

HP ProLiant DL360 G6 Server Maintenance and Service Guide



Part Number 517688-003
September 2009 (Third Edition)

© Copyright 2009 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation.

Intel and Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. UNIX is a registered trademark of The Open Group.

Intended audience

This guide is for an experienced service technician. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels and are familiar with weight and stability precautions for rack installations.

Contents

Customer self repair	5
Parts only warranty service	5
Illustrated parts catalog	16
Mechanical components	16
System components	19
Removal and replacement procedures	24
Required tools	24
Preparation procedures	24
Power down the server	24
Extend the server from the rack	25
Remove the server from the rack	25
Safety considerations	25
Preventing electrostatic discharge	25
Symbols on equipment	26
Server warnings and cautions	27
Access panel	27
Hard drive bezel blanks	28
Dual bezel blank	28
Hard drive blank	29
SAS and SATA hard drive	29
Power supply blank	30
Hot-plug power supply	30
Hard drive cage	31
DVD tray	32
DVD-ROM or DVD-RW drive	33
Fan module	34
Fan blank	35
BBWC battery pack	36
Air baffle	37
PCI riser board assembly	37
Expansion boards	38
PCIe riser board	39
PCI-X riser board	39
Cache module	40
Optional hard drive backplane assembly (top)	41
Standard hard drive backplane assembly (bottom)	41
HP Systems Insight Display and LED assembly	42
DIMMs	43
Heatsink	44
Processor	45
System battery	50
System board	51
HP Trusted Platform Module	56
Cabling	57

Cabling overview	57
Hard drive backplane cabling	57
BBWC battery pack cabling	58
DVD-ROM and DVD-RW drive cabling	59
Power button and Systems Insight Display cabling	59
PCI power cabling.....	60
Diagnostic tools	61
Troubleshooting resources	61
HP ROM-Based Setup Utility	61
HP Insight Diagnostics.....	61
HP Insight Diagnostics survey functionality	62
Integrated Management Log	62
Array Diagnostic Utility	62
Automatic Server Recovery	63
HP Systems Insight Manager.....	63
HP Insight Remote Support software	63
Component identification.....	65
Front panel components	65
Front panel LEDs and buttons	66
Rear panel components.....	67
Rear panel LEDs and buttons.....	68
System board components.....	69
System maintenance switch.....	70
NMI jumper.....	71
DIMM slots	71
DIMM identification	72
HP Systems Insight Display LEDs	72
Systems Insight Display LED combinations.....	74
SAS and SATA device numbers.....	76
SAS and SATA hard drive LEDs.....	76
SAS and SATA hard drive LED combinations.....	77
Fan modules.....	78
T-10/T-15 Torx screwdriver	79
Specifications.....	80
Environmental specifications	80
Server specifications	80
Power supply specifications	80
Hot-plug power supply calculations.....	82
Acronyms and abbreviations.....	83
Index.....	85

Customer self repair

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

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

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

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

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

Parts only warranty service

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

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

Réparation par le client (CSR)

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

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

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

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

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

Service de garantie "pièces seules"

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

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

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedisirà 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 facultativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

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

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

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

Servizio di garanzia per i soli componenti

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

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

Customer Self Repair

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

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

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

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center

anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

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

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

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

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

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

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al

Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

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

Servicio de garantía exclusivo de componentes

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

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

Customer Self Repair

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

- **Verplicht:** Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.
- **Optioneel:** Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type 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

período, geralmente cinco (5) dias úteis, retornar ao HP. O componente defeituoso deve ser enviado com a documentação correspondente no material de transporte fornecido. Caso contrário, o HP cobrará a reposição. Para as peças de reparo feito pelo cliente, o 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>).

Garantieservice "Parts Only"

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

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

Reparo feito pelo cliente

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

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

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

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso contrário, o 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連絡いただければ、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，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

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

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

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

仅部件保修服务

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

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

客戶自行維修

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

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

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

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

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

僅限零件的保固服務

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

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

고객 셀프 수리

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

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

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

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

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

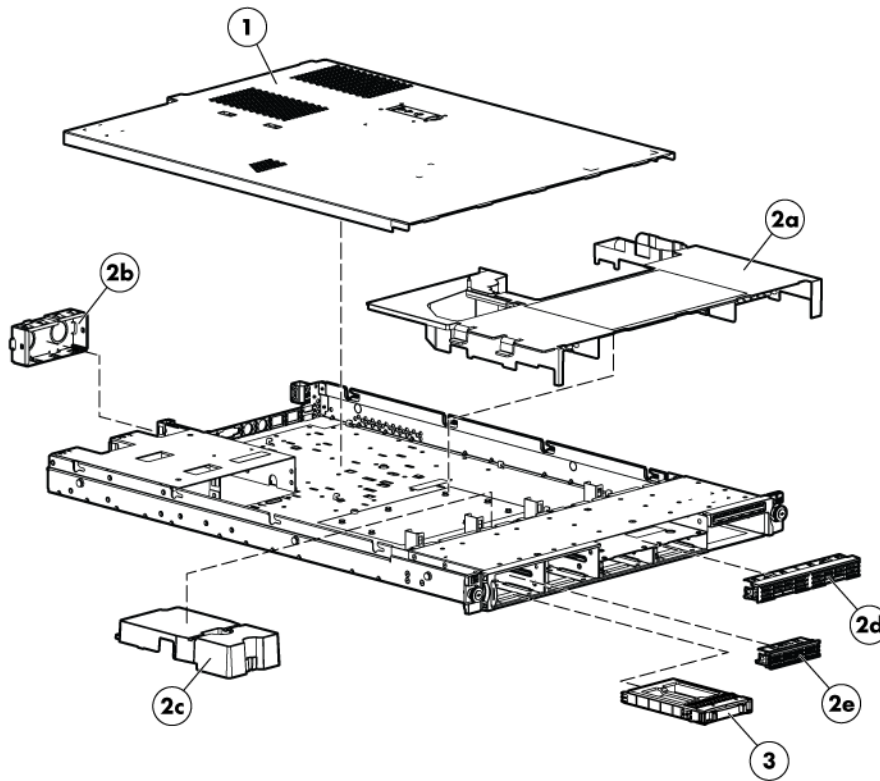
부품 제공 보증 서비스

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

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

Illustrated parts catalog

Mechanical components



Item	Description	Spare part number	Customer self repair (on page 5)
1	Access panel	532146-001	Mandatory ¹
2	Hardware and plastics kit	532392-001	Mandatory ¹
	a) Air baffle	—	—
	b) Power supply blank	—	—
	c) Fan blank	—	—
	d) Dual bezel blank	—	—
	e) Hard drive bezel blank (2)	—	—
3	Hard drive blank*	392613-001	Mandatory ¹
4	Hard drive cage*	532391-001	Mandatory ¹
	Rack mounting hardware		

Item	Description	Spare part number	Customer self repair (on page 5)
5	Rack mounting hardware kit*	533877-001	Mandatory ¹
6	Cable management arm*	360105-001	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 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 garantievoorzwaarden 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: 强制的 — 客户自行维修所使用的零件是强制性的。如果您要求 HP 更换这些零件，HP 将会向您收取此服务所需的外出费用与劳动成本。

²Optional: 選購的 — 客户自行维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。

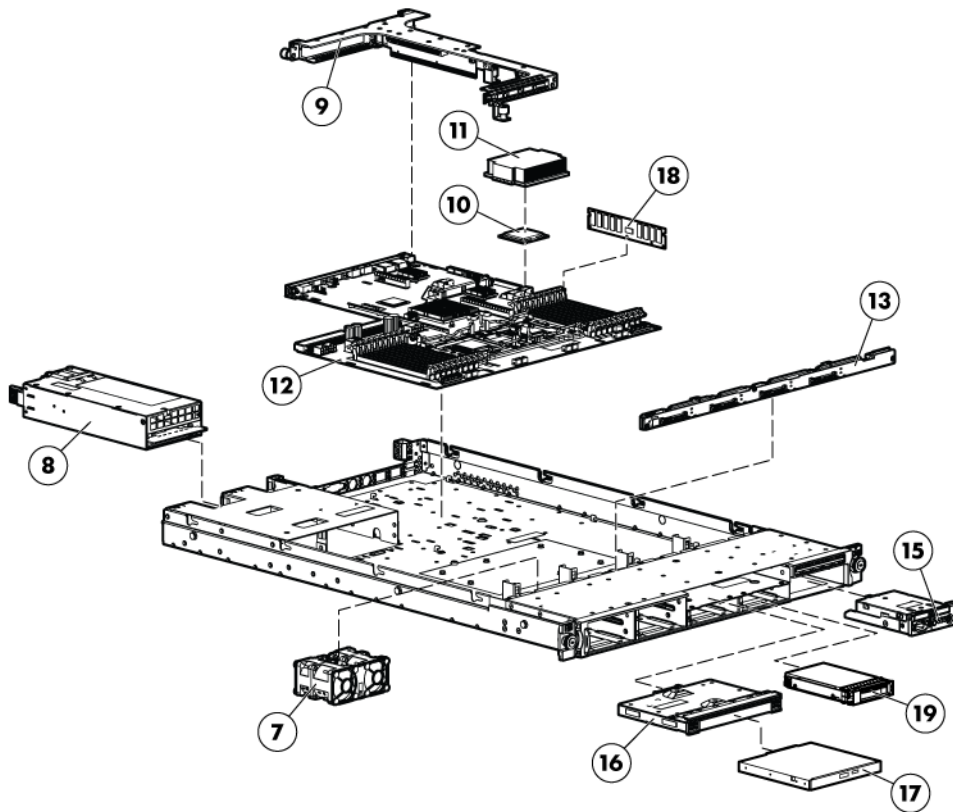
³No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

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



Item	Description	Spare part number	Customer self repair (on page 5)
7	Fan module	532149-001	Mandatory ¹
8	Hot-plug power supplies	—	—
	a) 460 W	511804-001	Mandatory ¹
	b) 750 W*	511778-001	Mandatory ¹
	c) 1200 W*	498152-001	Mandatory ¹
9	PCI riser board assembly	493802-001	Mandatory ¹
10	Processor	—	—
	a) 1.86-GHz Intel® Xeon® processor E5502†	490075-001	Optional ²
	b) 2.00-GHz Intel® Xeon® processor E5504*†	490074-001	Optional ²
	c) 2.13-GHz Intel® Xeon® processor L5506*†	513597-001	Optional ²
	c) 2.13-GHz Intel® Xeon® processor E5506*†	506013-001	Optional ²
	d) 2.26-GHz Intel® Xeon® processor L5520*†	508567-001	Optional ²
	e) 2.26-GHz Intel® Xeon® processor E5520*†	507248-001	Optional ²
	f) 2.40-GHz Intel® Xeon® processor E5530*†	490072-001	Optional ²
	g) 2.53-GHz Intel® Xeon® processor E5540*†	490071-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 5)
	h) 2.67-GHz Intel® Xeon® processor X5550*†	490070-001	Optional ²
	i) 2.80-GHz Intel® Xeon® processor X5560*†	490069-001	Optional ²
	j) 2.93-GHz Intel® Xeon® processor X5570*†	506012-001	Optional ²
	k) 2.40-GHz Intel® Xeon® processor L5530*†	536584-001	Optional ²
11	Heatsink	—	—
	a) Processor heatsink kit*	507672-001	Optional ²
	b) Thermal kit (cleaning pad and thermal grease)	468290-001	Optional ²
	Boards		
12	System board	493799-001	Optional ²
13	Primary hard drive backplane assembly and cable, bottom	532148-001	Optional ²
14	Optional hard drive backplane assembly and cable, top*	532147-001	Optional ²
15	HP Systems Insight Display, LEDs, and power button assembly, with cable	493805-001	Optional ²
	Media devices		
16	DVD tray	532390-001	Mandatory ¹
17	DVD-ROM drives	—	—
	a) SATA DVD-ROM drive, slimline	481428-001	Mandatory ¹
	b) SATA DVD-RW drive, slimline*	481429-001	Mandatory ¹
	Memory		
18	DIMM	—	—
	a) 2-GB, PC3-10600E	501540-001	Mandatory ¹
	b) 2-GB, PC3-10600R*	501533-001	Mandatory ¹
	c) 4-GB, PC3-10600R*	501534-001	Mandatory ¹
	d) 4-GB, PC3-8500R*	501535-001	Mandatory ¹
	e) 8-GB, PC3-8500R*	501537-001	Mandatory ¹
	f) 8-GB, PC3-10600R*	501536-001	Mandatory ¹
	g) 16-GB, PC3-8500R*	501538-001	Mandatory ¹
	Hard drives		
19	Hard drives	—	—
	a) 36-GB, SAS, 15,000-rpm	418397-001	Mandatory ¹
	b) 72-GB, SAS, 10,000-rpm*	389346-001	Mandatory ¹
	c) 72-GB, SAS, 15,000-rpm*	418398-001	Mandatory ¹
	d) 146-GB, SAS, 10,000-rpm*	418399-001	Mandatory ¹
	e) 146-GB, SAS, 10,000-rpm, 6G*	507283-001	Mandatory ¹
	f) 146-GB, SAS, 15,000-rpm*	504334-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 5)
	g) 300-GB, SAS, 10,000-rpm*	493083-001	Mandatory ¹
	h) 300-GB, SAS, 10,000-rpm, 6G*	507284-001	Mandatory ¹
	i) 120-GB, SATA, 5,400-rpm*	459322-001	Mandatory ¹
	j) 250-GB, SATA, 5,400-rpm*	460426-001	Mandatory ¹
	k) 500-GB, SATA, 7,200-rpm*	508035-001	Mandatory ¹
	Options		
20	PCI riser board options	—	—
	a) PCI-X riser board, x16*	535321-001	Optional ²
	b) PCIe riser board, x8*	493803-001	Optional ²
	c) PCIe riser board, x16*	493802-001	Optional ²
21	Trusted Platform Module*	450168-001	No ³
22	BBWC battery pack*	462976-001	Optional ²
23	BBWC cache module, 512-MB*	462975-001	Optional ²
24	BBWC cache module, 256-MB*	462974-001	Optional ²
	Miscellaneous		
25	Battery, 3.3-V, lithium*	234556-001	Mandatory ¹
26	AC power cord*	187335-001	Mandatory ¹
27	Cable kit	532393-001	Mandatory ¹
	a) Hard drive data cable or mini SAS cable (2)*	—	—
	b) Hard drive backplane power cable (2)*	—	—
	c) PCI power cable*	—	—
	d) HP Systems Insight Display and power button cable*	—	—
	e) SATA DVD-ROM drive cable*	—	—

*Not shown

†All processors in this HP ProLiant server must have the same cache size, speed, number of cores, and rated maximum power consumption.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

¹Mandatory: 强制的 — 客户自行维修所使用的零件是强制性的。如果您要求 HP 更换这些零件，HP 将会向您收取此服务所需的外出费用与劳动成本。

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

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

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

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

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

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-10/T-15 Torx screwdriver (on page 79) (provided inside the server)
- HP Insight Diagnostics software ("HP Insight Diagnostics" on page 61)

Preparation procedures

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

- Extend the server from the rack (on page 25).
If you are performing service procedures in an HP, Compaq branded, telco, or third-party rack cabinet, you can use the locking feature of the rack rails to support the server and gain access to internal components.
For more information about telco rack solutions, refer to the RackSolutions.com website (<http://www.racksolutions.com/hp>).
- Power down the server (on page 24).
If you must remove a server from a rack or a non-hot-plug component from a server, power down the server.
- Remove the server from the rack (on page 25).
If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.

Power down the server



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



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

1. Back up the server data.
2. Shut down the operating system as directed by the operating system documentation.
3. If the server is installed in a rack, press the UID LED button on the front panel. Blue LEDs illuminate on the front and rear panels of the server.


4. Press the Power On/Standby button to place the server in standby mode. When the server activates standby power mode, the system power LED changes to amber.
5. If the server is installed in a rack, locate the server by identifying the illuminated rear UID LED button.
6. Disconnect the power cords.


The system is now without power.

Extend the server from the rack

NOTE: If the optional cable management arm option is installed, you can extend the server without powering down the server or disconnecting peripheral cables and power cords. These steps are only necessary with the standard cable management solution.

1. Power down the server (on page 24).
2. Disconnect all peripheral cables and power cords.
3. Loosen the front panel thumbscrews.
4. Extend the server on the rack rails until the server rail-release latches engage.

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

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

5. After performing the installation or maintenance procedure, slide the server into the rack:
 - a. Slide the server fully into the rack.
 - b. Secure the server by tightening the thumbscrews.
6. Connect the peripheral cables and power cords.

Remove the server from the rack

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

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Disconnect the cabling and remove the server from the rack. For more information, refer to the documentation that ships with the rack mounting option.
4. Place the server on a sturdy, level surface.

