

HP ProLiant DL360 Gen9 Server Maintenance and Service Guide

Abstract

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



Part Number: 767928-001
September 2014
Edition: 1

© Copyright 2014 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®, Windows®, and Windows Server® are U.S. registered trademarks of the Microsoft group of companies.

Contents

Customer self repair	5
Parts only warranty service.....	5
Illustrated parts catalog	15
Mechanical components	15
System components	18
Removal and replacement procedures	25
Required tools.....	25
Preparation procedures.....	25
Power down the server	25
Extend the server from the rack.....	26
Remove the server from the rack	26
Access the product rear panel	27
Access the Systems Insight Display.....	27
Safety considerations.....	29
Preventing electrostatic discharge	29
Symbols on equipment.....	30
Server warnings and cautions.....	30
Drive blank.....	31
Hot-plug drive	31
Power supply blank	32
AC power supply	32
Access panel	33
Primary PCI riser cage	33
Secondary PCI riser cage.....	34
Primary PCIe riser blank.....	35
Secondary PCIe riser blank	36
Fan module	37
Fan blank.....	38
8-SFF Optical/USB/VGA assembly.....	39
4-LFF Optical/USB/VGA assembly	40
8-SFF Systems Insight Display	42
4-LFF Systems Insight Display.....	43
Location discovery services ear.....	44
2-SFF hard drive cage	46
8-SFF hard drive backplane.....	47
4-LFF hard drive backplane	48
FlexibleLOM	49
Expansion boards	50
DIMMs.....	51
Heatsink.....	52
Processor.....	53
System battery	56
System board	57
HP Trusted Platform Module.....	63

Cabling	64
Cabling overview	64
2-SFF backplane cabling	64
8-SFF Universal Media Bay cabling	65
4-LFF Universal Media Bay cabling	66
Smart Array controller cabling	67
Embedded SATA cabling	68
Diagnostic tools	70
HP UEFI System Utilities	70
Using HP UEFI System Utilities	70
HP Insight Diagnostics	70
HP Insight Diagnostics survey functionality	71
Active Health System	71
Integrated Management Log	72
USB support	72
External USB functionality	73
Internal USB functionality	73
Troubleshooting	74
Troubleshooting resources	74
Component identification	75
Front panel components	75
Front panel LEDs and buttons	76
Power fault LEDs	77
Systems Insight Display LEDs	78
Systems Insight Display LED combinations	79
Rear panel components	80
Rear panel LEDs and buttons	81
Non-hot-plug PCI riser board slot definitions	82
System board components	83
System maintenance switch	84
NMI jumper	84
DIMM slots	85
Device numbers	85
Hot-plug drive LED definitions	86
Hot-plug fans	86
Specifications	88
Environmental specifications	88
Server specifications	88
Power supply specifications	89
HP 500W Flex Slot Platinum Hot-plug Power Supply	89
HP 800W Flex Slot Platinum Hot-plug Power Supply	90
HP 1400W Flex Slot Platinum Plus Hot-plug Power Supply	90
Acronyms and abbreviations	91
Documentation feedback	93
Index	94

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

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

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

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

Servizio di garanzia per i soli componenti

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

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

Customer Self Repair

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

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

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

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

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

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

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

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

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

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

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

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

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

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

Servicio de garantía exclusivo de componentes

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

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

Customer Self Repair

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

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

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

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

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

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

Garantieservice "Parts Only"

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

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

Reparo feito pelo cliente

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

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

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

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

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

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

Serviço de garantia apenas para peças

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

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

カスタマーセルフリペア

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

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

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

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

部品のみ保証サービス

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

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

客户自行维修

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

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

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

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

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

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

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

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

부품 제공 보증 서비스

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

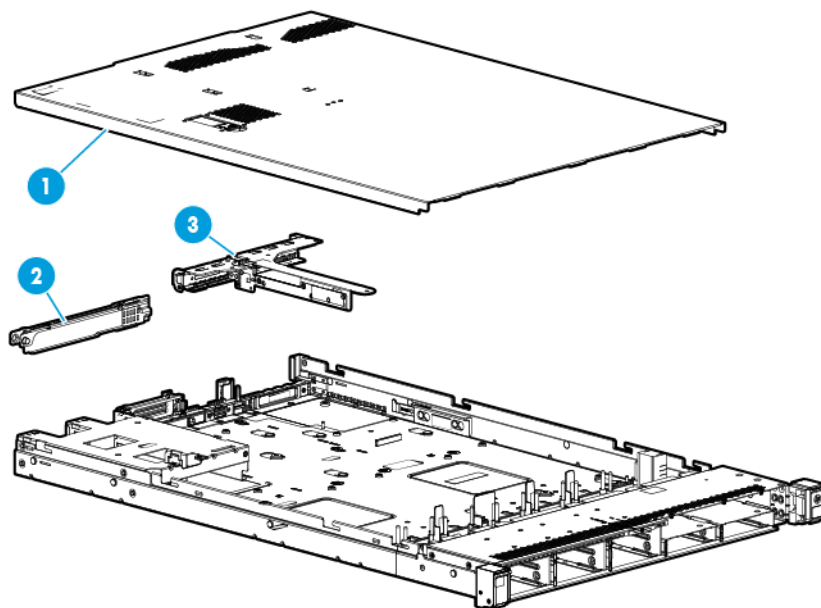
부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Illustrated parts catalog

Mechanical components

HP continually improves and changes product parts. For complete and current supported parts information, see one of the following websites:

- HP PartSurfer website (<http://partsurfer.hp.com>)
- HP PartSurfer mobile site (<http://partsurfermobile.hp.com>)



Item	Description	Spare part number	Customer self repair (on page 5)
1	Access panel	775425-001	Mandatory
2	PCI riser blank	—	—
	a) PCI riser blank, full height	775431-001	Mandatory
	b) PCI riser blank, low profile	785499-001	Mandatory
3	PCI riser cage	—	—
	a) PCI riser cage, standard primary	775421-001	Optional
	b) PCI riser cage, secondary, full height*	775419-001	Optional
	c) PCI riser cage, secondary, low profile*	775420-001	Optional
4	Miscellaneous blanks kit*	775423-001	
	a) Power supply blank	—	Mandatory

Item	Description	Spare part number	Customer self repair (on page 5)
	b) Heatsink blank	—	Mandatory
	c) Fan blank	—	Mandatory
	d) FlexibleLOM blank	—	Mandatory
5	Standard right ear	775417-001	Mandatory
6	Standard left ear	795214-001	Mandatory
	Rack mounting hardware	—	—
7	Rack mounting hardware kit*	—	—
	a) SFF Easy Install Rail	744111-001	Mandatory ¹
	b) LFF Easy Install Rail	744112-001	Mandatory ¹
	c) SFF Ball Bearing Rail	675042-001	Mandatory ¹
	d) LFF Ball Bearing Rail	675041-001	Mandatory ¹
8	Cable management arm*	—	—
	a) Cable management arm, easy install	744113-001	Mandatory ¹
	b) Cable management arm, ball bearing	675043-001	Mandatory ¹

*Not shown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

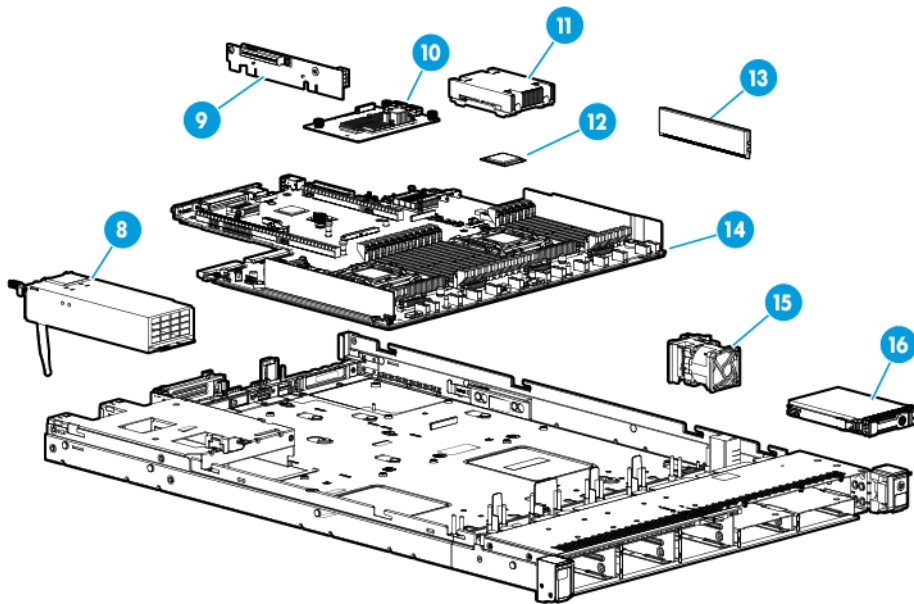
³ No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

System components

HP continually improves and changes product parts. For complete and current supported parts information, see one of the following websites:

- HP PartSurfer website (<http://partsurfer.hp.com>)

- HP PartSurfer mobile site (<http://partsurfermobile.hp.com>)



Item	Description	Spare part number	Customer self repair (on page 5)
8	Hot-plug power supplies	—	—
	a) 500 W, Flex Slot Platinum	754377-001	Mandatory ¹
	b) 800 W, Flex Slot Platinum*	754381-001	Mandatory ¹
	c) 1400 W, Flex Slot Platinum*	754383-001	Mandatory ¹
9	Primary PCI riser board	785497-001	Mandatory
10	HP P440ar Smart Array Controller	775413-001	Mandatory
11	Heatsink	—	—
	a) Standard efficiency heatsink	775403-001	Optional ²
	b) High-performance heatsink*	775404-001	Optional ²
12	Processor	—	—
	a) 1.60-GHz Intel Xeon E5-2603 v3 processor**	762441-001	Optional ²
	b) 1.90-GHz Intel Xeon E5-2609 v3 processor* **	762443-001	Optional ²
	c) 2.40-GHz Intel Xeon E5-2620 v3 processor* **	762445-001	Optional ²
	d) 3.00-GHz Intel Xeon E5-2623v3 processor* **	780762-001	Optional ²
	d) 2.40-GHz Intel Xeon E5-2630 v3 processor* **	762446-001	Optional ²
	e) 2.60-GHz Intel Xeon E5-2640 v3 processor* **	762447-001	Optional ²
	f) 2.30-GHz Intel Xeon E5-2650 v3 processor* **	762448-001	Optional ²
	g) 2.60-GHz Intel Xeon E5-2660 v3 processor* **	762449-001	Optional ²
	h) 2.30-GHz Intel Xeon E5-2670 v3 processor* **	762450-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 5)
	i) 2.50-GHz Intel Xeon E5-2680 v3 processor* **	762451-001	Optional ²
	j) 2.60-GHz Intel Xeon E5-2690 v3 processor* **	762452-001	Optional ²
	k) 2.00-GHz Intel Xeon E5-2683 v3 processor* **	762453-001	Optional ²
	l) 2.30-GHz Intel Xeon E5-2695 v3 processor* **	762454-001	Optional ²
	m) 2.60-GHz Intel Xeon E5-2697 v3 processor* **	765154-001	Optional ²
	n) 2.30-GHz Intel Xeon E5-2698 v3 processor* **	780760-001	Optional ²
	o) 2.30-GHz Intel Xeon E5-2699 v3 processor* **	780761-001	Optional ²
	n) 3.50-GHz Intel Xeon E5-2637 v3 processor* **	762455-001	Optional ²
	o) 3.40-GHz Intel Xeon E5-2643 v3 processor* **	762456-001	Optional ²
	p) 3.20-GHz Intel Xeon E5-2667 v3 processor* **	762457-001	Optional ²
	q) 3.10-GHz Intel Xeon E5-2687W v3 processor* **	762458-001	Optional ²
	r) 1.80-GHz Intel Xeon E5-2630L v3 processor* **	762459-001	Optional ²
	s) 1.80-GHz Intel Xeon E5-2650L v3 processor* **	762461-001	Optional ²
13	DIMM	—	—
	a) 8-GB, 1Rx4, PC4-2133R	774170-001	Mandatory ¹
	b) 16-GB, 2Rx4, PC4-2133R*	774172-001	Mandatory ¹
	c) 32-GB, 32-GB, 4Rx4, PC4-2133L*	774174-001	Mandatory ¹
14	System I/O board	775400-001	Optional ²
15	Hot plug fans	—	—
	Standard fan module	775415-001	Mandatory ¹
	High efficiency fan module*	775416-001	Mandatory
16	Drives	—	—
	Hot-plug drives	—	—
	a) 146-GB, SAS, SFF, 15,000-rpm, 6G	653950-001	Mandatory ¹
	b) 300-GB, SAS, SFF, 10,000-rpm, 6G	653955-001	Mandatory ¹
	c) 450-GB, SAS, SFF, 10,000-rpm, 6G	653956-001	Mandatory ¹
	d) 500-GB, SAS, SFF, 7,200-rpm, 6G	653953-001	Mandatory ¹
	e) 600-GB, SAS, SFF, 10,000-rpm, 6G	653957-001	Mandatory ¹
	f) 900-GB, SAS, SFF, 10,000-rpm, 6G	653971-001	Mandatory ¹
	g) 1-TB, SAS, SFF, 7,200-rpm, 6G	653954-001	Mandatory ¹
	h) 1-TB, SAS, LFF, 7,200-rpm, 6G	653947-001	Mandatory ¹
	i) 1.2-TB, SAS, SFF, 10,000-rpm, 6G	718292-001	Mandatory ¹
	j) 2-TB, SAS, LFF, 7,200-rpm, 6G	653948-001	Mandatory ¹
	k) 3-TB, SAS, LFF, 7,200-rpm, 6G	653959-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 5)
	l) 500-GB, SATA, LFF, 7,200-rpm, 6G	658103-001	Mandatory ¹
	m) 1-TB, SATA, SFF, 7,200-rpm, 6G	656108-001	Mandatory ¹
	n) 1-TB, SATA, LFF, 7,200-rpm, 6G	657739-001	Mandatory ¹
	o) 2-TB, SATA, LFF, 7,200-rpm, 6G	658102-001	Mandatory ¹
	p) 3-TB, SATA, LFF, 7,200-rpm, 6G	628182-001	Mandatory ¹
	q) 4-TB, SATA, LFF, 7,200-rpm, 6G	693720-001	Mandatory ¹
	Solid state drives*	—	—
	a) 200-GB, SAS, ME, SFF, 12G	741224-001	Mandatory ¹
	b) 200-GB, SAS, HE, SFF, 12G	741230-001	Mandatory ¹
	c) 400-GB, SAS, ME, SFF, 12G	741226-001	Mandatory ¹
	d) 400-GB, SAS, HE, SFF, 12G	741232-001	Mandatory ¹
	e) 800-GB, SAS, VE, SFF, 12G	762749-001	Mandatory ¹
	f) 800-GB, SAS, ME, SFF, 12G	741228-001	Mandatory ¹
	g) 800-GB, SAS, HE, SFF, 12G	741234-001	Mandatory ¹
	h) 800-GB, SAS, VE, LFF, 12G	762750-001	Mandatory ¹
	i) 1.6-TB, SAS, VE, SFF, 12G	762751-001	Mandatory ¹
	j) 1.6-TB, SAS, VE, LFF, 12G	762752-001	Mandatory ¹
	k) 80-GB, SATA, VE, SFF, 6G	734562-001	Mandatory ¹
	l) 80-GB, SATA, VE, SFF, 6G	734563-001	Mandatory ¹
	m) 100-GB, SATA, ME, SFF, 6G	692164-001	Mandatory ¹
	n) 100-GB, SATA, ME, LFF, 6G	692160-001	Mandatory ¹
	o) 120-GB, SATA, VE, SFF, 6G	718163-001	Mandatory ¹
	p) 120-GB, SATA, VE, LFF, 6G	718300-001	Mandatory ¹
	q) 200-GB, SATA, ME, SFF, 6G	692165-001	Mandatory ¹
	r) 200-GB, SATA, ME, LFF, 6G	692161-001	Mandatory ¹
	s) 240-GB, SATA, VE, SFF, 6G	718137-001	Mandatory ¹
	t) 240-GB, SATA, VE, LFF, 6G	718294-001	Mandatory ¹
	u) 300-GB, SATA, VE, SFF, 6G	739954-001	Mandatory ¹
	v) 300-GB, SATA, VE, LFF, 6G	739955-001	Mandatory ¹
	w) 400-GB, SATA, ME, SFF, 6G	692166-001	Mandatory ¹
	x) 400-GB, SATA, ME, LFF, 6G	692162-001	Mandatory ¹
	y) 480-GB, SATA, VE, SFF, 6G	718138-001	Mandatory ¹
	z) 480-GB, SATA, VE, LFF, 6G	718296-001	Mandatory ¹
	aa) 600-GB, SATA, VE, SFF, 6G	739959-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 5)
	bb) 600-GB, SATA, VE, LFF, 6G	739960-001	Mandatory ¹
	cc) 800-GB, SATA, VE, SFF, 6G	718139-001	Mandatory ¹
	dd) 800-GB, SATA, VE, LFF, 6G	718298-001	Mandatory ¹
	ee) 800-GB, SATA, ME, SFF, 6G	692167-001	Mandatory ¹
	ff) 800-GB, SATA, ME, LFF, 6G	692163-001	Mandatory ¹
17	SFF Systems Insight Display power switch module*	775418-001	Mandatory
18	LFF Systems Insight Display power switch module*	775412-001	Mandatory
	Other Boards*		
19	8 SFF backplane board	780428-001	Optional
20	2 SFF backplane board	775401-001	Optional
21	4 LFF backplane board	775402-001	Optional
22	HP P440ar with cut heatsink	786760-001	Mandatory
23	HP H240ar HBA	749997-001	Mandatory
24	Low Profile Secondary PCI riser board	785498-001	Mandatory
25	Quadro K2200 3GB GPU	783874-001	Mandatory ¹
26	Quadro K4200 4GB GPU	783875-001	Mandatory ¹
	Miscellaneous	—	—
27	SFF Standard cabled power switch module*	783290-001	Mandatory
28	LFF Standard cabled power switch module*	783291-001	Mandatory
29	HP Smart Battery*	750450-001	Mandatory
30	SFF DVD-RW/USB/VGA assembly*	775427-001	Mandatory
31	SFF USB/VGA assembly	775426-001	Mandatory
32	LFF USB/VGA assembly*	775411-001	Mandatory
	Cables*	—	—
33	8 SFF power cable	780418-001	Mandatory
34	4 LFF power cable	780423-001	Mandatory ¹
35	8 SFF x4 mini-SAS cable for P440 Slot 1 and P840	780419-001	Mandatory
36	8 SFF Embedded SATA cable	780420-001	Mandatory
37	8 SFF x8 mini-SAS cable for P440 Slot 1 and P840	780421-001	Mandatory
38	4 LFF Embedded SATA cable	780424-001	Mandatory
39	4 LFF x4 mini-SAS cable for P440ar and H240ar	780425-001	Mandatory
40	2 SFF H240ar internal SAS cable	787305-001	Mandatory
41	2 SFF P440ar internal SAS cable	787306-001	Mandatory
42	8 SFF P440ar internal SAS cable	787307-001	Mandatory
43	4 LFF P440ar internal SAS cable	787308-001	Mandatory
44	Secondary riser GPU cable	780426-001	Mandatory
45	Primary riser GPU cable	780427-001	Mandatory

*Not shown

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

†Be sure you are using the correct spare part when replacing processors, heatsinks, or system boards.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-10/T-15 Torx screwdriver
- HP Insight Diagnostics software ("HP Insight Diagnostics" on page 70)

Preparation procedures

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

- Extend the server from the rack (on page 26).
If you are performing service procedures in 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 25).
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 26).
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

Before powering down the server for any upgrade or maintenance procedures, perform a backup of critical server data and programs.



