Hewlett Packard Enterprise

HPE ProLiant Compute DL360 Gen12 Maintenance and Service Guide

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HPE ProLiant Compute DL360 Gen12 Maintenance and Service Guide

Abstract

This document is for the person who installs, administers, and troubleshoots servers and storage systems. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Customer self repair

Hewlett Packard Enterprise 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 Hewlett Packard Enterprise (or Hewlett Packard Enterprise service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise parts are not designed for customer self repair. In order to satisfy the customer warranty, Hewlett Packard Enterprise 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 contact the Hewlett Packard Enterprise Support Center and a technician will help you over the telephone or by electronic means. Hewlett Packard Enterprise specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to Hewlett Packard Enterprise. In cases where it is required to return the defective part to Hewlett Packard Enterprise, you must ship the defective part back to Hewlett Packard Enterprise 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 Hewlett Packard Enterprise billing you for the replacement. With a customer self repair, Hewlett Packard Enterprise will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about the Hewlett Packard Enterprise CSR program, contact your local service provider.

Parts only warranty service

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

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

Réparation par le client (CSR)

Les produits Hewlett Packard Enterprise 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, Hewlett Packard Enterprise (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces Hewlett Packard Enterprise ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, Hewlett Packard Enterprise 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 toute assistance, appelez le Centre d'assistance Hewlett Packard Enterprise pour qu'un technicien vous aide au téléphone Dans les documents envoyés avec la pièce de rechange CSR, Hewlett Packard Enterprise 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, Hewlett Packard Enterprise se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise, contactez votre Mainteneur Agrée local.

Service de garantie "pièces seules"

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

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à Hewlett Packard Enterprise 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 Hewlett Packard Enterprise sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica Hewlett Packard Enterprise (o un centro di servizi o di assistenza Hewlett Packard Enterprise) identifica il guasto come riparabile mediante un ricambio CSR, Hewlett Packard Enterprise lo spedirà 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 Hewlett Packard Enterprise, 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 Hewlett Packard Enterprise, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti Hewlett Packard Enterprise non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise. Nel materiale fornito con una parte di ricambio CSR, Hewlett Packard Enterprise specifica se il cliente deve restituire dei component. Qualora sia richiesta la resa ad Hewlett Packard Enterprise del componente difettoso, lo si deve spedire ad Hewlett Packard Enterprise 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 Hewlett Packard Enterprise. Nel caso di riparazione da parte del cliente, Hewlett Packard Enterprise sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di Hewlett Packard Enterprise, contattare il centro di assistenza di zona.

Servizio di garanzia per i soli componenti

La garanzia limitata Hewlett Packard Enterprise può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

Hewlett Packard Enterprise Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn Hewlett Packard Enterprise (oder ein Hewlett Packard Enterprise Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Hewlett Packard Enterprise Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem Hewlett Packard Enterprise 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 Hewlett Packard Enterprise Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien von Hewlett Packard Enterprise, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an Hewlett Packard Enterprise zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an Hewlett Packard Enterprise 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 Hewlett Packard Enterprise Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt Hewlett Packard

Enterprise für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das Hewlett Packard Enterprise Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort.

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

Los productos de Hewlett Packard Enterprise 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, Hewlett Packard Enterprise (o los proveedores o socios de servicio de Hewlett Packard Enterprise) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, Hewlett Packard Enterprise le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio**—Componentes cuya reparación por parte del usuario es obligatoria. Si solicita a Hewlett Packard Enterprise 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 cuya 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 Hewlett Packard Enterprise realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes de Hewlett Packard Enterprise no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, Hewlett Packard Enterprise especificará si los componentes defectuosos deberán devolverse a Hewlett Packard Enterprise. En aquellos casos en los que sea necesario devolver algún componente a Hewlett Packard Enterprise, 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, Hewlett Packard Enterprise podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise, póngase en contacto con su proveedor de servicios local.

Servicio de garantía exclusivo de componentes

La garantía limitada de Hewlett Packard Enterprise puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise (of een Hewlett Packard Enterprise Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 is gewenst, belt u het Hewlett Packard Enterprise Support Center om via de telefoon ondersteuning van een technicus te ontvangen. Hewlett Packard Enterprise vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan Hewlett Packard Enterprise moet worden geretourneerd. Als het defecte onderdeel aan Hewlett Packard Enterprise moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan Hewlett Packard Enterprise. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan Hewlett Packard Enterprise u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt Hewlett Packard Enterprise alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest Hewlett Packard Enterprise zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van Hewlett Packard Enterprise.

Garantieservice "Parts Only"

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

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise (ou fornecedores/parceiros da Hewlett Packard Enterprise) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a Hewlett Packard Enterprise enviará a peça diretamente ao cliente. Há duas categorias de peças CSR:

- **Obrigatória**—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a Hewlett Packard Enterprise 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 Hewlett Packard Enterprise para que um técnico o ajude por telefone. A Hewlett Packard Enterprise especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à Hewlett Packard Enterprise. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à Hewlett Packard Enterprise, você deverá enviar a peça com defeito de volta para a Hewlett Packard Enterprise dentro do período de tempo definido, normalmente em 5 (cinco) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a Hewlett Packard Enterprise poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a Hewlett Packard Enterprise 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 Hewlett Packard Enterprise, entre em contato com o fornecedor de serviços local.

Serviço de garantia apenas para peças

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

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a Hewlett Packard Enterprise 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、Hewlett Packard Enterprise製品には多数のカスタマーセルフリペア（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Hewlett Packard Enterprise（Hewlett Packard EnterpriseまたはHewlett Packard Enterprise正規保守代理店）が判断した場合、Hewlett Packard Enterprise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種類があります。

- **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Hewlett Packard Enterprise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Hewlett Packard Enterprise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：Hewlett Packard Enterprise製品の一部の部品は、カスタマーセルフリペアの対象外です。製品の保証を継続するためには、Hewlett Packard EnterpriseまたはHewlett Packard Enterprise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、Hewlett Packard Enterpriseサポートセンターに電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHewlett Packard Enterprise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Hewlett Packard Enterprise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Hewlett Packard Enterprise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、Hewlett Packard Enterprise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、Hewlett Packard Enterprise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

Hewlett Packard Enterprise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になります。当該部品について、もしもお客様がHewlett Packard Enterprise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のご負担となります。

客户自行维修

Hewlett Packard Enterprise 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 Hewlett Packard Enterprise（或Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 可能收取或不再收取任何附加费用。

注：某些 Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 技术支持中心，将会有技术人员通过电话为您提供帮助。Hewlett Packard Enterprise 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 Hewlett Packard Enterprise。如果要求您将有缺陷的部件返还给 Hewlett Packard Enterprise，那么您必须在规定的期限内（通常是五 (5) 个工作日）将缺陷部件发给 Hewlett Packard Enterprise。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，Hewlett Packard Enterprise 可能会要求您支付更换费用。客户自行维修时，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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。

仅部件保修服务

您的 Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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

Hewlett Packard Enterprise 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，Hewlett Packard Enterprise (或 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 零件沒有消費者可自行維修的設計。為符合客戶保固，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise，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 Hewlett Packard Enterprise。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，Hewlett Packard Enterprise 可能要向您收取替換費用。針對客戶自行維修情形，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 的 CSR 方案詳細資訊，請連絡您當地的服務供應商。

僅限零件的保固服務

您的「Hewlett Packard Enterprise 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，Hewlett Packard Enterprise 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 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

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

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

참고: 일부 Hewlett Packard Enterprise 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. Hewlett Packard Enterprise는 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 Hewlett Packard Enterprise Support Center로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. Hewlett Packard Enterprise는 결함이 발생한 부품을 Hewlett Packard Enterprise로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 Hewlett Packard Enterprise로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 Hewlett Packard Enterprise로 반환해야 합니다. 이때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 Hewlett Packard Enterprise가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, Hewlett Packard Enterprise는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

Hewlett Packard Enterprise CSR 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오.

부품 제공 보증 서비스

Hewlett Packard Enterprise 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 Hewlett Packard Enterprise는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

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

Illustrated parts catalog

Subtopics

Mechanical components
System components
Server options

Mechanical components

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported parts information, see the **Hewlett Packard Enterprise PartSurfer website**.

https://sketchfab.com/models/5a24c4180fb84e5fb4683a73438cc412/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&ui_animations=0

Item	Description
1	Right chassis ear spare part
2	Left chassis ear spare part
3	Energy pack retention latch spare part
4	Access panel spare part
5	PCIe riser cage spare part
6	Front bezel spare part *
7	Drive box blank spare part *
8	Drive blank spare parts *
9	E3.S drive filler spare part *
10	Air baffle spare part *
11	DIMM blank spare part *
12	Cable management arm spare part *
13	Rack mounting hardware spare parts *
14	Miscellaneous blank spare parts *

* Not shown

Subtopics

- **Chassis ear spare parts**
- **Energy pack retention latch spare part**
- **Access panel spare part**
- **PCIe riser cage spare part**
- **Front bezel spare part**
- **Drive box blank spare part**
- **Drive blank spare parts**
- **E3.S drive filler spare part**
- **Air baffle spare part**
- **Miscellaneous blank spare parts**
- **Cable management arm spare part**
- **Rack mounting hardware spare parts**

Chassis ear spare parts

Customer self repair: **Mandatory**

Replacement procedures:

- Removing and replacing the left chassis ear
- Removing and replacing the right chassis ear and power switch board

Description	Spare part number
Left chassis ear assembly	P56499-001
Right chassis ear and power switch [1]	P79636-001
Right chassis ear switch board [2]	P56501-001

1 This spare part includes the chassis ear with the front I/O and USB cable.
2 This is a miscellaneous component spare kit; only the switch board listed in this table is used on this server.

Energy pack retention latch spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the energy pack retention latch

Description	Spare part number
Energy pack retention latch	875066-001*

* This is a miscellaneous component spare kit; only the energy pack retention latch listed in this table is used on this server.

Access panel spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the access panel

Description	Spare part number
Access panel	P56474-001

PCIe riser cage spare part

Customer self repair: **Optional**

Replacement procedure: Removing and replacing a riser cage

Description	Spare part number
Primary riser cage, full-height	P80074-001

For riser board spares, see PCIe riser board spare parts.

Front bezel spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the front bezel

Description	Spare part number
Front bezel	P60140-001

Drive box blank spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a drive box blank

Description	Spare part number
Drive box blank	P76287-001*

* This blank is supported on the 10 SFF / 20 E3.S server or servers supporting mixed drive type in the front drive cage.

Drive blank spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a drive blank

Description	Spare part number
LFF drive blank	827363-001
SFF drive blank	670033-001
E3.S drive blank	P52488-001

E3.S drive filler spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing an E3.S drive cage filler

Description	Spare part number
E3.S drive filler	P74372-001

Air baffle spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the air baffle

Description	Spare part number
Air baffle	P86431-001

Miscellaneous blank spare parts

Customer self repair: **Mandatory**

Replacement procedures:

- Removing and replacing a power supply blank
- Removing and replacing a DIMM blank

Description	Spare part number
Miscellaneous blanks • OCP adapter blank • 2SFF blank • Serial port blank • PCI blank	P56489-001
Power supply blank	777301-001
Fan blank	779105-001
DIMM blank	812914-001

Cable management arm spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the cable management arm

Description	Spare part number
Cable management arm #4	P74370-001

Rack mounting hardware spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the friction rack rails

Description	Spare part number
1U friction rail kit 3 for 8 SFF servers	P58211-001
1U friction rail kit 5 for 4 LFF / 10 SFF / 20 E3.S servers	P59872-001

System components

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Item	Description
1	High performance fan spare part
2	Standard heatsink spare part
3	Processor spare parts
4	DIMM spare parts
5	Power supply spare parts
6	System battery spare part
7	System board assembly spare part
8	Liquid cooling fan spare part *
9	High performance heatsink spare part *
10	Drive cable spare parts *
11	Backplane power cable spare parts *
12	Closed-loop liquid cooling (CLLC) solution spare parts *
13	Direct liquid cooling (DLC) module spare parts *

* Not shown

Subtopics

- Processor spare parts
- System board assembly spare part
- DIMM spare parts
- Drive cable spare parts
- Drive backplane power cable spare parts
- Closed-loop liquid cooling solution spare parts
- Direct liquid cooling module spare parts
- Fan spare parts
- Heatsink spare parts
- Power supply spare parts
- Battery and capacitor spare parts

Processor spare parts

Customer self repair: **Optional**

Replacement procedure: Removing and replacing a processor

Intel Xeon 6 processor with Efficient-cores (E-cores)

Description	Spare part number
Intel Xeon 6710E, 2.40 GHz, 64C, 205W	P72411-001
Intel Xeon 6731E, 2.20 GHz, 96C, 250W	P72412-001
Intel Xeon 6740E, 2.40 GHz, 96C, 250W	P72413-001
Intel Xeon 6746E, 2.00 GHz, 112C, 250W	P72414-001
Intel Xeon 6756E, 1.80 GHz, 128C, 225W	P72415-001
Intel Xeon 6766E, 1.90 GHz, 144C, 250W	P72416-001
Intel Xeon 6780E, 2.20 GHz, 144C, 330W	P72417-001

Intel Xeon 6 processor with Performance-cores (P-cores)

Description	Spare part number
Intel Xeon 6500-series	—
Intel Xeon 6505P, 2.20 GHz, 12C, 150W	P80285-001
Intel Xeon 6507P, 3.50 GHz, 8C, 150W	P80286-001
Intel Xeon 6515P, 2.40 GHz, 16C, 150W	P80288-001
Intel Xeon 6517P, 3.20 GHz, 16C, 190W	P80289-001
Intel Xeon 6520P, 2.40 GHz, 24C, 210W	P80278-001
Intel Xeon 6527P, 3.00 GHz, 24C, 255W	P80280-001
Intel Xeon 6530P, 2.30 GHz, 32C, 225W	P80281-001
Intel Xeon 6700-series	—
Intel Xeon 6714P, 4.00 GHz, 8C, 195W	P80276-001
Intel Xeon 6724P, 3.60 GHz, 16C, 210W	P80277-001
Intel Xeon 6728P, 2.7 GHz, 24C, 210W	P80273-001
Intel Xeon 6730P, 2.50 GHz, 32C, 250W	P78738-001
Intel Xeon 6736P, 2.00 GHz, 36C, 205W	P80283-001
Intel Xeon 6737P, 2.90 GHz, 32C, 270W	P80284-001
Intel Xeon 6738P, 2.90 GHz, 32C, 270W	P80274-001
Intel Xeon 6740P, 2.10 GHz, 48C, 270W	P78691-001
Intel Xeon 6745P, 3.10 GHz, 32C, 300W	P82218-001
Intel Xeon 6747P, 2.70 GHz, 48C, 330W	P78693-001
Intel Xeon 6748P, 2.5 GHz, 48C, 300W	P80275-001
Intel Xeon 6760P, 2.20 GHz, 64C, 330W	P78694-001
Intel Xeon 6767P, 2.40 GHz, 64C, 350W	P78696-001
Intel Xeon 6768P, 2.4 GHz, 64C, 330W	P78699-001
Intel Xeon 6787P, 2.00 GHz, 86C, 350W	P78698-001
Intel Xeon 6788P, 2 GHz, 86C, 350W	P78700-001

System board assembly spare part

Customer self repair: **Optional**

Replacement procedure: Removing and replacing the system board

Description	Spare part number
System board assembly	P77347-001
System board assembly (for China only)	P77348-001

DIMM spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a DIMM

Description	Spare part number
16 GB, single-rank x8 PC5-6400B-R	P71254-001
32 GB, dual-rank x8 PC5-6400B-R	P71255-001
64 GB, dual-rank x4 PC5-6400B-R	P71256-001
96 GB, dual-rank x4 PC5-6400B-R	P71257-001
128 GB, dual-rank x4 PC5-6400B-R	P71258-001
256 GB, quad-rank x4 PC5-6400B-R 3DS	P75947-001

Drive cable spare parts

Customer self repair: **Mandatory**

Cable description and part number	Spare part number
4 LFF	—
4 LFF Box 1 controller cable to type-p controller in the primary riser: P48970-001	P53224-001
4 LFF Box 1 controller cable to type-o controller in Slot 14 OCP A: P48958-001	P56483-001
8 + 2 SFF	—
2 SFF Box 2 NVMe controller cable to type-o controller in Slot 14 OCP A: P48962-001	P56484-001 [1]
2 SFF Box 2 NVMe controller cable to type-o controller in Slot 15 OCP B: P48961-001	P56484-001 [1]
2 SFF Box 2 NVMe controller cable to type-p controller in the primary riser: P45611-001	P53222-001 [2]
2 SFF Box 2 NVMe direct attach cable: P75946-001	P76966-001
2 SFF Box 2 x4 NVMe controller cable to type-p controller in the primary riser: P76443-001	P77389-001
8 SFF Box 1 x1 NVMe to type-p controller in the primary riser: P45610-001	P53222-001 [2]
8 SFF Box 1 x1 NVMe controller cable to type-p controller in the primary riser: P79151-001	P84598-001
8 SFF Box 1 x1 NVMe to type-o controller in Slot 14 OCP A: P48960-001	P56484-001 [1]
8 SFF Box 1 x1 NVMe to type-o controller in Slot 15 OCP B: P55357-001	P61909-001 [3]
10 SFF / 20 E3.S server	—
4 EDSFF Box 1/3/4/5 direct attach cable to port 1/2/3/4/6: P75278-001	P76896-001
4 EDSFF Box 1 to secondary type-p controller cable: P74805-001	P76975-001
4 EDSFF Box 1 x4 NVMe to type-p controller in the primary riser (1 CPU): P75570-001	P84599-001
4 EDSFF Box 2 direct attach cable to port 7/8: P75317-001	P76969-001
4 EDSFF Box 2/5 direct attach cable to port 1/2/12: P75567-001	P76968-001
4 EDSFF Box 4 x4 NVMe direct attach cable: P74806-001	P76974-001
4 EDSFF Box 4 x4 NVMe to type-p controller cable: P75590-001	P77371-001

Cable description and part number	Spare part number
4 EDSFF Box 4 x4 NVMe to type-p controller in the primary riser (1 CPU): P75318-001	P80135-001
4 EDSFF Box 5 x4 NVMe to type-p controller cables: P76443-001 P75574-001	P77389-001 P76973-001
8 EDSFF Boxes 1–2 x4 NVMe controller cable to type-p ctontroller in the primary riser (1 CPU): P75318-001 8 EDSFF Boxes 1–2 x4 NVMe controller cable to type-p controller in the secondary riser: P75318-001	P80135-001
8 EDSFF Boxes 4–5 x4 NVMe controller cables to type-p controller in the primary riser: P75570-001 P75569-001	P84599-001 P84600-001
4 EDSFF Box 5 x4 NVMe to type-o controller cable: P75589-001 2 SFF Box 3/5 x4 NVMe to type-o controller cable: P75589-001	P77901-001
2 SFF Box 1/4 x4 NVMe direct attach cable to port 2/5: P75317-001	P76969-001
4 SFF Boxes 1–2 (x2 BW) NVMe to type-p controller cable: P75593-001	P77890-001
4 SFF Boxes 1–2 (x2 BW) NVMe to type-o controller cable: P75571-001	P76971-001
4 SFF Boxes 1–2 x4 NVMe to type-p controller in Slot 1: P75318-001	P80135-001
2 SFF Box 1/2/5 x4 NVMe to type-p controller cable: P75590-001	P77371-001
2 SFF Box 2/3/4/5 x4 NVMe direct attach cable to port 1/4/6: P75278-001	P76896-001
2 SFF Box 3/4/5 x4 NVMe direct attach cable to port 1/3/12: P75567-001	P76968-001
2 SFF Box 4/5 x4 NVMe to type-p controller in the primary riser: P76443-001	P77389-001
4 SFF Boxes 4–5 x4 NVMe direct attach cables: P75567-001 P75278-001	P76968-001 P76896-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe to type-o controller cable: P75573-001	P76970-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe to type-p controller cable: P75572-001	P76972-001
4 SFF Boxes 4–5 x4 NVMe to type-p controller in Slot 1: P75570-001	P84599-001
10 SFF Boxes 1–5 NVMe controller cables to type-p controller in Slot 1: • P79152-001 • P79153-001 • P75275-001	P80141-001 P87374-001 P77865-001

1 This is a miscellaneous cable kit and includes several cables, one of which is used in this configuration.

2 This is a miscellaneous cable kit and includes two cables, one of which is used in this configuration.
3 This is a miscellaneous cable kit and includes three cables, one of which is used in this configuration.