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage

system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

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

Symbols on equipment

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



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

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



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

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



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

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



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

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



14.06 - 15.97 kg
31.00 - 35.20 lb

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

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






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



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

Server warnings and cautions

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

-
-  **WARNING:** To reduce the risk of electric shock or damage to the equipment:
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
 - Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
 - Unplug the power cord from the power supply to disconnect power to the equipment.
 - Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.
-
-  **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
-  **CAUTION:** Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.
-

Access panel

-
-  **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
-  **CAUTION:** Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.
-

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Open the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.

If the locking latch is locked use a T-15 Torx screwdriver to unlock the latch.

To replace the component:

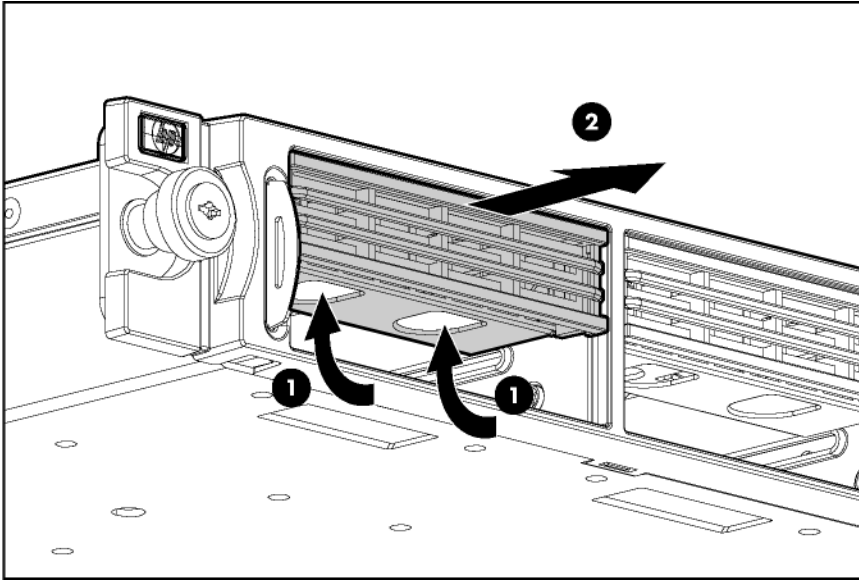
1. Place the access panel on top of the server with the hood latch open. Allow the panel to extend past the rear of the server approximately 1.25 cm (0.5 in).
2. Push down on the hood latch. The access panel slides to a closed position.
3. Use the T-15 Torx screwdriver provided with the server to tighten the security screw on the hood latch.

Hard drive bezel blanks

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

To remove the component:

1. Remove hard drives 1 and 2.
2. Remove the hard drive bezel blank.

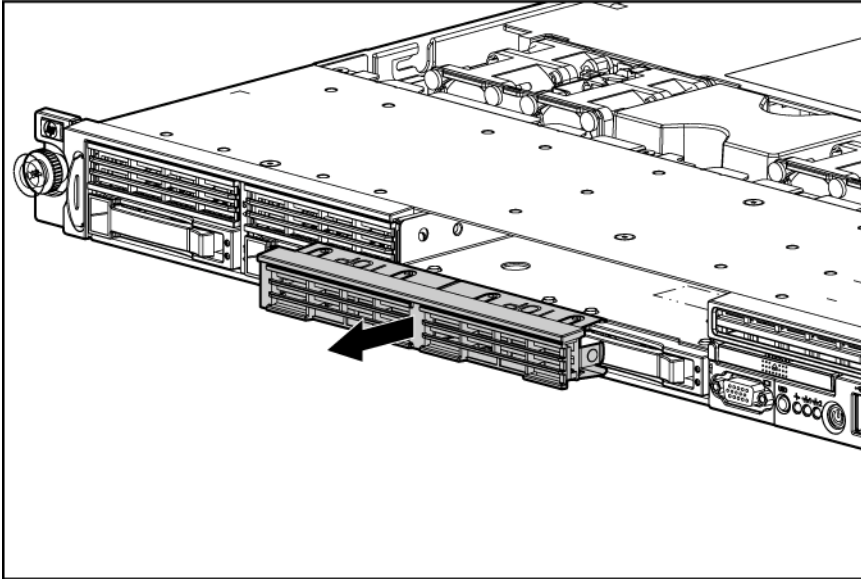


To replace the component, reverse the removal procedure.

Dual bezel blank

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

Remove the component as indicated.

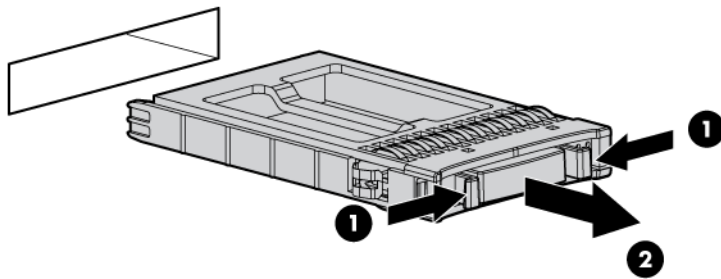


To replace the component, reverse the removal procedure.

Hard drive blank

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

Remove the component as indicated.



To replace the component, slide the component into the bay until it clicks.

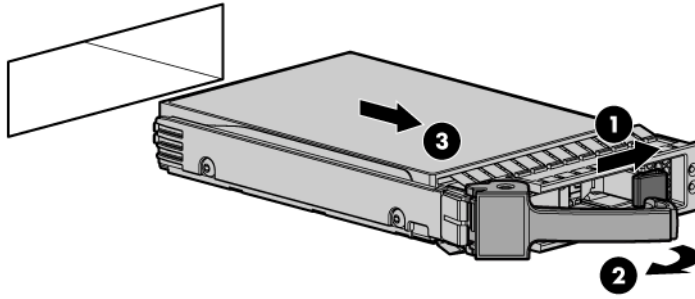
SAS and SATA hard drive

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

To remove the component:

1. Determine the status of the hard drive from the hot-plug SAS hard drive LED combinations ("[SAS and SATA hard drive LED combinations](#)" on page 77).

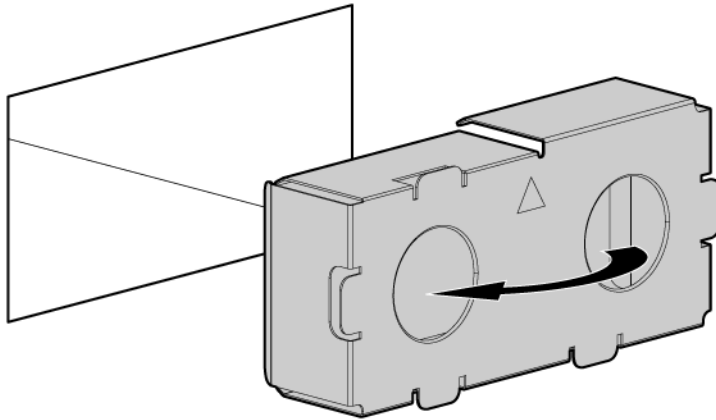
2. Back up all server data on the hard drive.
3. Remove the hard drive.



To replace the component, reverse the removal procedure.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

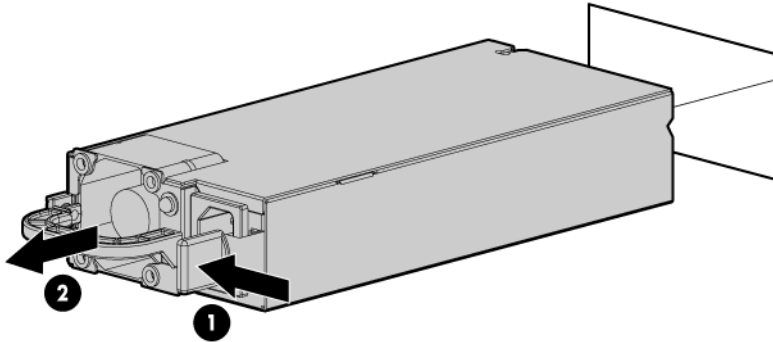
Hot-plug power supply

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

To remove the component:

1. Determine how many hot-plug power supplies are installed:

- If only one hot-plug power supply is installed, power down and remove the power cord from the server ("[Power down the server](#)" on page 24).
 - If more than one hot-plug power supply is installed, continue with the next step.
2. Unfasten the cable management solution to access the power supply bays.
 3. Disconnect the power cord from the power source.
 4. Disconnect the power cord from the power supply.
 5. Remove the hot-plug power supply.



WARNING: To reduce the risk of electric shock or damage to the equipment, do not connect the power cord to the power supply until the power supply is installed.

To replace the component:

1. Slide the hot-plug power supply into the power supply bay.
2. Connect the power cord to the power supply.
3. Install the cable management arm, if removed.
4. Route the power cord through the cable management arm or power cord anchor.

NOTE: If using the power cord anchor, be sure to leave enough slack in the power cord so that the redundant power supply can be removed without disconnecting the power cord from the primary power supply.

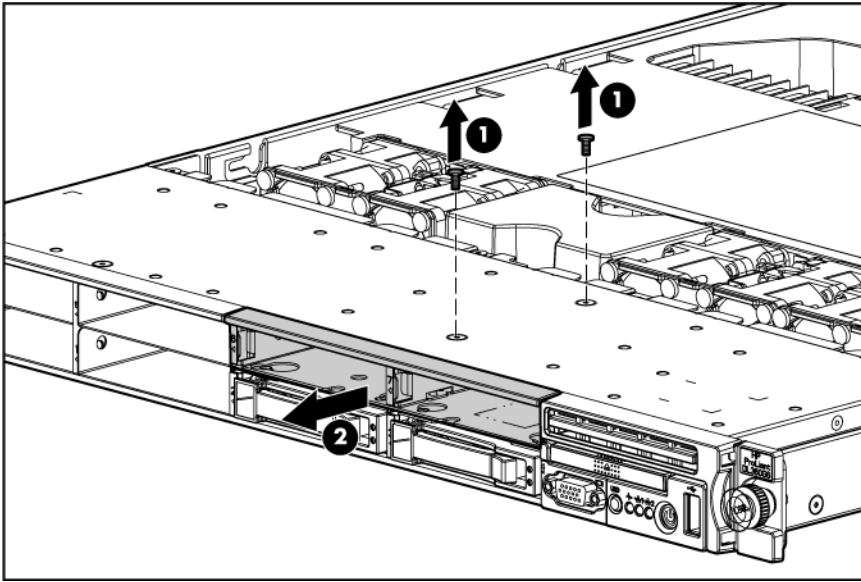
5. Close the cable management arm.
6. Connect the power cord to the power source.
7. Be sure that the power supply LED is green ("[Rear panel LEDs and buttons](#)" on page 68).
8. Be sure that the power supply LED on the SID is green ("[HP Systems Insight Display LEDs](#)" on page 72).

Hard drive cage

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).

3. Remove all hard drives ("[SAS and SATA hard drive](#)" on page 29).
4. Remove the hard drive cage.



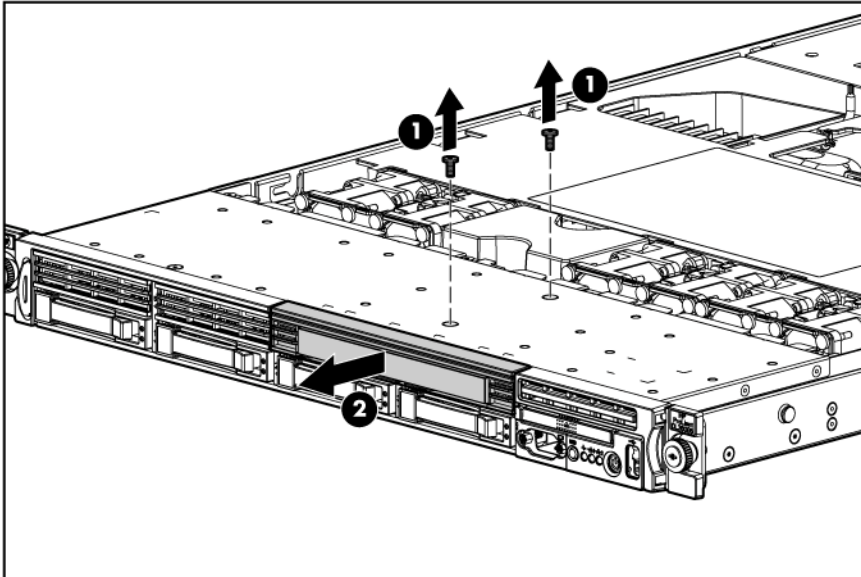
To replace the component, reverse the removal procedure.

DVD tray

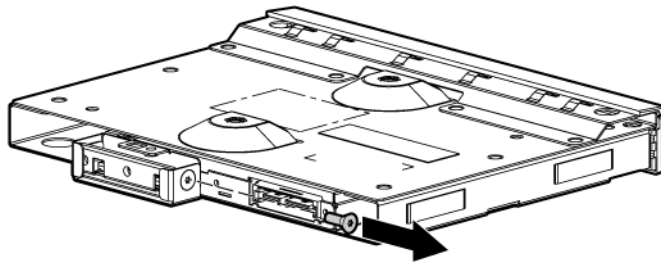
To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("[Access panel](#)" on page 27).
4. Remove the BBWC battery pack, if installed ("[BBWC battery pack](#)" on page 36).
5. Remove the air baffle ("[Air baffle](#)" on page 37).
6. Disconnect the SATA DVD cable from the rear of the DVD tray ("[DVD-ROM and DVD-RW drive cabling](#)" on page 59).

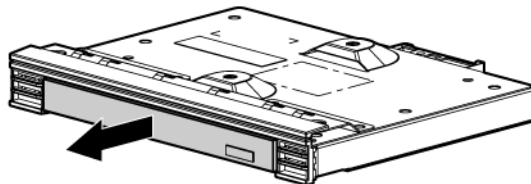
7. Remove the DVD tray.



8. Remove the screw from the rear of the DVD tray.



9. Remove the DVD-ROM or DVD-RW drive from the DVD tray.



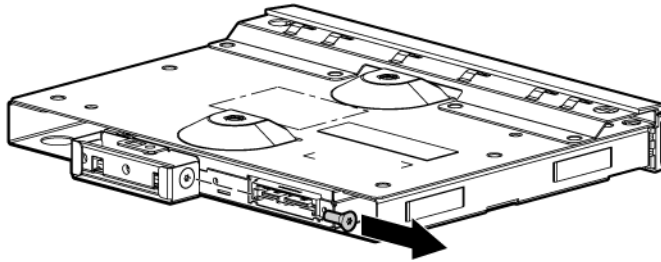
To replace the component, reverse the removal procedure.

DVD-ROM or DVD-RW drive

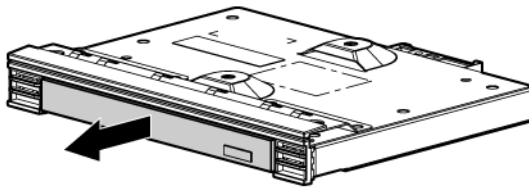
To remove the component:

1. Power down the server (on page 24).

2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Disconnect the SATA DVD cable from the rear of the DVD tray and the system board ("DVD-ROM and DVD-RW drive cabling" on page 59).
7. Remove the DVD tray ("DVD tray" on page 32).
8. Remove the screw from the rear of the DVD tray.



9. Remove the DVD-ROM or DVD-RW drive from the DVD tray.



To replace the component, reverse the removal procedure.

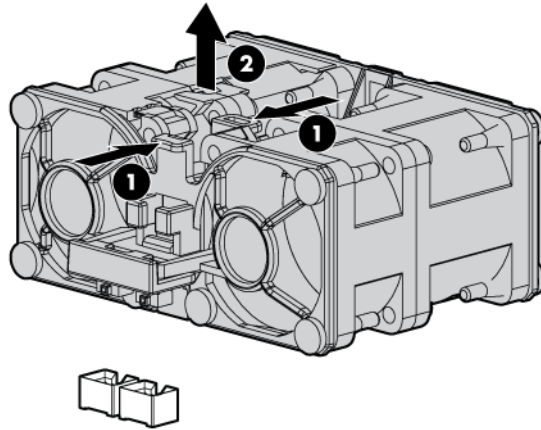
Fan module

The server has four fan modules ("Fan modules" on page 78). Install fan 2 only when processor 2 is installed. When only one processor is installed, always install the fan blank.

To remove a fan module:

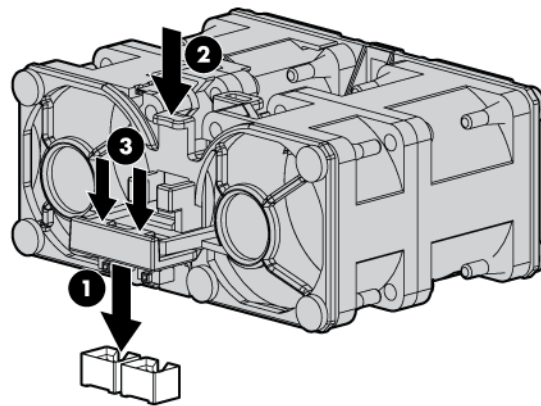
1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).