IMPORTANT: When the server is in standby mode, auxiliary power is still being provided to the system.

To power down the server, use one of the following methods:

- Press and release the Power On/Standby button.
This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.

This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown.

- Use a virtual power button selection through HP iLO.

This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

Before proceeding, verify the server is in standby mode by observing that the system power LED is amber.

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 25).
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:

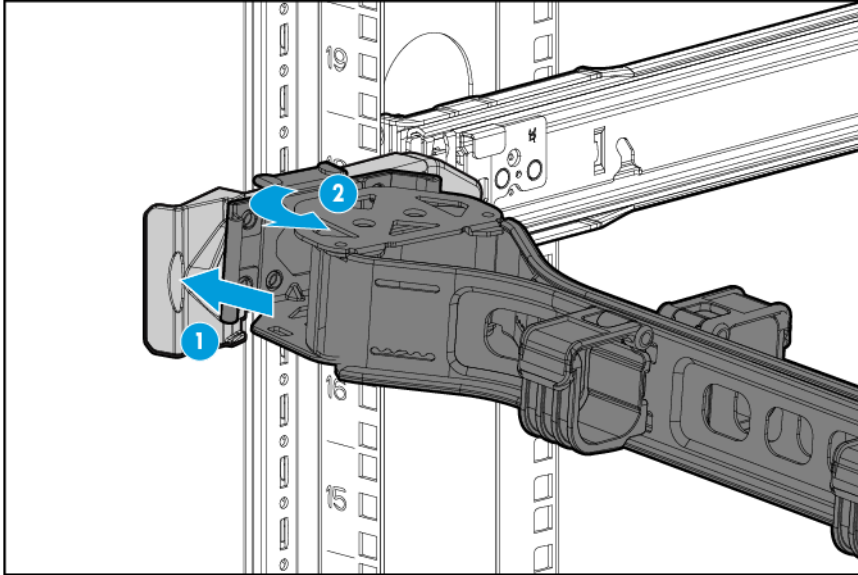
1. Power down the server (on page 25).
2. Extend the server from the rack (on page 26).
3. Disconnect the cabling and remove the server from the rack. For more information, refer to the documentation that ships with the rack mounting option.
4. Place the server on a sturdy, level surface.

Access the product rear panel

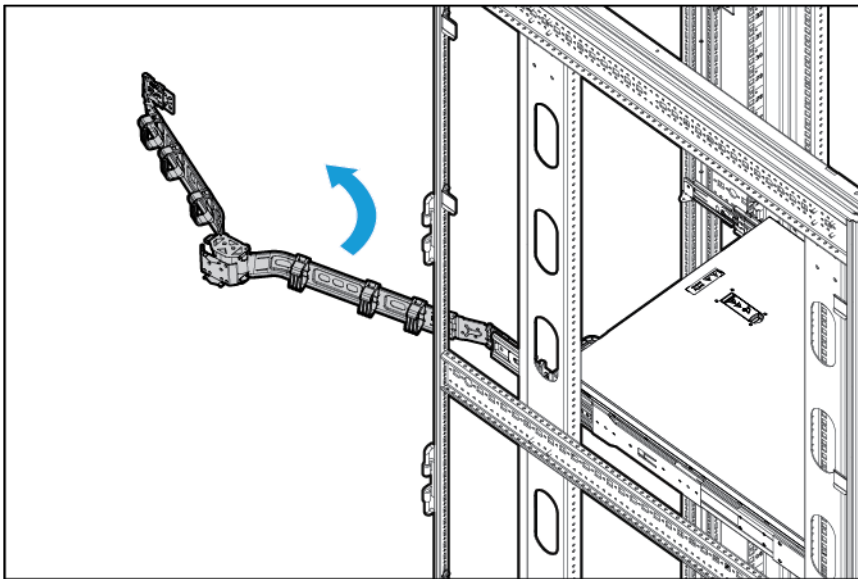
Opening the cable management arm

To access the server rear panel:

1. Release the cable management arm.



2. Open the cable management arm. The cable management arm can be right-mounted or left-mounted.

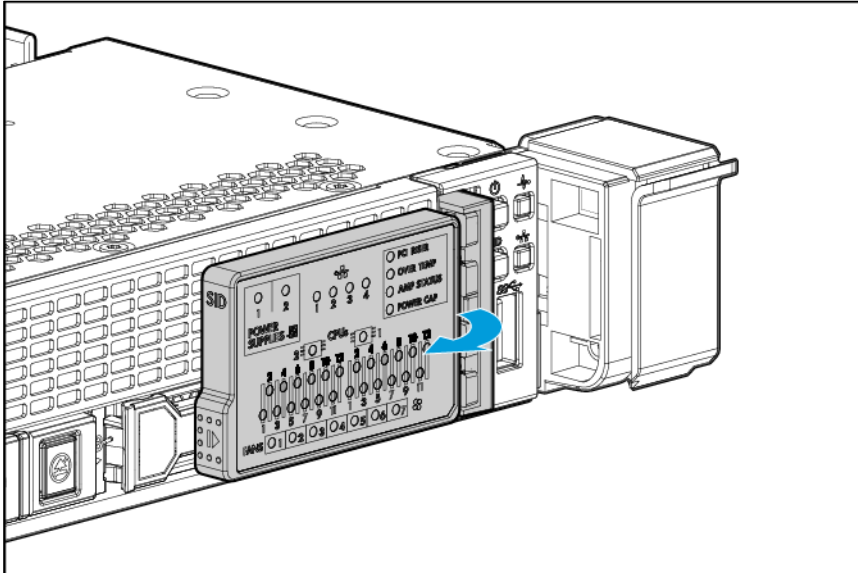
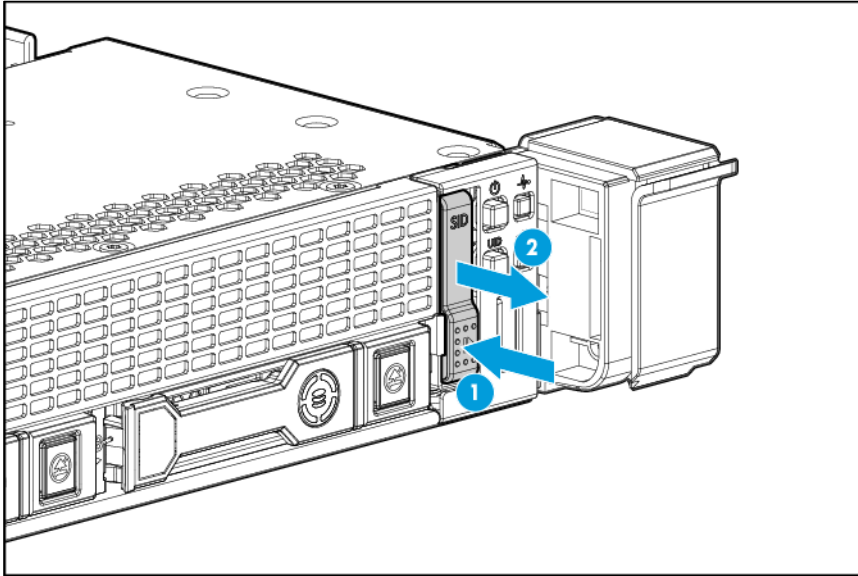


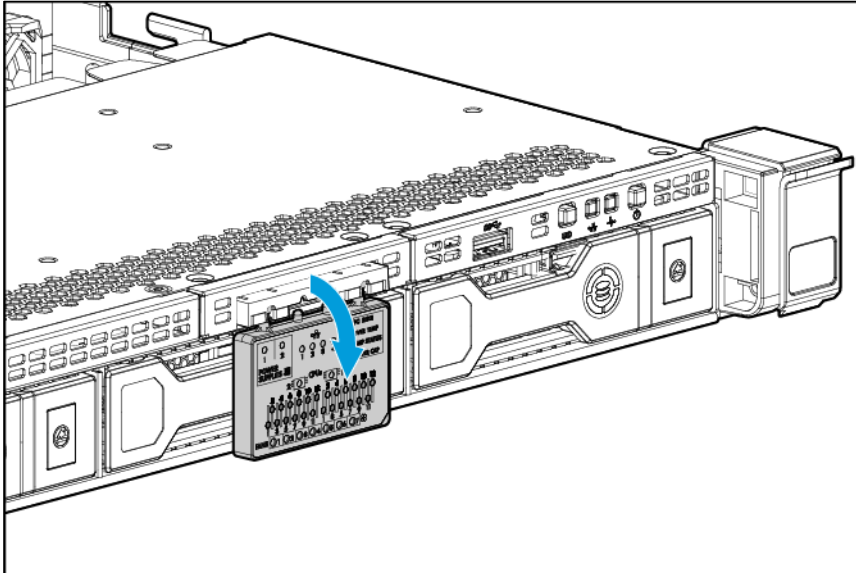
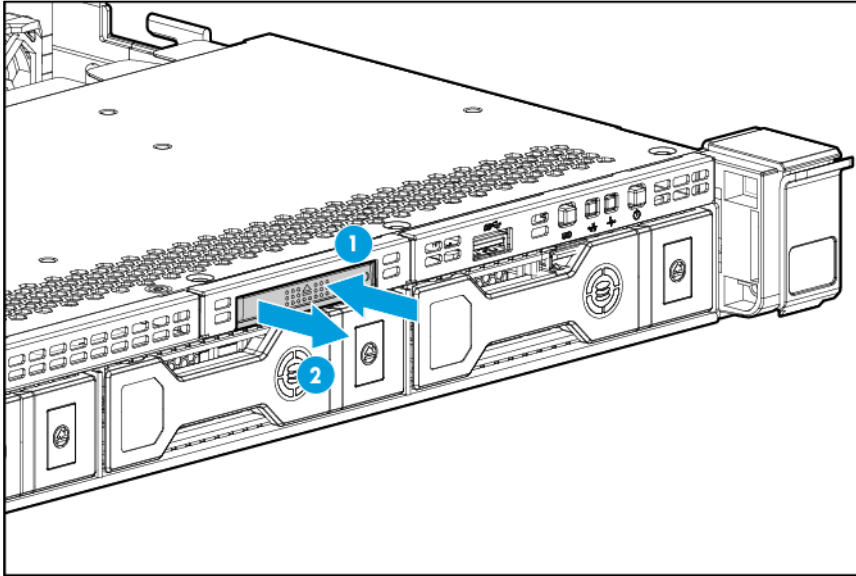
Access the Systems Insight Display

To access the optional pop-out HP Systems Insight Display:

1. Press and release the panel.
2. After the display fully ejects, rotate the display to view the LEDs.

8 SFF





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.

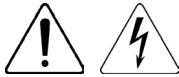
To prevent electrostatic damage:

- 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.



15.31 kg
33.76 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.

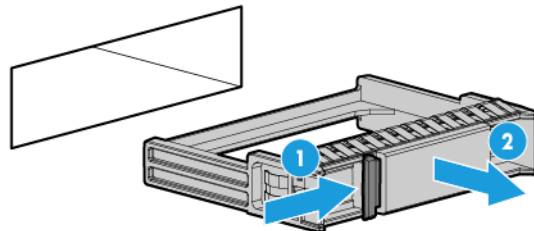
Drive blank



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.

To remove the component:

1. Remove the drive blank.



To replace the blank, slide the blank into the bay until it locks into place.

Hot-plug drive

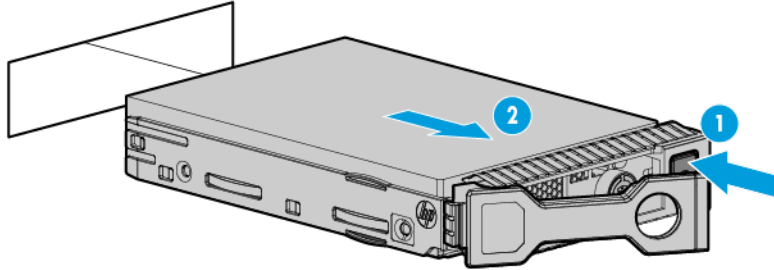


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. Back up all server data on the drive.
2. Determine the status of the drive from the drive LED definitions ("[Hot-plug drive LED definitions](#)" on page 86).

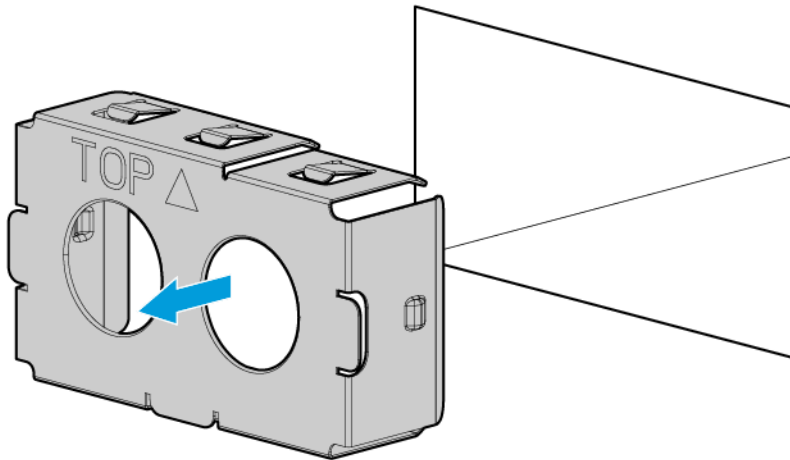
3. Remove the drive.



To replace the component, reverse the removal procedure.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

AC power supply

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

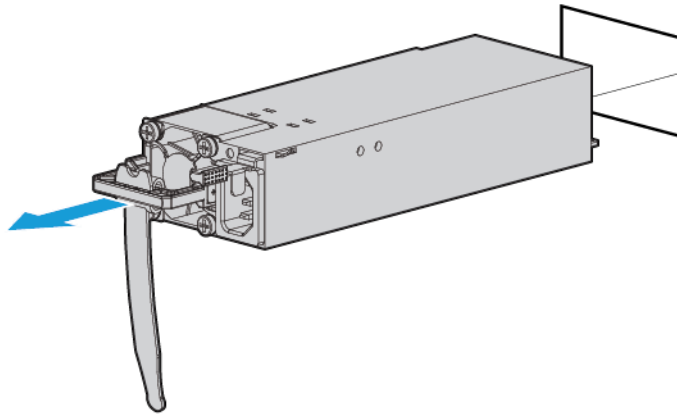
To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Access the product rear panel (on page 27).
4. Release the latch on the power supply.

5. Remove the power supply.



WARNING: To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



To replace the component, reverse the removal procedure.

Access panel



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



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

To remove the component:

1. Power down the server (on page 25).
2. Extend the server from the rack (on page 26).

Open or unlock the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.

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 inch).
2. Push down on the hood latch. The access panel slides to a closed position.

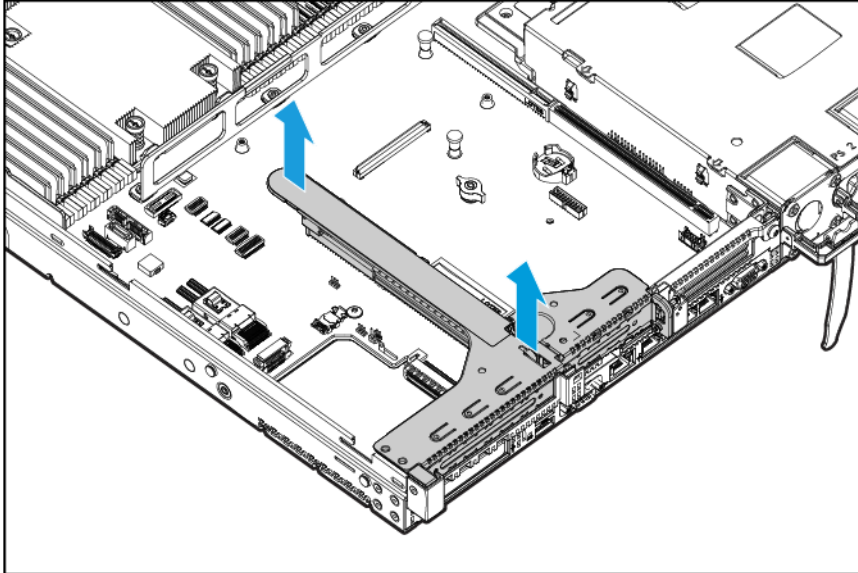
Primary PCI riser cage



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

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

- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove the primary PCI riser cage.



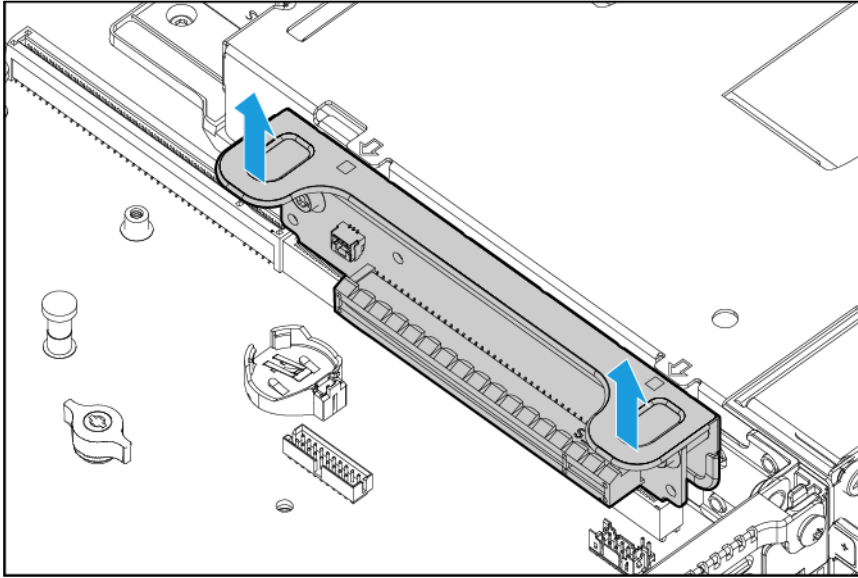
To replace the component, reverse the removal procedure.

