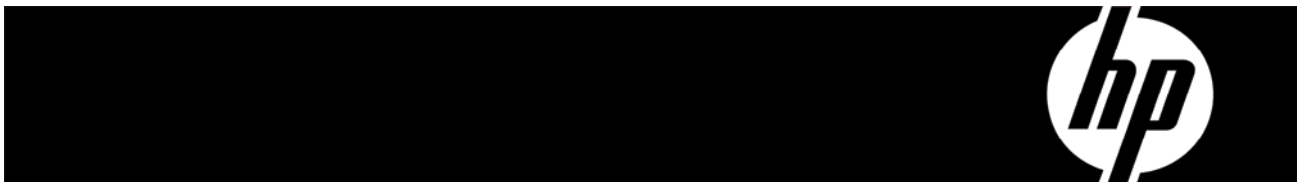


HP ProLiant DL160 G6 Server

Maintenance and Service Guide



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

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 garantievoorzwaarden 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.

顧客自己修理保証サービス

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製品には多数の顧客自己修理（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 - 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。
- 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、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、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。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともにに入れてください。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。顧客自己修理の際には、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。如果您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，并指定快递员/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 다양 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 / 2 or 4 3.5" hot-plug HDD model

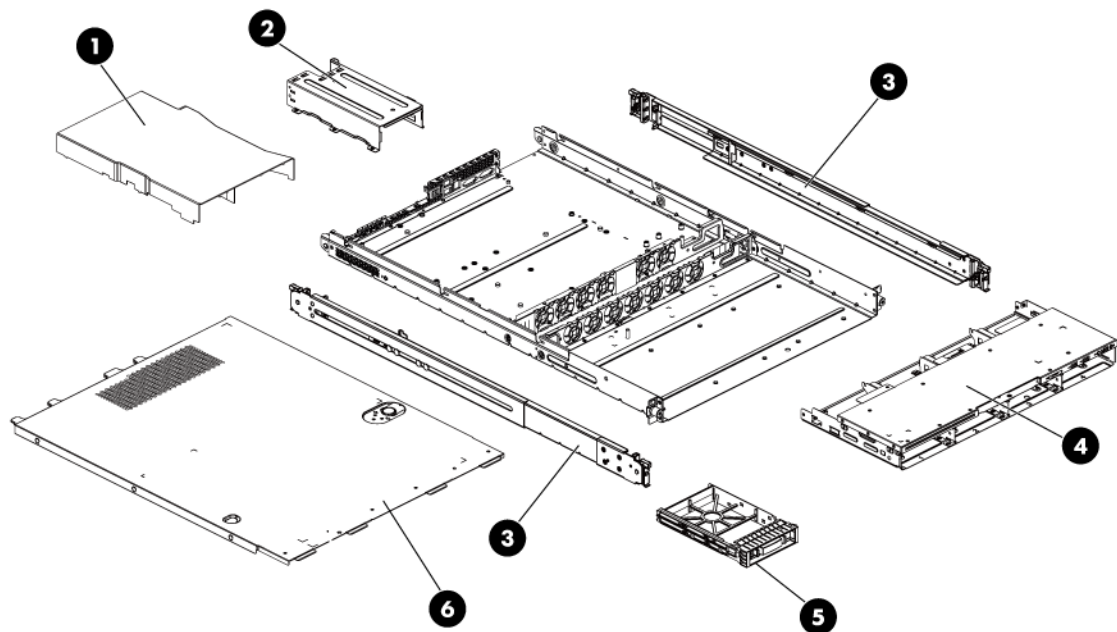


Table 1 Mechanical Components Spare Parts List / 2 or 4 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	Air baffle	511806-001	Mandatory ¹
2	Power supply cage	532473-001	Mandatory ¹
3	Rail kit	573091-001	Mandatory ¹
4	Hard drive cage (includes control panel)	532114-001	Mandatory ¹
5	Hardware and Plastic Kit	536390-001	Mandatory ¹
	BRKT FIXED PSU G6 SCR, 6-32 X .157,T10 SCR TT, 6-32x.160,SLT-T15 BRKT Rear I/O 1U G6 BLANK,HDD,SLIMLINE SFF HDD BLANK		
6	Top cover	507262-001	Mandatory ¹

Mechanical components / 4 3.5" HDD non-hot-plug model

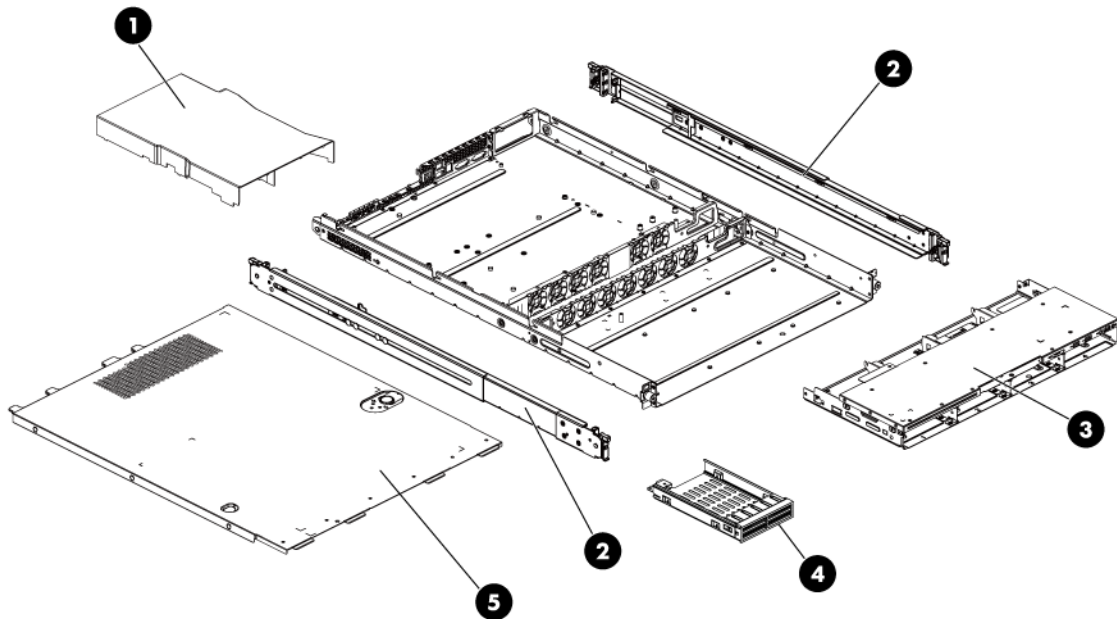


Table 2 Mechanical Components Spare Parts List / 4 3.5" HDD Non-hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	Air baffle	511806-001	Mandatory ¹
2	Rail kit	573091-001	Mandatory ¹
3	Hard drive cage (includes control panel)	532114-001	Mandatory ¹
4	Hardware and Plastic Kit	536390-001	Mandatory ¹
	BRKT FIXED PSU G6 SCR, 6-32 X .157,T10 SCR TT, 6-32x.160,SLT-T15 BRKT Rear I/O 1U G6 BLANK,HDD,SLIMLINE SFF HDD BLANK		
5	Top cover	507262-001	Mandatory ¹

Mechanical components / 8 2.5" HDD hot-plug model

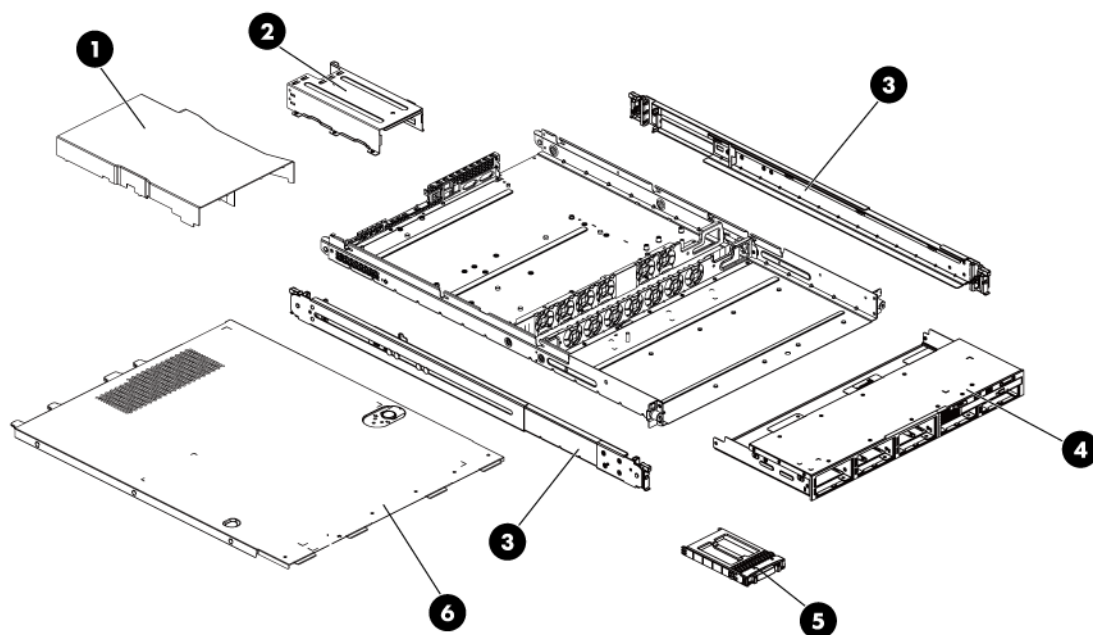


Table 3 Mechanical Components Spare Parts List / 8 2.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	Air baffle	511806-001	Mandatory ¹
2	Power supply cage	532473-001	Mandatory ¹
3	Rail kit	573091-001	Mandatory ¹
4	Hard drive cage(includes control panel)	532480-001	Mandatory ¹
5	Hardware and Plastic Kit	536390-001	Mandatory ¹
	BRKT FIXED PSU G6 SCR, 6-32 X .157,T10 SCR TT, 6-32x.160,SLT-T15 BRKT Rear I/O 1U G6 BLANK,HDD,SLIMLINE SFF HDD BLANK		
6	Top cover	507262-001	Mandatory ¹

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

System components / 2 3.5" HDD hot-plug model

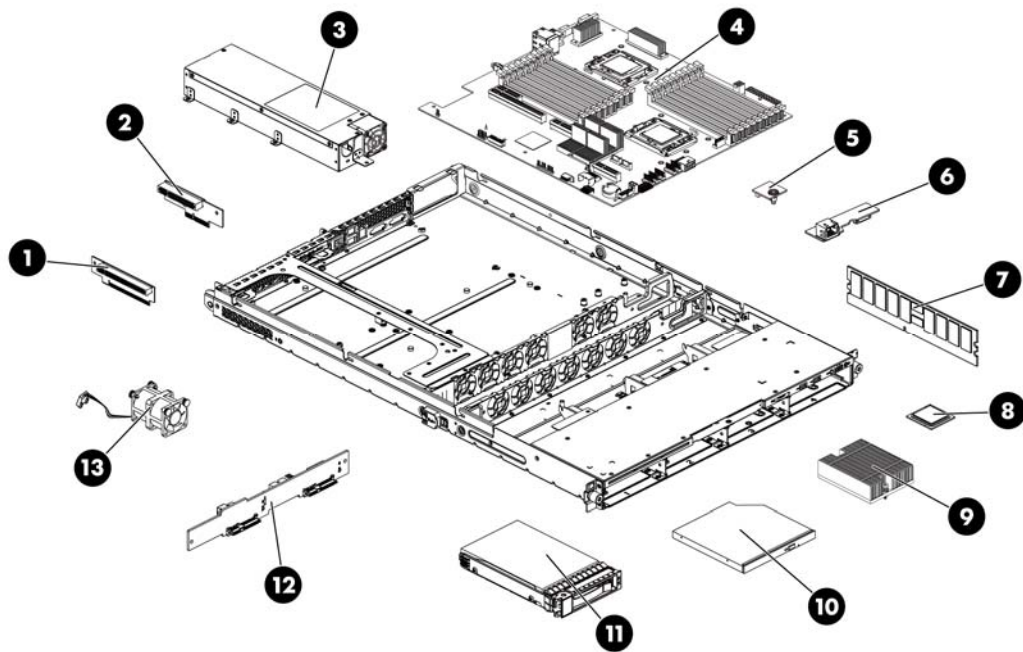


Table 4 System Components Spare Parts List / 2 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	PCI-Ex16 FH/FL PCIe riser card	511808-001	Mandatory ¹
2	PCI-Ex8 LP PCIe riser card	539372-001	Mandatory ¹
	PCI-x riser card (Option)	511819-001	Mandatory ¹
3	Power Supplies		
	Power Supply 500W non-hot-plug	506247-001	Mandatory ¹
	Power Supply 460W hot-plug	511777-001	Mandatory ¹
	Power Supply 750W	511778-001	Mandatory ¹
	Power Supply 460W 94% hot-plug	599381-001	Mandatory ¹
4	System board	511805-001	Optional ²
	System Board, 56XX series processor models	608882-001	
5	TPM Module (Must be replaced with system board if present)	505836-001	Optional ²
6	Dedicated Management Port Card	516806-001	Mandatory ¹
7	Memory modules		
	Registered DIMMs (RDIMMs)		
	DIMM, 2GB 2Rx8 PC3-10600R-9	501533-001	Mandatory ¹
	DIMM, 4GB 2Rx4 PC3-10600R-9	501534-001	Mandatory ¹
	DIMM, 4GB 4Rx8 PC3-8500R-7 LP	501535-001	Mandatory ¹

Table 4 System Components Spare Parts List / 2 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	DIMM, 8GB 2Rx4 PC3-8500R-7	519201-001	Mandatory ¹
	DIMM, 16GB 4RX4 PC3-8500R-7	501538-001	Mandatory ¹
	Unregistered DIMMs (UDIMMs)		
	DIMM, 1GB 1Rx8 PC3-10600E-9	501539-001	Mandatory ¹
	DIMM, 2GB 2Rx8 PC3-10600E-9	501540-001	Mandatory ¹
8	Processors, LGA 1366 Xeon™ Xeon		
	PROC,Xeon EP 2.93 GHz, 8M, 95W	506012-001	Optional ²
	PROC,Xeon EP 2.67 GHz, 8M, 95W	490070-001	Optional ²
	PROC,Xeon EP 2.26 GHz, 8M, 80W	490073-001	Optional ²
	PROC,Xeon EP 2.0 GHz, 4M, 80W QC	490074-001	Optional ²
	PROC,Xeon EP 2.53 GHz, 8M, 80W	490071-001	Optional ²
	PROC,Xeon EP 2.26 GHz, 8M, 60W	508567-001	Optional ²
	PROC Xeon EP 2.13 GHz,8M,80W	506013-001	Optional ²
	PROC Xeon E5503 2.0 GHz,4M, 80W	594889-001	Optional ²
	PROC Xeon X5680 3.33 GHz, 12M, 130W	594880-001	Optional ²
	PROC Xeon X5670 2.93 GHz, 12M, 95W	594882-001	Optional ²
	PROC Xeon X5660 2.8 GHz, 12M, 95W	594883-001	Optional ²
	PROC Xeon X5650 2.66 GHz, 12M, 95W	594884-001	Optional ²
	PROC Xeon E5640 2.66 GHz, 12M, 80W	594885-001	Optional ²
	PROC Xeon E5630 2.53 GHz, 12M, 80W	594886-001	Optional ²
	PROC Xeon E5620 2.4 GHz, 12M, 80W	594887-001	Optional ²
	PROC Xeon L5640 2.4 GHz, 12M, 60W	594890-001	Optional ²
	PROC Xeon L5630 2.13 GHz, 12M, 40W	594891-001	Optional ²
	PROC Xeon E5603 4c, 1.6 GHz, 4M, 80W	628700-001	Optional ²
	PROC Xeon E5606 4c, 2.13 GHz, 8M, 80W	628699-001	Optional ²
	PROC Xeon E5607 4c, 2.26 GHz, 8M, 80W	628698-001	Optional ²
	PROC Xeon E5645 4c, 2.4 GHz, 12M, 80W	628696-001	Optional ²
	PROC Xeon E5649 6c, 2.53 GHz, 12M, 80W	628695-001	Optional ²
	PROC Xeon E5675 6c, 3.06 GHz, 12M, 95W	638134-001	Optional ²
	PROC Xeon E5672 4c, 3.2 GHz, 12M, 95W	638135-001	Optional ²
	PROC Xeon E5690 6c, 3.4 GHz, 12M, 130W	638136-001	Optional ²
	PROC Xeon E5687 4c, 3.6 GHz, 12M, 130W	638137-001	Optional ²

Table 4 System Components Spare Parts List / 2 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
9	Processor heat sinks	511803-001	Mandatory ¹
10	Optical disc drive (optional)		
	DRV,ODD, 9.5mm SATA DVD-ROM	481430-001	Mandatory ¹
	DRV,ODD, 9.5mm SATA DVD-RW	481431-001	Mandatory ¹
11	Hard drives		
	3.5" hot-plug LFF SAS hard drives with carriers		
	72 GB 15,000 rpm	376594-001	Mandatory ¹
	146 GB 15,000 rpm	376595-001	Mandatory ¹
	300 GB 15,000 rpm	432146-001	Mandatory ¹
	400 GB 10,000 rpm	456896-001	Mandatory ¹
	450 GB 15,000 rpm	454274-001	Mandatory ¹
	750 GB 7,200 rpm	461288-001	Mandatory ¹
	1 TB 7,200 rpm	461289-001	Mandatory ¹
	3.5" hot-plug SATA hard drives with carriers		Mandatory ¹
	160 GB 7,200 rpm, 1.5Gbps	353043-001	Mandatory ¹
	160 GB 7,200 rpm, 3.0Gbps	483095-001	Mandatory ¹
	250 GB 7,200 rpm, 1.5Gbps	353044-001	Mandatory ¹
	250 GB 7,200 rpm, 3.0Gbps	459318-001	Mandatory ¹
	500 GB 7,200 rpm, 1.5Gbps	395501-001	Mandatory ¹
	500 GB 7,200 rpm, 3.0Gbps	459319-001	Mandatory ¹
	750 GB 7,200 rpm, 1.5Gbps	432401-001	Mandatory ¹
	750 GB 7,200 rpm, 3.0Gbps	459320-001	Mandatory ¹
	1 TB 7,200 rpm, 3.0Gbps	454273-001	Mandatory ¹
	3.5"non- hot-plug SATA hard drives with carriers		Mandatory ¹
	160 GB 7,200 rpm	459314-001	Mandatory ¹
	250 GB 7,200 rpm	373313-001	Mandatory ¹
	500 GB 7,200 rpm	404654-001	Mandatory ¹
	750 GB 7,200 rpm	463047-001	Mandatory ¹
12	Backplane two bays SAS/SATA hard drive	511812-001	Mandatory ¹
13	System fans	519711-001	Mandatory ¹

System components / 4 3.5" HDD hot-plug model

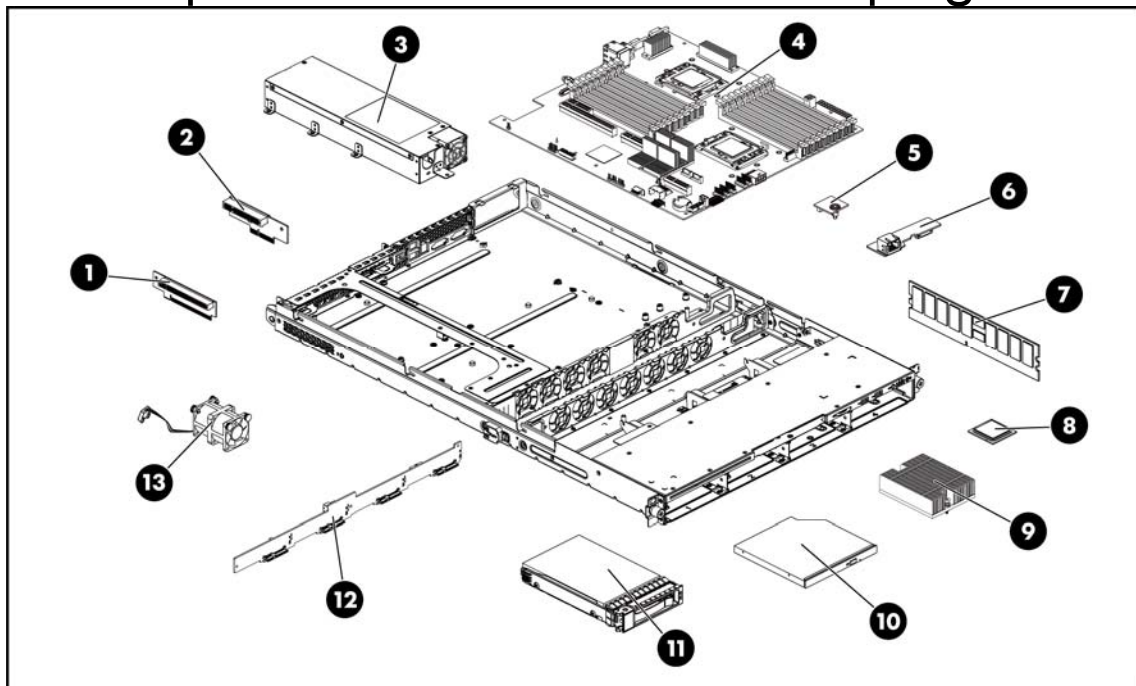


Table 5 System Components Spare Parts List / 4 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	PCI-Ex16 FH/FL PCIe riser card	511808-001	Mandatory ¹
2	PCI-Ex8 LP PCIe riser card	539372-001	Mandatory ¹
	PCI-x riser card (Option)	511819-001	Mandatory ¹
3	Power Supplies		Mandatory ¹
	Power Supply 500W non-hot-plug	506247-001	Mandatory ¹
	Power Supply 460W hot-plug	511777-001	Mandatory ¹
	Power Supply 750W	511778-001	Mandatory ¹
	Power Supply 460W 94% hot-plug	599381-001	Mandatory ¹
4	System board System Board, Xeon 56XX series	511805-001 608882-001	Optional ²
5	TPM Module (Must be replaced with system board if present)	505836-001	Optional ²
6	Dedicated Management Port Card	516806-001	Mandatory ¹
7	Memory modules		
	Registered DIMMs (RDIMMs)		
	DIMM, 2GB 2Rx8 PC3-10600R-9	501533-001	Mandatory ¹
	DIMM, 4GB 2Rx4 PC3-10600R-9	501534-001	Mandatory ¹

Table 5 System Components Spare Parts List / 4 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	DIMM, 4GB 4Rx8 PC3-8500R-7 LP	501535-001	Mandatory ¹
	DIMM, 16GB 4RX4 PC3-8500R-7	501538-001	Mandatory ¹
	Unregistered DIMMs (UDIMMs)		
	DIMM, 1GB 1Rx8 PC3-10600E-9	501539-001	Mandatory ¹
	DIMM, 2GB 2Rx8 PC3-10600E-9	501540-001	Mandatory ¹
8	Processors, LGA 1366 Xeon™ Xeon		
	PROC,Xeon EP 2.93 GHz, 8M, 95W	506012-001	Optional ²
	PROC,Xeon EP 2.67 GHz, 8M, 95W	490070-001	Optional ²
	PROC,Xeon EP 2.26 GHz, 8M, 80W	490073-001	Optional ²
	PROC,Xeon EP 2.0 GHz, 4M, 80W QC	490074-001	Optional ²
	PROC,Xeon EP 2.53 GHz, 8M, 80W	490071-001	Optional ²
	PROC,Xeon EP 2.26 GHz, 8M, 60W	508567-001	Optional ²
	PROC Xeon EP 2.13 GHz,8M,80W	506013-001	Optional ²
	PROC Xeon E5503 2.0 GHz,4M, 80W	594889-001	Optional ²
	PROC Xeon X5680 3.33 GHz,12M,130W	594880-001	Optional ²
	PROC Xeon X5670 2.93 GHz,12M, 95W	594882-001	Optional ²
	PROC Xeon X5660 2.8 GHz, 12M, 95W	594883-001	Optional ²
	PROC Xeon X5650 2.66 GHz, 12M, 95W	594884-001	Optional ²
	PROC Xeon E5640 2.66 GHz,12M, 80W	594885-001	Optional ²
	PROC Xeon E5630 2.53 GHz,12M,80W	594886-001	Optional ²
	PROC Xeon E5620 2.4 GHz,12M, 80W	594887-001	Optional ²
	PROC Xeon L5640 2.4 GHz,12M, 60W	594890-001	Optional ²
	PROC Xeon L5630 2.13 GHz,12M, 40W	594891-001	Optional ²
	PROC Xeon E5603 4c, 1.6 GHz, 4M, 80W	628700-001	Optional ²
	PROC Xeon E5606 4c, 2.13 GHz, 8M, 80W	628699-001	Optional ²
	PROC Xeon E5607 4c, 2.26 GHz, 8M, 80W	628698-001	Optional ²
	PROC Xeon E5645 4c, 2.4 GHz, 12M, 80W	628696-001	Optional ²
	PROC Xeon E5649 6c, 2.53 GHz, 12M, 80W	628695-001	Optional ²
	PROC Xeon E5675 6c, 3.06 GHz, 12M, 95W	638134-001	Optional ²
	PROC Xeon E5672 4c, 3.2 GHz, 12M, 95W	638135-001	Optional ²
	PROC Xeon E5690 6c, 3.4 GHz, 12M, 130W	638136-001	Optional ²

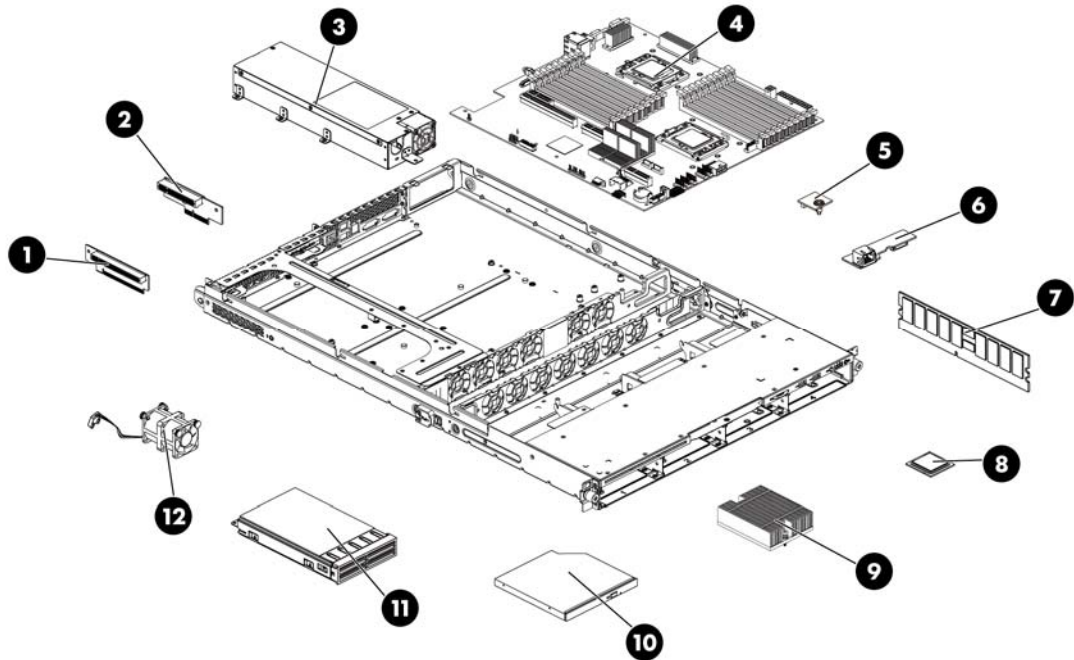
Table 5 System Components Spare Parts List / 4 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	PROC Xeon E5687 4c, 3.6 GHz, 12M, 130W	638137-001	Optional ²
9	Processor heat sinks	511803-001	Mandatory ¹
10	Optical disc drive (optional)		
	DRV,ODD, 9.5mm SATA DVD-ROM	481430-001	Mandatory ¹
	DRV,ODD, 9.5mm SATA DVD-RW	481431-001	Mandatory ¹
11	Hard drives		
	3.5" hot-plug LFF SAS hard drives with carriers		
	72 GB 15,000 rpm	376594-001	Mandatory ¹
	146 GB 15,000 rpm	376595-001	Mandatory ¹
	300 GB 15,000 rpm	432146-001	Mandatory ¹
	400 GB 10,000 rpm	456896-001	Mandatory ¹
	450 GB 15,000 rpm	454274-001	Mandatory ¹
	750 GB 7,200 rpm	461288-001	Mandatory ¹
	1 TB 7,200 rpm	461289-001	Mandatory ¹
	3.5" hot-plug SATA hard drives with carriers		
	160 GB 7,200 rpm, 1.5Gbps	353043-001	Mandatory ¹
	160 GB 7,200 rpm, 3.0Gbps	483095-001	Mandatory ¹
	250 GB 7,200 rpm, 1.5Gbps	353044-001	Mandatory ¹
	250 GB 7,200 rpm, 3.0Gbps	459318-001	Mandatory ¹
	500 GB 7,200 rpm, 1.5Gbps	395501-001	Mandatory ¹
	500 GB 7,200 rpm, 3.0Gbps	459319-001	Mandatory ¹
	750 GB 7,200 rpm, 1.5Gbps	432401-001	Mandatory ¹
	750 GB 7,200 rpm, 3.0Gbps	459320-001	Mandatory ¹
	1 TB 7,200 rpm, 3.0Gbps	454273-001	Mandatory ¹
	3.5" non-hot-plug SATA hard drives with carriers		
	160 GB 7,200 rpm	459314-001	Mandatory ¹
	250 GB 7,200 rpm	373313-001	Mandatory ¹
	500 GB 7,200 rpm	404654-001	Mandatory ¹
	750 GB 7,200 rpm	463047-001	Mandatory ¹
12	Backplane four bays SAS/SATA hard drive	535348-001	Mandatory ¹
	Backplane four bays SATA hard drive	570079-001	Mandatory ¹

Table 5 System Components Spare Parts List / 4 3.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
13	System fans	519711-001	Mandatory ¹

System components / 4 3.5" HDD non-hot-plug model

**Table 6** System Components Spare Parts List / 4 3.5" HDD Non-hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	PCI-Ex16 FH/FL PCIe riser card	511808-001	Mandatory ¹
2	PCI-Ex8 LP PCIe riser card	539372-001	Mandatory ¹
	PCI-x riser card (Option)	511819-001	Mandatory ¹
3	Power Supplies		
	Power Supply 500W non-hot-plug	506247-001	Mandatory ¹
	Power Supply 460W hot-plug	511777-001	Mandatory ¹
	Power Supply 750W	511778-001	Mandatory ¹
	Power Supply 460W 94% hot-plug	599381-001	Mandatory ¹
4	System board	511805-001	Optional ²
	System Board, 56XX series processor models	608882-001	

Table 6 System Components Spare Parts List / 4 3.5" HDD Non-hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
5	TPM Module (Must be replaced with system board if present)	505836-001	Optional ²
6	Dedicated Management Port Card	516806-001	Mandatory ¹
7	Memory modules		
	Registered DIMMs (RDIMMs)		
	DIMM, 2GB 2Rx8 PC3-10600R-9	501533-001	Mandatory ¹
	DIMM, 4GB 2Rx4 PC3-10600R-9	501534-001	Mandatory ¹
	DIMM, 4GB 4Rx8 PC3-8500R-7 LP	501535-001	Mandatory ¹
	DIMM, 8GB 2Rx4 PC3-8500R-7	519201-001	Mandatory ¹
	DIMM, 16GB 4RX4 PC3-8500R-7	501538-001	Mandatory ¹
	Unregistered DIMMs (UDIMMs)		
	DIMM, 1GB 1Rx8 PC3-10600E-9	501539-001	Mandatory ¹
	DIMM, 2GB 2Rx8 PC3-10600E-9	501540-001	Mandatory ¹
8	Processors, LGA 1366 Xeon™ Xeon		
	PROC,Xeon EP 2.93 GHz, 8M, 95W	506012-001	Optional ²
	PROC,Xeon EP 2.67 GHz, 8M, 95W	490070-001	Optional ²
	PROC,Xeon EP 2.26 GHz, 8M, 80W	490073-001	Optional ²
	PROC,Xeon EP 2.0 GHz, 4M, 80W QC	490074-001	Optional ²
	PROC,Xeon EP 2.53 GHz, 8M, 80W	490071-001	Optional ²
	PROC Xeon EP 2.13 GHz,8M,80W	506013-001	Optional ²
	PROC Xeon E5503 2.0 GHz,4M, 80W	594889-001	Optional ²
	PROC Xeon X5680 3.33 GHz,12M,130W	594880-001	Optional ²
	PROC Xeon X5670 2.93 GHz,12M, 95W	594882-001	Optional ²
	PROC Xeon X5660 2.8 GHz, 12M, 95W	594883-001	Optional ²
	PROC Xeon X5650 2.66 GHz, 12M, 95W	594884-001	Optional ²
	PROC Xeon E5640 2.66 GHz,12M, 80W	594885-001	Optional ²
	PROC Xeon E5630 2.53 GHz,12M,80W	594886-001	Optional ²
	PROC Xeon E5620 2.4 GHz,12M, 80W	594887-001	Optional ²
	PROC Xeon L5640 2.4 GHz,12M, 60W	594890-001	Optional ²
	PROC Xeon L5630 2.13 GHz,12M, 40W	594891-001	Optional ²
	PROC Xeon E5603 4c, 1.6 GHz, 4M, 80W	628700-001	Optional ²
	PROC Xeon E5606 4c, 2.13 GHz, 8M, 80W	628699-001	Optional ²
	PROC Xeon E5607 4c, 2.26 GHz, 8M, 80W	628698-001	Optional ²

Table 6 System Components Spare Parts List / 4 3.5" HDD Non-hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	PROC Xeon E5645 4c, 2.4 GHz, 12M, 80W	628696-001	Optional ²
	PROC Xeon E5649 6c, 2.53 GHz, 12M, 80W	628695-001	Optional ²
	PROC Xeon E5675 6c, 3.06 GHz, 12M, 95W	638134-001	Optional ²
	PROC Xeon E5672 4c, 3.2 GHz, 12M, 95W	638135-001	Optional ²
	PROC Xeon E5690 6c, 3.4 GHz, 12M, 130W	638136-001	Optional ²
	PROC Xeon E5687 4c, 3.6 GHz, 12M, 130W	638137-001	Optional ²
9	Processor heat sinks	511803-001	Mandatory ¹
10	Optical disc drive (optional)		
	DRV,ODD, 9.5mm SATA DVD-ROM	481430-001	Mandatory ¹
	DRV,ODD, 9.5mm SATA DVD-RW	481431-001	Mandatory ¹
11	Hard drives		
	3.5"non- hot-plug SATA hard drives with carriers		
	160 GB 7,200 rpm	459314-001	Mandatory ¹
	250 GB 7,200 rpm	373313-001	Mandatory ¹
	500 GB 7,200 rpm	404654-001	Mandatory ¹
	750 GB 7,200 rpm	463047-001	Mandatory ¹
12	System fans	519711-001	Mandatory ¹