4. Remove the fan module.



To replace the component:

1. Install the fan module.



2. Install the access panel ("[Access panel](#)" on page [27](#)).
3. Slide the server into the rack.
4. Power up the server.

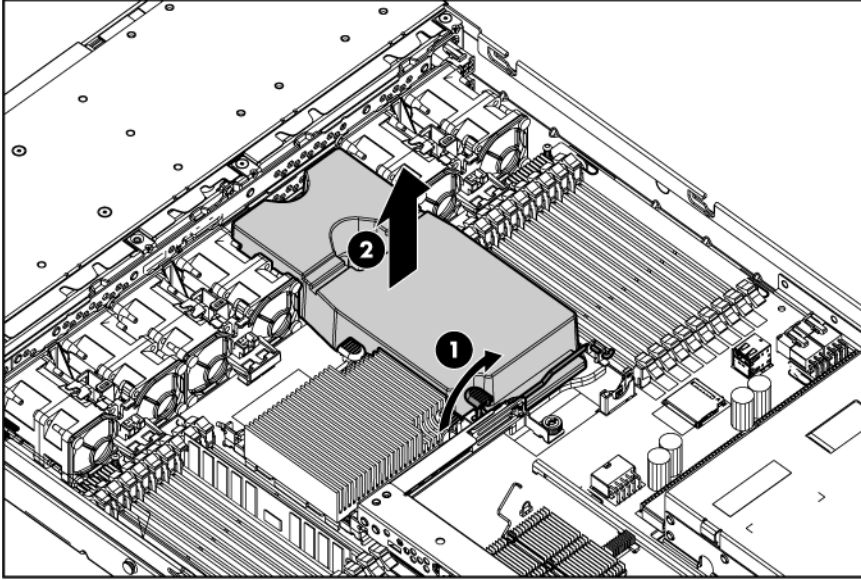
Fan blank

Install fan 2 only when processor 2 is installed. When only one processor is installed, always install the fan blank.

To remove the component:

1. Power down the server (on page [24](#)).
2. Extend the server from the rack (on page [25](#)).
3. Remove the access panel ("[Access panel](#)" on page [27](#)).

4. Remove the fan blank.



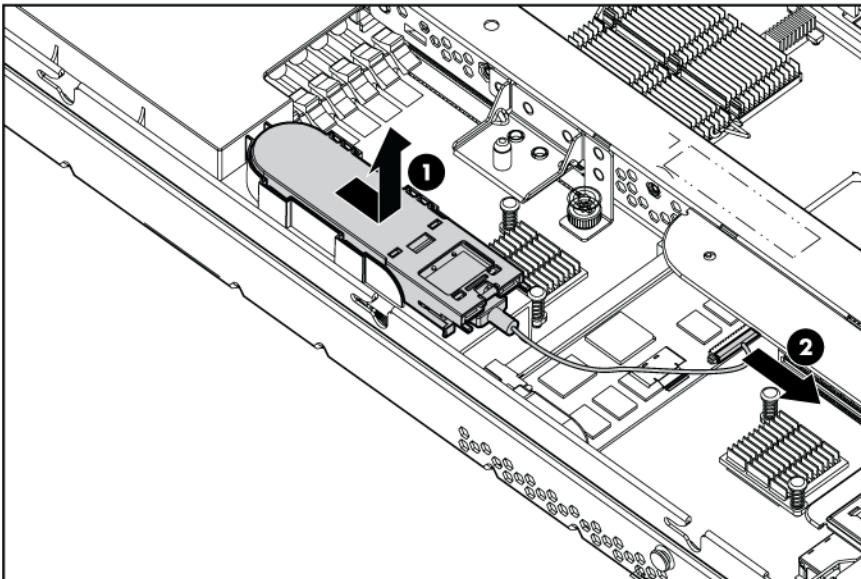
To replace the component, reverse the removal procedure.

BBWC battery pack

- CAUTION:** To prevent a server malfunction or damage to the equipment, do not add or remove the battery pack while an array capacity expansion, RAID level migration, or stripe size migration is in progress.

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery.

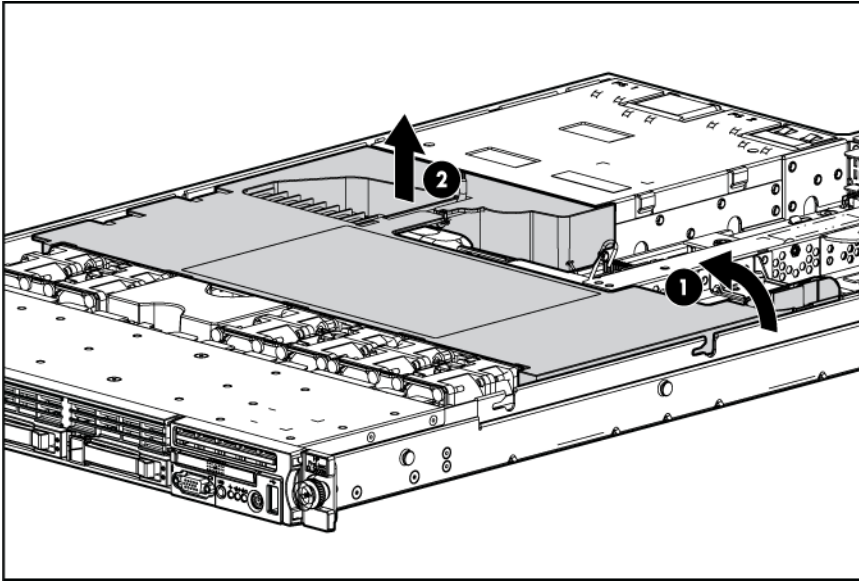


To replace the component, reverse the removal procedure.

Air baffle

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle.



To replace the component, reverse the removal procedure.

PCI riser board assembly

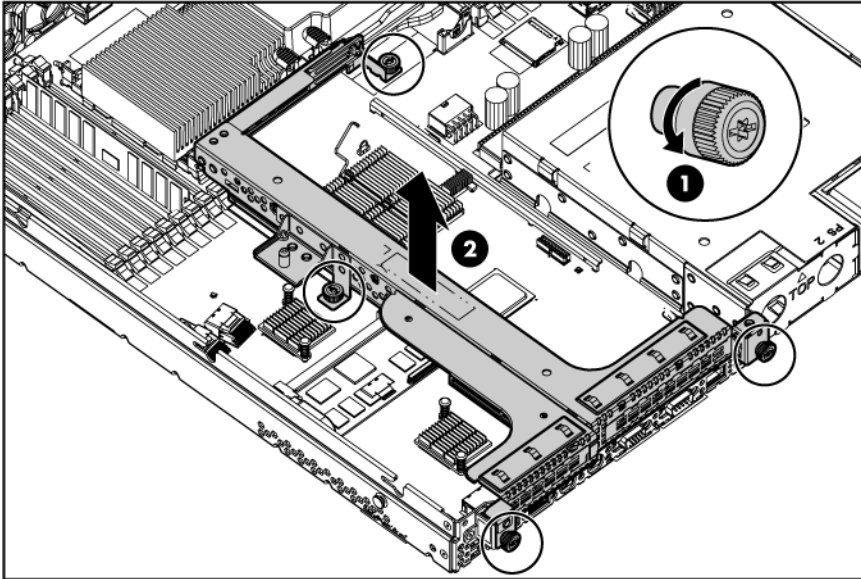
To remove the component:



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

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the PCI riser board assembly:
 - a. Disconnect external cables connected to any existing expansion boards.
 - b. Loosen the four PCI riser board assembly thumbscrews.

- c. Lift the assembly to unseat the PCI riser boards, and then remove the assembly.



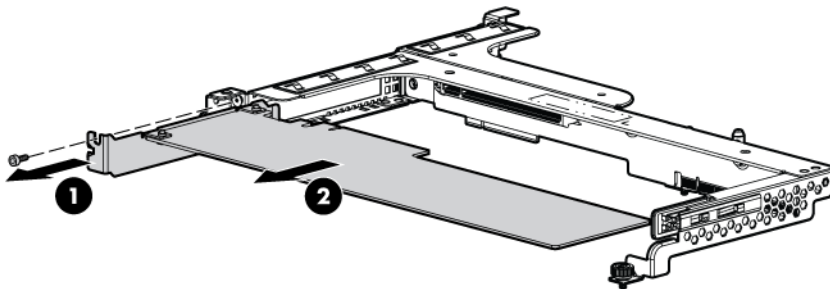
7. Remove all expansion boards ("[Expansion boards](#)" on page 38).

To replace the component, reverse the removal procedure.

Expansion boards

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("[Access panel](#)" on page 27).
4. Remove the BBWC battery pack, if installed ("[BBWC battery pack](#)" on page 36).
5. Remove the air baffle ("[Air baffle](#)" on page 37).
6. Remove the PCI riser board assembly ("[PCI riser board assembly](#)" on page 37).
7. Remove the expansion board.

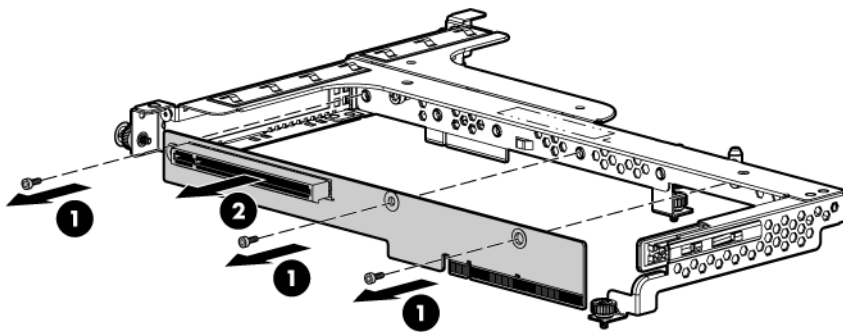


To replace the component, reverse the removal procedure.

PCIe riser board

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the PCI riser board assembly ("PCI riser board assembly" on page 37).
7. Remove all expansion boards ("Expansion boards" on page 38).
8. Remove the full-length PCIe riser board from the riser board assembly.



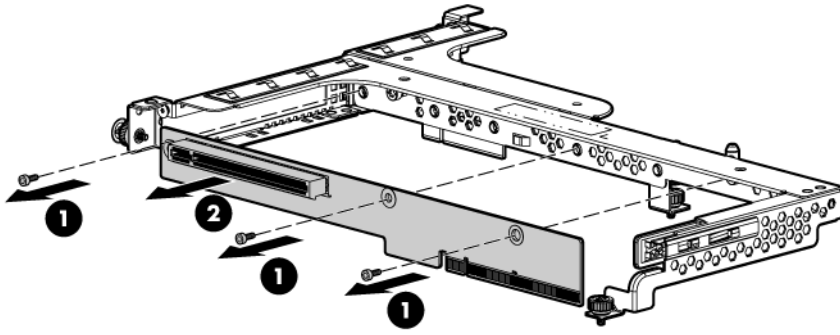
To replace the component, reverse the removal procedure.

PCI-X riser board

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the PCI riser board assembly ("PCI riser board assembly" on page 37).
7. Remove all expansion boards ("Expansion boards" on page 38).

8. Remove the full-length PCI-X riser board from the riser board assembly.

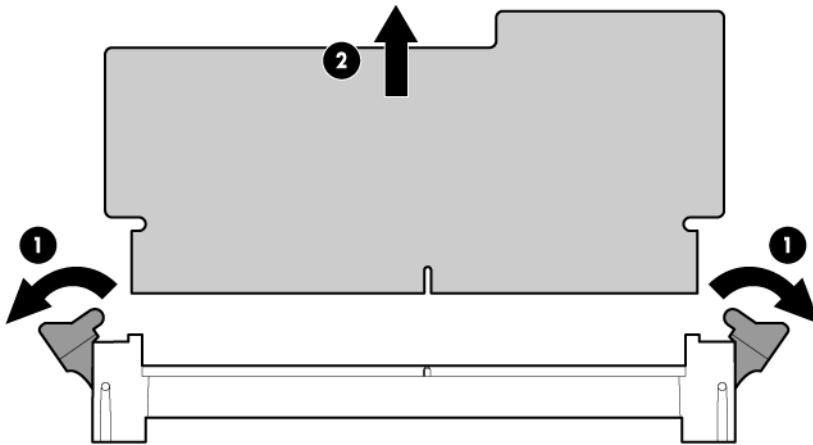


To replace the component, reverse the removal procedure.

Cache module

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the PCI riser board assembly ("PCI riser board assembly" on page 37).
7. Remove the cache module.

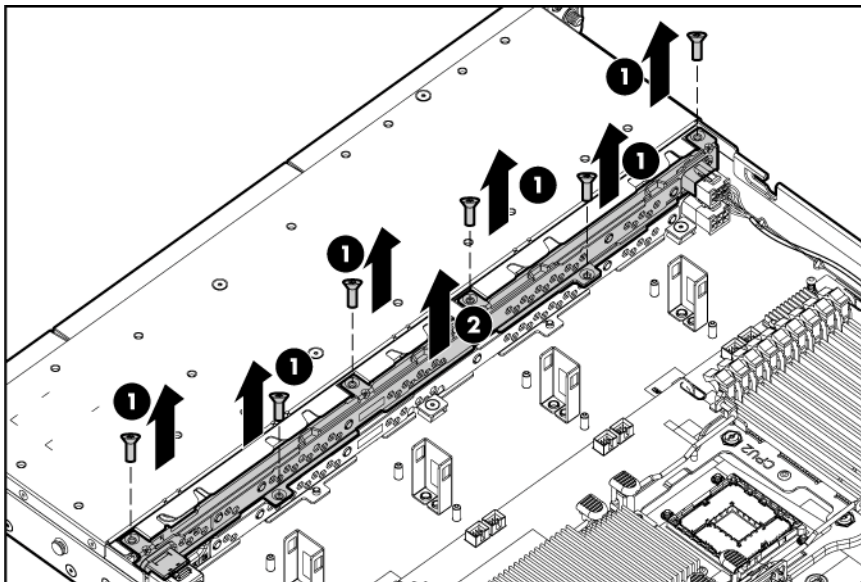


To replace the component, reverse the removal procedure.

Optional hard drive backplane assembly (top)

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the hard drives from hard drive bays 5, 6, 7, and 8 ("SAS and SATA hard drive" on page 29).
5. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
6. Remove the air baffle ("Air baffle" on page 37).
7. Remove all fan modules ("Fan module" on page 34).
8. Remove the fan blank ("Fan blank" on page 35).
9. Disconnect the hard drive data cable and the hard drive power cable from the optional hard drive backplane and the system board ("Hard drive backplane cabling" on page 57).
10. Remove the optional hard drive backplane.



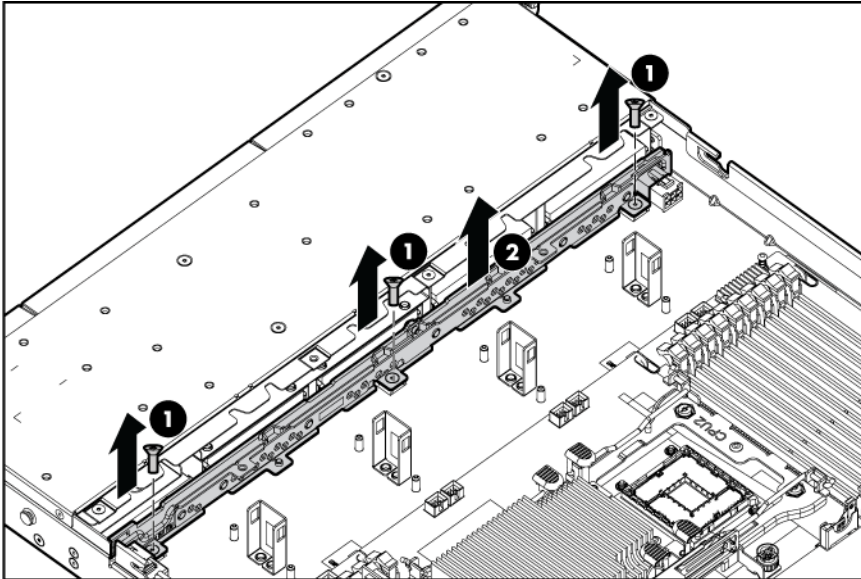
To replace the component, reverse the removal procedure.

Standard hard drive backplane assembly (bottom)

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove all hard drives ("SAS and SATA hard drive" on page 29).
5. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
6. Remove the air baffle ("Air baffle" on page 37).
7. Remove all fan modules ("Fan module" on page 34).

8. Remove the fan blank ("Fan blank" on page 35).
9. Disconnect the hard drive data cable and the hard drive power cable from the optional hard drive backplane and the system board ("Hard drive backplane cabling" on page 57).
10. Remove the optional hard drive backplane ("Optional hard drive backplane assembly (top)" on page 41).
11. Disconnect the hard drive data cable and the hard drive power cable from the standard hard drive backplane and the system board ("Hard drive backplane cabling" on page 57).
12. Remove the hard drive backplane.