Secondary PCI riser cage

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

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).

5. Remove the secondary PCI riser cage.



To replace the component, reverse the removal procedure.

Primary PCIe riser blank

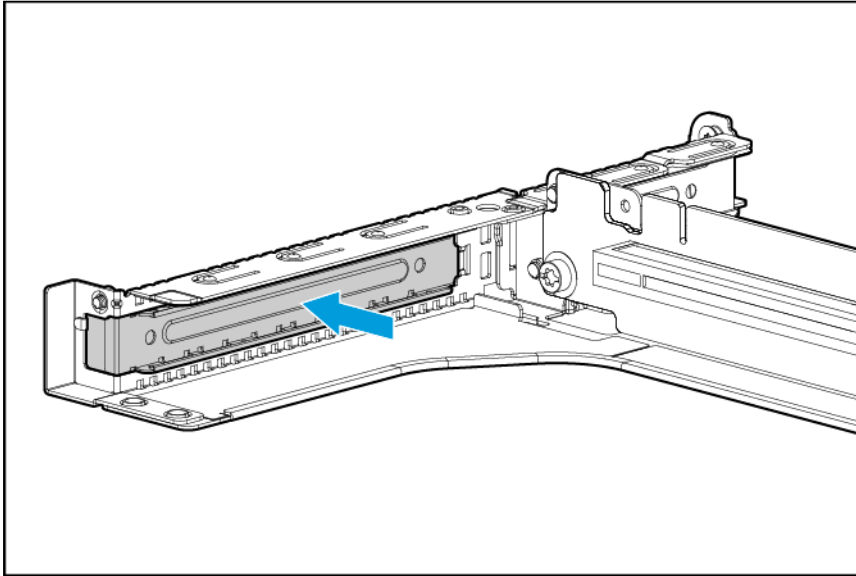


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove the PCI riser cage ("Primary PCI riser cage" on page 33).

6. Remove the primary PCIe riser blank.



To replace the component, reverse the removal procedure.

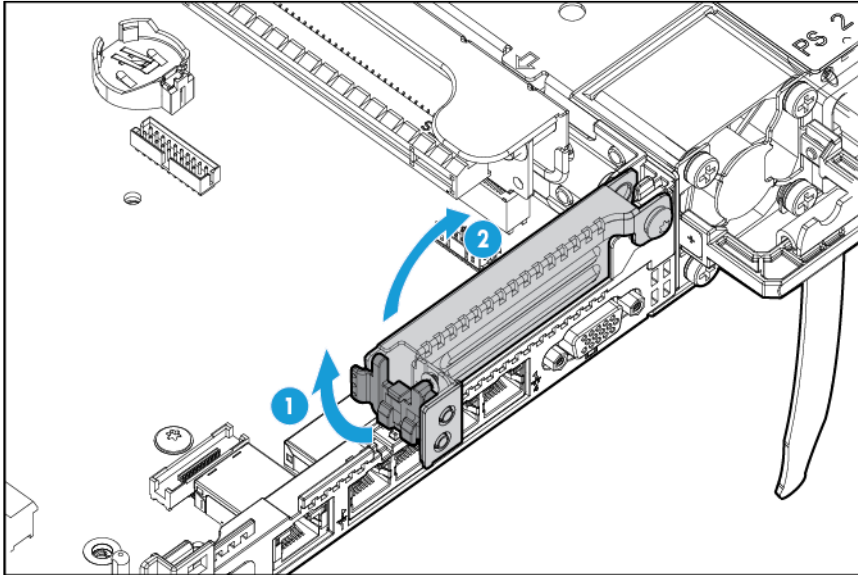
Secondary PCIe riser blank

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

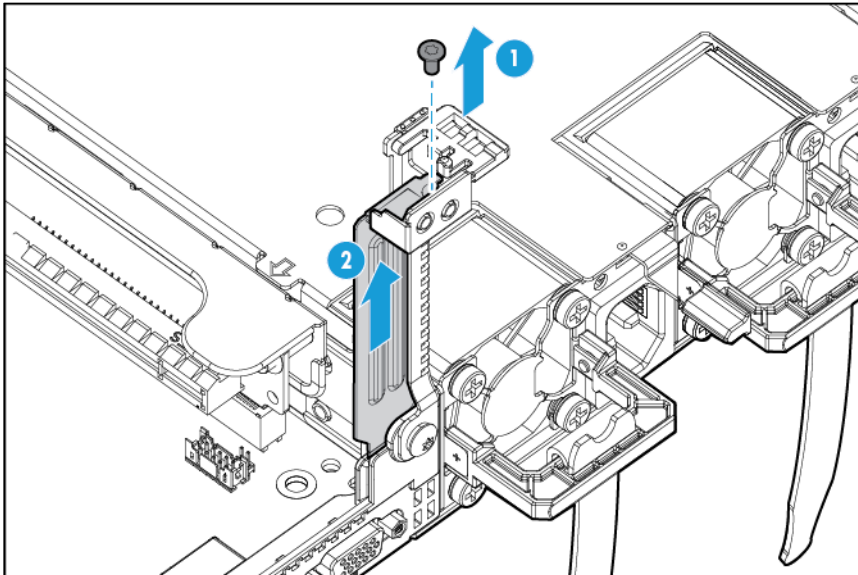
To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).

5. Lift the rear wall latch.



6. Remove the secondary PCIe riser blank.



To replace the component, reverse the removal procedure.

Fan module

The server has seven fans. Install fans 1 and 2 only when processor 2 is installed. When only one processor is installed, install the fan blanks in bays 1 and 2.

To remove the component:

1. Extend the server from the rack (on page 26).
2. Remove the access panel ("Access panel" on page 33).

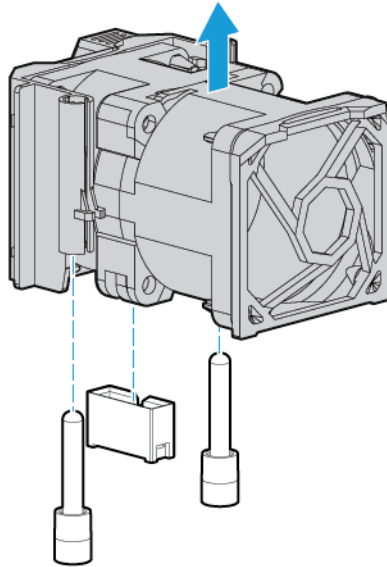


IMPORTANT: When a hot-plug fan is removed, the other fans in the server will increase speed to compensate.



CAUTION: To avoid server shutdown, a fan must be replaced within 60 seconds of being removed.

3. Remove the fan module.



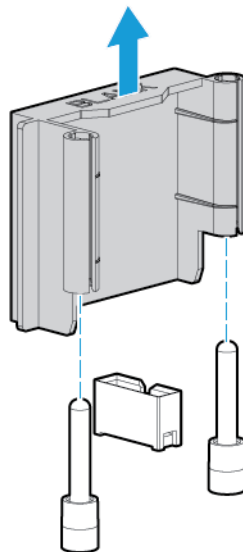
To replace the component, reverse the removal procedure.

Fan blank

Install fans 1 and 2 only when processor 2 is installed. When only one processor is installed, install the fan blanks in bays 1 and 2.

To remove the component:

1. Extend the server from the rack (on page 26).
2. Remove the access panel ("Access panel" on page 33).
3. Remove the fan blank.

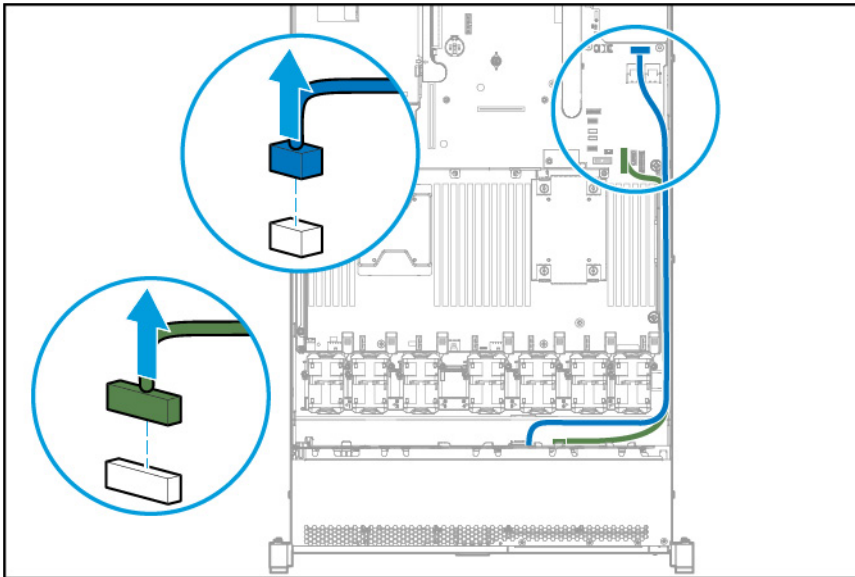


To replace the component, reverse the removal procedure.

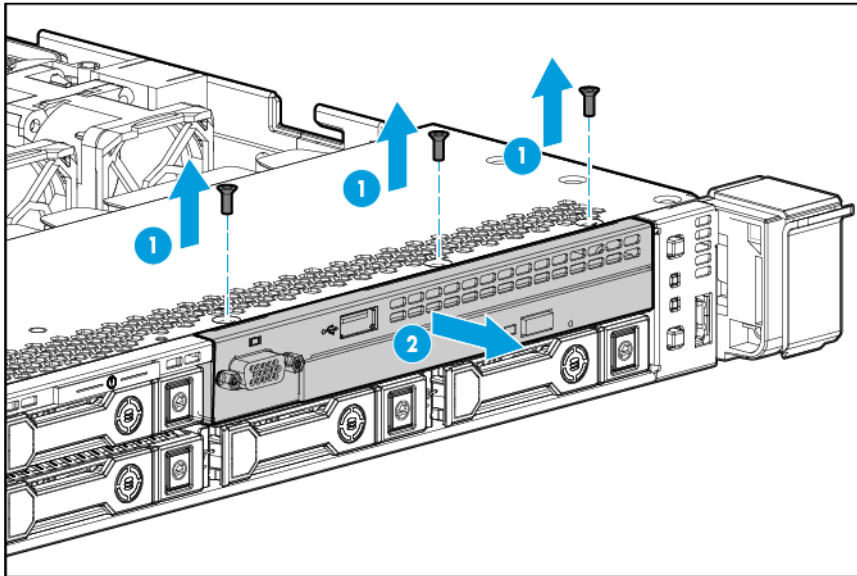
8-SFF Optical/USB/VGA assembly

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Disconnect the optical drive cable.



6. Remove the optical drive.



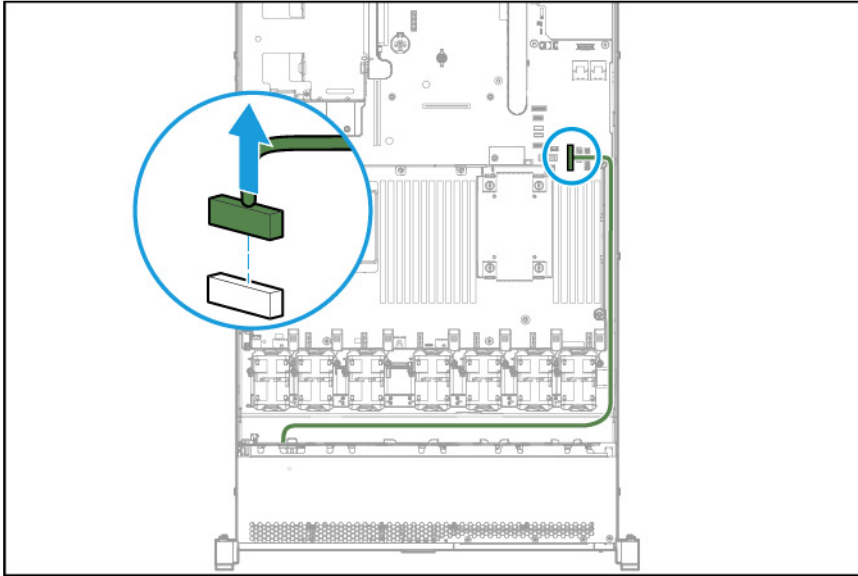
To replace the component, reverse the removal procedure.

4-LFF Optical/USB/VGA assembly

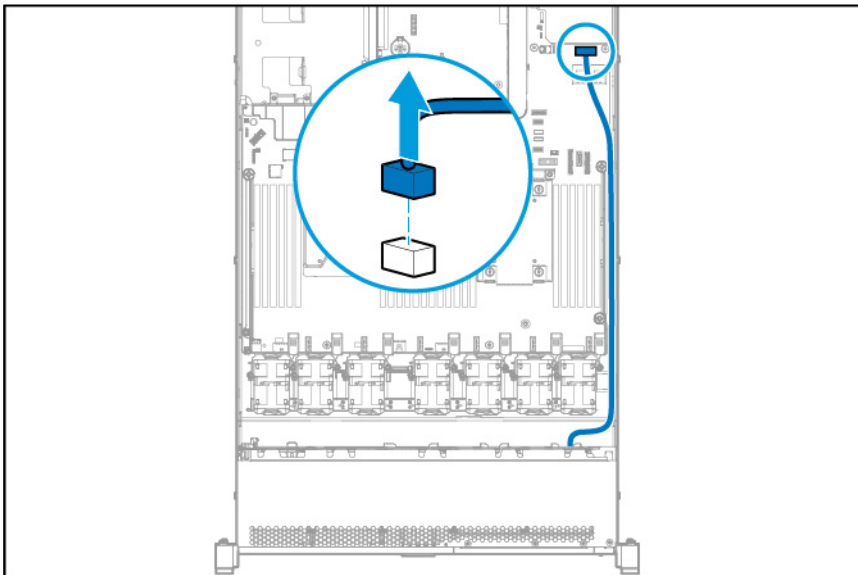
To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Disconnect the cables:

- Optical drive cabling

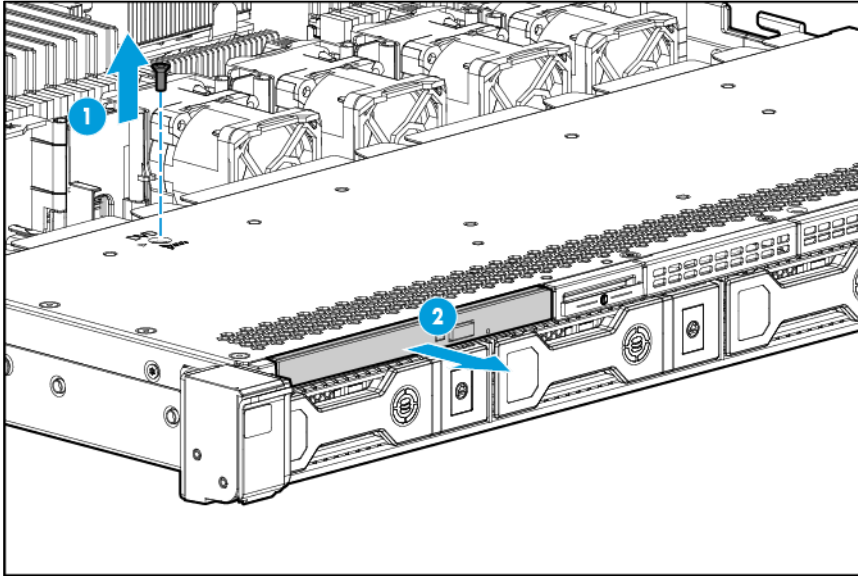


- USB/VGA cabling

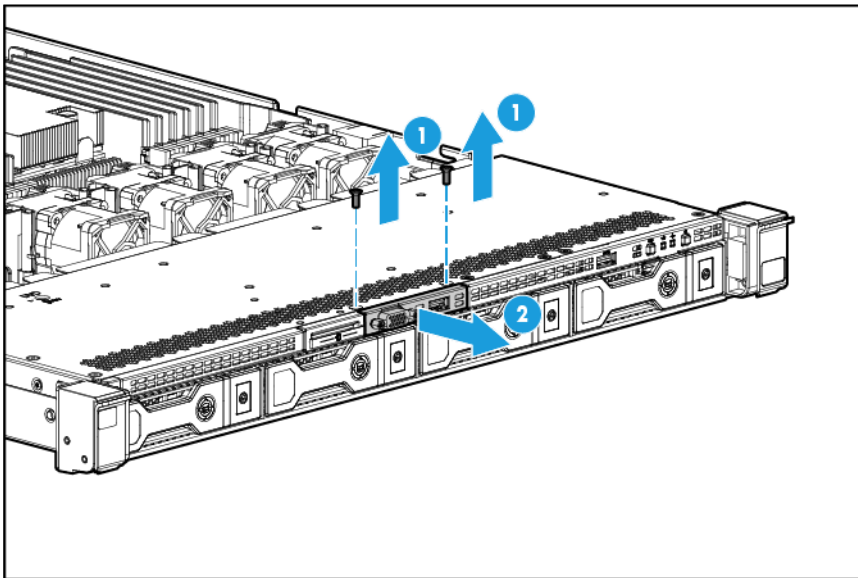


6. Remove the assembly:

- Optical drive assembly



- USB/VGA assembly



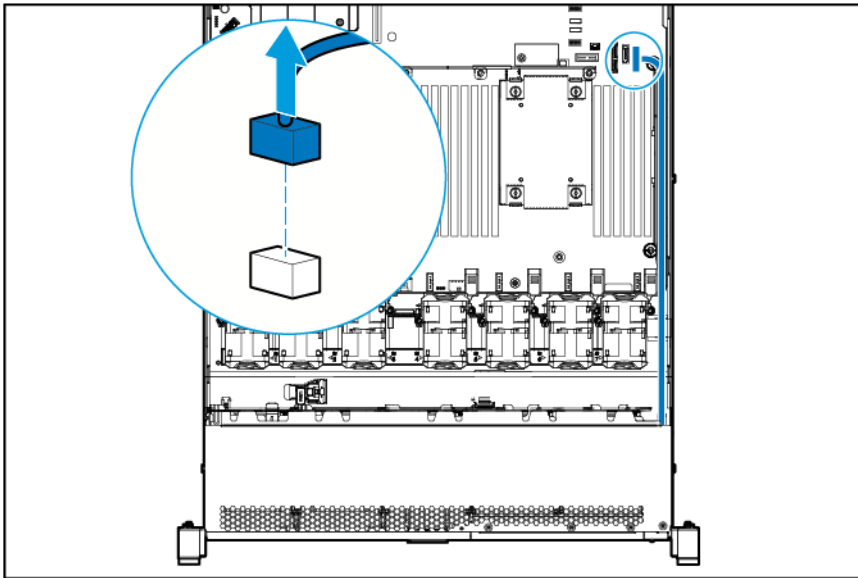
To replace the component, reverse the removal procedure.

