

ProLiant ML150 Generation 3 Server

Maintenance and Service Guide



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1 Customer self repair

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

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

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

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

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

Parts only warranty service

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

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

Réparation par le client (CSR)

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

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

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

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

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

Service de garantie "pièces seules"

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

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

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo 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 addizionali a seconda del tipo di garanzia previsto per il prodotto.

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

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

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

Servizio di garanzia per i soli componenti

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

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

Customer Self Repair

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

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

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilkatalog 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 garanteservice 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.nl/services/servicepartners>).

Garanteservice "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の修理受付窓口にご電話いただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。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，则根据您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

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

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

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

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

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

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

부품 제공 보증 서비스

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

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

2 Illustrated parts catalog

This chapter provides the illustrated parts breakdown and spare parts lists for the HP ProLiant ML150 Generation 3 server. Information for contacting HP is also provided.

Mechanical Components

Figure 2-1 Mechanical Components

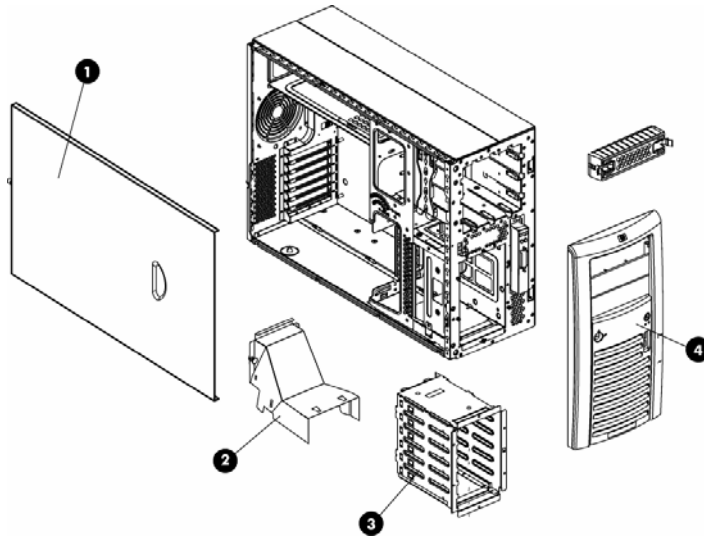


Table 2-1 Mechanical spare parts list

Item	Description	Assembly part number	Spare part number	Customer self repair
1	Access panel	412887-001	413951-001	Mandatory ¹
2	Air Baffle	412885-001	413962-001	Mandatory ¹
3	Hard drive cage	412884-001	413959-001	Mandatory ¹
4	Front bezel	402072-001	410427-001	Mandatory ¹
5	Hardware/Plastics Kit*, including: <ul style="list-style-type: none"> • Media Spring Latch • SCR, 6-32,T15,WF HD,W/SHLDR • Feet • PCI Guides / Latch • LGA 771 CPU Plastic Connector Cover • EMI SHIELD, ML150G3 • Bezel, 5.25" Blank, HP-CBT 	413590-001 242966-001 413592-001 412889-001 412890-001 411552-001 166775-004	410432-001	Mandatory ¹
6	Bezel key*		413952-001	Mandatory ¹

*Not shown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Figure 2-2 System components

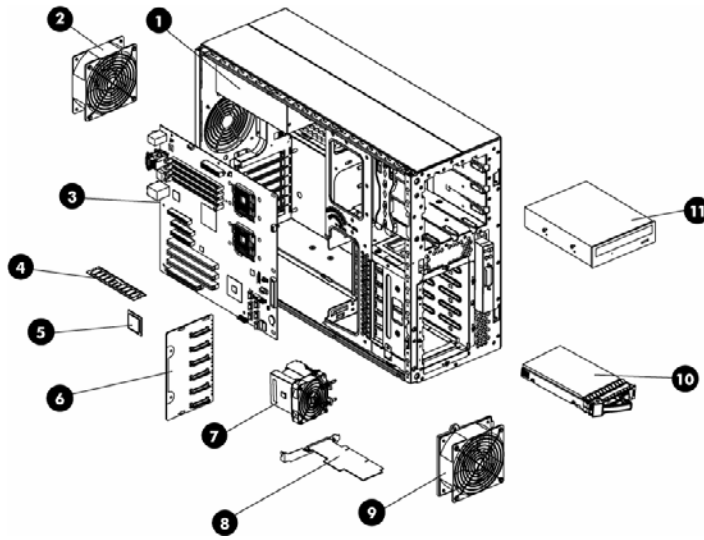


Table 2-2 System components spare parts list

Item	Description	Assembly part number	Spare part number	Customer self repair
1	650-watt power supply unit with cable assembly	402075-001	407730-001	Mandatory ¹
2	Rear system fan	402074-001	410430-001	Mandatory ¹
3	System board	436356-001	436718-001	Optional ²
4	Memory module			
	512MB FBDIMM, DDR2-533	405753-051	409437-001	Mandatory ¹
	512MB FBDIMM, DDR2-667	398705-051	416470-001	Mandatory ¹
	1G FBDIMM, DDR2-533	405754-051	409438-001	Mandatory ¹
	1G FBDIMM, DDR2-667	398706-051	416471-001	Mandatory ¹
	2G FBDIMM, DDR2-533	405755-051	409439-001	Mandatory ¹
	2G FBDIMM, DDR2-667	398707-051	416472-001	Mandatory ¹
5	Processor			
	Dual-Core Intel® Xeon® Processor 5000 series 3.73G 2X2M 1066 FCPGA	398571-001	412955-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5000 series 3.46G 2X2M 1066 FCPGA	398571-003	409425-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5000 series 3.2G 2X2M 1066 FCPGA	398571-002	409424-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5000 series 3.0G 2X2M 667 FCPGA	405176-004	409423-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5000 series 2.8G 2X2M 667 FCPGA	405176-001	409422-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5000 series 2.67G 2X2M 667 FCPGA	405176-003	411724-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5100 series 3.0G 4M 1333 FCLGA	416162-004	416799-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5100 series 2.66G 4M 1333 FCLGA	416162-003	416798-001	Optional ²

Table 2-2 System components spare parts list

Item	Description	Assembly part number	Spare part number	Customer self repair
	Dual-Core Intel® Xeon® Processor 5100 series 2.33G 4M 1333 FCLGA	416162-002	416797-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5100 series 2.0G 4M 1333 FCLGA	416162-001	416796-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5100 series 1.86G 4M 1066 FCLGA	409408-001	416794-001	Optional ²
	Dual-Core Intel® Xeon® Processor 5100 series 1.60G 4M 1066 FCLGA	409408-002	416795-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.66G 2X4M 1066 FCLGA	432231-001	436154-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.40G 2X4M 1066 FCLGA	433027-001	436153-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.13G 2X4M 1066 FCLGA	433027-002	436152-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 1.86G 2X4M 1066 FCLGA	433027-003	436151-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 1.6G 2X4M 1066 FCLGA	433027-004	437945-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.66G 2X4M 1333 FCLGA	437424-002	438363-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.33G 2X4M 1333 FCLGA	437424-001	438362-001	Optional ²
	Quad-Core Intel® Xeon® Processor 5300 series 2.0G 2X4M 1333 FCLGA	437426-001	437946-001	Optional ²
6	Back plane	402010-001	410423-001	Mandatory ¹
7	Processor cooler assembly	399818-001	410421-001	Optional ²
8	SAS controller card	383701-001	366493-001	Mandatory ¹
9	Front system fan	402073-001	410428-001	Mandatory ¹
10	SAS hard drive	375698-001	375874-004	Mandatory ¹
	SATA hard drive	391333-004	405362-001	Mandatory ¹
11	48X CD-ROM	266072-004	413383-001	Mandatory ¹
12	SAS/SATA cable*		410424-001	Mandatory ¹
			413956-001	Mandatory ¹
13	4 in 1 cable*		413957-001	Mandatory ¹
			417011-001	Mandatory ¹
14	2 in 1 cable*		417146-001	Mandatory ¹
15	Return kit*		410433-001	Mandatory ¹

*Not shown

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

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

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

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

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

³No: Non—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.

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.

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
- Third-party hardware or software
- Operating system type and revision level

3 Removal and replacement procedures

This chapter provides subassembly/module-level removal and replacement procedures for the HP ProLiant ML150 Generation 3 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.

Required tools

You need the following tools to perform these procedures:

- T-15 Torx screwdriver
- Flat-blade screwdriver



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.).

Hardware configuration information

⚠ WARNING! Only authorized technicians trained by HP should attempt to repair this equipment. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

⚠ CAUTION: Electrostatic discharge (ESD) can damage electronic components. Be sure that you are properly grounded (earthed) before beginning any installation procedure. Refer to the “Electrostatic Discharge Information” section for more information.

Before removing any serviceable parts, determine whether the part is hot-plug or non-hot-plug.

Non-hot-plug device

If the device is non-hot-plug, you must power down the server. Non-hot-plug devices in the server include the processor, all boards, memory modules, fans, PCI option cards, and all hard drives.


Electrostatic discharge information


ESD can damage static-sensitive devices or microcircuitry. 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.


Symbols on equipment

These symbols may be located on equipment in areas where hazardous conditions may exist.


 **WARNING!** This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult your documentation for specific details.

 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.

 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.


Weight in kg
Weight in lbs


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.

Pre-installation instructions

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

1. Turn off the server and all the peripherals connected to it.
Refer to the Powering down the server section in this chapter for detailed instructions on how to completely power down the server.
2. Unplug all cables from power outlets to avoid exposure to high energy levels that may cause burns if parts are short-circuited by metal objects such as tools or jewelry. If necessary, label each cable for reassembly.
3. Disconnect telecommunication cables to avoid exposure to shock hazard from ringing voltages.
4. Open the server according to the instructions described in the System covers section in this chapter.
5. Follow the ESD precautions listed previously in this chapter when handling a server component.

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

Post-installation instructions

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

1. Make sure that you install all components according to the described step-by-step instructions.
2. Make sure not to leave loose tools or parts inside the server.
3. Reinstall any expansion board(s), peripheral(s), board cover(s), and system cable(s) that have previously been removed.
4. Reinstall the system covers.
5. Connect all external cables and the AC power cord to the system.

6. Press the power button on the front panel to turn on the server.

⚠ CAUTION: Do not operate the server for more than 10 minutes with the access panel and drives removed. Otherwise, improper cooling airflow may damage system components.

Powering down the server

To power down the server:

1. Shut down server as directed by the operating system documentation.
2. Disconnect the AC power cord from the AC outlet and then from the server.
3. Be sure that the power LED indicator is turned off and that the fan noise has stopped.
4. Disconnect all external peripheral devices from the server.

⚠ WARNING! To completely remove all power from the system, disconnect all power cords from server.

⚠ WARNING! Hazardous voltages are present inside the server. Always disconnect AC power from the server and other associated assemblies while working inside the unit. Serious injury may result if this warning is not observed.

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

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

⚠ CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes, and keeps the system in operation during a power failure.

⚠ CAUTION: The server must always be operated with the system covers on. Proper cooling is not achieved when the system covers are removed.

System covers

The access panel and the front bezel are both detachable. You must remove these system covers before you can remove or replace a server component.

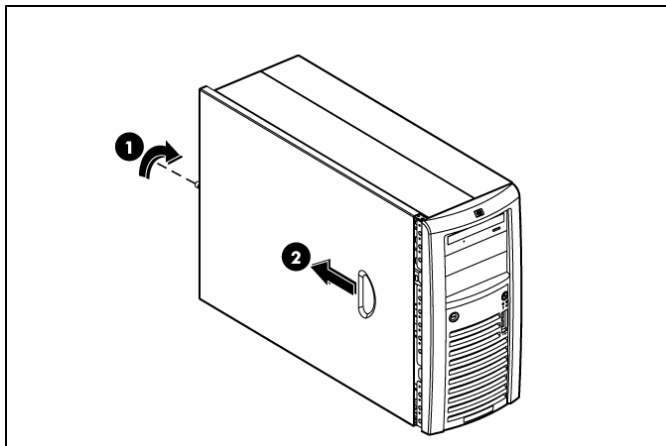
Access panel

To remove the access panel:

1. Loosen the captive thumbscrew located on the rear edge of the access panel.
2. Slide the panel back about 1.3 cm (0.5 in).

⚠ CAUTION: You must remove the access panel to access internal components.

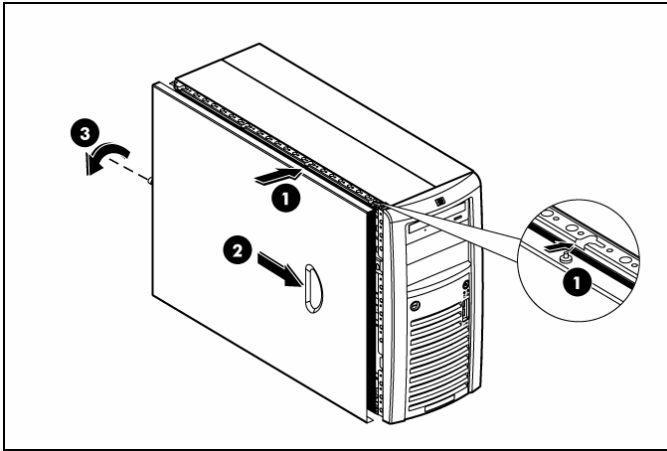
Figure 3-1 Removing the access panel



To replace the access panel:

1. Use both hands to place the access panel flat against the chassis, the back of the access panel extending about 1.3 cm (0.5 inch) behind the back of the server. Make sure the stand-off on the access panel align with the holes on the edges of the chassis.
2. Slide the panel toward the front of the chassis to position it into place.
3. Tighten the captive thumbscrew to secure the panel.

Figure 3-2 Reinstalling the access panel



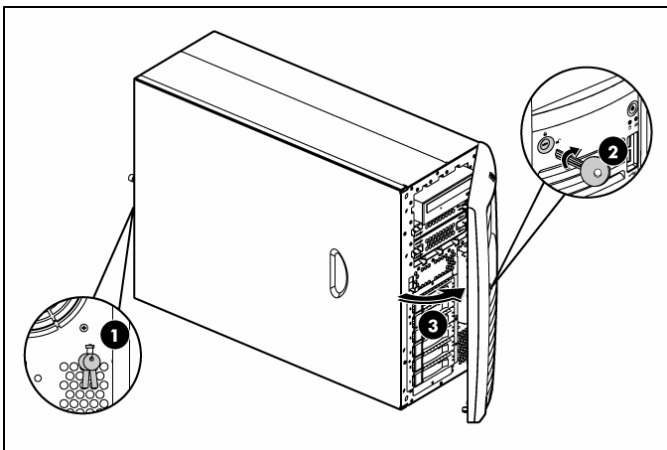
Opening and Closing Front bezel

To open the front bezel:

1. If the bezel door is locked, unlock the bezel door using the key hanging on the rear panel.
2. Open the bezel door fully to the right.

CAUTION: You must open the front bezel to access the hard drives.

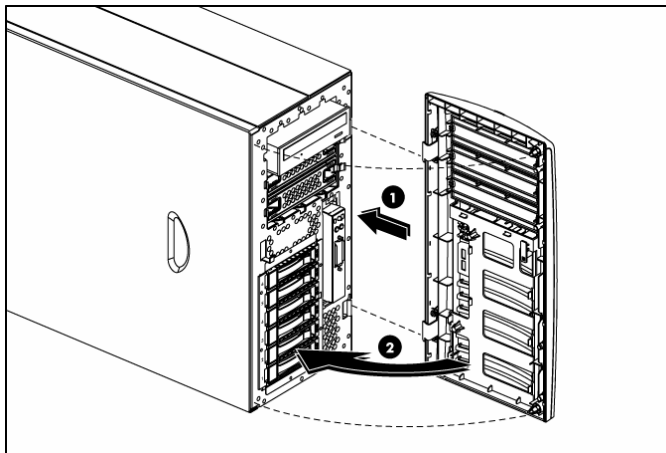
Figure 3-3 Opening the front bezel



To close the front bezel:

1. Insert the two hooks on the right side of the bezel into the rectangular holes on the chassis.
2. Rotate the bezel into place so that the two tabs on the left side of the bezel snap into the slots on the chassis.