To replace the component, reverse the removal procedure.

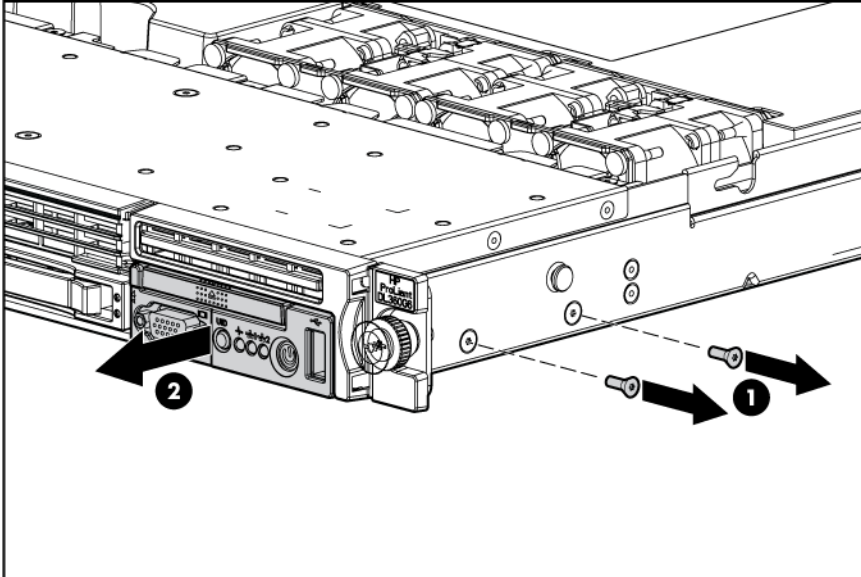
HP Systems Insight Display and LED assembly

The Systems Insight Display is an assembly that includes the front panel LEDs, Power On/Standby button, and a cable.

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Disconnect the Systems Insight Display cable from the system board ("Power button and Systems Insight Display cabling" on page 59).

7. Remove the HP Systems Insight Display and LED assembly.

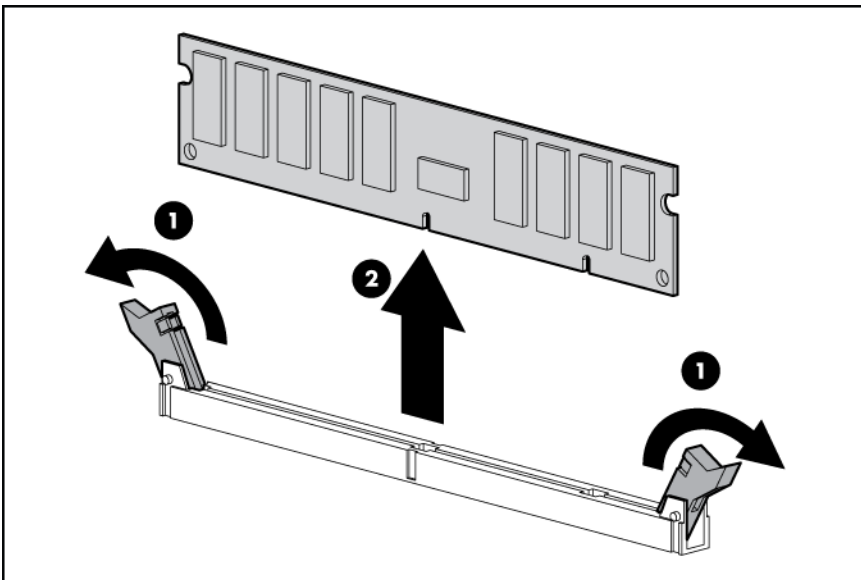


To replace the component, reverse the removal procedure.

DIMMs

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the DIMM.

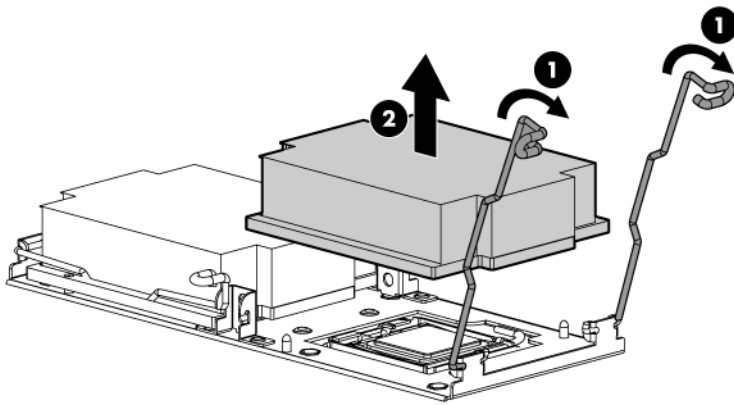


To replace the component, reverse the removal procedure.

Heatsink

To remove the component:

1. Power down the server (on page 24).
2. Extend the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
5. Remove the air baffle ("Air baffle" on page 37).
6. Remove the heatsink.

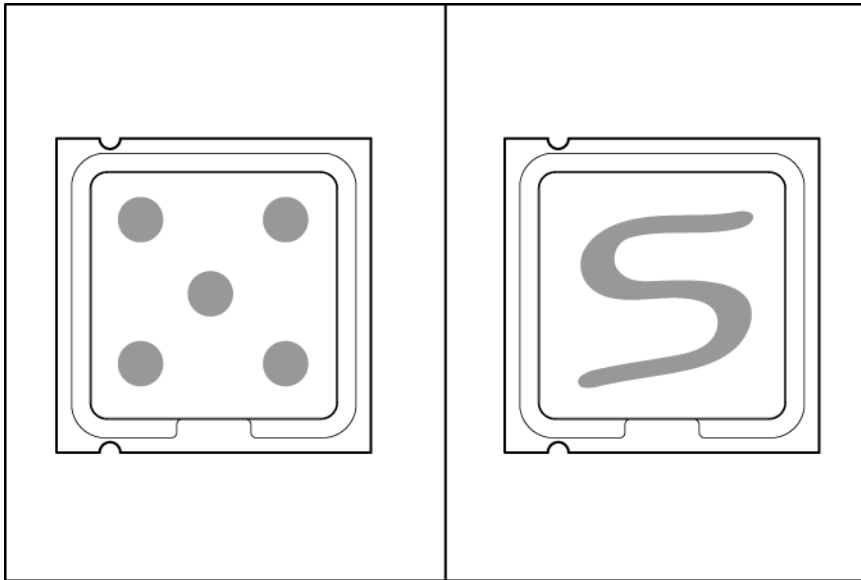


To replace the heatsink:

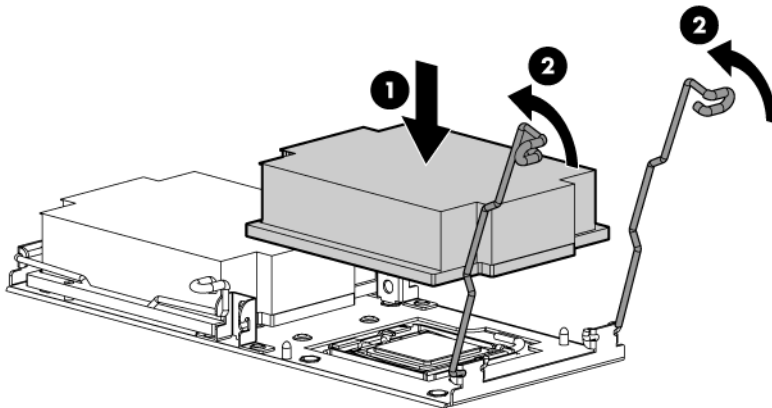
1. Use the alcohol swab to remove all the existing thermal grease from the processor. Allow the alcohol to evaporate before continuing.
2. Apply new grease to the top of the processor in one of the following patterns to ensure even distribution.



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



3. Install the heatsink.



4. Install the air baffle ("[Air baffle](#)" on page [37](#)).
5. Install the BBWC battery pack, if removed ("[BBWC battery pack](#)" on page [36](#)).
6. Install the access panel ("[Access panel](#)" on page [27](#)).
7. Slide the server into the rack.

Processor

The server supports single- and dual-processor operation. Fan 2 is only required when processor 2 is installed in the server. When only one processor is installed, always install the fan blank.

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



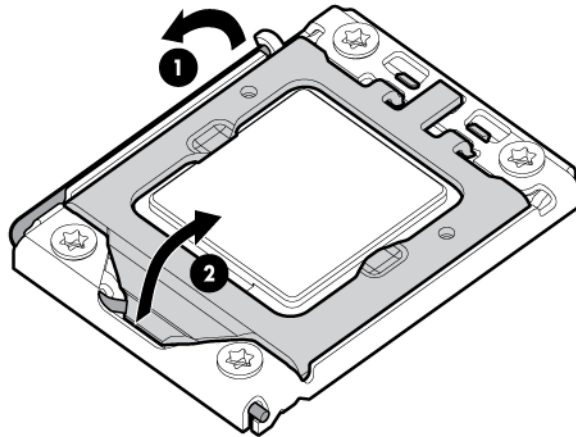
IMPORTANT: Processor socket 1 must be populated at all times or the server does not function.



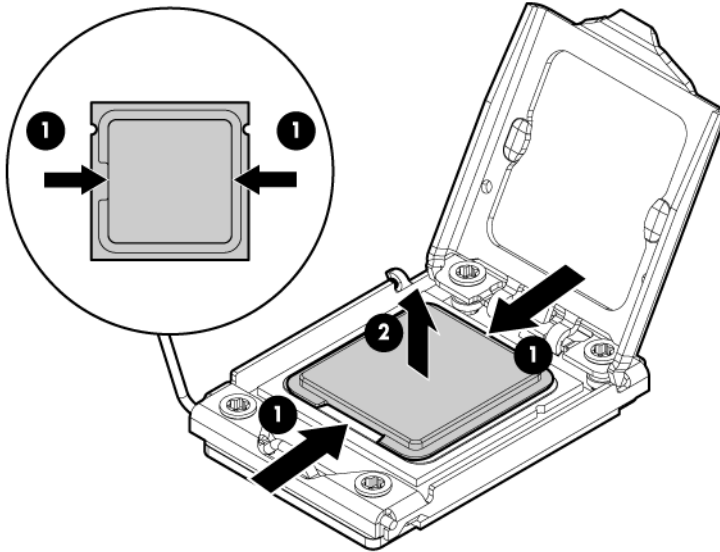
IMPORTANT: If installing a processor with a faster speed, update the system ROM before installing the processor.

To remove a processor:

1. Update the system ROM.
Locate and download the latest ROM version from the HP website (<http://www.hp.com/support>). Follow the instructions on the website to update the system ROM.
2. Power down the server (on page 24).
3. Extend the server from the rack (on page 25).
4. Remove the access panel ("Access panel" on page 27).
5. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
6. Remove the air baffle ("Air baffle" on page 37).
7. Remove the heatsink ("Heatsink" on page 44).
8. Open the processor retaining latch and the processor socket retaining bracket.



- Using your fingers, remove the failed processor.

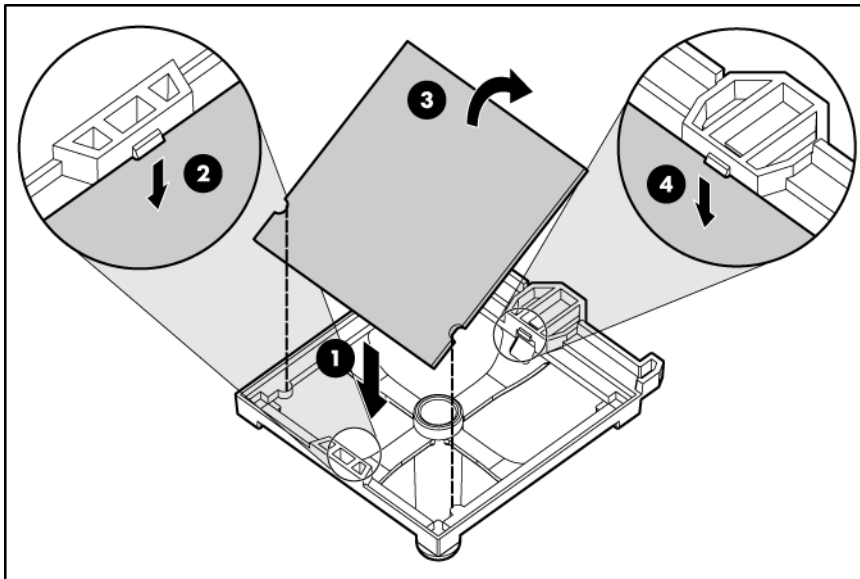


To replace a processor:



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

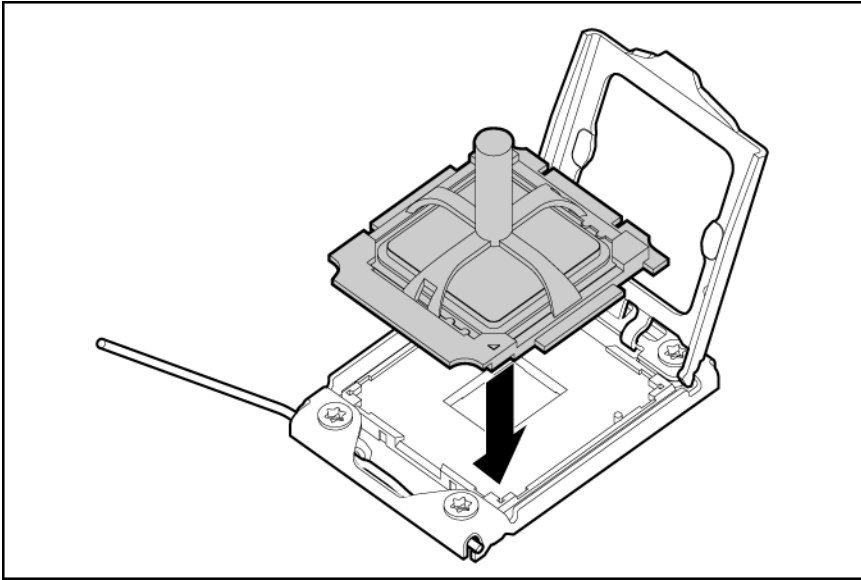
- If the processor has separated from the installation tool, carefully re-insert the processor in the tool.



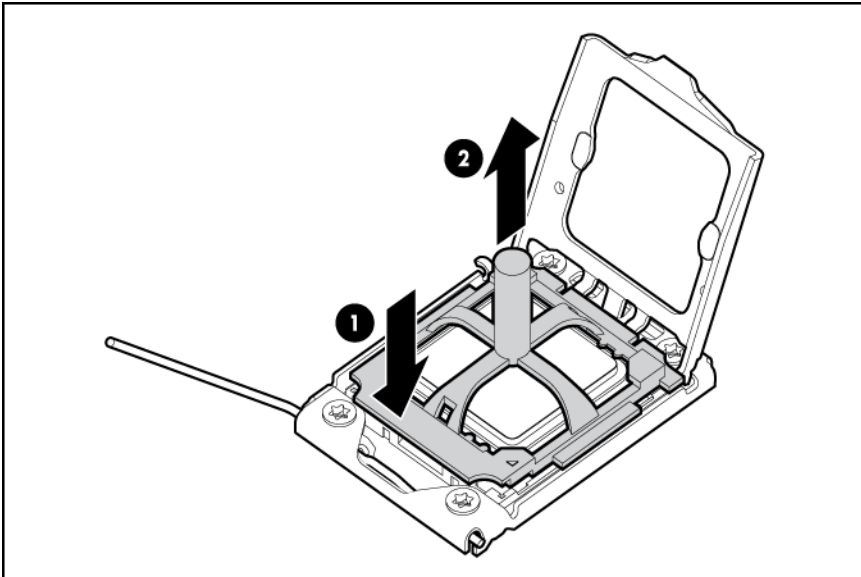
- Align the processor installation tool with the socket and install the spare processor.



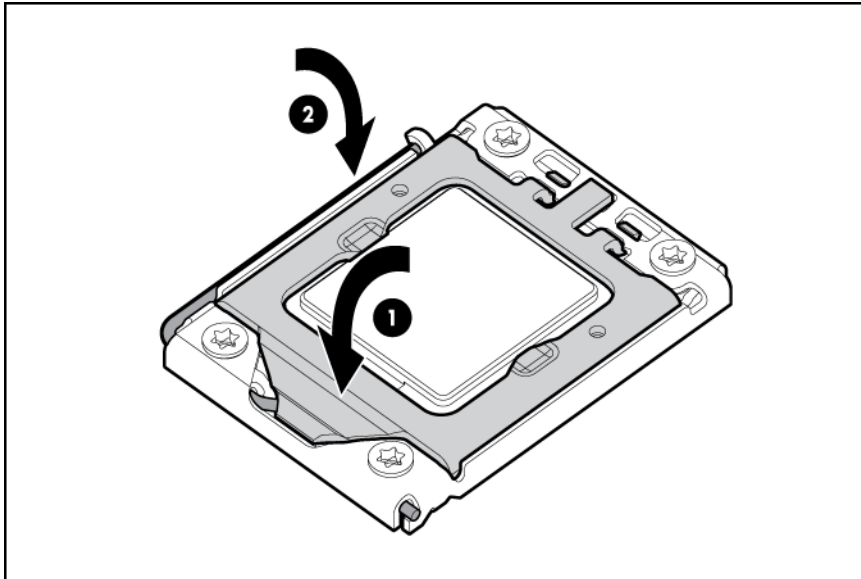
CAUTION: The processor is designed to fit one way into the socket. Use the alignment guides on the processor and socket to properly align the processor with the socket. Refer to the server hood label for specific instructions.