8-SFF Systems Insight Display

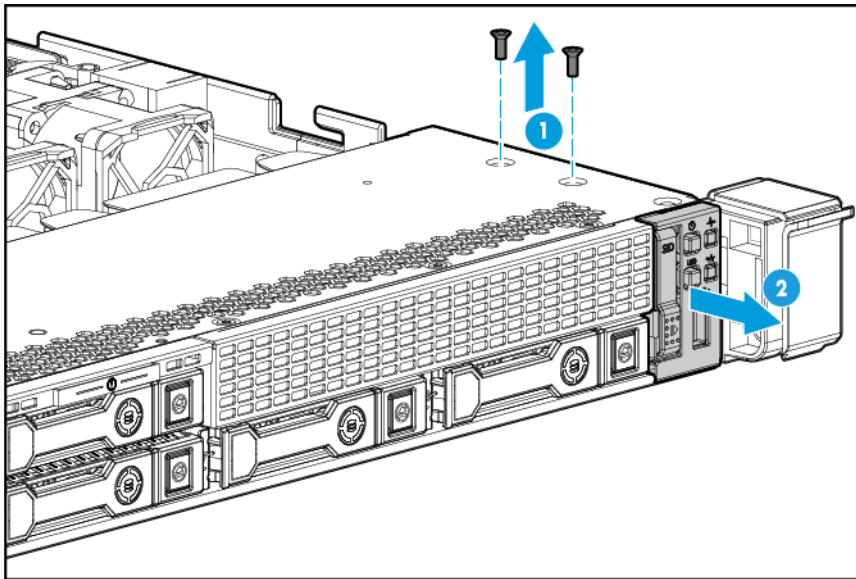
To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - Extend the server from the rack (on page 26).

- Remove the server from the rack (on page 26).
- 4. Remove the access panel ("Access panel" on page 33).
- 5. Disconnect the Systems Insight Display cable and the USB cable from the system board, and then disconnect the USB cable from the front of the Systems Insight Display.



- 6. Remove the screw securing the Systems Insight Display, and then remove the Systems Insight Display.



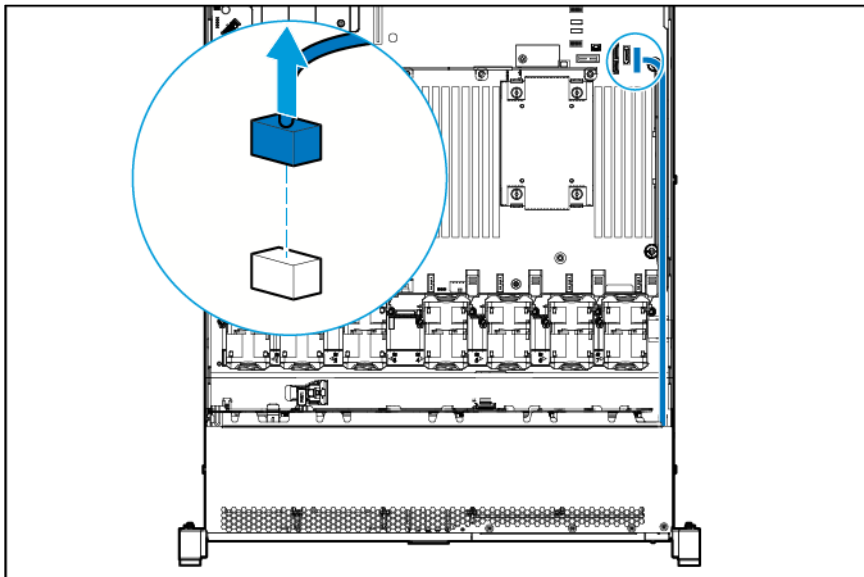
To replace the component, reverse the removal procedure.

4-LFF Systems Insight Display

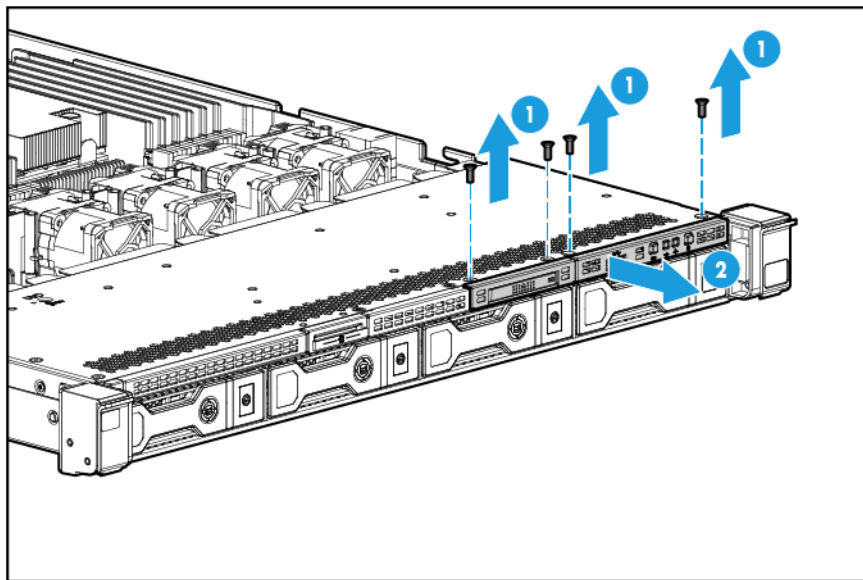
To remove the component:

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

- b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Disconnect the Systems Insight Display cable and the USB cable from the system board, and then disconnect the USB cable from the front of the Systems Insight Display.



6. Remove the screw securing the Systems Insight Display, and then remove the Systems Insight Display.

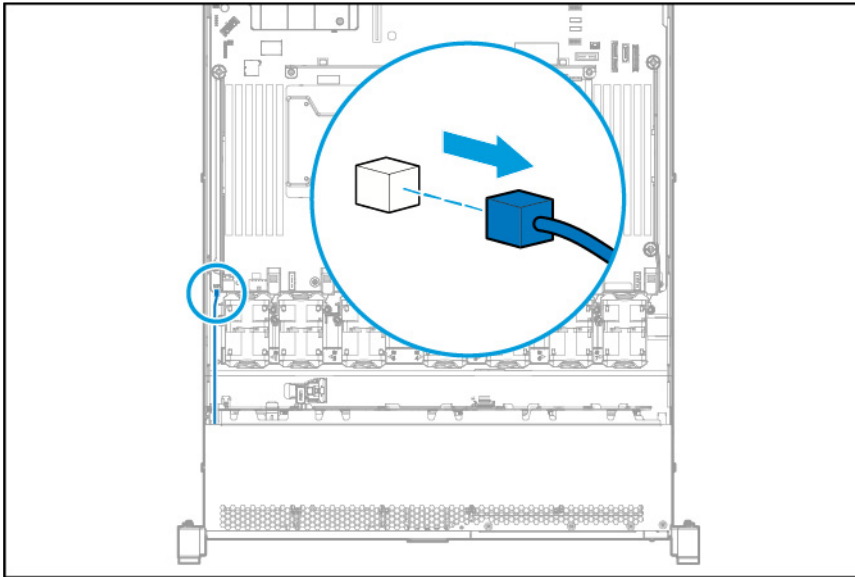


To replace the component, reverse the removal procedure.

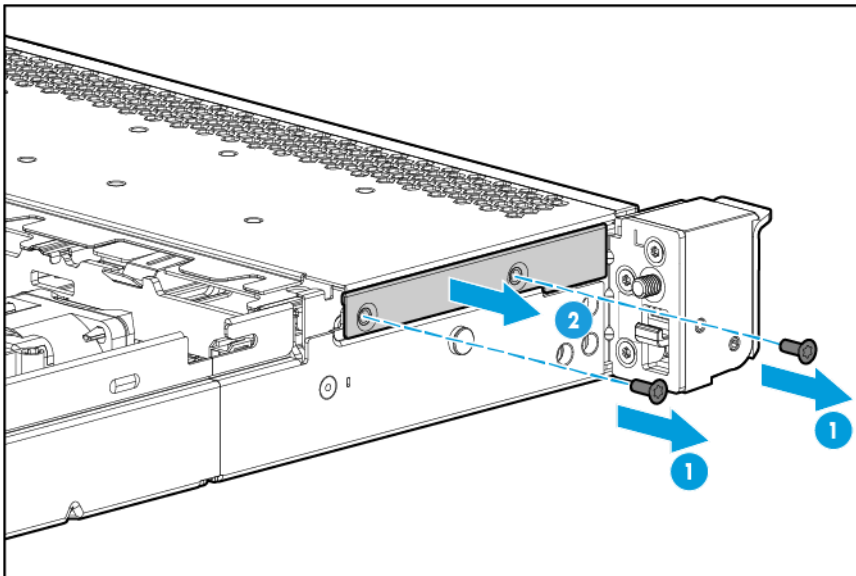
Location discovery services ear

To remove the component:

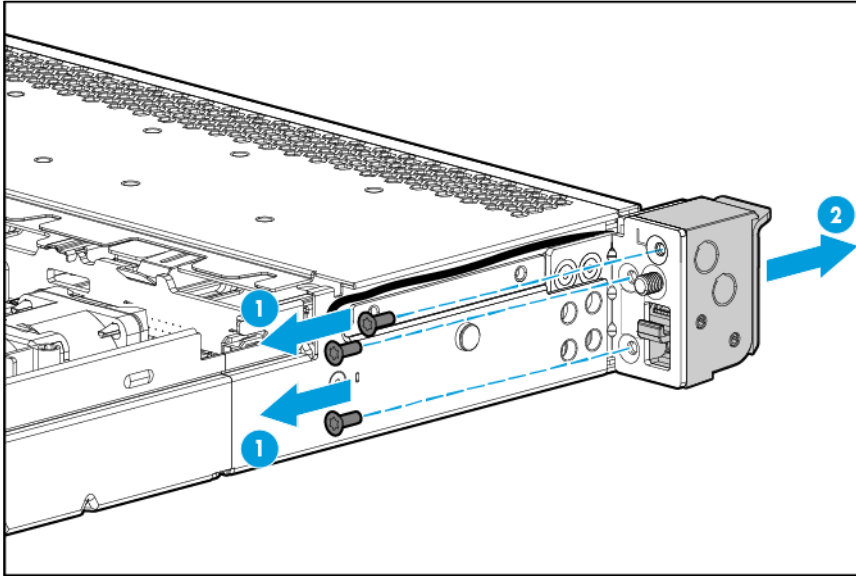
1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove the hot-plug fan or fan blank from fan bay 1 ("Fan module" on page 37).
6. Disconnect the discovery services cable.



7. Remove the discovery cable cover.



8. Remove the location discovery services ear.



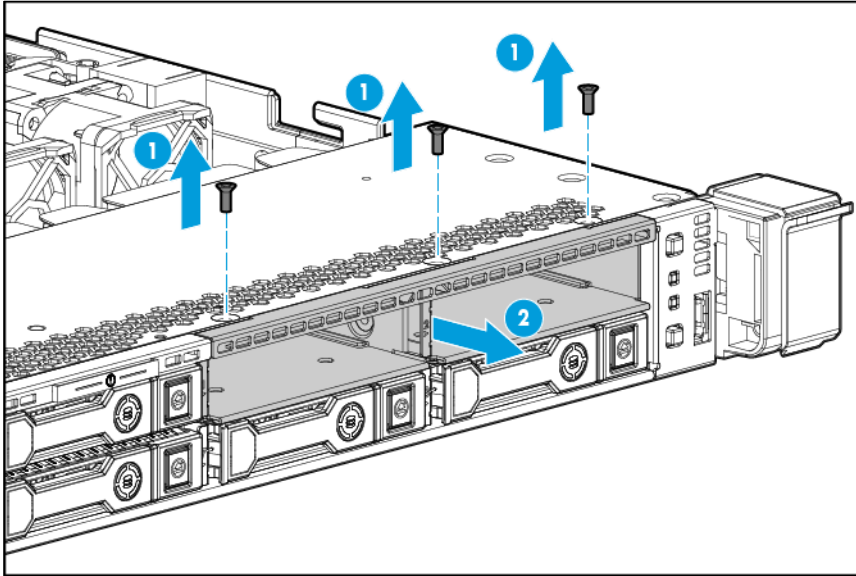
To replace the component, reverse the removal procedure.

2-SFF hard drive cage

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove all hot-plug hard drives ("Hot-plug drive" on page 31).
6. Disconnect all cables from the hard drive backplane.

7. Remove the hard drive cage.



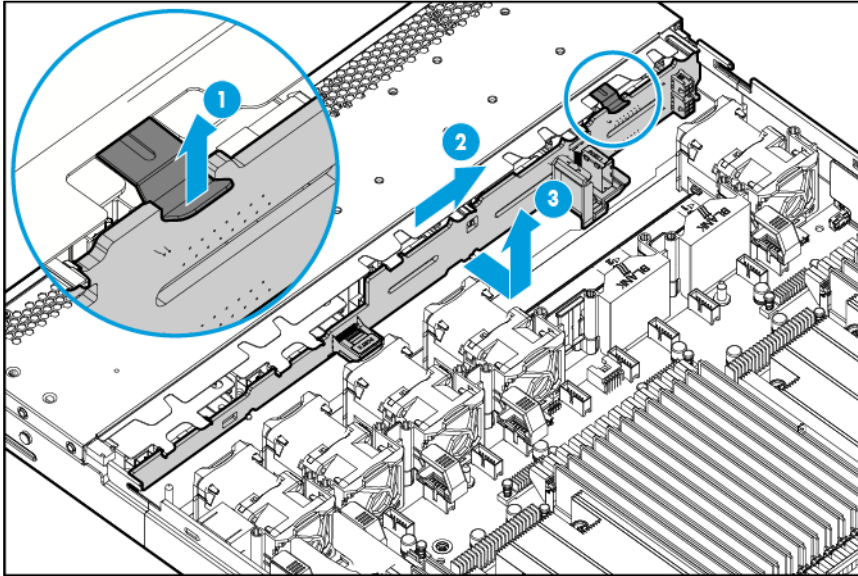
To replace the component, reverse the removal procedure.

8-SFF hard drive backplane

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove all hot-plug hard drives ("Hot-plug drive" on page 31).
6. Disconnect all cables from the hard drive backplane.

7. Remove the hard drive backplane.



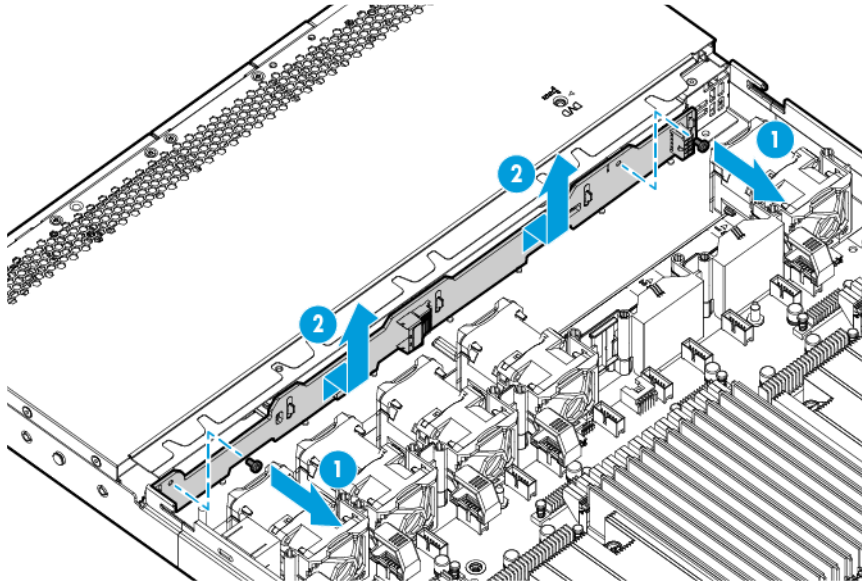
To replace the component, reverse the removal procedure.

4-LFF hard drive backplane

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove all hot-plug hard drives ("Hot-plug drive" on page 31).
6. Disconnect all cables from the hard drive backplane.

7. Remove the hard drive backplane.



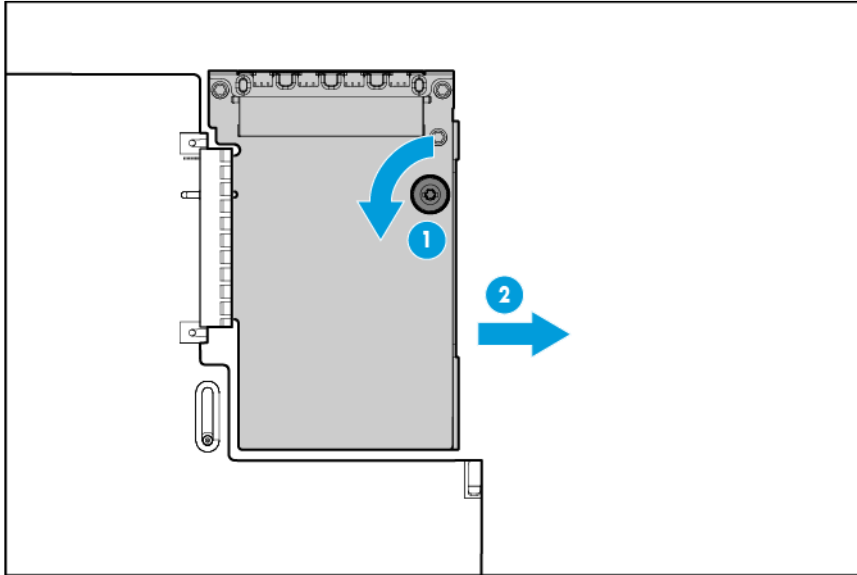
To replace the component, reverse the removal procedure.

FlexibleLOM

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect the LAN segment cables.
4. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).