Figure 3-4 Closing the front bezel



Drives

You can install two optical drives, one tape drive and six hard drives in the server.

Cable management

- Keep cables away from major heat sources like the cooler.
- 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 an SATA data cable tighter than a 30 mm (1.18 in) radius.
- Never crease an SATA data cable.
- Do not rely on components like the drive cage, power supply, or computer cover to push cables down into the chassis.



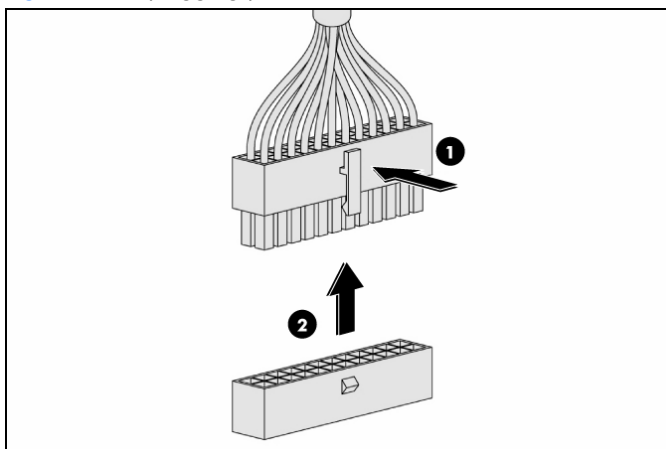
NOTE: Always follow good cable management practices when working inside the computer.

Removing power supply power cables from system boards connectors (P4, P6, P7, P24) follow below steps:

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

CAUTION: Always pull the connector - NEVER pull on the cable. Pulling the cable could cause cable damage and result in power supply failure.

Figure 3-5 Unplugging power cables



Cable connections

The following table provides power supply cable connector labels information and system board connector designators. The first half of the table indicates the label on the power supply cable. The second half of the table provides other cables system board designators. For more detailed information about system board components, see System board components in Chapter 5.

Table 3-1 Cable connections

Cable	To	Cable Designator
Power supply	System board	P1
Power supply	System board CPU power	P2
Power supply	1st optical drive	P3
Power supply	2nd optical drive	P4 (on power supply cable)
Power supply	Tape drive	P5
Power supply	System board memory power	P18
Power supply	Back plane power	P19
Power supply	1st Non-Hot-Plug SATA hard drive	P16 or P17
Power supply	2nd Non-Hot-Plug SATA hard drive	P14 or P15
Power supply	3rd Non-Hot-Plug SATA hard drive	P12 or P13
Power supply	4th Non-Hot-Plug SATA hard drive	P10 or P11
Power supply	5th Non-Hot-Plug SATA hard drive	P8 or P9
Power supply	6th Non-Hot-Plug SATA hard drive	P6 or P7
CPU1 fan connector	System board	P8
CPU2 fan connector	System board	P22
Rear system fan connector	System board	P4 (on system board)
Internal USB 2.0 connector	System board	J32
Front USB 2.0 connector	System board	P20
4-pin front system fan connector	System board	P21
18-pin front panel I/O connector	System board	P10
VGA Port (blue)	System board	P1B
Serial Port (teal)	System board	P1A
External LED connector	System board	P23
SATA1 connector	System board	P17
SATA2 connector	System board	P14
SATA3 connector	System board	P16
SATA4 connector	System board	P13
SATA5 connector	System board	P12
SATA6 connector	System board	P15

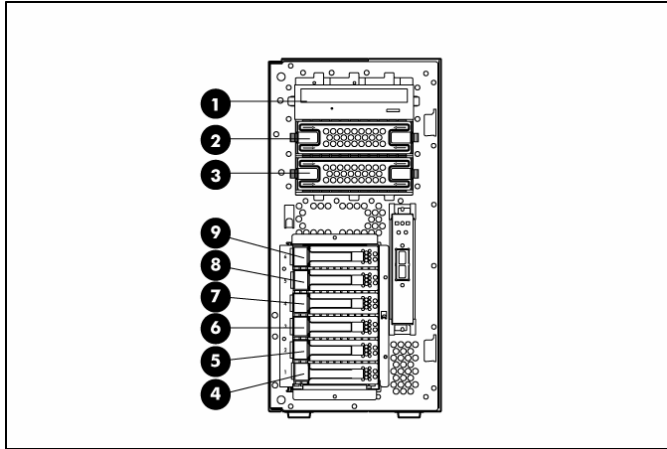
Drive bay configuration

The server supports a maximum of nine internal drives. The two upper drive bays are for optical drives, the third drive bay is for tape drive, while the six lower drive bays are for hard drives. The three upper bays are half height IDE optical bays. The six lower drive bays can accommodate hot-plug or non-hot-plug hard drives.



NOTE: You can install an SATA or SAS hard drive into the second half-height optical bay.

Figure 3-6 Drive bay configuration



- | | | | |
|---|--|---|--|
| 1 | 1 st optical drive | 6 | 3 rd SAS or SATA hard drive |
| 2 | 2 nd optical drive | 7 | 4 th SAS or SATA hard drive |
| 3 | Tape drive | 8 | 5 th SAS or SATA hard drive |
| 4 | 1 st SAS or SATA hard drive | 9 | 6 th SAS or SATA hard drive |
| 5 | 2 nd SAS or SATA hard drive | | |

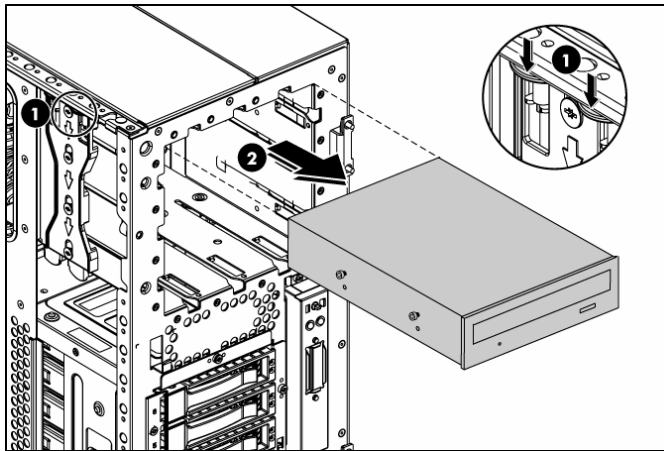
Optical drives

The first optical drive

To remove the optical drive from the server:

1. Disconnect the power and data cables from the rear of the optical drive.
2. Press down the latch drive bracket down and slide the optical drive out from its bay at the same time.

Figure 3-7 Removing the first optical drive



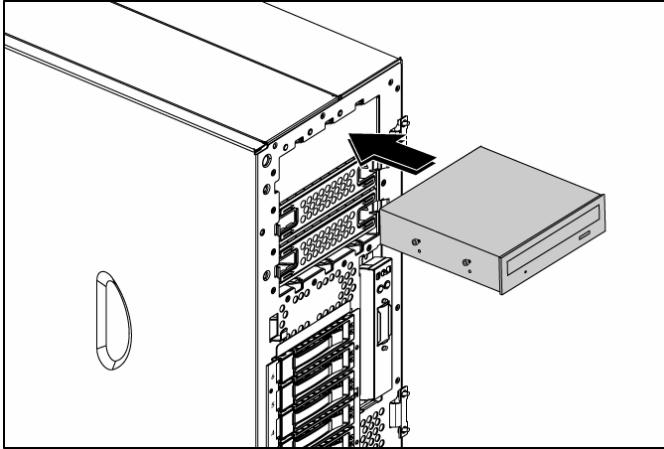
3. Place the old optical drive on a static-dissipating work surface or inside of an anti-static bag.

To install the new optical drive:

1. Remove the new optical drive from its protective packaging.
2. Check that the IDE jumper on the rear section of the optical drive is set to Cable-Select mode.

3. Fix four screws (two on each side) into the new optical drive.
4. Guide the new optical drive into the optical drive bay, with the cable connectors facing the rear of the chassis, and then push the drive all the way into the drive bay until the drive clicks into place.
5. Connect the IDE power and data cables to their connectors on the rear of the drive.

Figure 3-8 Installing the first optical drive

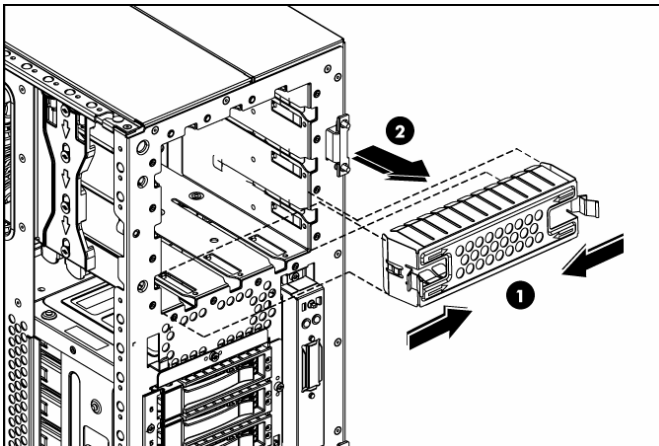


The second optical drive

To remove the EMI shield:

1. Press the two side tabs of the shield to loosen it from the chassis.
2. Pull the shield out of the chassis. Store it for later use.

Figure 3-9 Removing the EMI shield



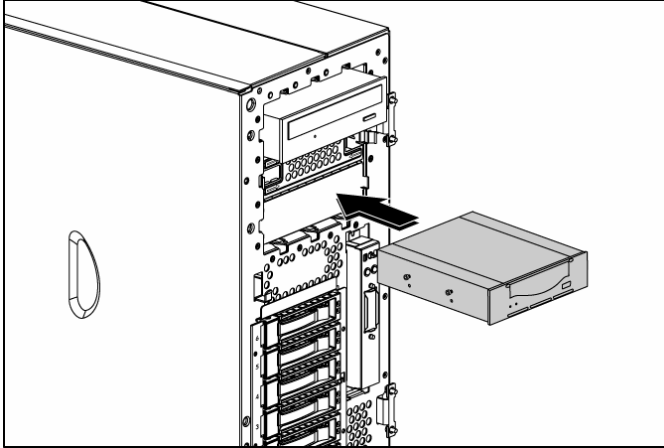
CAUTION: Do not discard the shield. If the drive is removed in the future, you must reinstall the shield to maintain proper system function.

Tape drive

To install the new tape drive:

1. Fix four screws (two on each side) into the new tape drive.
2. Guide the new drive into the bay, with the cable connectors of the drive facing the rear of the chassis, and then push the drive all the way into the chassis until the drive clicks into place.
3. Connect the tape drive power cable and data cables to the connectors on the rear of the drive.

Figure 3-10 Installing a tape drive



CAUTION: Do not discard the shield. If the drive is removed in the future, you must reinstall the shield to maintain proper system function.

Hard drive

You can install either SAS hard drives or SATA hard drives in the server. The bottom six bays (bays 1 to bay 6) are the hard drive bays.

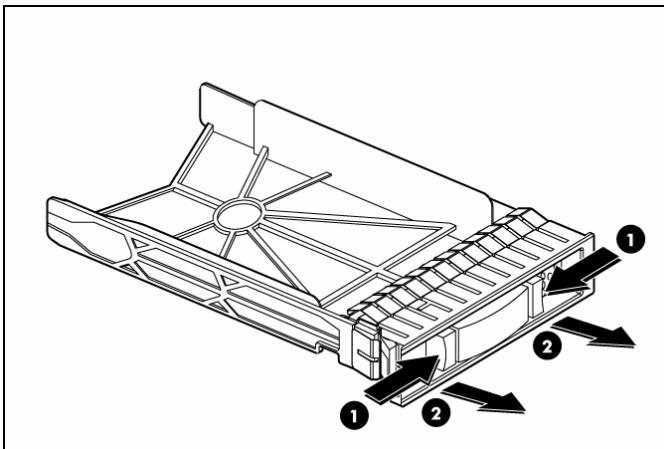
SAS hard drives require that you also install a SAS PCI expansion card (sputnik card). You connect the hard drive data and power cables from the hard drive to the SAS PCI expansion card. For more information about installing PCI expansion cards, see “Expansion cards.”

Hard drive blank carrier

To remove the hard drive blank carrier:

1. Press the two thumb releases to loosen the blank carrier from the drive bay.
2. Gently pull the blank carrier straight out of the drive bay.

Figure 3-11 [Removing the hard drive blank carrier]



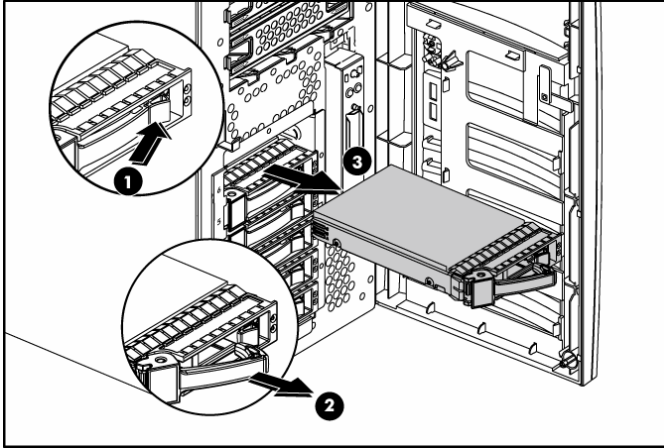
NOTE: The server does not need to be powered off to complete this operation.

SAS or SATA hot-plug hard drive

To remove a SAS or SATA hot-plug hard drive:

1. Push in the thumb release of the desired hard drive carrier.
2. Pull the cam latch towards you.
3. Gently pull the hard drive carrier straight out to disengage the connection from the back plane and then out of the drive bay.

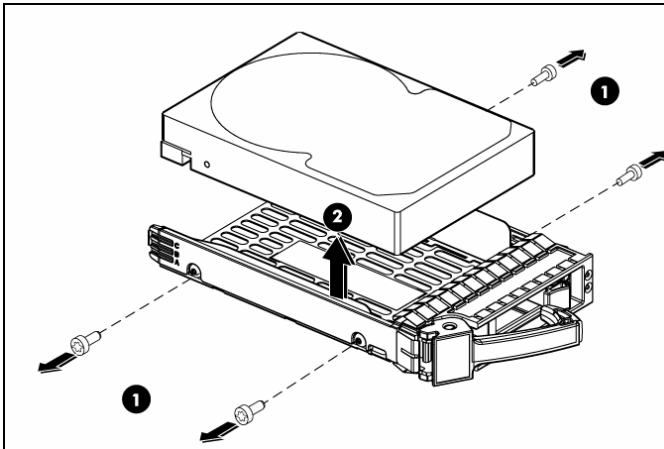
Figure 3-12 Removing a SAS or SATA hot-plug hard drive



To separate the hard drive and the carrier:

1. Remove the two screws on each side of the carrier.
2. Lift the hard drive out of the carrier.

Figure 3-13 Separating the hard drive and carrier



CAUTION: Place the hard drive in an electrostatic protected container.

To assemble the hard drive and the carrier:

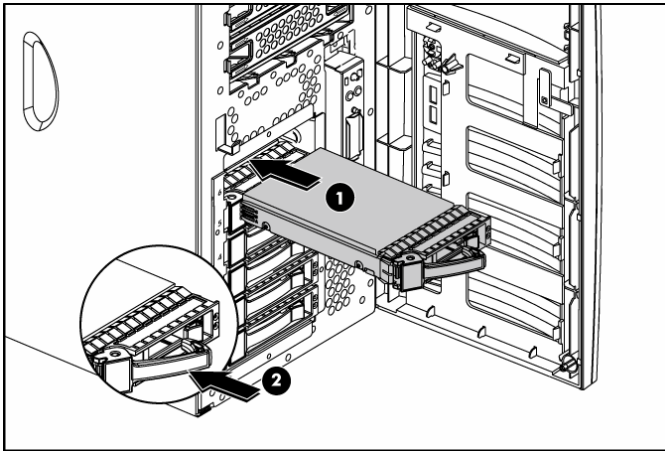
1. Place the hard drive inside the carrier.
2. Replace the two screws to each side of the carrier.