Drive backplane power cable spare parts

Customer self repair: **Mandatory**

Cable description and part number	Spare part number
4 LFF backplane power cable: P75565-001	P76964-001
8 SFF backplane power cable: P75566-001	P76965-001
2 SFF backplane power cable: 869667-001	P56475-001
2 SFF / 4 EDSFF stacked backplane power cable: P75316-001	P76967-001

Closed-loop liquid cooling solution spare parts

Customer self repair: **Optional**

Replacement procedure: Removing and replacing the closed-loop liquid cooling module

Description	Spare part number
Closed-loop liquid cooling module spare kit, includes: • Closed-loop liquid cooling module • Liquid cooling module handle	P76979-001
Closed-loop liquid cooling fan	P53225-001

Direct liquid cooling module spare parts

Customer self repair: DLC cold plate modules are **Optional.** Hose sets are **Mandatory.**

Replacement procedures:

- Disconnecting the direct liquid cooling kit
- Removing and replacing the DLC cold plate module

Description	Spare part number
DLC cold plate module from PCIe	P76980-001
DLC cold plate module from NS204 PCIe Slot 2 , includes: • DLC cold plate module • Rear NS204i-u boot device bracket	P83925-001
DLC hose set (FtoM) 76.2 cm / 122 cm QD	P80826-001
DLC hose set (SVRtoMAN) 45 cm QD	P63156-001

Fan spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a fan

Description	Spare part number
Standard fan	P53226-001
High-performance fan	P53227-001

For liquid cooling fans, see Closed-loop liquid cooling solution spare parts.

Heatsink spare parts

Customer self repair: Standard heatsink is **Mandatory**; high performance heatsink is **Optional**.

Replacement procedure: Removing and replacing the heatsink

Description	Spare part number
Standard heatsink	P53219-001
High performance heatsink	P76978-001

Power supply spare parts

Customer self repair: Power supplies are **Mandatory**; accessories are **Optional**.

Replacement procedures:

- Removing and replacing a hot-plug AC power supply
- Removing and replacing a DC Flexible Slot power supply

Power supplies

Description	Spare part number
HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply	P39385-001
HPE 1000 W Flex Slot Titanium Hot-plug Low Halogen Power Supply	P44412-001
HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply	P39384-001
HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply	P18510-001
HPE 1800-2200 W Flex Slot Titanium Power Supply	P47163-001

Accessories

Description	Spare part number
Power cable lug kit for the HPE 1600 W DC power supply	P25161-001

Battery and capacitor spare parts

Customer self repair: **Mandatory**

Replacement procedures:

- Removing and replacing an energy pack
- Removing and replacing the system battery
- Removing and replacing the serial port

Description	Spare part number
HPE 96 W Smart Storage Battery with 145 mm (5.71 in) cable	878643-001
HPE 12 W Smart Storage Hybrid Capacitor with 145 mm (5.71 in) cable	P07473-001
3.3-V lithium battery coin (CR2032)	319603-001
Storage controller enablement and serial port kit, includes:	P56488-001

- Energy pack extension cable: P45618-001
- Serial port cable: P45623-001

Server options

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Item	Description
1	SFF hot-plug drive For more information on the removal and replacement procedures, see Removing and replacing a hot-plug LFF / SFF drive.
2	Drive backplane spare parts
3	NS204i-u boot device spare parts
4	Energy pack spare parts
5	Intrusion detection switch spare part
6	Riser board spare parts
7	Serial port cable spare part
8	Front panel boot device bracket spare part*
9	HPE MR type-o and type-p storage controller spare parts*
10	2 SFF drive cage spare part*
11	4 E3.S drive cage spare part*
12	System Insight Display spare parts*
13	Front USB / DisplayPort spare parts*
14	Optical drive cable spare part*
15	OCP enablement cable spare parts*
16	Front OCP NIC cable spare part*
17	Front OCP NIC carrier spare part*
18	Phy board spare part*
19	OCP NIC interposer and cable spare parts*

*Not shown

Subtopics

- Drive cage spare parts
- Drive backplane spare parts
- Chassis intrusion detection switch spare part
- PCIe riser board spare parts
- Front NS204i-u bracket spare part
- Storage controller spare parts
- HPE NS204i-u Boot Device V2 spare parts
- System Insight Display spare parts
- Front USB / DisplayPort spare parts
- Optical drive cable spare part
- OCP enablement cable spare parts
- Front OCP NIC cable spare part
- Front OCP NIC carrier spare part
- PHY board spare part
- OCP NIC interposer and cable spare parts

Drive cage spare parts

Customer self repair: 4 E3.S stacked cage is **Mandatory**; 2 SFF stacked cage is **Optional**.

Replacement procedures:

- Removing and replacing the stacked 2 SFF drive cage
- Removing and replacing the stacked 4 E3.S drive cage

Description	Spare part number
2 SFF stacked drive cage *	P80075-001
4 E3.S stacked drive cage *	P76288-001

*This cage is supported in the 10 SFF / 20 E3.S server or servers using the mixed drive type configuration.

Drive backplane spare parts

Customer self repair: P40444-001 and P39783-001 are **Mandatory**. The remaining parts are **Optional.**

Replacement procedures:

- Removing and replacing the 4 LFF drive backplane
- Removing and replacing the 8 SFF drive backplane
- Removing and replacing the 2 SFF drive backplane in the 8 + 2 SFF drive configuration
- Removing and replacing the stacked 2 SFF / 4 E3.S drive backplane in the 10 SFF / 20 E3.S server

Description	Spare part number
4 LFF drive configuration	—
4 LFF 12G x1 SAS UBM6 LP	P62075-001
8 + 2 SFF drive configuration	—
8 SFF 24G x1 U.3 NVMe/SAS UBM3	P40444-001
8 SFF 24G x1 NVMe/SAS UBM6 BC	P62072-001
2 SFF 24G x4 NVMe/SAS UBM3 BC	P39783-001
2 SFF 24G x4 U.3 NVMe UBM6 BC	P62071-001
10 SFF / 20 E3.S / mixed drive type configuration	—
2 SFF 24G x4 NVMe/SAS UBM10	P73069-001
4 E3.S 32G x4 NVMe UBM10	P73067-001

Chassis intrusion detection switch spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the chassis intrusion detection switch

Description	Spare part number
Chassis intrusion detection switch	P52442-001

PCIe riser board spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a primary riser board

Description	Spare part number
1U 1 x16 low-profile riser	P56498-001
1U 2 x16 butterfly riser	P56497-001

Front NS204i-u bracket spare part

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the HPE NS204i-u Boot Device V2 cage

Description	Spare part number
Front NS204i-u bracket	P81214-001

For boot device spares, see HPE NS204i-u Boot Device V2 spare parts .

Storage controller spare parts

Customer self repair: **Optional**

Replacement procedures:

- Removing and replacing a type-o storage controller
- Removing and replacing a type-p storage controller

Description	Spare part number
HPE MR932i-p PCIe SPDM Plug-in Storage Controller	P75933-001
HPE Gen11 type-p controllers	—
HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller	P47951-001
HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller	P47953-001
HPE Gen11 type-o controllers	—
HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller	P47952-001
HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller	P47954-001
HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller	P58543-001
HPE Gen10 type-p controller	—
HPE Smart Array E208e-p SR Gen10 Controller	836267-001

HPE NS204i-u Boot Device V2 spare parts

Customer self repair: Cage, carrier, and SSD are **Optional**; cables are **Mandatory**

Replacement procedure: Removing and replacing the HPE NS204i-u Boot Device V2 cage

IMPORTANT

For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

- In the iLO web interface, see the Storage page.
- In UEFI System Utilities, see System Configuration > HPE NS204i Boot Controller > Physical Device Information.

Configurations with SSDs from different manufacturers are not supported.

NS204i-u

Description	Spare part number
Boot device V2 cage	P78425-001
M.2 SSD carrier	P59777-001
960 GB NVMe RI M.2 2280 V2 MV SSD	P80343-001
960 GB NVMe RI M.2 2280 MV SED SSD	P80345-001
480 GB NVMe RI M.2 2280 V2 MV SSD	P80342-001
480 GB NVMe RI M.2 SV 2280 SSD	P69616-001

Cables

Cable description and part number	Spare part number
Front / internal HPE NS204i-u Boot Device V2 power cable: P48956-001	P56479-001
Front / internal HPE NS204i-u Boot Device V2 signal cable: P74839-001	P76017-001
Riser cage HPE NS204i-u Boot Device V2 signal cable: P71913-001	P74376-001

System Insight Display spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the System Insight Display

Description	Spare part number
System Insight Display	P79637-001
System Insight Display cable: P48971-001	P58227-001

Front USB / DisplayPort spare parts

Customer self repair: **Mandatory**

Replacement procedures:

- Removing and replacing the optical disk drive / DisplayPort / USB in the 4 LFF server
- Removing and replacing the optical disk drive / DisplayPort / USB in the 8 SFF server
- Removing and replacing an optical disk drive / DisplayPort / USB in drive boxes 4–5

Cable description and part number	Spare part number
4 LFF DisplayPort / USB enablement kit, includes the following: • DisplayPort / USB tray • Front USB and DisplayPort cable: P73948-001	P79731-001
Front USB and DisplayPort cable: P73948-001 *	P76976-001
Front I/O cable: P71909-002 *	P77132-001

* This cable is supported in all the available drive configurations.

Optical drive cable spare part

Customer self repair: **Mandatory**

Cable description and part number	Spare part number
Optical drive cable: P73776-002	P76888-001

OCP enablement cable spare parts

Customer self repair: **Mandatory**

Cable description and part number	Spare part number
CPU1 to Slot 15 OCP B x8 enablement cable: P74889-001	P76891-001
CPU1 to Slot 14 OCP A x16 enablement cable: P74890-001	P76892-001
CPU2 to Slot 15 OCP B x8 / x16 enablement cable: P74891-001	P76893-001

Front OCP NIC cable spare part

The front OCP NIC hardware options and spare parts are supported in the 10 SFF / 20 E3.S server.

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the front OCP NIC cable

Cable description and part number	Spare part number
Primary / secondary front OCP NIC cable: P71942-001	P76977-001

Front OCP NIC carrier spare part

The front OCP NIC hardware options and spare parts are supported in the 10 SFF / 20 E3.S server.

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing a front OCP NIC or carrier kit

Description	Spare part number
Front OCP NIC carrier kit, includes: • OCP NIC carrier • OCP NIC bracket	P79872-001

PHY board spare part

The front OCP NIC hardware options and spare parts are supported in the 10 SFF / 20 E3.S server.

Customer self repair: **Mandatory**

Replacement procedure:

Description	Spare part number
PHY board	P76348-001

OCP NIC interposer and cable spare parts

Customer self repair: **Mandatory**

Replacement procedure: Removing and replacing the OCP NIC interposer

Interposer

Description	Spare part number
Bay 3 Slot 14 OCP A NIC interposer	P76350-001
Bay 1 Slot 15 OCP B NIC interposer	P76350-002

For more information on the front OCP slots, see OCP NIC 3.0 slot numbering .

Cable

Cable description and PN	Spare part number
OCP NIC Interposer cable: P73927-001	P75434-001

Removal and replacement procedures

Subtopics

Safety considerations
Preparation procedures
Removing and replacing the front bezel
Removing and replacing the cable management arm
Rack rail replacement
Removing and replacing a hot-plug SAS, SATA or NVMe drive
Removing and replacing a drive blank
Removing and replacing a drive box blank

Removing and replacing an E3.S drive cage filler
Removing and replacing a hot-plug E3.S drive
Chassis ear replacement
Removing and replacing a power supply blank
Flexible Slot power supply replacement
Removing and replacing the System Insight Display
Front OCP NIC kit replacement
Fan replacement
Media device replacement
Drive backplane replacement
Removing and replacing an energy pack
Removing and replacing the energy pack retention latch
Removing and replacing a DIMM
Removing and replacing a DIMM blank
Removing and replacing a riser cage
Removing and replacing an expansion card
HPE NS204i-u Boot Device V2 replacement
Removing and replacing a primary riser board
Removing and replacing the secondary low-profile riser
Removing and replacing the serial port
Removing and replacing the chassis intrusion detection switch
Removing and replacing a rear OCP 3.0 network adapter
Removing and replacing a type-o storage controller
Removing and replacing a type-p storage controller
System battery replacement
Heatsink replacement
Liquid cooling module replacement
Processor replacement
System board replacement

Safety considerations

Before performing service procedures, review all the safety information.

- Electrostatic discharge
- Symbols on equipment
- Rack warnings and cautions
- Server warnings and cautions

Subtopics

Electrostatic discharge
Symbols on equipment
Rack warnings and cautions
Server warnings and cautions

Electrostatic discharge

Be aware of the precautions you must follow when setting up the system or handling components. 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 system or component.

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. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:
  - Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
  - Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
  - Use conductive field service tools.
  - Use a portable field service kit with a folding static-dissipating work mat.

  If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Symbols on equipment

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



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

該符號與以下任意符號組合使用，指示存在潛在的危險。如果不遵守警告，可能會造成人身傷害。詳細信息請參閱相關文檔。



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.

此符號表明存在危險電路或觸電的危險。所有維修工作應由具有相關資格的人員來完成。
警告：為了減少觸電造成人身傷害的危險，請不要打開此外殼。所有維護、升級和維修工作都應由具有相關資格的人員來完成。



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 risk of injury from electric shock hazards, do not open this enclosure.

此符號表明存在觸電的危險。在這一區域內沒有用戶可以現場維修的部件。一定不要打開。警告：為了減少觸電造成人身傷害的危險，請不要打開此外殼。



This symbol on an RJ-45 receptacle indicates a Network Interface Connection.

WARNING

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

RJ-45 插孔上的該符號指示網絡接口連接。
警告：為了減少觸電、火災或設備損壞的危險，不要將電話或電信連接設備插入此插孔。



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.

此符號表明表面或組件過熱。如果觸摸此表面，可能會造成人身傷害。警告：為了減少因組件過熱而造成人身傷害的危險，應等到表面降溫後再觸摸。



This symbol indicates the presence of a moving fan blade. If the spinning blades are contacted, the potential for injury exists.

WARNING

Hazardous moving parts. Keep away from moving fan blades. To reduce the risk of injury from a hot component, allow the surface to cool before touching.

此符號表明存在運動風扇葉片的危險。如果觸摸旋轉葉片，可能會造成人身傷害。警告：危險的運動部件。請遠離運動風扇刀片。為減少被高溫組件燙傷的危險，應在表面冷卻之後再接觸。


or


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.

電源或系統上的這些符號表明設備由多個電源供電。
警告：為了減少觸電造成人身傷害的危險，應拔下所有電源線插頭，完全斷開系統的電源。



Weight in kg.
Weight in lb.

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

WARNING

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

此符號表明組件的重量超出了建議值，一個人無法安全取放。
警告：為了減少人身傷害或設備損壞的危險，應遵守當地有關人工取放物品的職業保健與安全規定及準則。



A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

手指或其它導體所釋放的靜電可能損壞主板或其它對靜電敏感的設備。為防止發生損壞，請遵守防靜電預防措施。



These symbols appearing together indicate that the product may have high touch current and that a reliable earth ground must be in place before connecting the equipment.

WARNING

Risk of electric shock due to high touch current. Connect to earth before connecting to supply.



This symbol indicates the presence of a laser device in the product that may exceed Class 1 limits. Refer to the product documentation for more information.

此符號表明在可能會超出 1 類限制的產品中存在激光設備。有關詳細信息，請參閱產品文檔。



This symbol indicates the presence of moving parts inside the product that may present a pinch point if improperly contacted.

WARNING

Hazardous moving parts. Do not insert any tools or any part of your body into the product while it is operating or in any openings.



This symbol indicates the presence of coin cell battery.

WARNING

- INGESTION HAZARD: This product contains a button cell or coin battery.
- DEATH or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause Internal Chemical Burns in as little as 2 hours.
- KEEP new and used batteries OUT OF REACH of CHILDREN.
- Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body.

Rack warnings and cautions

WARNING

When all components are removed, the server weighs 14.87 kg (32.71 lb). When all components are installed, the server can weigh up to 21.38 kg (47.04 lb).

Before configuring your rack solution, be sure to check the rack manufacturer weight limits and specifications. Failure to do so can result in physical injury or damage to the equipment and the facility.

WARNING

The server is heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The server weighs more than 14.87 kg (32.71 lb), so at least two people must lift the server into the rack together. An additional person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack.
- Adequately stabilized the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

WARNING

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

- The rack has anti-tip measures in place. Such measures include floor-bolting, anti-tip feet, ballast, or a combination as specified by the rack manufacturer and applicable codes.
- The leveling jacks (feet) are extended to the floor.
- The full weight of the rack rests on the leveling jacks (feet).
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple rack installations.

WARNING

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

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

CAUTION

Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

CAUTION

Before installing the server in a rack, be sure to properly scope the limitations of the rack. Before proceeding with the installation, consider the following:

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the server.
- Be sure sufficient clearance exists for cabling, installation and removal of the server, and movement of the rack doors.

Server warnings and cautions

WARNING

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

WARNING

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

WARNING

To reduce the risk of fire or burns after removing the energy pack:

- Do not disassemble, crush, or puncture the energy pack.
- Do not short external contacts.
- Do not dispose of the energy pack in fire or water.
- Do not expose the energy pack to low air pressure as it might lead to explosion or leakage of flammable liquid or gas.
- Do not expose the energy pack to temperatures higher than 60°C (140°F).

After power is disconnected, battery voltage might still be present for 1s to 160s.

CAUTION

Protect the server from power fluctuations and temporary interruptions with a regulating UPS. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the server in operation during a power failure.

CAUTION

To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

CAUTION

To avoid data loss, Hewlett Packard Enterprise recommends that you back up all server data before installing or removing a hardware option, or performing a server maintenance or troubleshooting procedure.

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.

Preparation procedures

Prerequisites

Before powering down the server for an upgrade, maintenance, or service procedure, perform a backup of critical server data.

About this task

To access components and perform certain upgrade, maintenance, or service procedure, you must perform one or more of the procedures described in this section.

Subtopics

Server data backup
Power down the server
Extend the server from the rack
Release the cable management arm
Remove the server from the rack
Remove the access panel
Remove the air baffle
Remove the middle cover

Remove the fan wall
Remove the primary PCIe riser cage
Power up the server

Server data backup

To avoid data loss, make sure to back up all server data before installing or removing a hardware option, performing a server maintenance, or a troubleshooting procedure.

Server data in this context refers to information that may be required to return the system to a normal operating environment after completing a hardware maintenance or troubleshooting procedure. This information may include:

- User data files
- User account names and passwords
- Application settings and passwords
- Component drivers and firmware
- TPM recovery key/password
- BIOS configuration settings—Use the backup and restore function in UEFI System Utilities. For more information, see the UEFI user guide (https://www.hpe.com/support/hpeuefisystemutilities-quicklinks).
  - Custom default system settings
  - Security passwords including those required for power-on and BIOS admin access, persistent memory, and Server Configuration Lock (for HPE Trusted Supply Chain servers)
  - Server serial number and the product ID
- iLO-related data—Use the iLO backup and restore function. For more information, see the iLO user guide (https://www.hpe.com/support/hpeilodocs-quicklinks).
  - iLO license
  - Customer iLO user name, password, and DNS name
  - iLO configuration settings

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 activates a controlled shutdown of applications and the OS before the server enters standby mode. It can also activate a shutdown behavior governed by an OS configuration or policy.
- 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 iLO 7.
  This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

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

Extend the server from the rack

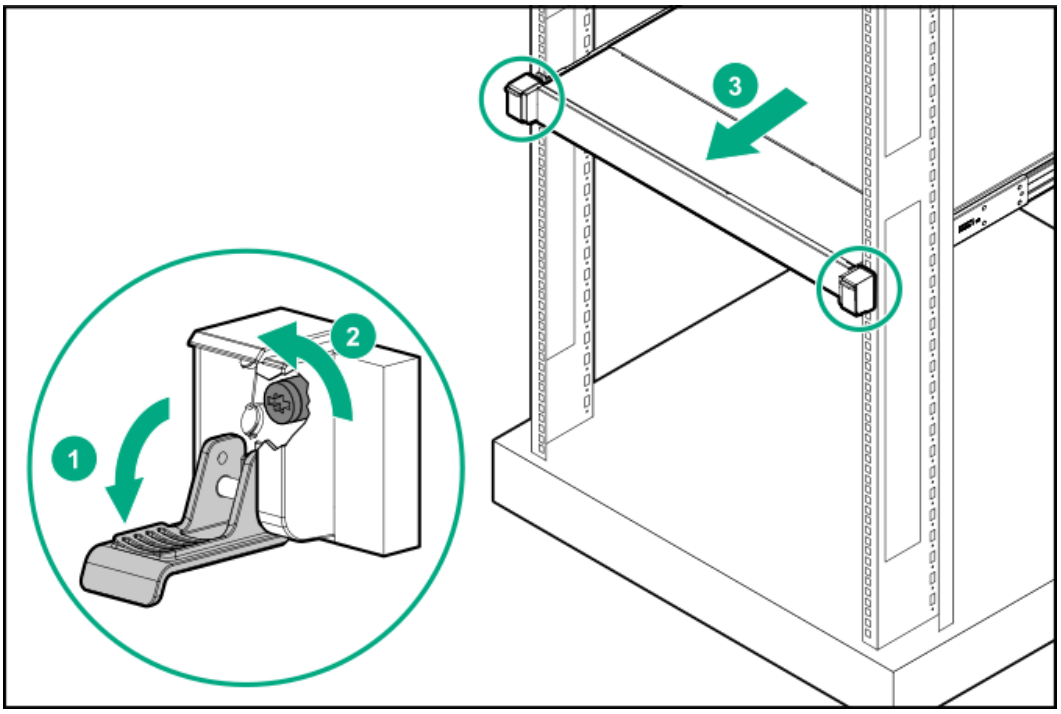
Prerequisites

- You might need a T-25 Torx screwdriver to loosen the shipping screws.
- Review the:
  - Rack warnings and cautions
  - Server warnings and cautions

Procedure

Extend the server from the rack.