System components / 8 2.5" HDD hot-plug model

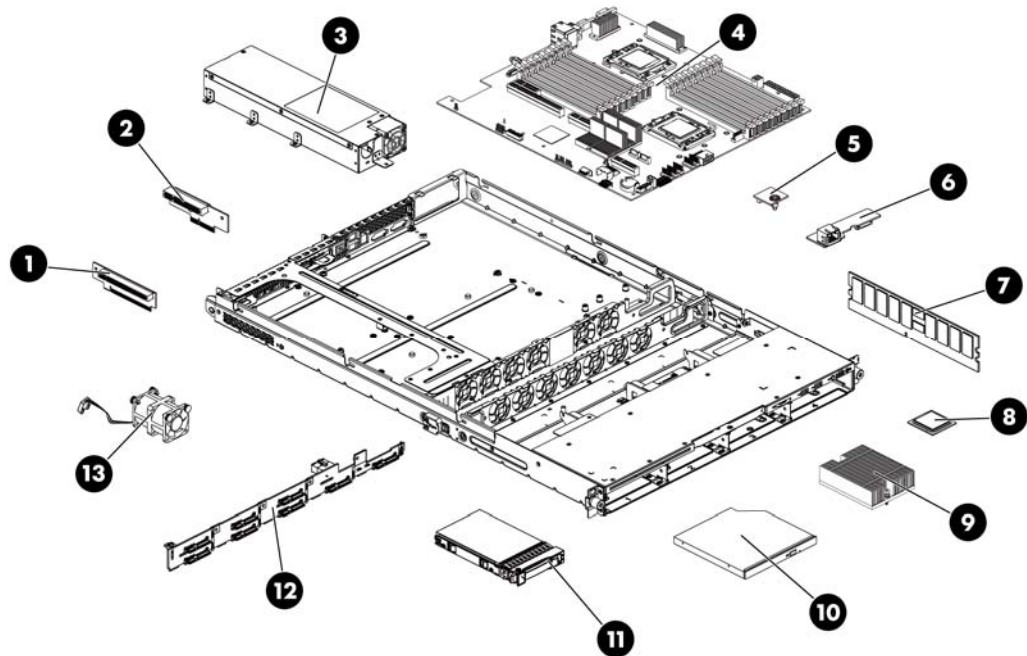


Table 7 System Components Spare Parts List / 8 2.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
1	PCI-Ex16 FH/FL PCIe riser card	511808-001	Mandatory ¹
2	PCI-Ex8 LP PCIe riser card	539372-001	Mandatory ¹
	PCI-x riser card (Option)	511819-001	Mandatory ¹
3	Power Supplies		
	Power Supply 500W non-hot-plug	506247-001	Mandatory ¹
	Power Supply 460W hot-plug	511777-001	Mandatory ¹
	Power Supply 750W	511778-001	Mandatory ¹
	Power Supply 460W 94% hot-plug	599381-001	Mandatory ¹
4	System board	511805-001	Mandatory ¹
	System Board, Xeon 56XX series	608882-001	
5	TPM Module (Must be replaced with system board if present)	505836-001	Optional ²
6	Dedicated Management Port Card	516806-001	Mandatory ¹
	Memory modules		
7	Registered DIMMs (RDIMMs)		
	DIMM, 2GB 2Rx8 PC3-10600R-9	501533-001	Mandatory ¹
	DIMM, 4GB 2Rx4 PC3-10600R-9	501534-001	Mandatory ¹
	DIMM, 4GB 4Rx8 PC3-8500R-7 LP	501535-001	Mandatory ¹

Table 7 System Components Spare Parts List / 8 2.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	DIMM, 8GB 2Rx4 PC3-8500R-7	519201-001	Mandatory ¹
	DIMM, 16GB 4RX4 PC3-8500R-7	501538-001	Mandatory ¹
	Unregistered DIMMs (UDIMMs)		
	DIMM, 1GB 1Rx8 PC3-10600E-9	501539-001	Mandatory ¹
	DIMM, 2GB 2Rx8 PC3-10600E-9	501540-001	Mandatory ¹
8	Processors, LGA 1366 Xeon™ Xeon		
	PROC,Xeon EP 2.93 GHz, 8M, 95W	506012-001	Mandatory ¹
	PROC,Xeon EP 2.67 GHz, 8M, 95W	490070-001	Mandatory ¹
	PROC,Xeon EP 2.26 GHz, 8M, 80W	490073-001	Mandatory ¹
	PROC,Xeon EP 2.0 GHz, 4M, 80W QC	490074-001	Mandatory ¹
	PROC,Xeon EP 2.53 GHz, 8M, 80W	490071-001	Mandatory ¹
	PROC,Xeon EP 2.26 GHz, 8M, 60W	508567-001	Mandatory ¹
	PROC Xeon EP 2.13 GHz,8M,80W	506013-001	Optional ²
	PROC Xeon E5503 2.0 GHz,4M, 80W	594889-001	Optional ²
	PROC Xeon X5680 3.33 GHz,12M,130W	594880-001	Optional ²
	PROC Xeon X5670 2.93 GHz,12M, 95W	594882-001	Optional ²
	PROC Xeon X5660 2.8 GHz, 12M, 95W	594883-001	Optional ²
	PROC Xeon X5650 2.66 GHz, 12M, 95W	594884-001	Optional ²
	PROC Xeon E5640 2.66 GHz,12M, 80W	594885-001	Optional ²
	PROC Xeon E5630 2.53 GHz,12M,80W	594886-001	Optional ²
	PROC Xeon E5620 2.4 GHz,12M, 80W	594887-001	Optional ²
	PROC Xeon L5640 2.4 GHz,12M, 60W	594890-001	Optional ²
	PROC Xeon L5630 2.13 GHz,12M, 40W	594891-001	Optional ²
	PROC Xeon E5603 4c, 1.6 GHz, 4M, 80W	628700-001	Optional ²
	PROC Xeon E5606 4c, 2.13 GHz, 8M, 80W	628699-001	Optional ²
	PROC Xeon E5607 4c, 2.26 GHz, 8M, 80W	628698-001	Optional ²
	PROC Xeon E5645 4c, 2.4 GHz, 12M, 80W	628700-001	Optional ²
	PROC Xeon E5649 6c, 2.53 GHz, 12M, 80W	628699-001	Optional ²
	PROC Xeon E5675 6c, 3.06 GHz, 12M, 95W	628698-001	Optional ²
	PROC Xeon E5672 4c, 3.2 GHz, 12M, 95W	628696-001	Optional ²
	PROC Xeon E5690 6c, 3.4 GHz, 12M, 130W	628695-001	Optional ²

Table 7 System Components Spare Parts List / 8 2.5" HDD Hot-plug Model

Item	Description	Spare Part Number	Customer Self Repair
	PROC Xeon E5687 4c, 3.6 GHz, 12M, 130W	638134-001	Optional ²
9	Processor heat sinks	511803-001	Mandatory ¹
10	Optical disc drive (optional)		
	DRV,ODD, 9.5mm SATA DVD-ROM	481430-001	Mandatory ¹
	DRV,ODD, 9.5mm SATA DVD-RW	481431-001	Mandatory ¹
11	Hard drives		
	2.5" hot-plug SAS hard drives with carriers		
	36 GB 15,000 rpm DP	418397-001	Mandatory ¹
	72 GB 10,000 rpm SP	376597-001	Mandatory ¹
	72 GB 10,000 rpm DP	389346-001	Mandatory ¹
	72 GB 15,000 rpm SP	432321-001	Mandatory ¹
	72 GB 15,000 rpm DP	418398-001	Mandatory ¹
	146 GB 10,000 rpm SP	432320-001	Mandatory ¹
	146 GB 10,000 rpm DP	418399-001	Mandatory ¹
	146 GB 15,000 rpm DP	504334-001	Mandatory ¹
	300 GB 10,000 rpm DP	493083-001	Mandatory ¹
	2.5" hot-plug SATA hard drives with carriers		
	120 GB 5,400 rpm	459322-001	Mandatory ¹
	250 GB 5,400 rpm	460426-001	Mandatory ¹
	500 GB 5,400 rpm	508035-001	Mandatory ¹
12	Backplane eight bays SAS/SATA hard drive	532481-001	Mandatory ¹
13	System fans	519711-001	Mandatory ¹

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HP contact information

For the name of the nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- In other locations, refer to the HP website at <http://www.hp.com/>.

For HP technical support:

- In North America:
 - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
 - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website at <http://www.hp.com/>.
- Outside North America, call the nearest HP Technical Support Phone Center. For telephone numbers for worldwide Technical Support Centers, refer to the HP website at <http://www.hp.com/>.

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number

- Product model name and number
- Applicable error messages
- Add-on boards or hardware model number and serial number
- Third-party hardware or software model number
- Operating system type and revision level

Removal and replacement procedures

This chapter provides subassembly/module-level removal and replacement procedures for the HP ProLiant DL160 G6 server.

Review the specifications of a new component before installing it to make sure it is compatible with the server. When you integrate new components into the system, record its model and serial number, and any other pertinent information for future reference. After completing any removal or replacement procedure, run the diagnostics program to verify that all components operate properly.

NOTE: The figures used in this chapter to illustrate procedural steps are labeled numerically (i.e., 1, 2...). When these figures are used in substep items, the alphabetically labeled instructions correspond to the numbered labels on the related figure (i.e., label 1 corresponds to step a, label 2 corresponds to step b, etc.). The procedures described in this section assume that the server is out of the rack and is positioned on a flat, stable surface.

Hardware configuration tools

You will need the following tools:

- T-10/T-15 wrench

The following references and software tools will assist with the hardware configuration:

- HP ProLiant DL160 G6 Server Easy Set-up CD
- IPMI Event Log
- Diagnostics Software

Hardware configuration information

Electrostatic discharge information

An electrostatic discharge (ESD) can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage, observe the following precautions:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Cover workstations with approved static-dissipating material. Use a wrist strap connected to the work surface, and properly grounded (earthed) tools and equipment.
- Keep work area free of nonconductive materials, such as ordinary plastic assembly aids and foam packing.
- Make sure that you are always properly grounded (earthed) when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, or circuitry.
- Always place drives with the Printed Circuit Board (PCB) assembly-side down.
- Use conductive field service tools.

Pre-installation procedure

Perform the steps below before you open the server or before you remove or replace any component.



WARNING: Failure to properly turn off the server before you open the server or before you start installing and removing components may cause serious damage as well as bodily harm.

1. Turn off the server and all the peripherals connected to it.
2. Unplug all cables from the power outlet(s) to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry.
If necessary, label each one to expedite reassembly.
3. Disconnect telecommunication cables to avoid exposure to shock hazard from ringing voltages.
4. If server is installed in a rack, remove server and place it on a flat surface.
5. Remove the top cover according to the instructions described in the "System cover" section in this chapter.
6. Follow the ESD precautions listed previously in this chapter when handling a server component.



IMPORTANT: To streamline the configuration process, read through the entire installation and removal procedures first and make sure you understand them before you begin.


Post-installation instructions


Observe the following items after installing or removing a server component:


1. Be sure all components are installed according to the described step-by-step instructions.
2. Reinstall the rear cage, air baffle, peripherals, and system cables that you have removed.
3. Reinstall the top cover.
4. Reinstall server into rack.
5. Connect all external cables and the AC power cord(s) to the system.
6. Press the power button on the front panel to turn on the server.

Server warnings and cautions

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


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


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

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

HP Trusted Platform Module

The TPM is not a customer-removable part.

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

-  **IMPORTANT:** If you suspect a TPM board failure, leave the TPM installed and remove the system. Contact an HP authorized service provider for a replacement system board and TPM board.
-

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.



Weight in kg
Weight in lb

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

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



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

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

Powering down the server

The server does not completely power down when the power button on the front panel is pressed. The button toggles between On and Standby. The standby position removes power from most electronics and the drives, but some internal circuitry remains active. To completely remove all power from the system, disconnect all power cords from the server.

To power down the server:

1. Shut down the server as directed by the operating system documentation.
2. Press the power button to toggle to Standby.

This places the server in standby mode changing the power LED indicator to amber. In this mode, the main power supply output is disabled. Standby does not completely disable or remove power from the system.

3. Disconnect the AC power cord(s) from the power outlet(s) and then from the server.
4. Be sure that the power LED indicator is turned off and that the fan noise has stopped.
5. Disconnect all peripheral devices from the server.

System cover

You need to remove the top cover before you can remove or replace a server component. The top cover needs to be removed to service the SAS/SATA backplane.

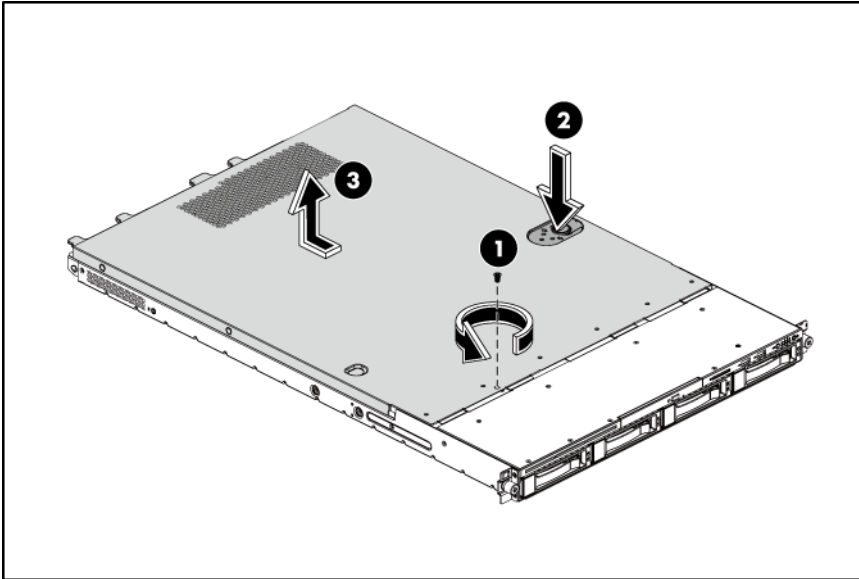
Top cover

To remove the top cover:

1. Loosen the screw on the top cover with a T-10 wrench.
2. Press the latch on the top cover.

3. Slide the cover toward the rear of the server and then lift the top cover to remove it from the chassis. Lift the top cover away from the chassis.

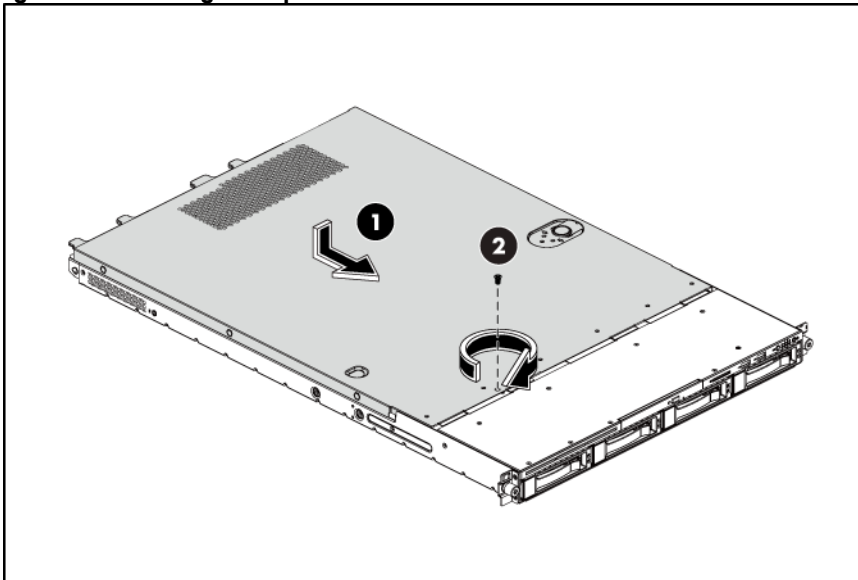
Figure 1 Removing the Top Cover



To reinstall the top cover:

1. Align the top cover to the chassis and then slide it towards the front panel to position it into place.
2. Once the cover is attached to the chassis, tighten the screw on the top cover with a T-10 wrench.

Figure 2 Reinstalling the Top Cover



Drives

The server supports the following configurations:

- 2 drive bays for 3.5-inch hard disk drives and 1 drive bay for an optical disc drive
- 4 drive bays for 3.5-inch hard disk drives and 1 drive bay for an optical disc drive.

- 8 drive bays for 2.5-inch hard disk drives and 1 drive bay for an optical disc drive.

Cable management

Always follow good cable management practices when working inside the computer.

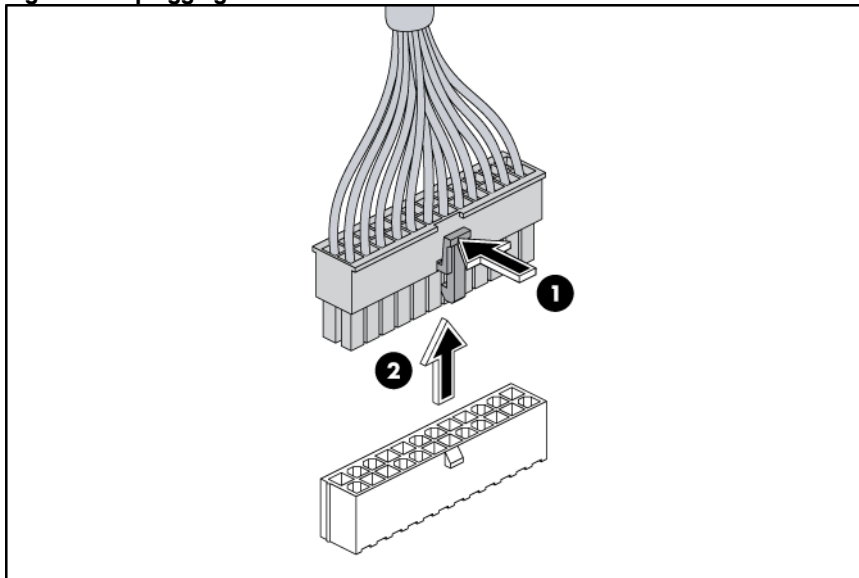
- Keep cables away from major heat sources like the heat sink.
- Do not jam cables on top of expansion cards or memory modules. Printed circuit cards are not designed to withstand excessive pressure.
- Keep cables clear of sliding or moveable parts to prevent cutting or crimping.
- When folding a flat ribbon cable, never fold to a sharp crease. Sharp creases may damage the wires.
- Some flat ribbon cables come pre-folded. Never change the folds on these cables.
- Do not sharply bend any cable. A sharp bend can break the internal wires.
- Never bend a SATA data cable tighter than a 30 mm (1.18 in.) radius.
- Never crease a SATA data cable.
- Do not rely on components like the drive cage, power supply, or system cover to push cables down into the chassis.

The next steps illustrate the removal of power cable from connector J51, 60, 64 and 82.

3. Squeeze on the top of the retaining latch attached to the cable end of the connector.
4. Grasp the cable end of the connector and pull it straight up.

△ CAUTION: Always pull the connector—NEVER pull on the cable. Pulling on the cable could damage the cable and result in a failed power supply.

Figure 3 Unplugging Power Cable



Cable connections

The following tables provide information about switching power supply cable connector labels.

Table 8 Cable connections from the 460W/750W Hot-plug Power Supply (Optional)

Cable	To	Cable Designator
Switching power supply	System board 24-pin power connector	P1
Switching power supply	System board 8-pin power connector	P2
Switching power supply	System board 4-pin power connector	P3
Switching Power Supply	Graph card power connector	P4
Switching Power Supply	4/8 HDD hot-plug Backplane power connector	P5
Switching power supply	Optical disc drive	CD
Switching Power Supply	System board backplane power connector	RPS
Switching power supply	2 HDD hot-plug Backplane power connector	P10/P11
Switching power supply	4 Non hot-plug HDD	P6,P7,P8,P9

NOTE: P6,P7,P8,P9,P10 and P11 are extended connectors from P5, P4 are the extended 6-pin connector from 10-pin P4 connector of power supply.

Table 9 Cable connections from the 500 W Non-hot-plug Power Supply

Cable	To	Cable Designator
Switching power supply	System board 24-pin power connector	P1
Switching power supply	System board 8-pin power connector	P2
Switching power supply	System board 4-pin power connector	P3
Switching Power Supply	4/8 HDD hot-plug Backplane power connector	P7
Switching Power Supply	Graph card power connector	P4
Switching power supply	Optical disc drive	P5
Switching power supply	2 HDD hot-plug Backplane power connector	P10
Switching power supply	4 Non hot-plug HDD	P11,P12,P13,P14

NOTE: P10,P11,P12,P13,P14 are extended connectors from P7

The following tables provide the system board designators that various cables plug into. For more detailed information about system board components, see "Figure 106 System Board Components".

Table 10 Cable Connections from the System Board

Cable	To	System Board Designator
20-pin front panel connector	Front panel	J42
USB 0/1 connector	Front panel USB 2.0	J56

Table 10 Cable Connections from the System Board

Cable	To	System Board Designator
USB 4 connector	Internal USB 2.0	J69
Mini SAS connector	Backplane Mini SAS connector	J11
24-pin power connector	Power supply	J51
8-pin power connector	Power supply	J64
4-pin power connector	Power supply	J60
16-pin Backplane power connector	Power supply	P82
3-pin backplane I2C connector	Backplane	J65
6-pin system fan 1 connector	System fan 1	J63
6-pin system fan 2 connector	System fan 2	J71
6-pin system fan 3 connector	System fan 3	J62
6-pin system fan 4 connector	System fan 4	J70
6-pin system fan 5 connector	System fan 5	J68
6-pin system fan 6 connector	System fan 6	J67
LCD connector (optional)	Optional LCD module	J53

Table 11 Drive Cable Connections / 2 3.5" Hot-plug HDD Model

Cable	To	System Board Designator
Mini SAS connector	2HDD backplane	J11
SATA 5/SATA 6 connector	Optical disc drive	J57,J58

Table 12 Drive Cable Connections / 4 3.5" Hot-plug HDD Model

Cable	To	System Board Designator
Mini SAS connector	4HDD backplane	J11
SATA 5/SATA 6 connector	Optical disc drive	J57,J58

Table 13 Drive Cable Connections / 4 3.5" Non-hot-plug HDD

Cable	To	System Board Designator
Mini SAS connector	HDD 1,2,3,4	J11
SATA 5/SATA 6 connector	Optical disc drive	J57,J58

Table 14 Drive Cable Connections / 8 2.5" hot-plug HDD

Cable	To	System Board Designator
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Table 14 Drive Cable Connections / 8 2.5" hot-plug HDD

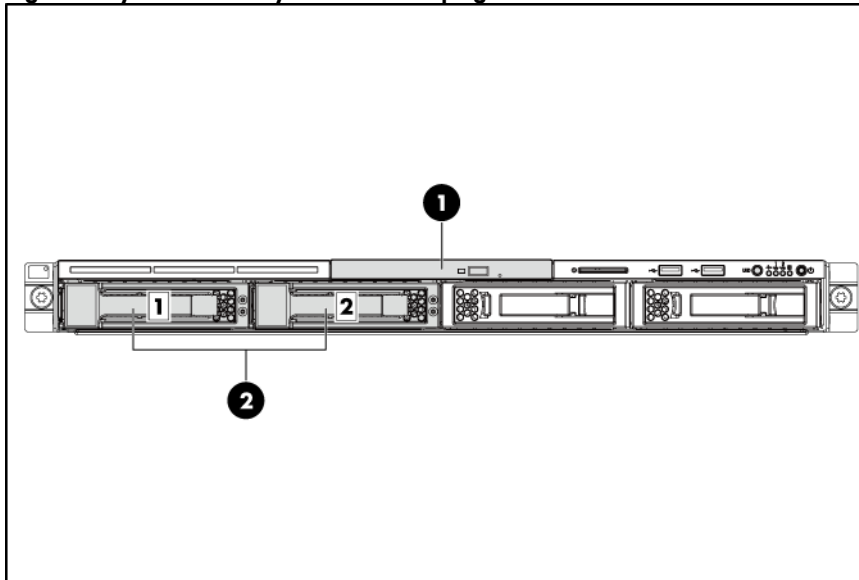
Cable	To	System Board Designator
PCI storage controller card	8 2.5" HDD Backplane	3rd party Mini-SAS connector 1
PCI storage controller card	8 2.5" HDD Backplane	3rd party Mini-SAS connector 2
SATA 5/SATA 6 connector	Optical disc drive	J57,J58

Drive bay configuration

The server supports the following drive bays

- 2 drive bays for 3.5-inch hard disk drives and 1 drive bay for 9.5mm (0.37 in.) optical disc drive
- 4 drive bays for 3.5-inch hard disk drives and 1 drive bay for 9.5mm (0.37 in.) optical disc drive
- 8 drive bays for 2.5-inch hard disk drives and 1 drive bay for 9.5mm (0.37 in.) optical disc drive.

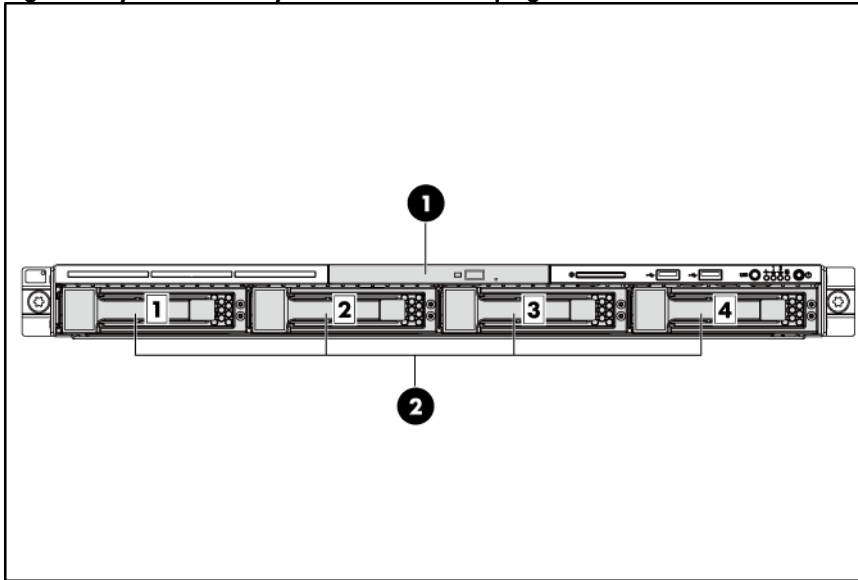
Figure 4 System Drive Bays / 2 3.5" Hot-plug HDD Model



Item	Description
1	9.5mm (0.37 in.) optical disk drive (optional)
2	3.5 in. hard disk drive bays (2)

The HDD bays support both SATA and SAS drives.

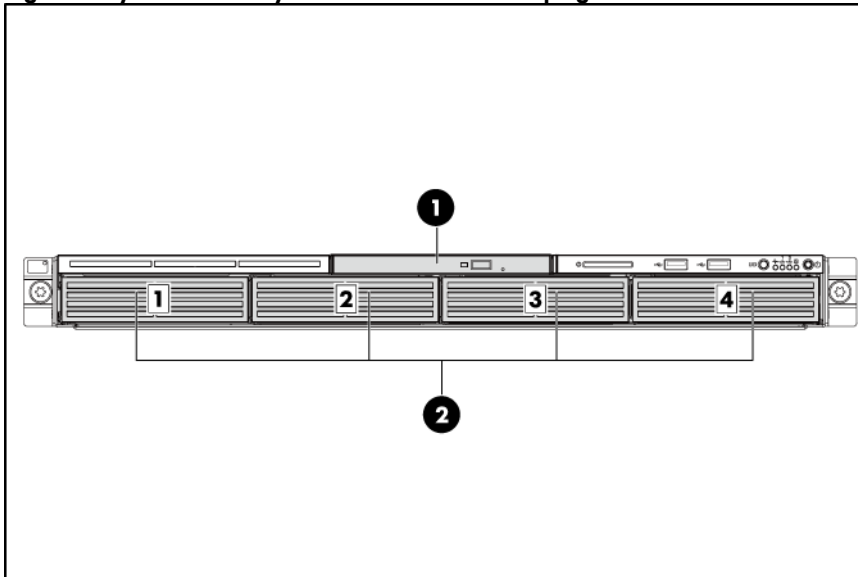
Figure 5 System Drive Bays / 4 3.5" HDD Hot-plug Model



Item	Description
1	9.5mm (0.37 in.) optical disc drive (optional)
2	3.5 in. hard disk drive bays (4)

The HDD bays support both SATA and SAS drives.

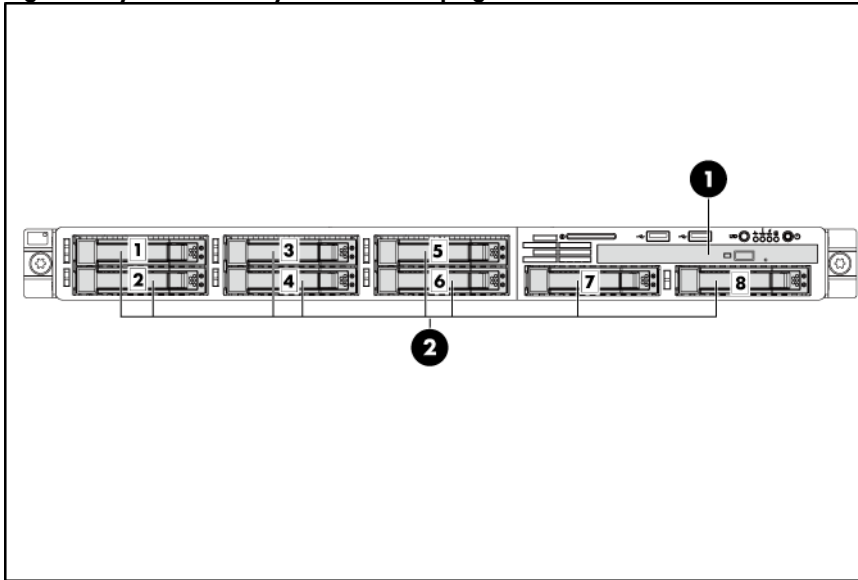
Figure 6 System Drive Bays / 4 3.5" HDD Non-hot-plug Model



Item	Description
1	9.5mm (0.37in.) optical disc drive (optional)
2	3.5 in. hard disk drive bays (4)

The HDD bays can support SATA drives.

Figure 7 System Drive Bays / 8 2.5" Hot-plug HDD Model



Item	Description
1	9.5mm (0.37 in.) optical disk drive
2	2.5 in. hard disk drive bays (8)
The HDD bays support both SATA and SAS drives.	

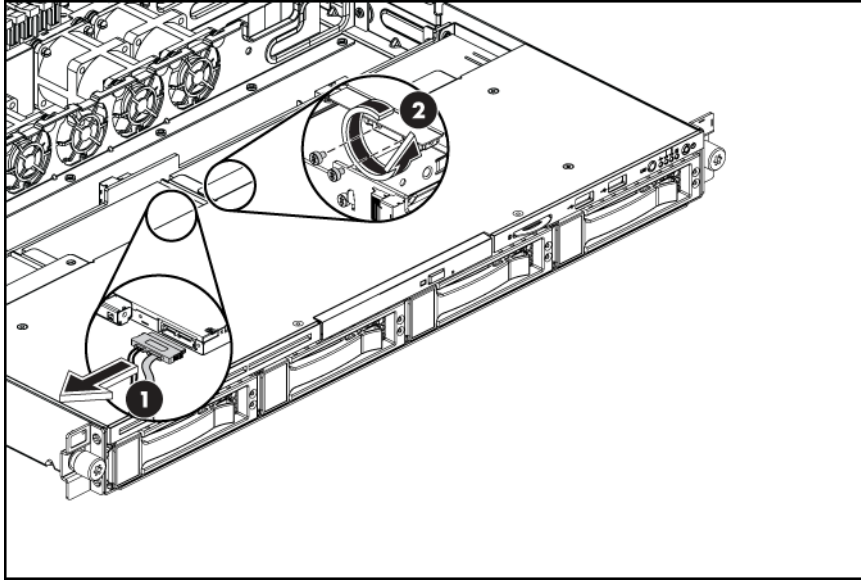
Optical disc drive bay

The optical media device bay of the servers with 2HDDs and 4HDDs both support a 9.5 mm (0.37 in.) DVD ROM. The following procedure is an example using the server with 4HDD model.

To remove the optical disk drive carrier:

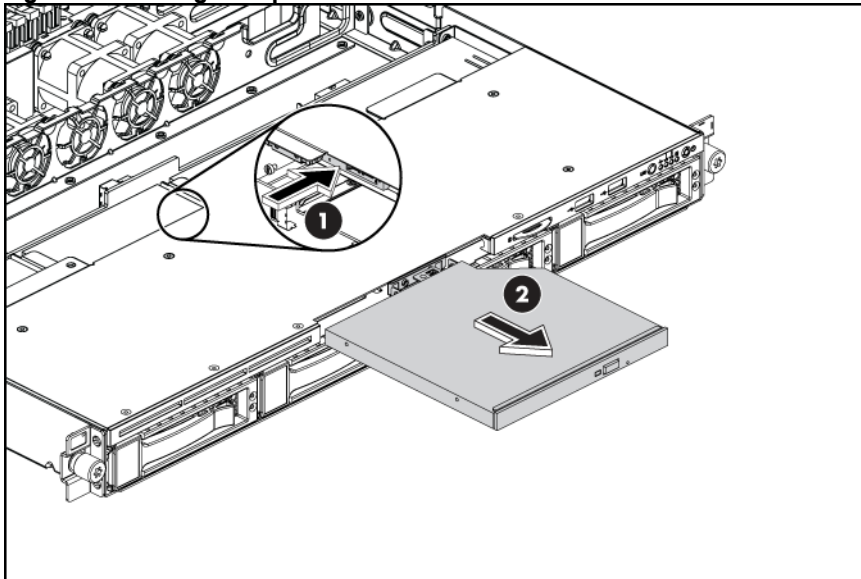
1. Remove the top cover and then unplug the SATA and power cable.
2. Loosen the screws.

Figure 8 Removing the Cables and Screws



3. Push the optical disk drive toward the front of the unit.
4. Pull the optical disk drive out of the chassis.

Figure 9 Removing the Optical disk drive

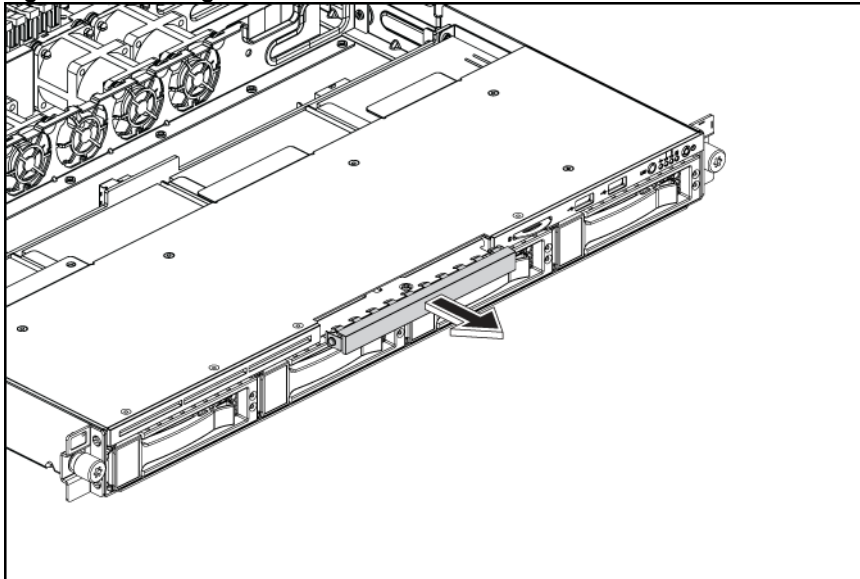


To remove the bezel blank:

1. Turn off the server and all the peripherals connected to it.
2. Unplug all external cables and AC power cords. If necessary, label each one to expedite reassembly.
3. Remove the unit from the rack and place on a flat surface.
4. Remove the top cover.
5. Pull the bezel blank out of the carrier.