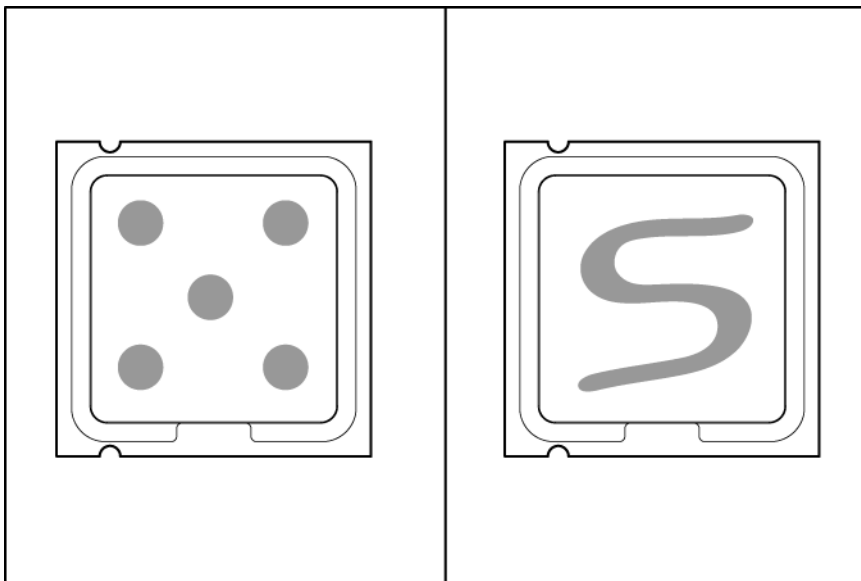
3. Press down firmly until the processor installation tool clicks and separates from the processor, and then remove the processor installation tool.



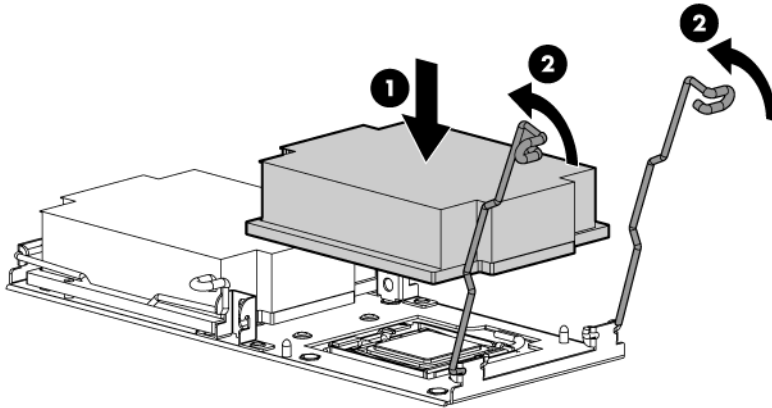
4. Close the processor retaining latch and the processor socket retaining bracket.



5. Clean the old thermal grease from the heatsink with the alcohol swab. Allow the alcohol to evaporate before continuing.
6. Apply all the grease to the top of the processor in one of the following patterns to ensure even distribution.



7. Install the heatsink.



8. Install the air baffle ("[Air baffle](#)" on page [37](#)).
9. Install the BBWC battery pack, if removed ("[BBWC battery pack](#)" on page [36](#)).
10. Install the access panel ("[Access panel](#)" on page [27](#)).
11. Slide the server into the rack.
12. Power up the server.

System battery

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



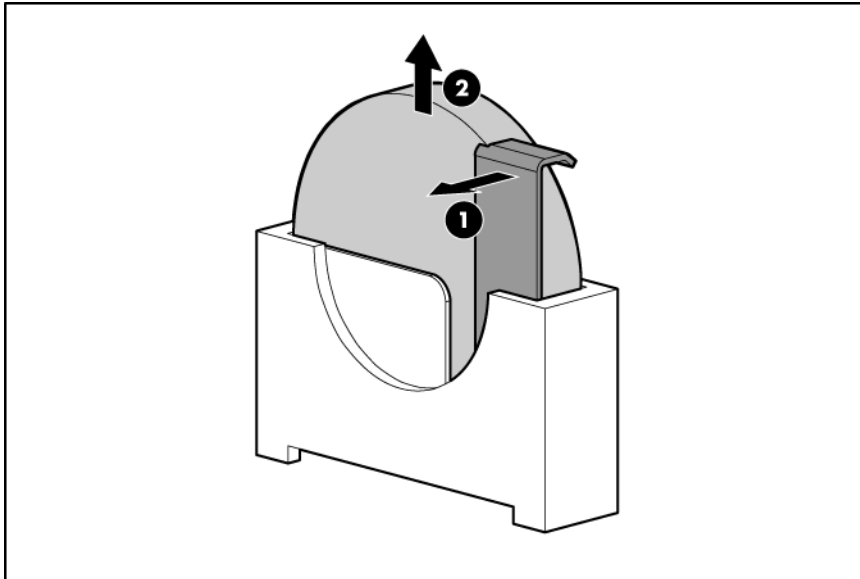
WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

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

To remove the component:

1. Power down the server (on page [24](#)).
2. Extend or remove the server from the rack ("[Extend the server from the rack](#)" on page [25](#), "[Remove the server from the rack](#)" on page [25](#)).
3. Remove the access panel ("[Access panel](#)" on page [27](#)).
4. Remove the BBWC battery pack, if installed ("[BBWC battery pack](#)" on page [36](#)).
5. Remove the air baffle ("[Air baffle](#)" on page [37](#)).
6. Locate the battery on the system board ("[System board components](#)" on page [69](#)).

7. Remove the battery.



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

To replace the component, reverse the removal procedure.

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

System board

To remove the component:

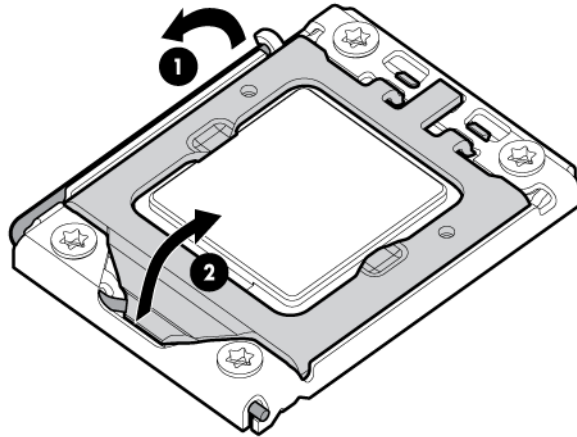
1. Power down the server (on page 24).
2. Remove the server from the rack (on page 25).
3. Remove the access panel ("Access panel" on page 27).
4. Remove all hard drives ("SAS and SATA hard drive" on page 29).
5. Remove all power supplies ("Hot-plug power supply" on page 30).
6. Remove the BBWC battery pack, if installed ("BBWC battery pack" on page 36).
7. Remove the air baffle ("Air baffle" on page 37).



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

8. Remove the PCI riser board assembly ("PCI riser board assembly" on page 37).
9. Remove all fan modules ("Fan module" on page 34).
10. Remove the fan blank ("Fan blank" on page 35).
11. Disconnect all cables connected to the system board ("System board components" on page 69). For more information, see "Cabling (on page 57)."
12. Remove the cache module ("Cache module" on page 40).

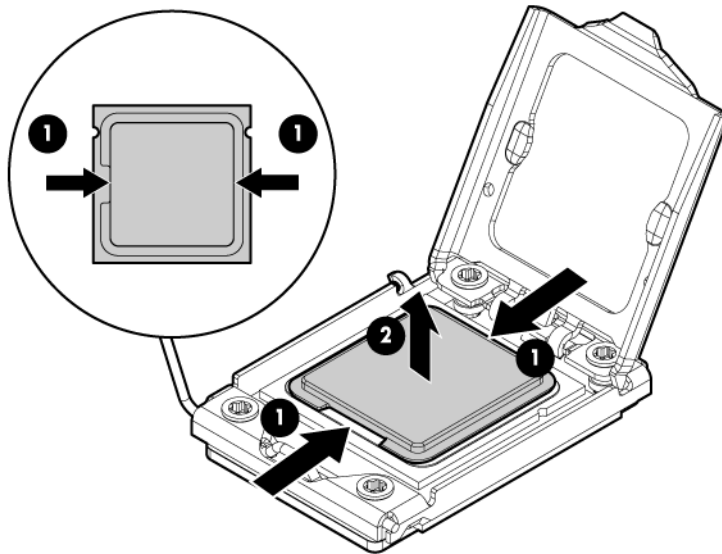
13. Remove the optional hard drive backplane ("[Optional hard drive backplane assembly \(top\)](#)" on page 41).
14. Remove the hard drive backplane ("[Standard hard drive backplane assembly \(bottom\)](#)" on page 41).
15. Remove all DIMMs ("[DIMMs](#)" on page 43).
16. Remove the heatsink ("[Heatsink](#)" on page 44).
17. Open the processor retaining latch and the processor socket retaining bracket.



△ **CAUTION:** To avoid damage to the processor:

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

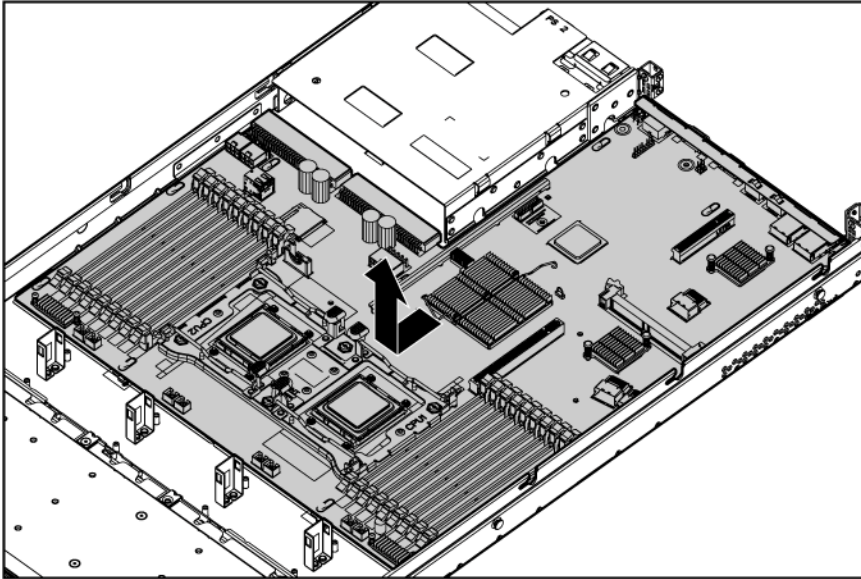
18. Using your fingers, remove the processor from the failed system board.



-
- ⚠ **CAUTION:** To avoid damage to the system board:
- Do not touch the processor socket contacts.
 - Always install the processor socket cover after removing the processor from the socket.
 - Do not tilt or slide the processor when lowering the processor into the socket.
-

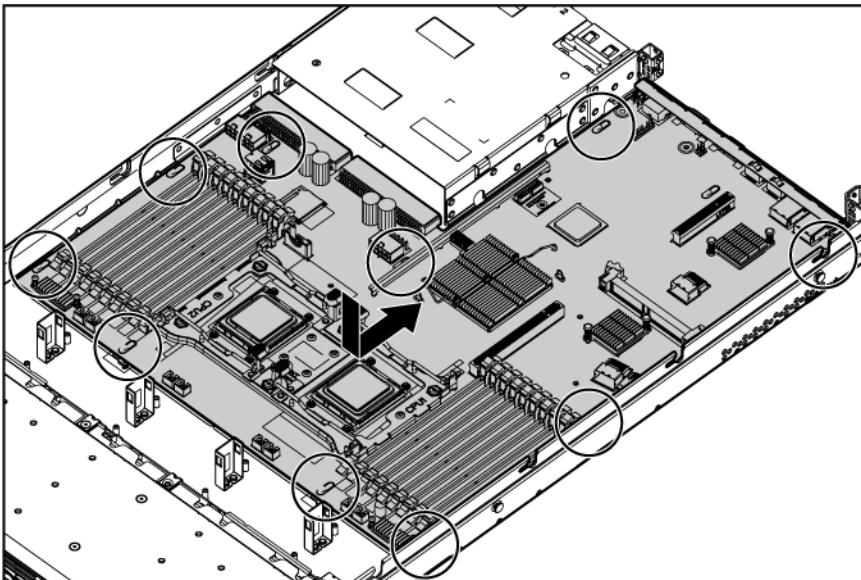
- ⚠ **CAUTION:** To avoid damage to the processor:
- Handle the processor only by the edges.
 - Do not touch the bottom of the processor, especially the contact area.
-

19. Remove the failed system board.



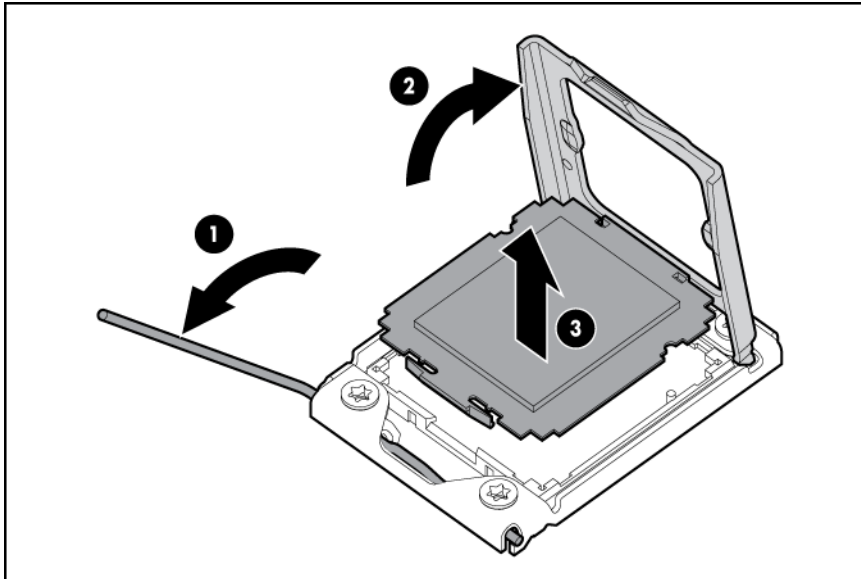
To replace the system board:

1. Align and install the spare system board in the server before installing the processor.



2. Prepare the processor socket on the spare system board:
 - a. Open the processor retaining latch and the processor socket retaining bracket.

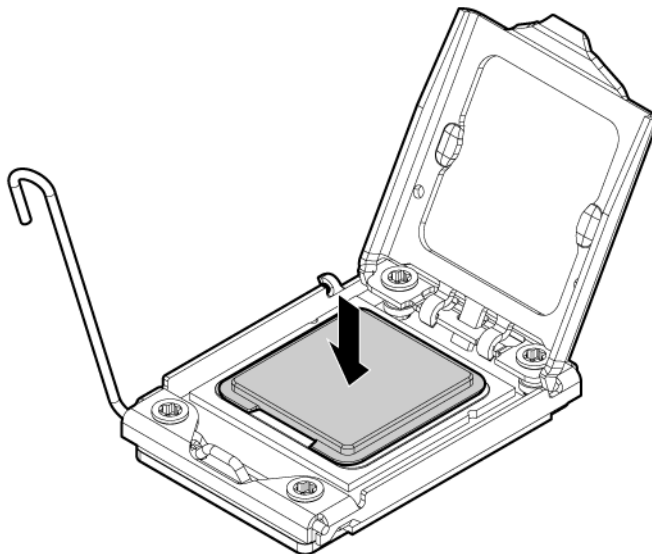
- b. Remove the processor socket protective cover.