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



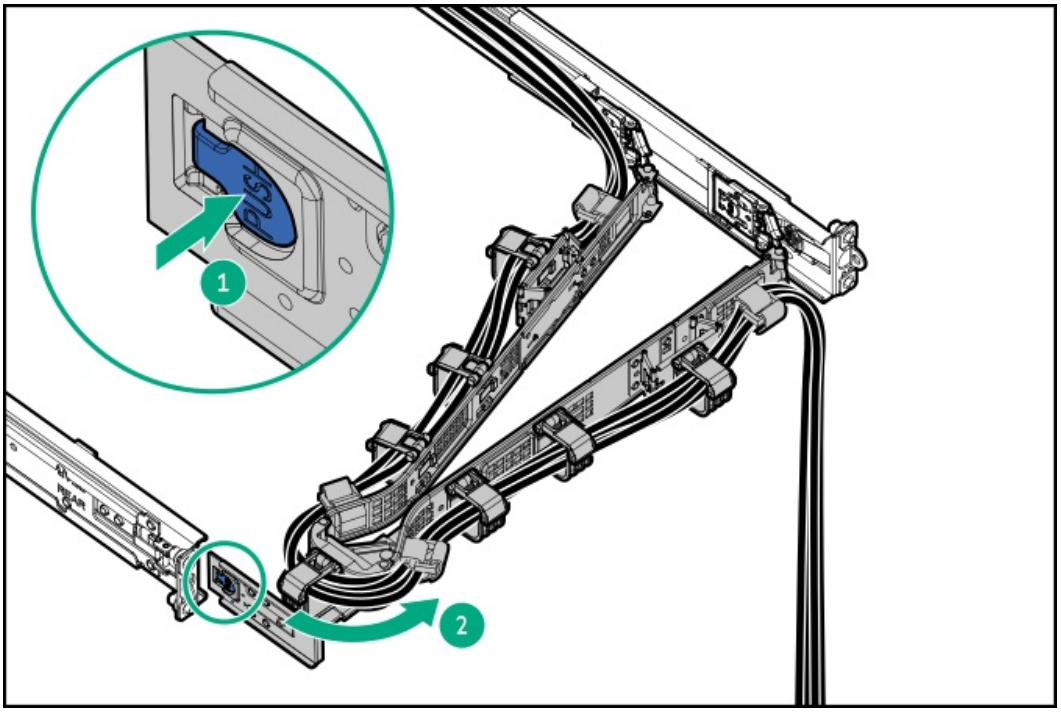
Release the cable management arm

About this task

CAUTION
To reduce the risk of personal injury, be careful when pressing the cable management or rail-release latches. The rails or latches could pinch your fingers.

Procedure

Release the cable management arm and swing away from the rack.



Remove the server from the rack

Prerequisites

Before you perform this procedure, review the:

- Rack warnings and cautions
- Server warnings and cautions

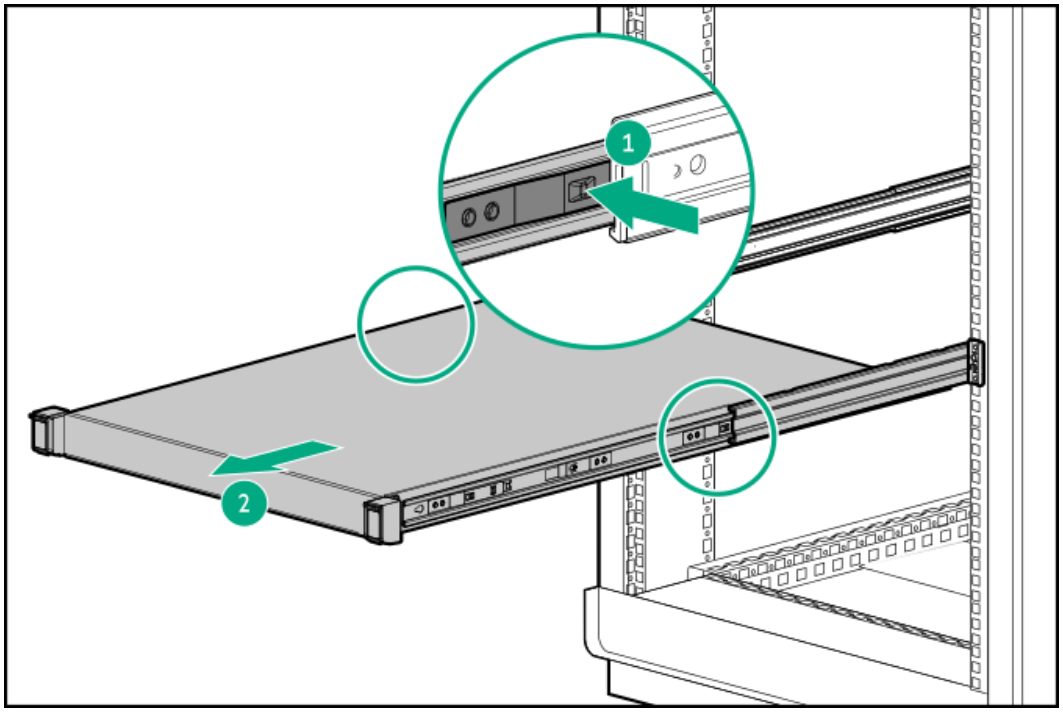
About this task

WARNING

To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending anything from the rack.

Procedure

1. Power down the server.
2. Release the cable management arm.
3. Disconnect the cabling from the rear panel.
4. Extend the server from the rack.
5. Remove the server from the rack:



6. Place the server on a sturdy, level surface.

Remove the access panel

About this task

WARNING

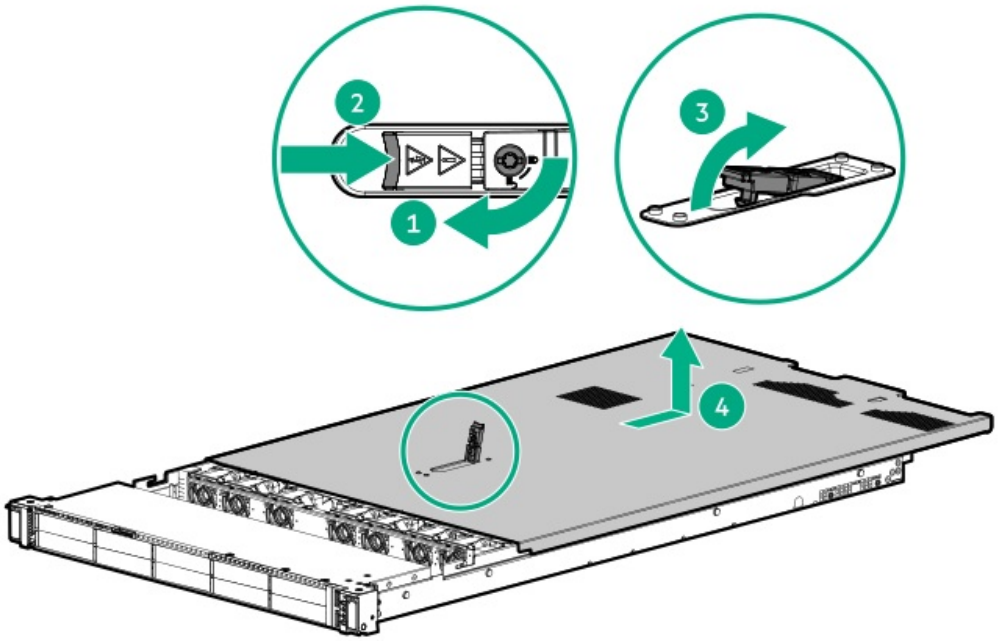
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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.

Procedure

1. Power down the server.
2. Extend the server from the rack.
3. Open or unlock the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.



Remove the air baffle

Prerequisites

Review the Fan and heatsink requirements.

About this task

The optional air baffle is supported on servers using high performance heatsinks.

CAUTION

For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

CAUTION

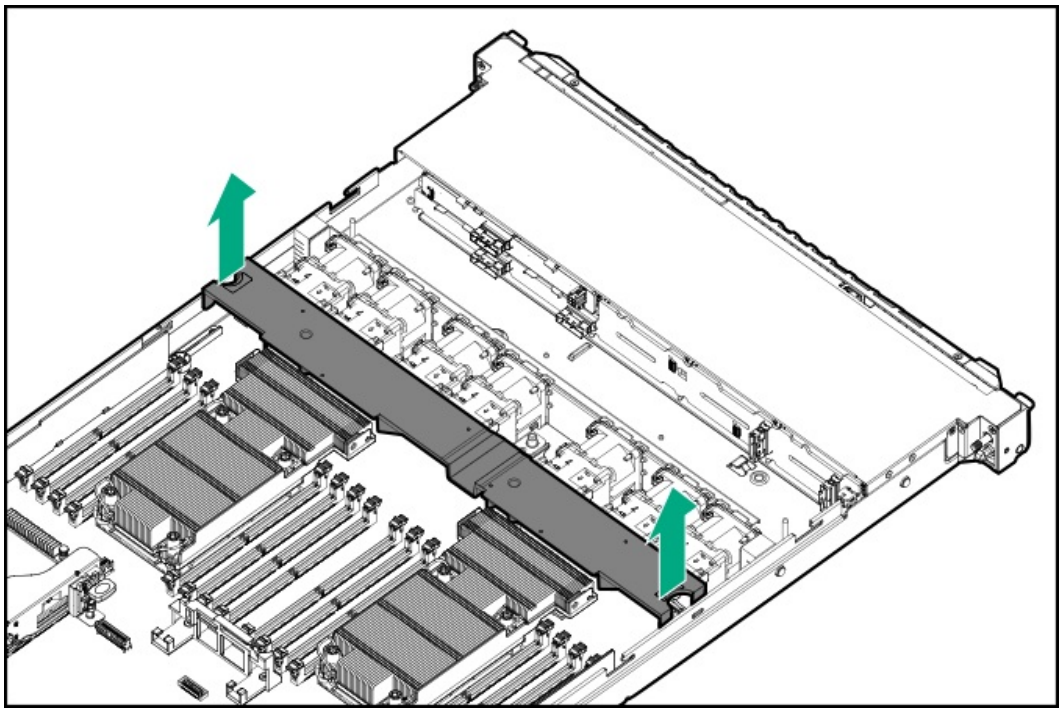
To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.

7. Remove the air baffle.

   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.



Remove the middle cover

About this task

The middle cover is available on the 10 SFF / 20 E3.S server.

https://sketchfab.com/models/acc000f01f31433bb44af7e1ecddf444/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed.

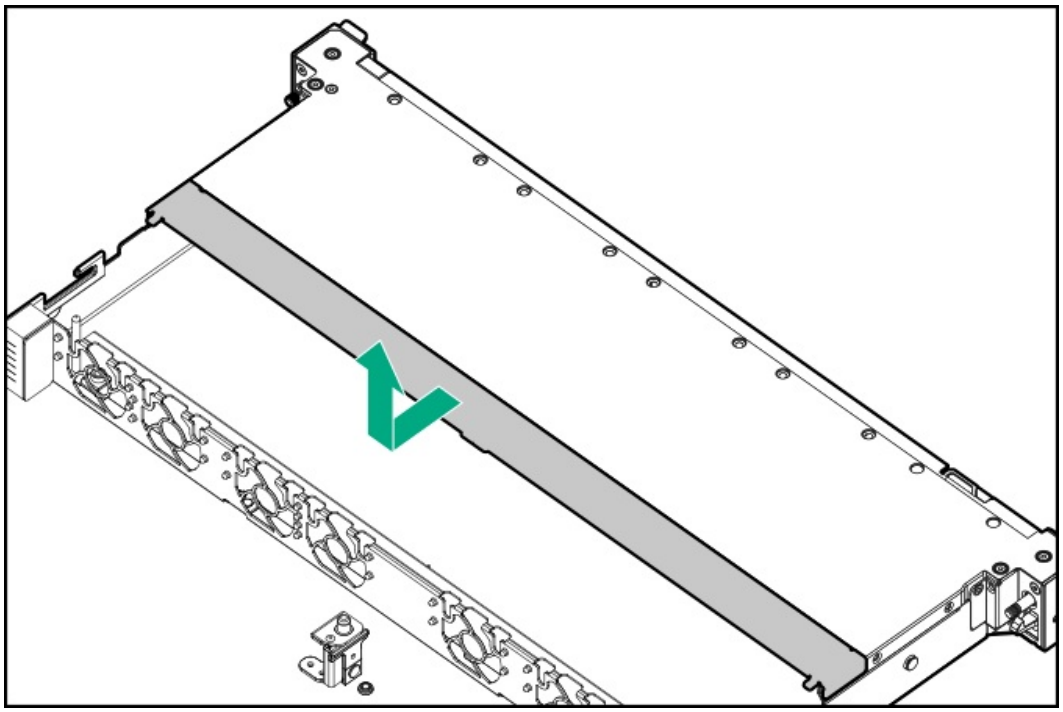
CAUTION

To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Extend the server from the rack.

5. Remove the access panel.
6. Take both sides of the middle cover and detach it from the server.



Remove the fan wall

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

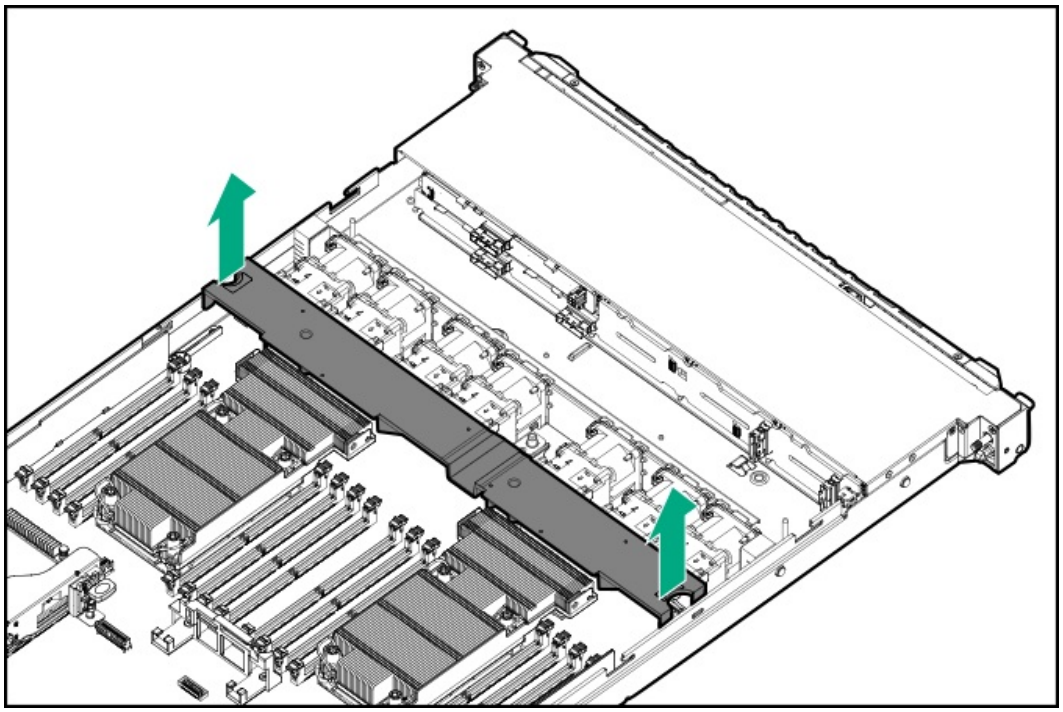
The fan wall is not available on servers with the liquid cooling heatsink and fan kit installed.

> **CAUTION**
> To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

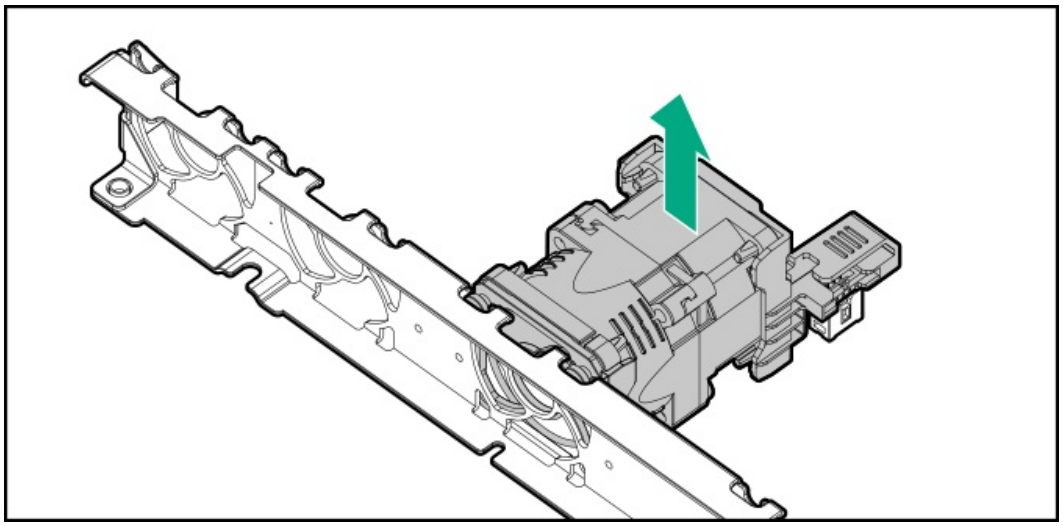
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If installed, remove the air baffle.

An 8 SFF server is shown. The removal procedure is the same for all drive configurations.

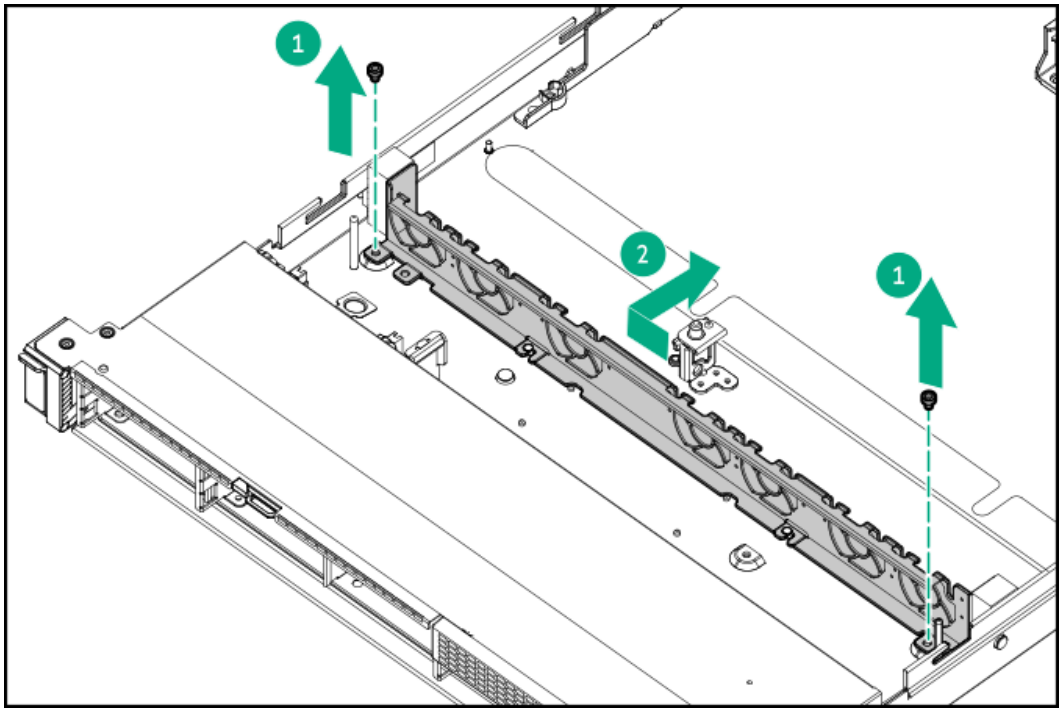


8. Remove the fans.



9. Remove the screws to remove the fan wall.

   Retain the screws and fan wall. These screws will be used to secure the fan wall after replacing or installing the internal component.