△ CAUTION: Do not discard the bezel blank. If the optical disk drive is removed in the future, you must reinstall the bezel blank to maintain proper system function.

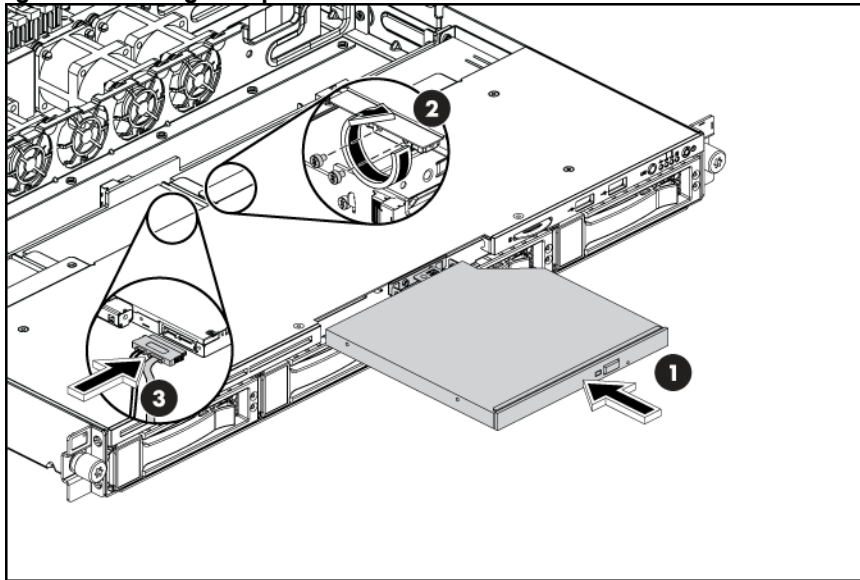
Figure 10 Removing the Bezel Blank



To install the optical disk drive:

1. Slide the optical disk drive assembly into the chassis.
2. Remove the top cover, fasten the screws and connect the SATA and power cables to their corresponding connectors on the optical disk drive.

Figure 11 Installing the Optical disk drive

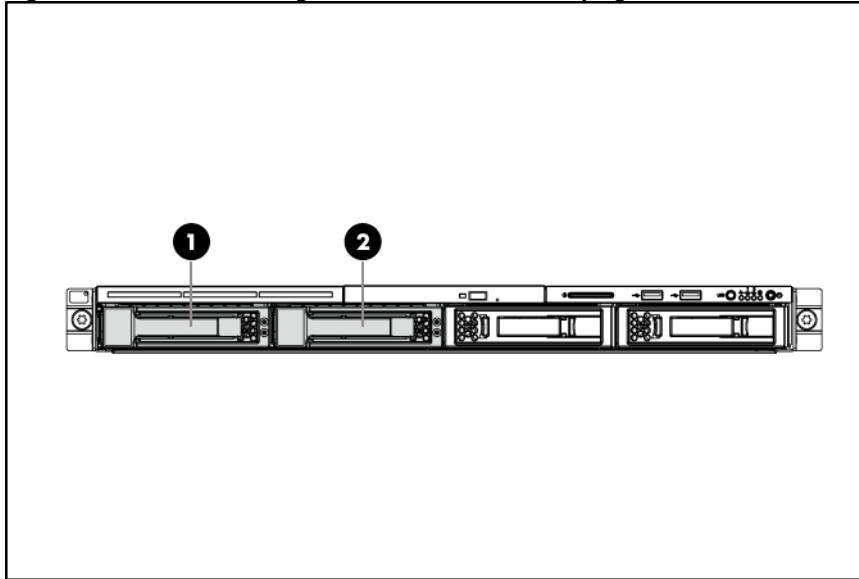


Hard drives

The drive bays on the front panel can accommodate up to two, four or eight hard drives. You can install either SAS hard drives or SATA hard drives in the server.

For servers with 2 3.5-inch HDDs, the hard drives installed in the server are labeled from Device 1 to Device 2, from left to right, when viewed from the front of the server.

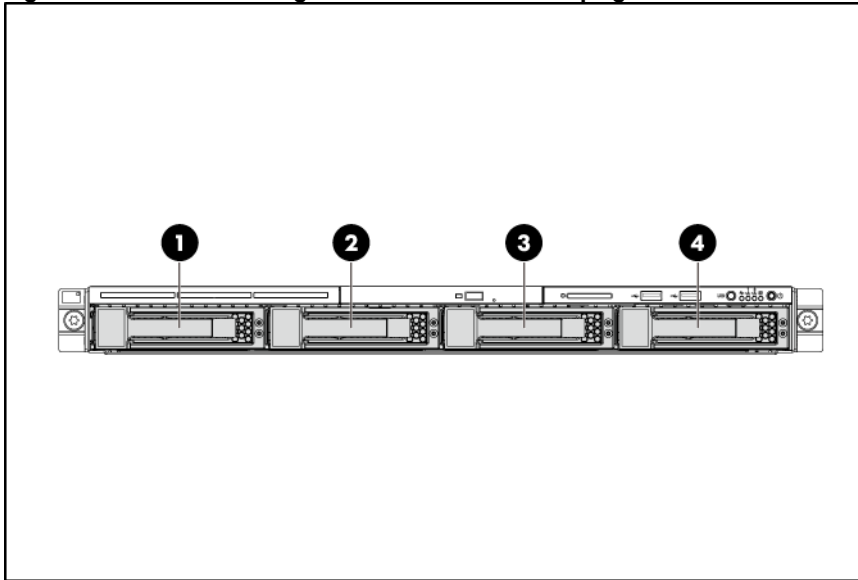
Figure 12 Hard Drive Configuration / 2 3.5" HDD Hot-plug Model



Item	Description
1-2	SAS/SATA hard drives 1-2

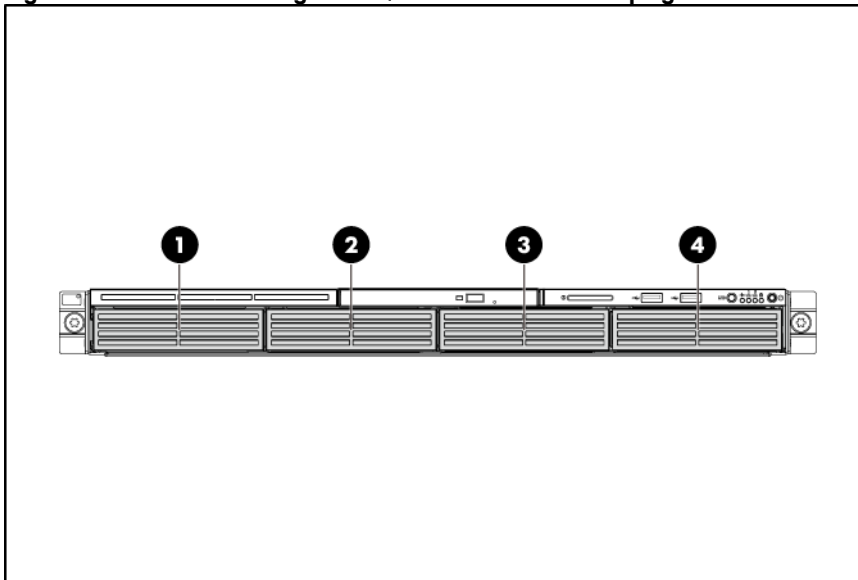
For servers with 4 3.5-inch HDDs, the hard drives installed in the server are labeled from Device 1 to Device 4, from left to right, when viewed from the front of the server.

Figure 13 Hard Drive Configuration / 4 3.5" HDD Hot-plug Model



Item	Description
1-4	SAS/SATA hard drives 1-4

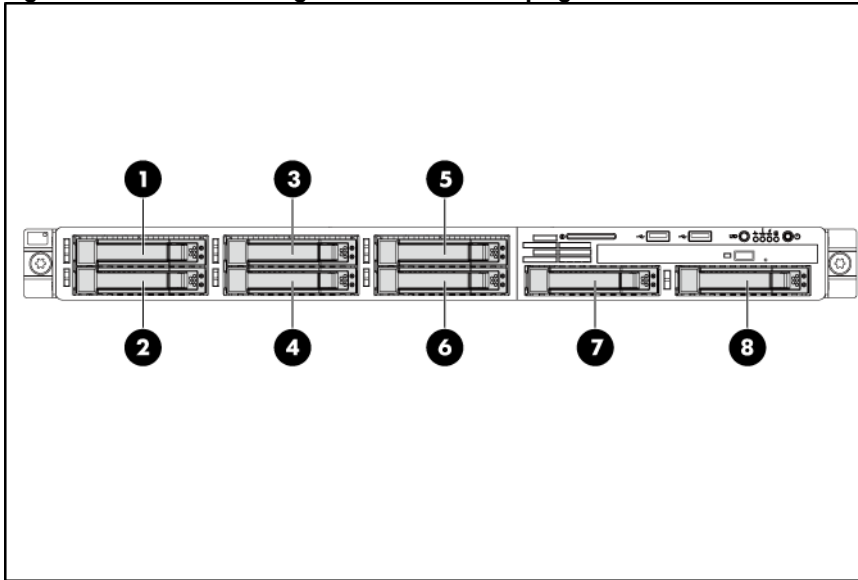
Figure 14 Hard Drive Configuration / 4 3.5" HDD Non-hot-plug Model



Item	Description
1-4	SATA hard drives 1-4

For servers with 8 2.5-inch HDDs, the hard drives installed in the server are labeled from Device 1 to Device 8, from top to bottom, left to right, when viewed from the front of the server.

Figure 15 Hard Drive Configuration / 8 2.5" Hot-plug HDD Model



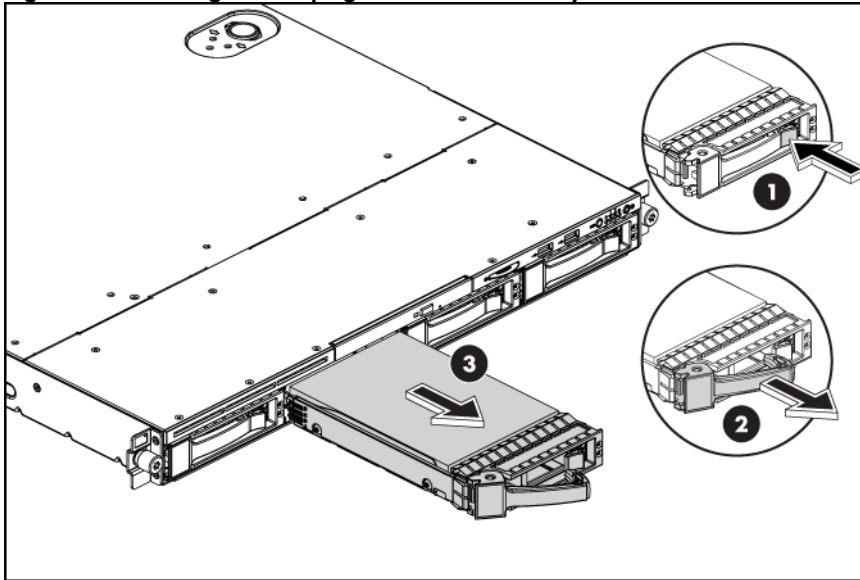
Item	Description
1-8	SAS/SATA hard drives 1-8

The hot-plug HDD for the servers with 2 3.5" HDDs and 4 3.5" HDDs and 8 2.5" HDDs share the same removal and replacement procedures. Here we take the server with 4 3.5" HDDs as an example for your reference.

To remove the hot-plug hard drive:

1. Press the hard disk carrier button to release the ejector lever.
2. Use the HDD carrier latch to pull the drive out of the cage.
Make sure to support the drive when pulling it out of the cage.
3. Pull the hard drive assembly out of the drive bay.

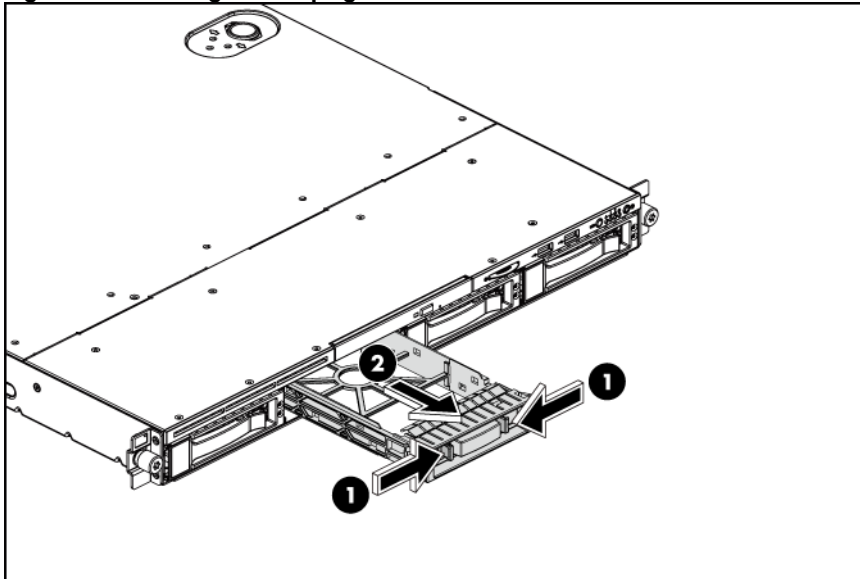
Figure 16 Removing the Hot-plug Hard Drive Assembly



To install the hot-plug hard drive:

1. Press the release tabs, and then pull the hard drive blank out of the chassis.

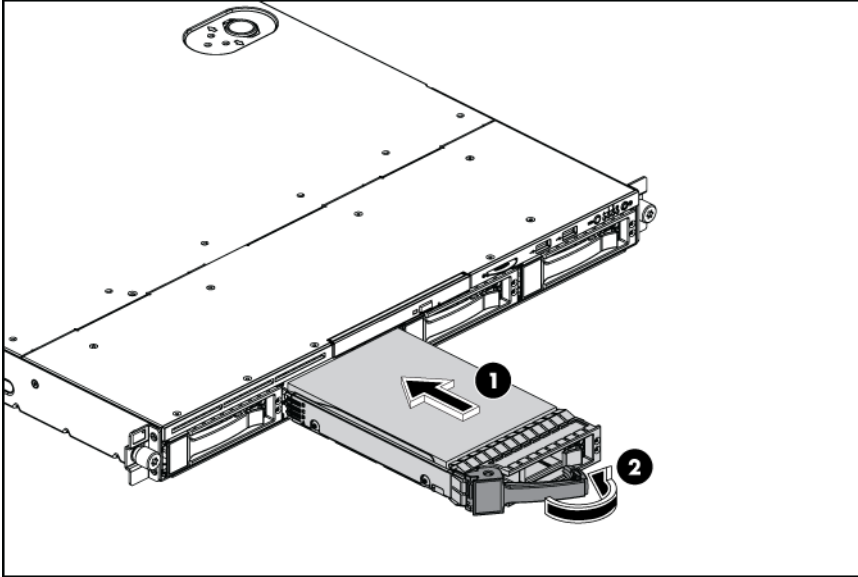
Figure 17 Removing the Hot-plug Hard Drive Blank



IMPORTANT: Do not discard the hard drive blank. If the drive is removed in the future, you must reinstall the hard drive blank to maintain proper system airflow.

2. Install a hard drive.
 - a. Push the hard drive assembly into the drive bay until it stops.
 - b. Press the HDD carrier latch inward until it clicks.

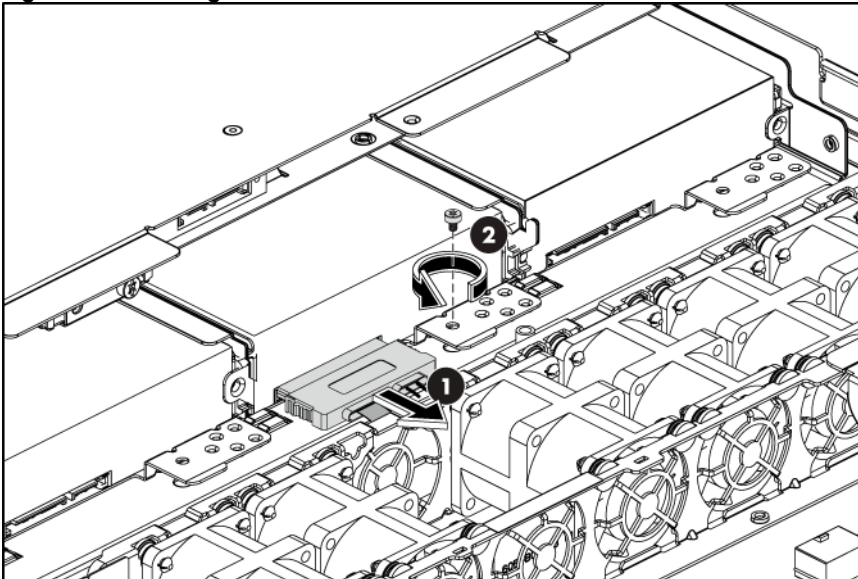
Figure 18 Installing the Hot-plug Hard Drive Assembly



To remove the non-hot-plug hard drive:

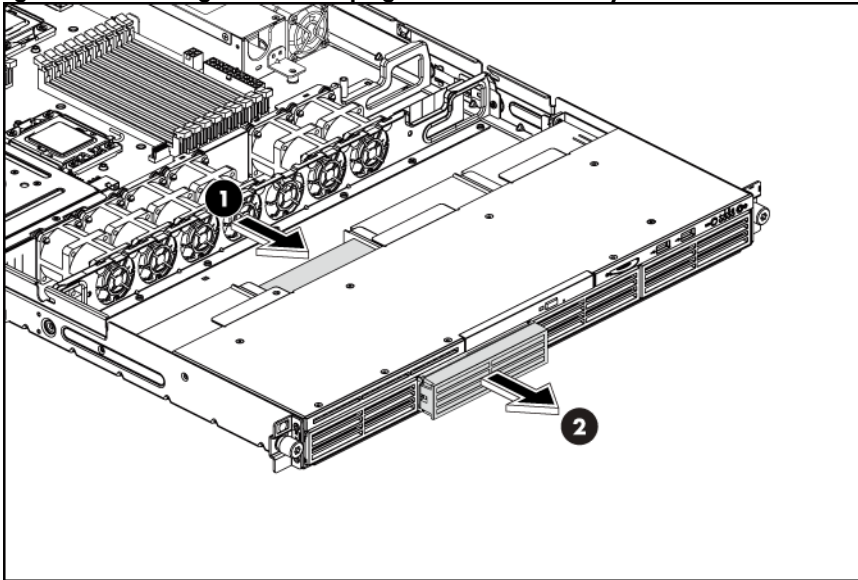
1. Disconnect the SATA and power cable.
2. Loosen the screw with the T-10/T-15 wrench provided.

Figure 19 Loosening the Screw



3. Push the hard drive toward the front of the unit
4. Pull the hard drive assembly out of the drive bay.

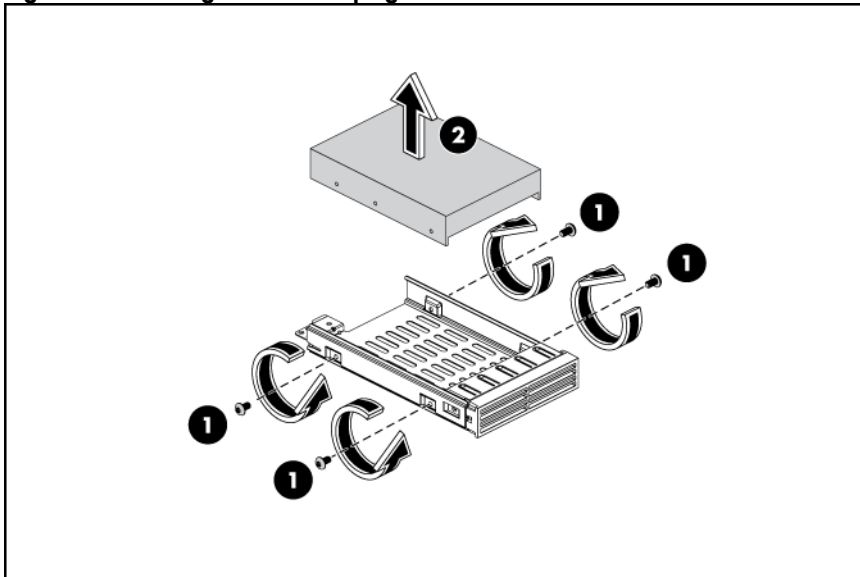
Figure 20 Removing the Non-hot-plug Hard Drive Assembly



To remove a non-hot-plug hard drive disk from the carrier:

1. Loosen the four screws on the carrier (two on each side).
2. Lift the hard drive from the carrier.

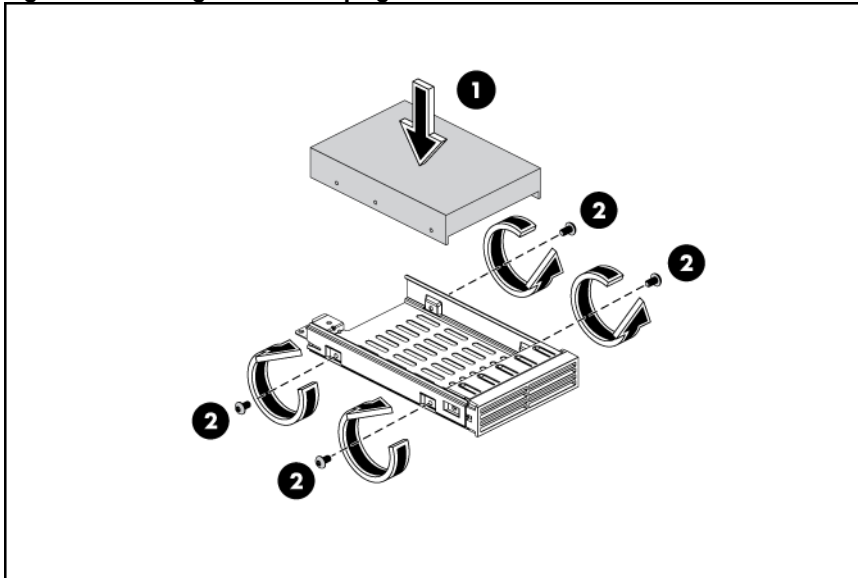
Figure 21 Removing the Non-hot-plug Hard Drive Disk



To install a non-hot-plug hard drive:

1. Put the non-hot-plug hard drive disk into the carrier.
2. Fasten the HDD to the carrier using the screws (two on each side).

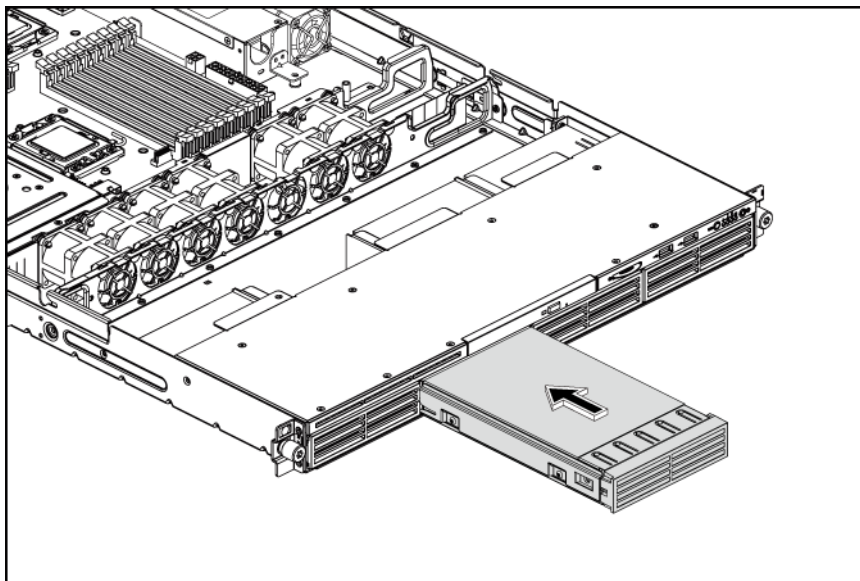
Figure 22 Installing the Non-hot-plug Hard Drive Disk into the Carrier



To install a non-hot-plug hard drive into the server:

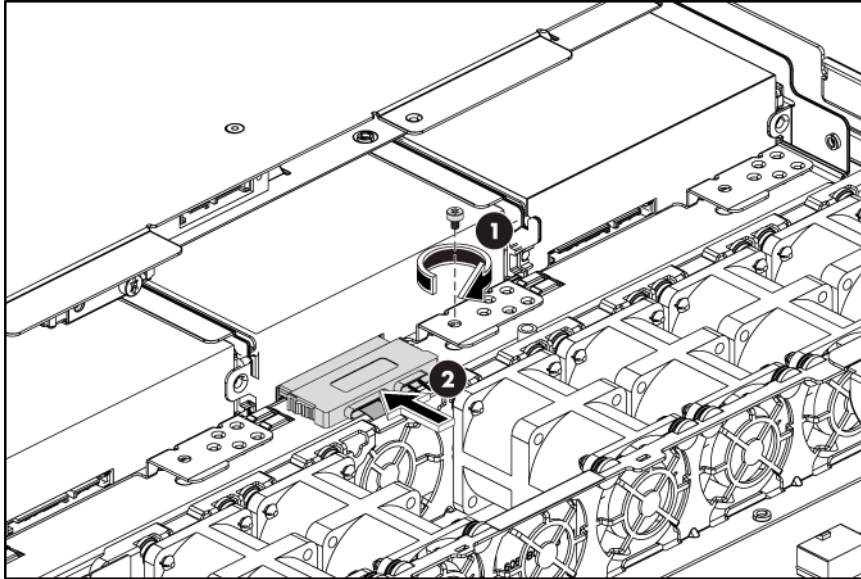
1. Remove the hard drive blank from the front of the system if installed.
2. Push the hard drive assembly into the drive bay until it stops.

Figure 23 Installing the Non-hot-plug Hard Drive Assembly



3. Fasten the screw with the T-10/T-15 wrench provided to secure the hard drive to the chassis.
4. Connect the cabling from the power supply to the drive using the cables provided.

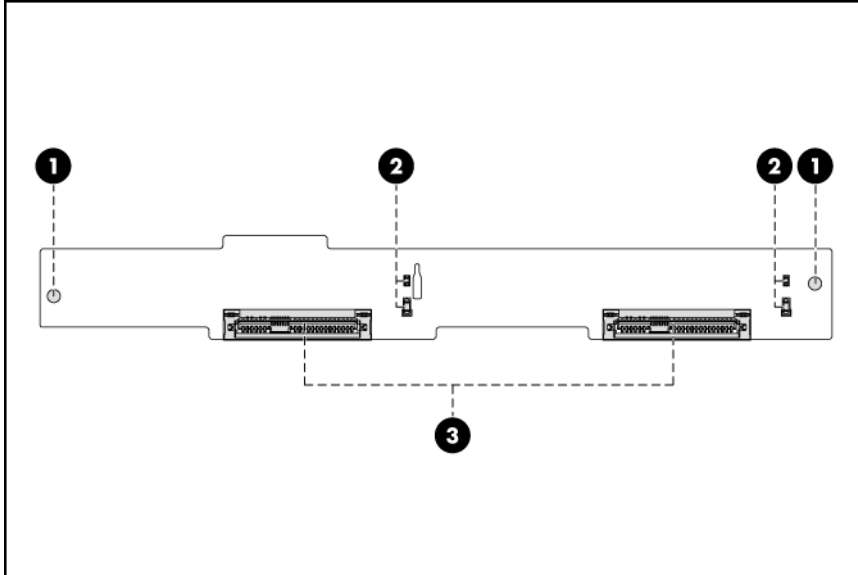
Figure 24 Fastening the Screw



SAS/SATA HDD backplane

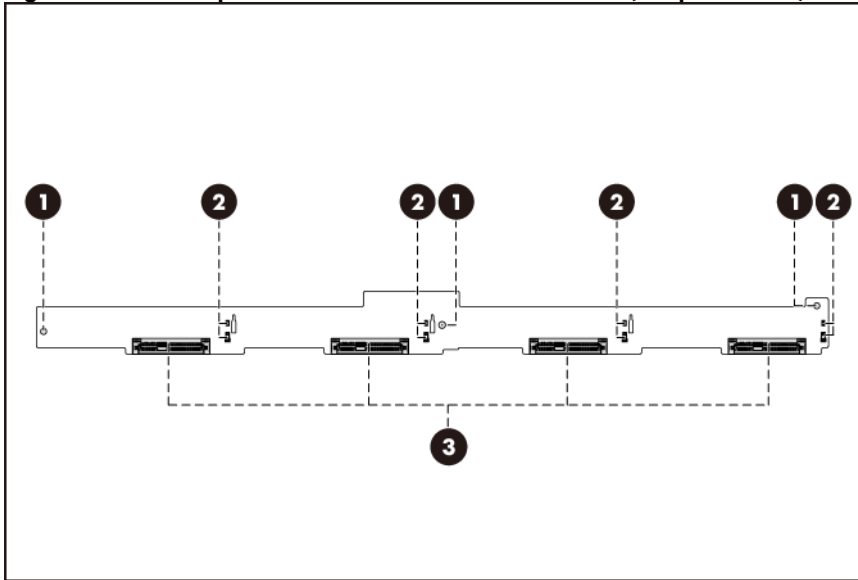
The following figures show the front and back side of the backplane.

Figure 25 SAS Backplane Connectors of Server with 2 HDD (component side)



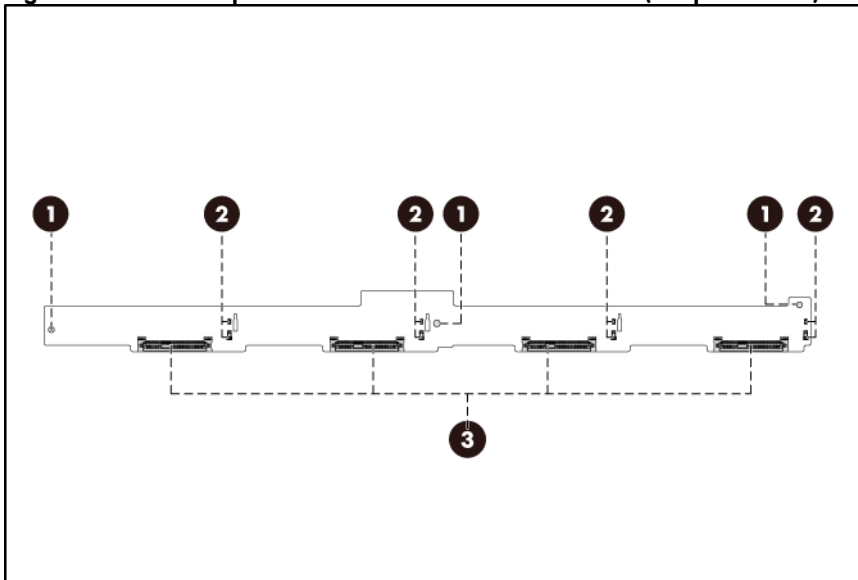
Item	Description
1	Screw holes
2	LED indicators
3	Headers for hard drive

Figure 26 SAS Backplane Connectors of Server with 4 HDD (component side)



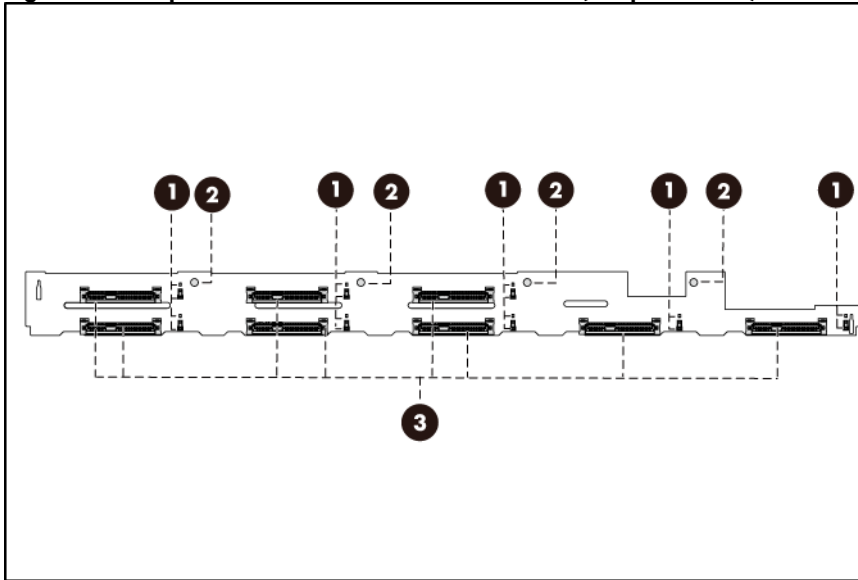
Item	Description
1	Screw holes
2	LED indicators
3	Headers for hard drive

Figure 27 SATA Backplane Connectors of Server with 4 HDD (component side)



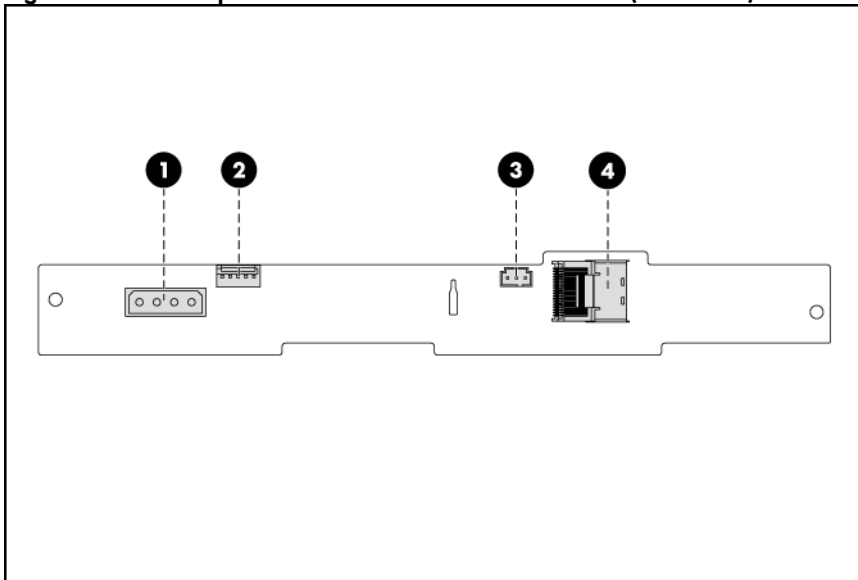
Item	Description
1	Screw holes
2	LED indicators
3	Headers for hard drive

Figure 28 Backplane Connectors of Server with 8 HDD (component side)