To install SAS or SATA hot-plug hard drive:

1. Slide the hard drive into the drive bay until you feel resistance, and then press firmly until the hard drive is fully seated into the connector on the back plane.
2. Verify the hooks behind the pivot end of the handle engage the hole in the edge of the hard drive cage.
3. Press the cam latch in until you feel the latch click into place.

Closing the cam latch engages the hard drive with the electrical connector in the hot-plug hard drive cage and seats the hard drive.

Figure 3-14 Installing a SAS or SATA hot-plug hard drive



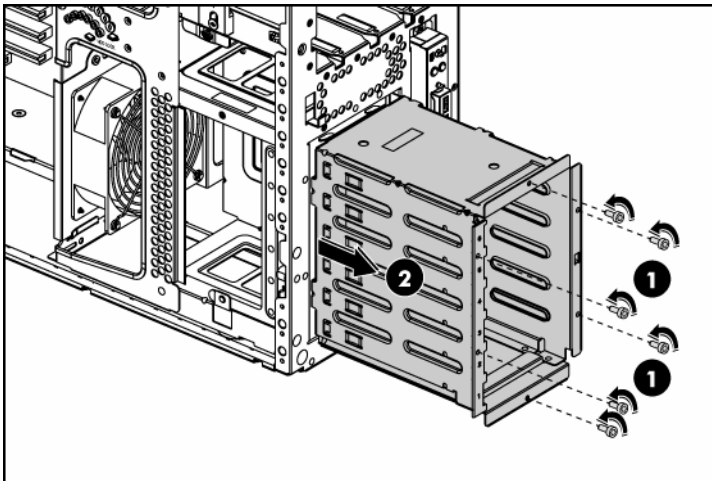
Back plane

To replace the back plane:

⚠ CAUTION: You must remove all blank carriers and hard drives before removing the hard drive cage.

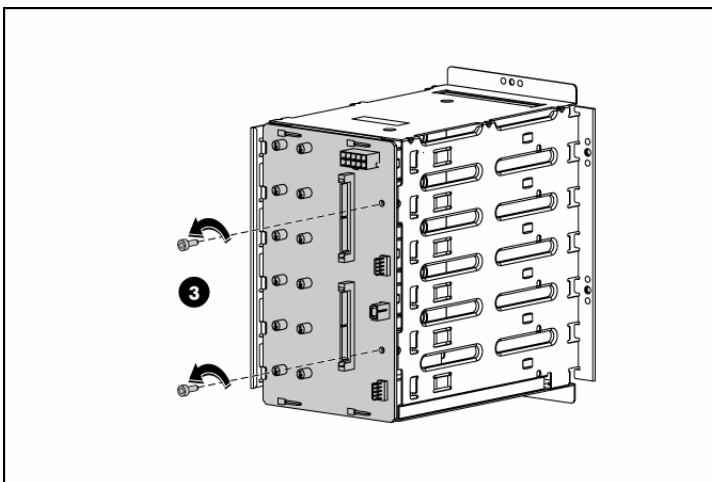
1. Remove the six screws on the hard drive cage to the chassis with a T-15 Torx screwdriver.
2. Pull the hard drive cage from the chassis.

Figure 3-15 Removing the hard drive cage



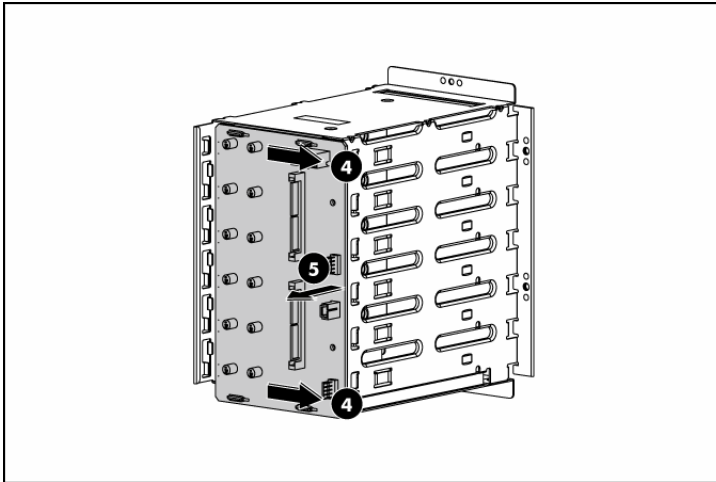
3. Loosen two screws on the back plane on the hard drive cage.

Figure 3-16 Loosen the back plane screws



4. Pull the back plane slightly towards the open side of the hard drive cage to release it from the four hooks.
5. Move the back plane from the hard drive cage.

Figure 3-17 Removing the back plane



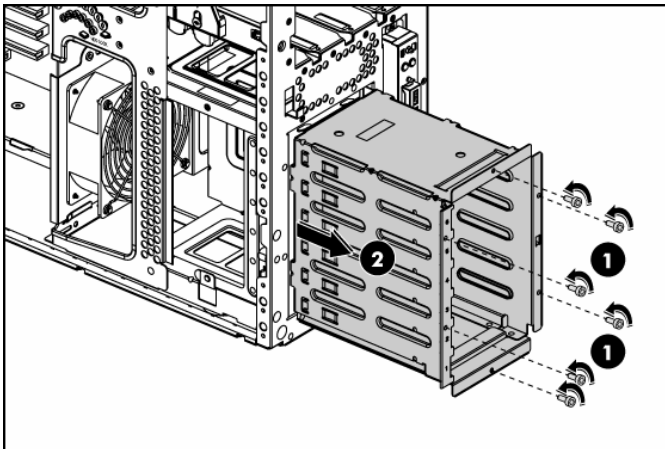
6. To replace the back plane, reverse step 1 to 4.

SAS or SATA hot-plug hard drive cage

To replace the hard drive cage:

1. Remove the six screws on the front securing the hard drive cage to the chassis with a T-15 Torx screwdriver.
2. Pull the hard drive cage out from the chassis.

Figure 3-18 Removing the SAS or SATA hot-plug hard drive cage



3. To replace the SAS or SATA hot-plug hard drive cage, reverse step 1 through 2.

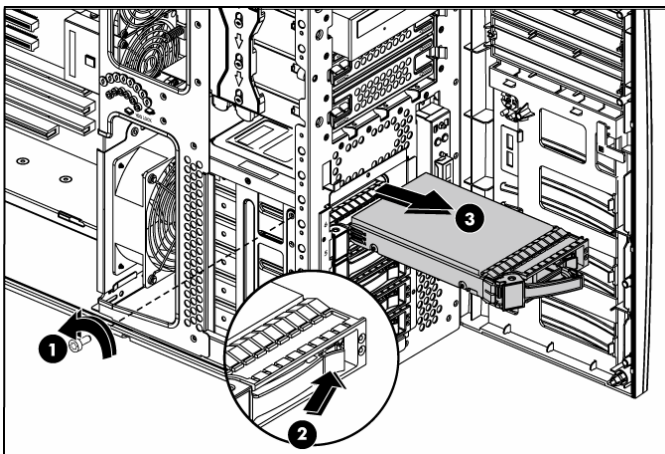
CAUTION: When installing the hard drive cage in the chassis, be sure that the hard drive cage is seated properly on the supporter.

SATA non-hot-plug hard drive

To replace the SATA non-hot-plug hard drive:

1. Remove the screw securing the hard drive to the hard drive cage.
2. Push in the thumb release of the desired hard drive carrier and then pull the cam latch towards you.
3. Gently pull the hard drive carrier straight out to disengage the connection from the back plane and then out of the drive bay.

Figure 3-19 Removing the SATA non-hot-plug hard drive



4. To replace the SATA non-hot-plug hard drive, reverse step 1 to 3.

CAUTION: Place the hard drive in an electrostatic protected container.

CAUTION: Do not stack drives.

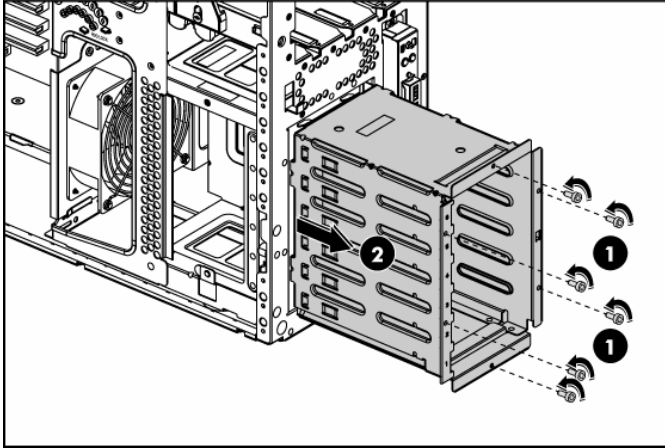
NOTE: Verify if the hard drive is flash with the other hard drives. If the hard drive does not flash, it is not seated properly in the drive bay.

SATA non-hot-plug hard drive cage

To replace SATA non-hot-plug hard drive cage:

1. Remove the six screws on the front securing the hard drive cage to the chassis with a T-15 Torx screwdriver.
2. Pull the hard drive cage out from the chassis.

Figure 3-20 Removing the SATA non-hot-plug hard drive cage



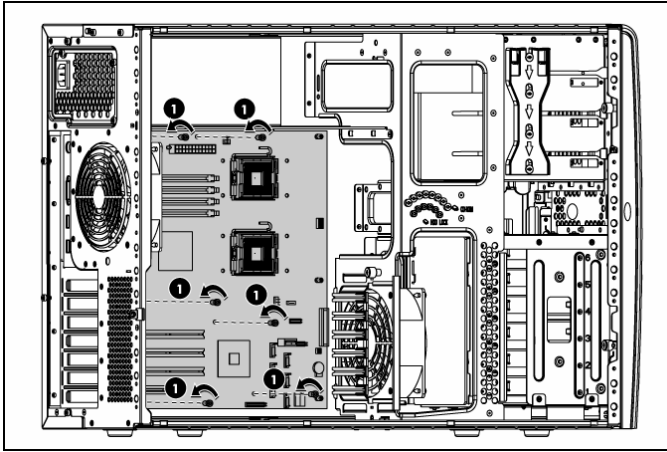
3. To replace the SATA non-hot-plug hard drive cage, reverse step 1 through 2.

System board removal and replacement procedure

To replace system board:

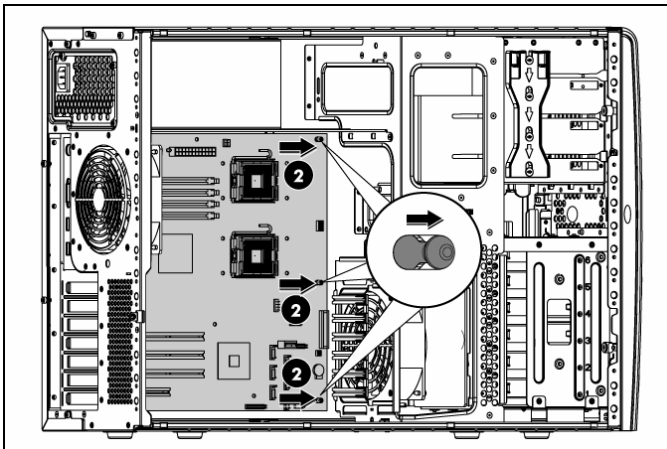
1. Loosen the six screws on the system board.

Figure 3-21 Loosening the system board screws



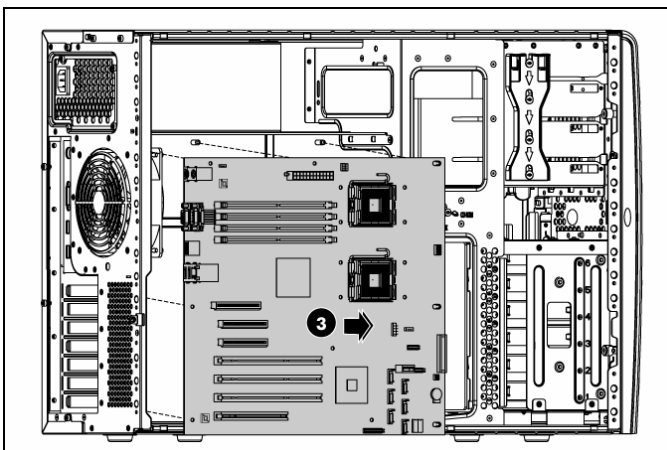
2. Identify the alignment keys and keyhole locations on the system board.

Figure 3-22 the alignment keys and keyhole locations



3. Slide the system board toward the front of the device and lift the system board off the alignment keys.

Figure 3-23 Removing the system board from the chassis



4. To replace the system board, reverse step 1 to 3.

System board components

Refer to the following sections for instructions about how to remove or replace the processor, the memory modules, the expansion cards, and the system battery.

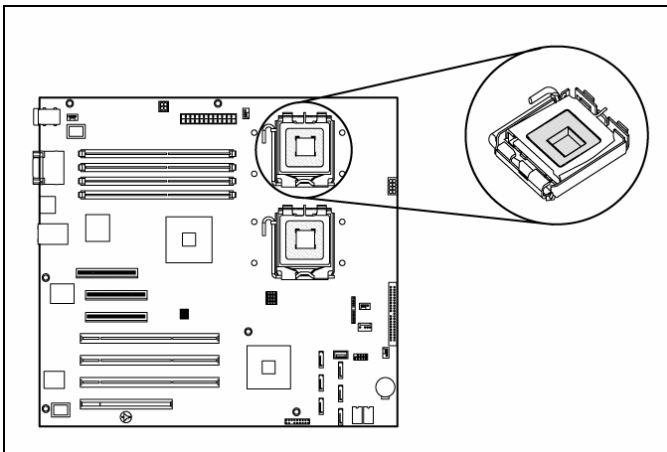
Processor

HP ProLiant ML150 Generation 3 Server supports dual-processor operation. With two processors installed, the server supports boot functions through the processor installed in processor socket 1. However, if processor 1 fails, the system automatically boots from processor 2 and provides a processor failure message.

The LGA771 processor socket supports Dual-Core Intel® Xeon® Processor 2X2M/4M FCPGA 5000/5100 series and Quad-Core Intel® Xeon® Processor 2X4M FCPGA 5300 series.

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

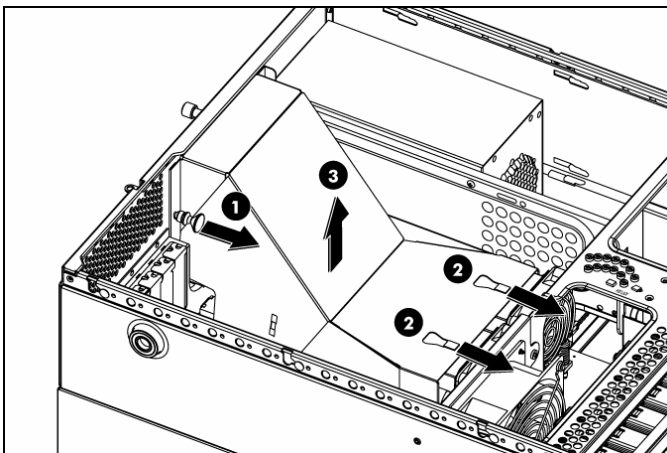
Figure 3-24 LGA771 processor socket



To remove the air baffle:

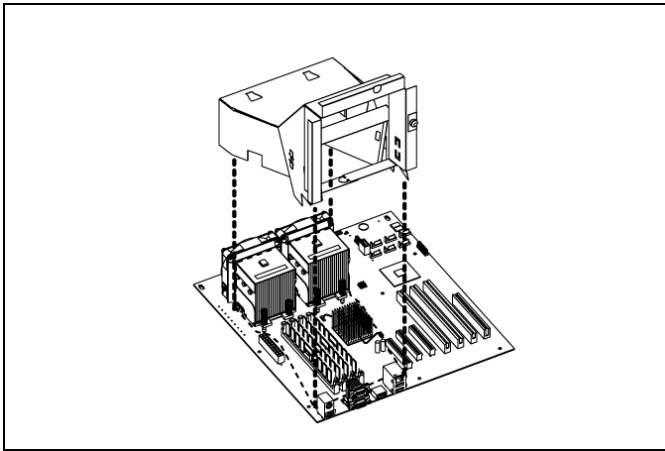
1. Slightly pull the snap rivet (blue color) out a little.
2. Move the air baffle to the inside direction of the chassis to unhook the air baffle from the hooks on the cooler.
3. Take the air baffle out from the chassis.