5. Remove the FlexibleLOM.



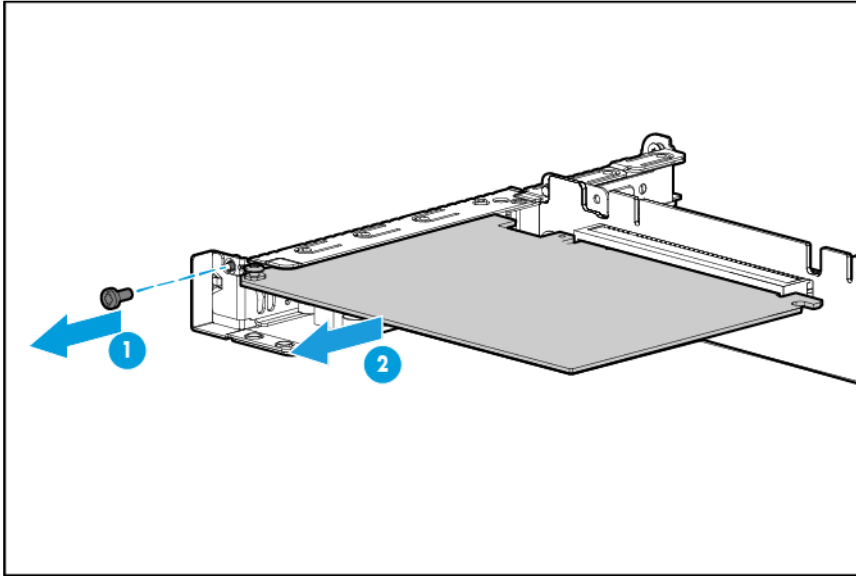
To replace the component, reverse the removal procedure.

Expansion boards

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove the PCIe riser cage ("Primary PCI riser cage" on page 33).

6. Remove the expansion board.



To replace the component, reverse the removal procedure.

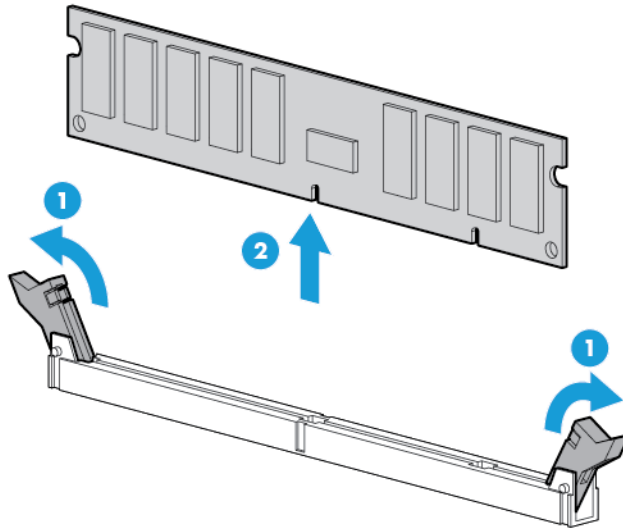
If you are not replacing the expansion board, install the screw back into the PCIe riser cage before installing the PCIe riser cage back into the server.

DIMMs

To remove the component:

1. Power down the server (on page [25](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page [26](#)).
 - o Remove the server from the rack (on page [26](#)).
4. Remove the access panel ("[Access panel](#)" on page [33](#)).

5. Remove the DIMM.



To replace the component, reverse the removal procedure.

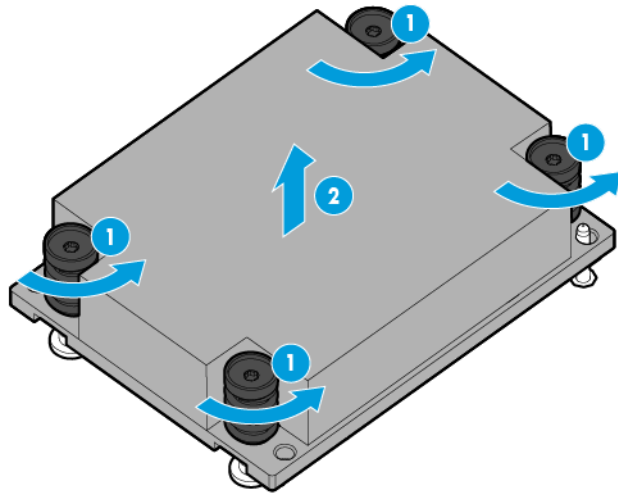
Heatsink

-
- ⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
- ⚠ **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.
-
- ⚠ **CAUTION:** To avoid thermal shutdown, all fans must be installed in a dual processor configuration.
-

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - Extend the server from the rack (on page 26).
 - Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).

5. Remove the heatsink.



To replace the component, reverse the removal procedure.

Processor

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

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

 - CAUTION:** To prevent possible server overheating, always populate each processor socket with a processor socket cover and a heatsink blank or a processor and a heatsink.

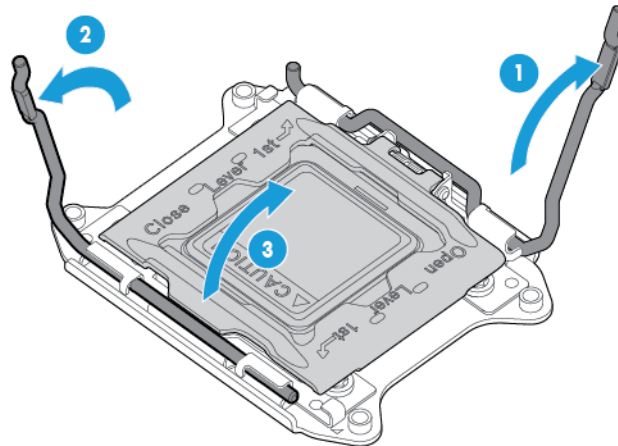
 - IMPORTANT:** Processor socket 1 must always be populated. If processor socket 1 is empty, the server does not power up.
-

Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1866MHz, or 2133MHz.

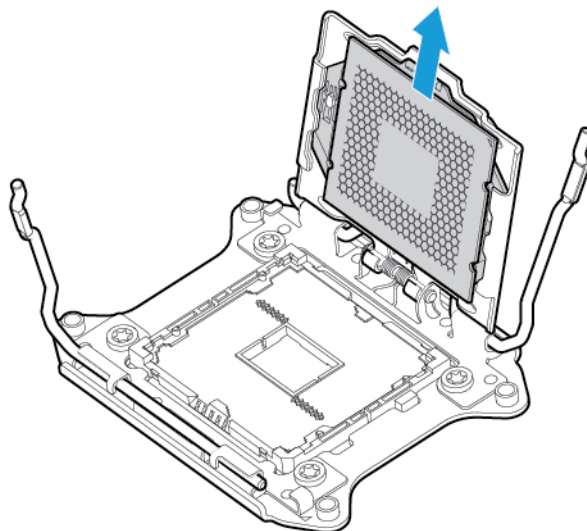
To remove the component:

1. Update the system ROM.
Locate and download the latest ROM version from the HP website (<http://www.hp.com/support>). Follow the instructions on the website to update the system ROM.
2. Power down the server (on page 25).
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Remove the heatsink ("Heatsink" on page 52).

6. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



7. Remove the processor from the processor retaining bracket.

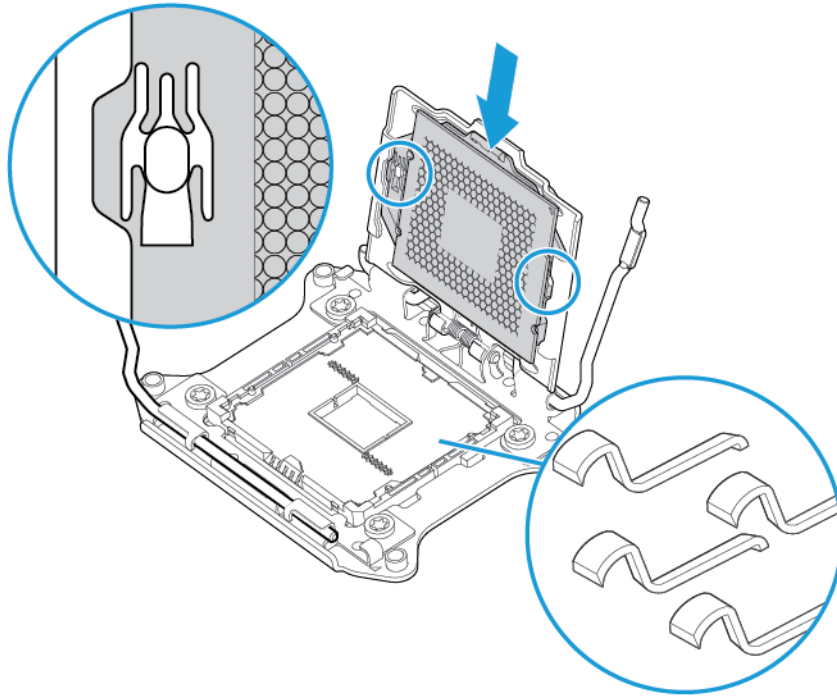


△ **CAUTION:** To avoid damage to the processor, do not touch the bottom of the processor, especially the contact area.

To replace the component:

△ **CAUTION:** To avoid damage to the system board, processor socket, and screws, do not overtighten the heatsink screws.

1. Install the processor. Verify that the processor is fully seated in the processor retaining bracket by visually inspecting the processor installation guides on either side of the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.**

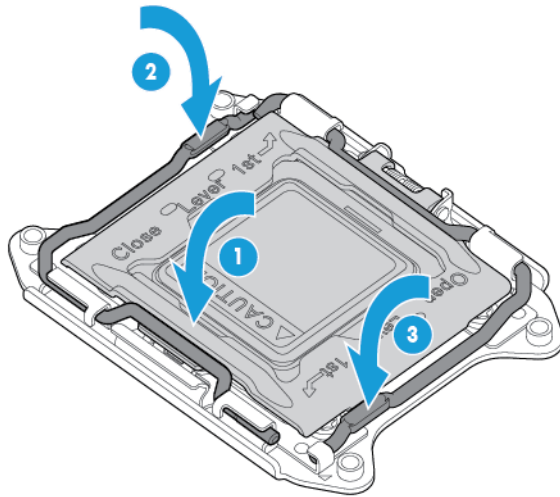


△ **CAUTION:** **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board, do not touch the processor or the processor socket contacts.

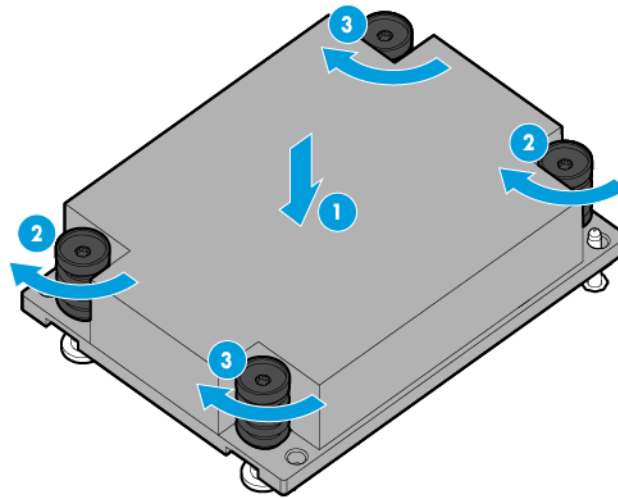
2. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.

△ **CAUTION:** Do not press down on the processor. Pressing down on the processor may cause damage to the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.

3. Press and hold the processor retaining bracket in place, and then close each processor locking lever. Press only in the area indicated on the processor retaining bracket.



4. Align and install the heatsink.



5. Install the access panel.

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.

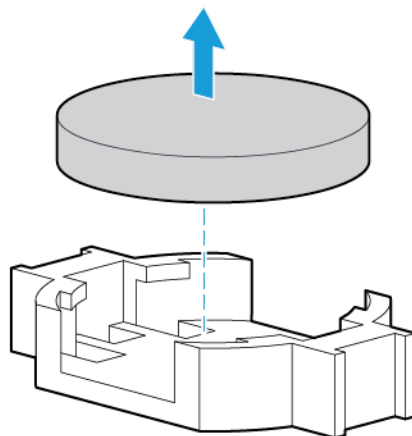


WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

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

To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 33).
5. Locate the battery ("System board components" on page 83).
6. Remove the battery.



To replace the component, reverse the removal procedure.

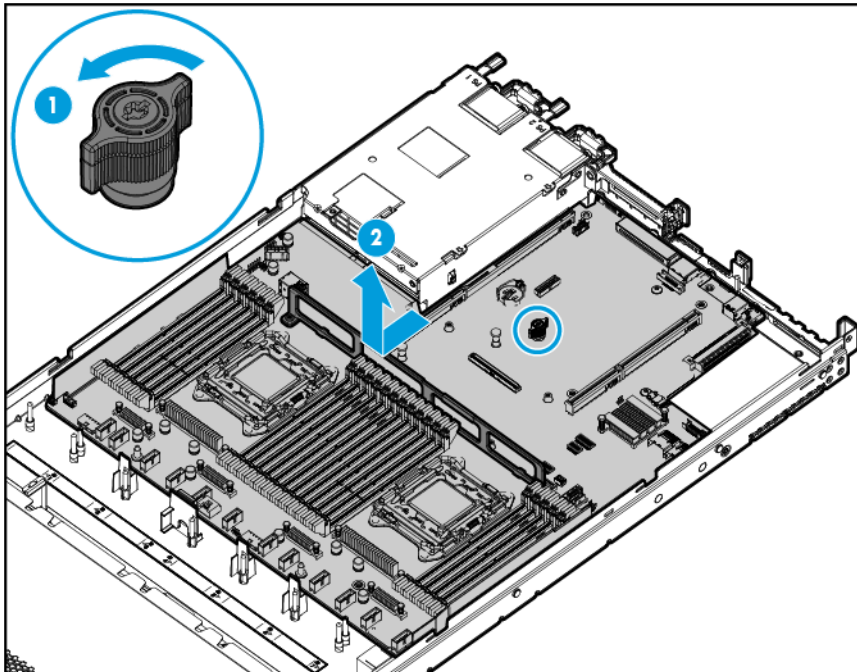
For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

System board

To remove the component:

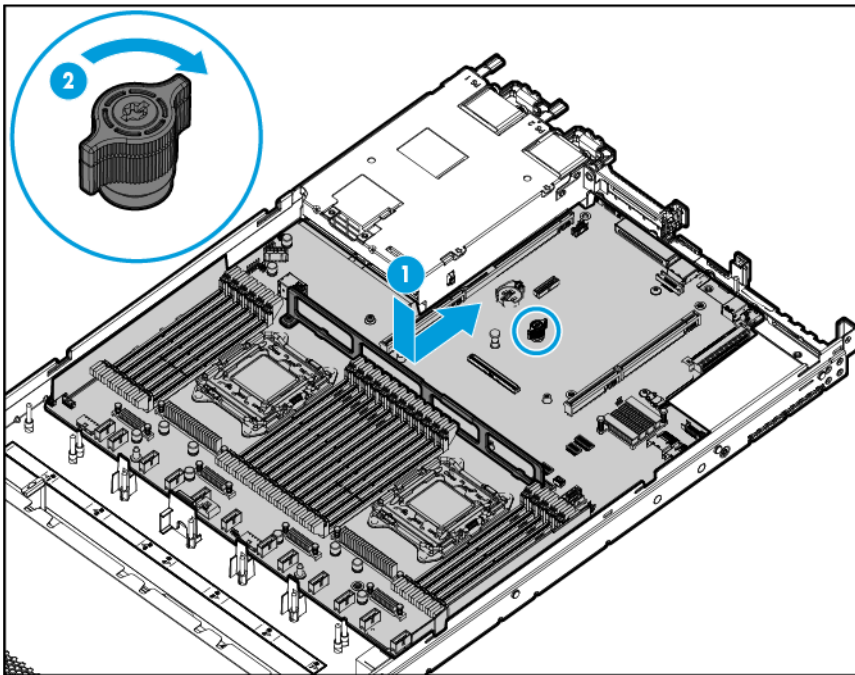
1. Power down the server (on page 25).
2. Remove all power:
 - a. Disconnect each power cord from the power source.

- b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the server from the rack (on page 26).
4. Remove all power supplies ("AC power supply" on page 32).
5. Remove the access panel ("Access panel" on page 33).
6. Remove the PCIe riser cage ("Primary PCI riser cage" on page 33).
7. If installed, remove the secondary PCIe riser cage ("Secondary PCI riser cage" on page 34).
8. Remove the FlexibleLOM ("FlexibleLOM" on page 49).
9. Remove all DIMMs ("DIMMs" on page 51).
10. Disconnect all cables connected to the system board.
11. Remove the heatsink ("Heatsink" on page 52).
12. Remove the processor ("Processor" on page 53).
13. Loosen the system board thumbscrews.
14. Remove the system board, using the handle to lift it out of the chassis.

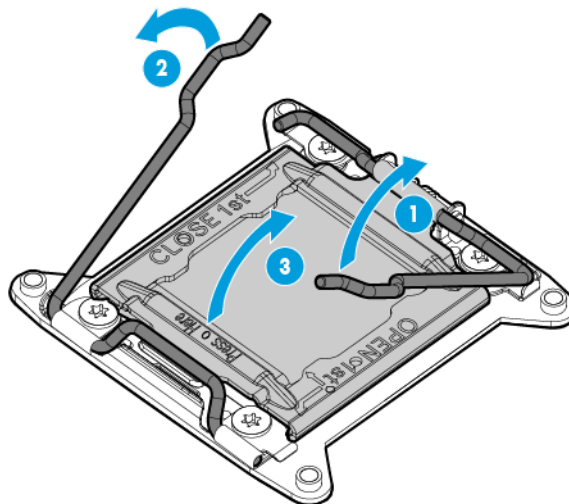


To replace the component:

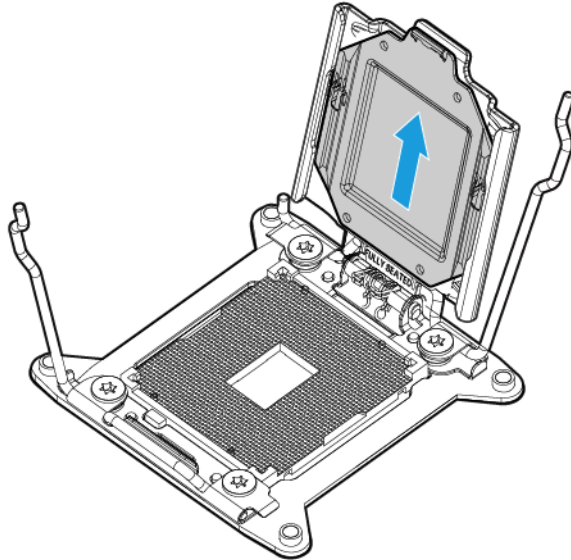
1. Install the spare system board.