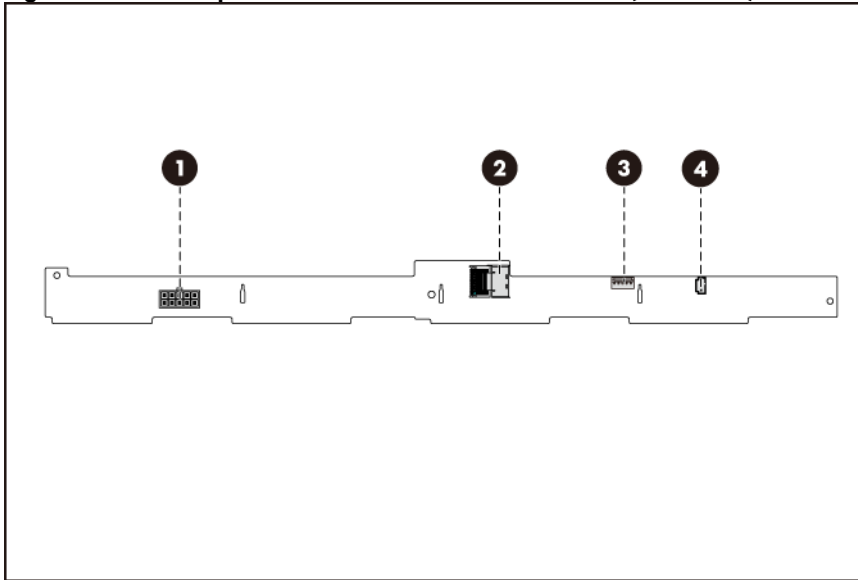
Item	Description
1	LED indicators
2	Screw holes
3	Headers for hard drive

Figure 29 SAS Backplane Connectors of Server with 2 HDD (solder side)



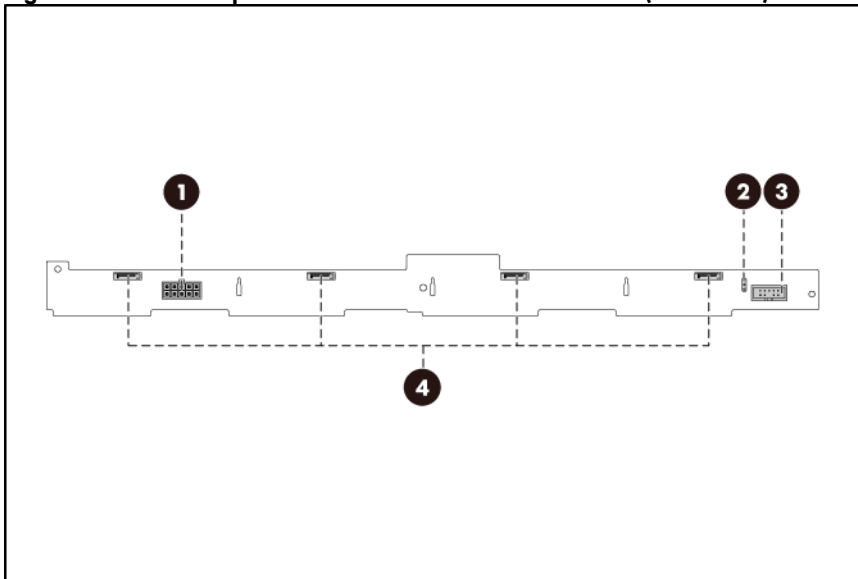
Item	Description
1	Power connector
2	PROG connector
3	I2C connector
4	Mini SAS connector

Figure 30 SAS Backplane Connectors of Server with 4 HDD (solder side)



Item	Description
1	Power connector
2	Mini SAS connector
3	PROG connector
4	I2C connector

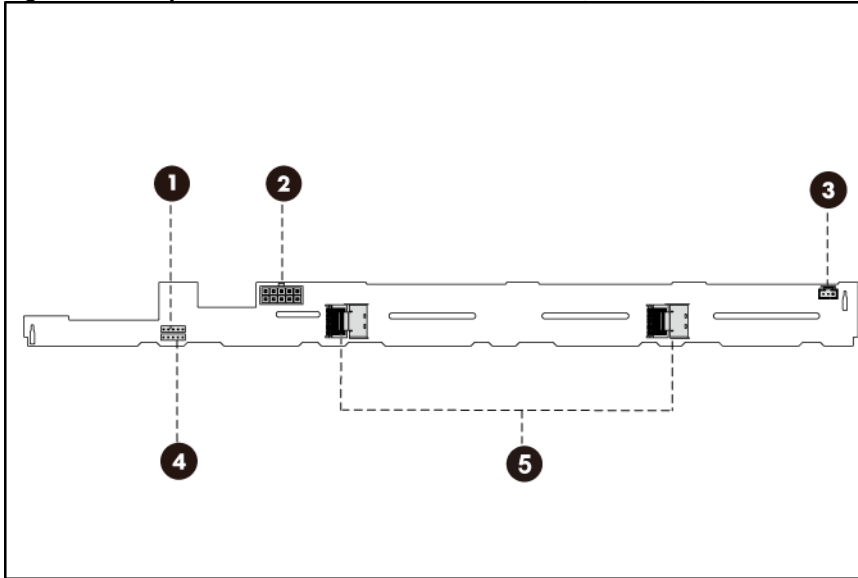
Figure 31 SATA Backplane Connectors of Server with 4 HDD (solder side)



Item	Description
1	Power connector
2	I2C connector
3	SGPIO connector

Item	Description
4	SATA connectors

Figure 32 Backplane Connectors of Server with 8 HDD (solder side)



Item	Description
1	PIC 2 PROG connector
2	Power connector
3	I2C connector
4	PIC 1 PROG connector
5	Mini SAS connectors

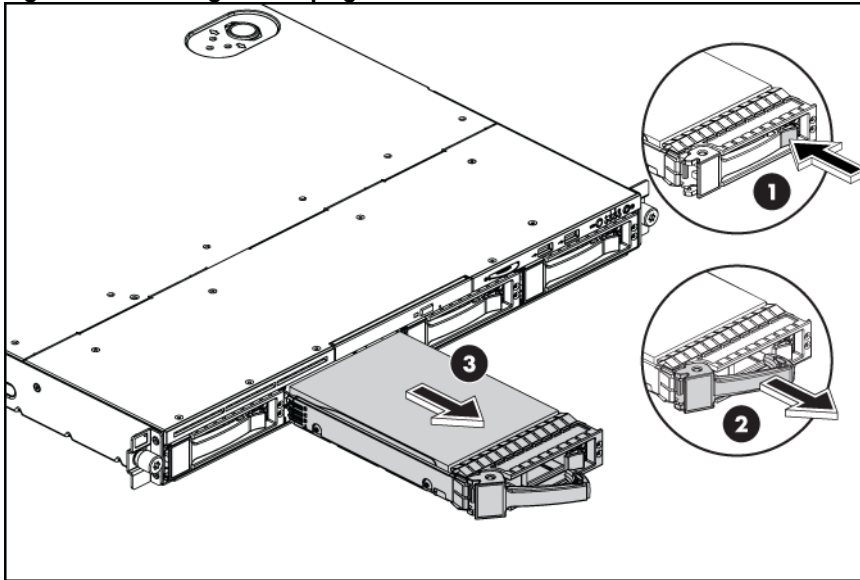
⚠ WARNING: Ensure that the system is powered off and all power sources have been disconnected from the server. Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

The backplanes for the servers with 2 HDDs and 4 HDDs and 8HDDs share the same removal and replacement procedures. Here we take the backplane for the server with 4 HDDs as an example for your reference.

To remove the backplane:

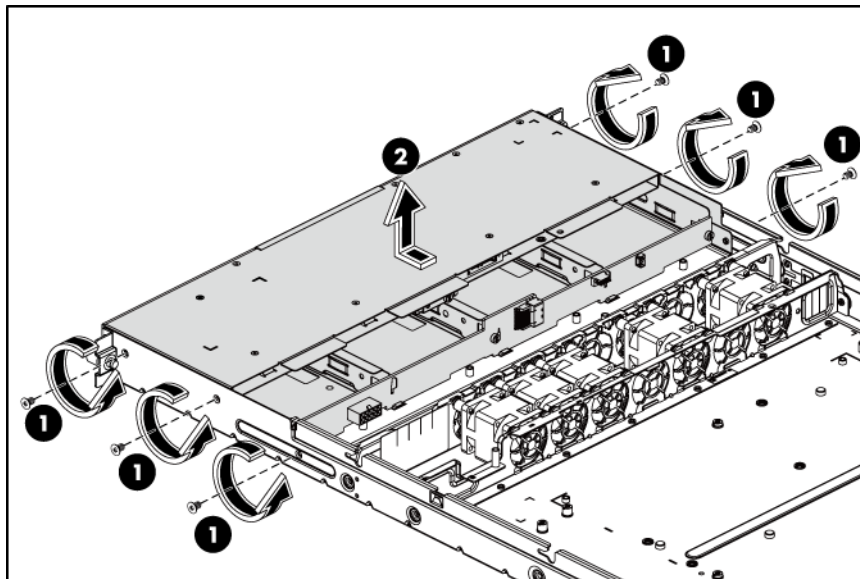
1. Remove all drives out of the drive bays.
Refer to the "Optical disc drive bay" and "Hard drives" sections in this chapter for detailed procedures.

Figure 33 Removing the Hot-plug Hard Drive



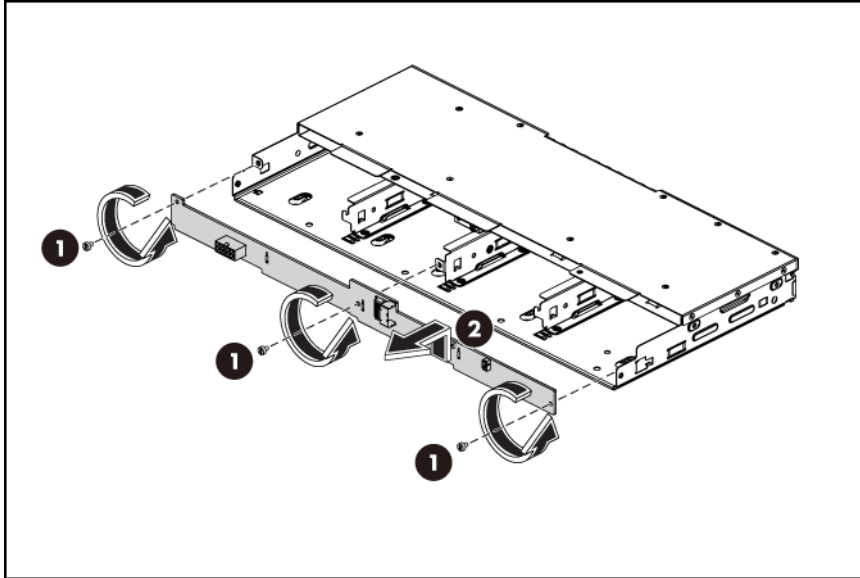
2. Remove the top cover.
3. Remove all cables connected to the backplane.
4. Remove the hard drive cage.
 - a. Loosen all screws that secure the hard drive cage to the chassis.
 - b. Slide the hard drive cage out and then lift it up. Remove the hard drive cage from the chassis.

Figure 34 Removing the Hard Drive Cage



5. Remove the backplane.
 - a. Remove all cables—including optical disk drive cables.
 - b. Remove the three screws that secure the backplane to the hard drive cage.
 - c. Pull the backplane up and out to release it from the hard drive cage.

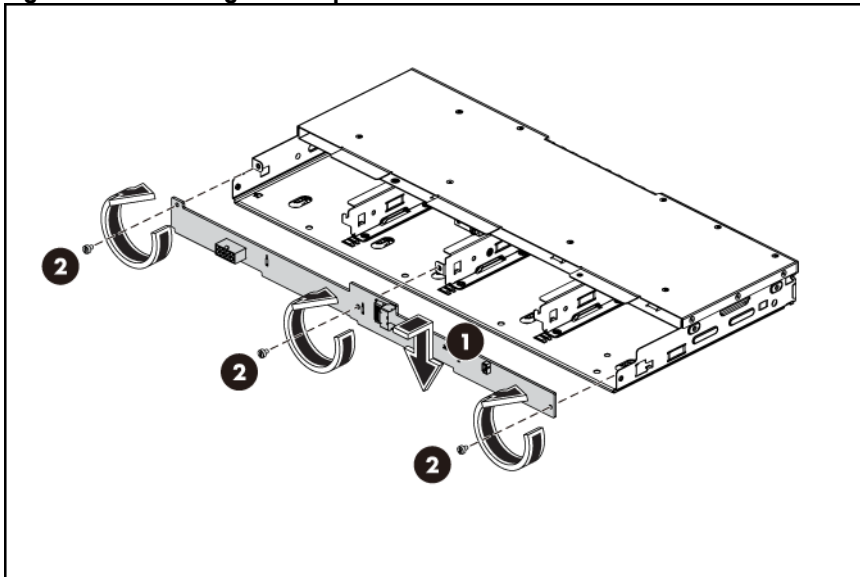
Figure 35 Removing the Backplane



To reinstall the backplane:

1. Orient the backplane so that the notches on the backplane align with the hook on the drive cage and then press the backplane down until it clicks into place.
2. Secure the backplane with three screws.

Figure 36 Reinstalling the Backplane



3. Install all cables.

System board configuration

Processor

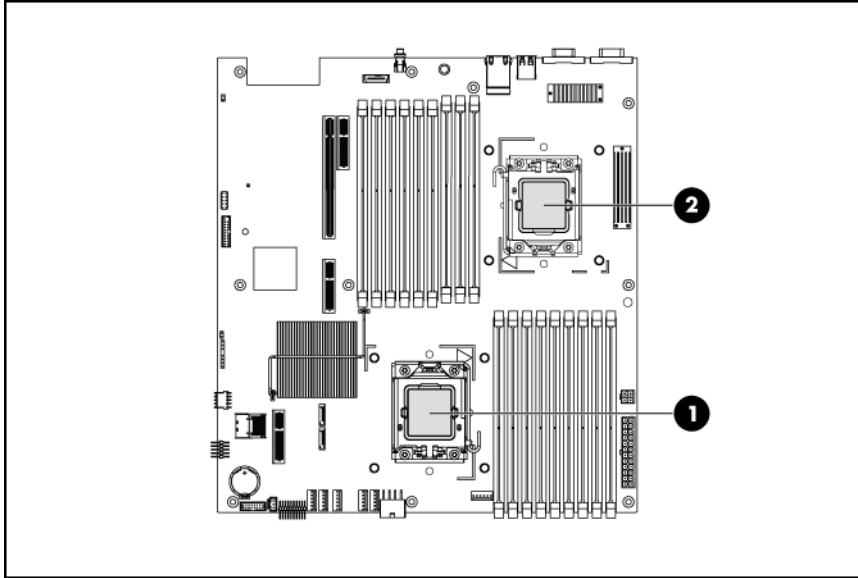
HP ProLiant DL160 G6 Server supports quad core processors. If a single processor is installed, then use socket 1. When two processors are used, the server supports boot functions through the processor installed in socket 1. However, if processor 1 fails, the system cannot boot up, and if

processor 2 fails, the system will be automatically booted from processor 1 and provide a processor failure message.

The processor socket supports 2P Intel Xeon processor with integrated memory controller.

⚠ CAUTION: It is recommended to use processors of the same speeds or cache sizes to prevent possible server malfunction.

Figure 37 Processor Locations



Item	Description
1	Processor 1
2	Processor 2

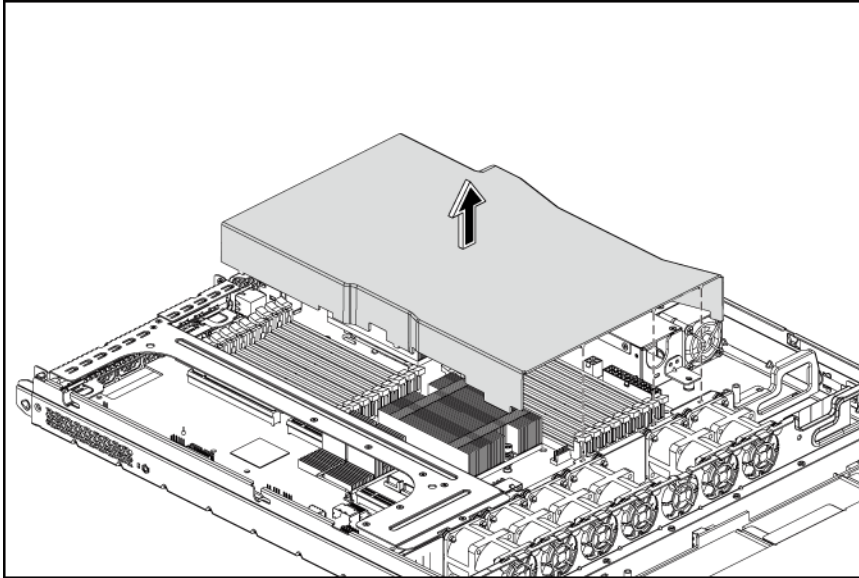
⚠ WARNING: To reduce the risk of personal injury from hot surfaces, allow the heat sink and the processor to cool before touching them.

NOTE: Before installing the processor, remove the air baffle.

To remove the air baffle:

1. Gently rock the air baffle up.
2. Take the air baffle out from the system board.

Figure 38 Removing the Air Baffle

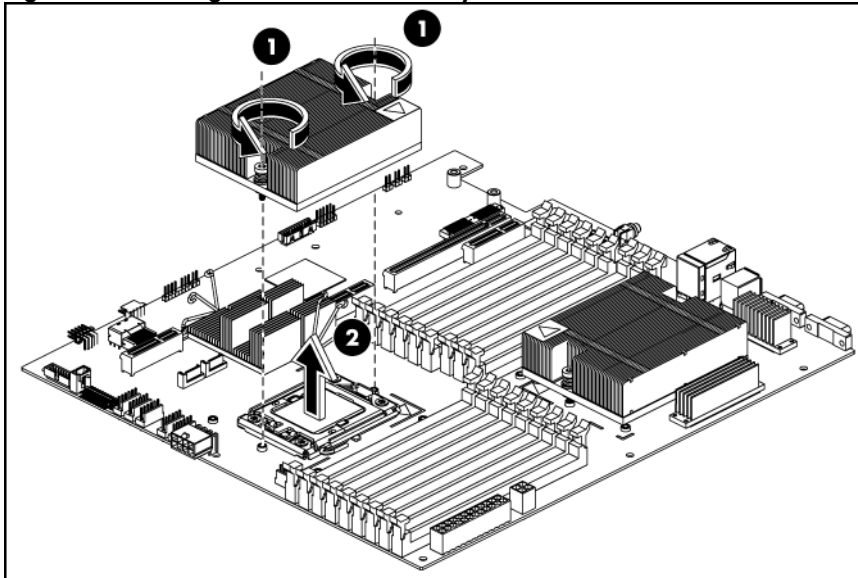


To remove the heat sink:

1. Loosen the two spring-loaded screws.
2. Lift the heat sink away from the system board.

CAUTION: Place the heat sink down in an upright position with the thermal patch facing upward. Do not let the thermal patch touch the work surface.

Figure 39 Removing the Heat Sink Assembly



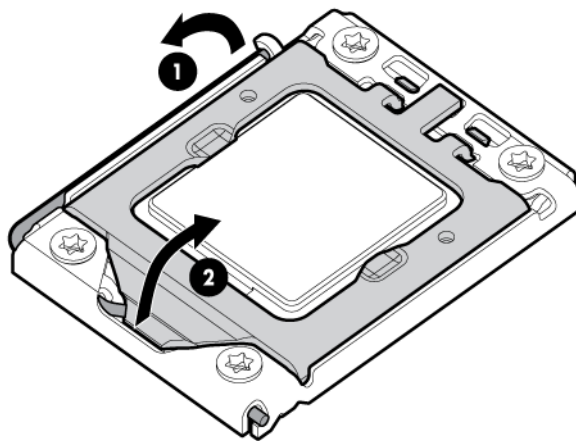
IMPORTANT: If the heat sink has been removed for any reason on a previously installed processor, it is critical that you clean any residue of the thermal compound from both the processor and heatsink with alcohol and apply more thermal grease compound to the integrated heat spreader on the processor to ensure proper thermal bonding between the processor and the heat sink.

⚠ CAUTION: Do not over-tighten the spring-loaded screws to prevent them from breaking off. A maximum torque of 6 inch-lb is set for each screw. Rotate the heat sink a few degrees to the left and right to break the bonding of the thermal grease compound before removing the heat sink from the processor.

To remove the processor:

1. Open the processor locking lever.
2. Open the processor socket retaining bracket.

Figure 40 Opening the lever and bracket



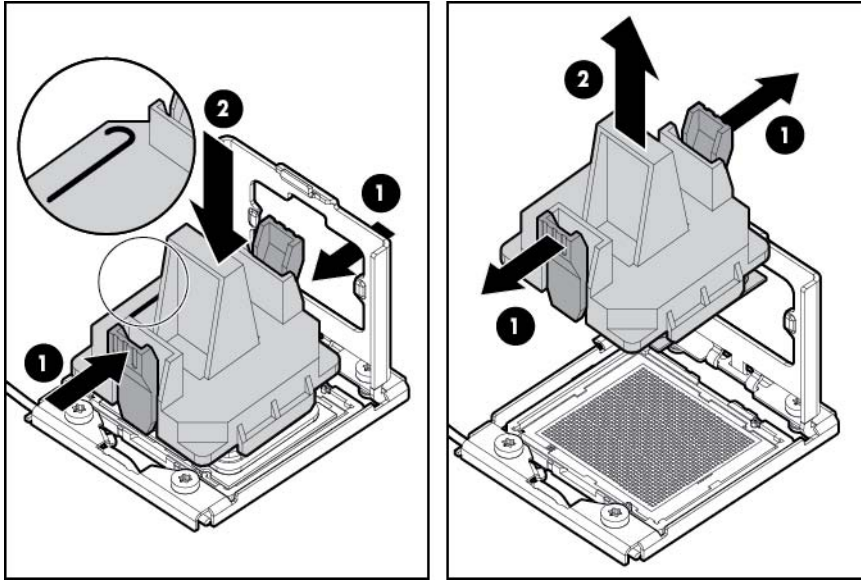
⚠ CAUTION: The pins of the socket are very fragile. Do not bend or damage them.

⚠ CAUTION: Place the processor on a static-dissipating work surface or in an anti-static bag.

⚠ CAUTION: To allow heat sink to draw as much heat as possible from the processor base, there must be good contact between the heat sink base and the top of the processor. To ensure good contact, you must first remove any residue of the old thermal compound with alcohol and apply new thermal grease compound.

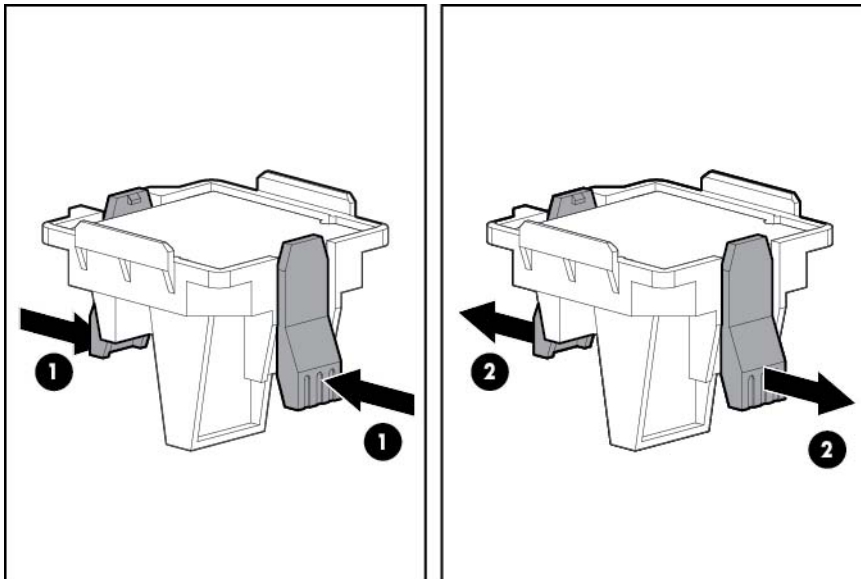
3. Using the processor removal tool, remove the processor from the system board.
 - a. Line up the processor tool, ensuring the locking lever graphic on the tool is correctly oriented.
 - b. Press in on the plastic tabs, and then place the tool on the processor.
 - c. Release the tabs, and then carefully lift the processor and tool straight up.

Figure 41 Removing the Processor



4. Carefully rotate the tool, and then push in and release the tabs to secure the processor in the tool.

Figure 42 Removing the Processor



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

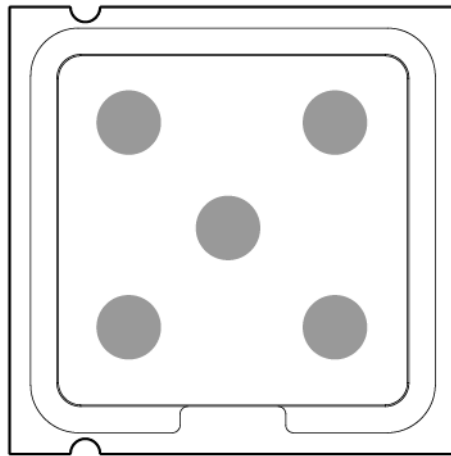
To apply the thermal grease compound:

1. Use a clean cloth dipped in rubbing alcohol to clean the contact surface on the heat sink and the new processor. Wipe the contact surfaces several times to make sure that no particles or dust contaminants are evident.
2. Apply the thermal grease compound to the integrated heat spreader on the processor in one of the following patterns to ensure even distribution.

△ **CAUTION:** HP recommends using Shin-Etsu X-23-7783D thermal grease compound for your ProLiant server.

3. Apply new grease to the top of the processor using a five-dot pattern to ensure even distribution.

Figure 43 The top of the Processor



△ **CAUTION:** Never touch the bottom of the processor; any contaminant could prevent the mounting pads from making contact with the socket.

△ **CAUTION:** Applying too much grease creates a gap between the contact surfaces, significantly reducing the ability of the heat sink to draw out heat. Installing the heat sink with excessive grease can also cause the grease to spread over the processor pins or the system board base, which can cause electrical shorts that damage the system.

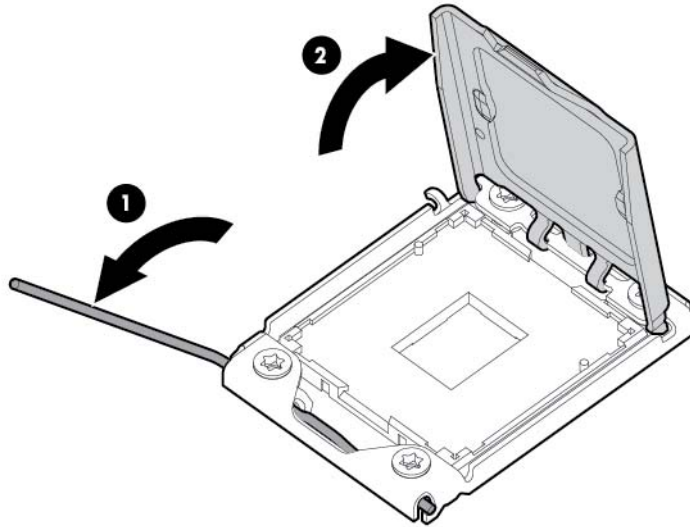
△ **CAUTION:** To prevent damage to processor socket pins the processor installation tool must be used to insert the processor into the socket. Instructions are provided in the Option Kits and spare part kits.

To install a new processor:

△ **CAUTION:** Failure to completely open the processor locking lever prevents the processor from seating during installation, leading to hardware damage.

1. Open the processor locking lever and the processor socket retaining bracket. **DO NOT REMOVE THE PROCESSOR SOCKET COVER**

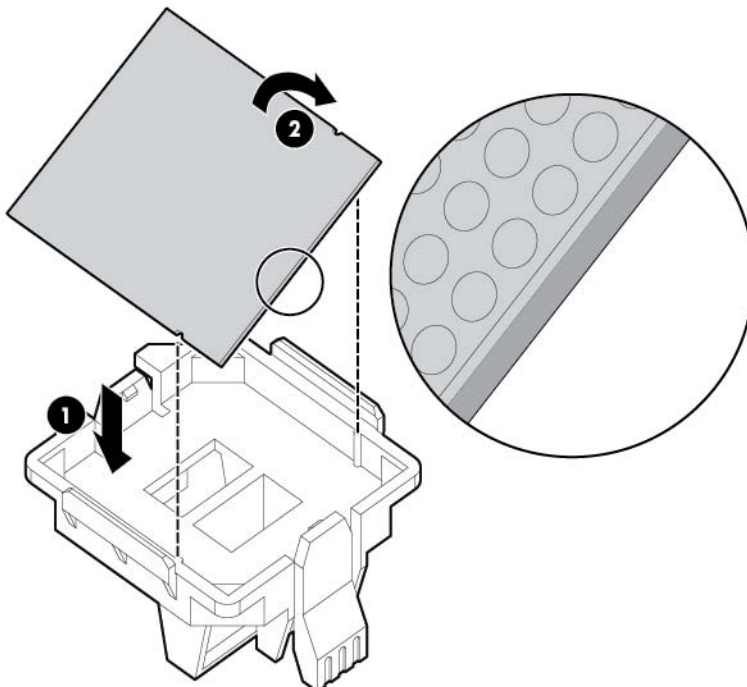
Figure 44 Opening the lever and bracket



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

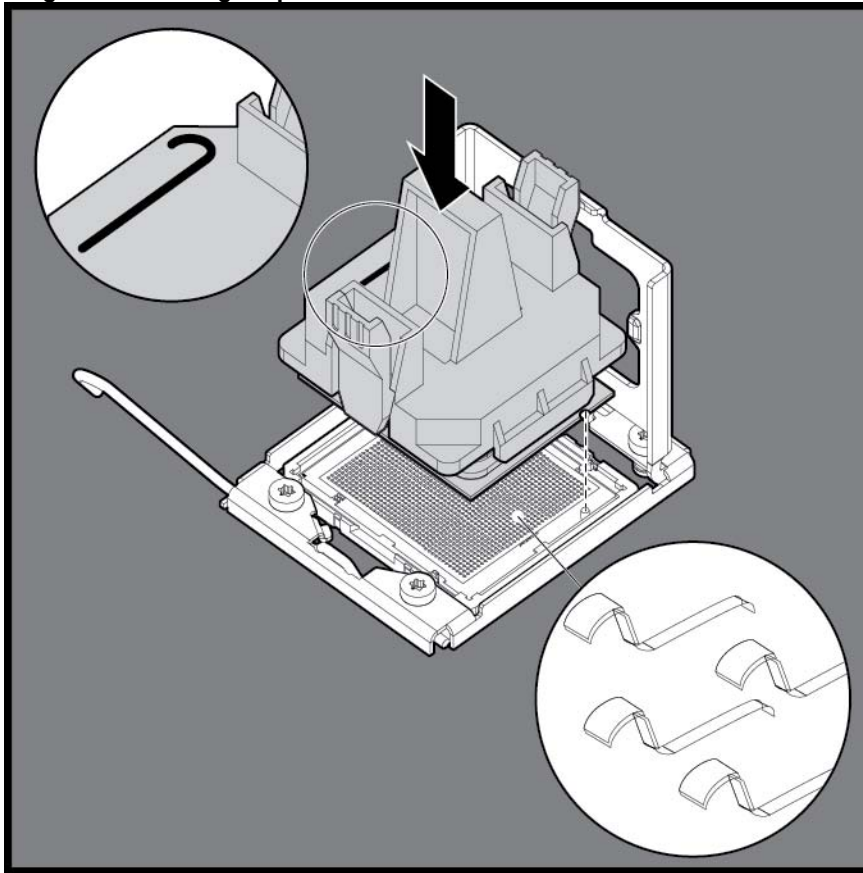
2. If the processor has separated from the installation tool, carefully re-insert the processor in the tool. Handle the processor by the edges only, and do not touch the bottom of the processor, especially the contact area.

Figure 45 Installing the processor in the installation tool



3. Be sure the tool is oriented correctly. Align the processor installation tool with the socket, and then install the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.**

Figure 46 Installing the processor

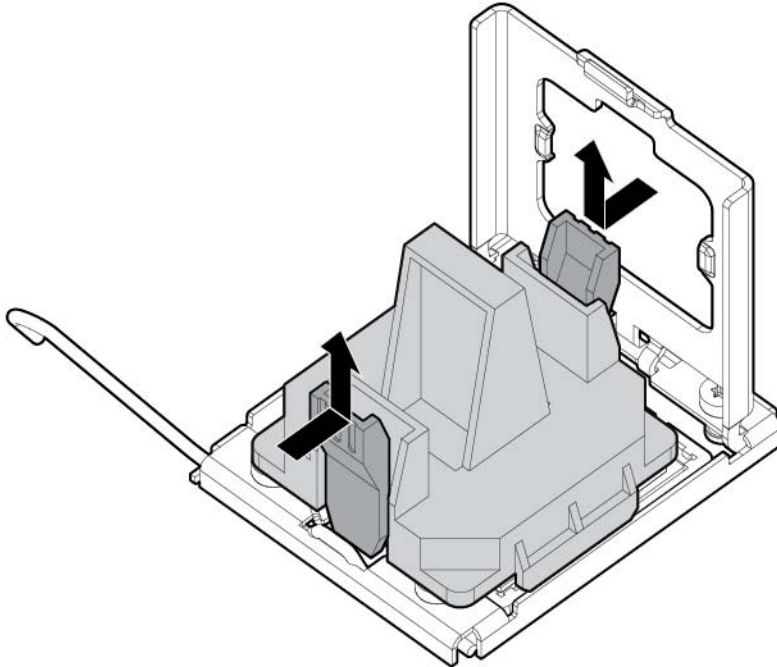


⚠ CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board:

- Never install or remove a processor without using the processor installation tool.
 - Do not touch the processor socket contacts.
 - Do not tilt or slide the processor when lowering the processor into the socket.
-

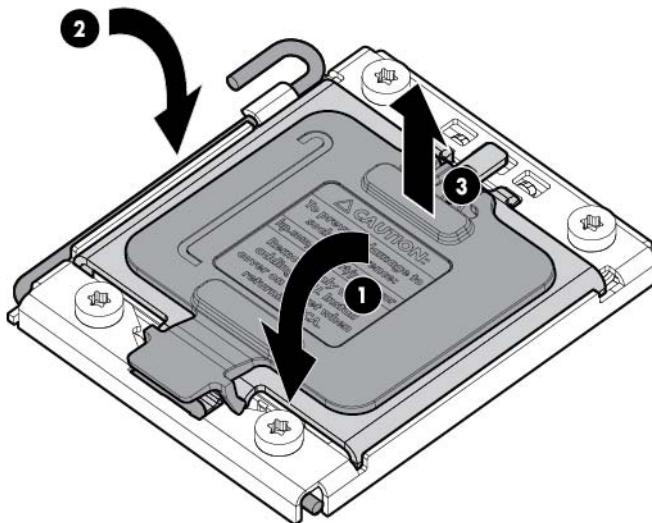
4. Press and hold the tabs on the processor installation tool to separate it from the processor, and then remove the tool.

Figure 47 Removing the processor installation tool



5. Close the processor socket retaining bracket and the processor locking lever.

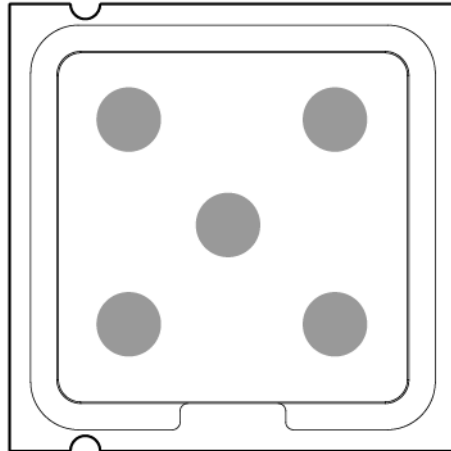
Figure 48 Closing the processor socket



CAUTION: Be sure to close the processor socket retaining bracket before closing the processor locking lever. The lever should close without resistance. Forcing the lever closed can damage the processor and socket, requiring system board replacement.