Figure 3-25 Removing the air baffle



WARNING! The air baffle covers those area in dotted line of system board as shown in the below figure. When removing or installing the air baffle, make sure the location is correct and do not interfere any nearby components.

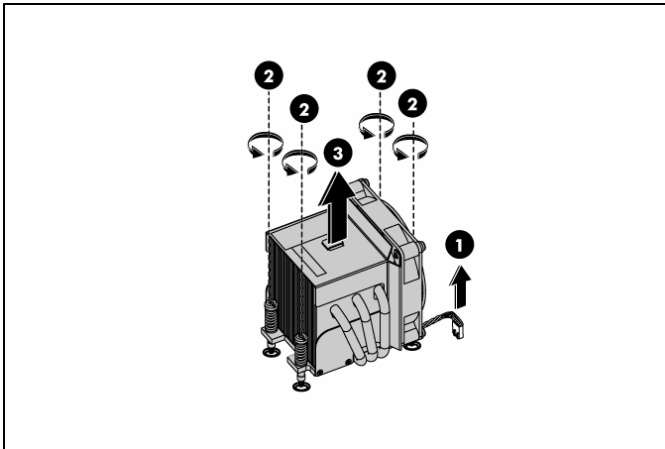
Figure 3-26 Air baffle location:



To remove the cooler:

1. Disconnect the processor fan cable from the connector on the system board (P8 and P22).
2. Twist the mounting pins counterclockwise to loosen them.
3. After you loosen all four mounting pins, lift the cooler away from the system board.

Figure 3-27 Removing the cooler

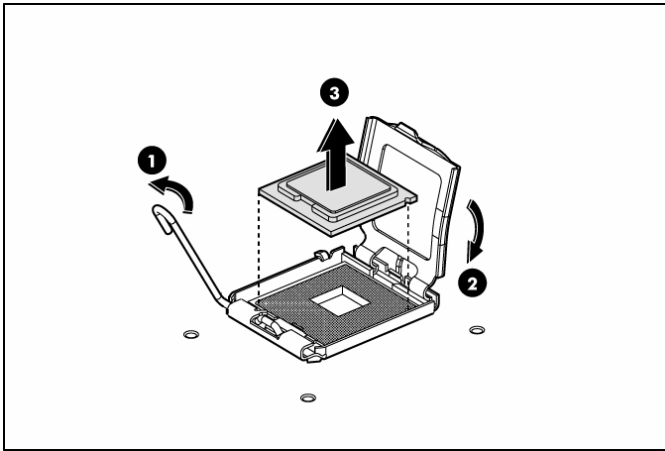


CAUTION: Place the cooler down in an upright position with the thermal patch facing upward. Do not let the thermal patch touch the work surface.

To remove the processor:

1. Disengage the load lever.
2. Lift the retention plate to expose the socket body.
3. Grasp the processor by its edges and lift it out of the socket.

Figure 3-28 Removing the processor



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

CAUTION: To allow the cooler to draw away as much heat as possible from the processor base, there must be a tight connection between the cooler base and the top of the processor. To ensure this connection, you must apply a thermal grease compound.

To apply the thermal grease compound:

1. Use a clean cloth dipped in rubbing alcohol to clean the contact surface on the cooler and on 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 CPU contact surface.

CAUTION: It is recommended to use the thermal grease of X-23-7783D made by Shin-Etsu.

3. Use the edge of a razor blade to spread the grease throughout the entire contact surface and lightly scrape off any excess grease. Make sure that you only apply a very thin layer so that the contact surface is still visible.

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

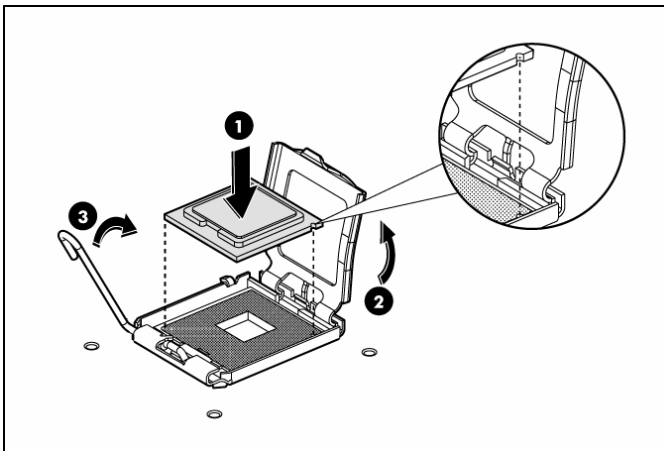
CAUTION: Applying too much grease creates a gap between the contact surfaces, significantly reducing the ability of the cooler to draw out heat. Installing the cooler with excessive grease can also cause the grease to spread over the processor pins or the system board base, which can cause electrical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

To install the new processor:

1. Insert the processor into the socket.
2. Engage the retention plate and the load lever.

CAUTION: With the load lever and the retention plate disengaged, hold the processor by its edges and align it over the empty processor socket. Make sure that you properly align the processor with the orientation notch on the socket.

Figure 3-29 Installing a processor



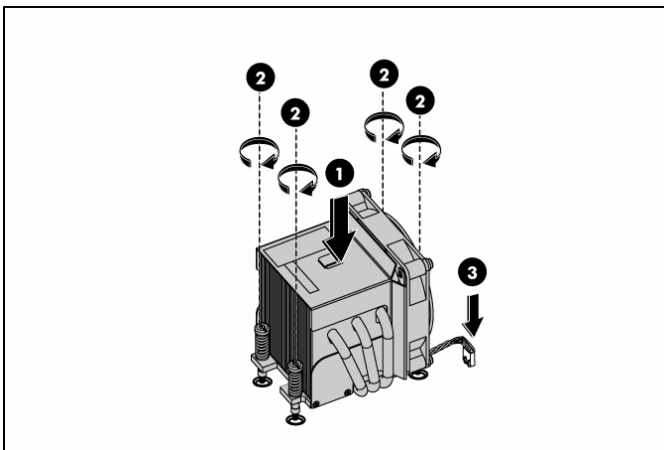
CAUTION: After you install the processor, you must reinstall the cooler on top of the processor socket. The thermal grease you applied on the contact surfaces of the cooler and the processor provides the necessary thermal bonding to allow the cooler to draw away heat from the processor.

To replace the cooler assembly:

1. Properly align the cooler mounting pins to the system board mounting holes and press down until you hear a click.
2. Twist the mounting pins clockwise to secure the cooler connection to the system board.
3. Connect the processor fan cable to the connector on the system board (P8, P22).

CAUTION: Failure to connect the processor fan cable to the system board may result in damage to the processor and could cause the server to shut down without displaying messages.

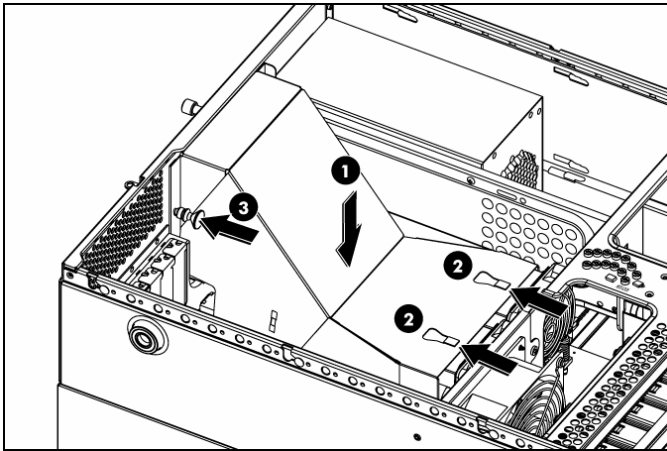
Figure 3-30 Installing the cooler assembly



To install the air baffle:

1. Align the air baffle above the system board and move it downwards. Make sure the location is correct. (Refer to "Figure 3-26 Air baffle location")
2. Move the air baffle towards the rear of the chassis to make the two holes are hooked with the two hooks on the cooler.
3. Press the snap rivet (blue color) into the place so that the air baffle is secured to the chassis.

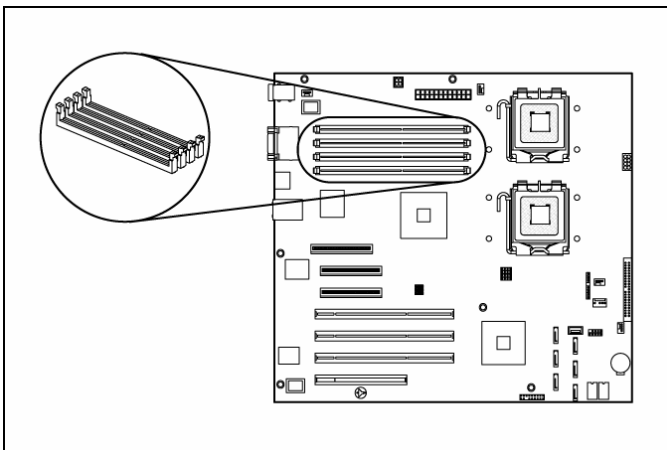
Figure 3-31 Installing the air baffle



Memory

HP ProLiant ML150 Generation 3 server has four DIMM slots that support up to 8 GB maximum system memory (2 GB in each of the four DIMM slots).

Figure 3-32 DIMM slots



Guidelines for installing memory modules

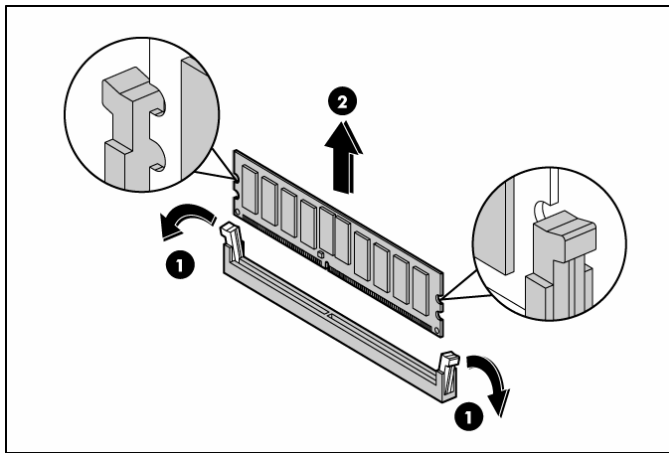
You must adhere to the following guidelines when adding or replacing memory modules:

- For 2P system, both physical processors must be of the same type and speed.
- Use 533/677 MHz ECC FBD (Fully Buffered DIMM).
- Supported DIMM: 512 MB, 1 GB, and 2 GB (Maximum 8 GB system memory size)
- Supported configurations: Single DIMM in slot 1, one identical pair in Slot 1&3, two pairs (4 DIMMs).

To remove memory module:

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

Figure 3-33 Removing a memory module

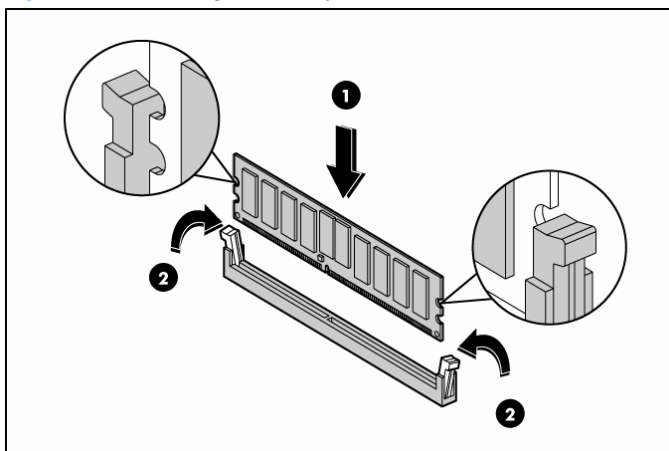


CAUTION: Place the memory module on a static-dissipating work surface or inside of an anti-static bag.

To install a memory module:

1. Orient the module so that the notch on the bottom edge of the module aligns with the keyed surface of the DIMM slot, and then press it fully into the slot.
2. Firmly press the holding clips inward to secure the memory module in place.

Figure 3-34 Installing a memory module



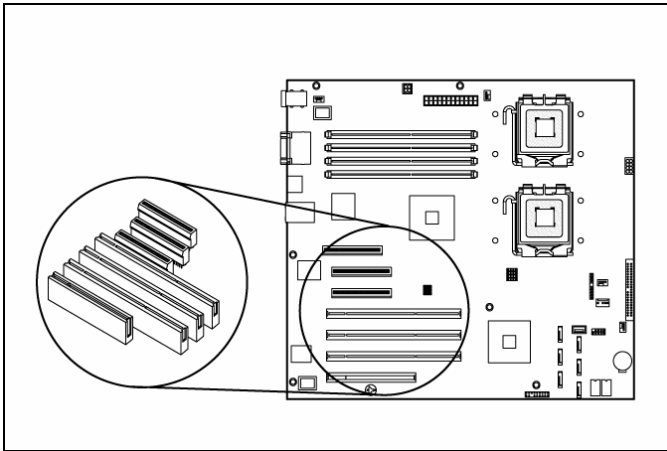
CAUTION: The memory slots are structured to ensure proper installation. If you insert a memory module but it does not fit easily into the slot, you may have inserted it incorrectly. Double-check the orientation of the module and reinsert. If the holding clips do not close, the module is not inserted correctly.

Expansion cards

The server supports the following:

- Three PCI-X slots (64-bit)
- Two PCI-E slots
- One PCI slot (32-bit)
- LO100c Management slot

Figure 3-35 PCI slot location



To remove an expansion card:

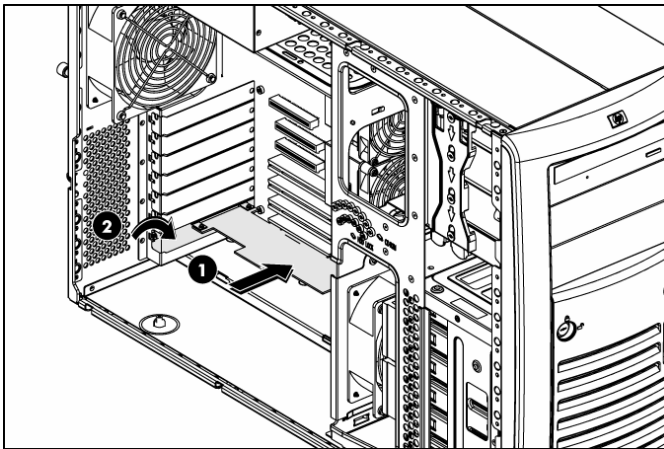
1. Loosen the screw on the PCI expansion card bracket.
2. Hold the card at each end, and then carefully rock the card back and forth until the connectors pull free from the socket.
3. Pull the expansion card straight up from the socket then away from the inside of the chassis to maneuver the card out of the computer.

-
- ⚠ **CAUTION:** Store the old card in the anti-static packaging that contained the new card.
 - ⚠ **CAUTION:** If you are installing a PCI expansion card for the first time in this computer, remove the expansion slot cover by loosening its screw.
 - ⚠ **CAUTION:** Do not discard the slot cover. If the PCI expansion card is removed in the future, the slot cover must be reinstalled to maintain proper cooling.
 - ⚠ **CAUTION:** When installing an expansion card, hold the card just above the expansion slot on the system board, and then move the card toward the rear of the chassis so that the bracket on the card is aligned with the open slot on the rear of the chassis.
-

To installing PCI card:

1. Press the card straight down into the expansion slot on the system board.
2. Tighten the screw on the PCI expansion card bracket.
3. Connect required cables to the card.