Remove the primary PCIe riser cage

About this task

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

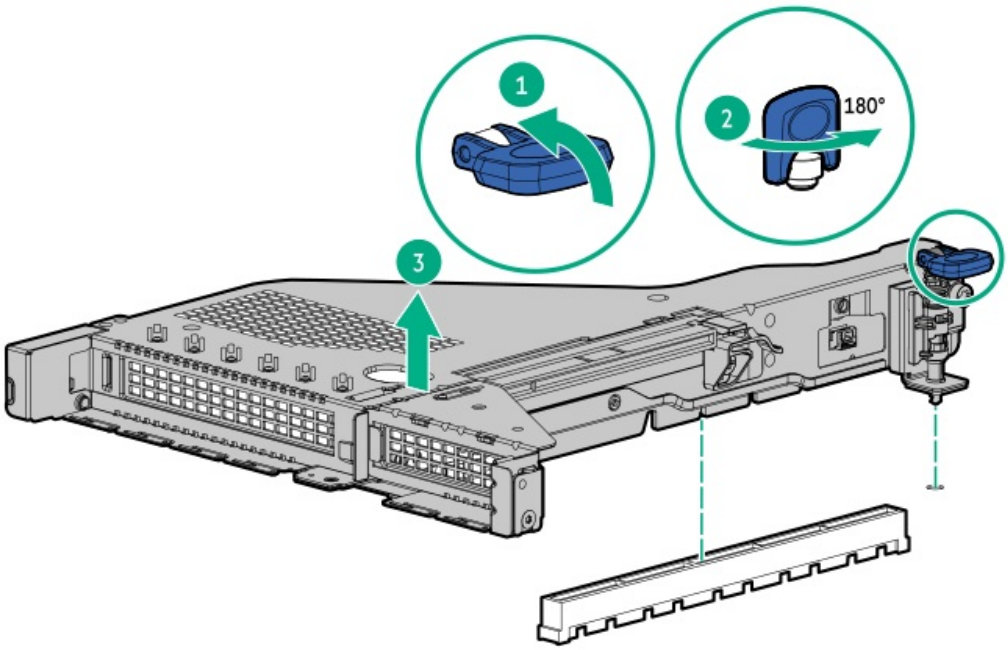
CAUTION

To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Remove the secondary riser cage blank.

6. Remove the PCI riser cage.



Power up the server

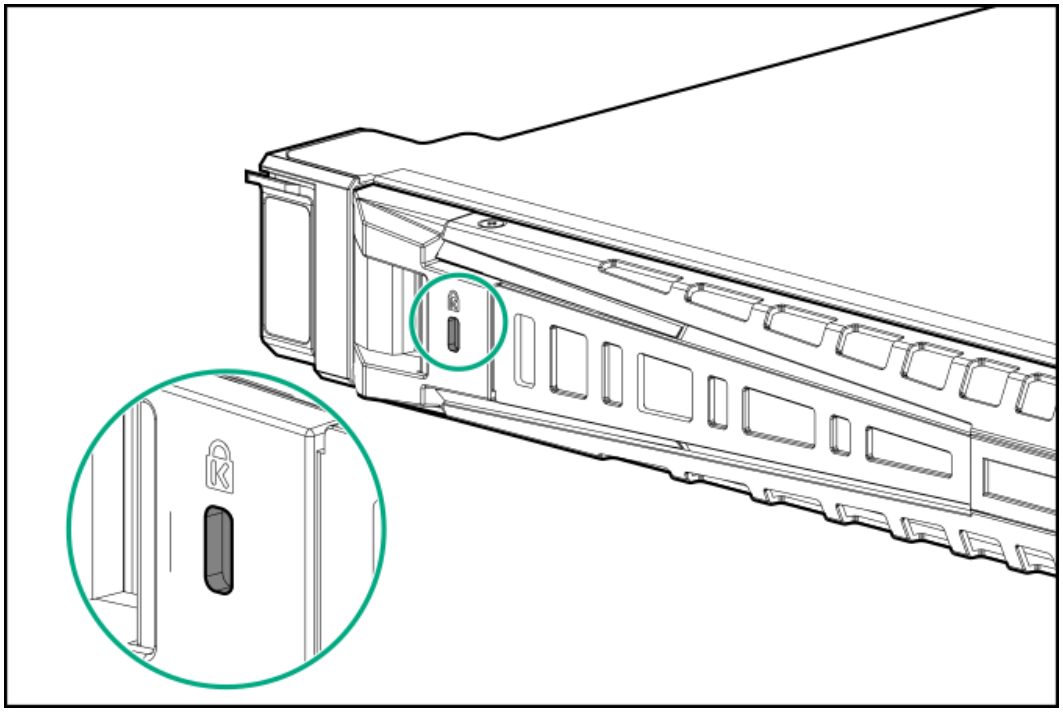
Procedure

- Press the Power On/Standby button.
- Use the virtual power button through iLO 7.

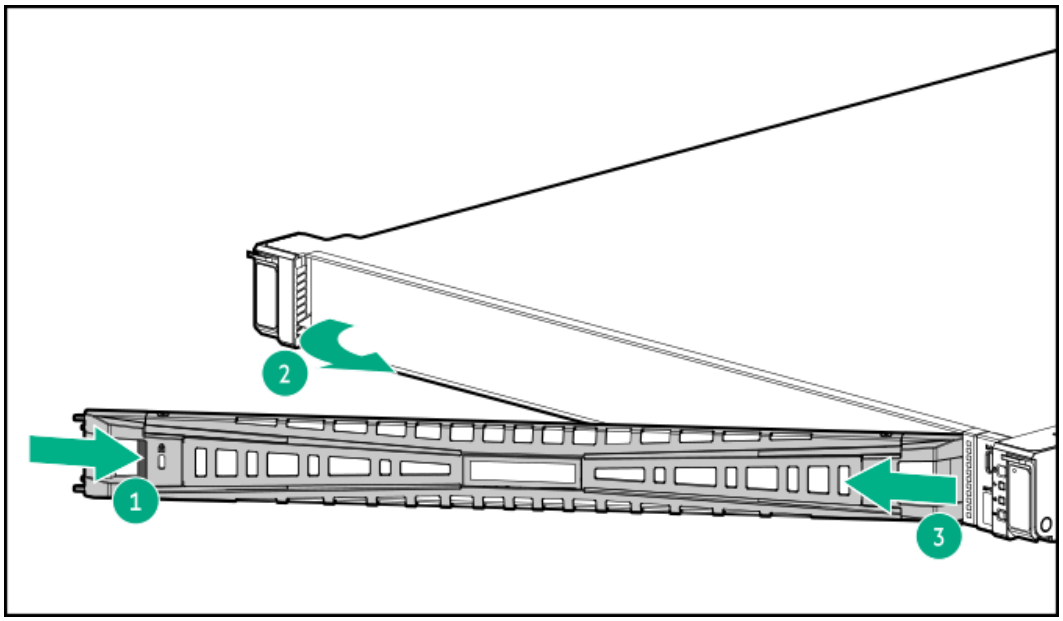
Removing and replacing the front bezel

Procedure

1. If installed, remove the Kensington security lock.



2. Remove the bezel.



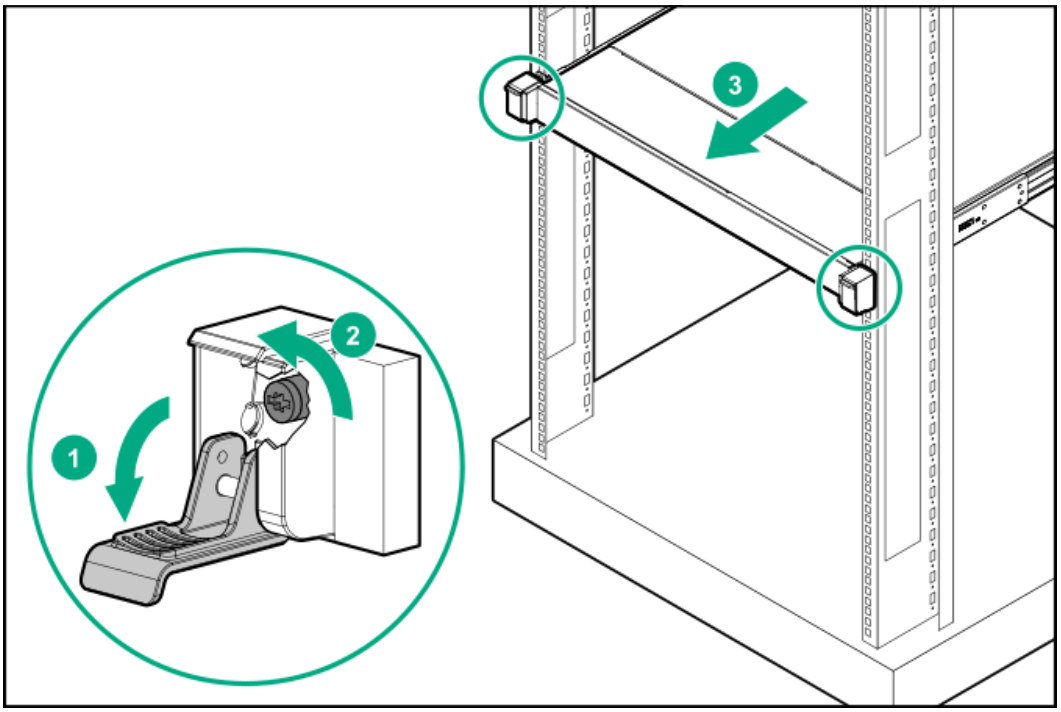
Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the cable management arm

Prerequisites

For 1U servers that are densely populated in a deep rack, you must extend the server to access the release latch.



About this task

CAUTION

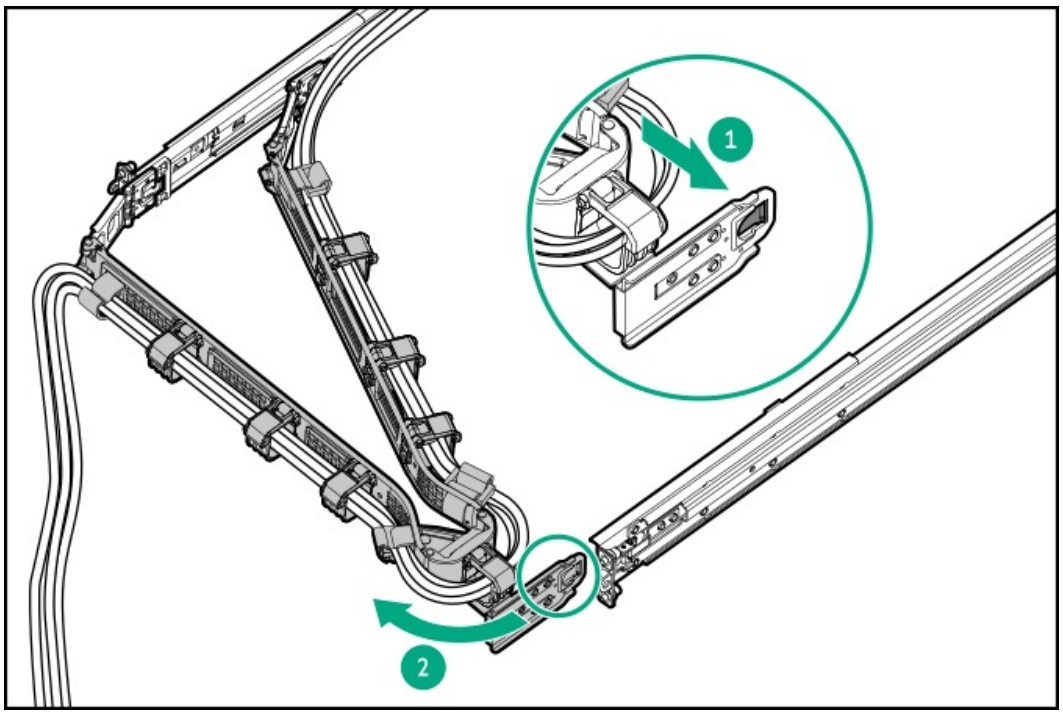
Support the CMA during the removal and replacement procedures. Do not allow the CMA to hang by its own weight during the procedure.

CAUTION

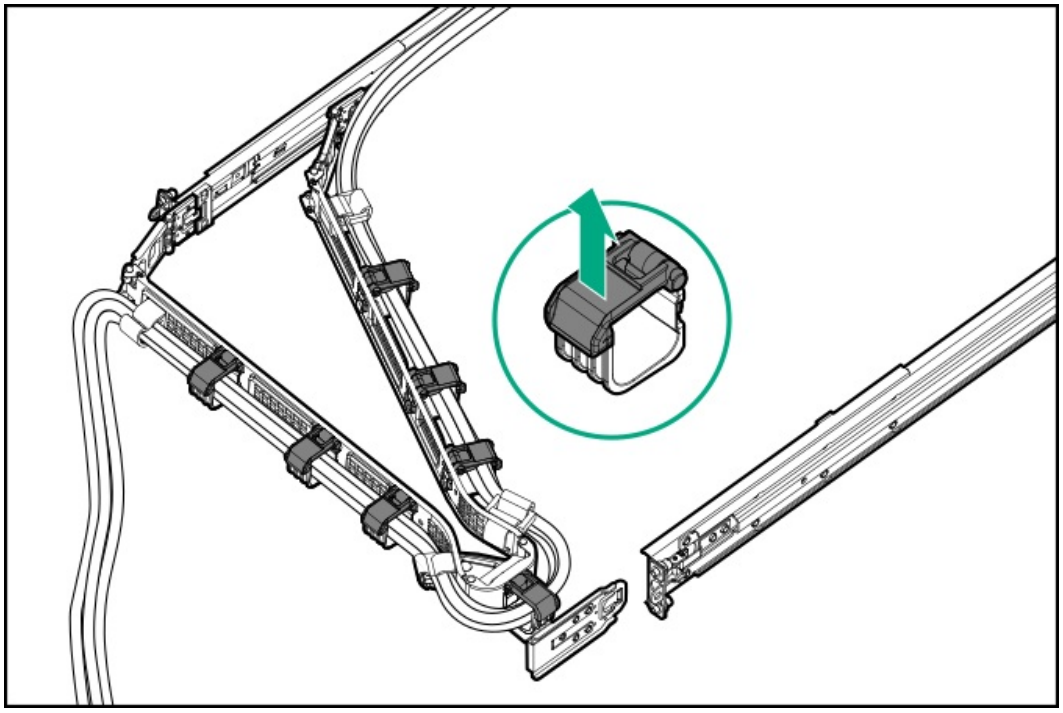
To reduce the risk of personal injury, be careful when pressing the cable management or rail-release latches. The rails or latches could pinch your fingers.

Procedure

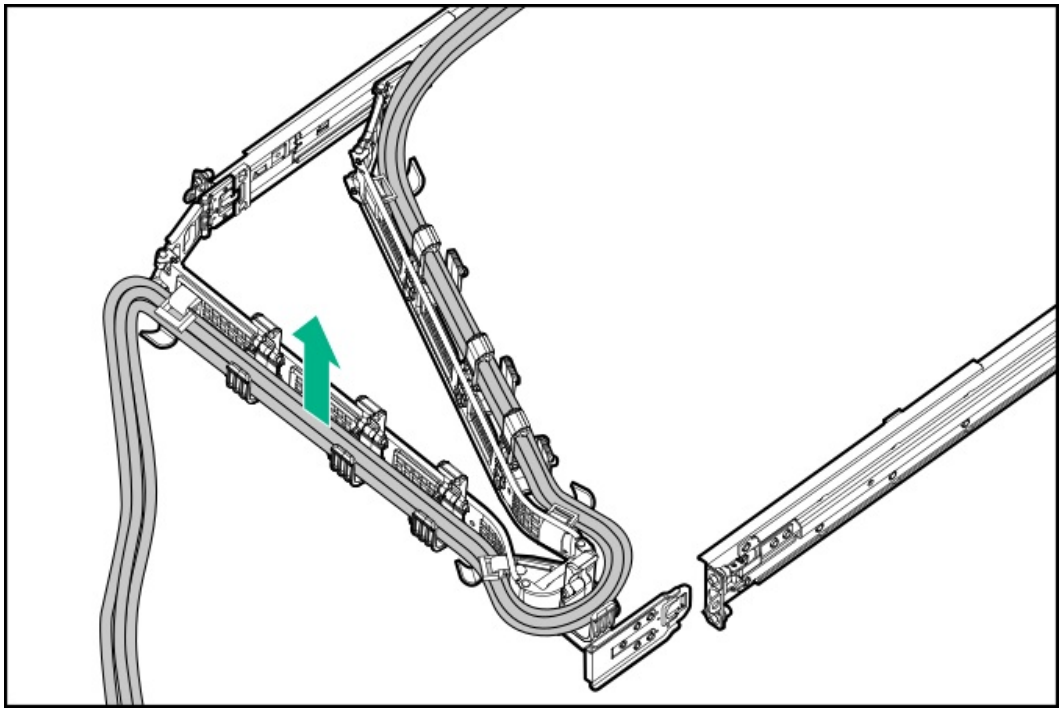
1. Press the release latch and open the cable management arm.



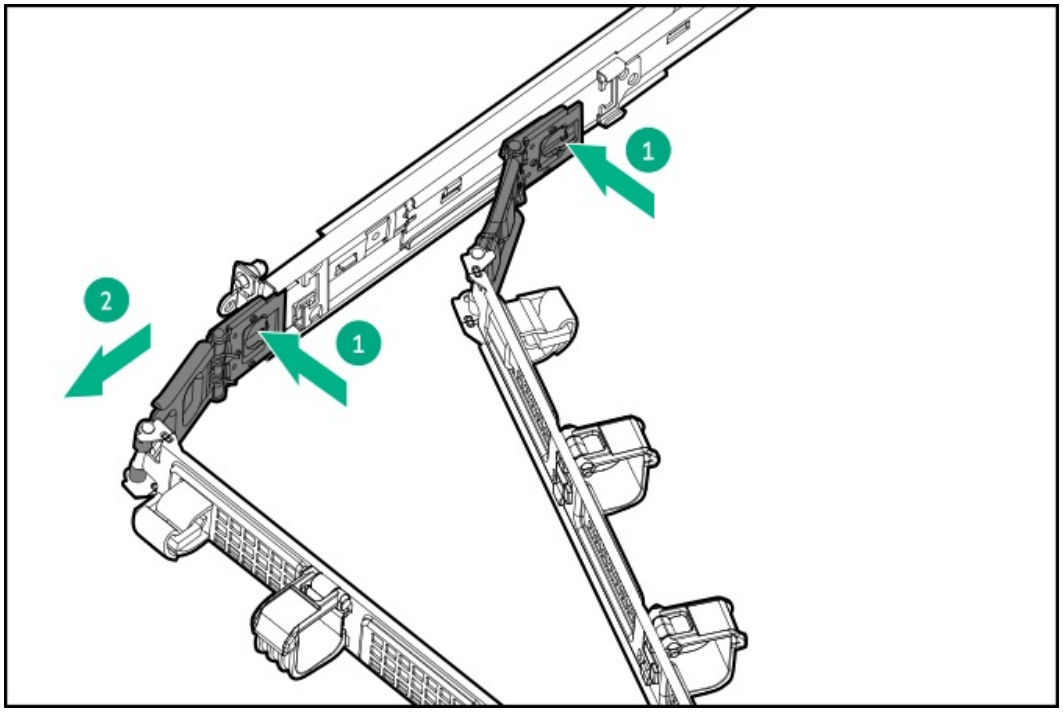
2. Open all cable baskets and loosen straps.