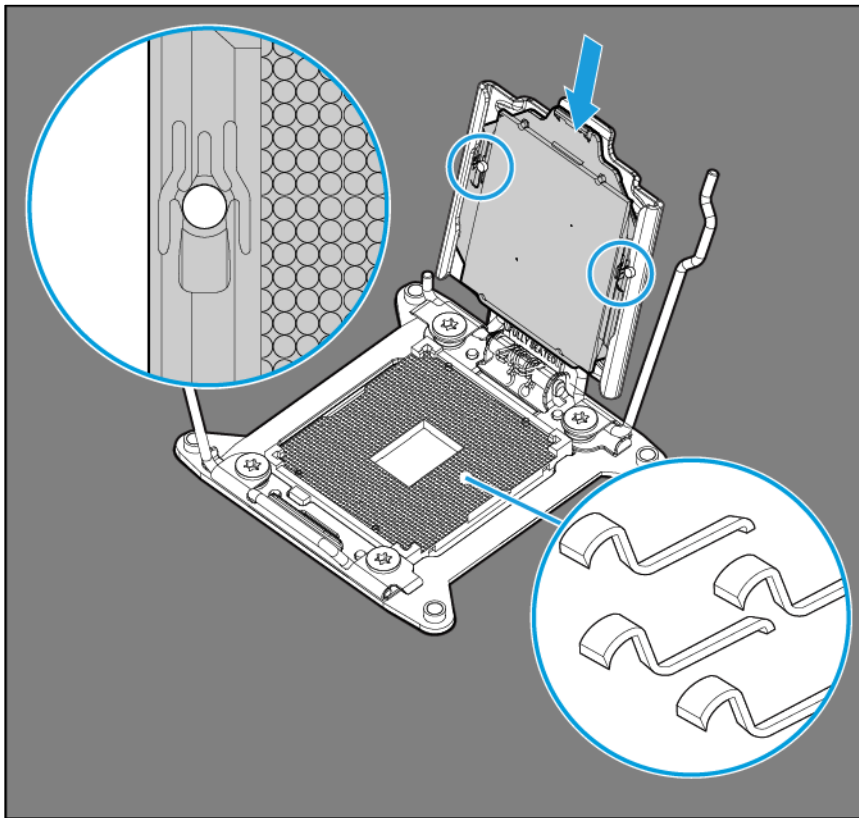
2. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



3. Remove the clear processor socket cover. Retain the processor socket cover for future use.



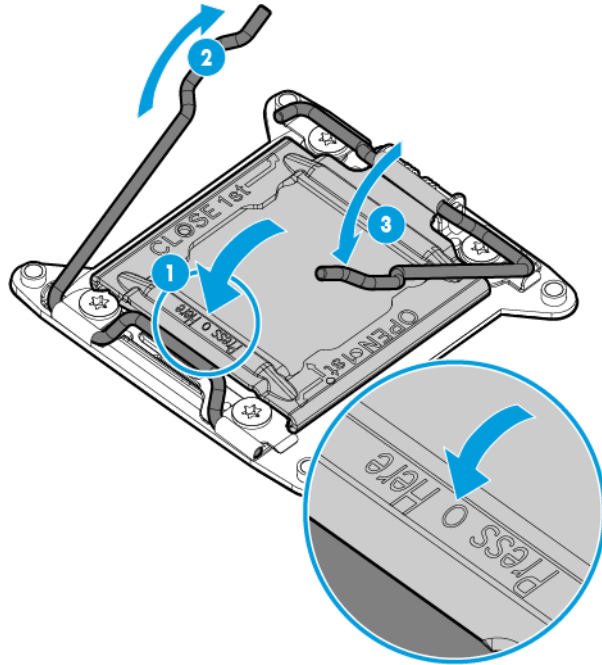
4. Install the processor. Verify that the processor is fully seated in the processor retaining bracket by visually inspecting the processor installation guides on either side of the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.**



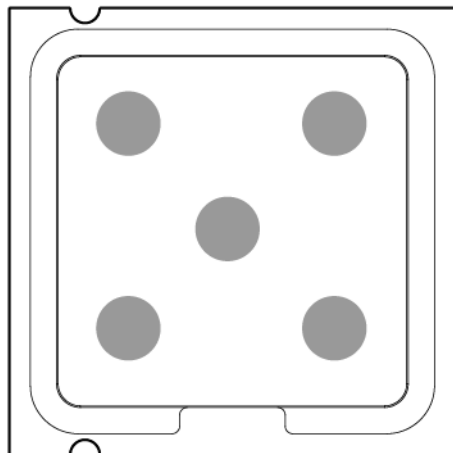
CAUTION: Do not press down on the processor. Pressing down on the processor may cause damage to the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.

△ **CAUTION:** Close and hold down the processor cover socket while closing the processor locking levers. The levers should close without resistance. Forcing the levers closed can damage the processor and socket, requiring system board replacement.

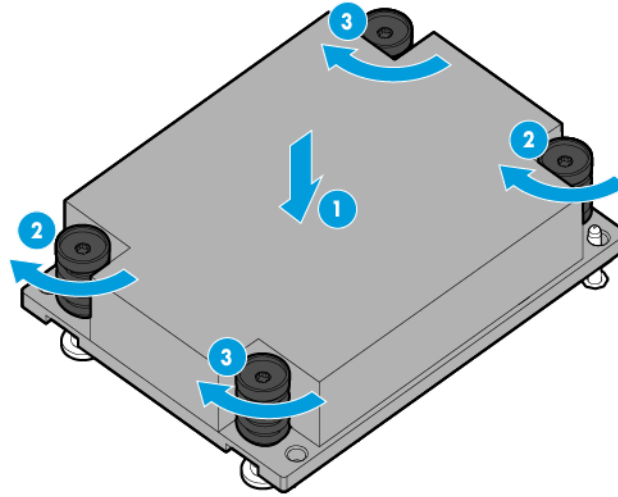
5. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.
6. Press and hold the processor retaining bracket in place, and then close each processor locking lever. Press only in the area indicated on the processor retaining bracket.



7. Install the processor socket cover onto the processor socket of the failed system board.
8. 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.
9. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



10. Install the heatsink.



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

11. Install all components removed from the failed system board.
12. Install the access panel.
13. Install the power supplies.
14. Power up the server.

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

1. During the server startup sequence, press the **F9** key to access UEFI System Utilities.
2. Select the **System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced System ROM Options > Serial Number**, and then press the **Enter** key.
3. Enter the serial number and press the **Enter** key. The following message appears:
The serial number should only be modified by qualified service personnel.
This value should always match the serial number located on the chassis.
4. Press the **Enter** key to clear the warning.
5. Enter the serial number and press the **Enter** key.
6. Select **Product ID**. The following warning appears:
Warning: The Product ID should ONLY be modified by qualified service personnel. This value should always match the Product ID located on the chassis.
7. Enter the product ID and press the **Enter** key.
8. Press the **F10** key to confirm exiting System Utilities. The server automatically reboots.

HP Trusted Platform Module

The TPM is not a customer-removable part.



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

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

Cabling

Cabling overview

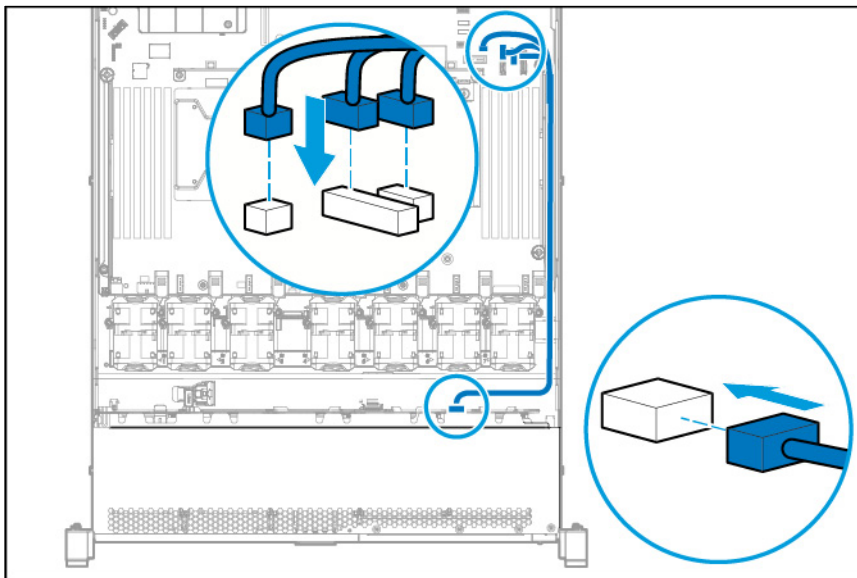
This section provides guidelines that help you make informed decisions about cabling the server and hardware options to optimize performance.

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>).

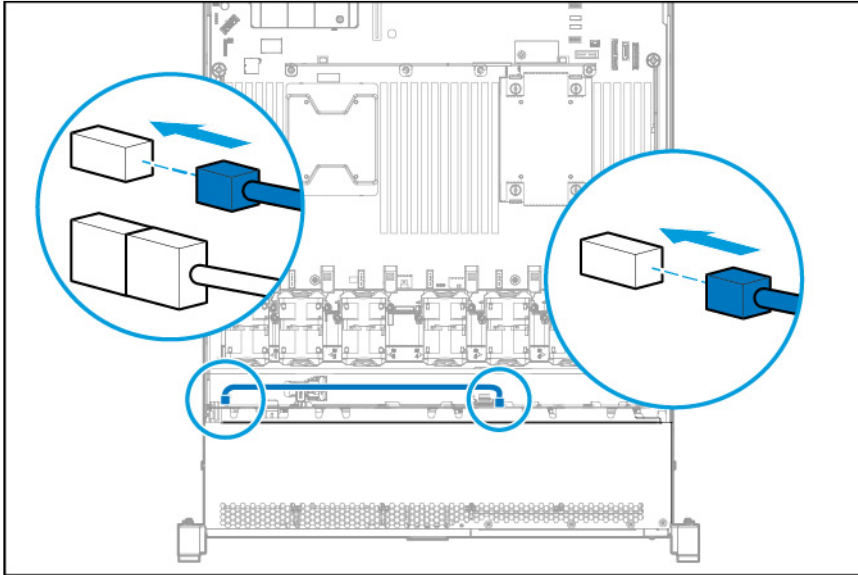
- ⚠ CAUTION:** When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

2-SFF backplane cabling

1. Connect the data cables to the SATA storage connector, the SATA optical/storage drive connector, and the backplane presence detect connector.



2. Connect the power cable to the left power connector on the backplane.

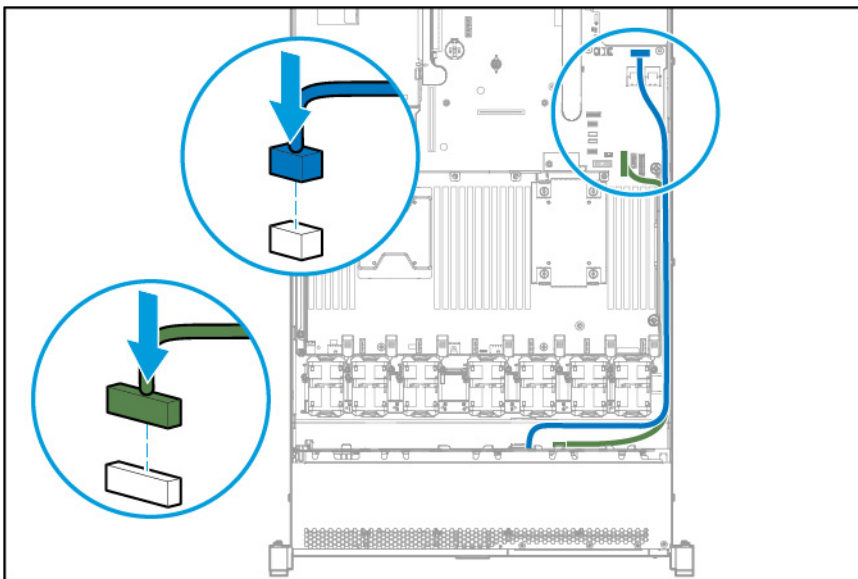


NOTE: Cabling from the 2 SFF backplane will vary if a PCIe storage controller is installed.

8-SFF Universal Media Bay cabling

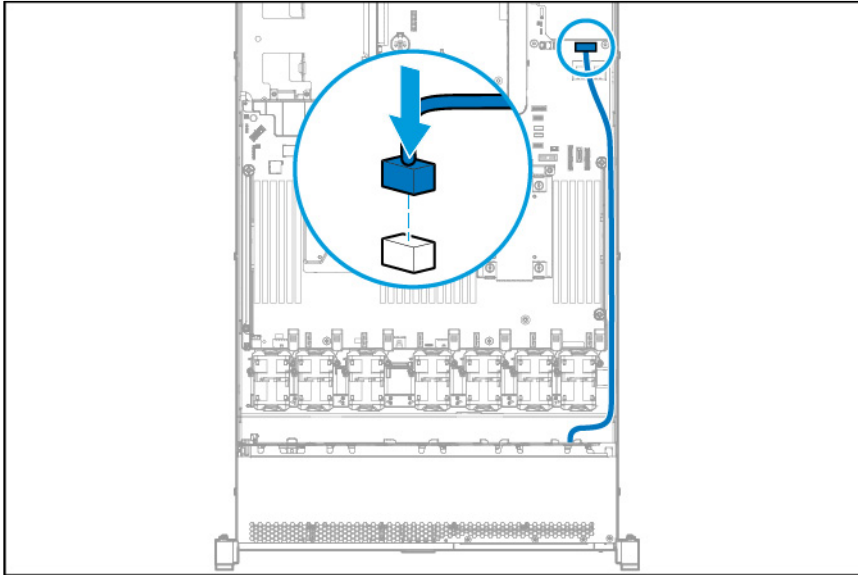
Route the cables along the edge of the system board, and then connect the cables to the system board:

- 8 SFF DVD-RW/VGA/USB connections
 - Connect the VGA/USB cable to the front VGA/USB connector toward the rear of the system board.
 - Connect the SATA optical cable to the SATA optical/storage drive connector.



- 8 SFF VGA/USB connections

Connect the VGA/USB cable to the front VGA/USB connector toward the rear of the system board.

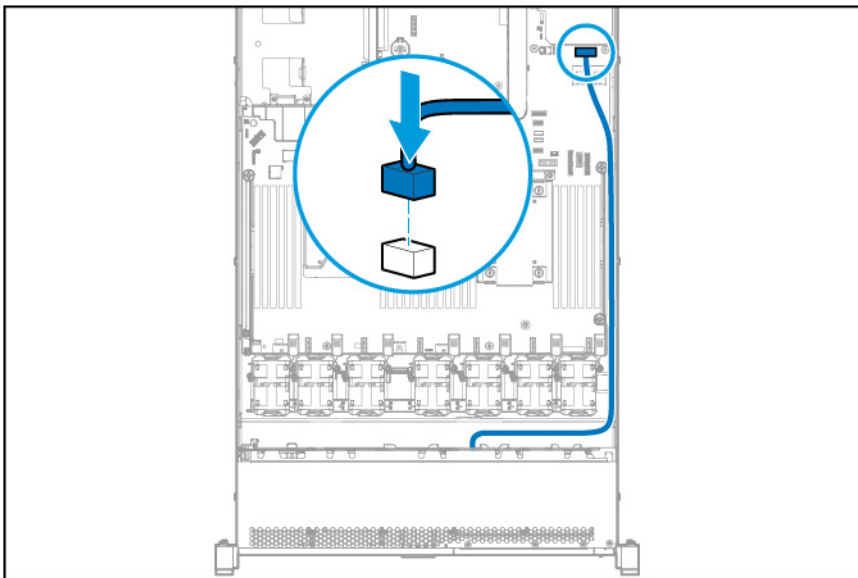


4-LFF Universal Media Bay cabling

Route the cables along the edge of the system board, and then connect the cables to the system board:

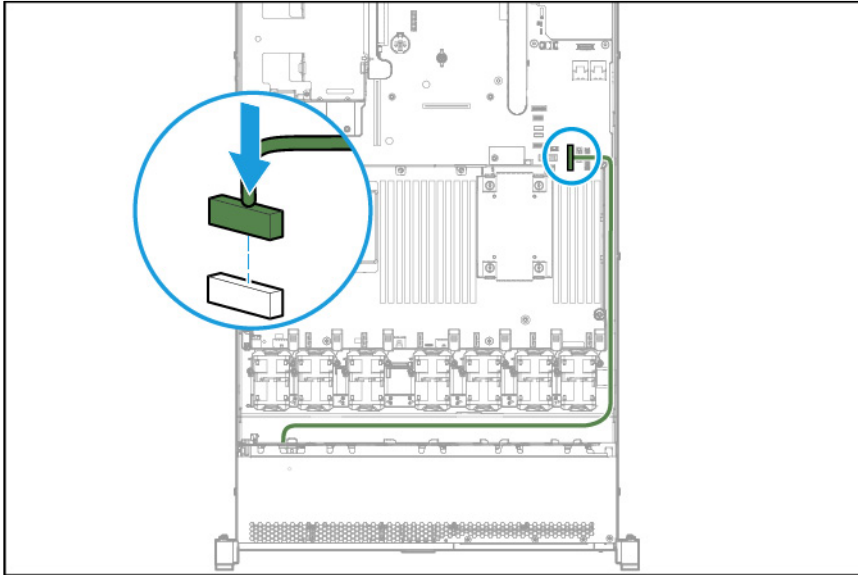
- 4 LFF VGA/USB connections

Connect the VGA/USB cable to the front VGA/USB connector toward the rear of the system board.



- 4 LFF optical drive connection

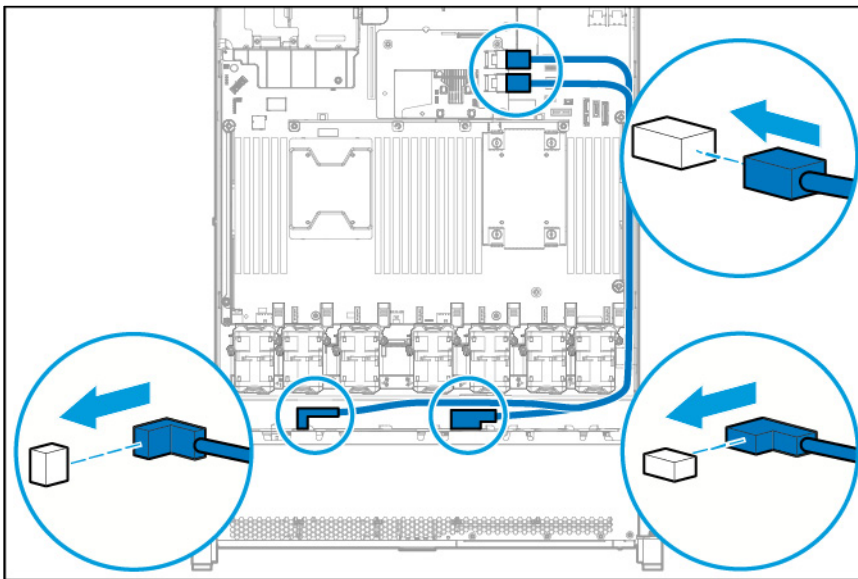
Connect the SATA optical cable to the SATA optical/storage drive connector.