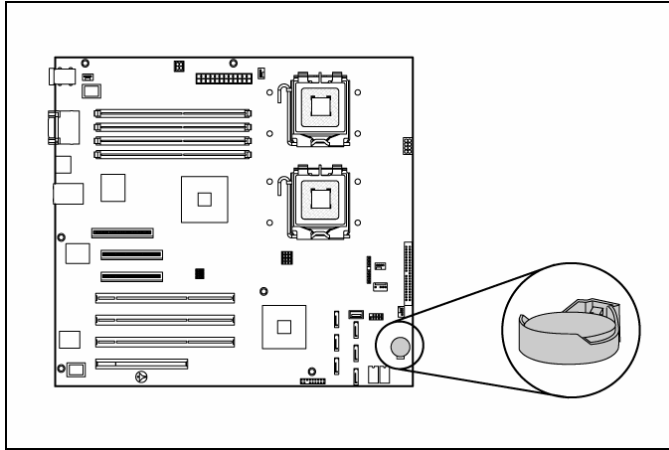
Figure 3-36 Installing PCI card



System battery

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

Figure 3-37 System battery location



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

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

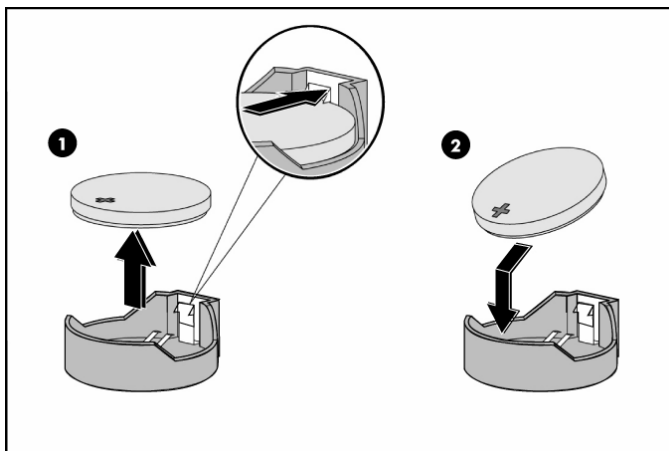
- Replace the battery with the same type as the battery recommended by HP. Use of another battery may present a risk of fire or explosion.
- A risk of fire and chemical burn exists if the battery is not handled properly. Do not disassemble, crush, puncture, or short external contacts, or expose the battery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

WARNING! Loss of BIOS settings occurs when the battery is removed. You must reconfigure BIOS settings whenever you replace the battery.

To replace the system battery:

1. To release the battery from its holder, squeeze the metal clamp that extends above one edge of the battery. When the battery pops up, lift it out.
2. 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 3-38 Replacing the battery



Power supply unit (PSU)

Located on the rear panel of the server is a single standard auto ranging 650-watt PSU with PFC (power factor correction) function.

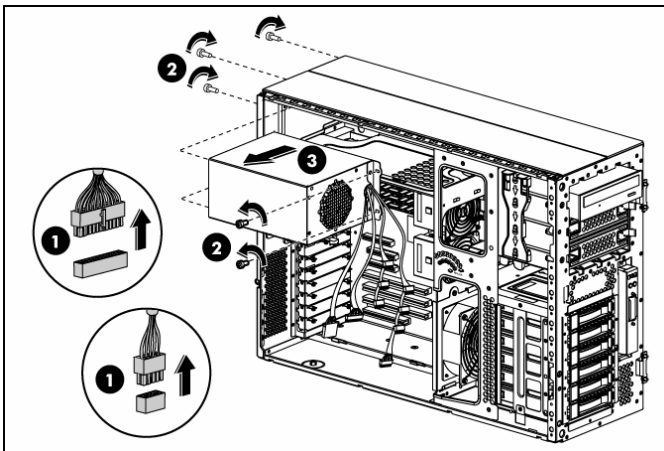
⚠ WARNING! Note the following reminders to reduce the risk of personal injury from electric shock hazards and/or damage to the equipment.

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

To remove the power supply:

1. Disconnect the power cables of all installed drives from the PSU.
2. While supporting the PSU with one hand, remove the two screws in the front and three screws at the back that secure the PSU to the chassis.
3. Take the PSU out of the chassis.

Figure 3-39 Removing the PSU

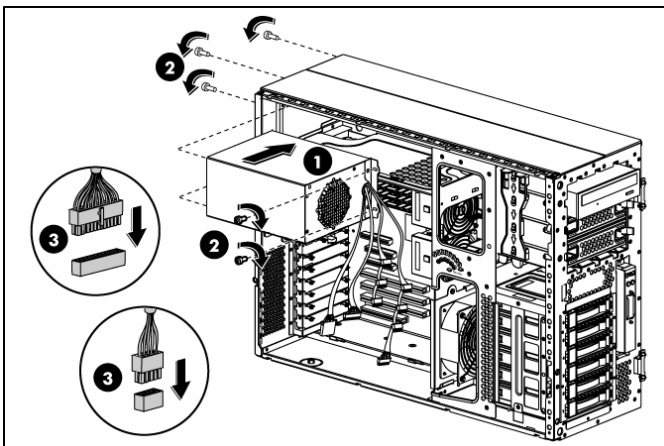


⚠ WARNING! Be sure to support the PSU with your hands when removing the screws that secure it to the chassis. The PSU is heavy and could hurt you or damage system components.

To install a new PSU:

1. Align the new PSU to the support ledges inside of the chassis.
2. While supporting the PSU, secure the PSU to the chassis using five screws.
3. Reconnect the processor and system board power cables to the system board connectors (P4, P6, P7 and P24), and then connect the power cables for all installed drives to the PSU.

Figure 3-40 Installing a PSU



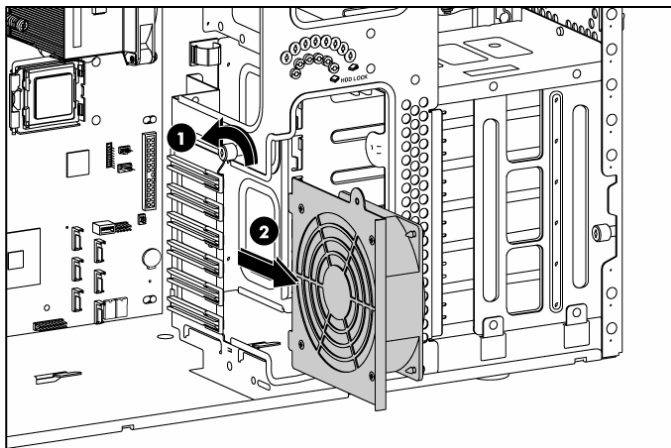
Fan

Front system fan

To remove front system fan module:

1. Loosen the thumbscrew securing the fan.
2. Take the fan out from the chassis.

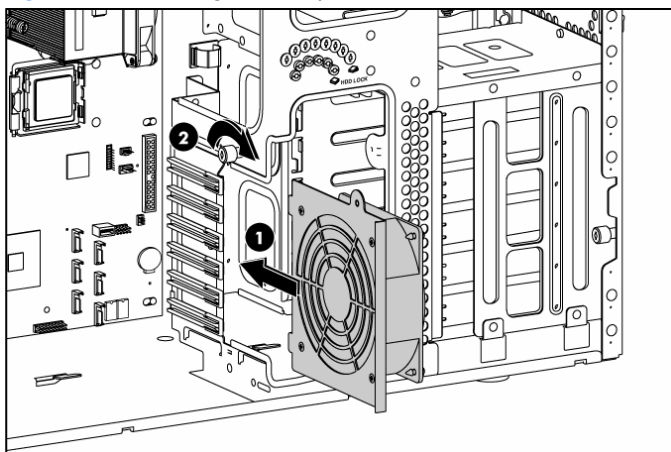
Figure 3-41 Removing the front system fan module



To install a new front system fan:

1. Slot in the fan inside the chassis until it's fully seated.
2. Tighten the thumbscrew.
3. Connect the front system fan cable to the system board (P21).

Figure 3-42 Installing a front system fan module



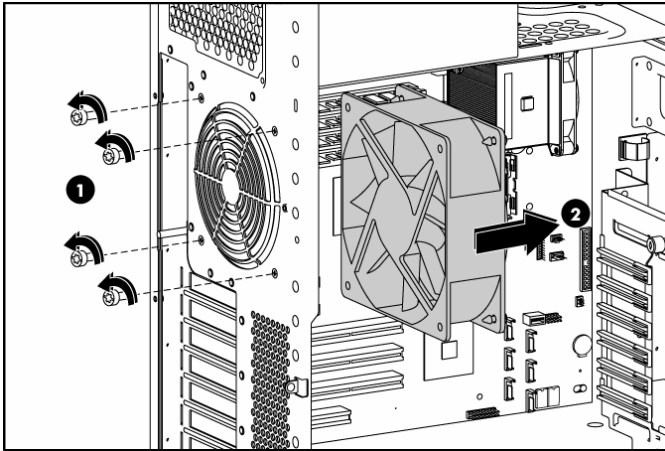
Rear system fan

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

To remove the rear system fan:

1. Disconnect the rear system fan cable from its connector (P4) on the system board.
2. Remove the four screws from the rear of the chassis that secure the fan.
3. Remove the fan from the chassis.

Figure 3-43 Removing the rear system fan module

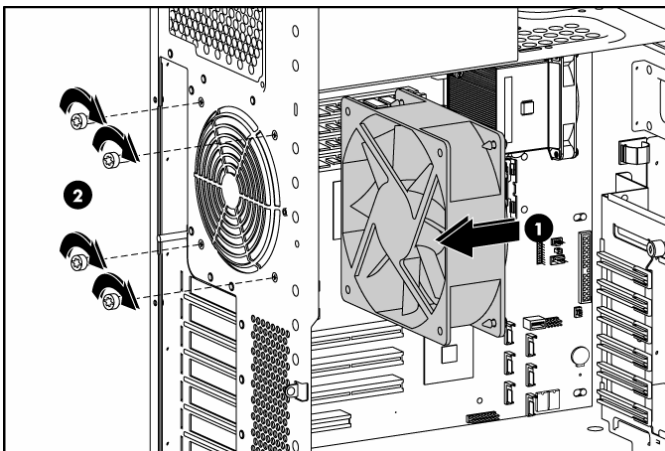


⚠ WARNING! Be sure to support the fan with your hands when removing it from the chassis. The fan could fall onto the system board or an accessory board causing damage if not supported.

To install a new rear system fan:

1. Align the new fan to the screw holes inside the chassis.
2. While holding the new fan against the chassis, replace the four screws that secure the fan to the chassis.
3. Connect the rear system fan cable to its connector (P4) on the system board.

Figure 3-44 Installing a rear system fan module



4 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 Generation 3 server uses BIOS to boot up the system. BIOS software is a ROM BIOS-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 enable various features such as serial console redirection, hyper-threading, PXE boot, and much more.
- Initialize hardware at boot up using POST routines
During power-on or warm reset, the BIOS performs Power-On Self Test (POST) routines to test system components, to allocate resource for various hardware devices, and to 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
- Security
- Boot
- 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 all open applications, then restart the server.
2. When the HP logo is displayed during POST, press **F10**. 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 move between selections on the menu bar. Use the up (↑) and down (↓) arrow keys to select items within a menu.

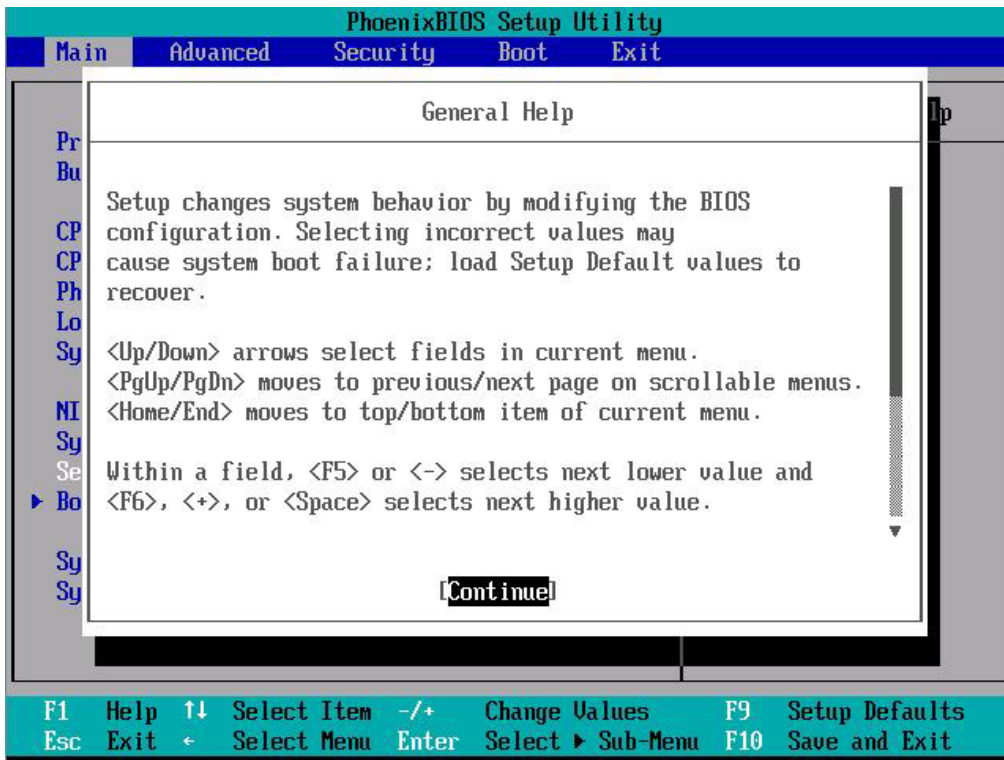
Navigating through the Setup Utility

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. Table 4-1 lists these legend keys and their respective functions.

Table 4-1 Setup Utility Navigation Keys

Key	Function
← and →	To move between selections on the menu bar.
↑ and ↓	To move the cursor to the field you want. The currently selected field is highlighted. The right side of each menu screen displays a field help panel—Item Specific Help panel. This panel displays the help text for the currently selected field. It updates as you move the cursor to each field.
+ (or F6), – (or F5) and <Space>	To select a value for the currently selected field (only if it is user-configurable). Press the (+), (–) or <Space> keys repeatedly to display each possible entry, or the Enter key to choose from a pop-up menu. A parameter that is enclosed in square brackets [] is user-configurable. Grayed-out parameters are not user-configurable for one of the following reasons: <ul style="list-style-type: none"> • The field value is auto-configured or auto-detected. • The field value is informational only. • The field is password-protected.
Enter	To select a field value or display a submenu screen. Displays more option for items marked with ►
Ctrl+Enter	To expands all device list.
Esc or <Alt+X>	If you press this key: <ul style="list-style-type: none"> • On one of the primary menu screens, the Exit menu displays. • On a submenu screen, the previous screen displays. • When you are making selections from a pop-up menu, the pop-up closes without making a selection.
F1 or <Alt+H>	To bring up the General Help window. The General Help window describes other Setup navigation keys that are not displayed on the legend bar.
<Page Up> and <Page Down>	Moves to previous/next page on scrollable menus.
<Home> and <End>	Moves to top/button item of current menu.
F9	To load default system values.
F10	To save changes and close the Setup Utility.

Figure 4-1 Setup Utility General Help screen



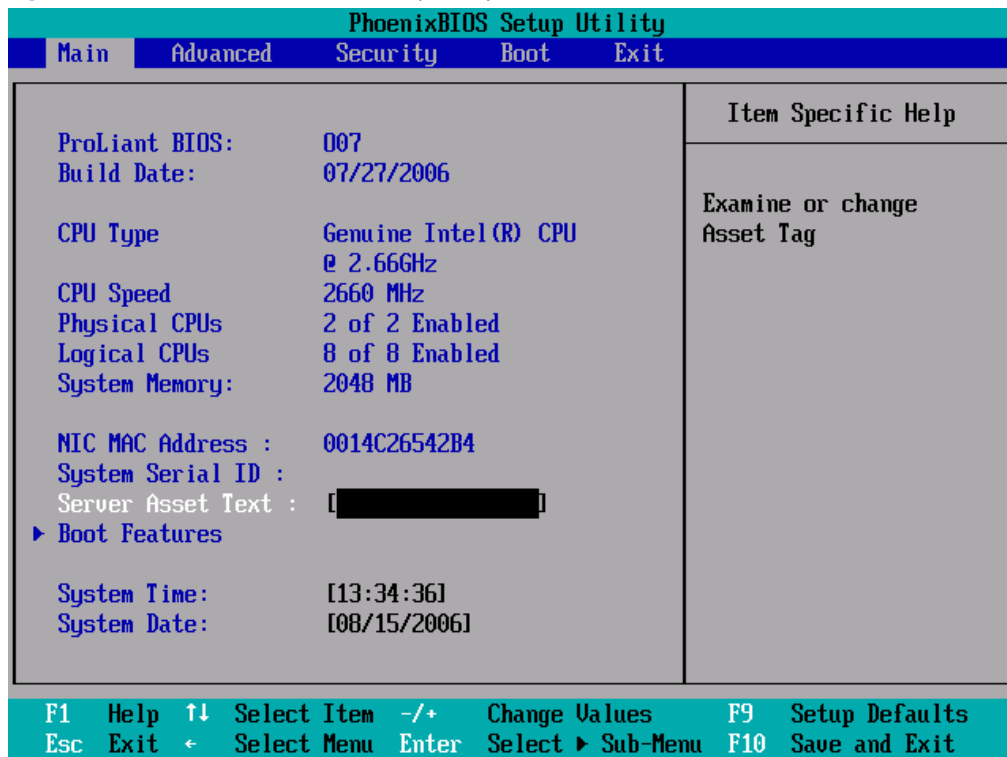
Press F1 to get the general help message box.