3. Remove the cables.



4. Remove the cable management arm.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

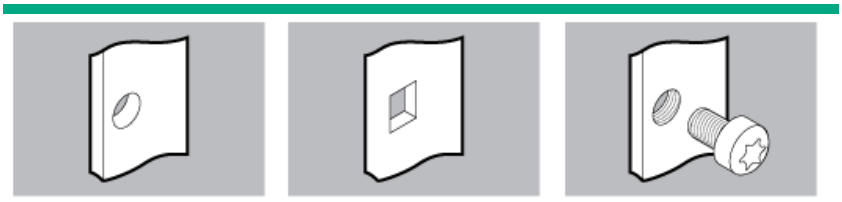
Rack rail replacement

Subtopics

Rack mounting interfaces
Removing and replacing the friction rack rails

Rack mounting interfaces

The rack rails can be installed in a rack that has the following mounting interfaces:



Round-hole	Square-hole	Threaded round-hole

The illustrations used in this procedure show an icon on the upper right corner of the image. This icon indicates the type of mounting interface for which the action illustrated in the image is valid.

Removing and replacing the friction rack rails

Prerequisites

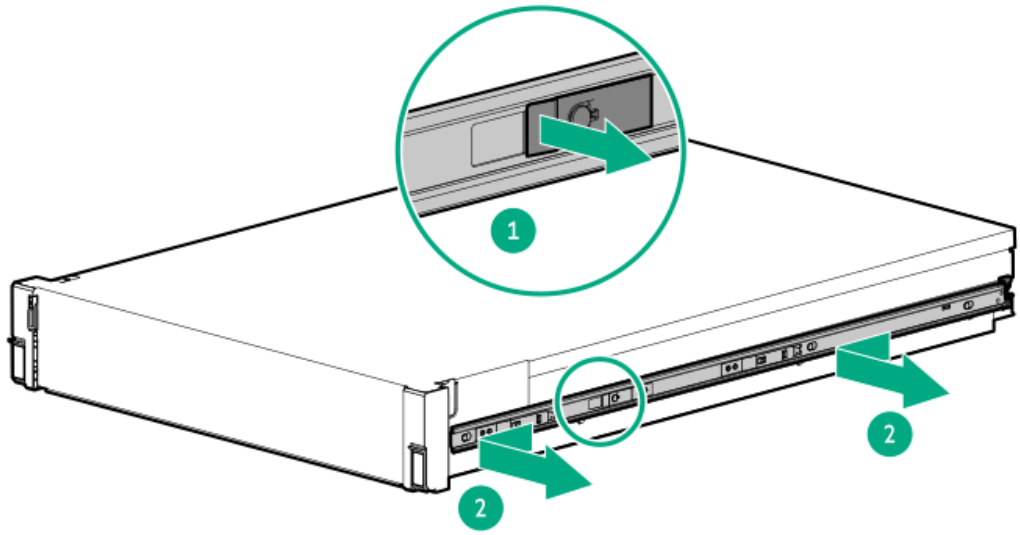
- Review the rack mounting interfaces.
- If you are replacing the rack mounting rails from a threaded-hole rack, make sure that you have a T-25 Torx screwdriver available.

About this task

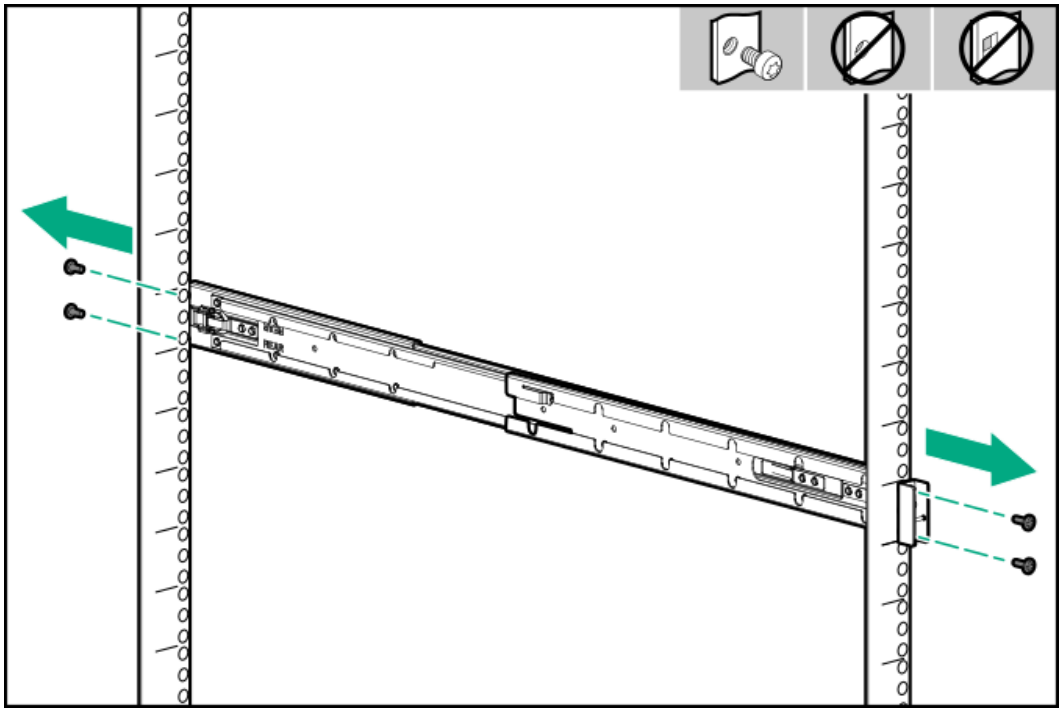
https://sketchfab.com/models/7b55f5599368447a82781f373bcacc3d/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0

Procedure

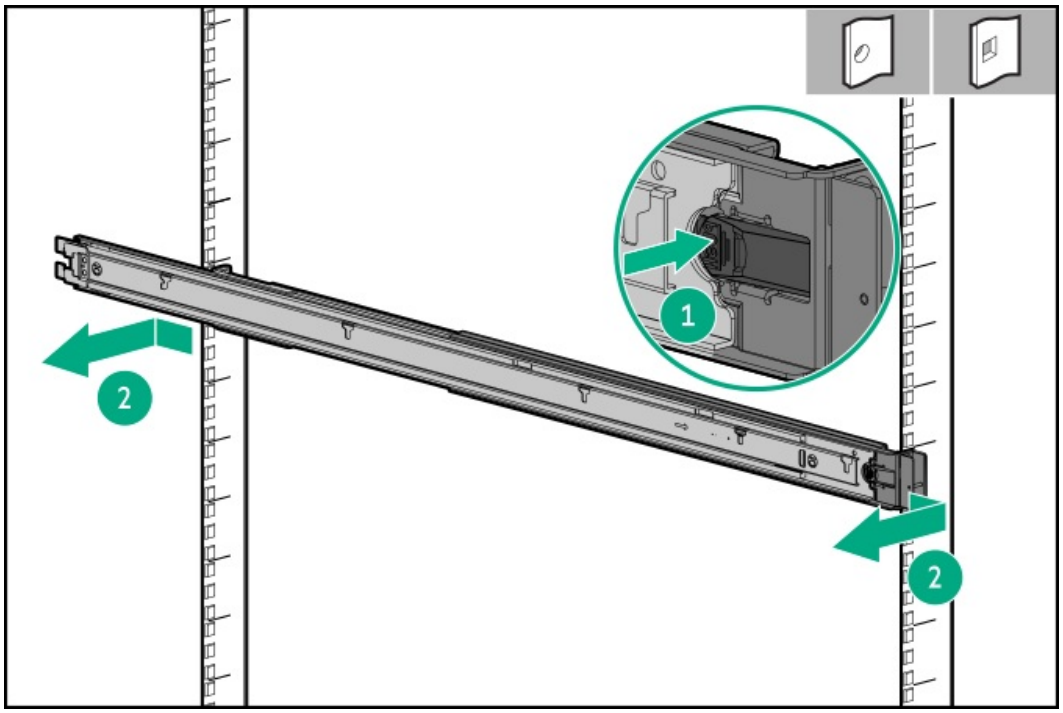
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. If installed, remove the cable management arm.
7. To remove the sliding rails, do the following:
   a. Pull and hold the release latch.
   b. Slide the rail towards the front panel and pull it from the server.



   c. Repeat steps a and b to remove the other sliding rail.
8. To remove the rack mounting rails, do the following:
   a. In a threaded-hole rack, remove the rail screws.



b. Press and hold the release latch, and then disengage the rail pins from the rack columns.



c. Repeat steps a and b to remove the other rack rail.

Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a hot-plug SAS, SATA or NVMe drive

About this task

CAUTION

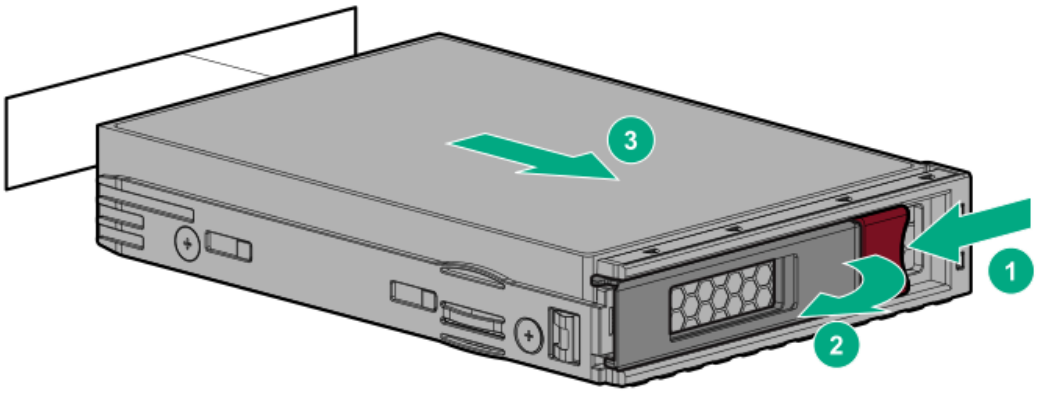
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

CAUTION

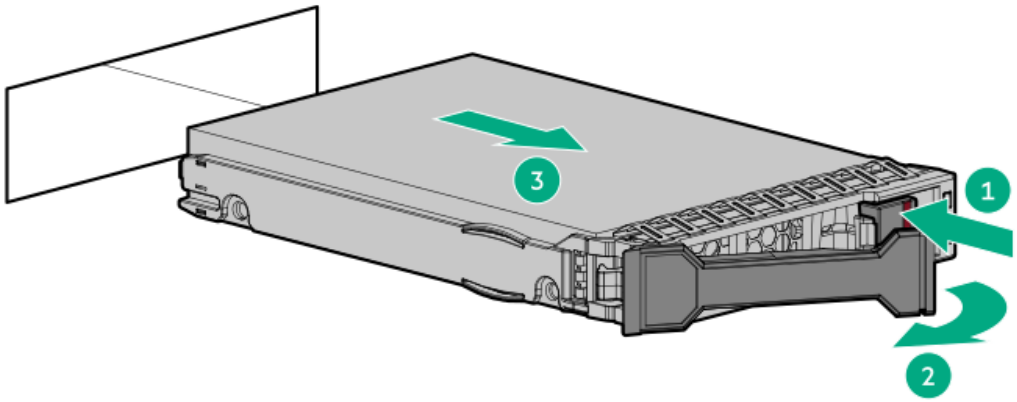
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Determine the status of the drive from the hot-plug drive LED definitions.
4. Remove the drive.
   - LFF drive



   - SFF drive



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a drive blank

About this task

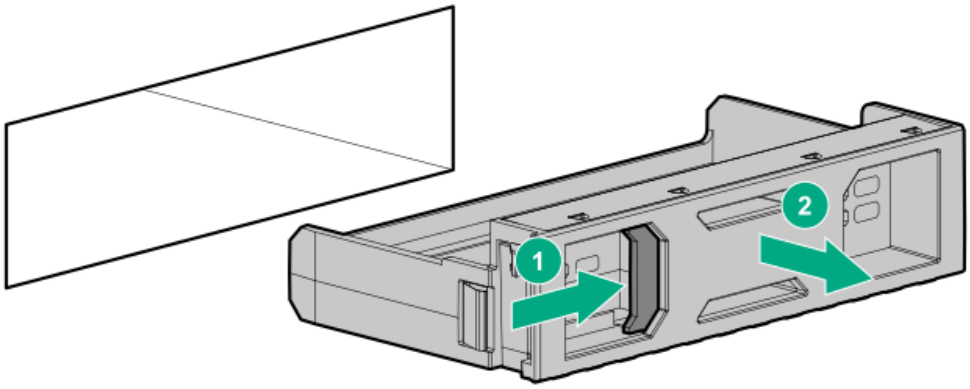
https://sketchfab.com/models/ebfa72a6e53c4241b82df150ca59c962/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

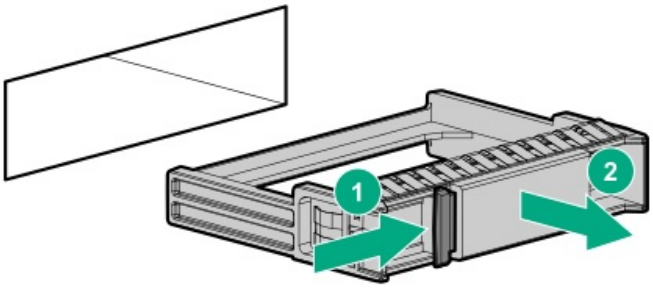
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

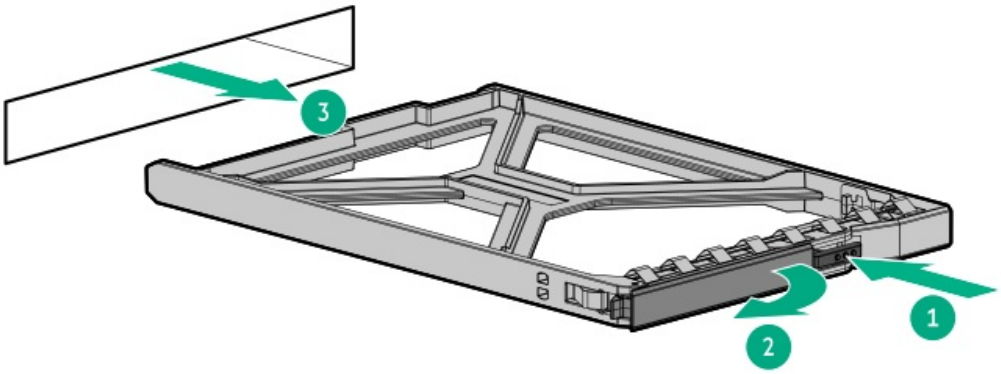
1. If installed, remove the front bezel.
2. Remove the drive blank.
   - LFF drive blank



   - SFF drive blank



   - E3.S drive blank



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a drive box blank

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

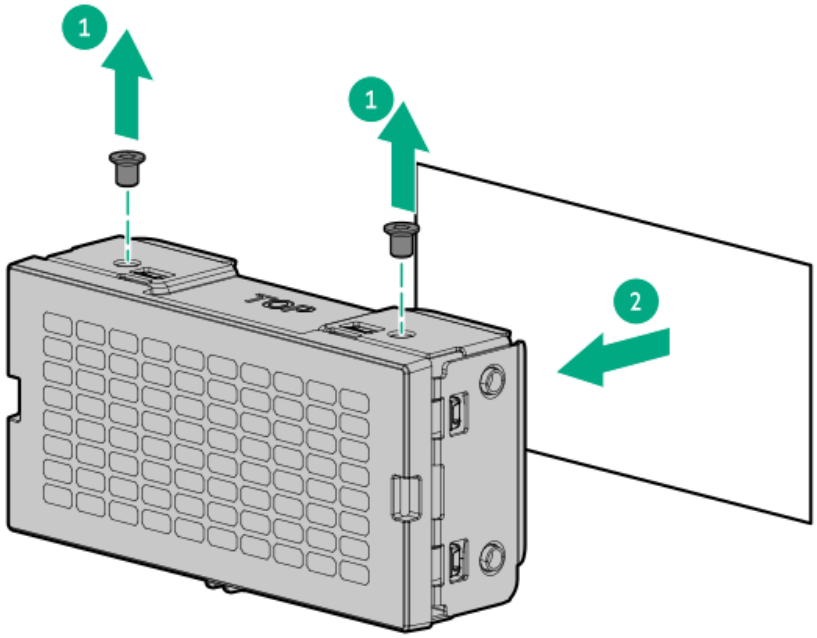
About this task

This drive box blank is supported in the 10 SFF / 20 E3.S server.

> **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.

Procedure

1. If installed, remove the front bezel.
2. Remove the drive box blank.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing an E3.S drive cage filler

Prerequisites

Before you perform this procedure, make sure that you have a small slotted screwdriver available.

About this task

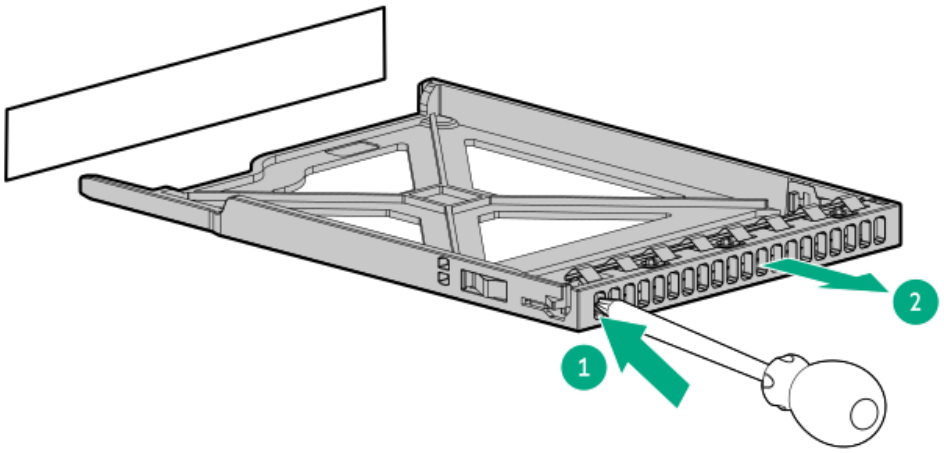
https://sketchfab.com/models/be12fb70179e4650ad08a5f691195e82/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

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.

Procedure

1. If installed, remove the front bezel.
2. Remove the E3.S drive cage filler:
   a. Insert a small-slotted screwdriver into the slot on the far left to push the release latch.
   b. Remove the E3.S drive cage filler.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a hot-plug E3.S drive

About this task

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.

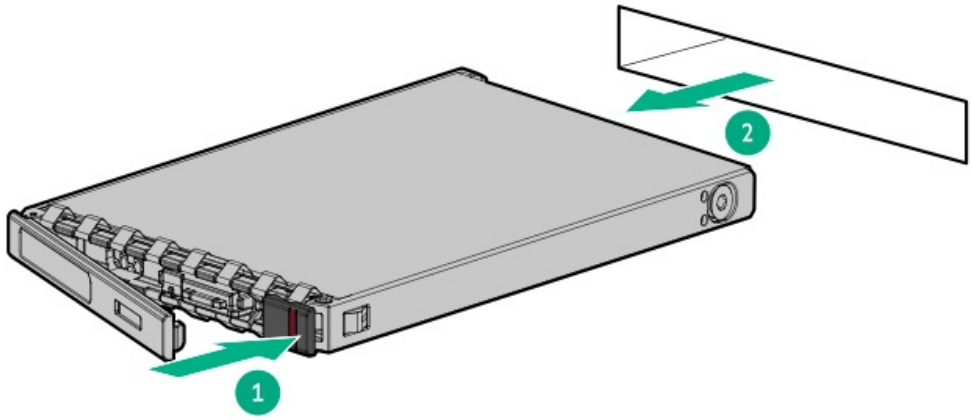
CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Observe the drive LED status and determine if the drive can be removed.

4. Remove the drive.



Results

To replace the component, reverse the removal procedure.