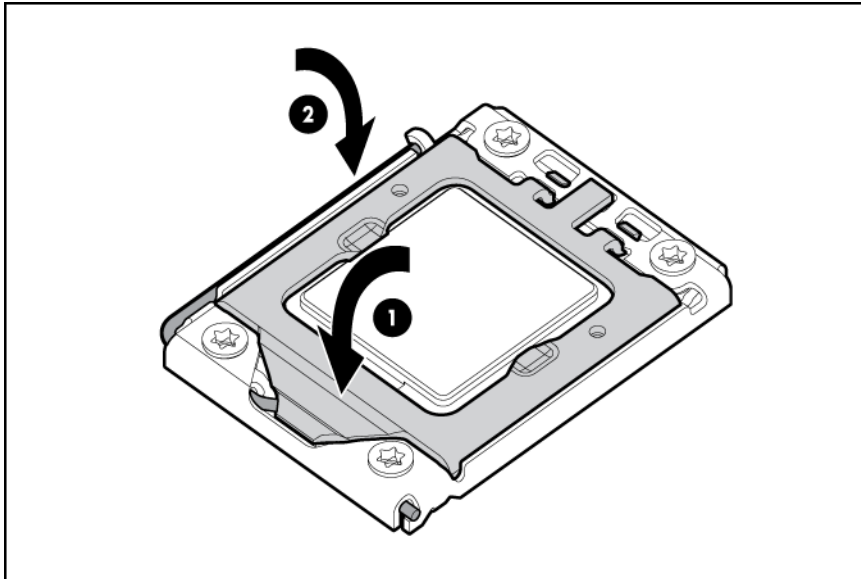
3. Install the processor socket cover onto the processor socket of the failed system board.
4. Install the processor on the spare system board.

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

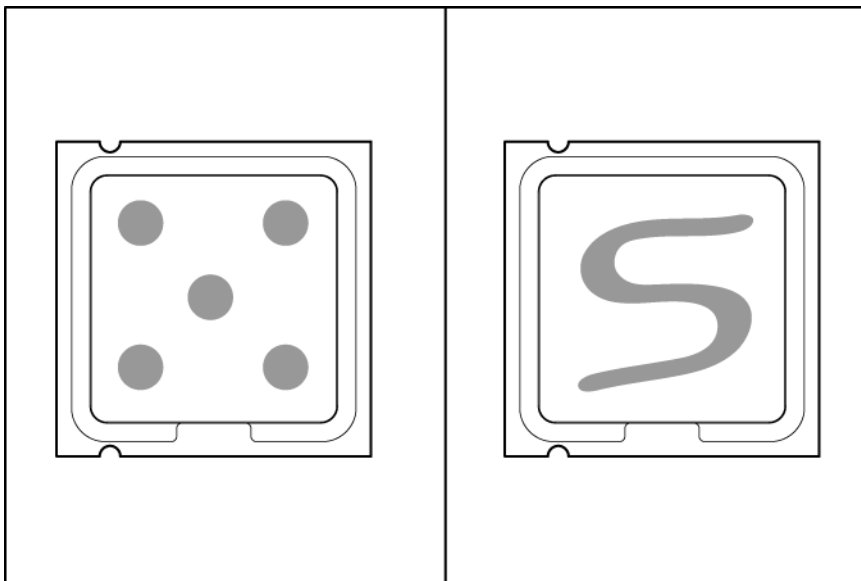
△ **CAUTION:** Always install the processor parallel to the system board to avoid damage to the pins.





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



6. Clean the old thermal grease from the heatsink and the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
7. Apply all the grease to the top of the processor in one of the following patterns to ensure even distribution.



8. Install the heatsink ("[Heatsink](#)" on page 44).
 **IMPORTANT:** To ensure proper cooling, be sure the processor air baffle is installed at all times (if applicable).
9. Install all components removed from the failed system board.
 **IMPORTANT:** Install all components with the same configuration that was used on the failed system board.
10. Install the hard drives ("[SAS and SATA hard drive](#)" on page 29).

11. Install all power supplies ("Hot-plug power supply" on page 30).
12. Install the air baffle ("Air baffle" on page 37).
13. Install the BBWC battery pack, if removed ("BBWC battery pack" on page 36).
14. Install the access panel ("Access panel" on page 27).
15. Install the server into the rack.
16. Slide the server into the rack.
17. Power up the server.

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

1. During the server startup sequence, press the **F9** key to access RBSU.
2. Select the **Advanced Options** menu.
3. Select **Serial Number**. The following warning is displayed:
Warning: The serial number should ONLY be modified by qualified service personnel. This value should always match the serial number located on the chassis.
4. Press the **Enter** key to clear the warning.
5. Enter the serial number.
6. Select **Product ID**. The following warning is displayed:
Warning: The Product ID should ONLY be modified by qualified service personnel. This value should always match the Product ID located on the chassis.
7. Enter the product ID and press the **Enter** key.
8. Press the **Esc** key to close the menu.
9. Press the **Esc** key to exit RBSU.

Press the **F10** key to confirm exiting RBSU. The server will automatically reboot.

HP Trusted Platform Module

The TPM is not a customer-removable part.



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

If you suspect a TPM board failure, leave the TPM installed and remove the system board ("System board" on page 51). Contact an HP authorized service provider for a replacement system board and TPM board.

Cabling

Cabling overview

This section provides guidelines that help you make informed decisions about cabling the server and hardware options to optimize performance.

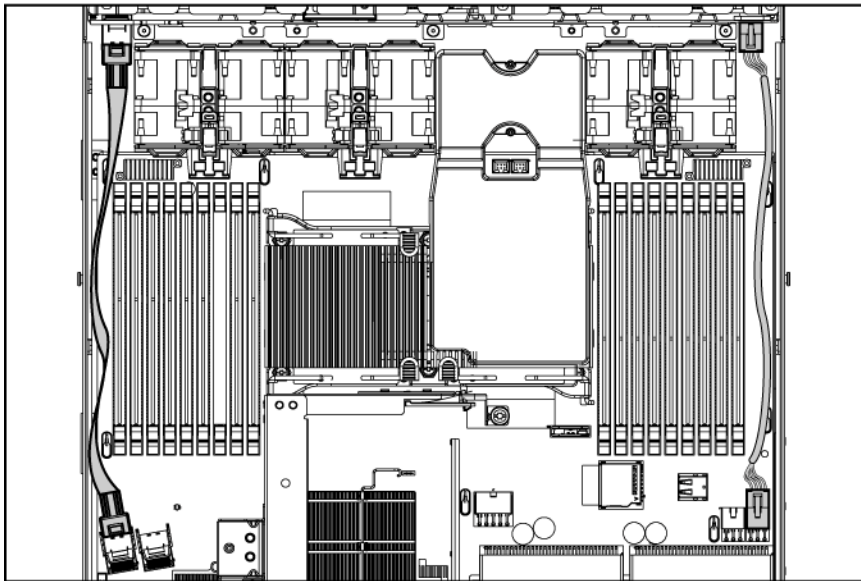
For information on cabling peripheral components, refer to the white paper on high-density deployment at the HP website (<http://www.hp.com/products/servers/platforms>).

- △ **CAUTION:** When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

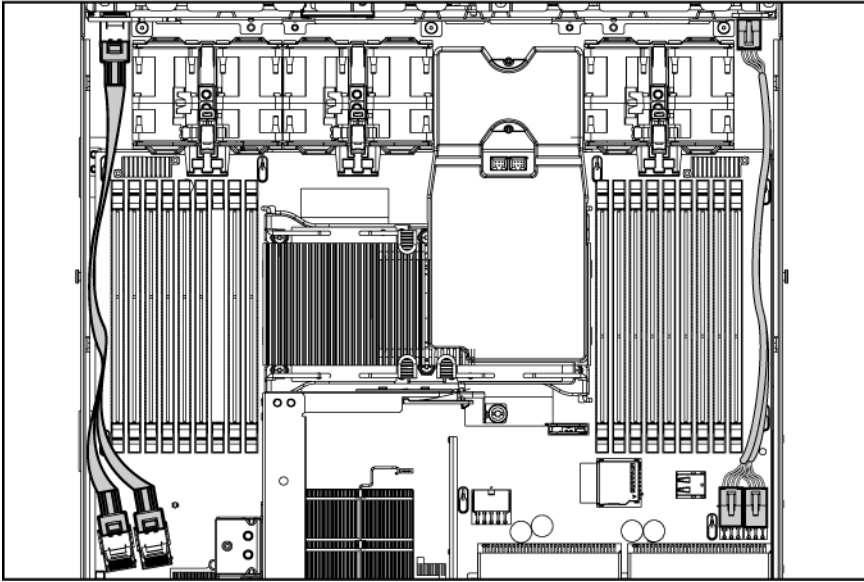
Hard drive backplane cabling

The server ships with one hard drive backplane that supports four hard drives. Installation of the optional, second hard drive backplane enables the server to support eight hard drives.

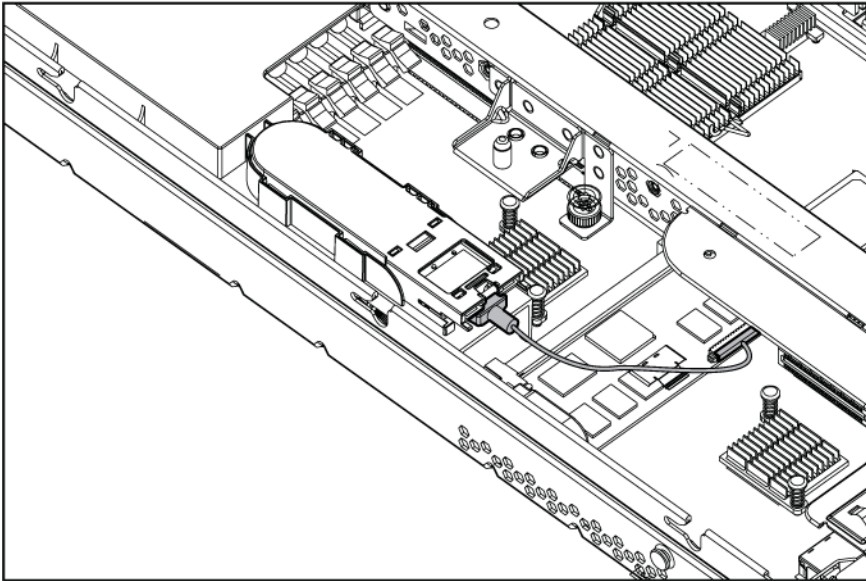
- Hard drive backplane



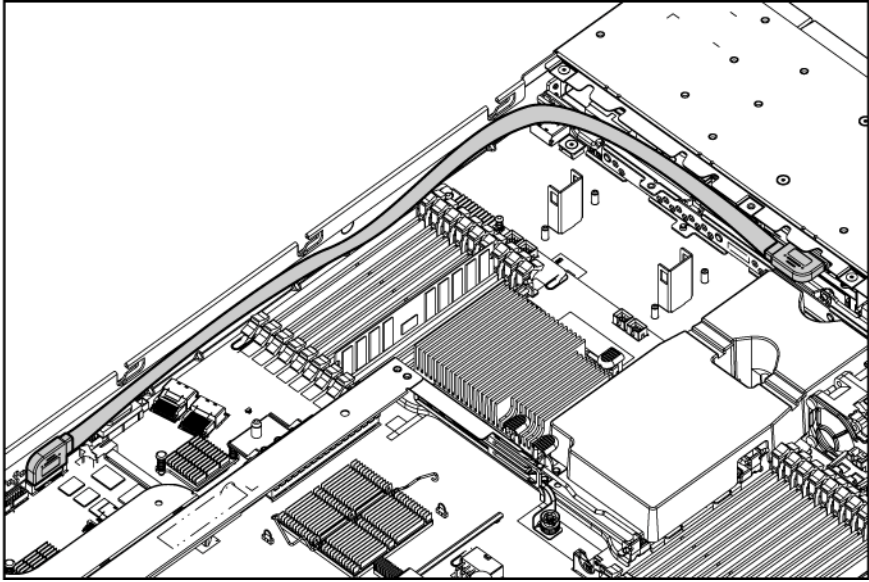
- Optional hard drive backplane



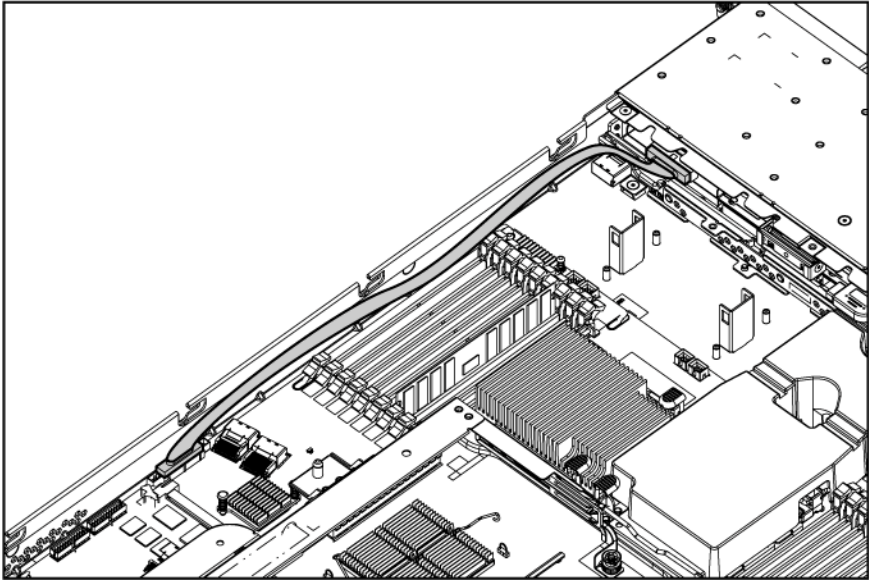
BBWC battery pack cabling



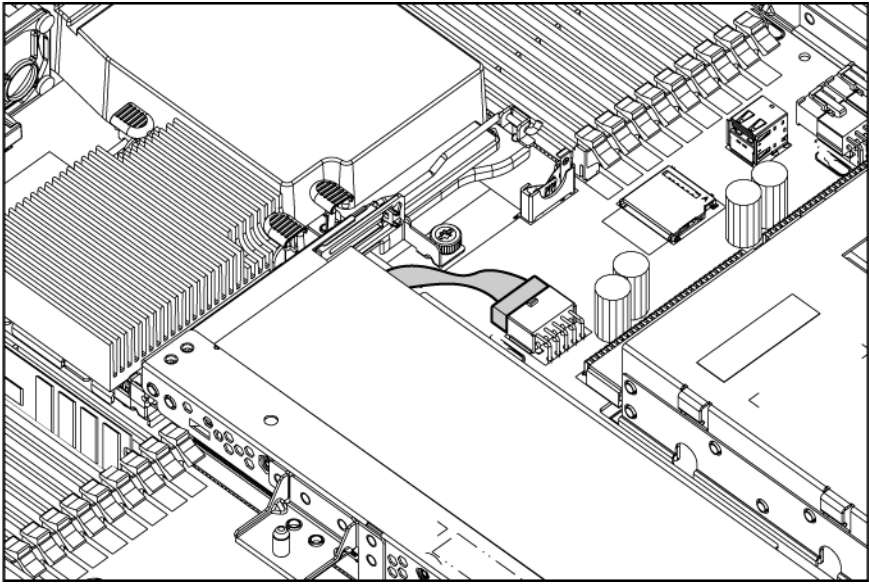
DVD-ROM and DVD-RW drive cabling



Power button and Systems Insight Display cabling



PCI power cabling



Diagnostic tools

Troubleshooting resources

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

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

HP ROM-Based Setup Utility

RBSU is a configuration utility embedded in ProLiant servers that performs a wide range of configuration activities that can include the following:

- Configuring system devices and installed options
- Enabling and disabling system features
- Displaying system information
- Selecting the primary boot controller
- Configuring memory options
- Language selection

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

HP Insight Diagnostics

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

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

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

For more information or to download the utility, refer to the HP website (<http://www.hp.com/servers/diags>).

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 61) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

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

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

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

NOTE: The current version of SmartStart provides the memory spare part numbers for the server. To download the latest version, see the HP website (<http://www.hp.com/support>).

Integrated Management Log

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

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

- From within HP SIM ("HP Systems Insight Manager" on page 63)
- From within Survey Utility
- From within operating system-specific IML viewers
 - For NetWare: IML Viewer
 - For Windows®: IML Viewer
 - For Linux: IML Viewer Application
- From within the iLO 2 user interface
- From within HP Insight Diagnostics (on page 61)

For more information, refer to the Management CD in the HP ProLiant Essentials Foundation Pack.

Array Diagnostic Utility

The HP Array Diagnostics Utility is a web-based application that creates a report of all HP storage controllers and disk drives. This report provides vital information to assist in identifying faults or conditions that may require attention. ADU can be accessed from the SmartStart CD or downloaded from the HP website (<http://www.hp.com>).

Automatic Server Recovery

ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND, or panic. A system fail-safe timer, the ASR timer, starts when the System Management driver, also known as the Health Driver, is loaded. When the operating system is functioning properly, the system periodically resets the timer. However, when the operating system fails, the timer expires and restarts the server.