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 4-2 Main menu of the BIOS Setup Utility

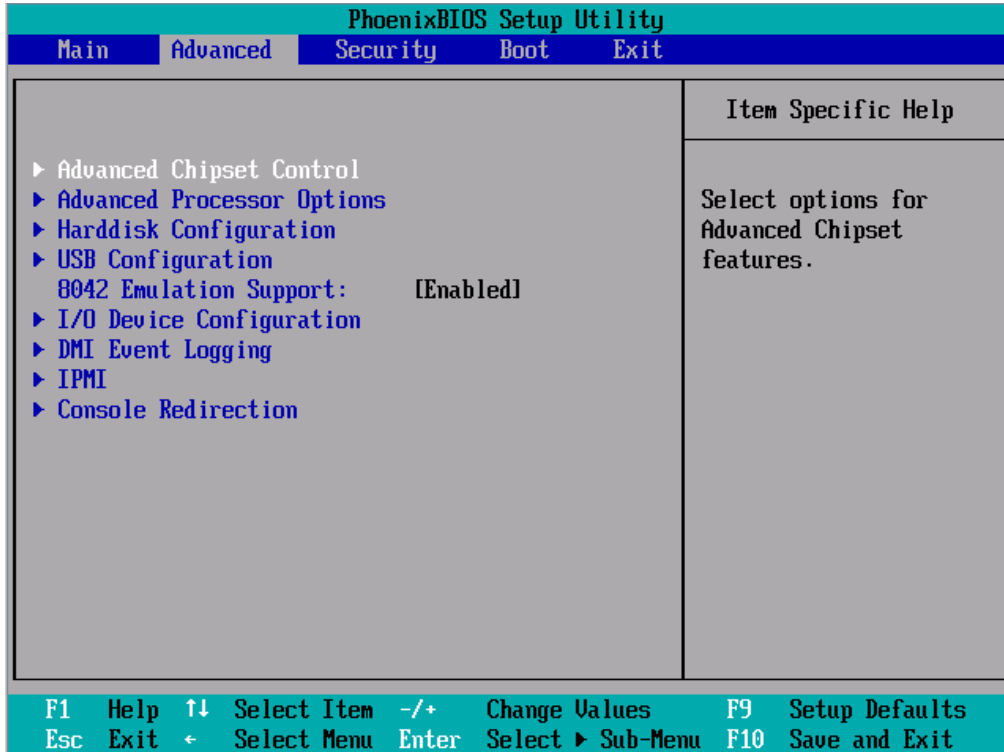


Use this menu to set the system time and date, and configure the following items:

- Set system time and date.
- Set boot features:
 - a. Enable or disable the BIOS summary display.
 - b. Turn on or off boot up Num Lock.
 - c. Set restore on AC power loss options, such as last state, power off, and power on.
 - d. If BIOS displays an error message, set POST F1 Prompt for selections, such as delayed, enabled, or disabled.
- View CPU type / CPU speed information.
- View System memory size.
- View MAC address for the embedded NIC.
- View System serial ID.
- Set Server Asset Text.

Advanced Menu

Figure 4-3 Advanced menu of the BIOS Setup Utility



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

- **Advanced Chipset Control** — Configure the advanced chipset control settings such as the SATA controller mode.
- **Advanced Processor Options** — Enable or disable Intel Virtualization technology for the processor supported.
- **Harddisk Configuration** — Configure the hard disk settings of the server.
View CD-ROM status and SATA hard drive status.
- **USB Configuration** — Configure the USB settings of the server.
- **8042 Emulation Support** — Normally enabled. Disable for Red Hat Linux 64bit installation.
- **I/O Device Configuration** — Configure the serial port settings of the server.
- **DMI Event Logging** — Allow you to view the DMI event log, clear the log, enable or disable this feature, and mark the event as read.
- **Embedded NIC PXE** — Enable or disable PXE boot support.
- **IPMI** — Configure the Intelligent Platform Management Interface (IPMI) settings.
- **Console Redirection** — Configure the settings when redirect the console to a serial port.

IPMI Submenu

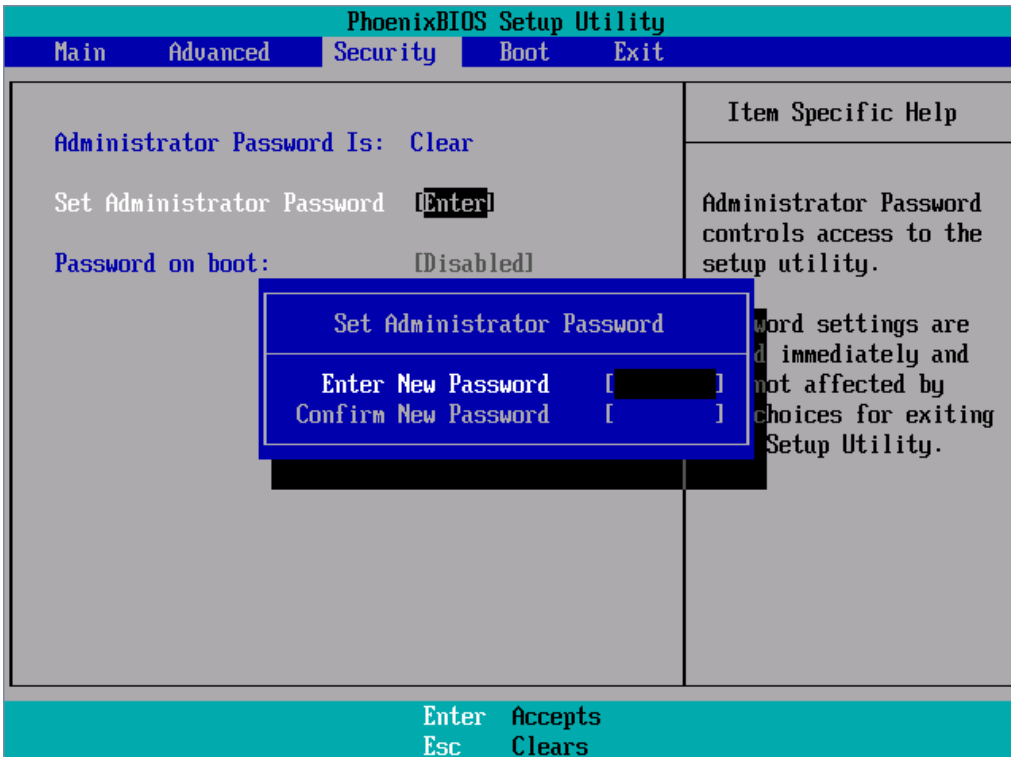
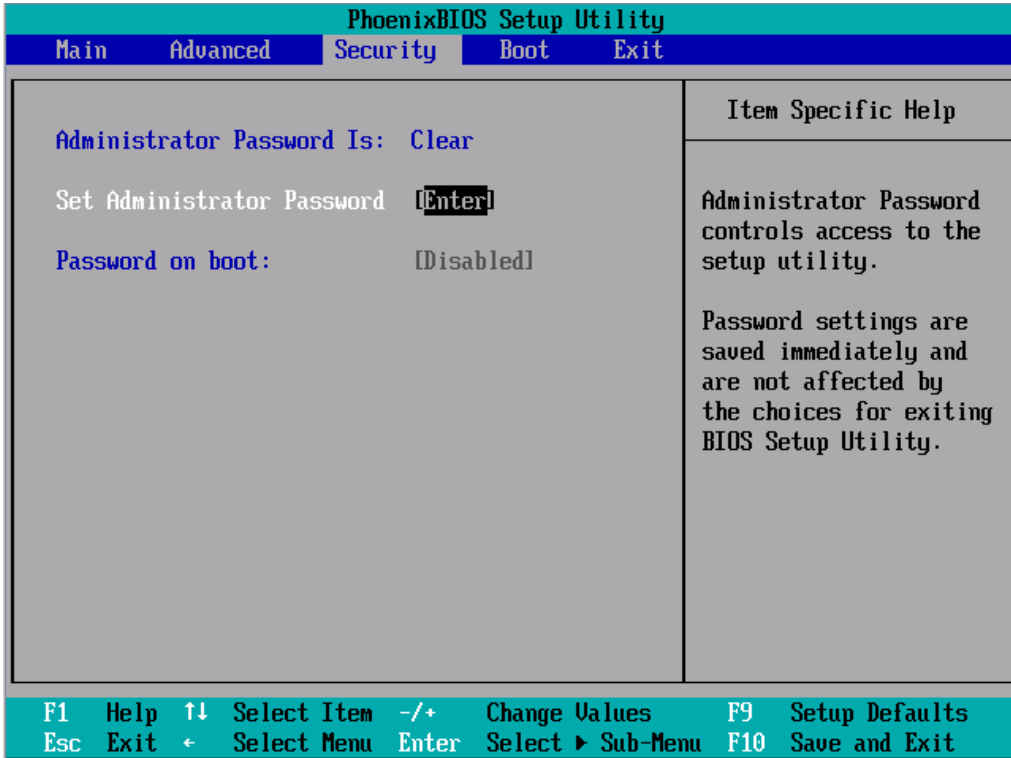
Figure 4-4 IPMI submenu of the BIOS Setup Utility

PhoenixBIOS Setup Utility			
Advanced			
IPMI		Item Specific Help	
IPMI Specification Version	2.0	Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.	
BMC Firmware Version	1.14		
BMC Firmware Date	Aug 10 2006		
System Event Logging	[Enabled]		
Clear System Event Log	[Disabled]		
Existing Event Log number	13		
Remaining Event Log number	370		
Event Log Control			
SYS Firmware Progress	[Disabled]		
BIOS POST Errors	[Enabled]		
BIOS POST Watchdog	[Enabled]		
OS boot Watchdog	[Enabled]		
Timer for loading OS (min)	[10]		
Time out action	[No Action]		
Serial port assignment	[System]		
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit			

PhoenixBIOS Setup Utility			
Advanced			
IPMI		Item Specific Help	
Serial port assignment	[System]	Shared NIC Mode.	
Serial port switching	[Enabled]		
Serial port connection mode	[Direct]		
Date Format to show	[MM DD YYYY]		
Date Separator	[/]		
▶ System Event Log			
▶ System Event Log (list mode)			
▶ Realtime Sensor Data			
Share NIC Mode	[Disabled]		
DHCP IP Source	[Enabled]		
IP Address	[010.141.038.157]		
IP Subnet Mask	[255.255.255.000]		
Default Gateway	[010.141.038.001]		
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit			

Security Menu

Figure 4-5 Security menu of the BIOS Setup Utility



Use this menu to configure the following items:

- **Administrator Password Is** – Display if an administrator password is set.
- **Set Administrator Password** – Allows you to access and change all settings in the Setup Utility. The administrator password allows you to configure access for system users.
- **Password on boot** – If an administrator password has been set, use this item to enable or disable the requirement of the administrator password when booting the server.

To set a new administrator password:

1. In the Security screen, select a set password field - **Set Administrator Password**, and then press **Enter**.
2. Type a new password in the **Enter New Password** box.
3. The password may consist of up to eight alphanumeric characters (A-Z, a-z, 0-9).
4. Retype the password to verify the first entry, and then press **Enter**.
5. Press **F10** to close the Setup Utility.
6. After setting the password, Setup automatically sets the selected password field to **Enabled**.

Boot Menu

Figure 4-6 Boot menu of the BIOS Setup Utility

PhoenixBIOS Setup Utility				
Main	Advanced	Security	Boot	Exit
CD-ROM / DVD-ROM Removable Devices +Hard Drive Embedded NIC Embedded NIC PXE : [Enabled]				Item Specific Help Keys used to view or configure devices: <Enter> expands or collapses devices with a + or - <Ctrl+Enter> expands all <+> and <-> moves the device up or down.
F1	Help	↑↓	Select Item -/+	Change Values
Esc	Exit	←	Select Menu Enter	Select ► Sub-Menu
F9	Setup Defaults			F10 Save and Exit

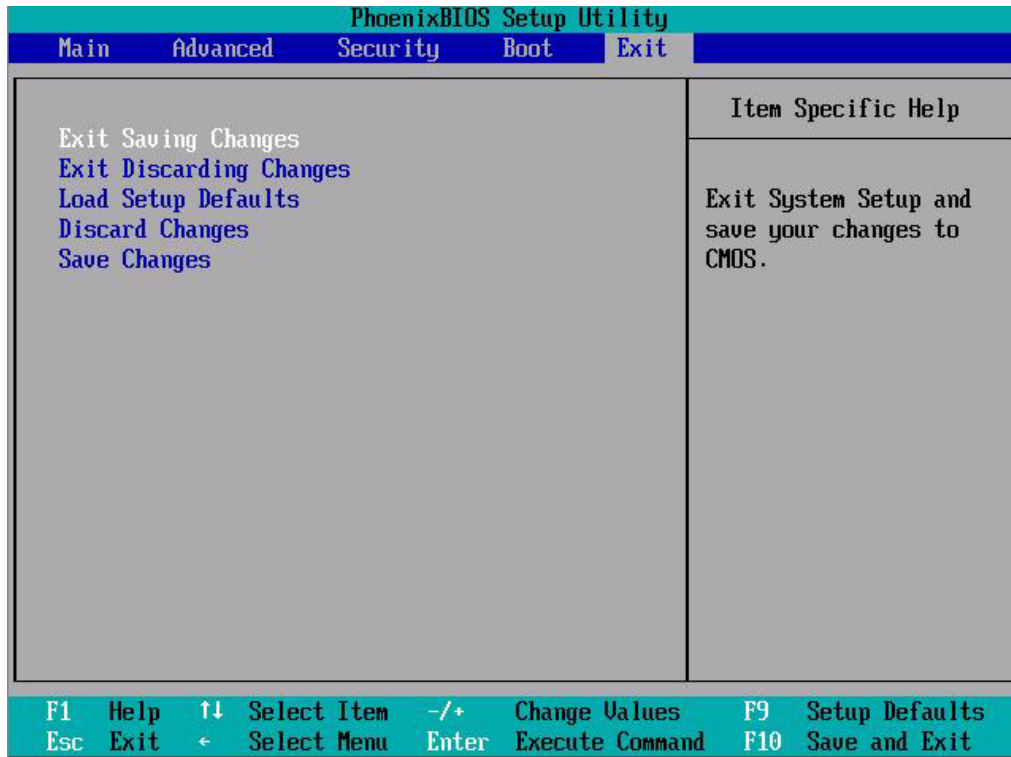
Use this menu to configure the boot priority.

Set boot device priority. By default, the server searches for boot devices in the following order:

1. CD-ROM/DVD-ROM drives
2. Removable devices
3. Hard drive
4. Embedded NIC

Exit Menu

Figure 4-7 Exit menu of the BIOS Setup Utility



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

- **Exit Saving Changes** -- Save the changes you have made and exit the BIOS Setup Utility. (You can also press **F10** key.)
- **Exit Discarding Changes** -- Exit the BIOS Setup Utility without saving the changes you have made. (You can also press **Esc** key.)
- **Load Setup Defaults** -- Load the factory default values for all items. (You can also press the **F9** key.)
- **Discard Changes** -- Discard any changes you have made.
- **Save Changes** -- Save the changes you have made.