Chassis ear replacement

Subtopics

Removing and replacing the left chassis ear
Removing and replacing the right chassis ear and power switch board

Removing and replacing the left chassis ear

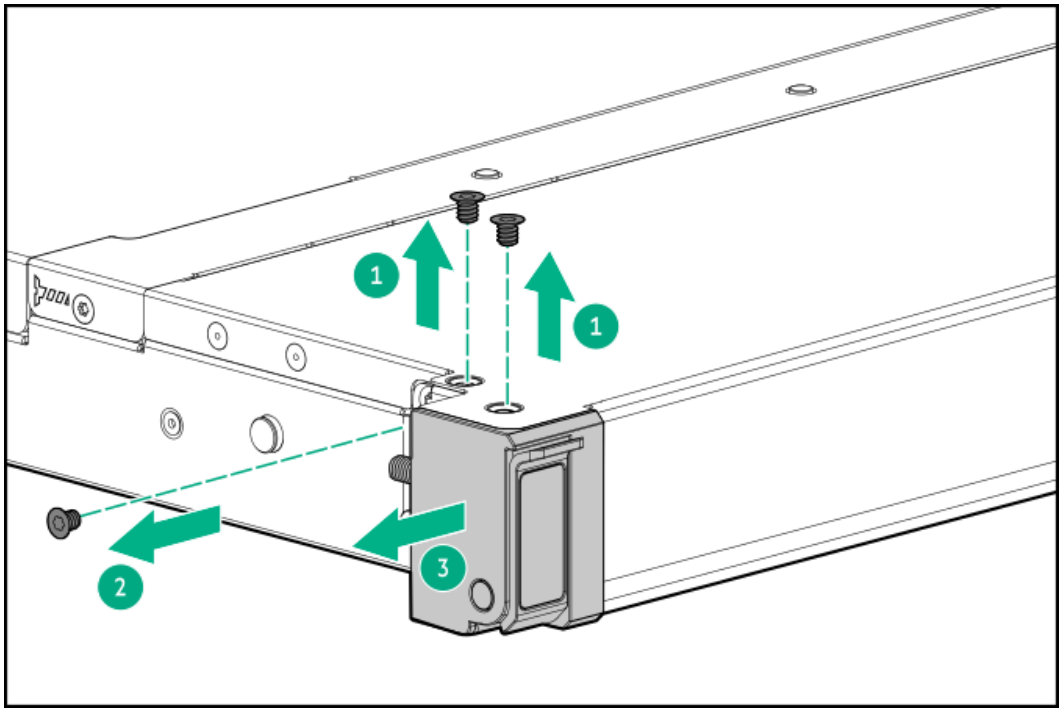
Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

1. If installed, remove the front bezel.
2. Power down the server.
3. If installed, release the cable management arm.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the left chassis ear:
   a. Remove left chassis ear screws.

      Retain the screws to secure the new left chassis ear spare.
   b. Detach the left chassis ear.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the right chassis ear and power switch board

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

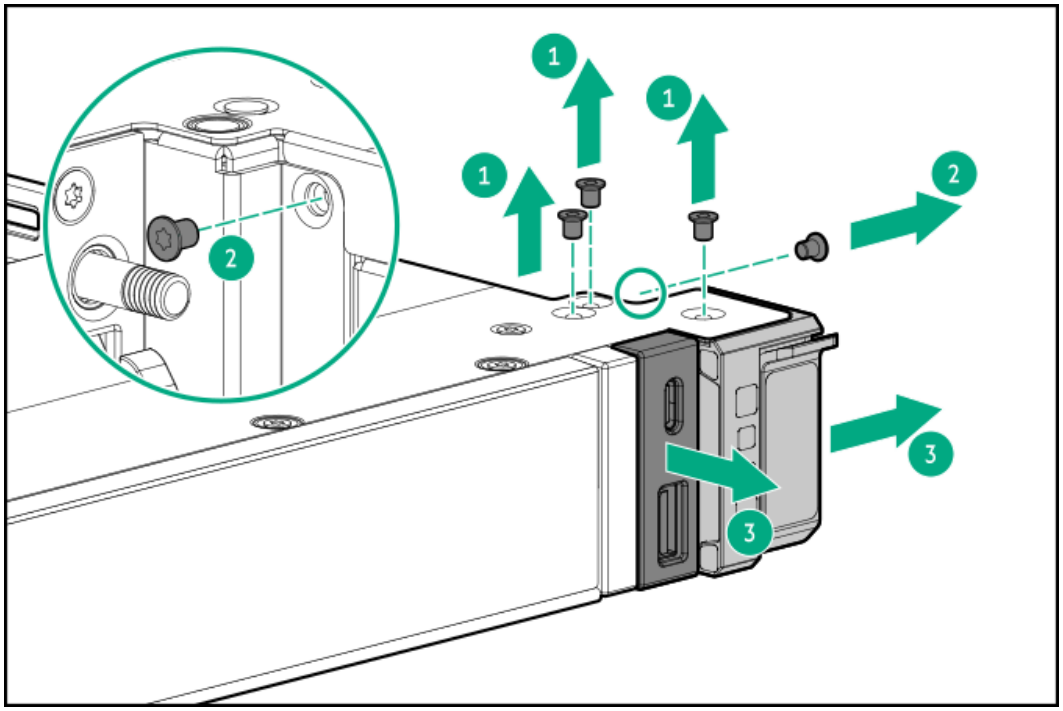
1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Remove the access panel.
6. Disconnect the cable from the system board.

Removing the right ear in the 10 SFF / 20 E3.S server or 8 SFF server

7. Remove the right chassis ear:

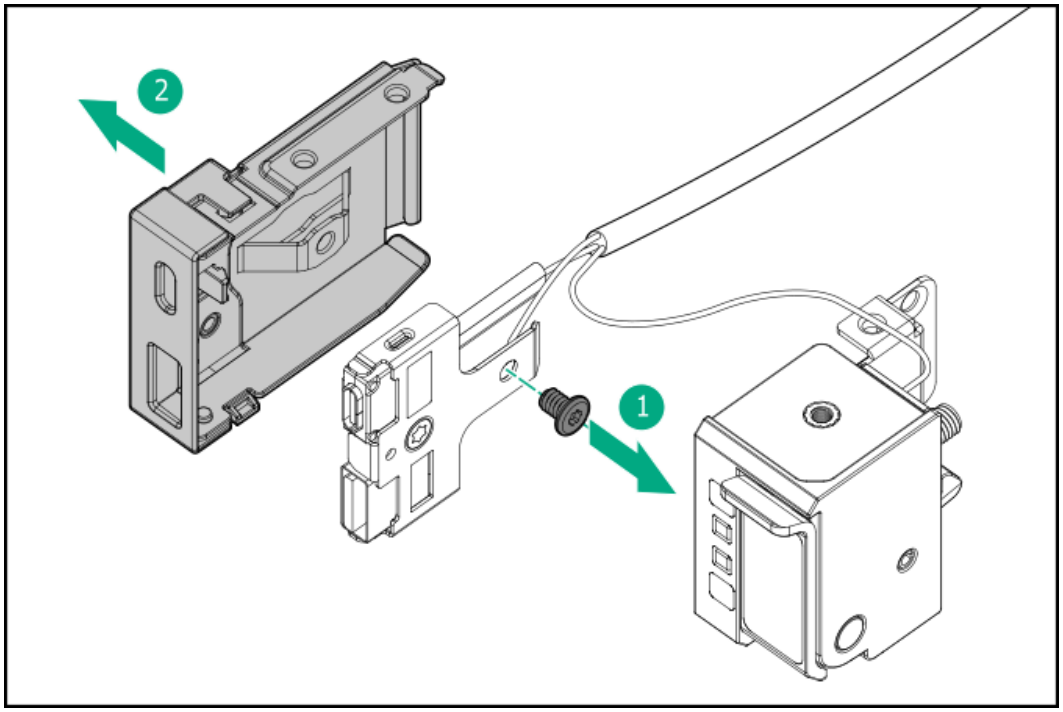
   a. Remove the screws.

   b. Pull the right ear and front I/O port assembly simultaneously.



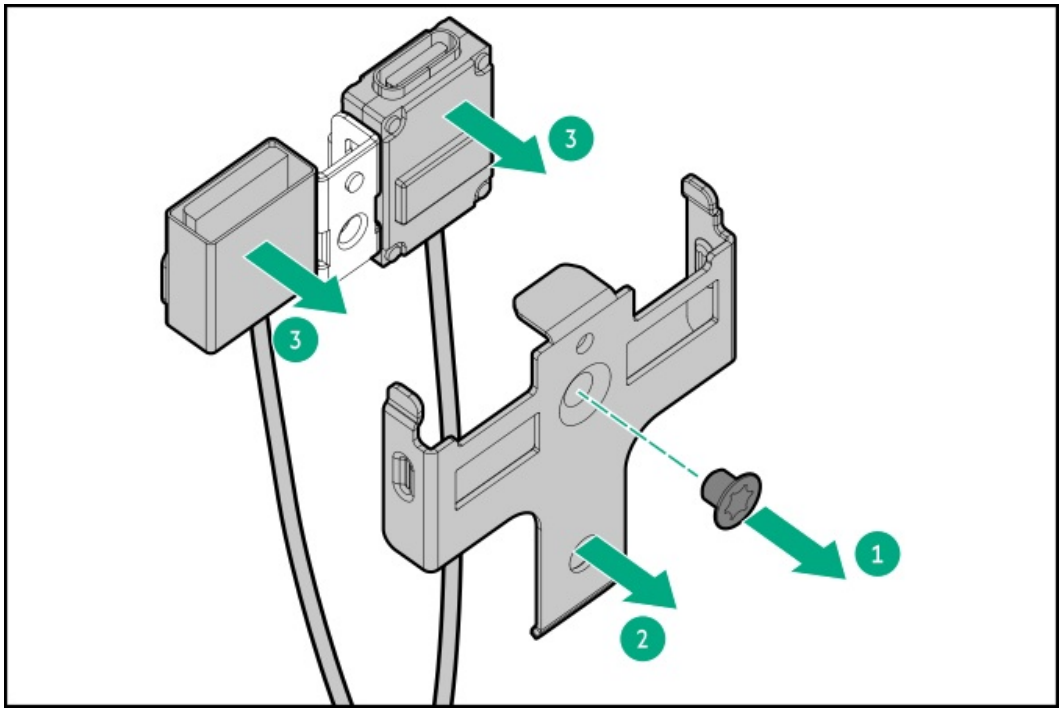
8. Remove the front I/O cable from the front USB panel.

   Retain the front USB panel. The front USB panel will be used to secure the new right chassis ear spare.



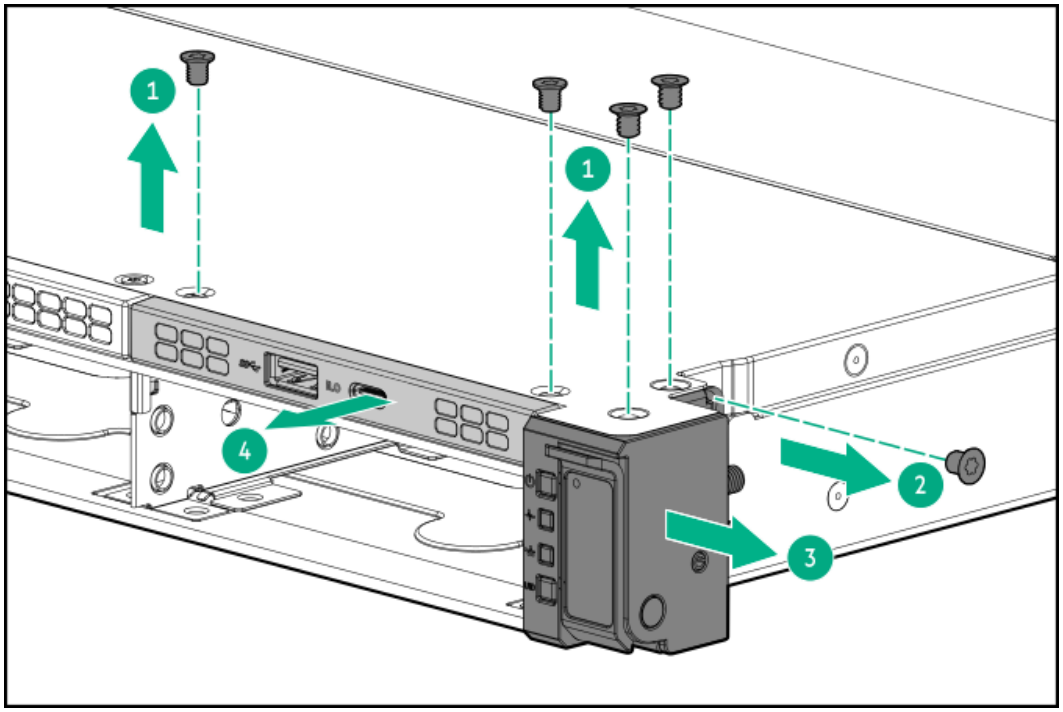
9. Remove the USB cable from the support bracket.

   Retain the support bracket and screw. The support bracket and screw will be used to secure the new right chassis ear spare.

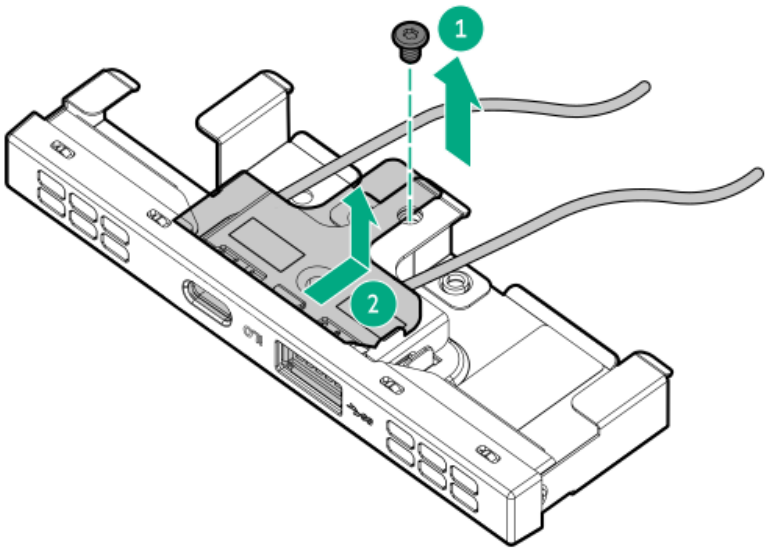


Removing the right ear in the LFF drive configuration

10. Remove the right chassis ear:
    a. Remove the screws.
    b. Pull the right ear and front I/O port assembly simultaneously.



11. Remove the front I/O port assembly from the cage.

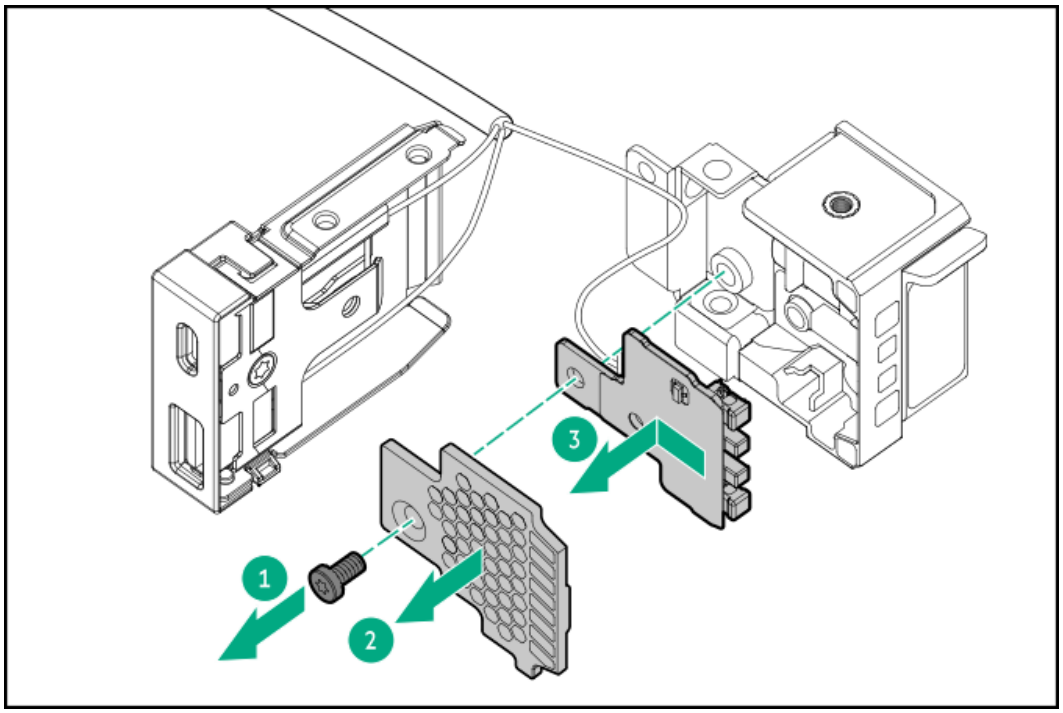


(Optional) Removing the switch board

12. Remove the power switch board:

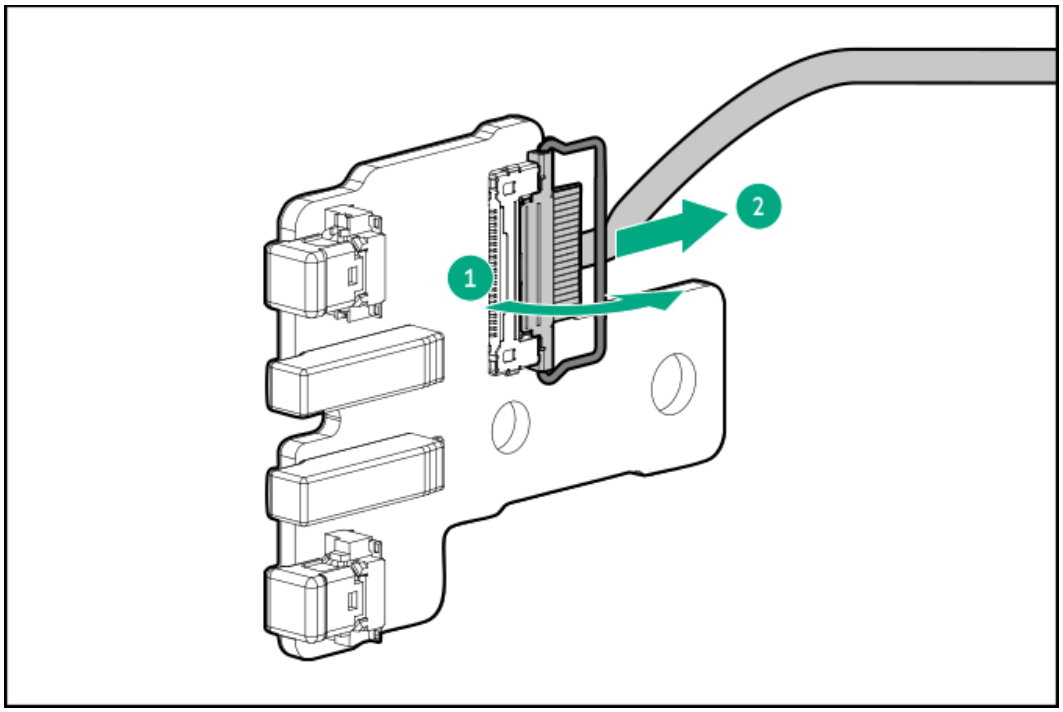
    a. Remove the screw to remove the right ear cover.

    b. Remove the switch board.



    c. Unlock the connector and disconnect the front I/O cable.

    Retain the front I/O cable. The cable will be connected to the new switch board spare.



d. Remove the Mylar from the back of the switch board.

   Retain the Mylar. The Mylar will be installed on the new switch board spare.

Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a power supply blank

About this task

WARNING

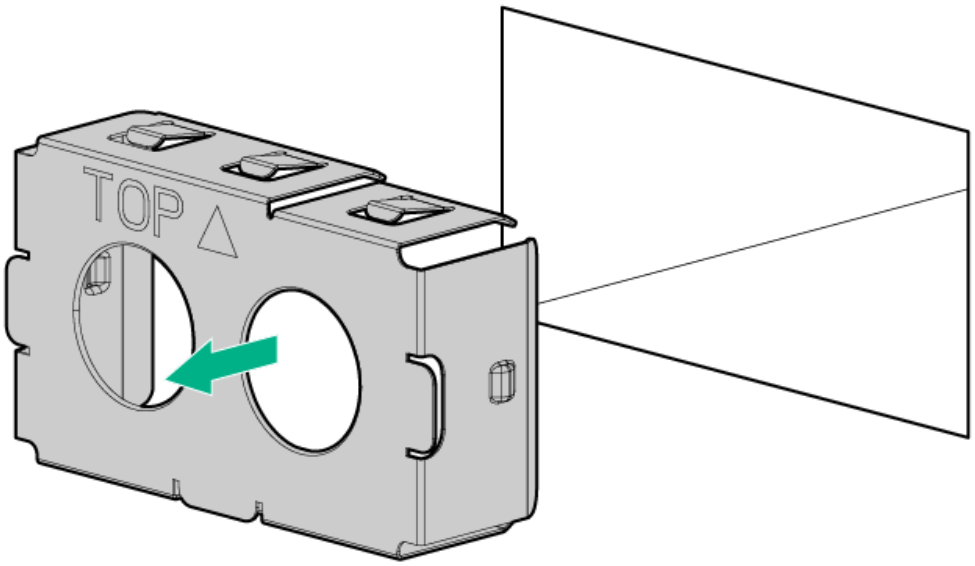
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

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.