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

Figure 49 The top of the processor

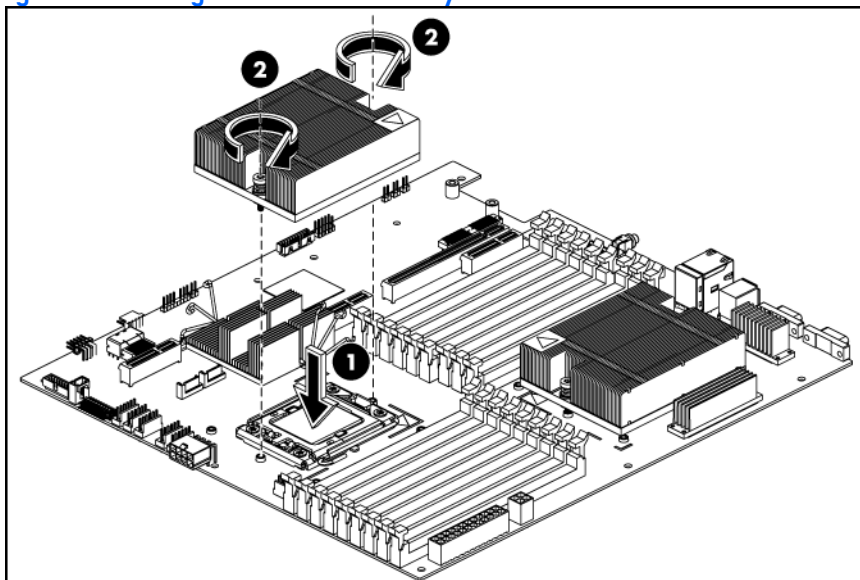


CAUTION: To prevent overheating or a possible system crash, use only a heat sink model specified for the HP ProLiant DL160 G6 server.

To install the heat sink:

1. Properly align the heat sink spring-loaded screws to the system board mounting holes.
2. Tighten the spring-loaded screws clockwise to secure the heat sink connection to the system board.

Figure 50 Installing the Heat Sink Assembly



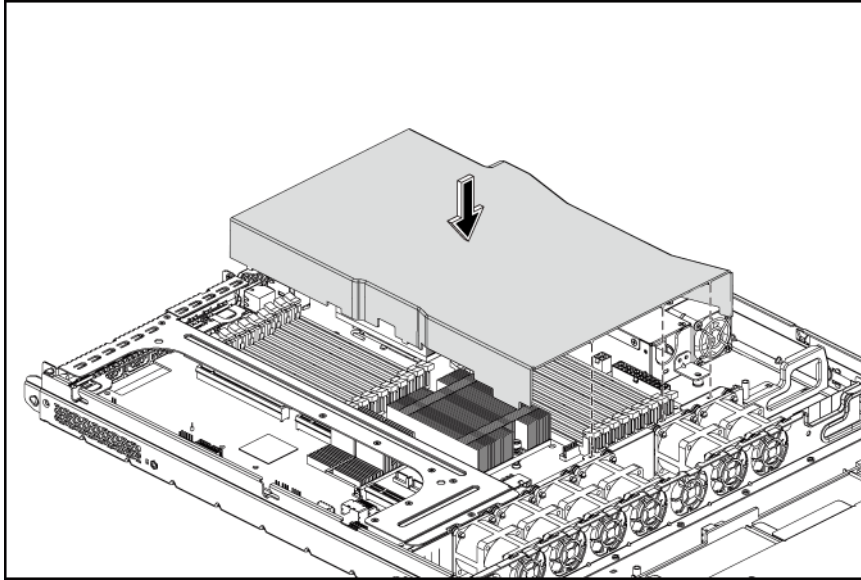
CAUTION: When installing two heat sinks, please keep the label on heat sink towards the T mark guide orientation on the system board.

⚠ CAUTION: For proper cooling, do not operate the server without the top cover, air baffle, expansion slot covers, or blanks installed. For additional information, see the user guide. If hot-plug components are supported, minimize the amount of time the top cover is removed.

To install the air baffle:

1. Connect all necessary cables.
2. Gently place the air baffle on the system board.

Figure 51 Installing the Air Baffle



Memory

The system board has eighteen DIMM slots that support up to 192 GB Quad-rank system memory (Two 16 GB Quad-rank DIMMs in each of the six channels).

You must adhere to the following guidelines when adding or replacing memory modules:

- For 2P system, both physical processors must be of the same type and speed.
- Use 800/1066/1333 MHz DDR3 RDIMM/UDIMM.
- Supported DIMM capacity: 2 GB, 4 GB, 8 GB and 16 GB.
- Installation guide for 1P configuration:
 - Follow the sequence of 3A, 6B, 9C, 2D, 5E, 8F, 1G, 4H and 7I for the corresponding processor when installing the memory.
- Installation guide for 2P configuration:
 - Follow the sequence of 3A, 6B, 9C, 2D, 5E, 8F, 1G, 4H and 7I for the corresponding processor when installing the memory.
 - Install at least one memory DIMM for each processor.
 - The memory quantity installed for each processor can be different.

Figure 52 DIMM Population

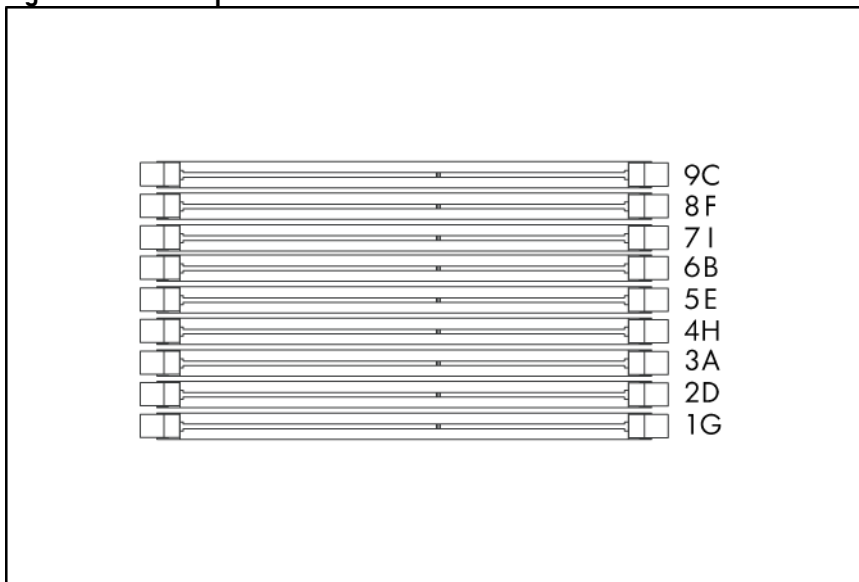
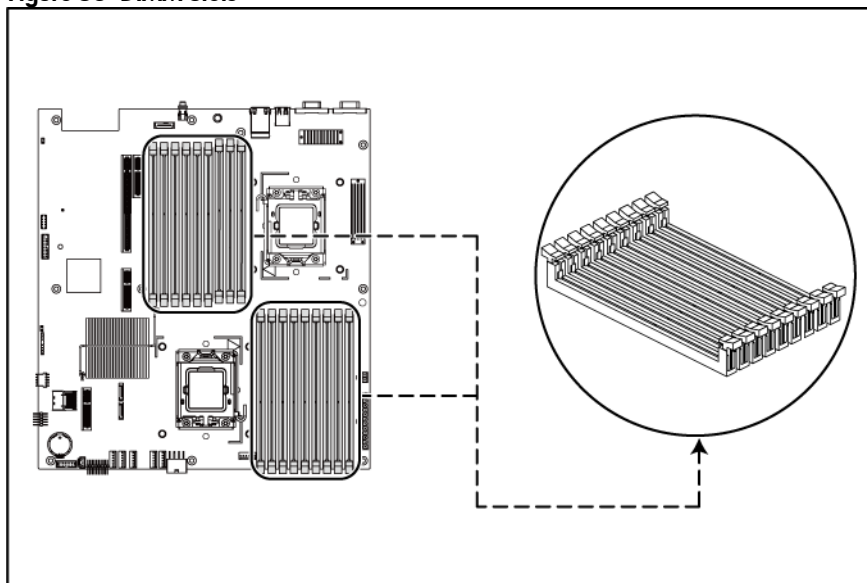


Figure 53 DIMM Slots

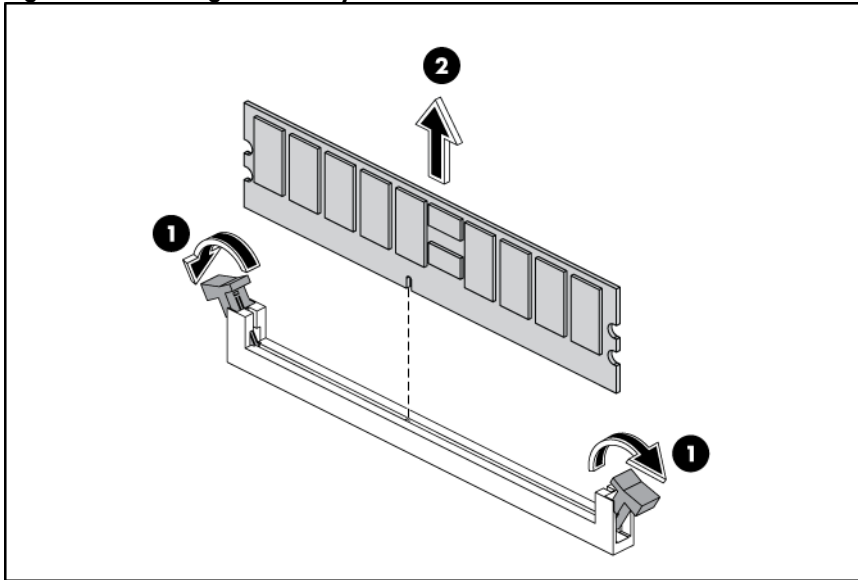


NOTE: Before installing the memory, remove the air baffle first. For a detailed procedure, see the "Processor" section in this chapter.

To remove the memory module:

1. Completely open the holding clips securing the memory module.
2. Gently pull the memory module upward to remove it from the slot.

Figure 54 Removing the Memory Module

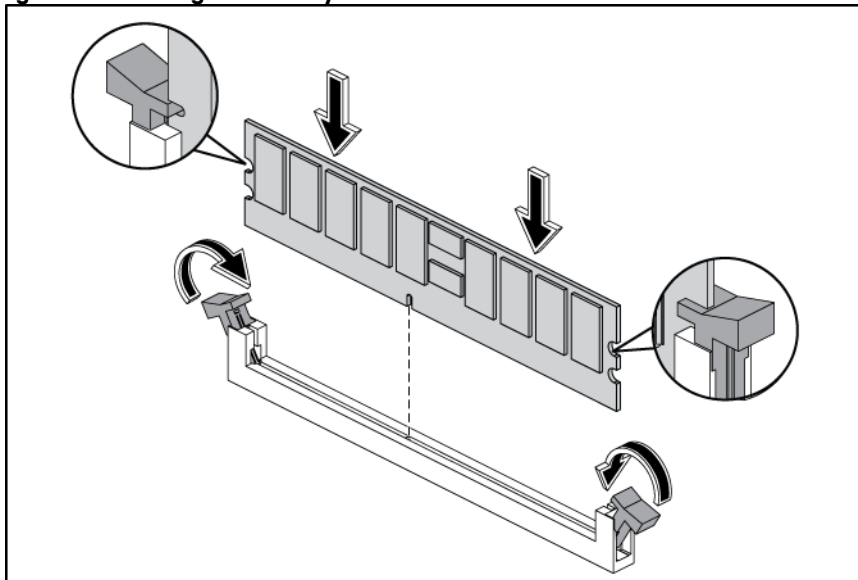


⚠ CAUTION: Place the memory module on a static-dissipating work surface or inside of an anti-static bag.

To install the memory module:

1. Align the notch on the bottom edge of the memory module with the keyed surface of the DIMM slot and then fully press the memory module into the slot until the holding clips snap back in place.

Figure 55 Installing the Memory Module



⚠ CAUTION: The DIMM slots are structured to ensure proper installation. If you insert a DIMM but it does not fit easily into the slot, you may have inserted it incorrectly. Reverse the orientation of the DIMM and insert it again.

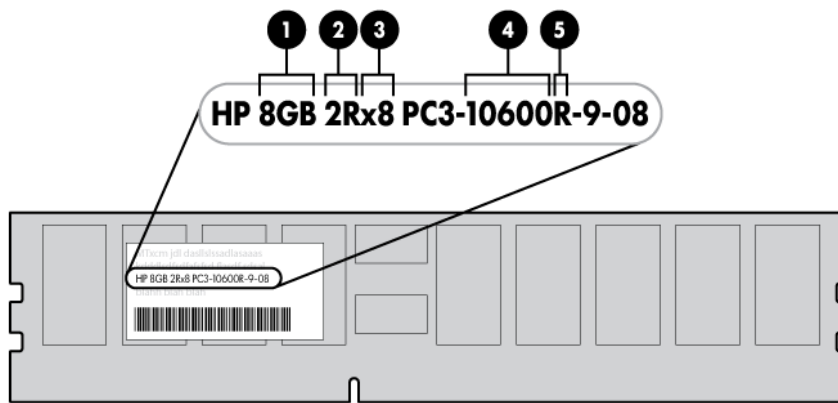
DIMM identification



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

The memory subsystem may be populated with either RDIMMs or UDIMMs, but mixing the two types is not supported. To determine DIMM characteristics, use the label attached to the DIMM and the following illustration and table.

Figure 56 DIMM identification



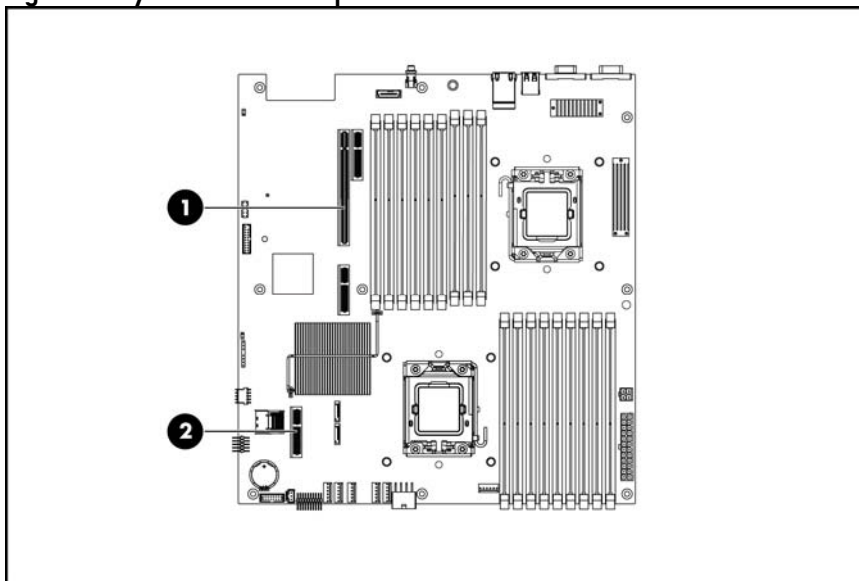
Item	Description	Definition
1	Size	—
2	Rank	1R = Single-rank 2R = Dual-rank 4R = Quad-rank
3	Data width	x4 = 4-bit x8 = 8-bit
4	Memory speed	10600 = 1333-MHz 8500 = 1067-MHz
5	DIMM type	R = RDIMM (registered) E = UDIMM (unbuffered with ECC)

PCI expansion card

System board PCI expansion slot

There are four PCI expansion slots on the system board.

Figure 57 System Board PCI Expansion Slot



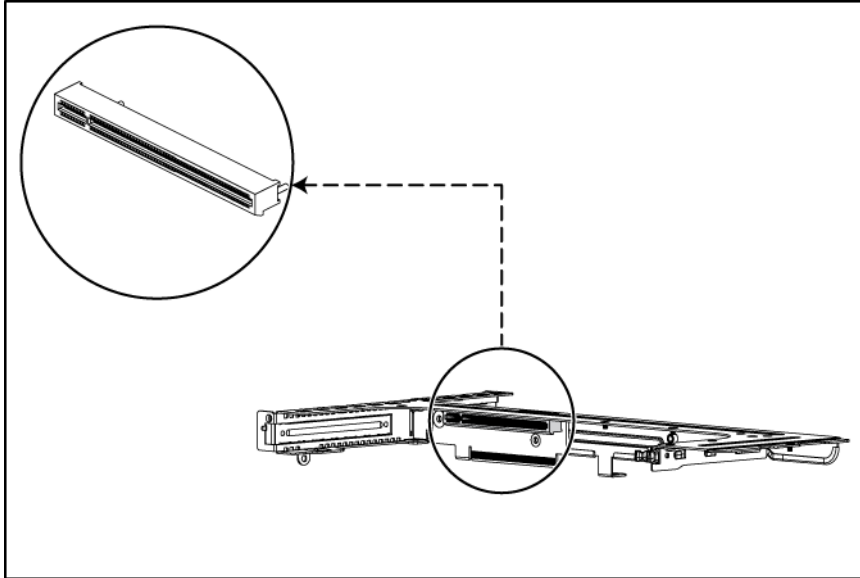
Item	Component Designator	Component	Function
1	J17	PCIe x16 (FH/FL) slot 1a	Support a PCIe riser card
2	J3	PCIe x4 (FH/FL) slot (storage card slot)	Supports a PCIe riser card

PCI riser card expansion slot

The two PCIe riser cards attached to the PCI cage converts the functionality of the system board expansion slot to the slot positioned at a 90° angle from the system board.

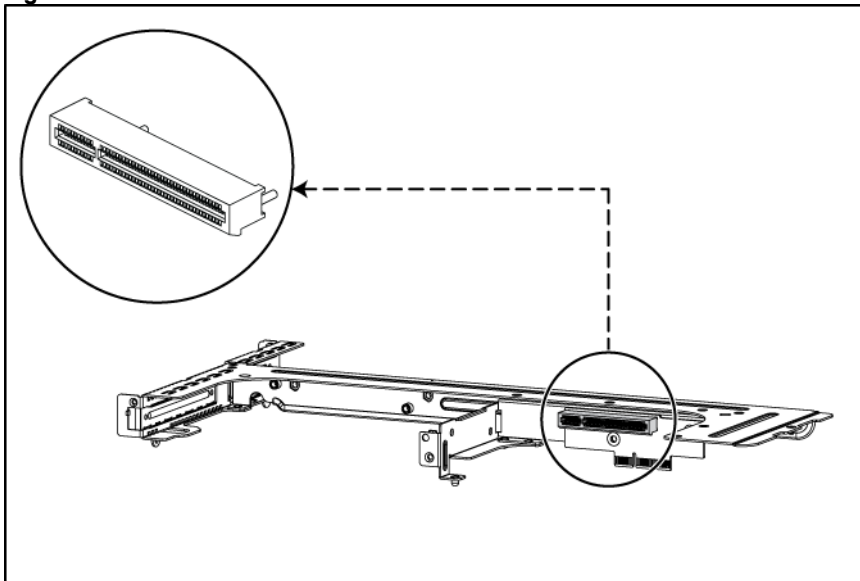
NOTE: Users have to install the PCIe x16 (FH/FL) riser card in slot 1a and the PCIe x8 (LP) riser card in the slot storage card.

Figure 58 PCIe x16 Riser Card Connector Location



- Single-slot PCIe riser card (x16 link with x16 slot)

Figure 59 PCIe x8 Riser Card Connector Location



- Single-slot PCIe riser card (x4 link with x8 slot)

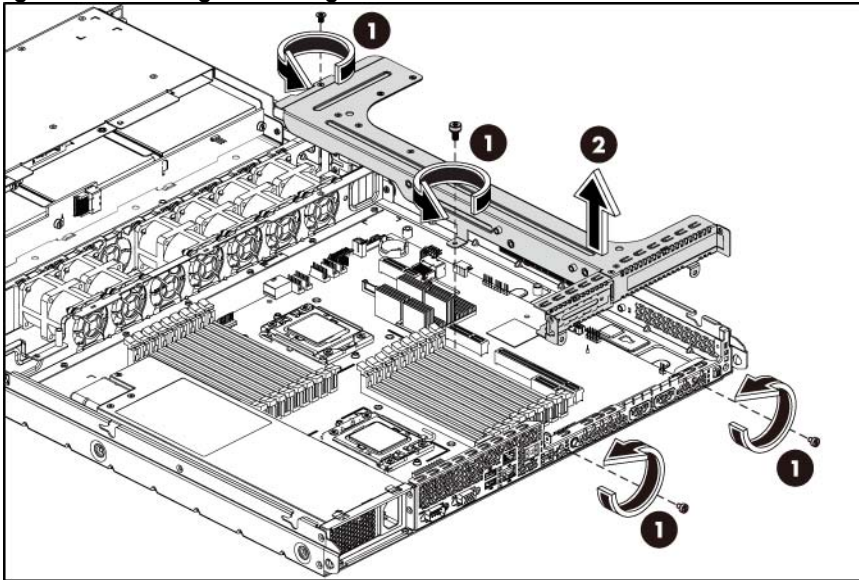
PCI cage

To remove the PCI cage:

NOTE: Disconnect all cables connecting an existing expansion board to the system board.

1. Loosen the four screws that secure the PCI cage to the chassis.
2. Lift the PCI cage away from the system.

Figure 60 Removing the PCI Cage



Installing PCIe riser card

The system supports only two riser card at a time. Use only HP supported expansion boards that meet the following specifications:

- Compliance
 - PCIe x16
 - PCIe x8
- Form Factor
 - Full-Height/Full-Length
 - Low Profile

NOTE: To use the PCIe x8 (LP) riser card (shown in Figure 62), a subassembly to the PCI cage must be installed.

To remove the PCIe riser card:

1. Loosen the two screws securing the riser card to the PCI cage.
2. Remove the riser card from the PCI cage.

Figure 61 Removing the PCIe x16 Riser Card

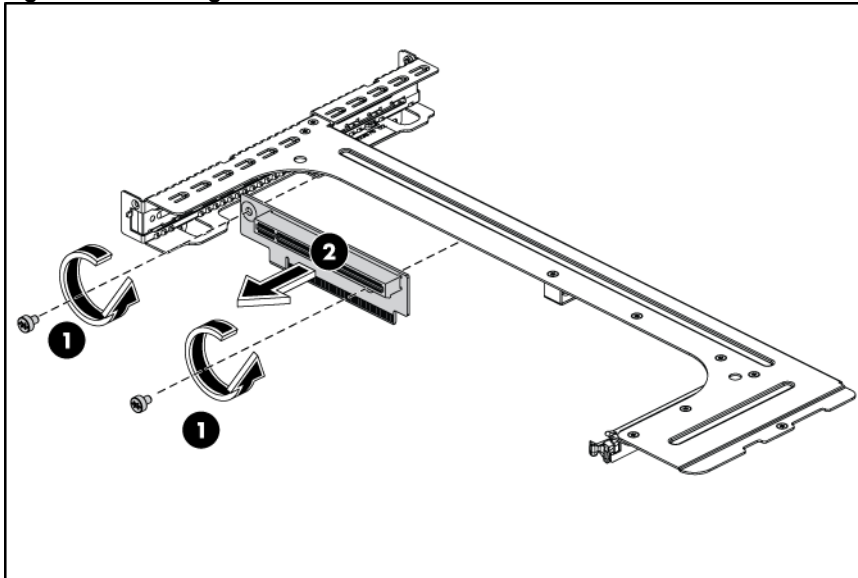
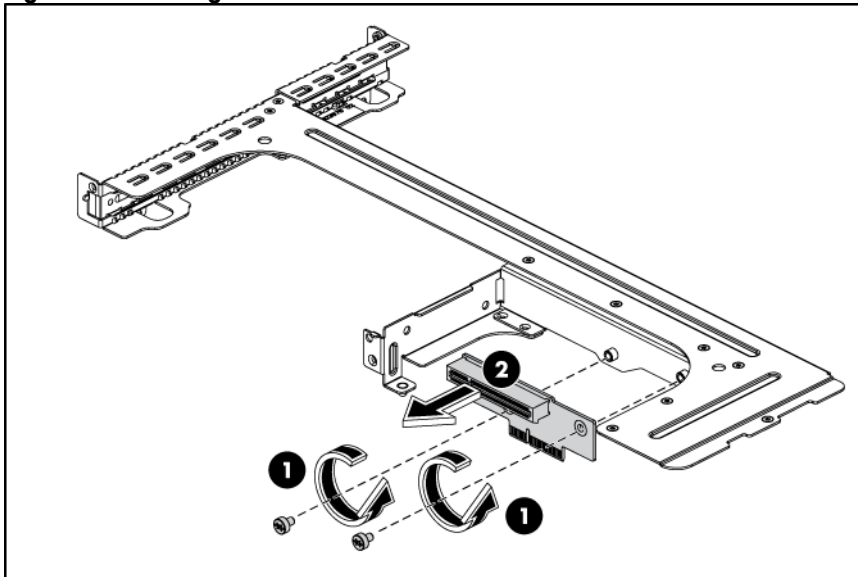


Figure 62 Removing the PCIe x8 Riser Card



To install the PCIe riser card:

1. Align the screw holes on the riser card to the screw holes on the PCI cage.
2. Install and tighten the two screws that secure the riser card to the PCI cage.

Figure 63 Installing the PCIe x16 Riser Card

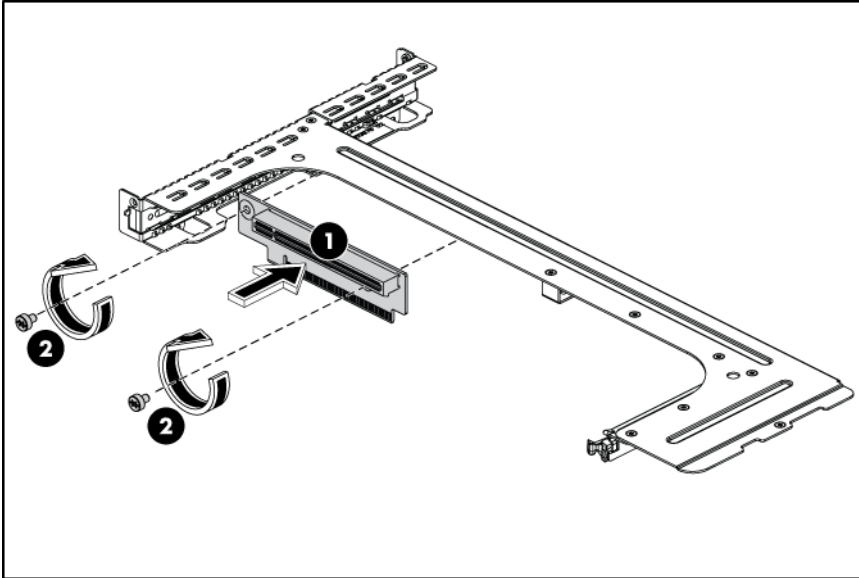
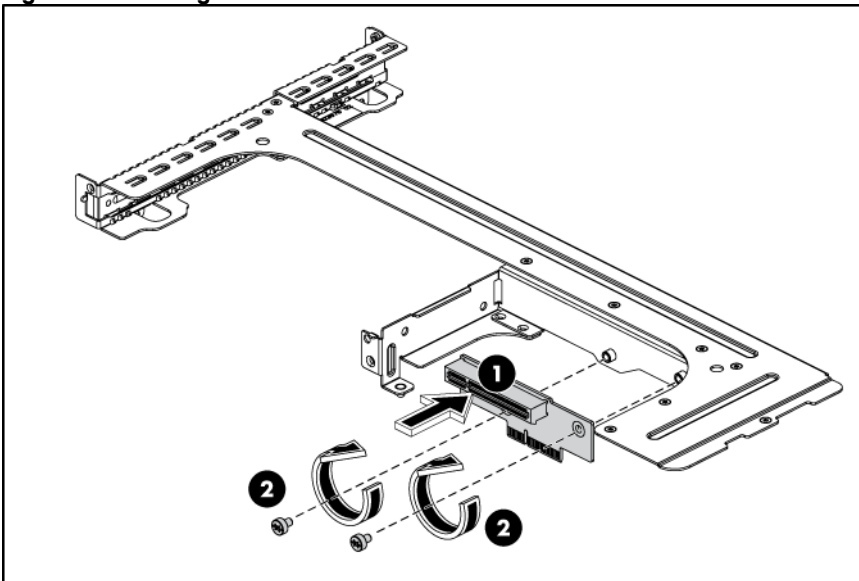


Figure 64 Installing the PCIe x8 Riser Card



To install the PCI expansion board:

1. Remove the screw near the slot cover on the PCI cage.

Figure 65 Removing the screw on the FH/FL PCI cage

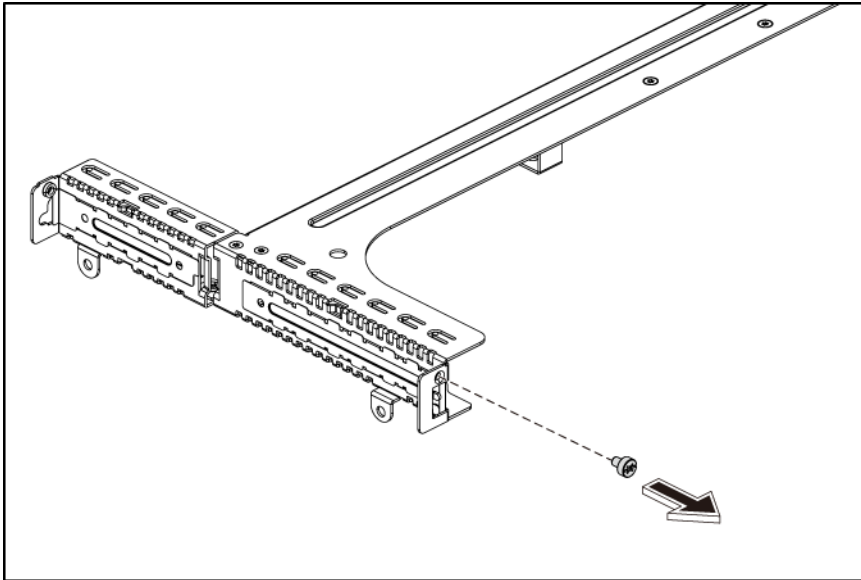
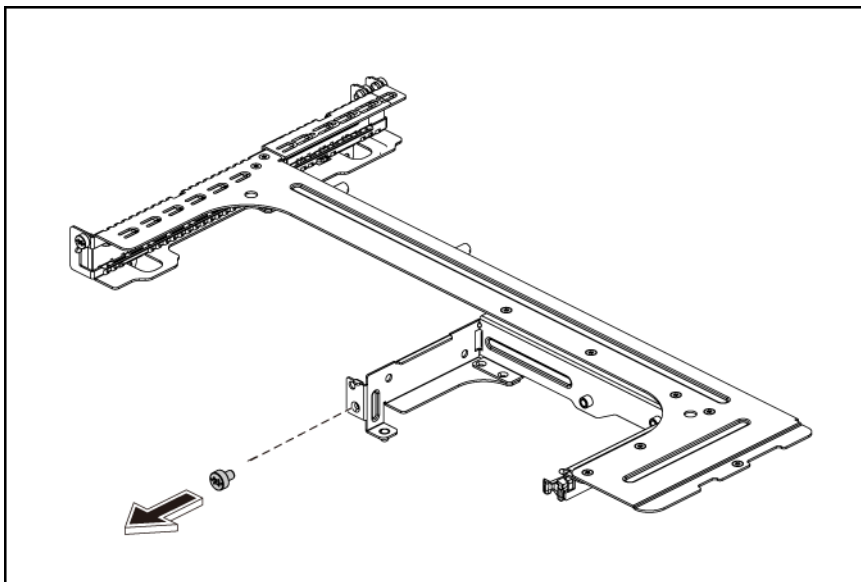


Figure 66 Removing the screw on the LP PCI cage



2. Remove the slot cover from the PCI cage.
3. Slide the expansion board into the slot, aligning the board with its matching connector. Firmly press the board to seat it properly on the slot.
4. Fasten the screw to secure it.

Figure 67 Installing the PCI Expansion Board

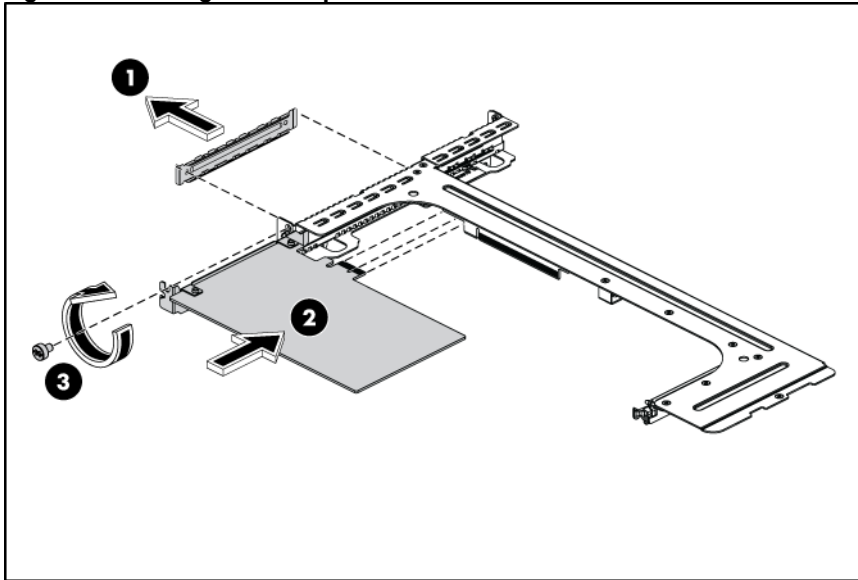
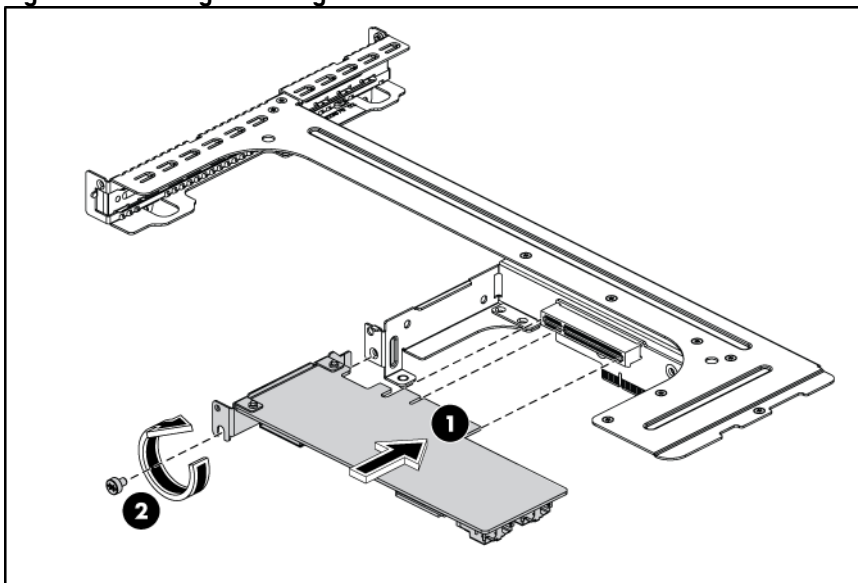


Figure 68 Installing the Storage Card



⚠ CAUTION: Do not discard the slot cover. If the expansion board is removed in the future, the slot cover must be reinstalled to maintain proper cooling.