BIOS Update

Perform the steps below to update BIOS:

1. Download the Smart Component (SPxxxx.exe) to a directory on your hard drive.
2. Execute (SPxxxx.exe) and followed with direction to complete the steps. "ProLiant Flash Update" interface will appear.
3. Select items which need to update:
 - Create a bootable ROMPAQ diskette
 - Create a bootable ROMPAQ USB Key
 - Create a bootable ROMPAQ CD
 - ROMPAQ Diskette Flat Files
 - Create a label for the ROMPAQ diskette
 - Network ROM Flashing Capabilities
4. Reboot ML150 Generation 3 Server with one of the above bootable devices and make sure the BIOS setting allows booting from the USB disk.
5. Follow the on-screen instructions to finish the flashing of the BIOS.

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 instructions listed in Chapter 3.
2. If necessary, remove any accessory boards or cables that prevent access to the system configuration switch.
3. Locate the system configuration button (SW2) on the system board.
4. Press the button. AC power must not be connected.
5. Perform the post-installation instructions listed in Chapter 3.
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 deletes all system configurations and password settings.

Power-On Self Test

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 **F7** to display the Boot menu.
- Press **F10** to access the Setup Utility.
- Press **F12** to request a network boot (PXE).

POST Error Indicators

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

Recoverable POST Errors

Whenever a non-fatal error occurs during POST, an error message describing the problem appears onscreen. These error messages are displayed in normal video (white text on black background), and show the details of the error. The following is an example of a POST error message:

0271 - Check date and time settings

Table 4-2 lists the most common POST error messages with corresponding troubleshooting recommendation. HP recommends that you correct the error, even if the server appears to boot successfully.

Table 4-2 POST Error Messages

Error Code	Error Message	Description / Corrective Action
0200	Failure fixed disk	A fixed disk did not respond. Remove A/C power momentarily then try again. If this does not resolve the error, an unrecoverable hardware error has occurred.
0210	Stuck key	A key on the keyboard is stuck down. Release the key or replace the keyboard.
0211	Keyboard error	The keyboard did not respond. If the error continues, replace the keyboard.
0212	Keyboard controller failed	Try a different keyboard. If the error persists, main board replacement may be required.
0213	Keyboard locked - Unlock key switch	A keyboard with a lock option is reporting that the lock is active.
0250	System battery is dead - Replace and run SETUP	The CMOS battery is discharged. It must be replaced.
0260	System timer error	The 8254 timer did not respond as expected. Main board replacement may be required.
0270	Real time clock error	The real time clock did not respond. Main board replacement may be required.
0271	Check date and time settings	The system date or time is invalid. If the error returns after resetting date and time, CMOS battery replacement may be required.
0280	Previous boot incomplete - Default configuration used	Setup changes were not saved because of a boot failure. Reapply setup changes and boot again.
02D0	System cache error - Cache disabled	A processor reported an uncorrectable cache error. Replacement is required.
0230	System RAM Failed at offset:	An uncorrectable memory error has occurred. Replace memory modules.
0231	Shadow Ram Failed at offset:	An uncorrectable memory error has occurred. Replace memory modules.
0232	Extended RAM Failed at address line:	An uncorrectable memory error has occurred. Replace memory modules.
0251	System CMOS checksum bad - Default configuration used	CMOS memory has been corrupted. This message is normal after the CMOS battery is replaced.
02F5	DMA test failed	The DMA controller did not respond. Main board replacement may be required.
02F9	CPU0 fan not installed	The CPU0 Fan did not respond. Replace the CPU Fan.
02FA	CPU1 fan not installed	The CPU1 Fan did not respond. Replace the CPU Fan.
02FB	PCI fan not installed	The PCI Fan did not respond. Replace the CPU Fan.
02FC	REAR fan not installed	The Rear Fan did not respond. Replace the Rear Fan

POST Related Troubleshooting

Perform the following procedures when POST fails to run, displays error messages, or emits beep codes.

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 which the server is connected and is working.
- 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 cooler 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 switches or 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 any switches on the system board, verify that each is properly set.

5 Connectors, Jumpers, and LEDs

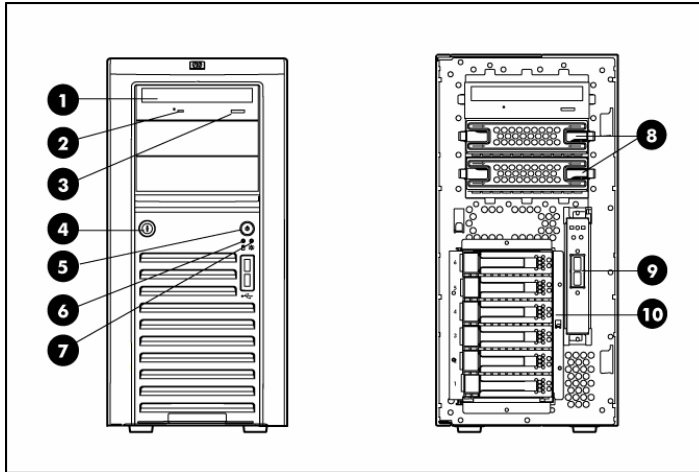
This chapter contains illustrations and tables identifying and describing the connectors, switches, buttons, and LED indicators located on the front panel, rear panel, system board and hard drives of the HP ProLiant ML150 Generation 3 Server.

Connectors and Components

This chapter contains illustrations and tables identifying and describing the connectors and components on the front and rear panels of the server, as well as those located on the system board.

Front Panel Components

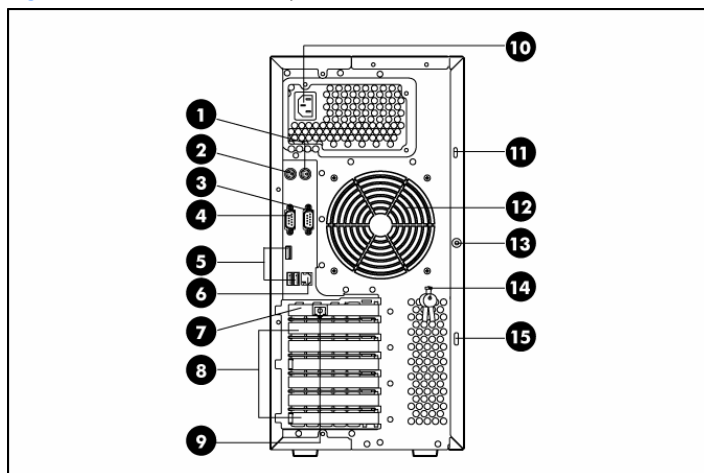
Figure 5-1 Front Panel Components



- | | | | |
|---|---------------------------------|----|----------------------------|
| 1 | CD-ROM drive | 6 | Drive activity indicator |
| 2 | CD-ROM drive activity indicator | 7 | Power indicator |
| 3 | CD-ROM drive eject button | 8 | EMI shield |
| 4 | Front bezel lock | 9 | USB port |
| 5 | Power button | 10 | Hard disk drive (HDD) cage |

Rear Panel Components

Figure 5-2 Rear Panel Components



- | | | | |
|---|--------------------------------------|----|--------------------------------|
| 1 | PS/2 mouse port (green) | 9 | HP LO100c management card port |
| 2 | PS/2 keyboard port (purple) | 10 | Power supply cable socket |
| 3 | Serial port | 11 | Kensington lock |
| 4 | VGA port | 12 | Rear system fan |
| 5 | USB 2.0 port | 13 | Thumbscrew for access panel |
| 6 | LAN port (RJ-45) | 14 | Key for front bezel |
| 7 | HP LO100c management card slot cover | 15 | Side panel latch |
| 8 | PCI slot covers | | |

System Board Components

Figure 5-3 System Board Components

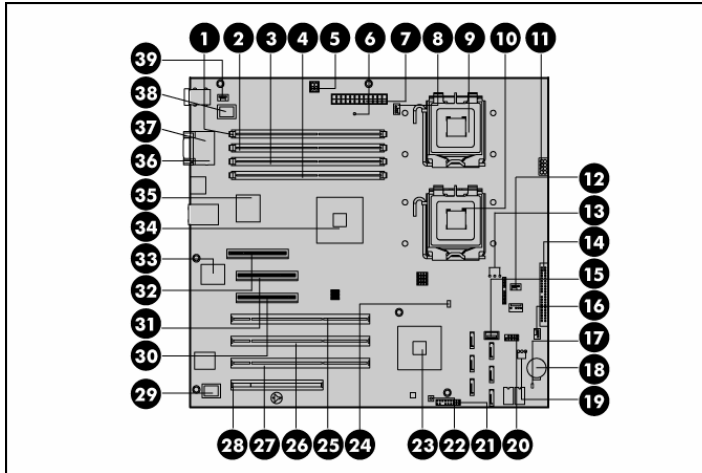


Table 5-1 System Board Components

Item	Component	Description
1	XMM4	DIMM slot 4
2	XMM3	DIMM slot 3
3	XMM2	DIMM slot 2
4	XMM1	DIMM slot 1
5	P6	4-pin power connector
6	CR1	5V aux power indicator
7	P7	24-pin power connector
8	P8	4-pin CPU0 fan connector
9	XU2	Processor0 socket
10	XU1	Processor1 socket
11	P24	8-pin power connector
12	P22	4-pin CPU1 fan connector
13	CR2	CPU 1 System Error Indicator
	CR3	CPU 2 System Error indicator
14	P25	IDE channel
15	J32	Internal USB 2.0 port
16	P21	4-pin front system fan header
17	P23	External LED connector
18	XBT1	Battery
19	CR4	3.3V aux power indicator
	CR5	3.3V power indicator
20	P20	Front USB 2.0 cable header
21	P10	18-pin front panel I/O connector
22	SW2	CMOS reset button
23	U32	Intel ICH ESB2 chip
24	P11	Password jumper
25	J15	PCI slot 4(64-bit PCI-X)

Table 5-1 System Board Components

Item	Component	Description
26	J14	PCI slot 3(64-bit PCI-X)
27	J13	PCI slot 2(64-bit PCI-X)
28	J12	PCI slot 1(32-bit PCI)
29	J38	System BIOS
30	J10	PCI slot 5(PCI-E x8)
31	J11	PCI slot 6(PCI-E x4)
32	J9	HP LO100c management card slot
33	U4	Broadcom GbE LAN chipset
34	U22	Intel MCH Blackford VS chip
35	U14	Server Engines Pilot chip
36	P1B	VGA port (blue)
37	P1A	Serial port (teal)
38	J4	Server Management Control Firmware
39	P4	4-pin rear system fan header

Jumpers --- Password

The system board password (P11). Table 5-2 describes the jumper settings.

Table 5-2 System Configuration Switch Settings

Jumper	Status	Function
P11	On (default)	Password enabled
	Off	Password reset/disabled

Clear CMOS Button

The system board has a system configuration (CMOS) button (SW2). To clear system configuration, disconnect AC power and press the CMOS button.

LEDs

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

- Front panel
- Rear panel
- System board

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

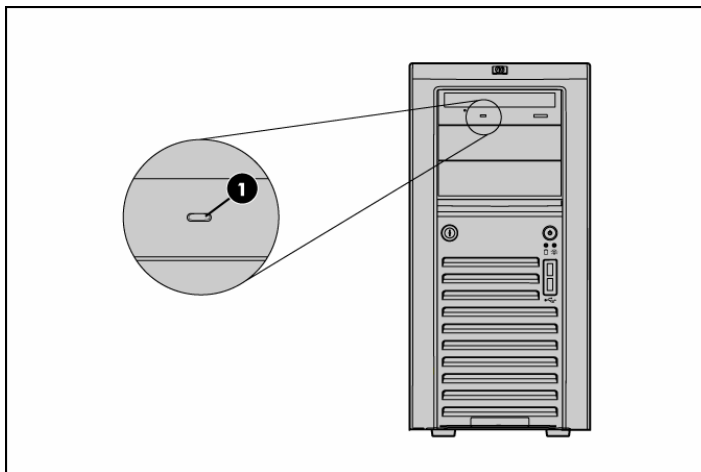
Front panel LEDs indicators

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

Optical drive activity LED indicator

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

Figure 5-4 Optical drive activity LED indicator



Activity states for the optical drive are as follows:

- Flashing green -- Ongoing drive activity
- Off -- No drive activity

Power / system health LEDs indicator

The power status and health condition of the server is indicated by the bicolor LED indicator found on the front panel.

Figure 5-5 Power / system health LED indicator

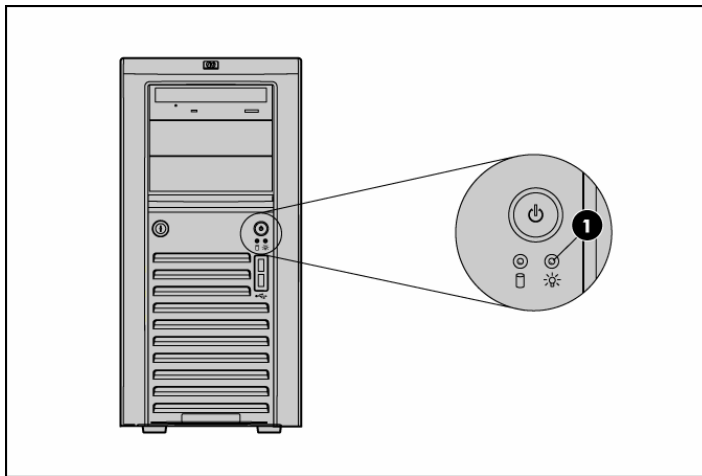


Table 5-3 Power / system health LED indicator status

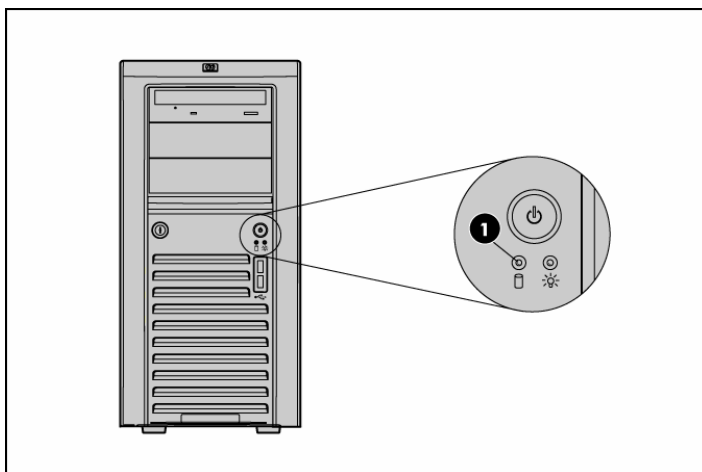
Component	Status	Description
Power / system health LED indicator	Steady green	The server is operating normally.
	Steady Amber	The server is shut down, but with A/C power plugged in or the server hibernate
	Off	The server is system off without A/C power.

CAUTION: When the power indicator is green, it is unsafe to remove AC power from the system without performing a proper shutdown of the operating system.

Hard drive activity LED indicator

The status of hard drives installed in the server is indicated by the drive activity LED indicator located on the front panel of the server.

Figure 5-6 Drive activity LED indicator



Activity states for hard drives are as follows:

- Flashing green -- Ongoing drive activity
- Off -- No drive activity



















SAS/SATA Hot-Plug Hard Drive LEDs

The SAS and SATA hot-plug hard drive LEDs, located on each physical drive, are visible on the backplane after you open the front panel.

- **Status LED**
This LED indicates the drive operating condition: normal, warning, or failure.
- **Activity LED**
This LED indicates the disk drive access activity. This LED is controlled by the disk drive directly. When a drive is accessed, the LED shows a green light.

Table 5–4 describes the LEDs signals used to indicate the operating status of a SAS or SATA disk drive.

Table 5-4 Carrier status light definitions

Activity	Status	Indicator
Green	Bicolor Amber/blue	Description
		No power, offline or not configured
		Normal operation, under power. no activity [green is on-solid]
		Normal operation, under power, IO disk activity [green is fluttering]
		Offline, disk not being accessed, predictive failure [amber is flashing at constant 1 Hz]
		Online, no activity, predictive failure (further investigation required) [green is fluttering, amber is flashing at constant 1 Hz]
		Disk activity, predictive failure (further investigation required) [green is fluttering, amber is flashing at constant 1 Hz]
		Offline, no activity, critical fault condition [amber is on-solid]
		Offline, drive selected (blue reserved for identification only) [blue is on-solid]
		Drive rebuilding [green is flashing at constant 1 Hz]

Real panel LEDs indicator

The LAN port on the rear panel has two indicators that allow monitoring of network activity. Table 5-5 show and describe the function of these LEDs.