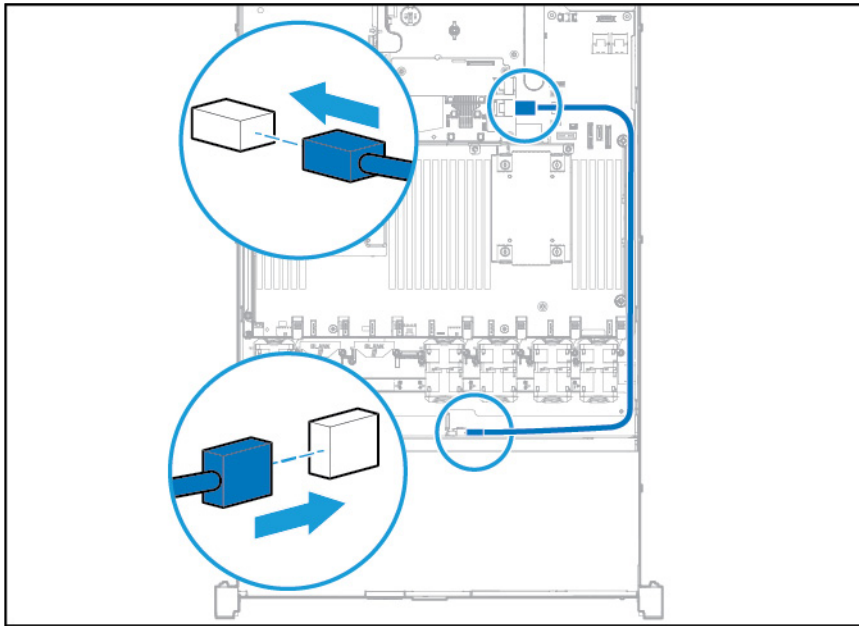
Smart Array controller cabling

Connect the SAS/SATA cables to the backplane and Smart Array controller. Install the SAS/SATA cables according to their labels as Port 1 or Port 2. These labels are on the cables and their connections.

- 8 SFF



- 4 LFF



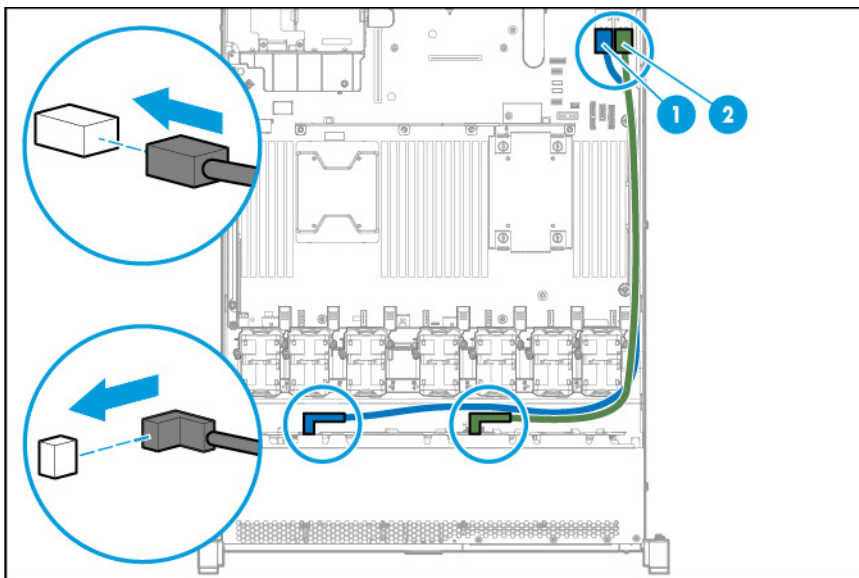
Embedded SATA cabling



WARNING: Eliminate the risk of electric shock by removing all AC power from the system before installing or replacing any non-hot-plug hardware option. Disconnect all power cords to completely remove power from the server.

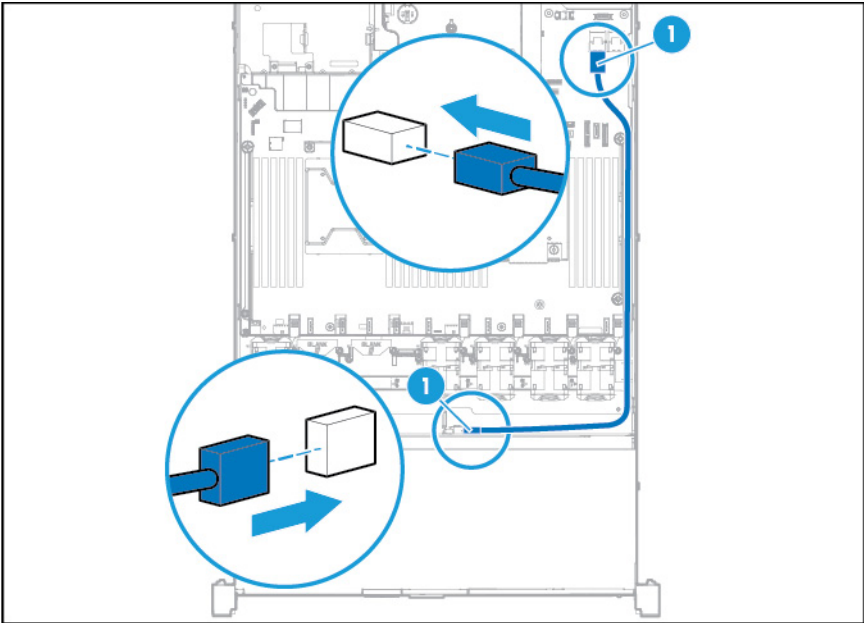
Connect the SATA cables from the backplane to the Mini-SAS/SATA connectors on the system board according to their labels as Port 1 or Port 2. These labels are on the cables and their connections.

- 8 SFF



- 4 LFF

Connect the SATA cable from port one on the backplane to port one on the system board as indicated on the connectors.



Diagnostic tools

HP UEFI System Utilities

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

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

For more information on the HP UEFI System Utilities, see the *HP UEFI System Utilities User Guide* on the HP website (<http://www.hp.com/go/uefi/docs>).

Using HP UEFI System Utilities

To use the System Utilities, use the following keys:

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

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

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

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

HP Insight Diagnostics

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

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

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

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

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 70) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

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

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

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

Active Health System

HP Active Health System provides the following features:

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

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

The Active Health System collects the following types of data:

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

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

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

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

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

For more information, see the following documents:

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

Integrated Management Log

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

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

- From within HP SIM
- From within operating system-specific IML viewers:
 - For Windows: IML Viewer
 - For Linux: IML Viewer Application
- From within the HP iLO web interface
- From within HP Insight Diagnostics (on page 70)

USB support

HP provides standard USB 2.0 support, standard USB 3.0 support, and legacy USB support. Standard support is provided by the OS through the appropriate USB device drivers.

Before the OS loads, HP provides support for USB 2.0 devices through legacy USB support, which is enabled by default in the system ROM. USB 3.0 ports are not functional before the OS loads. The native OS provides USB 3.0 support through appropriate xHCI drivers.

Legacy USB support provides USB functionality in environments where USB support is not available normally. Specifically, HP provides legacy USB functionality for the following:

- POST (system boot)
- UEFI System Utilities
- Pre-boot UEFI shell
- DOS
- Operating environments which do not provide native USB support

External USB functionality

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

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

Internal USB functionality

An internal USB connector is available for use with security key devices and USB drive keys. This solution provides for use of a permanent USB key installed in the internal connector, avoiding issues of clearance on the front of the rack and physical access to secure data.

Troubleshooting

Troubleshooting resources

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

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

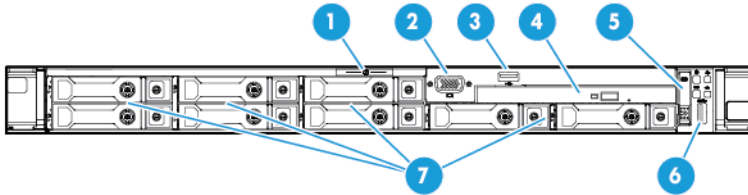
The *HP ProLiant Gen9 Troubleshooting Guide, Volume II: Error Messages* provides a list of error messages and information to assist with interpreting and resolving error messages on ProLiant servers and server blades. To view the guide, select a language:

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

Component identification

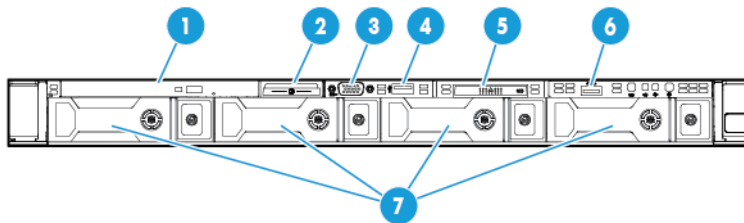
Front panel components

- 8 SFF



Item	Description
1	Serial label pull tab
2	Front video connector (optional)
3	USB 2.0 connector (optional)
4	Optical drive (optional)
5	Systems Insight Display (optional)
6	USB 3.0 connector
7	SAS/SATA/SSD drive bays

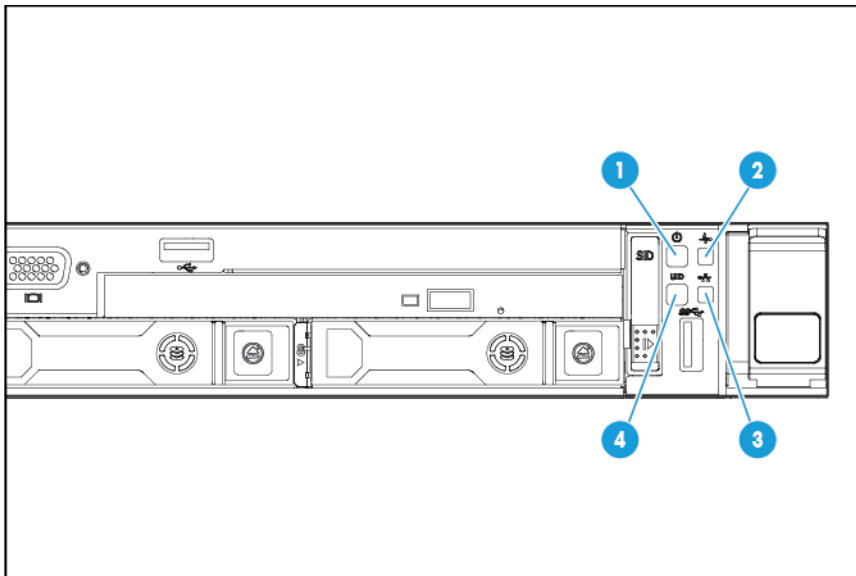
- 4 LFF



Item	Description
1	Optical drive (optional)
2	Serial label pull tab
3	Front video connector (optional)
4	USB 2.0 connector (optional)
5	Systems Insight Display (optional)
6	USB 3.0 connector
7	SAS/SATA/SSD drive bays

Front panel LEDs and buttons

- 8 SFF



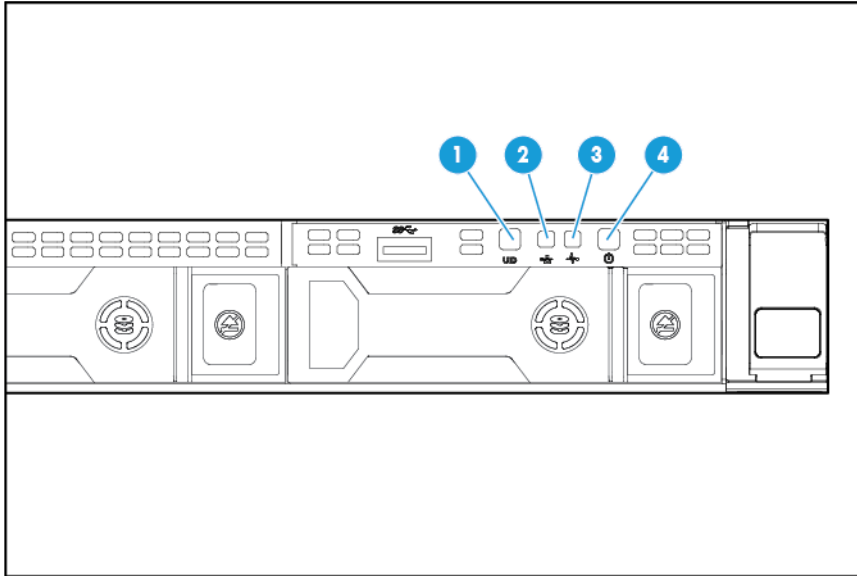
Item	Description	Status
1	Power On/Standby button and system power LED*	Solid green = System on Flashing green (1 Hz/cycle per sec) = Performing power on sequence Solid amber = System in standby Off = No power present**
2	Health LED*	Solid green = Normal Flashing green (1 Hz/cycle per sec) = iLO is rebooting. Flashing amber = System degraded Flashing red (1 Hz/cycle per sec) = System critical†
3	NIC status LED*	Solid green = Link to network Flashing green (1 Hz/cycle per sec) = Network active Off = No network activity
4	UID button/LED*	Solid blue = Activated Flashing blue: <ul style="list-style-type: none"> • 1 Hz/cycle per sec = Remote management or firmware upgrade in progress • 4 Hz/cycle per sec = iLO manual reboot sequence initiated • 8 Hz/cycle per sec = iLO manual reboot sequence in progress Off = Deactivated

*When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Power fault LEDs (on page 77)."

**Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.

†If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

- 4 LFF



Item	Description	Status
1	UID button/LED*	Solid blue = Activated Flashing blue: <ul style="list-style-type: none"> • 1 Hz/cycle per sec = Remote management or firmware upgrade in progress • 4 Hz/cycle per sec = iLO manual reboot sequence initiated • 8 Hz/cycle per sec = iLO manual reboot sequence in progress Off = Deactivated
2	NIC status LED*	Solid green = Link to network Flashing green (1 Hz/cycle per sec) = Network active Off = No network activity
3	Health LED*	Solid green = Normal Flashing green (1 Hz/cycle per sec) = iLO is rebooting. Flashing amber = System degraded Flashing red (1 Hz/cycle per sec) = System critical†
4	Power On/Standby button and system power LED*	Solid green = System on Flashing green (1 Hz/cycle per sec) = Performing power on sequence Solid amber = System in standby Off = No power present**

*When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Power fault LEDs (on page 77)."

**Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.

†To identify components in a degraded or critical state, see the Systems Insight Display LEDs, check iLO/BIOS logs, and reference the server troubleshooting guide.

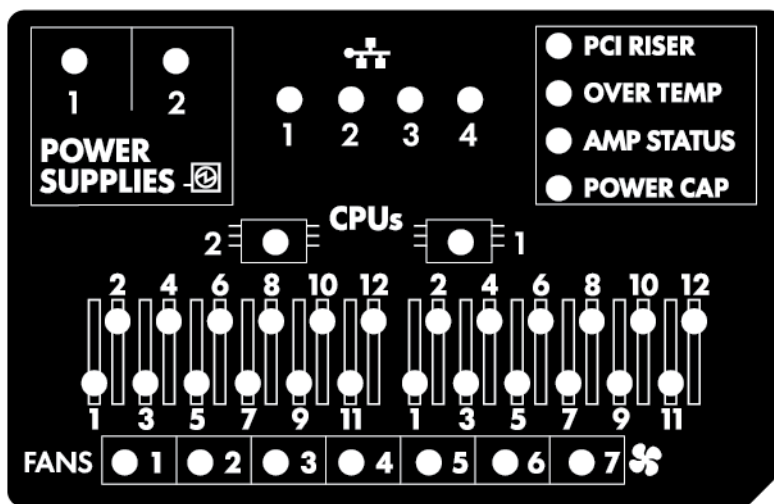
Power fault LEDs

The following table provides a list of power fault LEDs, and the subsystems that are affected. Not all power faults are used by all servers.

Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Removable HP Flexible Smart Array controller/Smart SAS HBA controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

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.



Description	Status
Processor LEDs	Off = Normal Amber = Failed processor
DIMM LEDs	Off = Normal Amber = Failed DIMM or configuration issue
Fan LEDs	Off = Normal Amber = Failed fan or missing fan
NIC LEDs	Off = No link to network Solid green = Network link Flashing green = Network link with activity If power is off, the front panel LED is not active. For status, see "Rear panel LEDs and buttons (on page 81)."

Description	Status
Power supply LEDs	Off = Normal Amber = Failed power supply
PCI riser LED	Off = Normal Amber = Incorrectly installed PCI riser cage
Over temp LED	Off = Normal Amber = High system temperature detected
Amp Status LED	Off = AMP modes disabled Solid green = AMP mode enabled Solid amber = Failover Flashing amber = Invalid configuration
Power cap LED	Off = System is in standby, or no cap is set. Solid green = Power cap applied

For more information, see "Systems Insight Display LED combinations (on page 79)."

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.

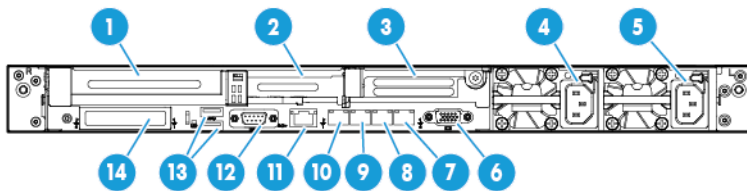
Systems Insight Display LED and color	Health LED	System power LED	Status
Processor (amber)	Red	Amber	One or more of the following conditions may exist: <ul style="list-style-type: none"> Processor in socket X has failed. Processor X is not installed in the socket. Processor X is unsupported. ROM detects 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.
Over temp (amber)	Amber	Green	The Health Driver has detected a cautionary temperature level.
Over temp (amber)	Red	Amber	The server has detected a hardware critical temperature level.
PCI riser (amber)	Red	Green	The PCI riser cage is not seated properly.
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	One or more of the following conditions may exist: <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	One or more of the following conditions may

Systems Insight Display LED and color	Health LED	System power LED	Status
			exist: <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 (green)	—	Green	Power is available.