Procedure

1. Remove the power supply blank.



2. Immediately install the replacement power supply blank spare.

Flexible Slot power supply replacement

Depending on the configuration and the regional location where the server was purchased, the server can be configured with one of the supported power supplies.

Subtopics

Power supply warnings and cautions
DC power supply warnings and cautions
DC power supply wire colors
Removing and replacing a hot-plug AC power supply
Removing and replacing a DC Flexible Slot power supply

Power supply 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 injury from electric shock hazards, do not open power supplies. Refer all maintenance, upgrades, and servicing to qualified personnel.

CAUTION

Mixing different types of power supplies in the same server might:

- Limit or disable some power supply features including support for power redundancy.
- Cause the system to become unstable and might shut down.

To ensure access to all available features, all power supplies in the same server should have the same output and efficiency ratings. Verify that all power supplies have the same part number and label color.

DC power supply warnings and cautions

WARNING

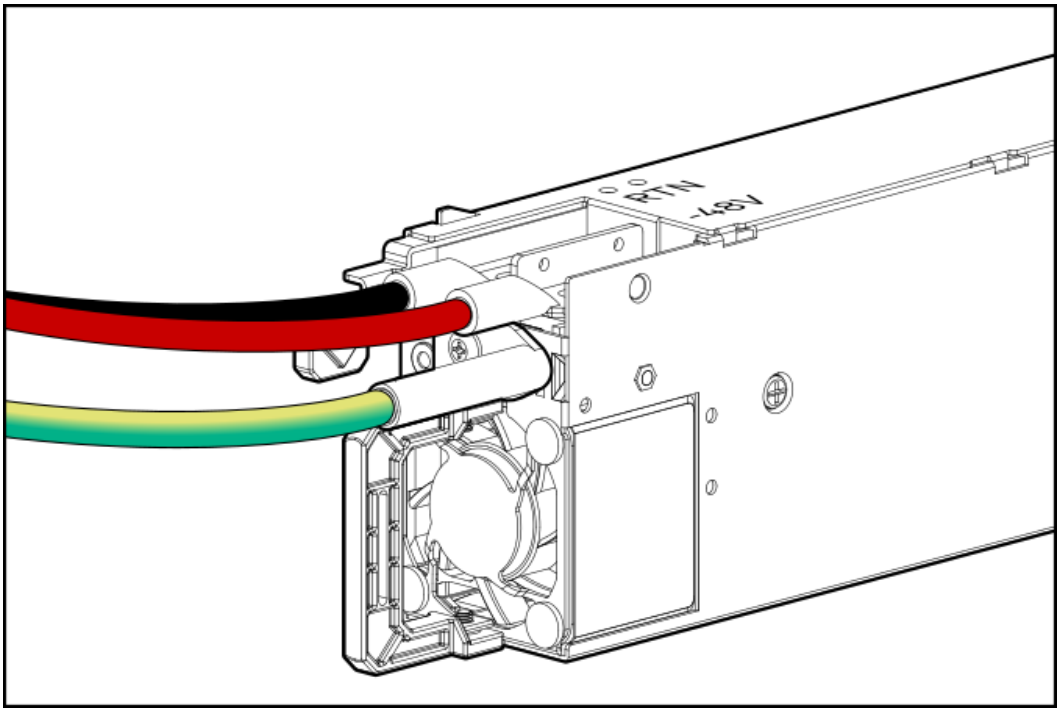
To reduce the risk of electric shock, be sure that the cable grounding kit is properly installed and connected to a suitable protective earth terminal before connecting the power source to the rack.

CAUTION

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

DC power supply wire colors



Wire color	Description	Wire slot
Red	Line wire	-48V
Black	Return wire	Return
Green + Yellow	Ground wire	Safety ground

Removing and replacing a hot-plug AC power supply

Prerequisites

Before you perform this procedure, make sure that you have the following items:

- Components included with the hardware kit
- No. 1 Phillips screwdriver

About this task

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, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

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 damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

CAUTION

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

CAUTION

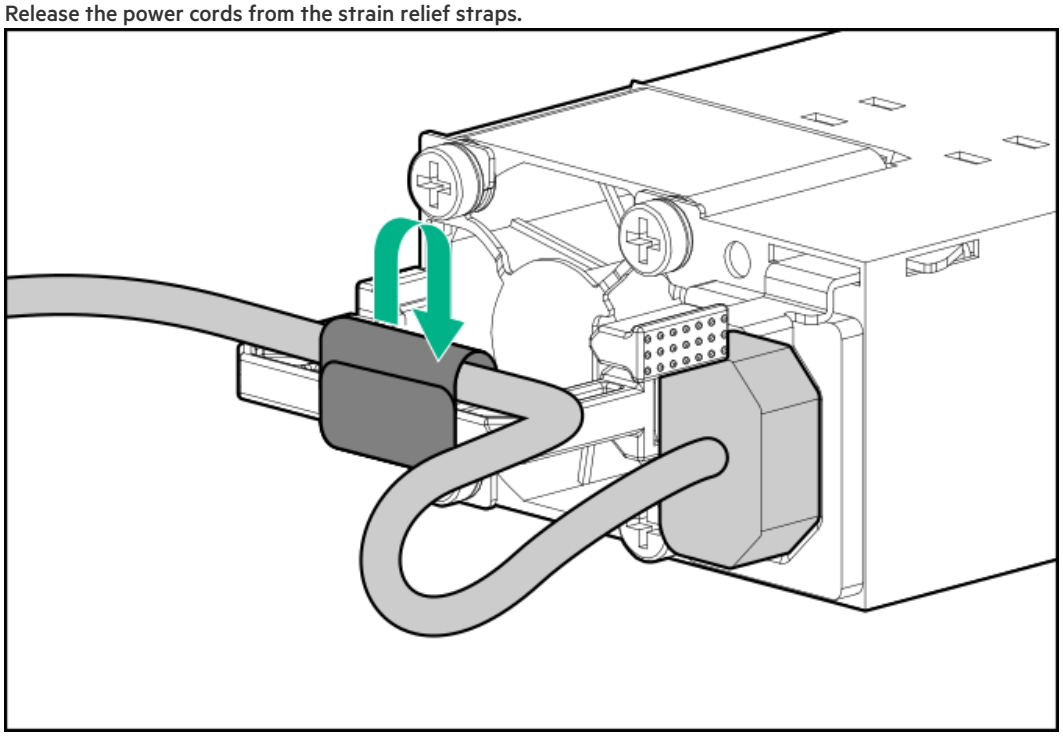
Mixing different types of power supplies in the same server might:

- Limit or disable some power supply features including support for power redundancy.
- Cause the system to become unstable and might shut down.

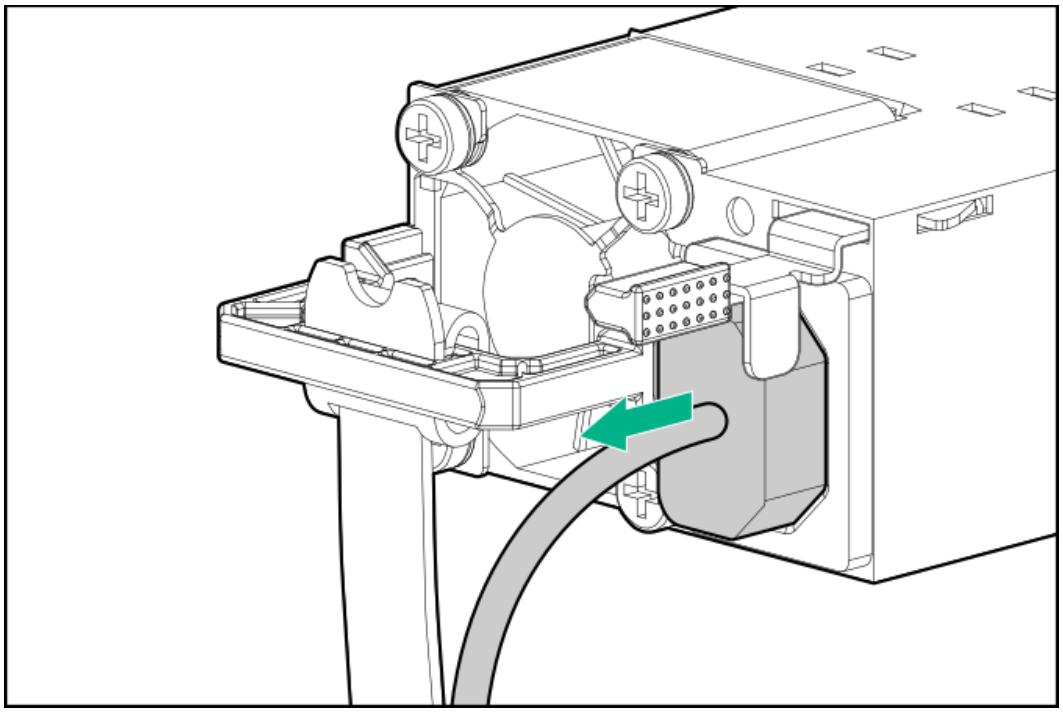
To ensure access to all available features, all power supplies in the same server should have the same output and efficiency ratings. Verify that all power supplies have the same part number and label color.

Procedure

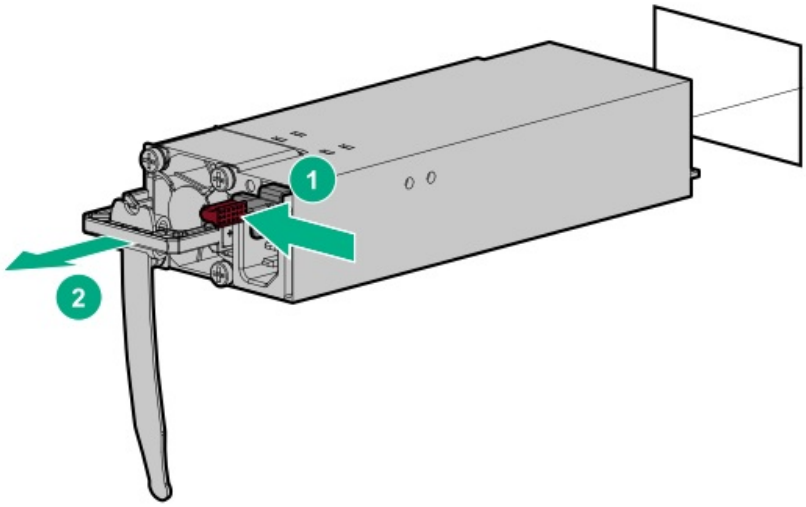
1. Release the cable management arm.
2. If the server is using a single power supply only, remove all power from the server:
   a. Back up all server data.
   b. Power down the server.
   c. Disconnect all peripheral cables from the server.
3. Release the power cords from the strain relief straps.



4. Disconnect the power cord from the power supply.



5. Remove the power supply.



Results

To replace the component, reverse the removal procedure.

Removing and replacing a DC Flexible Slot power supply

Prerequisites

- Before replacing a power supply, review the following:
  - Power supply warnings and cautions
  - DC power supply warnings and cautions
  - DC power supply wire colors

- Before you perform this procedure, make sure that you have a Phillips No. 2 screwdriver available.

About this task

WARNING

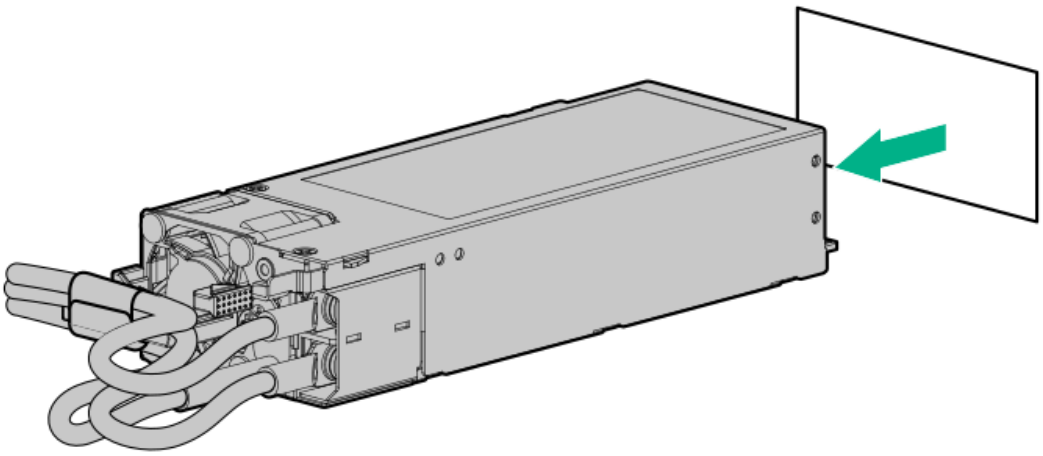
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

CAUTION

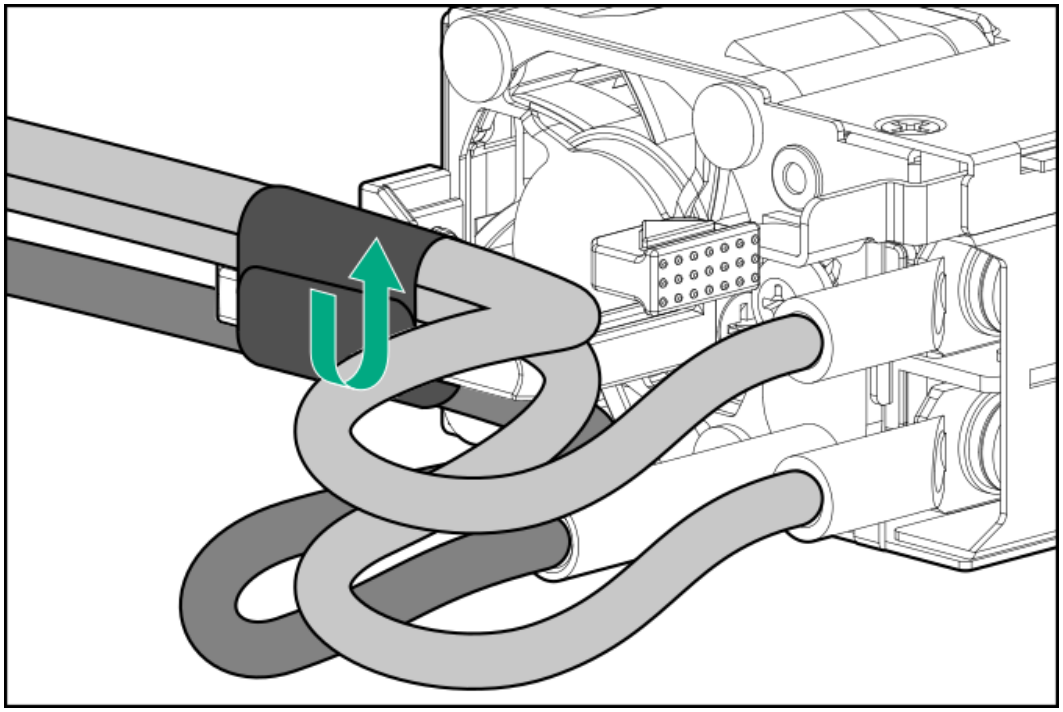
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

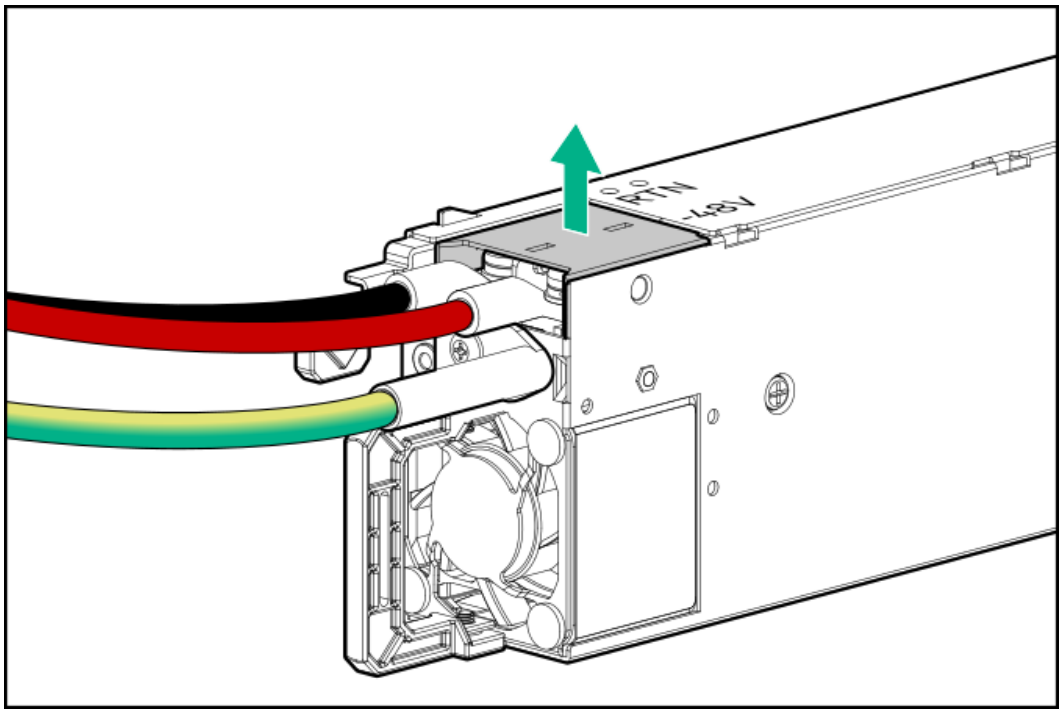
1. Power down the server.
2. To remove the DC power supply, do the following:
   a. Remove the power supply.



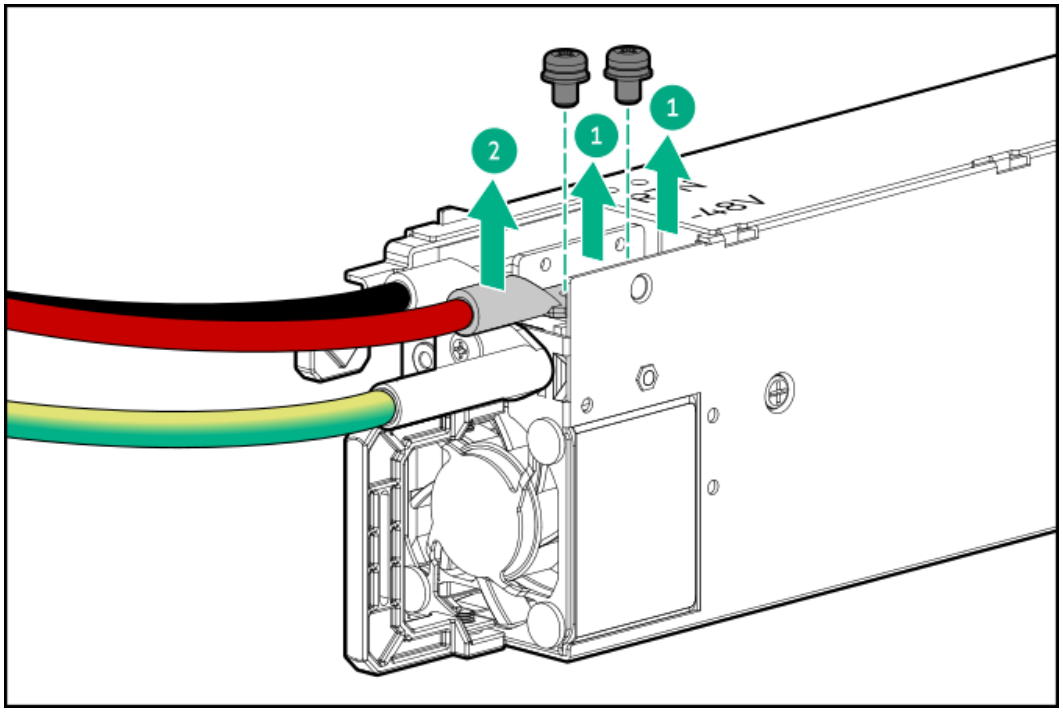
   b. Release the ground, positive return, and negative input wires from the strain relief strap.