Figure 5-7 LAN/ LED indicator states

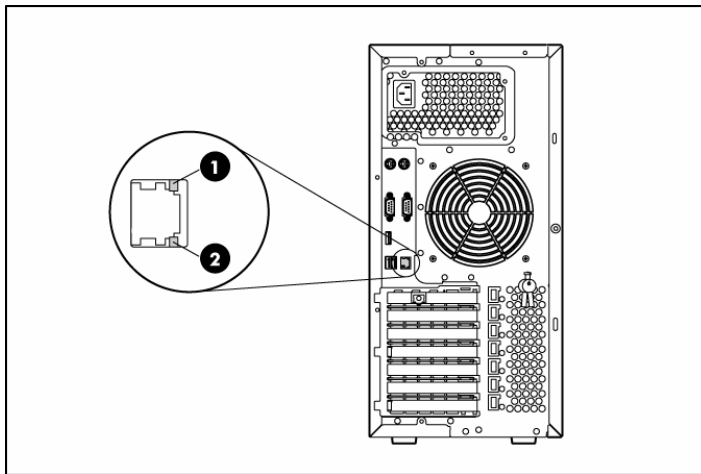


Table 5-5 LAN/ LED indicator states

Item	Components	States	Description
1	LAN activity states LED indicator	Flashing green	Ongoing network data activity.
		Off	No network data activity.
2	LAN network speed LED indicator	Steady green	The LAN connection is using a GbE link.
		Steady amber	The LAN connection is using a 10 or 100 Mbps link.

System board LED indicators

The system board contains three internal power status LED indicators for use during troubleshooting operations.

Table 5-6 show and describe the function of these LEDs.

Figure 5-8 System Board LED indicators

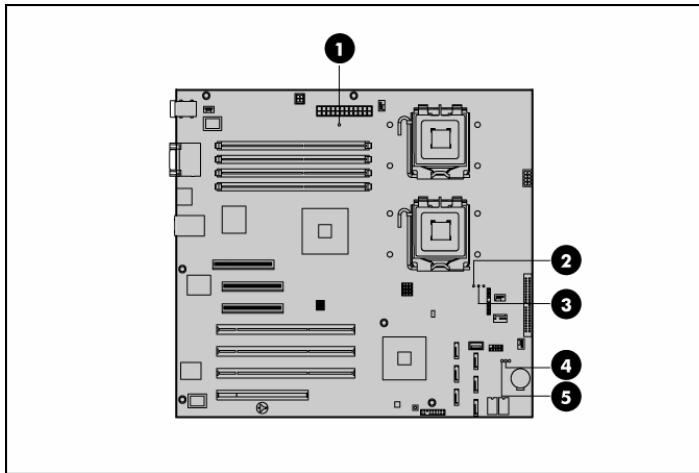


Table 5-6 System Board LED indicators

Item	Component	Status	Description
1	5V aux power indicator (CR1)	Green	Auxiliary power present
2	CPU 1 System Error Indicator (CR2)	Red	A system error has occurred.
		Off	System is operating under normal condition.
3	CPU 2 System Error indicator (CR3)	Red	A system error has occurred.
		Off	System is operating under normal condition.
4	3.3V power indicator (CR5)	Green	AC power action
5	3.3V aux power indicator (CR4)	Off	The server is powered off (AC power disconnected).

6 Physical and Operating Specifications

This chapter provides physical and operating specifications for the HP ProLiant ML150 Generation 3 server. Specifications include:

System Unit

Table 6-1 Hardware Specifications

Item	Component
Processor socket	Intel LGA771 (2)
Processor support	Dual-Core Intel® Xeon® Processor 5000 series Dual-Core Intel® Xeon® Processor 5000 series MV Dual-Core Intel® Xeon® Processor 5100 series Quad-Core Intel® Xeon® Processor 5300 series
Chipset	Intel® 5000V Chipset
Hardware monitoring device	Server Engines Pilot
Gigabit Ethernet controller	Broadcom 5703
Memory controller	Intel® 5000V Chipset
SATA and IDE controllers	ESB2T
Embedded video controller	Server Engine VGA
I/O subsystem	<ul style="list-style-type: none"> • One PCI slot • Three PCI-X slots • One PCI-E x8 link with x8 slot • One PCI-E x4 link with x8 slot
Memory	Four Fully buffered DDR2 533/667 MHz DIMM slots with ECC, up to 8-GB
Default media storage	One-half height IDE CD-ROM drive, SAS/SATA hard drive
Optional media storage	<ul style="list-style-type: none"> • Two half-height drive bays for CD-ROM drive, non-hot-plug hard drive, any SAS device • Six bay hot-plug HDD cage for SAS or SATA drives
I/O ports	PS2 keyboard port, PS2 mouse port, USB 2.0 ports (two front-mounted ports, three rear-mounted ports and two internal connectors on the system board), video port, serial port and GbE port.
Status LED indicators Front panel	<ul style="list-style-type: none"> • IDE CD-ROM drive activity • Power/system health status • Hard drive activity
Rear Panel	<ul style="list-style-type: none"> • LAN activity • LAN link status
System Board	<ul style="list-style-type: none"> • Auxiliary power indicators • Processor IERR# indicator
Power Supply unit (PSU)	Delta TDPS-650BB A (650 watts)
Thermal solution	<ul style="list-style-type: none"> • Two system fans (Rear system fan and front system fan) • Two processor cooler • One PSU fan

Table 6-2 Software Specifications

Item	Description
Network operating system (NOS) support	<ul style="list-style-type: none"> • Microsoft Windows Server 2003 Standard Edition • Microsoft Windows Server 2003 Standard x64 Edition • Microsoft Windows Server 2003 Enterprise Edition • Microsoft Windows Server 2003 Enterprise x64 Edition • Microsoft Windows Small Business Server 2003 • Microsoft Windows Server 2003 Web Edition • Microsoft Windows 2000 Server • SCO OpenServer 6 • SCO UnixWare 7.1.4 • Red Hat Enterprise Linux 4 AS (x86) • Red Hat Enterprise Linux 4 AS (AMD64/EM64T) • SUSE Linux Enterprise Server 9 (x86) • SUSE Linux Enterprise Server 9 (AMD64/EM64T) • Red Flag Advanced Server 4.1
System diagnostics	<ul style="list-style-type: none"> • Phoenix BIOS Setup Utility • HP Insight Diagnostics

Table 6-3 Physical Dimensions

Item	Description
System board platform	ATX (Advanced Technology Extended)
System board dimension	12" * 13"
Server dimensions Tower	217.8W * 443.9H * 649.9D (mm)
Rack	217.8W * 443.9H * 629.3D (mm)
Server weight	Basic Configuration (excludes keyboard and monitor): 31.3 KG

Table 6-4 Environmental Specifications

Item	Description
<u>Temperature</u> Operating Non-operating Storage Wet-bulb temperature	 +10 to +35° (+50 to +95°F) -30 to 60° (-22 to 140°F) -30 to 60° (-22 to 140°F) 29° (84.2°F)
<u>Relative humidity</u> Operating Non-operating Storage	 10% to 90% (non-condensing) 10% to 95% 10% to 95%
<u>Altitude</u> Operating Non-operating	 0 to 3000 meters (0 to 10,000 ft) 0 to 9144 meters (0 to 30,000 ft)
Thermal output (maximum operating)	380 W/hr
Acoustic emissions Normal configuration	LPA: 43 dBA, LWad : 6.0 Bels (operating at room temperature) LPA: 38 dBA, LWad : 5.5 Bels (Idle at room temperature)

Table 6-5 Power Supply Specifications

Item	Description
Dimensions (H x W x D)	160 mm x 98 mm x 200 mm
Weight (approximate)	2.86 kg
<u>Input requirements :</u> Rated input voltage Normal line voltage	90 VAC to 265 VAC 100 VAC to 127 VAC /200 VAC to 240 VAC
Line frequency	47 – 66 Hz
Rated input current	Load 11.6A at100 VAC to 127 VAC, 5.5A at 200 VAC to 240 VAC
BTU rating	N/A
<u>Power supply output power:</u> Rated steady state power Maximum peak power	650W 650W
<u>Temperature range:</u> Operating Shipping	+10° to +45° -40° to +70°
Relative humidity: Operating Non-operating	5% to 95% (non-condensing at +40°) 90%(for a period of 24 hours at 65° ambient)

Memory

Table 6-6 Memory Specifications

Item	Description
Size	512-MB, 1-GB, 2-GB
Speed	533/667-MHz
Type	fully buffered DDR2 533/667 DIMM with ECC

Processor

The LGA771 processor socket supports Dual-Core Intel® Xeon® Processor 5000/5100 series and Quad-Core Intel® Xeon® 5300 series.

Table 6-7 Dual-Core Intel® Xeon® Processor 5000 series 2X2M 1066 FCPGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
3.73 G	1066 MHz	L1 32K L2 2Mx2	1.30	LGA771
3.46 G	1066 MHz	L1 32K L2 2Mx2	1.30	LGA771
3.2 G	1066 MHz	L1 32K L2 2Mx2	1.30	LGA771

Table 6-8 Dual-Core Intel® Xeon® Processor 5000 series 2X2M 667 FCPGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
3.0 G	667	L1 16K L2 2Mx2	1.26	LGA771
2.8 G	667	L1 16K L2 2Mx2	1.26	LGA771

Table 6-9 Dual-Core Intel® Xeon® Processor 5000 series 2MMV 667 FCPGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
2.67 G	667	L1 16K L2 2Mx2	1.26	LGA771

Table 6-10 Dual-Core Intel® Xeon® Processor 5100 series 4M 1333 FCLGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
3.0 G	1333 MHz	L1 16K L2 4M	1.30	LGA771
2.66 G	1333 MHz	L1 16K L2 4M	1.30	LGA771
2.33 G	1333 MHz	L1 16K L2 4M	1.30	LGA771
2.0 G	1333 MHz	L1 16K L2 4M	1.30	LGA771

Table 6-11 Dual-Core Intel® Xeon® Processor 5100 series 4M 1066 FCLGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
1.86 G	1066 MHz	L1 16K L2 4M	1.30	LGA771
1.60 G	1066 MHz	L1 16K L2 4M	1.30	LGA771

Table 6-12 Quad-Core Intel® Xeon® Processor 5300 series 2X4M 1066 FCLGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
2.66 G	1066 MHz	2x4M	1.35	LGA771
2.40 G	1066 MHz	2x4M	1.35	LGA771
2.13 G	1066 MHz	2x4M	1.325	LGA771
1.86 G	1066 MHz`	2x4M	1.325	LGA771
1.6G	1066 MHz	2x4M	1.325	LGA771

Table 6-13 Quad-Core Intel® Xeon® Processor 5300 series 2X4M 1333 FCLGA specifications

Operating Frequency	FSB Speed	On-die Cache	Voltage	Package
2.66 G	1333 MHz	2x4M	1.35	LGA771
2.33 G	1333 MHz	2x4M	1.325	LGA771
2.0 G	1333 MHz`	2x4M	1.325	LGA771

IDE CD-ROM Drive

Table 6-14 IDE CD-ROM Specifications

Item	Description
Form factor	5.25 in, half-height
Dimensions	
Height	41.5 mm (1.6 in)
Width	145.8 mm (5.7 in)
Depth	170.0 mm (6.7 in)
Weight	0.8 kg (1.8 lb)
Supported disc formats	<ul style="list-style-type: none"> Mixed mode (audio and data combined) CD-DA, mode (basic format), Mode 2, Form 1 and Form 2 Photo-CD (multi-session), CD-XA CD-1, CD-Plus/CD-Extra,0 CD-RW
Rational speed	20 x to 48 x
Data capacity	2,048 bytes/block
Mode 1 and Mode 2, Form 1	2,340/2,336 bytes per block
Mode 2	2,332 bytes/block
Mode 2, Form 2	2,352 bytes/block
CD-DA	
Data buffer capacity	128-KB
Data transfer rate	
Sustained	<ul style="list-style-type: none"> 20X (inner side) – 3,000 KB/s 48X (Outer side) – 7,200 KB/s
Burst	<ul style="list-style-type: none"> PIO mode 4 – 16.67 MB/s DMA mode – 216.67 MB/s Ultra DMA mode 2 – 33.3 MB/s
Average access time	
Typical	75 ms
Maximum	100 ms
Three-way eject support	<ul style="list-style-type: none"> Using software Using drive open/eject button Using emergency eject hole
Operating conditions	
Temperature	5° to 50° (41°F to 110°F)
Relative humidity	10% to 80% RH

SAS Hard Drive

Table 6-15 SAS Hard Drive specifications

Item	36-GB Drive	72-GB Drive	146-GB Drive	300-GB Drive
Capacity	36 GB	72 GB	146 GB	300 GB
Height	1 in	1 in	1 in	1 in
Width	4 in	4 in	4 in	4 in
Interface	SAS	SAS	SAS	SAS
Transfer Rate	300	300	300	300
Rotational Speed	15,000 RPM	15,000 RPM	15,000 RPM	15,000 RPM
Bytes per sector	685 to 1142 MBps	685 to 1142 MBps	685 to 1142 MBps	685 to 1142 MBps

Table 6-15 SAS Hard Drive specifications

Item	36-GB Drive	72-GB Drive	146-GB Drive	300-GB Drive
Operating Temperature	5° to 55°	5° to 55°	5° to 55°	5° to 55°

SATA Hard Drive

Table 6-16 Type Table Name Here

Item	80-GB Drive	160-GB Drive	250-GB Drive	500-GB Drive	750-GB Drive
Capacity	80-GB	160-GB	250-GB	500-GB	750-GB
Dimensions					
Height	26.10 mm(1.03 in)	26.10 mm(1.03 in)	26.10 mm(1.03 in)	26.10 mm(1.03 in)	26.10 mm(1.03 in)
Width	101.6 mm (4.0 in)	101.6 mm (4.0 in)	101.6 mm (4.0 in)	101.6 mm (4.0 in)	101.6 mm (4.0 in)
Depth	147.0 mm (5.8 in)	147.0 mm (5.8 in)	147.0 mm (5.8 in)	147.0 mm (5.8 in)	147.0 mm (5.8 in)
Weight	0.63 kg (1.4 lb)	0.63 kg (1.4 lb)	0.63 kg (1.4 lb)	0.63 kg (1.4 lb)	0.63 kg (1.4 lb)
Interface	SATA 150 Gbps 8MB Buffer	SATA 150 Gbps 8MB Buffer	SATA 150 Gbps 16 MB	SATA 150 Gbps 16MB	SATA 150 Gbps 16MB
Maximum transfer rate	150 MB/s	150 MB/s	150 MB/s	3.0 Gb/s	300Mbytes/s
Rotational speed	7200 RPM	7200 RPM	7200 RPM	7200 RPM	7200 RPM
Byte per sector	512	512	512	n/a	512
Sectors per drive	160,086,528	320,173,056	490,234,752	n/a	1,465,149,168
Operating temperature	0° to 60° (-17.78 °F to 140°F)	0° to 60° (-17.78 to 140°F)	0° to 60° (-17.78 to 140°F)	0° to 60° (-17.78 to 140°F)	0° to 60° (-17.78 to 140°F)

SAS Controller Card

Table 6-17 SAS Controller card Specifications

Item	Description
Processor	LSISAS1068
Form factor	Lower-profile PCI-X
Interface type	PCI-X/ 133 MHz
Controller interface	1.5 Gbit/s and 3.0 Gbit/s SAS 1.5 Gbit/s SATA
Dimensions	
Height	63.5 mm (2.5 in)
Depth	167.6 mm (6.6 in)
Data transfer rate	1064 MB/s
Supported devices	Hard drive, disk array (RAID)
Number of channels	Two Internal x4 right angle SAS connector with 4 sideband lines
Maximum number of supported storage devices	15
Standard compliance	EMC Class-B
Operating conditions	
Temperature	0° to 60°
Related humidity	5% to 90%

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