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

HP Systems Insight Manager

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



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

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

HP Insight Remote Support software

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that has been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur. There are two HP Insight Remote Support solutions:

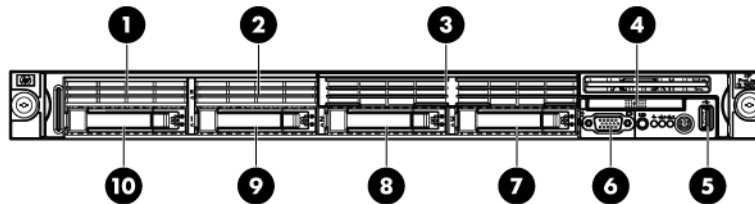
- For small and midsize environments: HP Insight Remote Support Standard provides basic remote monitoring, notification/advisories and service dispatch. It is optimized for environments with 1 to 50 servers and can be installed on a shared HP ProLiant Windows application server. The software supports HP EVA storage devices, HP ProLiant, BladeSystems, HP Integrity and HP 9000 servers running Microsoft Windows, Red Hat Enterprise Linux, Novell SUSE and Novell Netware. Download from the HP website (<http://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=RSSWMBA SE>).
- For midsize and large environments: HP Insight Remote Support Pack (formerly Service Essentials Remote Support Pack) is targeted for larger environments and is integrated with HP Systems Insight Manager (SIM). It provides comprehensive remote monitoring, notification/advisories, dispatch and proactive service support for nearly all HP servers, storage, network and SAN environments, plus selected Dell and IBM Windows servers that have a support obligation with HP. It also enables HP to deliver higher levels of proactive support in line with HP Mission Critical Services support agreements. Download from the HP website (<http://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=ISDVD>).

Both HP Insight Remote Support solutions are available at no additional cost to customers with a valid warranty on HP technology, an HP Care Pack Service or HP contractual support agreement.

For more information, see the HP website (<http://www.hp.com/go/insightremotesupport>).

Component identification

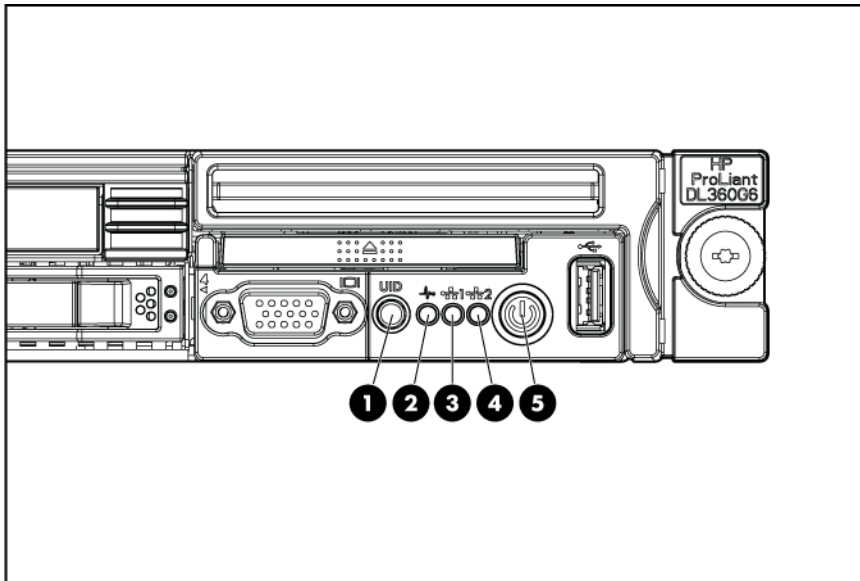
Front panel components



Item	Description
1	Hard drive bay 5 (optional)*
2	Hard drive bay 6 (optional)*
3	DVD tray/hard drive bays 7 and 8 (optional)*
4	HP Systems Insight Display
5	Front USB connector
6	Video connector
7	Hard drive bay 4
8	Hard drive bay 3
9	Hard drive bay 2
10	Hard drive bay 1

*An optional hard drive backplane is required when the server is configured with eight hard drives.

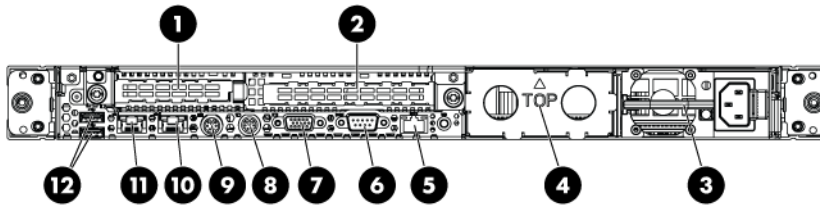
Front panel LEDs and buttons



Item	Description	Status
1	UID LED/button	Blue = Identification is activated. Flashing blue = System is being managed remotely. Off = Identification is deactivated.
2	Health LED	Green = System health is normal. Amber = System health is degraded. To identify the component in a degraded state, see "HP Systems Insight Display and LEDs ("HP Systems Insight Display LEDs" on page 72)". Red = System health is critical. To identify the component in a critical state, see "HP Systems Insight Display and LEDs ("HP Systems Insight Display LEDs" on page 72)". Off = System health is normal (when in standby mode).
3	NIC 1 link/activity LED	Green = Network link exists. Flashing green = Network link and activity exist. Off = No link to network exists. If power is off, the front panel LED is not active. For status, view the RJ-45 connector LEDs ("Rear panel LEDs and buttons" on page 68).
4	NIC 2 link/activity LED	Green = Network link exists. Flashing green = Network link and activity exist. Off = No link to network exists. If power is off, the front panel LED is not active. For status, view the RJ-45 connector LEDs ("Rear panel LEDs and buttons" on page 68).

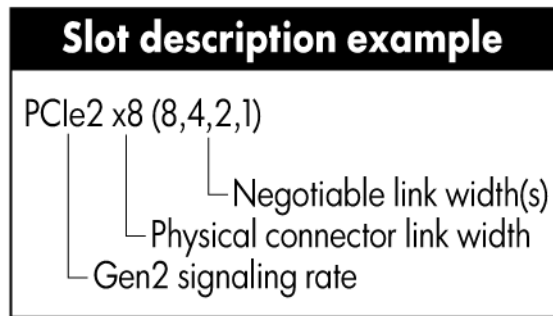
Item	Description	Status
5	Power On/Standby button and system power LED	Green = System is on. Amber = System is in standby, but power is still applied. Off = Power cord is not attached, power supply failure has occurred, no power supplies are installed, facility power is not available, or the power button cable is disconnected.

Rear panel components

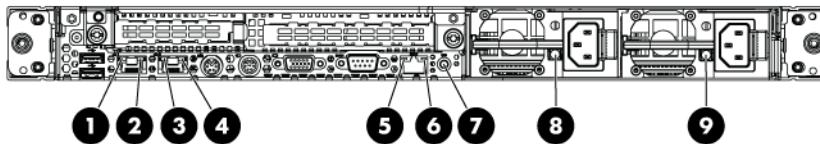


Item	Description
1	Slot 1 PCIe2 x8 (8, 4, 2, 1)
2	Slot 2 PCIe2 x16 (16, 8, 4, 2, 1), 75W +EXT 75W*
3	Power supply bay 1 (populated)
4	Power supply bay 2
5	iLO 2/NIC connector
6	Serial connector
7	Video connector
8	Mouse connector
9	Keyboard connector
10	NIC 2 connector
11	NIC 1 connector
12	USB connectors (2)

*This expansion slot provides 75 W of power to an adapter, with an additional 75 W of power supplied by external power.



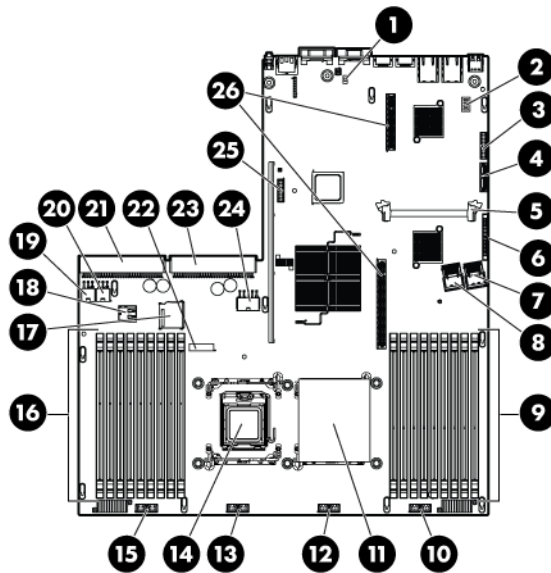
Rear panel LEDs and buttons



Item	Description	Status
1	10/100/1000 NIC 1 activity LED	Green = Activity exists. Flashing green = Activity exists. Off = No activity exists.
2	10/100/1000 NIC 1 link LED	Green = Link exists. Off = No link exists.
3	10/100/1000 NIC 2 activity LED	Green = Activity exists. Flashing green = Activity exists. Off = No activity exists.
4	10/100/1000 NIC 2 link LED	Green = Link exists. Off = No link exists.
5	iLO 2 NIC activity LED	Green = Activity exists. Flashing green = Activity exists. Off = No activity exists.
6	iLO 2 NIC link LED	Green = Link exists. Off = No link exists.

Item	Description	Status
7	UID button/LED	Blue = Identification is activated. Flashing blue = System is being managed remotely. Off = Identification is deactivated.
8	Power supply 2 LED	Green = Normal Off = One or more of the following conditions exists: <ul style="list-style-type: none"> • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit
9	Power supply 1 LED	Green = Normal Off = One or more of the following conditions exists: <ul style="list-style-type: none"> • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit

System board components



Item	Description
1	NMI jumper
2	System maintenance switch
3	10Gb sideband connector (MII)
4	SATA DVD-ROM drive connector

Item	Description
5	SAS cache module connector
6	Power button connector
7	Hard drive data connector 1 (drives 1-4)
8	Hard drive data connector 2 (drives 5-8)
9	Processor 1 DIMM slots (9)
10	Fan module 4 connector
11	Processor socket 1 (populated)
12	Fan module 3 connector
13	Fan module 2 connector
14	Processor socket 2
15	Fan module 1 connector
16	Processor 2 DIMM slots (9)
17	SD card slot
18	Internal USB connector
19	Hard drive power connector 1
20	Hard drive power connector 2
21	Power supply connector 1
22	System battery
23	Power supply connector 2
24	PCI power connector
25	TPM connector
26	PCIe riser board connectors (2)

System maintenance switch

Position	Default	Function
S1	Off	Off = iLO 2 security is enabled. On = iLO 2 security is disabled.
S2	Off	Off = System configuration can be changed. On = System configuration is locked.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.

Position	Default	Function
S6	Off	Off = No function On = Clear NVRAM
S7	—	Reserved
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved

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

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

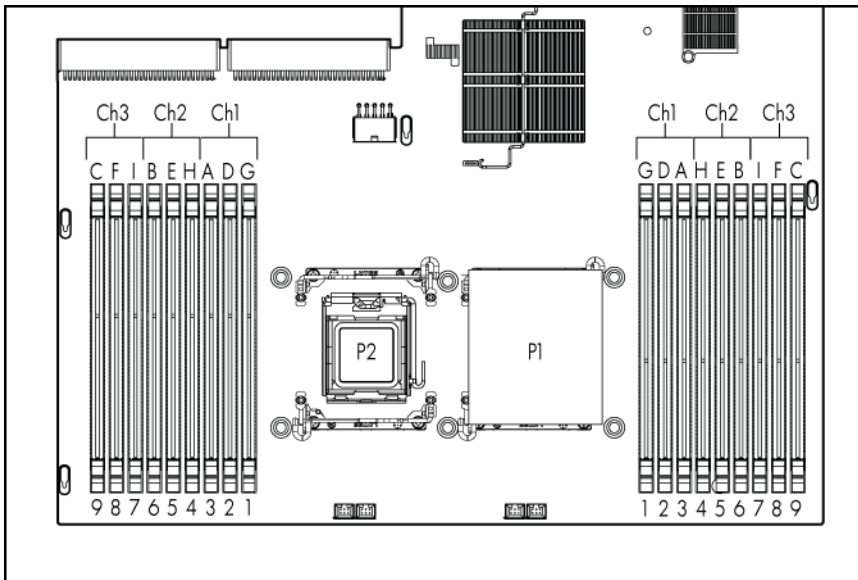
NMI jumper

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

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

DIMM slots

DIMM slots are numbered sequentially (1 through 9) for each processor. The supported AMP modes use the letter assignments for population guidelines.

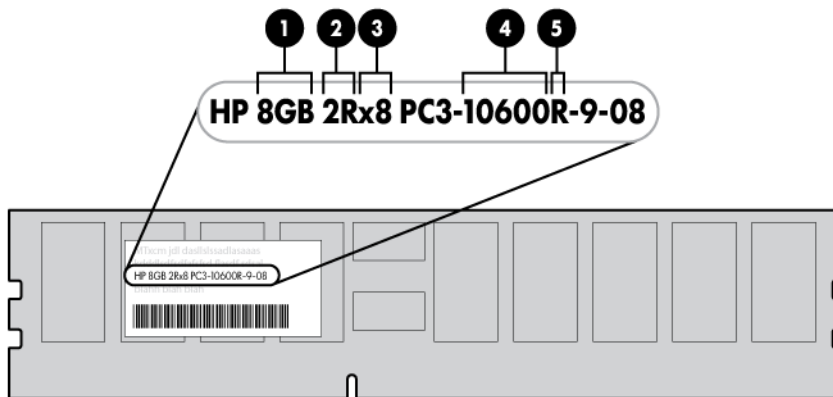


DIMM identification



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

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



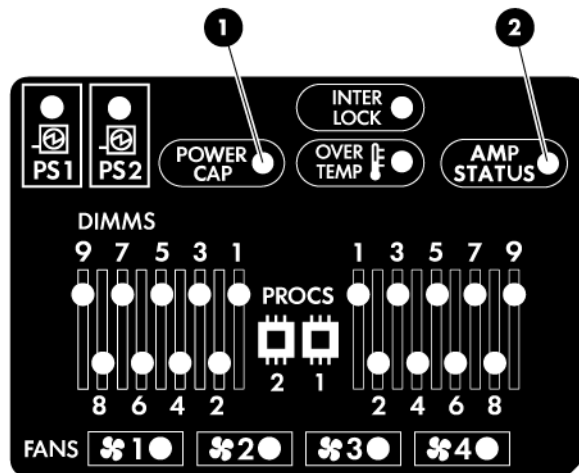
Item	Description	Definition
1	Size	—
2	Rank	1R = Single-rank 2R = Dual-rank 4R = Quad-rank
3	Data width	x4 = 4-bit x8 = 8-bit
4	Memory speed	10600 = 1333-MHz 8500 = 1067-MHz
5	DIMM type	R = RDIMM (registered) E = UDIMM (unbuffered with ECC)

For the latest supported memory information, see the QuickSpecs on the HP website (<http://www.hp.com>).

HP Systems Insight Display LEDs

The HP Systems Insight Display LEDs represent the system board layout. The display provides status for all internal LEDs and enables diagnosis with the access panel installed.

To view the LEDs, access the HP Systems Insight Display.

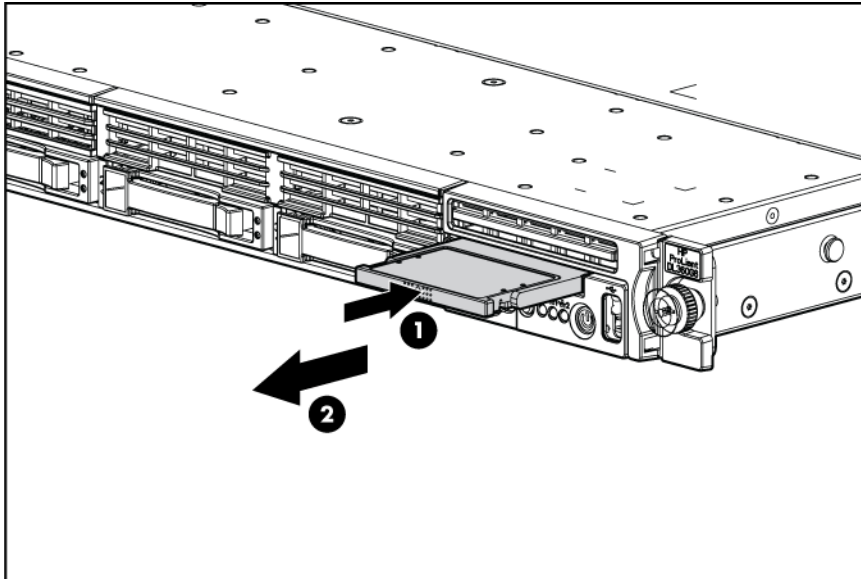


Item	Description	Status
1	Power cap LED	To determine Power cap status, see "Systems Insight Display LED combinations (on page 74)."
2	AMP status	Green = AMP mode enabled Amber = Failover Flashing amber = Invalid configuration Off = AMP mode disabled
	All other LEDs	Amber = Failure Off = Normal For possible failure causes, see "Systems Insight Display LED combinations (on page 74)."