To reinstall the PCI cage:

1. Install the PCI expansion board into the PCI cage.
 - a. Align the PCI expansion board with the open expansion slot.
 - b. Press the PCI expansion board into the expansion slot on the riser card.
2. Align the PCI cage to the system board expansion slot, and then press it down to ensure full connection to the system board.
3. Tighten the four screws to secure the PCI cage to the chassis.

Figure 69 Reinstalling the PCI Cage with PCI Expansion Board

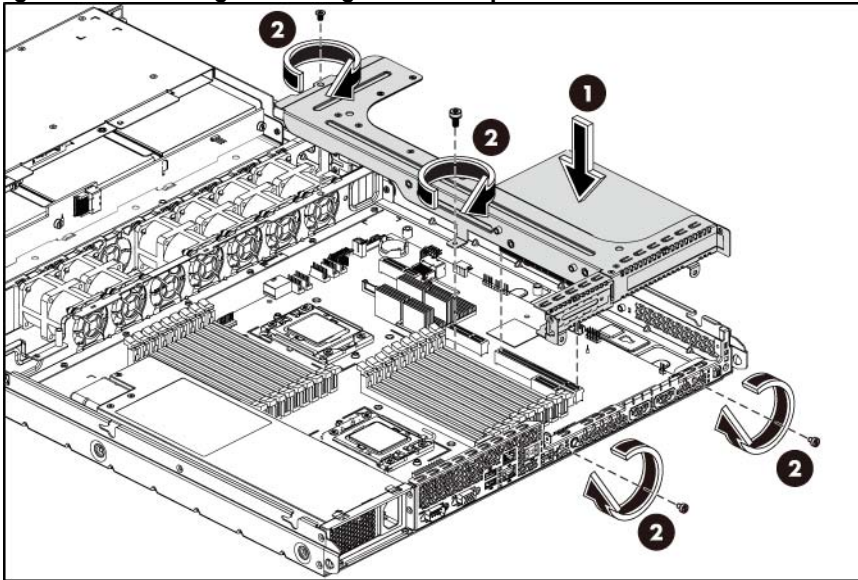
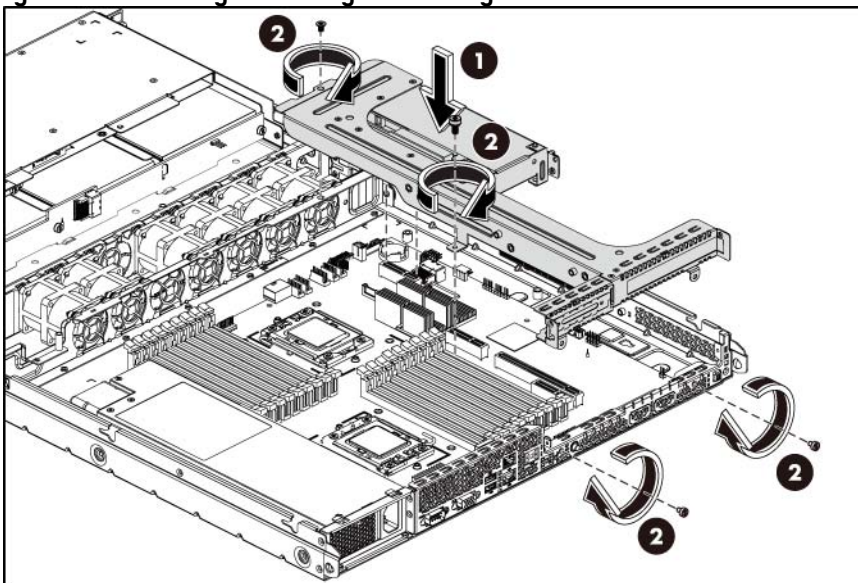


Figure 70 Reinstalling the PCI Cage with Storage Card



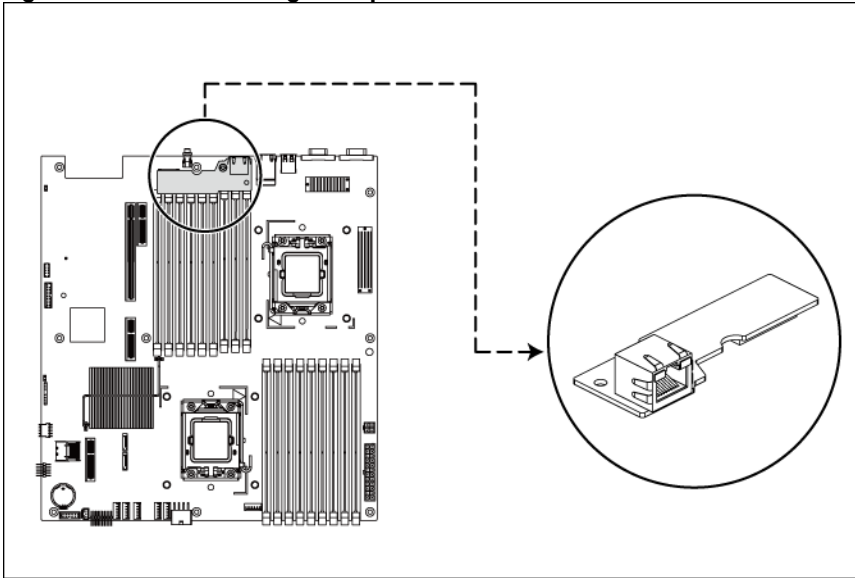
4. Connect the necessary cable(s) to the system board.

Dedicated management port. (Optional)

The server can support a dedicated management port. The dedicated management port is optional for the shipment.

The following figure shows the dedicated management port location.

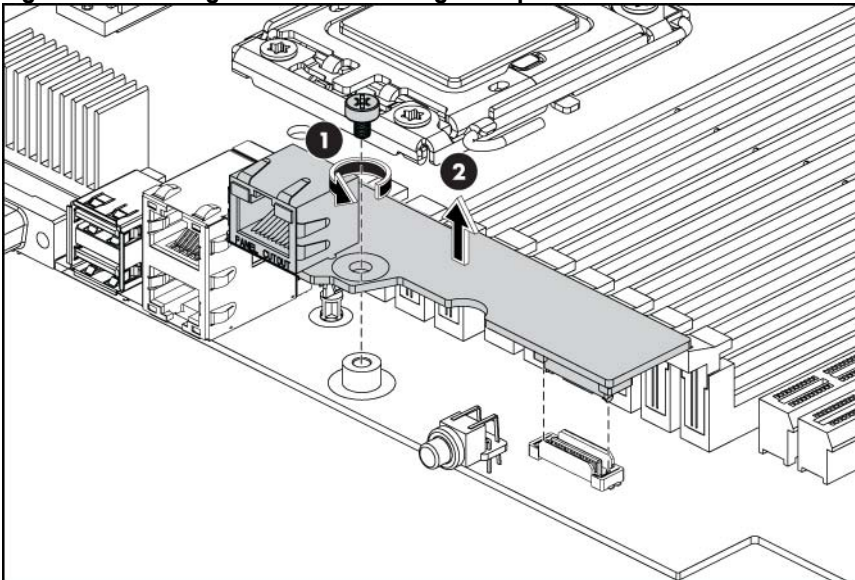
Figure 71 Dedicated management port Location



To remove the Dedicated management port:

1. Remove the PCI cage assembly out of the chassis. Refer to the “PCI expansion card” section in this chapter for detailed procedures.
2. Loosen the screw.
3. Pull the dedicated management port upwards, and then remove the dedicated management port from the dedicated management port connector.

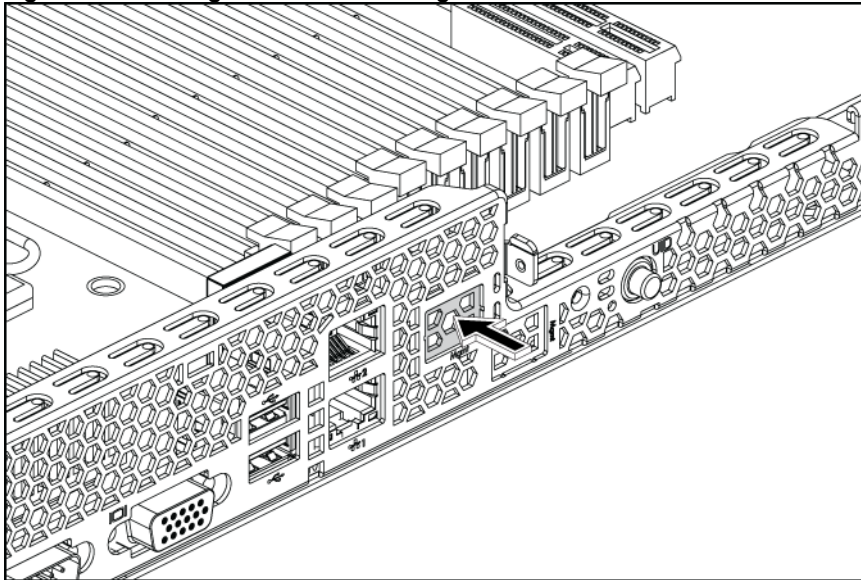
Figure 72 Removing the Dedicated management port



To reinstall the dedicated management port:

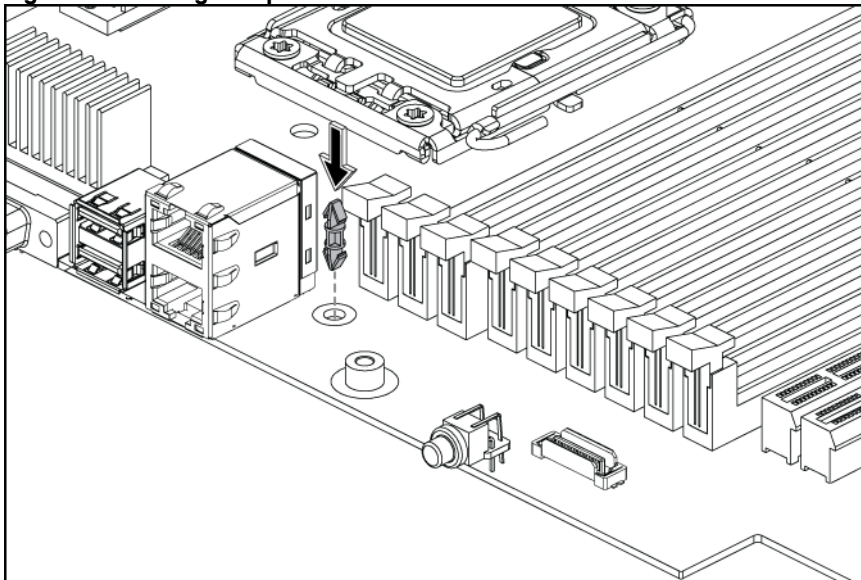
1. Remove the dedicated management port cover.

Figure 73 Removing the Dedicated management Port Cover



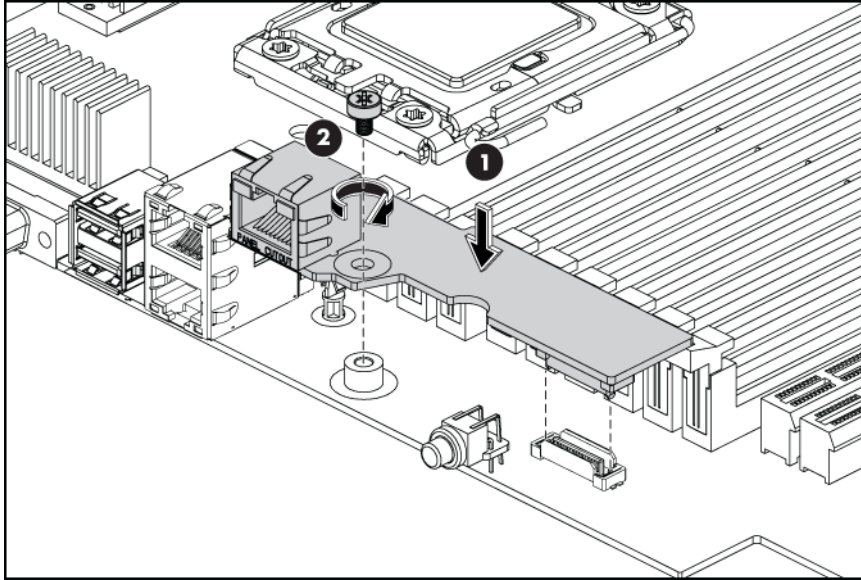
2. Insert the spacer into the system board.

Figure 74 Inserting the Spacer



3. Insert the dedicated management port into the dedicated management port connector.
4. Tighten the screw clockwise to secure the dedicated management port to the system board.

Figure 75 Reinstalling the Dedicated management port

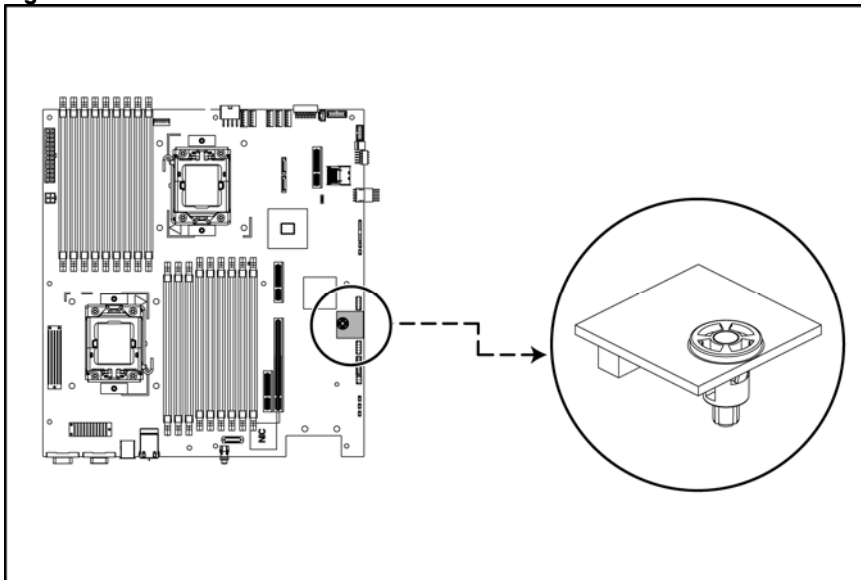


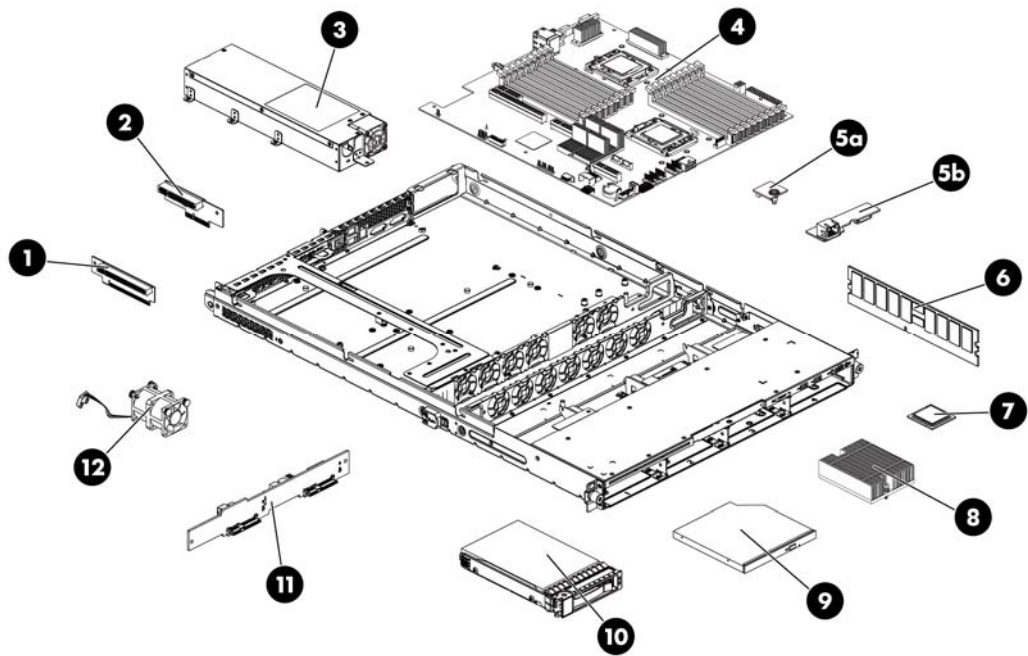
TPM Module (Optional)

The server can support a TPM module. The TPM module is optional for the shipment.

The following figure shows the TPM module location.

Figure 76 TPM module Location

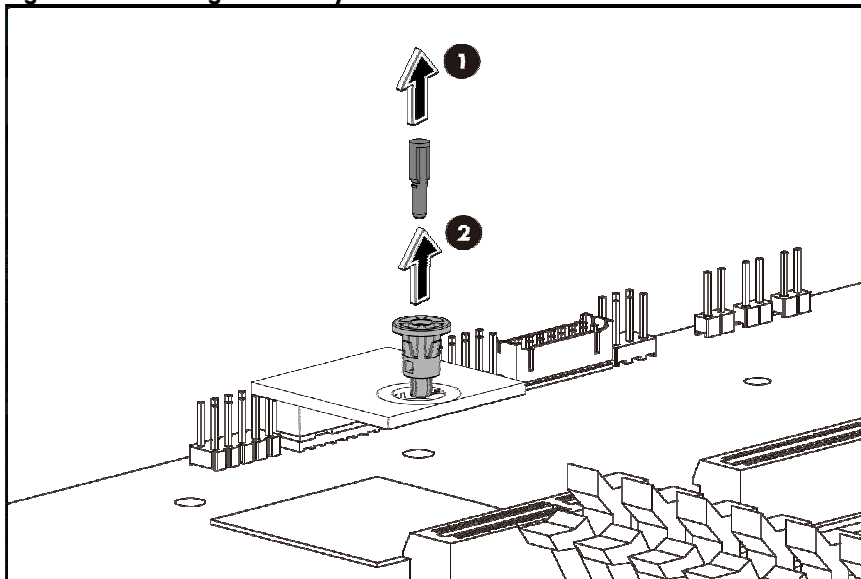




To remove the Dedicated management port:

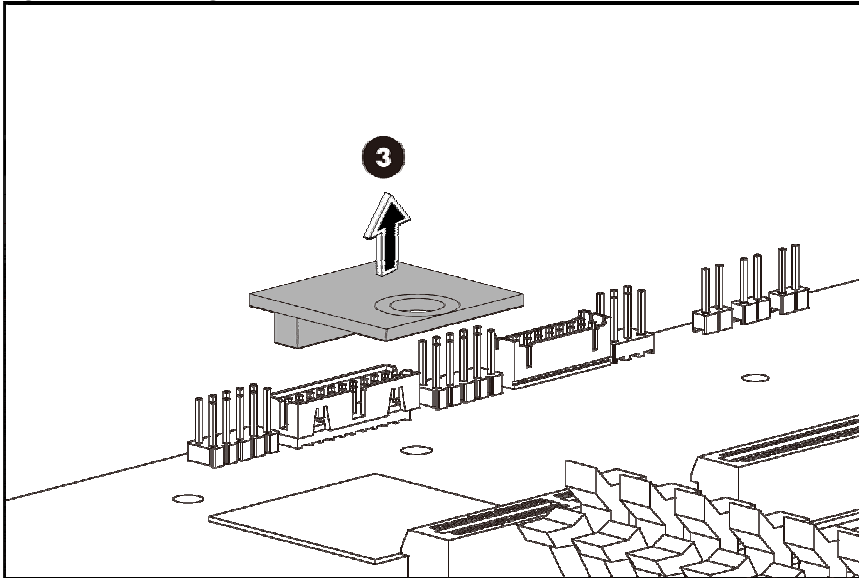
1. Remove the security rivet from the system board

Figure 77 Removing the security rivet



2. Remove the TPM card from system board.

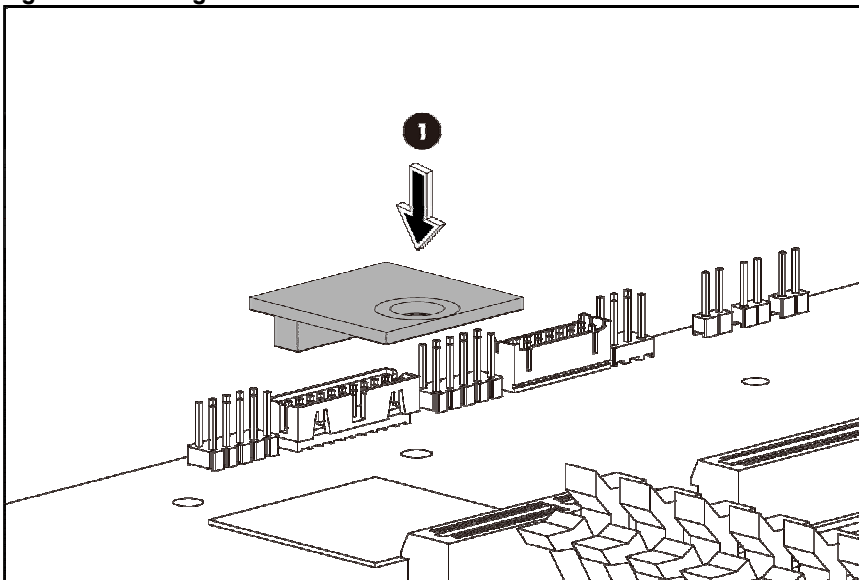
Figure 78 Removing the TPM card



To reinstall the dedicated management port:

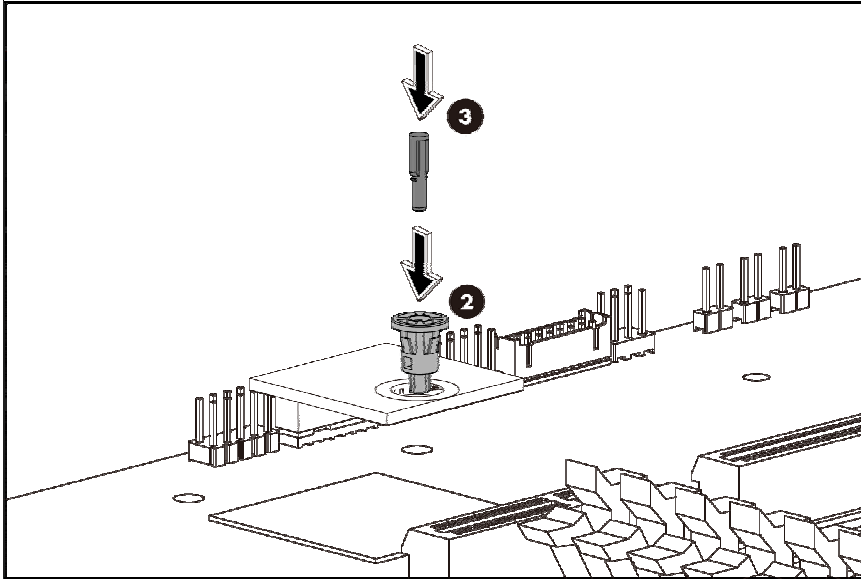
1. Install the TPM card. Press down the TPM card to the connector to seat on the system board

Figure 79 Inserting the TPM card



2. Insert the TPM security rivet by pressing the rivet firmly into the system board

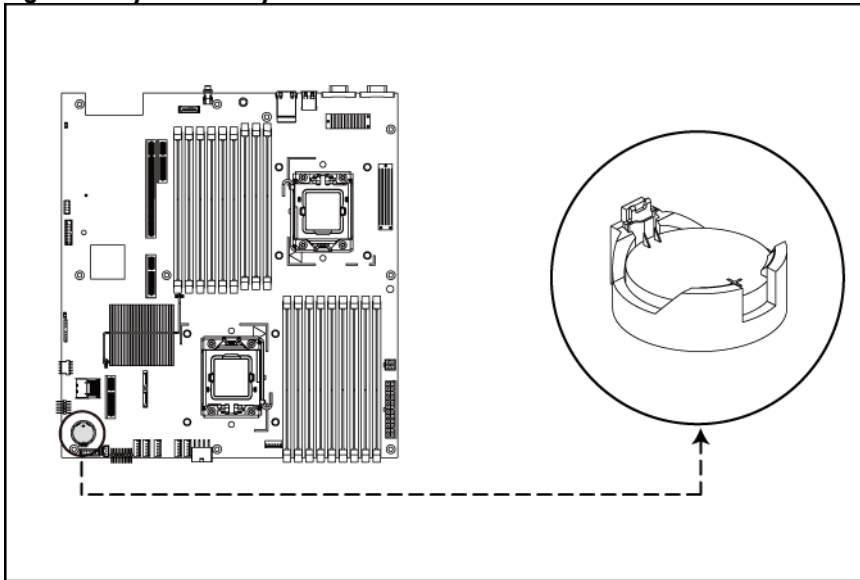
Figure 80 Inserting security rivet



System battery

The server uses nonvolatile memory that requires a system battery to retain system information when power is removed. This 3 V lithium coin cell battery is located on the system board.

Figure 81 System Battery Location



WARNING: Note the following reminders when replacing the system battery:

- Replace the system battery with the same type as the system battery recommended by HP. Use of another system battery may present a risk of fire or explosion.
- A risk of fire and chemical burn exists if the system battery is not handled properly. Do not disassemble, crush, puncture, or short external contacts, or expose the system battery to temperatures higher than 60°C (140°F).
- Do not dispose of used system battery in water or fire. Dispose of used system battery according to manufacturer's instructions.

⚠ CAUTION: Loss of BIOS settings occurs when the system battery is removed. You must reconfigure BIOS settings whenever you replace the system battery.

NOTE: If the server no longer automatically displays the correct date and time, you may need to replace the system battery. Under normal usage, system battery life is five to ten years.

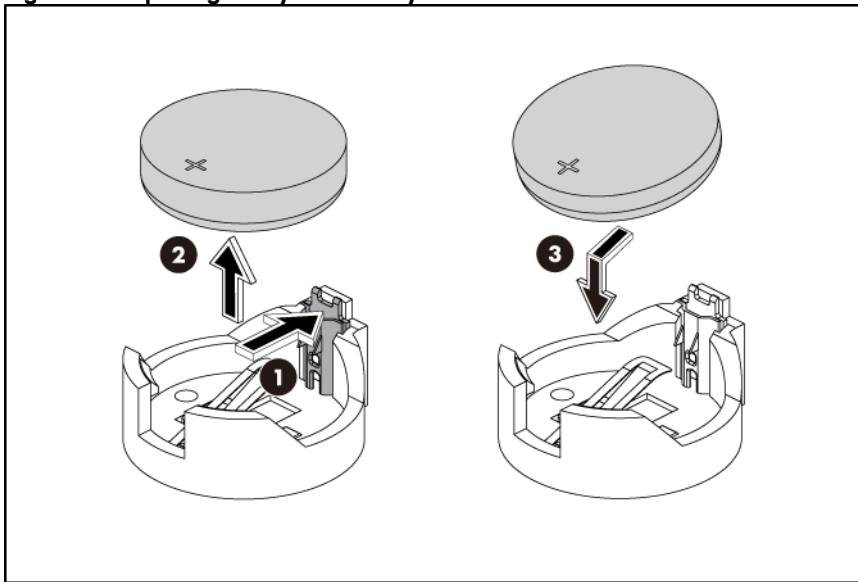
To replace the system battery:

1. Power down the server.
 2. Disconnect the power cord(s).
 3. Unlock the server if necessary and remove the top cover as described in the section "System cover".
-

NOTE: If the expansion board is installed to the PCI cage, remove the PCI cage before releasing the battery. Refer to the "PCI cage" section in this chapter for detailed procedures.

4. Release the battery from its holder by squeezing the metal clamp that extends above one edge of the battery. When the battery pops up, lift it out.
5. To insert the new battery, slide one edge of the replacement battery under the holder's lip with the positive side up. Push the other edge down until the clamp snaps over the other edge of the battery.

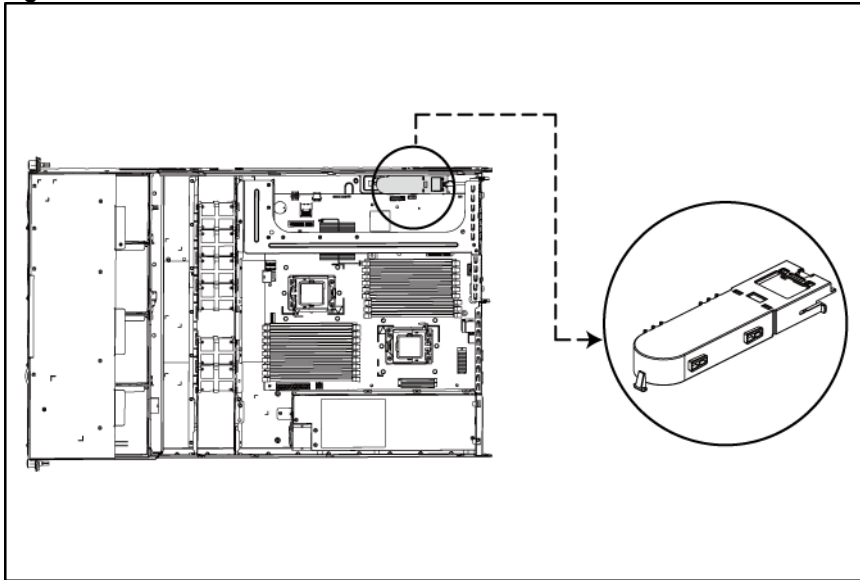
Figure 82 Replacing the System Battery



BBWC (Optional)

This server can support a BBWC. The BBWC is optional for the shipment.

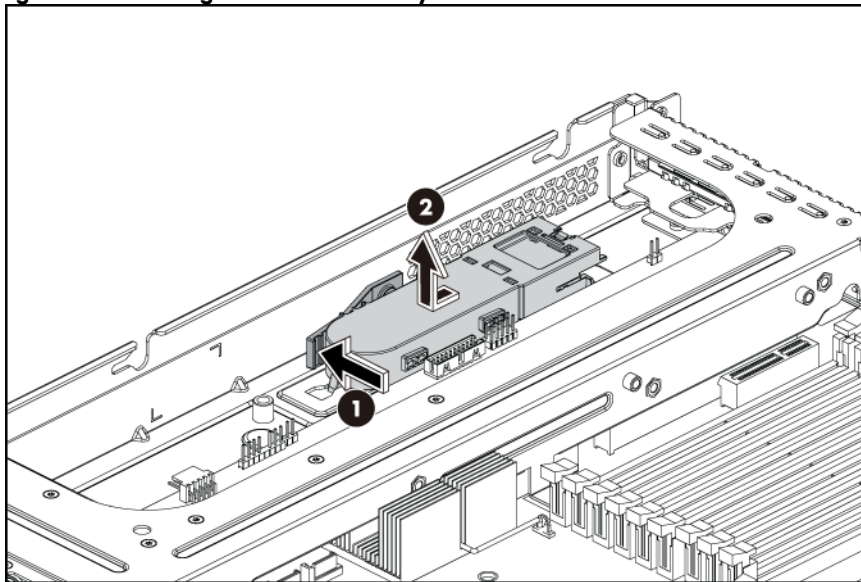
Figure 83 BBWC Location



To remove the BBWC assembly:

1. Push the tab that secures the BBWC assembly to the system board tray.
2. Slide the BBWC assembly, and then lift it out of the system board assembly.

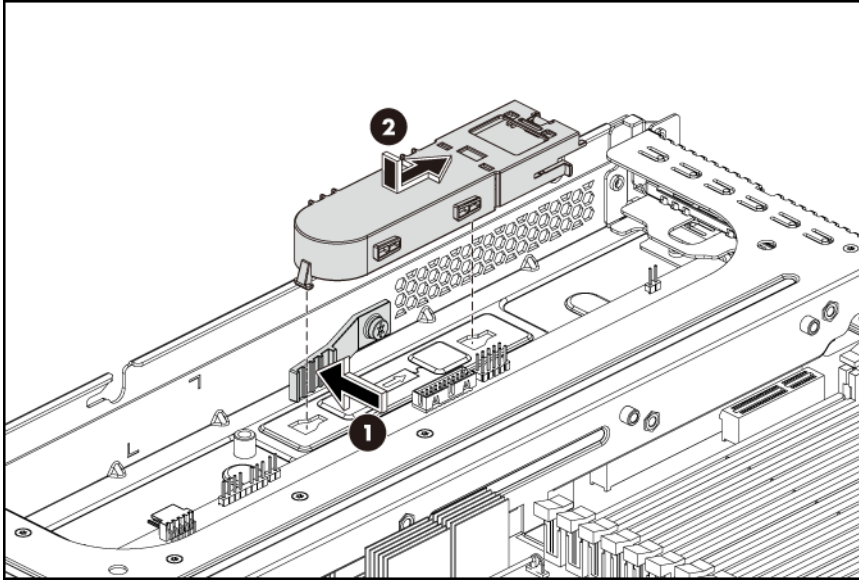
Figure 84 Removing the BBWC Assembly



To reinstall the BBWC:

1. Push the tab that secures the BBWC assembly to the system board tray.
2. Align the locking tabs on the BBWC assembly to their holes on the tray. Press the BBWC assembly into the tray, and then push it along the direction of the arrow to lock the locking tabs.

Figure 85 Reinstalling the BBWC Assembly

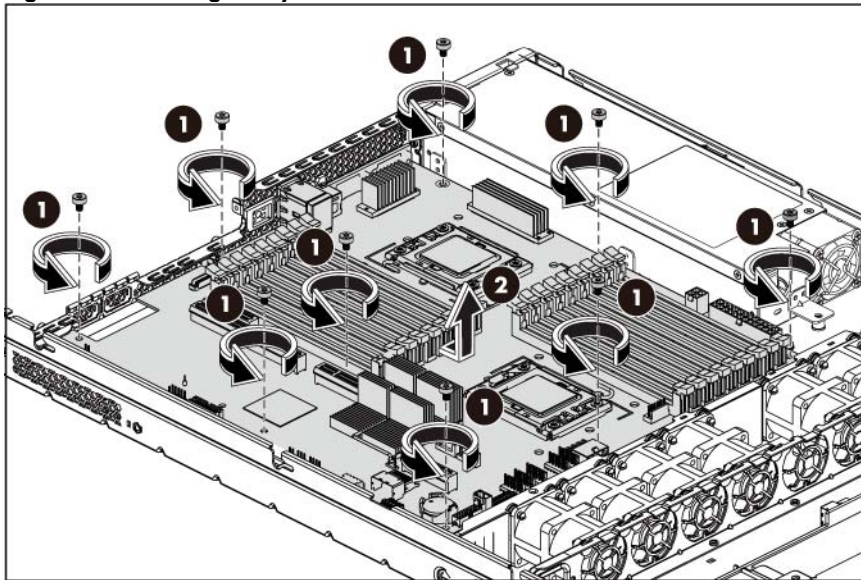


System board removal and replacement procedure

To remove the system board:

1. Remove the top cover.
2. Remove the air baffle and all cables from the system board.
3. Loosen the nine screws that secure the system board to the chassis.
4. Slide the system board back, up and out of the chassis. Remove the system board from the chassis.