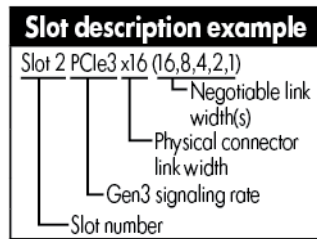
IMPORTANT: If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

Rear panel components

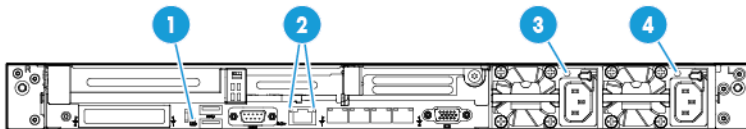


Item	Description
1	Slot 1 PCIe3 x16 (16, 8, 4, 1)
2	Slot 2 PCIe 3 x8 (8, 4, 1)
3	Slot 3 PCIe 3 x16 (16, 8, 4, 1)*
4	Power supply 2
5	Power supply 1
6	Video connector
7	NIC connector 4
8	NIC connector 3
9	NIC connector 2
10	NIC connector 1
11	iLO 4 connector
12	Serial connector (optional)
13	USB 3.0 connectors
14	FlexibleLOM bay

*The slot 3 PCIe 3 riser is optional and requires a second processor before installation.



Rear panel LEDs and buttons



Item	Description	Status
1	UID LED	Solid blue = Identification is activated. Flashing blue = System is being managed remotely. Off = Identification is deactivated.
2L	HP iLO/standard NIC activity LED	Solid green = Activity exists. Flashing green = Activity exists. Off = No activity exists.
2R	HP iLO/standard NIC link LED	Solid green = Link exists. Off = No link exists.
3	Power supply 2 LED	Solid 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
4	Power supply 1 LED	Solid 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

Non-hot-plug PCI riser board slot definitions

- Primary riser cage connector, connected to processor 1 or the southbridge

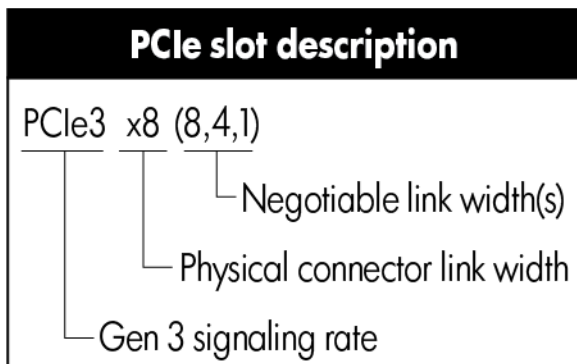
	PCIe 3-slot riser cage*	PCIe 2-slot x16 riser cage
1 - 3/4L/FH	PCIe3 x8 (8,4,2,1)	PCIe3 x16 (16,8,4,2,1)
2 - LP	PCIe3 x8 (8,4,2,1)	PCIe3* x8 (8,4,2,1)
3 - LP/3/4L/FH	PCIe3 x16 (16, 8,4,2,1)**	—

*The server ships with one PCIe3 riser cage installed in the primary riser cage connector.

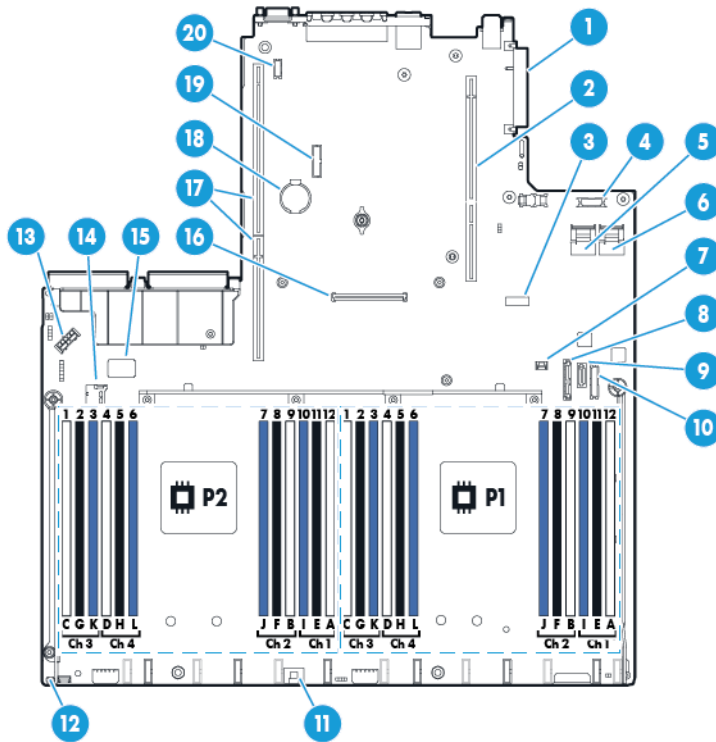
**The x16 PCIe3 riser cage is optional and can be converted to a FH riser. This conversion requires a second processor to be installed.

Notes:

- "Primary" denotes the riser cage is installed in the primary riser connector.
- "Secondary" denotes the riser cage is installed in the secondary riser connector.
- Installing the riser cages listed in the table above in either the primary or secondary riser connectors determines the form factor of the PCI cards supported by those riser cages.
- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height. LP denotes low profile.



System board components



Item	Description
1	FlexibleLOM connector
2	Primary (processor 1) PCI riser connector
3	System maintenance switch
4	Front VGA/USB 2.0 connector
5	x4 SATA port 1
6	x4 SATA port 2
7	Backplane presence detect connector
8	Optical/SATA port 5
9	SATA port 4
10	Front power/USB 3.0 connector
11	HP Smart Storage Battery connector
12	Optional Location Discovery Services connector
13	Drive backplane power connector
14	MicroSD card slot
15	Dual internal USB 3.0 connector
16	Smart Array/HBA connector
17	Secondary (processor 2) PCI riser connector
18	System battery
19	TPM connector
20	Optional serial port connector

System maintenance switch

Position	Default	Function
S1	Off	Off = HP iLO security is enabled. On = HP iLO security is disabled.
S2	Off	Off = System configuration can be changed. On = System configuration is locked.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6	Off	Off = No function On = ROM reads system configuration as invalid.
S7	—	Reserved
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

To access the redundant ROM, set S1, S5, and S6 to on.

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.

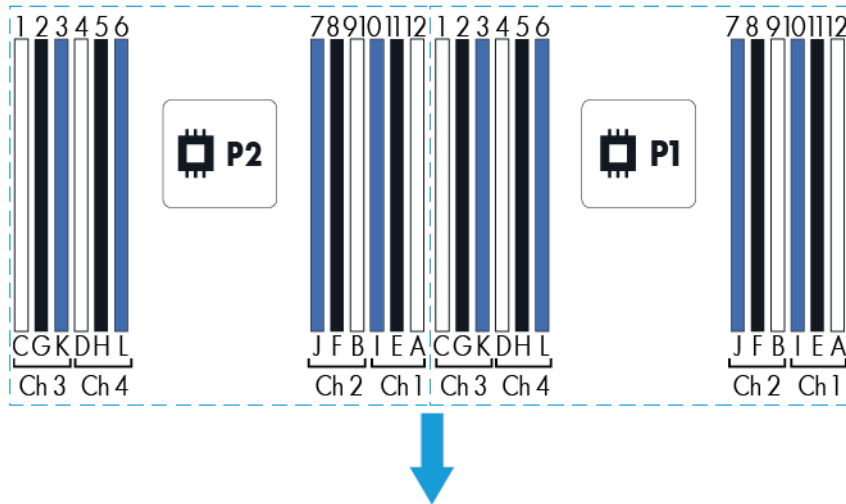
NMI jumper

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.

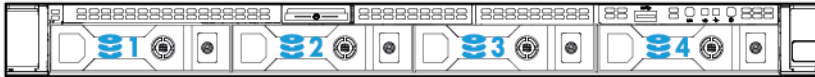
DIMM slots

DIMM slots are numbered sequentially (1 through 12) for each processor. The supported AMP modes use the letter assignments for population guidelines.



Device numbers

- 4 LFF configuration



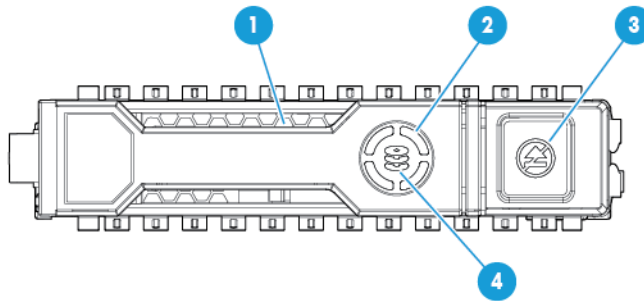
- 8 SFF configuration



- 10 SFF configuration



Hot-plug drive LED definitions



Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Do not remove	Solid white	Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.
		Off	Removing the drive does not cause a logical drive to fail.
4	Drive status	Solid green	The drive is a member of one or more logical drives.
		Flashing green	The drive is rebuilding or performing a RAID migration, strip size migration, capacity expansion, or logical drive extension, or is erasing.
		Flashing amber/green	The drive is a member of one or more logical drives and predicts the drive will fail.
		Flashing amber	The drive is not configured and predicts the drive will fail.
		Solid amber	The drive has failed.
		Off	The drive is not configured by a RAID controller.

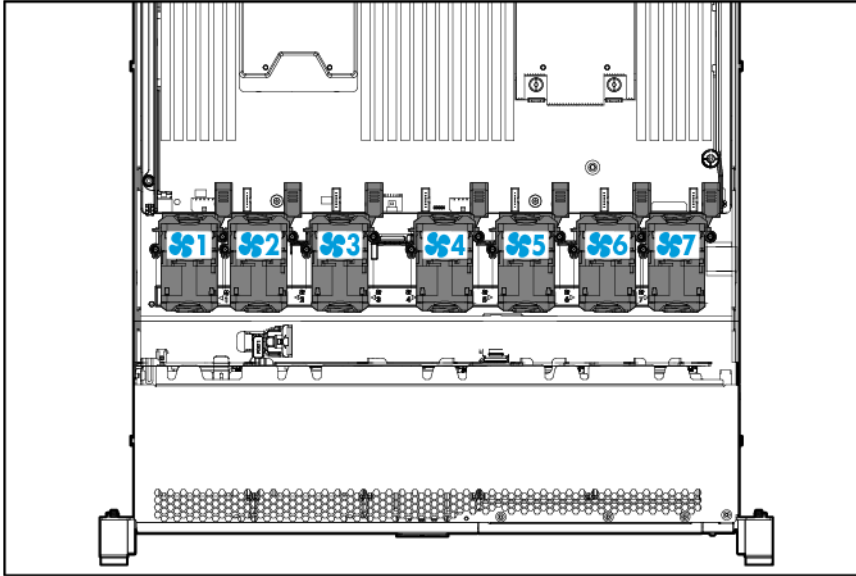
Hot-plug fans



CAUTION: To avoid damage to server components, fan blanks must be installed in fan bays 1 and 2 in a single-processor configuration.

The only two valid fan configurations are listed in the following table.

Configuration	Fan bay 1	Fan bay 2	Fan bay 3	Fan bay 4	Fan bay 5	Fan bay 6	Fan bay 7
1 processor	Fan blank	Fan blank	Fan	Fan	Fan	Fan	Fan
2 processors	Fan	Fan	Fan	Fan	Fan	Fan	Fan



For a single-processor configuration, five fans and two blanks are required in specific fan bays for redundancy.

For a dual-processor configuration, seven fans are required for redundancy. A fan failure or missing fan causes a loss of redundancy. A second fan failure or missing fan causes an orderly shutdown of the server.

The high performance fan option might be necessary for the following installations:

- LR DIMM configuration
- ASHRAE compliant configurations

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

The server supports variable fan speeds. The fans operate at minimum speed until a temperature change requires a fan speed increase to cool the server. The server shuts down during the following temperature-related scenarios:

- At POST and in the OS, HP iLO performs an orderly shutdown if a cautionary temperature level is detected. If the server hardware detects a critical temperature level before an orderly shutdown occurs, the server performs an immediate shutdown.
- When the Thermal Shutdown feature is disabled in RBSU, HP iLO does not perform an orderly shutdown when a cautionary temperature level is detected. Disabling this feature does not disable the server hardware from performing an immediate shutdown when a critical temperature level is detected.



CAUTION: A thermal event can damage server components when the Thermal Shutdown feature is disabled in RBSU.

Specifications

Environmental specifications

Specification	Value
Temperature range*	
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (noncondensing)	
Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity Maximum to be 24°C (75.2°F) dew point or 90% relative humidity
Nonoperating	5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature

* All temperature ratings shown are for sea level. An altitude derating of 1.0°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Maximum rate of change is 20°C per hour (36°F per hour). The upper limit and rate of change might be limited by the type and number of options installed.

For certain approved hardware configurations, the supported system inlet temperature range is extended:

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).

The approved hardware configurations for this system are listed on the HP website (<http://www.hp.com/servers/ASHRAE>).

Server specifications

Specification	Value
Height	4.29 cm (1.69 in)
Depth (chassis with SFF drive cage)	69.90 cm (27.50 in)
Depth (chassis with LFF drive cage)	74.98 cm (29.50 in)
Width	43.46 cm (17.11 in)
Weights	
SFF minimum (one drive, one processor, one power supply, two	12.25 kg (27.00 lb)

Specification	Value
heatsinks, one Smart Array controller, five fans)	
SFF maximum (10 drives, two processors, two power supplies, two heatsinks, one Smart Array controller, seven fans)	15.31 kg (33.36 lb)
LFF minimum (one drive, one processor, one power supply, two heatsinks, one Smart Array controller, five fans)	13.77 kg (30.36 lb)
LFF maximum (Four drives, two processors, two power supplies, two heatsinks, one Smart Array controller, seven fans)	16.78 kg (37 lb)

Power supply specifications

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

- HP 500W Flex Slot Platinum Hot-plug Power Supply (on page 89)
- HP 800W Flex Slot Platinum Hot-plug Power Supply (on page 90)
- HP 1400W Flex Slot Platinum Plus Hot-plug Power Supply (on page 90)

For detailed power supply specifications, see the QuickSpecs on the HP website (<http://www.hp.com/go/proliant/powersupply>).

HP 500W Flex Slot Platinum Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 120 VAC 200 to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	5.8 A at 100 VAC 2.8 A at 200 VAC 2.4 A at 240 VDC
Maximum rated input power	580 W at 100 VAC 560 W at 200 VAC
BTUs per hour	1979 at 100 VAC 1911 at 200 VAC
Power supply output	
Rated steady-state power	500 W at 100 VAC to 120 VAC input 500 W at 200 VAC to 240 VAC input
Maximum peak power	500 W at 100 VAC to 120 VAC input

	500 W at 200 VAC to 240 VAC input
--	-----------------------------------

HP 800W Flex Slot Platinum Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 120 VAC 200 to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	9.4 A at 100 VAC 4.5 A at 200 VAC 3.8 A at 240 VDC
Maximum rated input power	940 W at 100 VAC 900 W at 200 VAC
BTUs per hour	3207 at 100 VAC 3071 at 200 VAC
Power supply output	
Rated steady-state power	800 W at 100 VAC to 120 VAC input 800 W at 200 VAC to 240 VAC input
Maximum peak power	800 W at 100 VAC to 120 VAC input 800 W at 200 VAC to 240 VAC input

HP 1400W Flex Slot Platinum Plus Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	200 to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.0 A at 200 VAC 6.7 A at 240 VAC
Maximum rated input power	1600 W at 200 VAC 1600 W at 240 VAC
BTUs per hour	5459 at 200 VAC 5459 at 240 VAC
Power supply output	
Rated steady-state power	1400 W at 200 VAC to 240 VAC input
Maximum peak power	1400 W at 200 VAC to 240 VAC input

Acronyms and abbreviations

AMP

Advanced Memory Protection

CSR

Customer Self Repair

HP SIM

HP Systems Insight Manager

iLO

Integrated Lights-Out

IML

Integrated Management Log

LFF

large form factor

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

PCIe

Peripheral Component Interconnect Express

POST

Power-On Self Test

RBSU

ROM-Based Setup Utility

SAS

serial attached SCSI

SATA

serial ATA

SD

Secure Digital

SFF

small form factor

SPP

Standard Parallel Port Mode

TPM

Trusted Platform Module

UID

unit identification

Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (<mailto:docsfeedback@hp.com>). Include the document title and part number, version number, or the URL when submitting your feedback.

Index

A

AC power supply 89
air baffle 25

B

buttons 75, 76, 81

C

cable management arm 27
cables 64
cabling 64
cautions 30
components 15, 75
components, identification 15, 75
components, system board 84
connectors 75
CSR (customer self repair) 5
customer self repair (CSR) 5

D

diagnostic tools 70
diagnostics utility 70
drive bays 75
drive LEDs 86
drives 31, 75, 86

E

electrostatic discharge 29
error messages 74
extending server from rack 26
external USB functionality 73

F

features 75
FlexibleLOM 49
front panel buttons 76
front panel components 75
front panel LEDs 76

G

grounding methods 29
grounding requirements 29

H

hard drive LEDs 86
hard drives, determining status of 86
health LEDs 76
hot-plug fans 27
HP Insight Diagnostics 25, 70, 71
HP technical support 5

I

illustrated parts catalog 15
iLO (Integrated Lights-Out) 71, 72
IML (Integrated Management Log) 72
Insight Diagnostics 70, 71
Integrated Lights-Out (iLO) 72
Integrated Management Log (IML) 72
internal USB functionality 73

L

LED, system power 76
LEDs 79, 86
LEDs, front panel 86
LEDs, hard drive 86
LEDs, NIC 76
LEDs, power supply 77, 81
LEDs, SAS hard drive 86
LEDs, troubleshooting 74
LEDs, unit identification (UID) 81

M

maintenance 25
management tools 70
mechanical components 15

N

NIC connectors 80
NMI header 84

P

- part numbers 15
- POST error messages 74
- power LEDs, system 76
- Power On button 76
- power supply blank 32
- power supply LEDs 77
- power supply specifications 89, 90
- powering down 25
- preparation procedures 25
- problem diagnosis 70, 74

R

- rack, extending server from 26
- rear panel buttons 81
- rear panel components 80
- rear panel LEDs 81
- rear panel, accessing 27
- removal and replacement procedures 25
- removing server from rack 26

S

- safety considerations 29
- serial connector 80
- spare part numbers 15
- specifications 88
- specifications, environmental 88
- specifications, power 89, 90
- specifications, server 88
- static electricity 29
- symbols on equipment 30
- system components 75
- system maintenance switch 84
- system power LED 76
- Systems Insight Display 79
- Systems Insight Display LEDs 79

T

- technical support 5
- telco racks 25
- tools 25
- TPM (Trusted Platform Module) 63
- troubleshooting 74

U

- UID LED 81
- USB connector 75, 80
- USB support 72

- utilities 70

V

- video connector 75, 80

W

- warnings 30