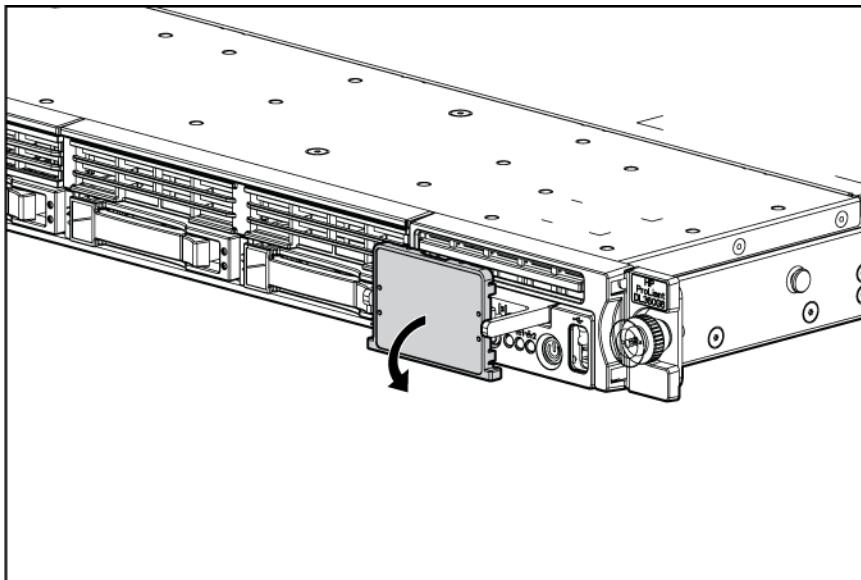
To eject the HP Systems Insight Display:

1. Press and release the display.

2. Extend the display from the chassis.



The display can be rotated up to 90 degrees.



Systems Insight Display LED combinations

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

Systems Insight Display LED and color	Health LED	System power LED	Status
Processor (amber)	Red	Amber	One or more of the following conditions may exist: <ul style="list-style-type: none"> • Processor in socket X has failed. • Processor X is not installed in the socket. • Processor X is unsupported. • ROM detects a failed processor during POST
Processor (amber)	Amber	Green	Processor in socket X is in a pre-failure condition.
DIMM (amber)	Red	Green	One or more DIMMs have failed.
DIMM (amber)	Amber	Green	DIMM in slot X is in a pre-failure condition.
Overtemperature (amber)	Amber	Green	The Health Driver has detected a cautionary temperature level.
Overtemperature (amber)	Red	Amber	The server has detected a hardware critical temperature level.
Fan (amber)	Amber	Green	One fan has failed or has been removed.
Fan (amber)	Red	Green	Two or more fans have failed or been removed.
Power supply (amber)	Red	Amber	<ul style="list-style-type: none"> • Only one power supply is installed and that power supply is in standby. • Power supply fault • System board fault
Power supply (amber)	Amber	Green	<ul style="list-style-type: none"> • Redundant power supply is installed and only one power supply is functional. • AC power cord is not plugged into redundant power supply. • Redundant power supply fault • Power supply mismatch at POST or power supply mismatch through hot-plug addition.
Power cap (off)	—	Amber	Standby
Power cap (green)	—	Flashing green	Waiting for power
Power cap (flashing amber)	—	Amber	Power cap has been exceeded
Power cap (green)	—	Green	Power is available



IMPORTANT: If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

SAS and SATA device numbers

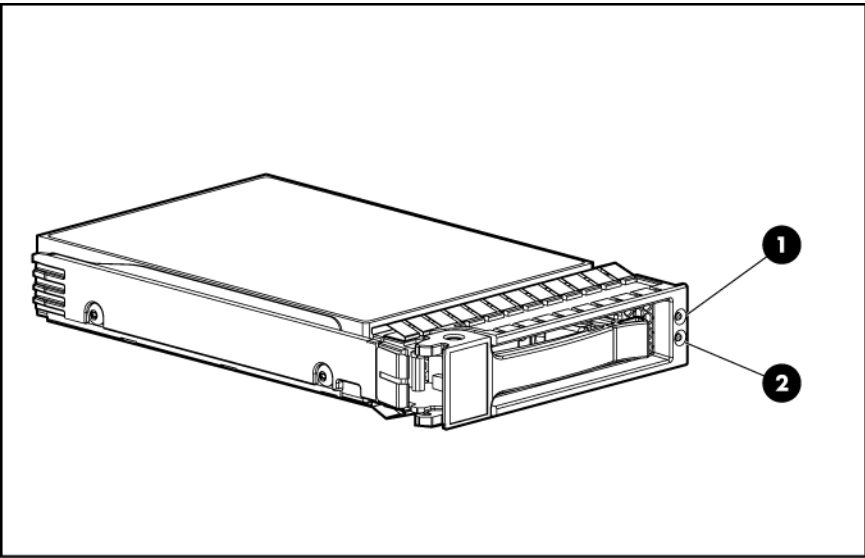
- Four hard drive configuration



- Eight hard drive configuration



SAS and SATA hard drive LEDs



Item	Description
1	Fault/UID LED (amber/blue)

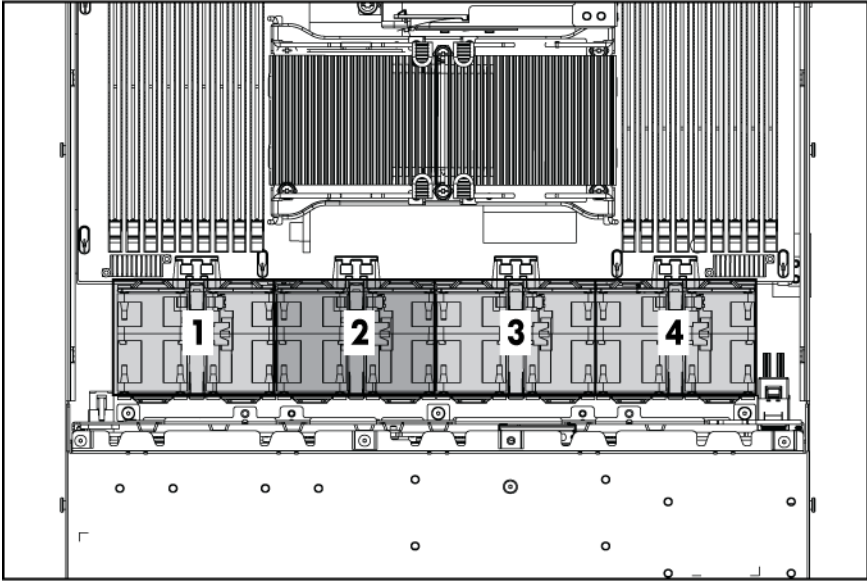
Item	Description
2	Online LED (green)

SAS and SATA hard drive LED combinations

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

Fan modules

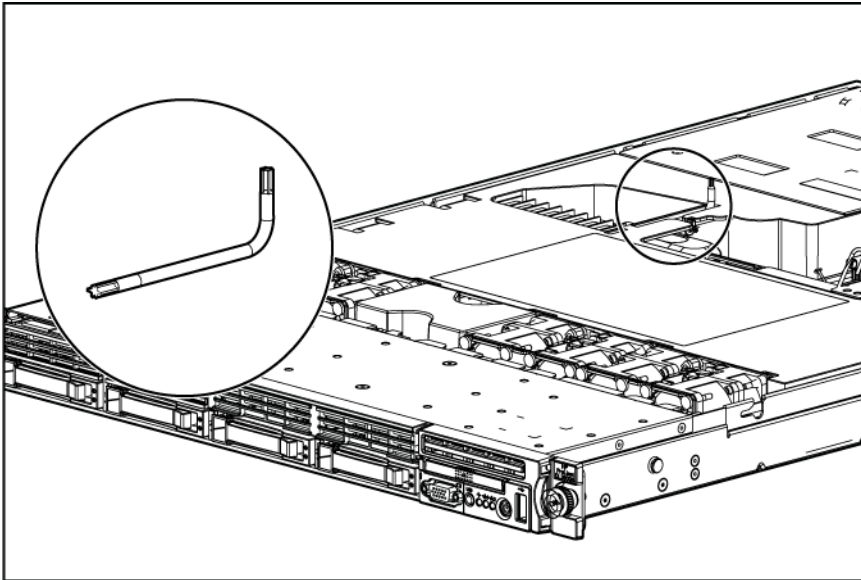
Install fan 2 only when processor 2 is installed. When only one processor is installed, always install the fan blank.



Item	Description
1	Fan module 1
2	Fan module 2
3	Fan module 3
4	Fan module 4

T-10/T-15 Torx screwdriver

The server includes a T-10/T-15 Torx screwdriver that ships on the air baffle. Use the screwdriver to loosen screws or thumbscrews, as needed, during procedures.



Specifications

Environmental specifications

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

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed.

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

Server specifications

Specification	Value
Height	4.32 cm (1.70 in)
Depth	69.53 cm (27.38 in)
Width	42.62 cm (16.78 in)
Weight (maximum: two processors, two power supplies, eight hard drives)	15.97 kg (35.20 lb)
Weight (minimum: one processor, one power supply, no hard drives)	14.51 kg (32.00 lb)
Weight (no drives installed)	14.06 kg (31.00 lb)

Power supply specifications

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

- HP ProLiant 460 W Power Supply

Specification	Value
Input requirements	

Rated input voltage	100 to 120 VAC, 200 to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	5.5 A at 100 VAC 2.6 A at 200 VAC
Rated input power	526 W at 100V AC input 505 W at 200V AC input
BTUs per hour	1794 at 100V AC input 1725 at 200V AC input
Power supply output	
Rated steady-state power	460 W at 100V to 120V AC input 460 W at 200V to 240V AC input
Maximum peak power	460 W at 100V to 120V AC input 460 W at 200V to 240V AC input

- HP ProLiant 750 W Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 120 VAC, 200 to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.9 A at 100 VAC 4.3 A at 200 VAC
Rated input power	857 W at 100V AC input 824 W at 200V AC input
BTUs per hour	2925 at 100V AC input 2812 at 200V AC input
Power supply output	
Rated steady-state power	750 W at 100V to 120V AC input 750 W at 200V to 240V AC input
Maximum peak power	750 W at 100V to 120V AC input 750 W at 200V to 240V AC input

- HP ProLiant 1200 W Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 120 VAC, 200 to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	10 A at 100 VAC 4.9 A at 200 VAC
Rated input power	930 W at 100V AC input 1348 W at 200V AC input
BTUs per hour	3530 at 120V AC input 4600 at 200V to 240V AC input
Power supply output	
Rated steady-state power	800 W at 100V AC input 900 W at 120V AC input 1200 W at 200V to 240V AC input
Maximum peak power	800 W at 100V AC input 900 W at 120V AC input 1200 W at 200V to 240V AC input

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the server, refer to the HP Enterprise Configurator website (<http://h30099.www3.hp.com/configurator/>).

Acronyms and abbreviations

ABEND

abnormal end

ADU

Array Diagnostics Utility

AMP

Advanced Memory Protection

ASR

Automatic Server Recovery

BBWC

battery-backed write cache

CSR

Customer Self Repair

iLO 2

Integrated Lights-Out 2

IML

Integrated Management Log

NIC

network interface controller

NMI

non-maskable interrupt

NVRAM

non-volatile memory

PCI-X

peripheral component interconnect extended

PCIe

peripheral component interconnect express

PPM

processor power module

PSP

ProLiant Support Pack

RAID

redundant array of inexpensive (or independent) disks

RBSU

ROM-Based Setup Utility

SAS

serial attached SCSI

SATA

serial ATA

SIM

Systems Insight Manager

UID

unit identification

USB

universal serial bus

Index

A

access panel 16, 27
additional information 61
ADU (Array Diagnostic Utility) 62
air baffle 16, 24, 37
Array Diagnostic Utility (ADU) 62
ASR (Automatic Server Recovery) 63
Automatic Server Recovery (ASR) 63

B

battery 50, 69
battery-backed write cache battery pack 36
battery-backed write cache cabling 58
battery-backed write cache enabler cabling 58
BBWC battery pack 36
buttons 65, 66, 68

C

cables 57
cabling 57
cabling, battery pack 58
cabling, BBWC 58
cache module 40
cache module connector 69
cautions 27
components 16, 65, 67
components, identification 65, 76
components, system board 69
connectors 65, 67, 69
CSR (customer self repair) 5, 16
customer self repair (CSR) 5, 16

D

diagnostic tools 61, 63
diagnostics utility 61
DIMM identification 72
DIMM slot locations 71
DIMM slots 69
DIMMs 43, 72
dual bezel blank 16, 28
DVD tray 65

DVD±RW drive 59
DVD-ROM cabling 59
DVD-ROM drive 59
DVD-ROM drive connectors 69

E

electrostatic discharge 25
environmental requirements 80
environmental specifications 80
expansion boards 38
expansion slot covers 16
extending server from rack 25

F

fan blank 16, 35
fan connectors 69
fan LED 72
fan module connector 69
fan module locations 78
fan modules, installation 34
fan modules, removal 34
features 65
front panel buttons 66
front panel components 65
front panel LEDs 66

G

graphics card cabling 60
graphics card option 60

H

hard drive backplane 41
hard drive backplane cabling 57
hard drive bays 65
hard drive bezel blanks 16, 28
hard drive blanks 16, 28, 29
hard drive cage 16, 31
hard drive data connector 69
hard drive LEDs 76, 77
hard drive power connector 69
hard drives 29, 65, 76, 77
hard drives, determining status of 76, 77

- hardware kit 16
- health driver 63
- health LEDs 66, 76, 77
- heatsink 44
- hot-plug power supply calculations 82
- HP Enterprise Configurator 82
- HP Insight Diagnostics 24, 61, 62
- HP Insight Diagnostics survey functionality 62
- HP Insight Remote Support software 63
- HP ProLiant Essentials Foundation Pack 63
- HP Systems Insight Display 42
- HP Systems Insight Manager, overview 63

I

- illustrated parts catalog 16
- iLO 2 activity LED 68
- iLO 2 link LED 68
- IML (Integrated Management Log) 62
- Insight Diagnostics 61, 62
- Integrated Management Log (IML) 62
- internal health LED 76, 77
- internal USB connector 69

K

- keyboard connector 67

L

- LED, health 76
- LED, power on 66
- LED, system power 66
- LED, UID 66, 68
- LEDs 65, 74, 77
- LEDs, front panel 76
- LEDs, hard drive 76, 77
- LEDs, NIC 66, 68
- LEDs, power supply 68
- LEDs, SAS hard drive 76
- LEDs, SATA hard drive 76
- LEDs, unit identification (UID) 66, 68

M

- management tools 61
- mechanical components 16
- memory slot LEDs 72
- mouse connector 67

N

- NIC connectors 67

- NMI jumper 71

O

- overtemperature LED 72

P

- PCI power cabling 60
- PCI power connector 69
- PCI riser board 37, 39
- PCI riser board assembly 37
- PCI riser board expansion slot definitions 67
- PCIe riser board connector 69
- plastics kit 16
- power button cabling 59
- power button connector 69
- power calculator 82
- power cap 74
- power LEDs, system 66
- Power On/Standby button 24, 66
- power requirements 82
- power supplies 30, 82
- power supply 82
- power supply bays 67
- power supply blank 16, 30
- power supply connector 69
- power supply LEDs 72
- power supply output 82
- power supply specifications 80
- powering down 24
- preparation procedures 24
- processor socket 69
- processors 45, 69

R

- rack mounting hardware 16
- rack, extending server from 25
- rack, removing server from 25
- RBSU (ROM-Based Setup Utility) 61
- rear panel buttons 67, 68
- rear panel components 67
- rear panel LEDs 68
- removal and replacement procedures 24
- removing server from rack 25
- replacement procedures 24
- required tools 24
- requirements, environmental 80
- requirements, power 82
- ROM-Based Setup Utility (RBSU) 61

S

- safety considerations 25
- safety information 25
- SAS device numbers 76
- SAS hard drive LEDs 76, 77
- SAS/SATA LED combinations 77
- SATA drives 76
- SATA DVD drive connector 69
- SATA hard drive LEDs 76, 77
- SD card slot 69
- serial connector 67
- server specifications 80, 82
- server warnings and cautions 27
- specifications 80
- specifications, environmental 80
- specifications, power 80
- specifications, server 80, 82
- static electricity 25
- symbols on equipment 26
- system battery 50, 69
- system board 51
- system board battery 69
- system board components 69
- system components 65
- system maintenance switch 69, 70
- system power LED 66
- Systems Insight Display 42, 72, 74
- Systems Insight Display cabling 59
- Systems Insight Display LEDs 72, 74

T

- T-10/T-15 Torx screwdriver 24, 79
- telco racks 24, 25
- temperature, overtemperature LED 72
- tools 24, 61, 79
- Torx screwdriver 79
- TPM (Trusted Platform Module) 56
- troubleshooting 61
- troubleshooting guidelines 61
- troubleshooting resources 61
- Trusted Platform Module (TPM) 56

U

- UID button 68
- UID LED 24, 68
- USB (universal serial bus) 69
- USB connectors 65, 67, 69
- utilities 61
- utilities, deployment 61

V

- video connector 65, 67

W

- warnings 27