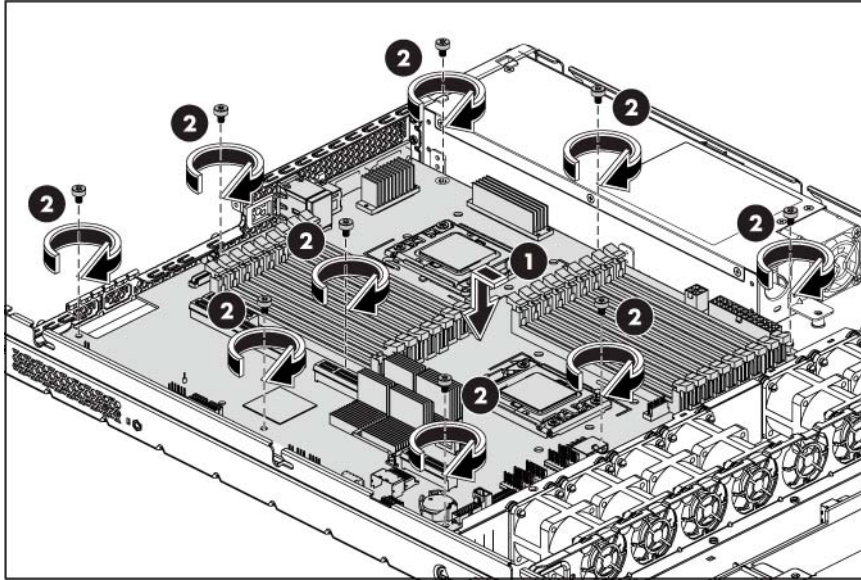
Figure 86 Removing the System Board



To reinstall the system board:

1. Align the system board I/O connectors to their openings and slide the system board into place. The screw holes on the tray should align with the system board.
2. Fasten the screws that secure the system board to the chassis.

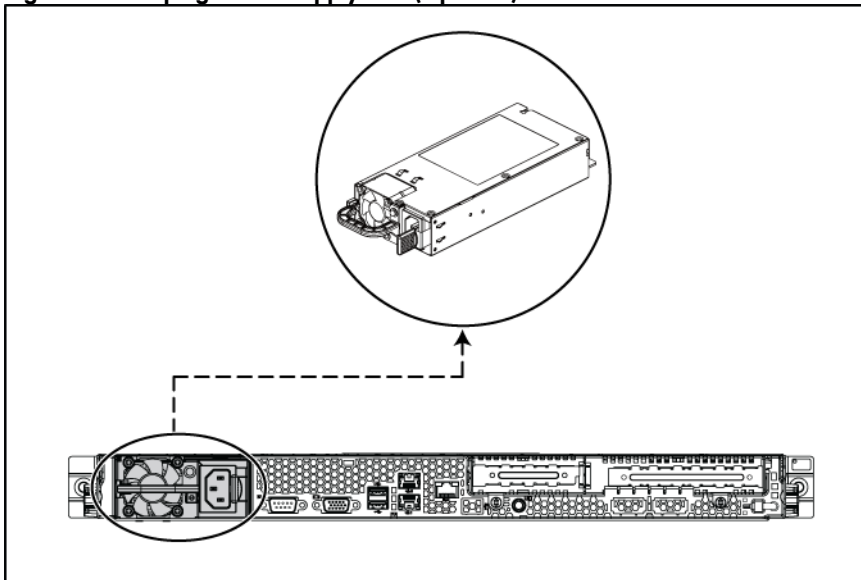
Figure 87 Reinstalling the System Board



Power supply unit (PSU)

Located on the rear panel of the server power supply is a standard 500 W non-hot-plug PSU, or optional 750 W or optional 460 W hot-plug PSU with PFC (power factor correction) function.

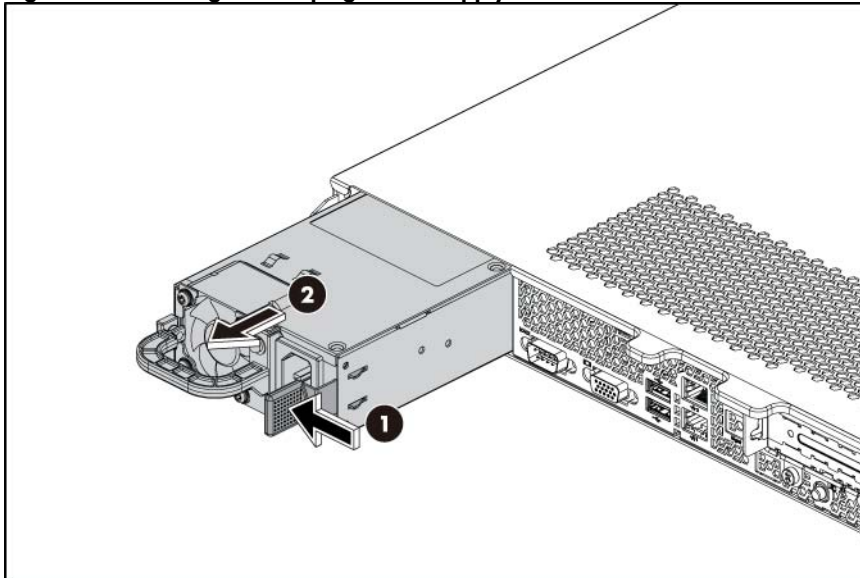
Figure 88 Hot-plug Power Supply Unit (Optional)



To remove the hot-plug power supply:

1. Press the port wine colored tab.
2. Pull the hot-plug power supply out of the power supply bay

Figure 89 Removing the Hot-plug Power Supply



To reinstall the hot-plug power supply:

1. Align the hot-plug power supply cage connector with the open power supply bay and slide the power supply into the chassis.
2. Push it in until the locking tab is clicked.

Figure 90 Reinstalling the Hot-plug Power Supply

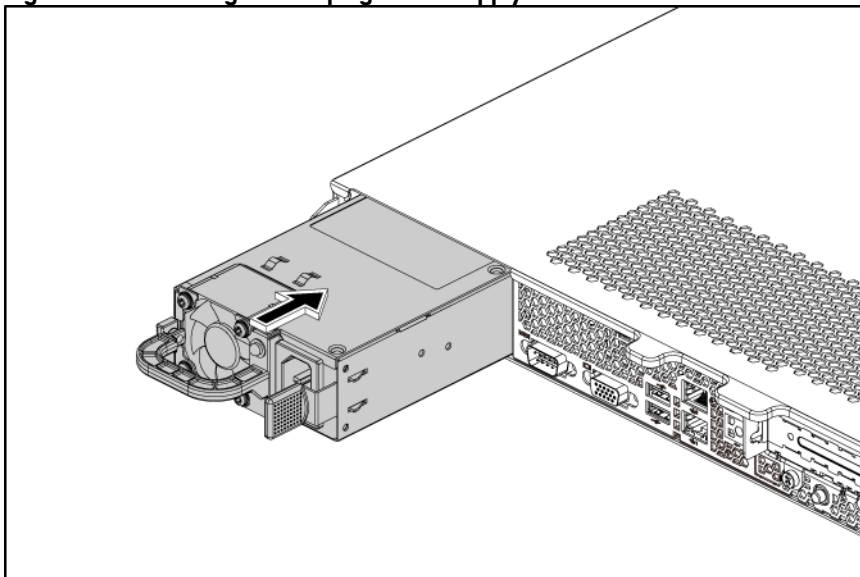
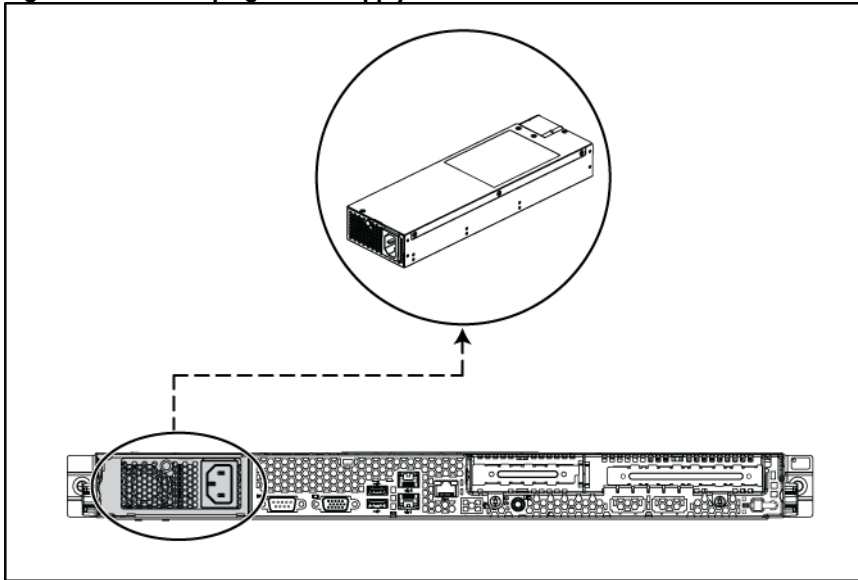


Figure 91 Non-hot-plug Power Supply Unit



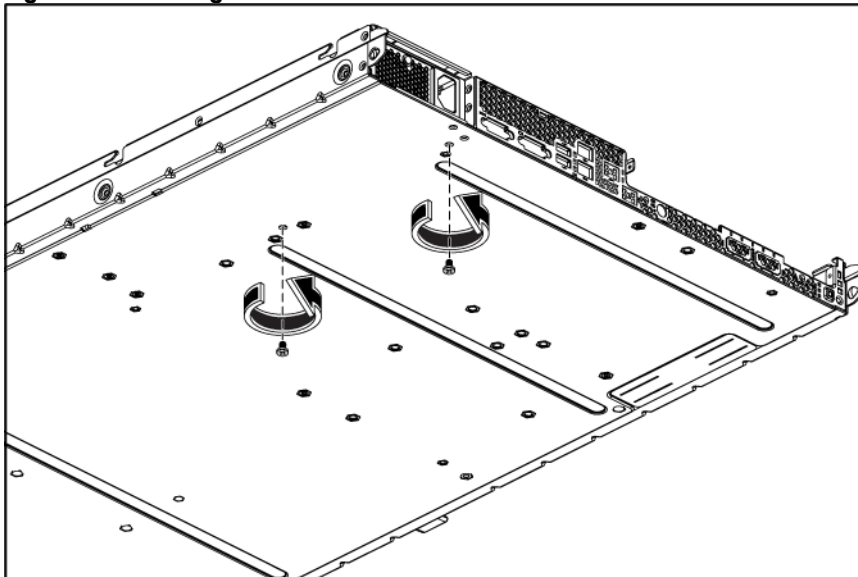
WARNING: Take note of the following reminders to reduce the risk of personal injury from electric shock hazards and/or damage to the equipment.

- Installation of power supply units should be referred to individuals who are qualified to service server systems and are trained to deal with equipment capability of generating hazardous energy levels.
- **DO not** open the power supply unit. There are no serviceable parts inside it.

To remove the non-hot-plug power supply:

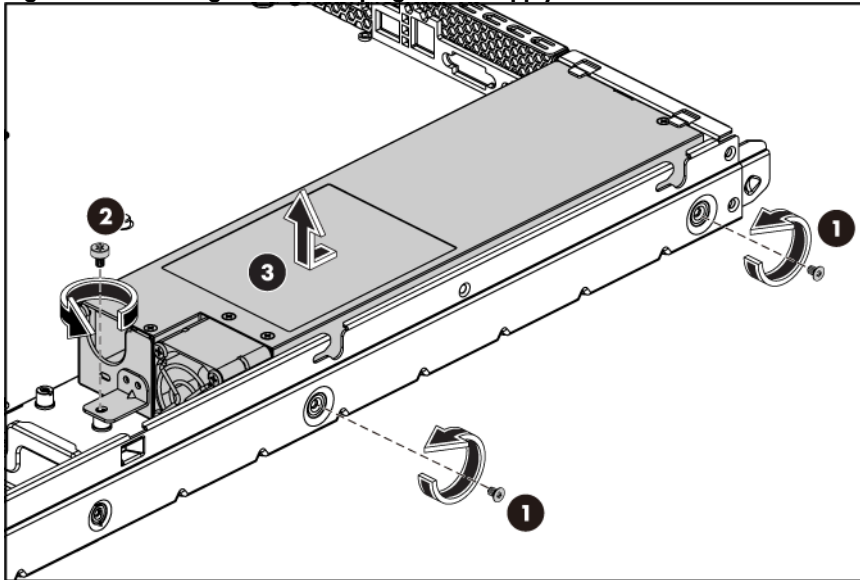
1. Loosen the two screws that secure the power supply, which are located beneath the chassis.

Figure 92 Loosening the Two Screws beneath the Chassis



2. Loosen the screws that secure the power supply to the chassis.
3. Pull and lift the power supply out of the chassis.

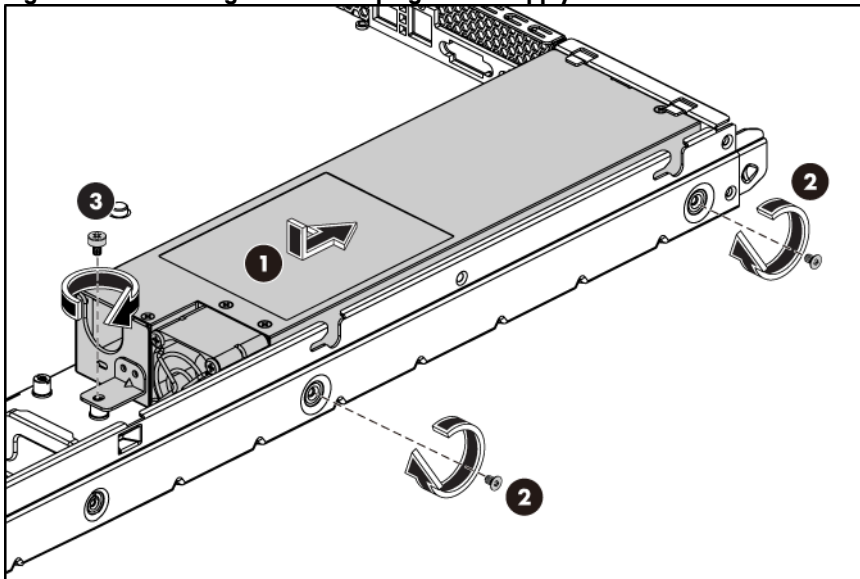
Figure 93 Removing the Non-hot-plug Power Supply



To reinstall the non-hot-plug power supply:

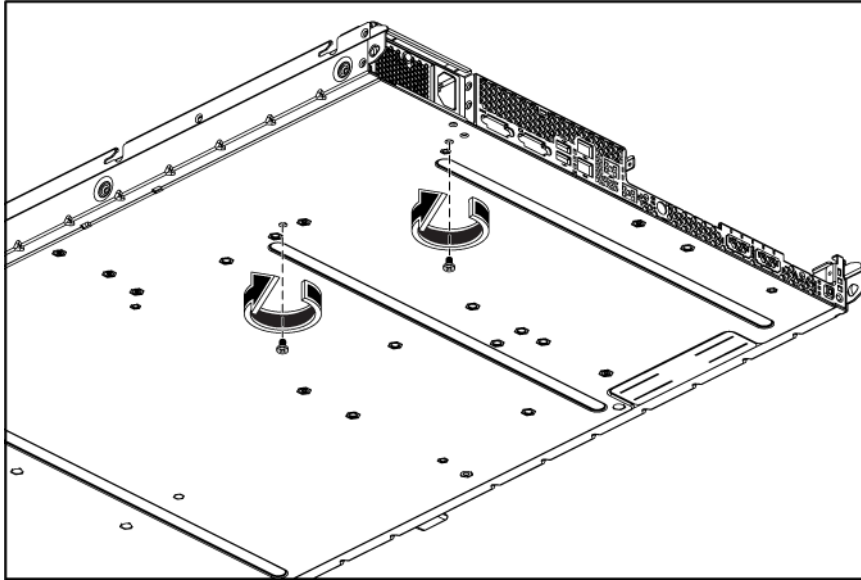
1. Locate and push the power supply to the proper place in the chassis.
2. Fasten the power supply to the chassis using the screws as shown in the figure below.

Figure 94 Reinstalling the Non-hot-plug Power Supply



3. Fasten the two screws which are located beneath the chassis to secure the power supply

Figure 95 Fastening the Two Screws beneath the Chassis



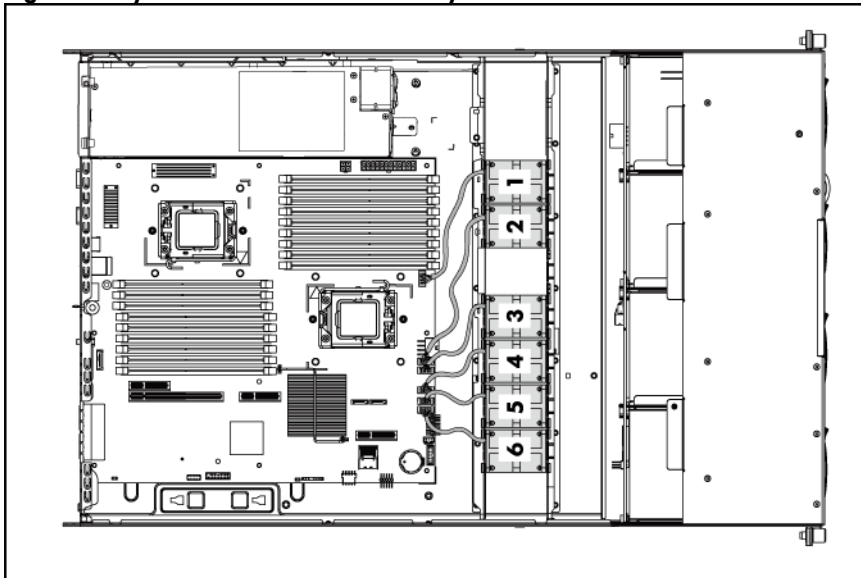
System fan

The server has six system fans located on the center wall of the chassis.

In order to provide appropriate cooling to the system and maintain the stability of system temperature, Two kinds of fan locations are applied for the system.

The figures below identifies the system fans by their device number and shows their corresponding cable connections.

Figure 96 System Fan Device Number of system with non-130W CPU

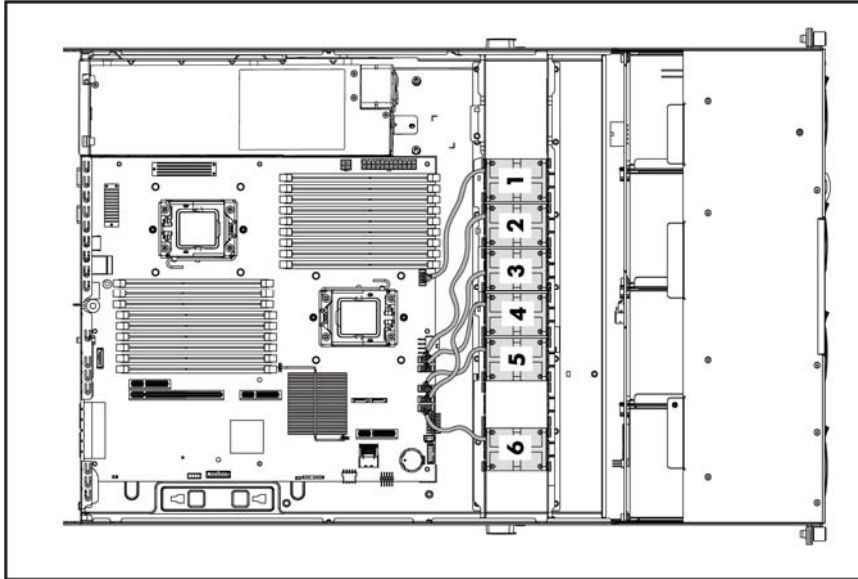


Device number	Connector
System Fan 1	J63 on the system board
System Fan 2	J71 on the system board
System Fan 3	J62 on the system board

Device number	Connector
System Fan 4	J70 on the system board
System Fan 5	J68 on the system board
System Fan 6	J67 on the system board

System fans 1 to 4 are for the memory modules and processors, while system fan 5 to 6 are for the PCI slots and system chipsets.

Figure 97 System Fan Device Number of system with 130W CPU



Device number	Connector
System Fan 1	J63 on the system board
System Fan 2	J71 on the system board
System Fan 3	J68 on the system board
System Fan 4	J62 on the system board
System Fan 5	J70 on the system board
System Fan 6	J67 on the system board

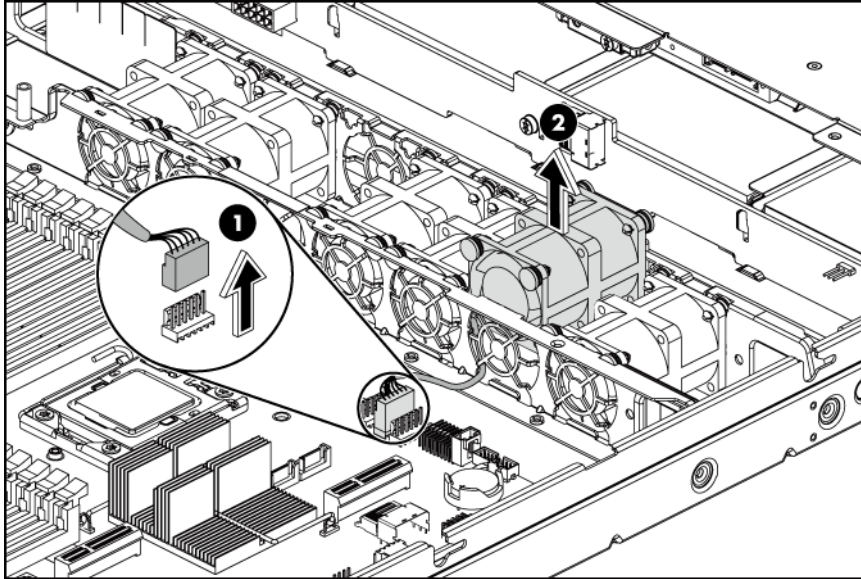
A new system fan can be installed to allow the server to operate properly in case a default system fan becomes defective.

To remove the system fan:

1. Power down the server.
2. Disconnect the power cord(s).
3. Unlock the server if necessary and remove the top cover as described in the section "System cover".
4. Disconnect the system fan cable from its corresponding board connector.
5. Release the fan cable from the cable clip securing it to the chassis partition wall.

6. Squeeze the release tab on the system fan to release it from the chassis.
7. Lift the system fan away from the chassis.

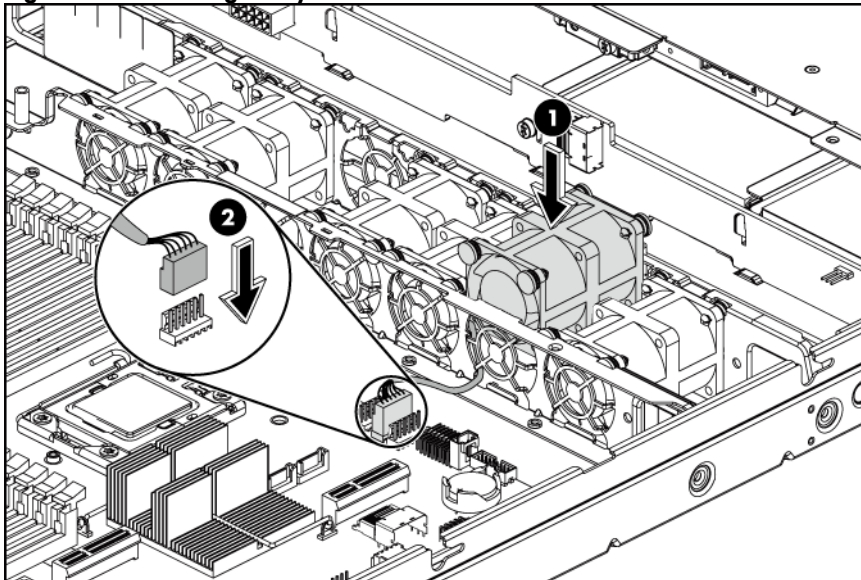
Figure 98 Removing the System Fan



To reinstall the system fan:

1. Put the system fan cable through the system fan cage.
2. Hold the system fan and press the system fan into the system fan bracket.
3. Connect the system fan cable to its corresponding board connector.

Figure 99 Reinstalling the System Fan



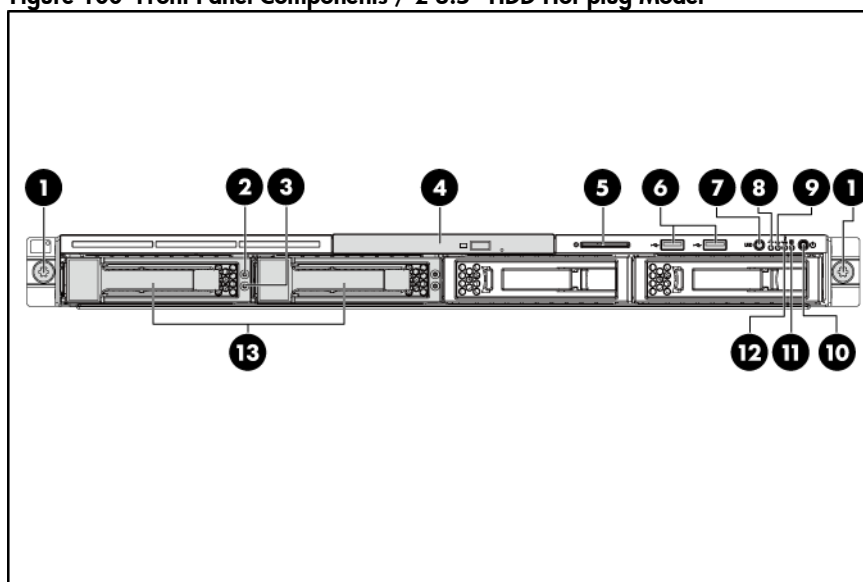
Connectors, switches, and LEDs

This chapter contains illustrations and tables identifying and describing the connectors, jumpers, switch, buttons, and LED indicators located on the front panel, rear panel, system board and hard drives of the HP ProLiant DL160 G6 server.

Connectors and components

Front panel components

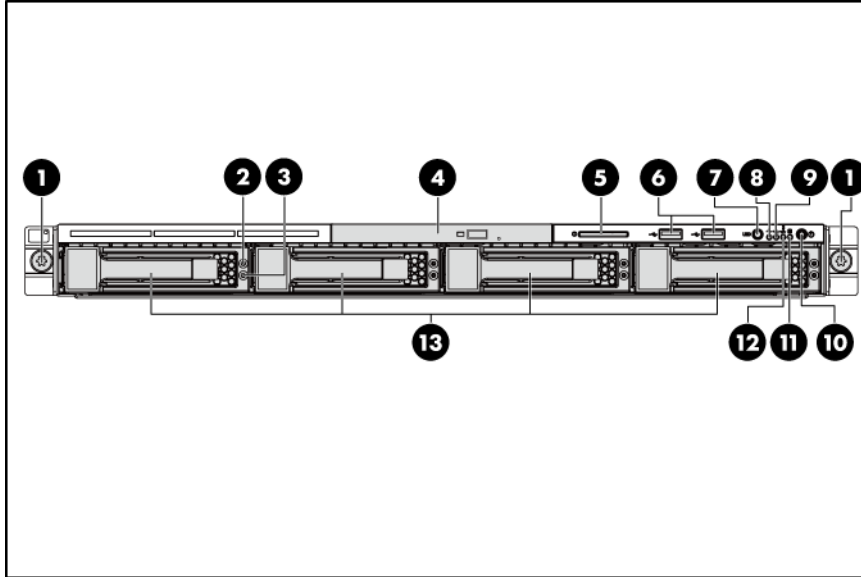
Figure 100 Front Panel Components / 2 3.5" HDD Hot-plug Model



Item	Description
1	Thumbscrews for rack mounting
2	Drive online/error LED
3	Drive activity LED
4	Optical disc drive (optional)
5	Serial number pull tab
6	Front panel USB 2.0 port 0/1
7	Front UID LED/switch
8	System health LED
9	NIC 1 activity LED
10	Power LED/switch
11	Hard drive activity LED

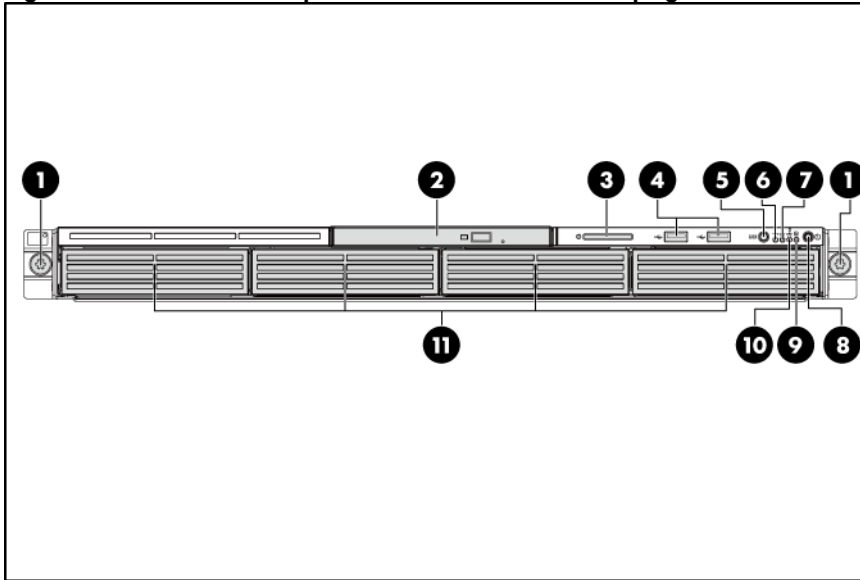
Item	Description
12	NIC 2 activity LED
13	Hard disk drive (HDD) bays

Figure 101 Front Panel Components / 4 3.5" HDD Hot-plug Model



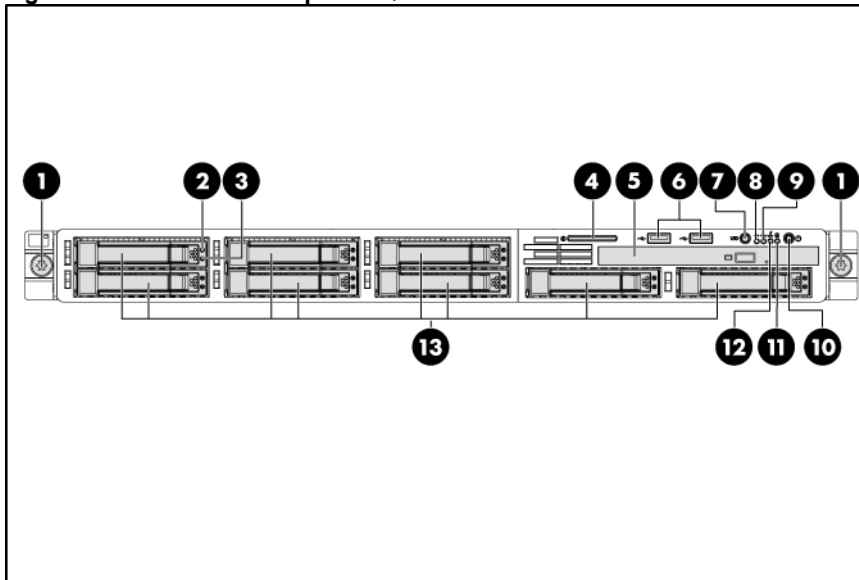
Item	Description
1	Thumbscrews for rack mounting
2	Drive online/error LED
3	Drive activity LED
4	Optical disc drive (optional)
5	Serial number pull tab
6	Front panel USB 2.0 port 0/1
7	Front UID LED/switch
8	System health LED
9	NIC 1 activity LED
10	Power LED/switch
11	Hard drive activity LED
12	NIC 2 activity LED
13	Hard disk drive (HDD) bays

Figure 102 Front Panel Components / 4 3.5" HDD Non-hot-plug Model



Item	Description
1	Thumbscrews for rack mounting
2	Optical disc drive (optional)
3	Serial number pull tab
4	Front panel USB 2.0 port 0/1
5	Front UID LED/switch
6	System health LED
7	NIC 1 activity LED
8	Power LED/switch
9	Hard drive activity LED
10	NIC 2 activity LED
11	Hard disk drive (HDD) bays

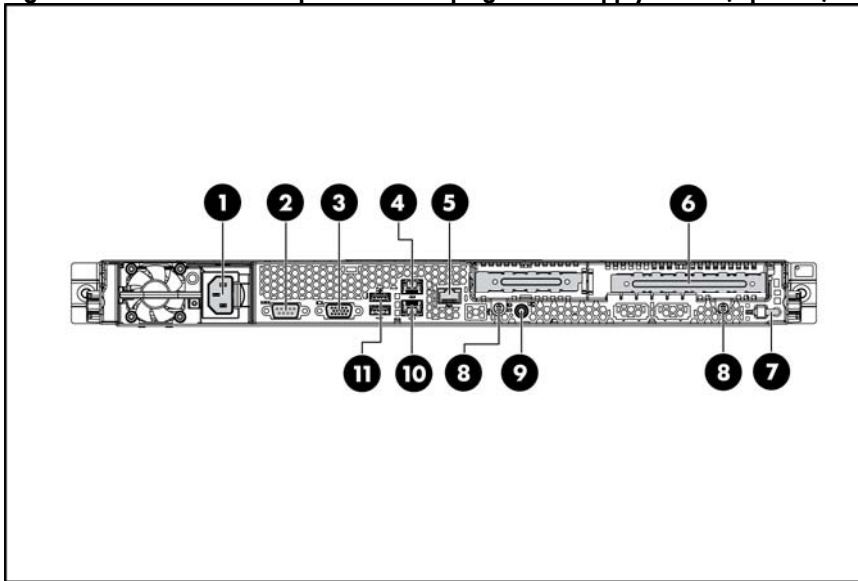
Figure 103 Front Panel Components / 8 2.5" HDD Model



Item	Description
1	Thumbscrews for rack mounting
2	Drive online/error LED
3	Drive activity LED
4	Serial number pull tab
5	Optical disc drive
6	Front panel USB 2.0 port 0/1
7	Front UID LED/switch
8	System health LED
9	NIC 1 activity LED
10	Power LED/switch
11	Hard drive activity LED
12	NIC 2 activity LED
13	Hard disk drive (HDD) bays

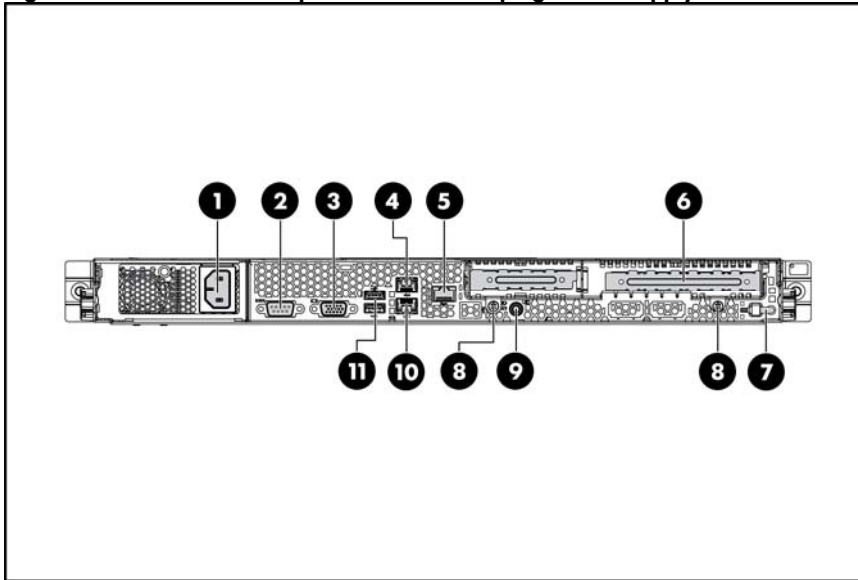
Rear panel components

Figure 104 Rear Panel Components / Hot-plug Power Supply Model (Optional)



Item	Description
1	Power supply cable socket
2	Serial port
3	VGA port
4	GbE LAN port for NIC 2
5	Dedicated management port (optional)
6	Full-height/full-length PCI expansion card slot cover
7	T-10/T-15 wrench
8	Screws for PCI cage
9	Rear UID LED/switch
10	GbE LAN port for NIC 1
11	Rear panel 2.0 port 2/3

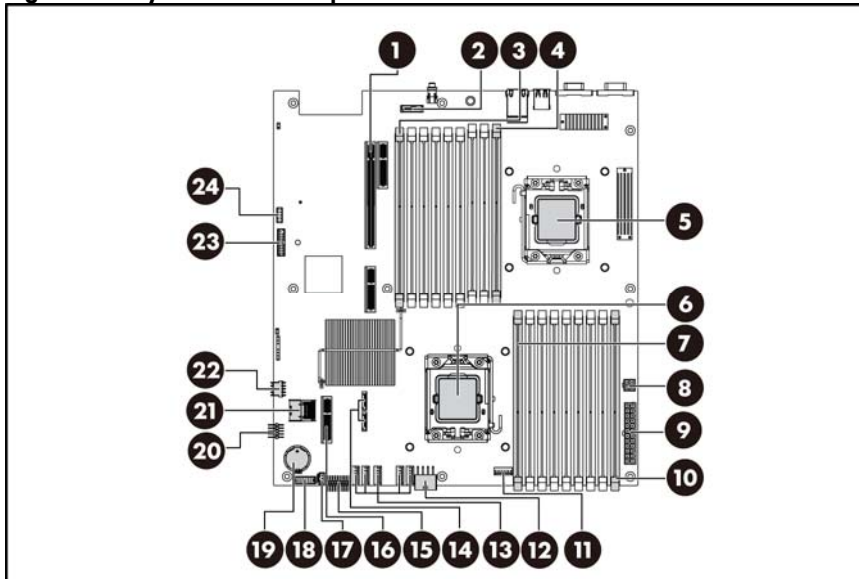
Figure 105 Rear Panel Components / Non-hot-plug Power Supply Model



Item	Description
1	Power supply cable socket
2	Serial port
3	VGA port
4	GbE LAN port for NIC 2
5	Dedicated management port (optional)
6	Full-height/full-length PCI expansion card slot cover
7	T-10/T-15 wrench
8	Screws for PCI cage
9	Rear UID LED/switch
10	GbE LAN port for NIC 1
11	Rear panel 2.0 port 2/3

System board components

Figure 106 System Board Components



Item	Designator	Description
1	J17	PCIe slot
2	J90	Dedicated management port connector
3	J21	DIMM slot 9C for processor 2
4	J77	DIMM slot 1G for processor 2
5	CPU 2	Processor 2
6	CPU 1	Processor 1
7	J74	DIMM slot 1G for processor 1
8	J60	4-pin power connector
9	J51	System power connector
10	J48	DIMM slot 9C for processor 1
11	J63	Fan 1 connector
12	J64	8-pin power connector
13	J71, J62, J70, J68, J67	Fan 2-6 connectors (from right to left)
14	J57, J58	SATA 5-6 connectors (from top to bottom)
15	J42	Front panel header
16	J3	Storage card slot
17	J65	Backplane I2C connector
18	J82	Backplane power connector
19	B1	3 V CMOS battery (CR2032)

Item	Designator	Description
20	J56	Front panel USB 2.0 port 0/1
21	J11	Mini SAS connector
22	J69	Internal USB 2.0 port 4
23	J29	TPM connector
24	J27	System maintenance jumper

Jumpers

The system board contains a system maintenance jumper (J27). Table 15 describes the jumper settings.

Table 15 System Maintenance Jumper Setting (J27)

Jumper	Status (default=off)
A	Clear CMOS
B	Clear password
C	Recovery BIOS
D	Recovery BMC
E	RTC reset

LED indicators

This section contains illustration and descriptions of internal and external status LED indicators located on the:

- Front panel
- Optical disk drive
- Hard drive
- Rear panel
- System board

These LED indicators aid in problem diagnosis by indicating the status of system components and operations of the server.

Front panel LED indicators

The front panel LED indicators allow constant monitoring of basic system functions while the server is operating.

Figure 107 Front Panel LED Indicators

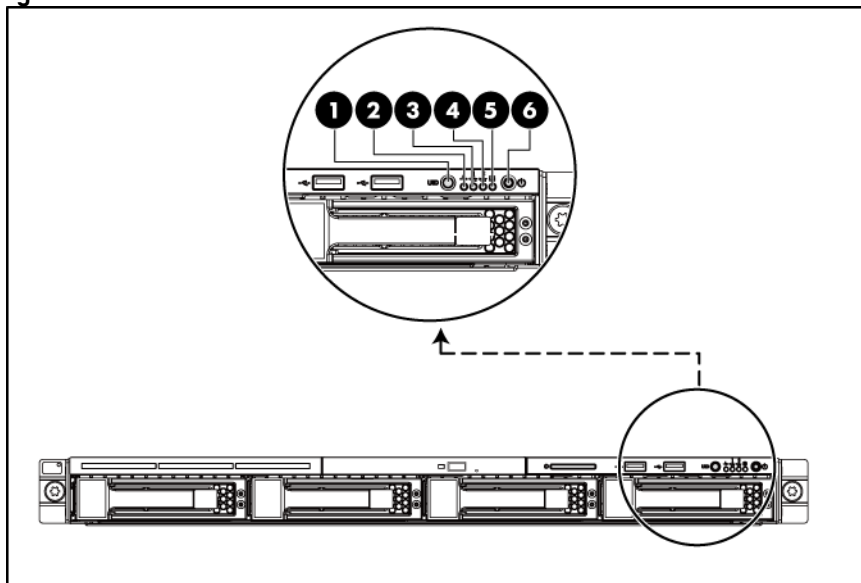


Table 16 Front Panel LED Indicators

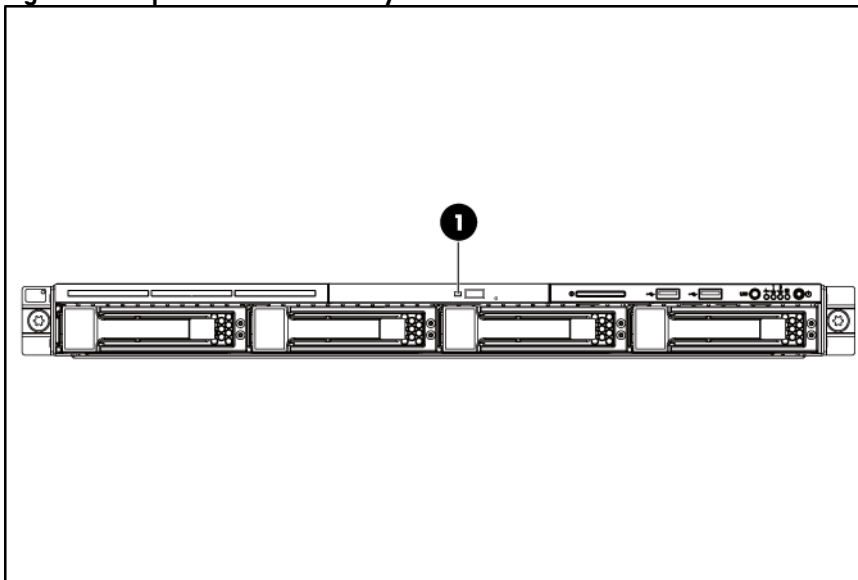
Item	LED indicator	Status	Description
1	Front UID LED/switch	Steady blue	Identification
		Flashing blue	The system is being remotely managed
		Off	No identification
2	System health LED	Steady green	Healthy
		Red	Critical error
		Amber	Non-critical error
3	NIC 1 activity LED	Steady green	Linked to the network

Table 16 Front Panel LED Indicators

Item	LED indicator	Status	Description
		Flashing green	Linked and activity on the network.
		Off	No connection
4	NIC 2 activity LED	Steady green	Linked to the network
		Flashing green	Linked and activity on the network.
		Off	No connection
5	Hard drive activity LED	Flashing green	Hard drive activity
		Off	No hard drive activity
6	Power LED/switch	Steady green	The system has AC power and is turned on.
		Steady amber	The system has AC power but in standby mode.
		Off	No AC power to the system.

Optical disk drive activity LED indicator

The optical disk drive has an activity indicator that indicates when the drive is reading media.

Figure 108 Optical disk drive activity LED indicator**Table 17** Optical disk drive Activity LED Indicator Status

Item	LED indicator	Status	Description
1	Optical disk drive activity LED indicator	Flashing green	Ongoing drive activity
		Off	No drive activity

Hard drive LED indicator

The status of hard drives installed in the server is indicated by the hard drive LED indicators located on the HDD.

Figure 109 Hard Drive LED Indicator

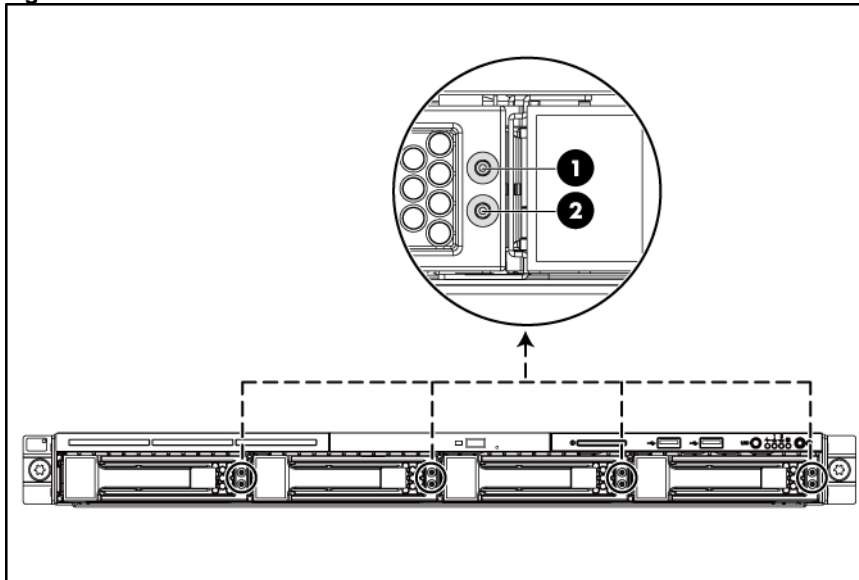


Table 18 Hard Drive Activity LED Indicator Status

Item	LED indicator	Status	Description
1	Drive online/error LED indicator	Steady blue	The drive is located
		Steady orange	The drive is in a failed state.
		Off	The drive is not in a failed state.
2	Drive activity LED indicator	Flashing green	The drive is in an activity state.
		Off	The drive is not in an activity state.

Rear panel LED indicators

The LAN port on the rear panel has two LED indicators that allow monitoring of network activity.

Figure 110 LAN LED Indicators Location

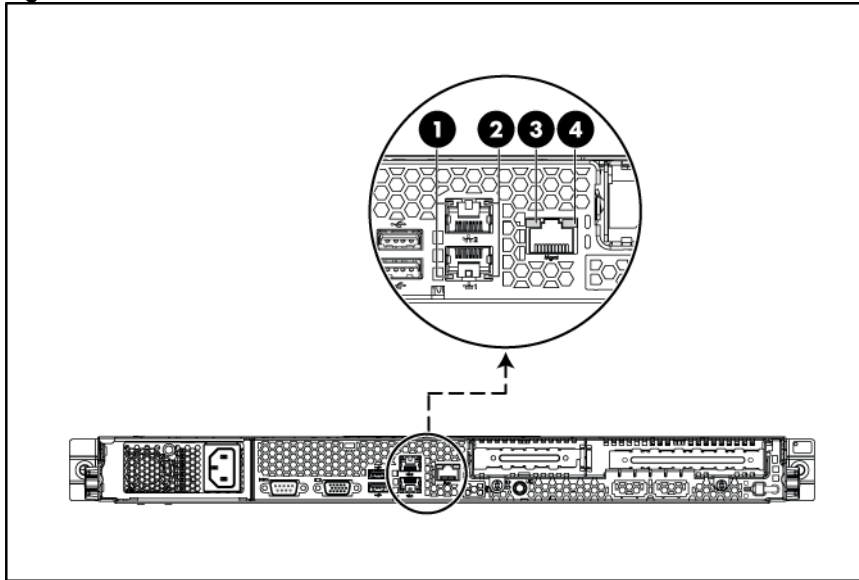


Table 19 LAN LED Indicator Status

Item	Component	Status	Description
1	NIC link LED indicator	Steady green	Linking at 100 Mbps speed.
		Off	No connection or linking at 10 Mbps speed.
2	NIC activity LED indicator	Flashing green	LAN is active.
		Steady green	LAN is linking.
		Off	No connection.
3	Dedicated management LAN port activity LED indicator (optional)	Flashing green	LAN is active.
		Steady green	LAN is linking.
		Off	No connection
4	Dedicated management LAN port link LED indicator (optional)	Steady green	Linking at 100 Mbps speed.
		Off	No connection or linking at 10 Mbps speed.

System board LED indicator

The system board contains one LED indicator for use during troubleshooting operations.

Figure 111 System Board LED Indicator

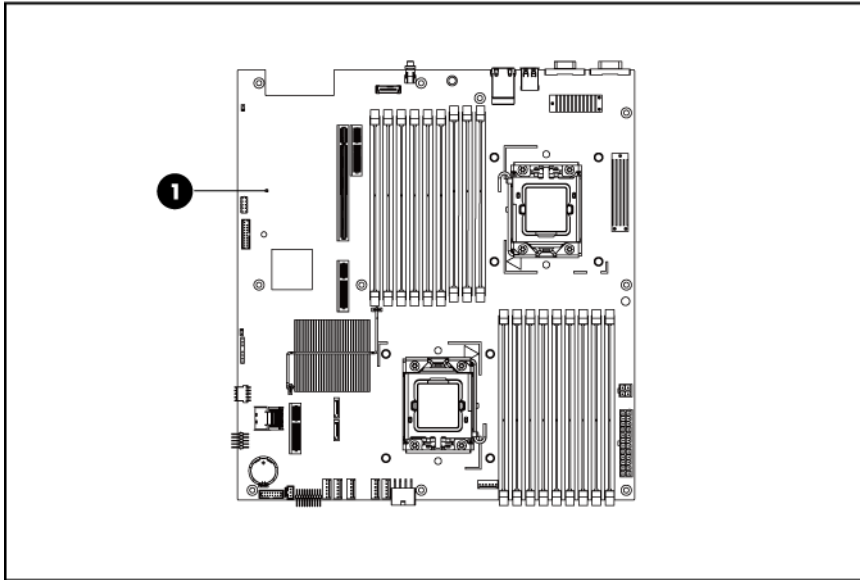


Table 20 System Board LED Indicator Status

Item	Component	Status	Description
1	BMC activity LED indicator	Steady green	BMC is power on and in initialization process.
		Flashing green	BMC activity.
		Off	AC is Off.

Diagnostic tools and setup utilities

This chapter provides an overview of the Power-On Self-Test (POST), the POST error messages, and BIOS, SAS and SATA setup utilities.

BIOS software

The server uses BIOS to boot up the system. BIOS software is a ROM-based firmware that allows reliability, manageability, and connectivity for server platforms. This software contains a set of programs permanently stored in an EEPROM chipset located on the system board. These programs assist in managing, initializing, and testing the hardware devices installed on the computer.

BIOS software allows you to:

- Perform configuration from the BIOS Setup Utility
Using the Setup Utility, you can install, configure, and optimize the hardware devices on the system board. In addition, you can set various features such as serial console redirection, PXE boot, and much more.
- Initialize hardware at boot up using POST routines
During power-on or warm reset, the BIOS perform POST routines to test system components, allocate resource for various hardware devices, and prepare the system to boot to various operating systems.

BIOS Setup Utility

The HP server BIOS Setup Utility is used to configure five primary menu selections:

- Main
- Advanced
- Boot
- Security
- Exit

Accessing the BIOS Setup Utility

1. Turn on the monitor and server.
If the server is already turned on, save your data and exit from all open applications, and then restart the server.
2. When the HP logo is displayed during POST, press F10 into BIOS Setup Utility. If you fail to press F10 before POST is completed, you will need to restart the server.
3. The first page displayed is the Main menu showing the Setup Utility menu bar. Use the left (←) and right (→) arrow keys to change the options for each setting. Use the up (↑) and down (↓) arrow keys to move among the different settings in each menu.

Navigating through the Setup Utility

Use the keys listed in the legend bar on the right of the Setup screen to navigate through the various menu and submenu screens of the Setup Utility. **Error! Reference source not found.** lists these legend keys and their respective functions.

Table 21 Setup Utility Navigation Keys

Key	Function
Enter, Tab, or Shift-Tab	Select a field value or display a submenu screen. Display more options for items marked with ►
<+>, <->	Configure the system time or change field.
← and →	Select different screens.
↑ and ↓	Select items in each menu.
F1	To bring up the General Help window. The General Help window describes other Setup navigation keys that are not displayed on the legend bar.
F10	To save changes and exit the BIOS Setup Utility.
Esc	Exit the BIOS Setup menu.

Setup Utility menu bar

The BIOS Setup Utility provides a menu bar with the menu selections. The menu bar choices are described in the topics below.

Main menu

Figure 112 Main Menu of the BIOS Setup Utility

ROM-based Setup Utility	
<Main> Advanced Boot Security Exit	
System Overview	User [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Product Name : Proliant DL160 G6	Use [+] or [-] to configure system Time.
ProLiant BIOS : O33	
Build Date : 01/26/2010	
ROM ID : 18DIM191	
Processor	
Intel(R) Xeon(R) CPU xxxxxxxxxxxx	
Speed : xxxxMHz	
Count : 1	
System Memory	←→ Select Screen
Size : 1024MB	↑ ↓ Select Item
	+ - Change Field
System Time [16:52:34]	Tab Select Field
System Date [Sat 02/14/2009]	F1 General Help
System Serial Number :	F10 Save and Exit
NIC#1 MAC Address : 00-21-5A-4A-11-21	ESC Exit
NIC#2 MAC Address : 00-1E-0B-4A-89-24	
Asset Tag []	
POST F1 Prompt [Delayed]	
V02. 61(C) Copyright 1985-2006, American Megatrends, Inc.	

Use this menu to configure the following items:

- View product name.
- View BIOS build date and ROM ID.
- View processor information and system memory size.
- Set system time and date.
- View system serial number.
- View NIC 1&2 MAC addresses.
- Configure asset tags and POST F1 Prompt settings.

Advanced menu

Figure 113 Advanced Menu of the BIOS Setup Utility

ROM-based Setup Utility	
Main <Advanced> Boot Security Exit	
Advanced Settings	Custom: Allow to configure Efficiency/Performance related items individually.
WARNING: Setting wrong values in below sections may cause system to malfunction.	Efficiency/Performance: Impact groups as CPU Configuration/CPU bridge Configuration/PCI Express Configuration
Power Efficiency Mode [Efficiency]	
▶ CPU Configuration	
▶ CPU Bridge Configuration	
▶ SATA Configuration	
▶ SuperIO Configuration	
▶ USB Configuration	
▶ PCI Configuration	
▶ PCI Express Configuration	
▶ IPMI Configuration	
▶ BIOS Serial Console Configuration	←→ Select Screen
▶ Trusted Computing	↑ ↓ Select Item
▶ Intel VT-d Configuration	Enter Go to Sub Screen
	F1 General Help
	F10 Save and Exit
	ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	



WARNING: Incorrect settings may cause the server to malfunction. To correct the settings, press the F9 key to restore the default settings.

- CPU Configuration—Configure CPU settings.
- CPU Bridge Configuration—Configure CPU bridge settings.
- SATA Configuration—Configure SATA settings.
- SuperIO Configuration—Configure Super I/O settings.
- USB Configuration—Configure USB settings.
- PCI Configuration—Configure PCI settings.
- PCI-Express Configuration—Configure PCI Express settings.
- IPMI Configuration—Configure the IPMI settings.
- BIOS Serial Console Configuration—Configure the BIOS Serial Console settings.

- Trusted Computing—Configure trusted computing settings.
- Intel VT-d Configuration—Configure Intel VT-d settings.

Figure 114 IPMI Submenu of the BIOS Setup Utility

ROM-based Setup Utility	
Main <Advanced> Boot Security Exit	
IPMI 2.0 Configuration	InPut for Set LAN
Status Of BMC Working	Configuration command.
BMC Firmware Revision 09.57	NOTE: -
BMC/IPMI FW Date: Jan/13/201	Each question in
BMC SDR Version: X.XX.XX.XXX	This group may take considerable amount of time.
Warehouse Build Number:XXX	
▶ Set LAN Configuration	
▶ SEL Configuration	
▶ Hardware Health Information	
▶ Watchdog Configuration	
▶ Serial Port Configuration	
	←→ Select Screen
	↑ ↓ Select Item
	Enter Go to Sub Screen
	F1 General Help
	F10 Save and Exit
	ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	

- Status of BMC—Display the status of the BMC.
- BMC Firmware Revision—Display the version of the BMC hardware and firmware.
- BMC/IPMI FW Date—View BMC/IPMI FW date.
- BMC SDR Version—View BMC SDR version.
- Warehouse Build Number—View Warehouse Build Number.
- Set LAN Configuration—Set LAN settings.
- SEL Configuration—Display BMC event log.
- Hardware Health Information—Set temperature and fan rotation rate.
- Watchdog Configuration—Configure watch dog timer status.
- Serial Port Configuration—Configure serial port connection settings.

Boot menu

Figure 115 Boot Menu of the BIOS Setup Utility

ROM-based Setup Utility	
Main Advanced <Boot> Security Exit	
Boot Settings ▶ Boot Settings Configuration ▶ Standard Boot Order USB Device Boot Priority [High]	Configure Settings during System Boot.
Restore on AC Power Loss [Last State]	← → Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	

- Boot Settings Configuration— Configure settings during system boot.
- Standard Boot Order—View and configure standard boot order settings.
- USB Device Boot Priority— Configure priority settings for USB devices. Users can configure the BIOS to avoid attempting to boot non-bootable USB devices that are left plugged into the server during POST. The options are High (default) and Low.
- Restore on AC Power Loss—View and configure settings to restore AC power loss.

Security menu

Figure 116 Security Menu of the BIOS Setup Utility

ROM-based Setup Utility	
Main Advanced Boot <Security> Exit	
Security Settings	Install or Change the Password.
Admin Password: Not Installed	
User Password: Not Installed	
Change Admin Password	
Boot Sector Virus Protection [Disabled]	← → Select Screen ↑ ↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	

Use this menu to configure the following items:

- Admin Password—Indicate if an admin password has been installed to the system.
- User Password—Indicate if a user password has been installed to the system.
- Change Admin Password—Modify or change your admin password.
- Boot Sector Virus Protection— Set Enabled to boot sector virus protection. The options are Enabled and Disabled.

Exit menu

Figure 117 Exit Menu of the BIOS Setup Utility

ROM-based Setup Utility	
Main Advanced Boot Security Chipset <Exit>	
Exit Options	Exit system setup after saving the changes.
Save Changes and Exit	F10 key can be used for this operation.
Discard Changes and Exit	
Discard Changes	
Restore Default Settings	
	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	

Use this menu to save changes or discard changes. When you save and exit, the server reboots.

- Save Changes and Exit—Save the changes you have made and exit the BIOS Setup Utility.
- Discard Changes and Exit—Exit the BIOS Setup Utility without saving the changes you have made.
- Discard Changes—Discard (cancel) any changes you have made. F10 can be used for this operation. You will remain in the Setup Utility.
- Restore Default Settings—Restore the default settings for all items in the BIOS Setup.

BIOS update

HP recommends that you update the server BIOS with the latest system BIOS version to take advantage of the most recent compatibility fixes. The latest BIOS version for your server can be downloaded from <http://www.hp.com>.

Clear CMOS

You may need to clear the Setup configuration values (CMOS) if the configuration has been corrupted, or if incorrect settings made in the Setup Utility have caused error messages to be unreadable.

To clear CMOS:

1. Perform the Pre-installation procedure.
2. If necessary, remove any accessory boards or cables that prevent access to the system configuration switch.
3. Locate the system maintenance jumper (J27-A) on the system board.
4. Press the button. AC power must not be connected.
5. Perform the Post-installation instructions.
6. During POST, press F10 to access the Setup Utility.
7. Load setup defaults by pressing F9.
8. Set time, date, and other system values.
9. Press F10 to close the Setup Utility.

NOTE: Clearing CMOS restore all system configurations and password default settings.

Power-On Self-Test (POST)

Before you can use a server, all devices must be tested and initialized, and the operating system must be bootstrapped to the memory. This is referred to as Power-On Self-Test or POST. POST is a series of diagnostic tests that checks firmware and hardware components on the system to ensure that the server is properly functioning. This diagnostic function automatically runs each time the server is powered on.

These diagnostics, which reside in the BIOS ROM, isolate server-related logic failures and indicate the board or component that you need to replace, as indicated by the error messages. Most server hardware failures will be accurately isolated during POST. The number of tests displayed depends on the configuration of the server.

During POST you can:

- Press ESC to skip the HP logo and go to POST boot progress display system summary screen.
- Press F10 to access the Setup Utility.
- Press F12 to request a network boot (PXE).
- Press F1 to continue POST after POST errors are detected.

POST error indicators

When POST detects a system failure, it displays a POST error message.

POST error descriptions

When a recoverable type of error occurs during POST, the screen will display an error message with the format "xxx-Error Identifier String" where "xxx" is a unique number code that matches ODM system specific error documentation and may be a hexadecimal or decimal value.

All Error messages describe the problems as shown below:

Table 22 POST Error Messages

Error code	Description
10	Floppy Controller Failure
00B	CMOS Memory Size Wrong
00C	RAM R/W test failed
003	CMOS Battery Low
005	CMOS Checksum Bad
040	Refresh timer test failed
041	Display memory test failed
048	Password check failed
120	\$A0CCMOS Cleared by Jumper. Restore the Jumper and Continue...
122	\$A0CPASSWORD Cleared By Jumper. Restore the Jumper and Continue...
150	Processor failed BIST
160	Processor missing microcode:
192	L3 cache size mismatch
193	CPUID, Processor stepping are different
194	CPUID, Processor family are different
195	Front side bus mismatch. System halted.
196	CPUID, Processor Model are different
197	Processor speeds mismatched
198	Processor QPI speed mismatch detected.
601	Error: BMC Not Responding
605	BMC Has Detected Fatal Hardware Error
611	Internal User Area Of BMC FRU Corrupted
612	Controller Update 'boot block' Firmware Corrupted
613	Controller Operational Firmware Corrupted
620	Non-Redundant Fan Failure or Missing

Table 22 POST Error Messages

Error code	Description
621	Redundant Fan Configuration, One Fan Failure or Missing
622	Redundant Fan Configuration, Multiple Fans Failure or Missing
623	Temperature Violation Detected Waiting 5 minutes for system to cool Press ESC Key to resume booting without waiting for the system to cool Warning: Pressing ESC is NOT recommended as the system may shutdown unexpectedly
624	Power Supply Failure or Power Supply Unplugged
626	Update SDRR/Configuration Image failed
627	Invalid or Unknown SKU/Chassis ID Please check Front panel, System ID Jumper or Riser card Press F1 to Continue
628	Redundant Power Supply Mismatch
701	Insufficient Runtime space for MPS data.!!. System may operate in PIC or Non-MPS mode.
702	No enough APIC ID in range 0-0Fh can be assigned to IO APICs. (Re-assigning CPUs' local APIC ID may solve this issue) MPS Table is not built! System may operate in PIC or Non-MPS mode.

POST related troubleshooting

Perform the following procedures when POST fails to run, displays error messages.

If the POST failure is during a routine boot up, check the following:

- All external cables and power cables should be firmly plugged in.
- The power outlet to the server should be connected and works correctly.
- The server and monitor are both turned on. The bicolour status LED indicator on the front panel must be lit up green.
- The monitor's contrast and brightness settings are correct.
- All internal cables are properly connected and all boards firmly seated.
- The processor is fully seated in its socket on the system board.
- The heat sink assembly is properly installed on top of the processor.
- All memory modules are properly installed.
- If you have installed a PCI accessory board, verify that the board is firmly seated and any jumpers on the board are properly set. Refer to the documentation provided with the accessory board.
- All internal cabling and connections are in their proper order.
- If you have changed the jumpers on the system board, verify that each is properly set.

SETSYS utility

SETSYS.EXE (DOS application) is the correct tool for setting the Serial Number/Asset Tag text on this server after a system board replacement has occurred.

Once the Serial Number/Asset Tag text has been entered via SETSYS, populating the SMBIOS data, the system BIOS will automatically write this info into the BMC IPMI FRU data on the next boot up.

Physical and operating specifications

This chapter provides physical and operating specifications for the HP ProLiant DL160 G6 server. Specifications include:

System unit

Table 23 Hardware Specifications

Item	Components
Processor socket	Intel® FCLGA 1366 socket
Processor	2P Intel Xeon processor 5500 series with integrated memory controller 2P Intel Xeon processor 5600 series with integrated memory controller
Chipset	Tylersberg-36D/ICH-10R
Hardware monitoring device	ServerEngines Pilot 2 management controller
Gigabit ethernet controller	HP NC362i GbE controllers for NIC IPMI card LO100 support
Onboard controller	Integrated into ICH10R SATA (4-port)
ODD & Floppy interface	Optional optical disc drive (SATA) Optional Floppy (USB only, USB key)
Embedded video controller	ServerEngines Pilo2 management controller
I/O subsystem	One PCIe x16 links with x16 slot One PCIe x4 links with x8 slot
Memory	Eighteen DDR3 800/1066/1333 MHz RDIMM/UDIMM slots, up to 144 GB
Default media storage	Two bays hot-plug HDD cage for 3.5" SAS or SATA drives Four bays hot-plug HDD cage for 3.5" SAS or SATA drives Four bays non-hot-plug HDD cage for 3.5" SATA drives Eight bays hot-plug HDD cage for 2.5" SAS or SATA drives
Optical media storage	One slim optical disc drive bay for DVD-ROM drive on the front
I/O ports	USB 2.0 ports (two rear USB ports, one internal USB port, two front USB ports), video port, serial port, dual GbE ports and IPMI LAN port.

Table 23 Hardware Specifications

Item	Components
Status LED indicators	System Health LED NIC 1/2 activity LED
Front panel	Power Switch/LED Hard drive activity LED indicator UID Switch/LED
Rear panel	UID LED LAN link status
System board	BMC activity LED
Power supply unit	460 W hot-plug, power supply 500 W non-hot-plug, power supply 750 W hot-plug, power supply
Thermal solution	Six system fans

Table 24 Physical Dimensions

Item	Description
System board platform	ATX (Advanced Technology Extended)
System board dimension	304.8 mm x 330.2 mm (12 in x 13 in)
Server dimensions (H x W x D) Rack	43 mm x 448 mm x 713 mm (1.69 in. x 17.64 in. x 28.07 in.)
Server weight	Basic configuration (excludes monitor): 14~20kg

Table 25 Environmental Specifications

Item	Description
Temperature:	
Operating	+10°C to +35°C (+50°F to +95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Storage	-30°C to 60°C (-22°F to 140°F)
Wet-bulb temperature	38.7°C (101.7°F)
Relative humidity:	
Operating	10% to 90% (non-condensing)
Non-operating	5% to 95%
Storage	5% to 95%
Altitude:	
Operating	0 to 3049 m (0 to 10,000 ft)
Non-operating	0 to 9146 m (0 to 30,000 ft)
Thermal output (maximum operating)	950 W @ 90 V 1075 W @ 108 V 1375 W @ 180 V
Acoustic emissions	LWad: 6.3 Bels
Normal configuration	(operating at room temperature) LWad: 6.3 Bels (Idle at room temperature)

Table 26 Power Supply Specifications / 460 W Hot-plug

Item	Description
Dimensions (H x W x D)	38.48 mm x 86.36 mm x 190.5 mm (1.52 in x 3.4 in x 7.5 in)
Weight (approximate)	1.36 kg
Input requirements:	
Rated input voltage	90 VAC to 264 VAC
Normal line voltage	100 VAC to 120 VAC/200 VAC to 240 VAC

Table 26 Power Supply Specifications / 460 W Hot-plug

Item	Description
Line frequency	47–63 Hz
Rated input current	6.0 ARMS max @ 100 V 5.0 ARMS max @ 120 V 3.00 ARMS max @ 200 V to 240 V
BTU rating	N/A
Power supply output power:	
Rated steady state power	460 W
Maximum peak power	N/A
Temperature range:	
Operating	+5°C to +50°C
Shipping	–40°C to +85°C
Relative humidity:	
Operating	5% to 95% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Table 27 Power Supply Specifications / 500 W Non-hot-plug

Item	Description
Dimensions (H x W x D)	40 mm x 86 mm x 280 mm (1.57 in x 3.39 in x 11.02 in)
Weight (approximate)	1.36 kg
Input requirements:	
Rated input voltage	90 VAC to 264 VAC
Normal line voltage	100 VAC to 120 VAC/200 VAC to 240 VAC
Line frequency	47–63 Hz
Rated input current	10.0 ARMS max @ 100 V to 120 V 5.0 ARMS max @ 200 V to 240 V
BTU rating	N/A
Power supply output power:	
Rated steady state power	500 W
Maximum peak power	N/A
Temperature range:	
Operating	+5°C to +50°C
Shipping	–40°C to +85°C
Relative humidity:	
Operating	5% to 95% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Table 28 Power Supply Specifications / 750 W Hot-plug

Item	Description
Dimensions (H x W x D)	38.48 mm x 86.36 mm x 190.5 mm (1.52 in x 3.4 in x 7.5 in)
Weight (approximate)	1.36 kg
Input requirements:	
Rated input voltage	90 VAC to 264 VAC
Normal line voltage	100 VAC to 120 VAC/200 VAC to 240 VAC
Line frequency	47–63 Hz
Rated input current	9.10 ARMS max @ 100V 5.10 ARMS max @ 200V
BTU rating	N/A
Power supply output power:	
Rated steady state power	750 W
Maximum peak power	N/A
Temperature range:	
Operating	+5°C to +50°C
Shipping	–40°C to +85°C
Relative humidity:	
Operating	5% to 95% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Table 29 Power Supply Specifications / 750 W Non-hot-plug

Item	Description
Dimensions (H x W x D)	40 mm x 86 mm x 280 mm (1.57 in x 3.39 in x 11.02 in)
Weight (approximate)	1.36 kg
Input requirements:	
Rated input voltage	90 VAC to 264 VAC
Normal line voltage	100 VAC to 120 VAC/200 VAC to 240 VAC
Line frequency	47–63 Hz
Rated input current	9.10 ARMS max @ 100V 5.10 ARMS max @ 200V
BTU rating	N/A
Power supply output power:	
Rated steady state power	750 W
Maximum peak power	N/A
Temperature range:	
Operating	+5°C to +50°C
Shipping	–40°C to +85°C

Table 29 Power Supply Specifications / 750 W Non-hot-plug

Item	Description
Relative humidity:	
Operating	5% to 95% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

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