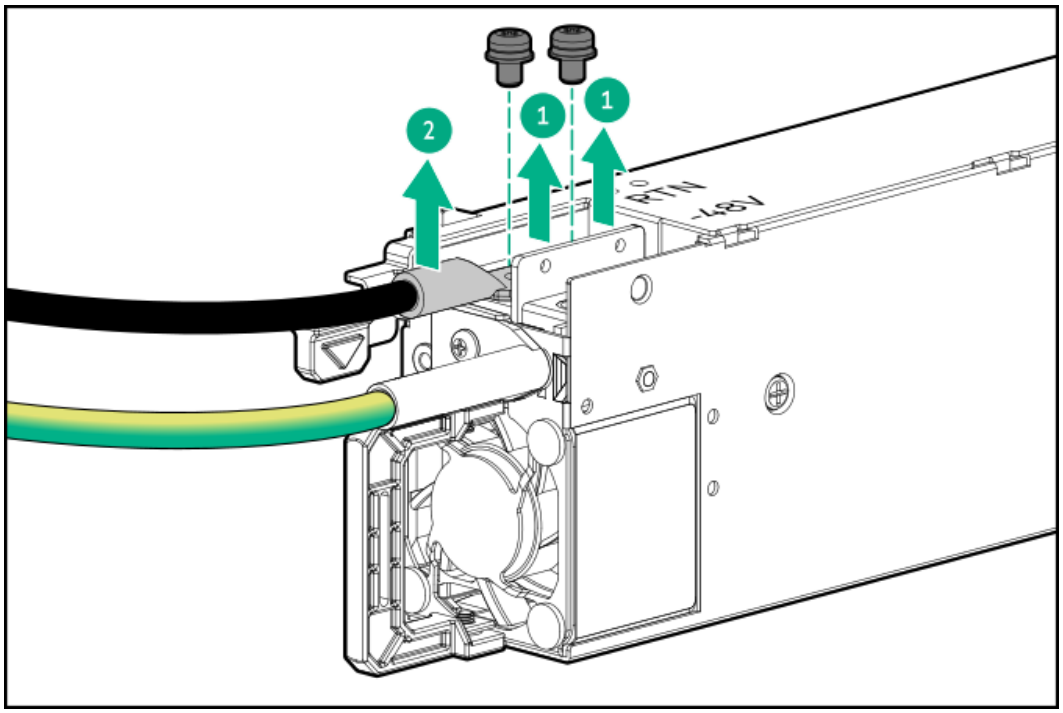
c. Remove the protective cover from the power supply.



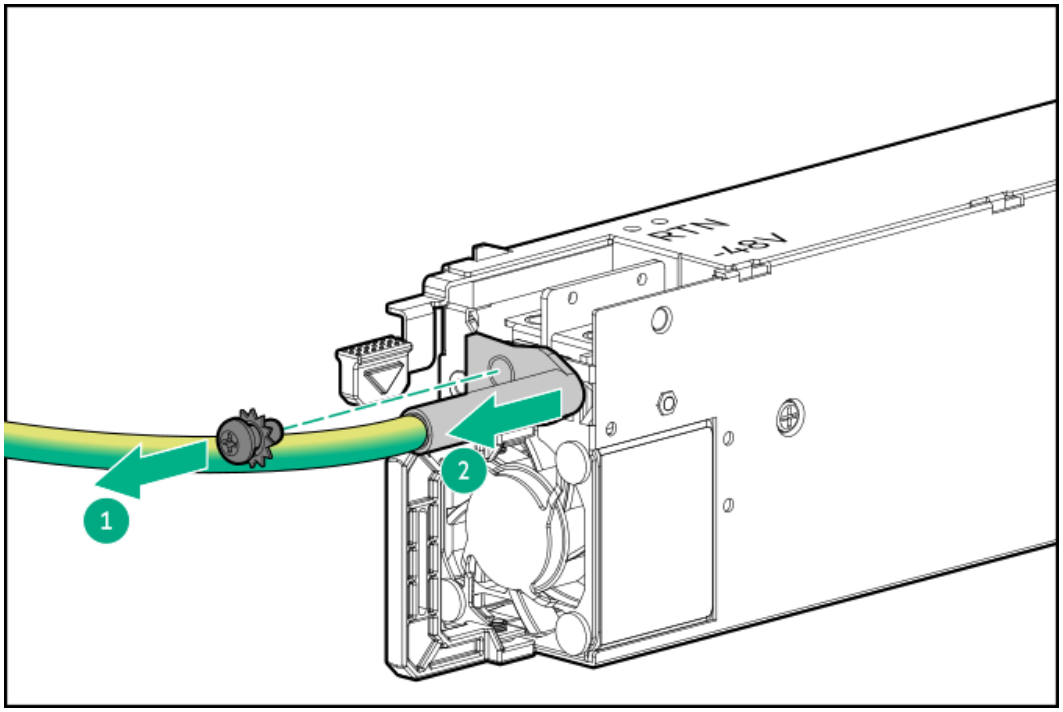
d. Remove the line wire (red) from the -48V slot on the DC power supply.



e. Remove the return wire (black) from the RTN slot on the DC power supply.



f. Remove the ground wire (green and yellow) from the DC power supply.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the System Insight Display

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

System Insight Display is supported in the 8 SFF server.

https://sketchfab.com/models/4e5ead76315d4abfad48b4228e7e9764/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

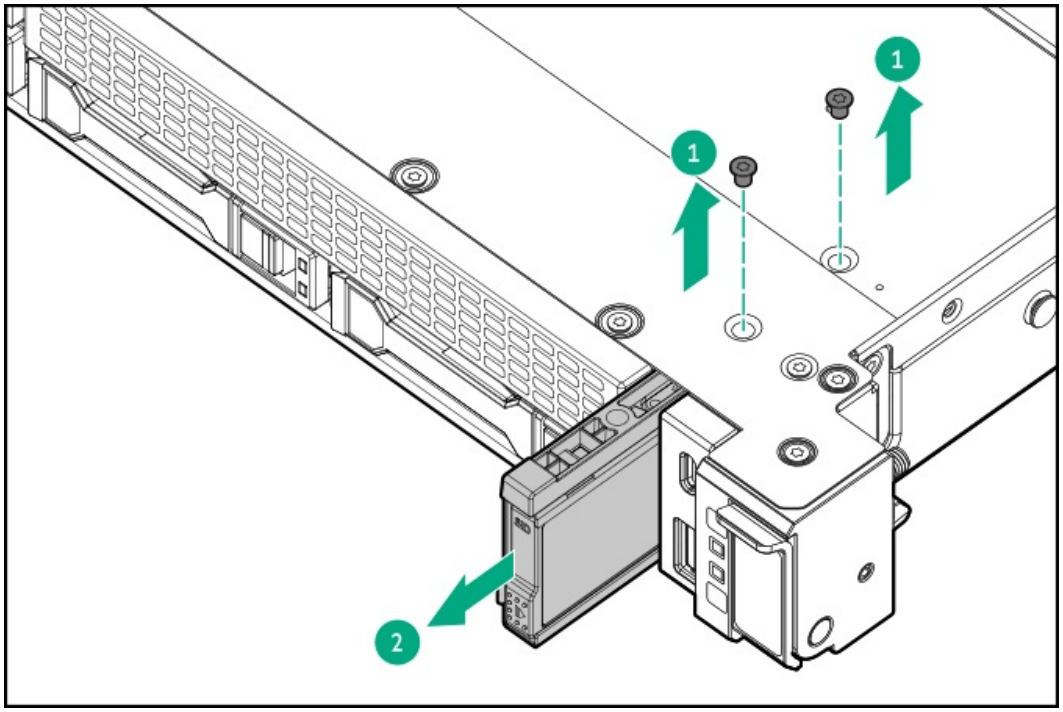
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   a. Extend the server from the rack.

b. Remove the server from the rack.

5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Disconnect the cable from the system board.
8. Remove the component.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Front OCP NIC kit replacement

The front OCP NIC hardware options and spare parts are supported in the 10 SFF / 20 E3.S server.

Subtopics

Removing and replacing a front OCP NIC or carrier kit
Removing and replacing the front OCP NIC cable
Removing and replacing the OCP NIC interposer

Removing and replacing a front OCP NIC or carrier kit

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

CAUTION

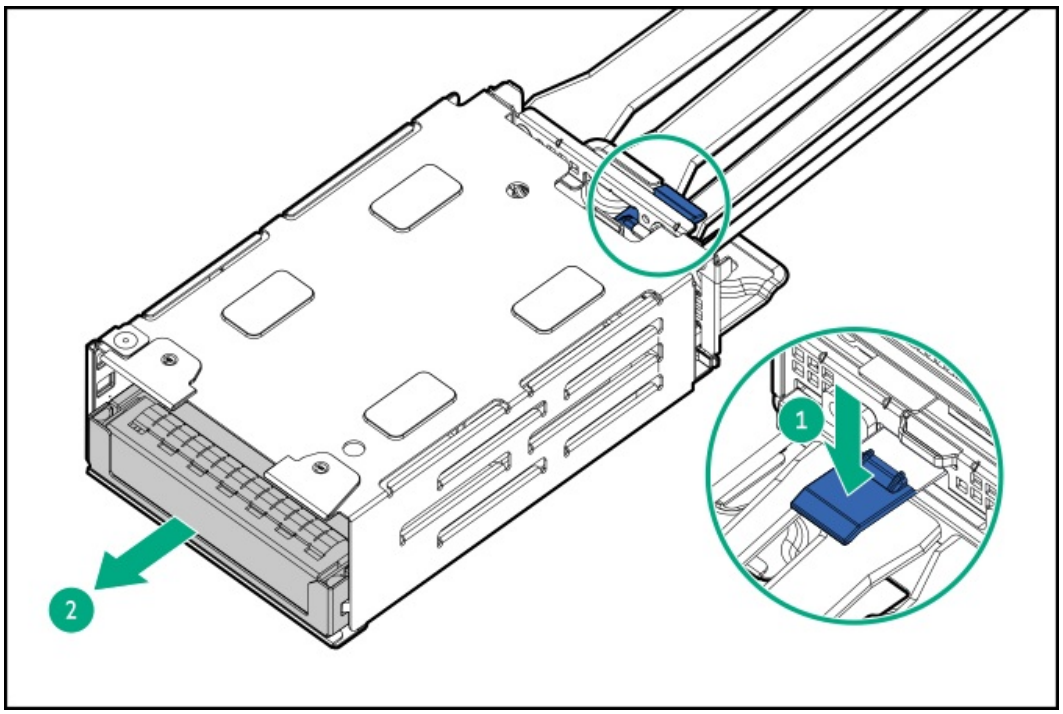
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

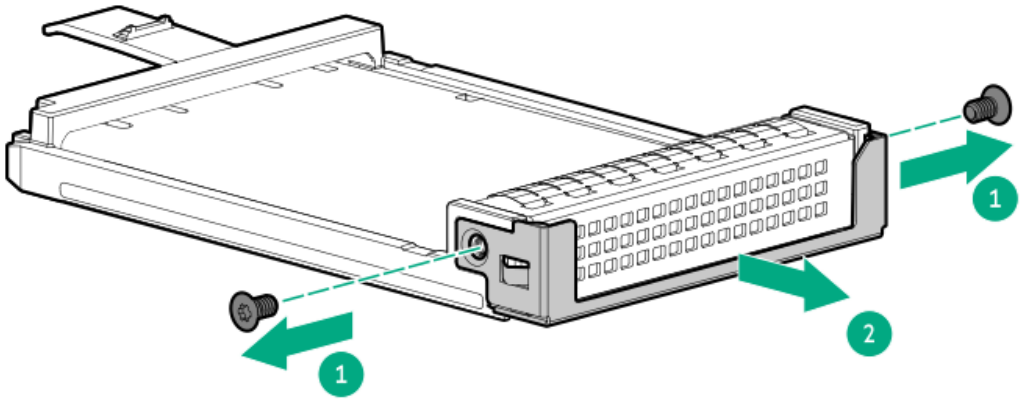
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

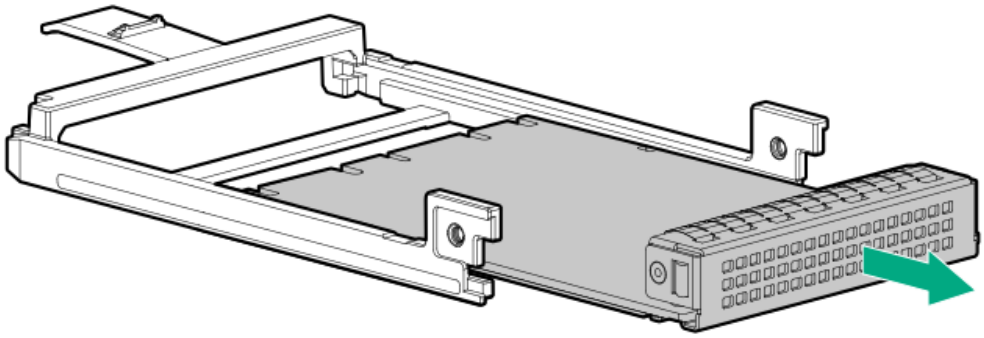
1. Back up all server data.
2. Power down the server.
3. If installed, release the cable management arm.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
7. Remove the access panel.
8. Remove the middle cover.
9. Remove the OCP NIC and carrier.



10. Remove the OCP NIC bracket.



11. Slide the OCP NIC out of the OCP NIC carrier.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the front OCP NIC cable

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

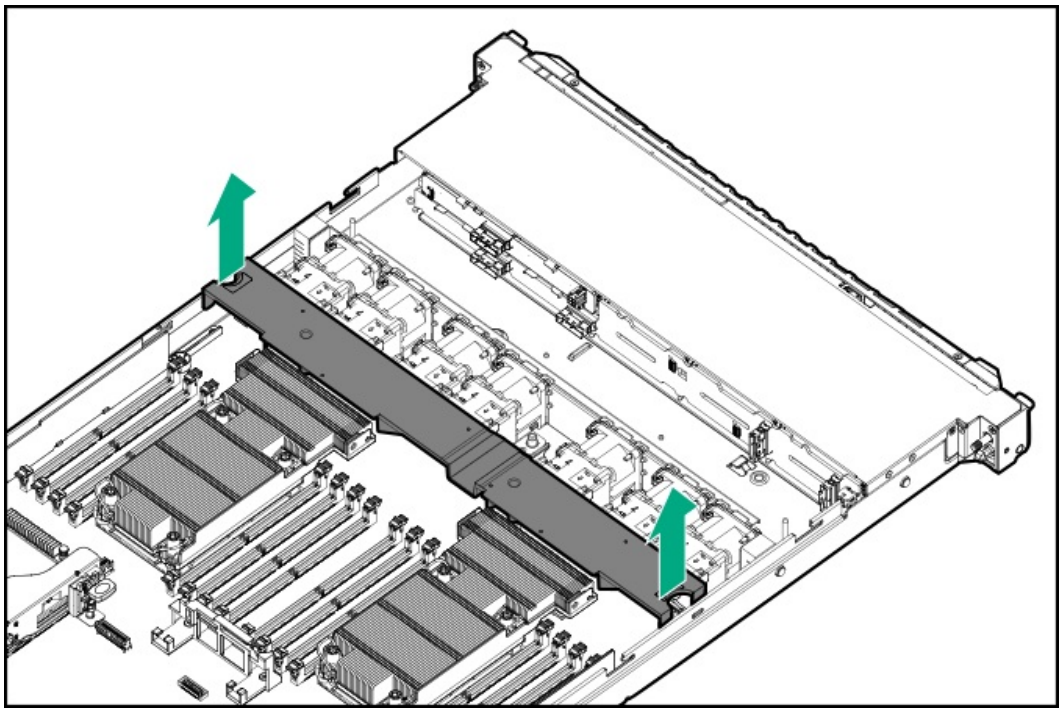
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

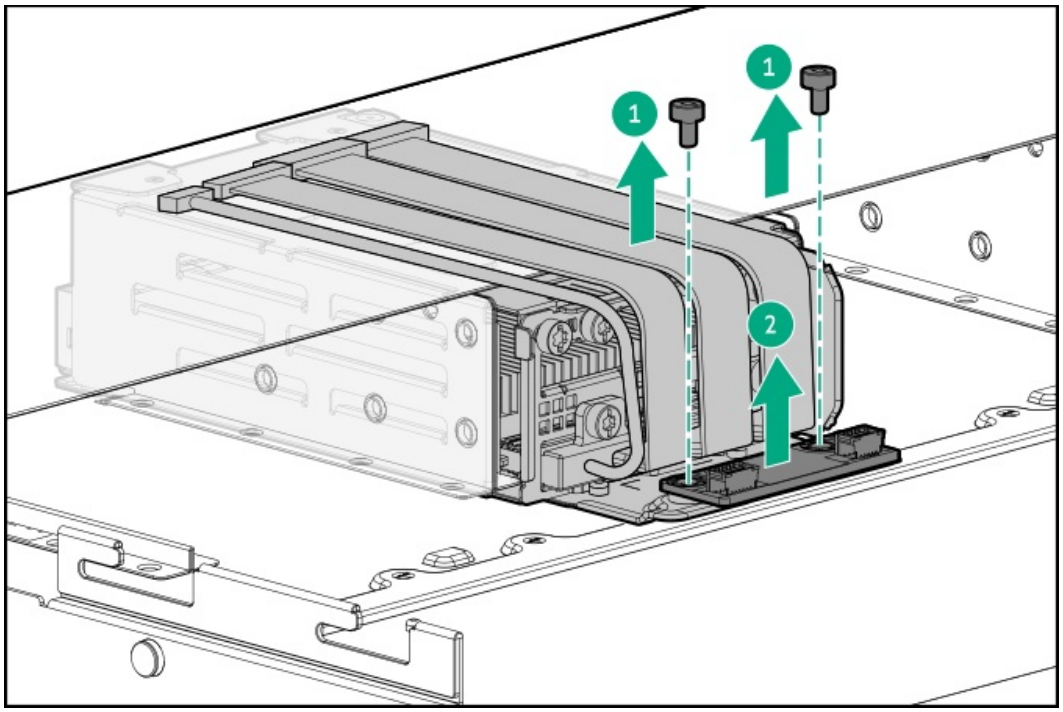
1. Back up all server data.
2. Power down the server.

3. If installed, release the cable management arm.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
7. Remove the access panel.
8. If installed, remove the air baffle.

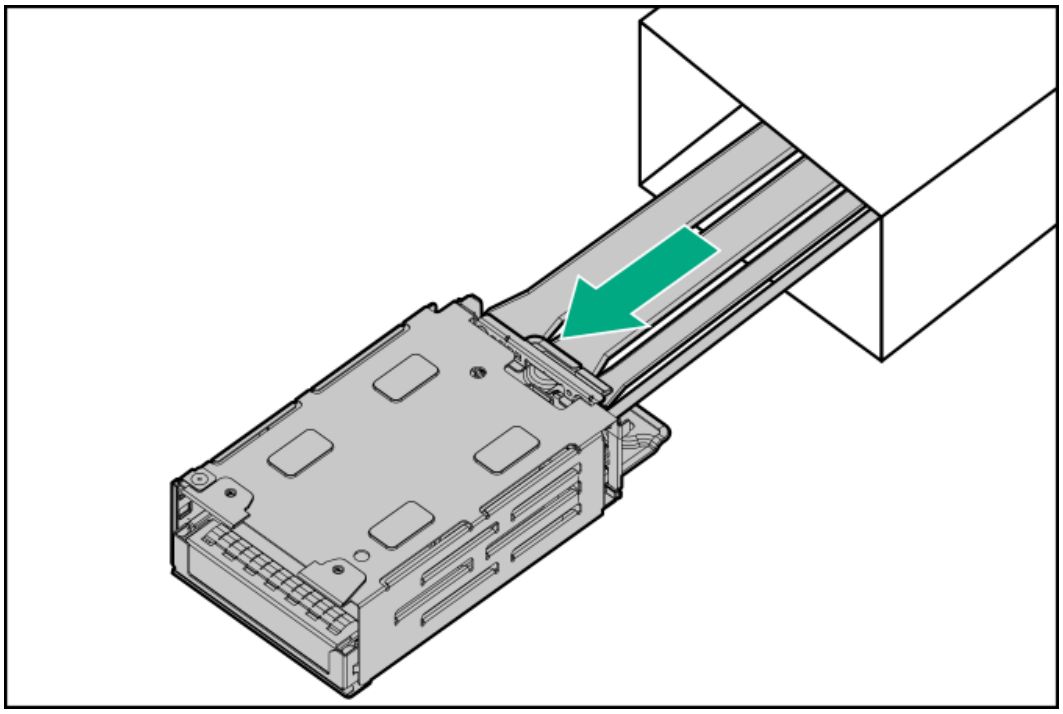
   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.



9. Remove the middle cover.
10. Disconnect the front OCP cable from the system board and the interposer .
11. Do the following:
    a. Disconnect the front OCP NIC cable from the PHY board .
    b. Remove the PHY board.

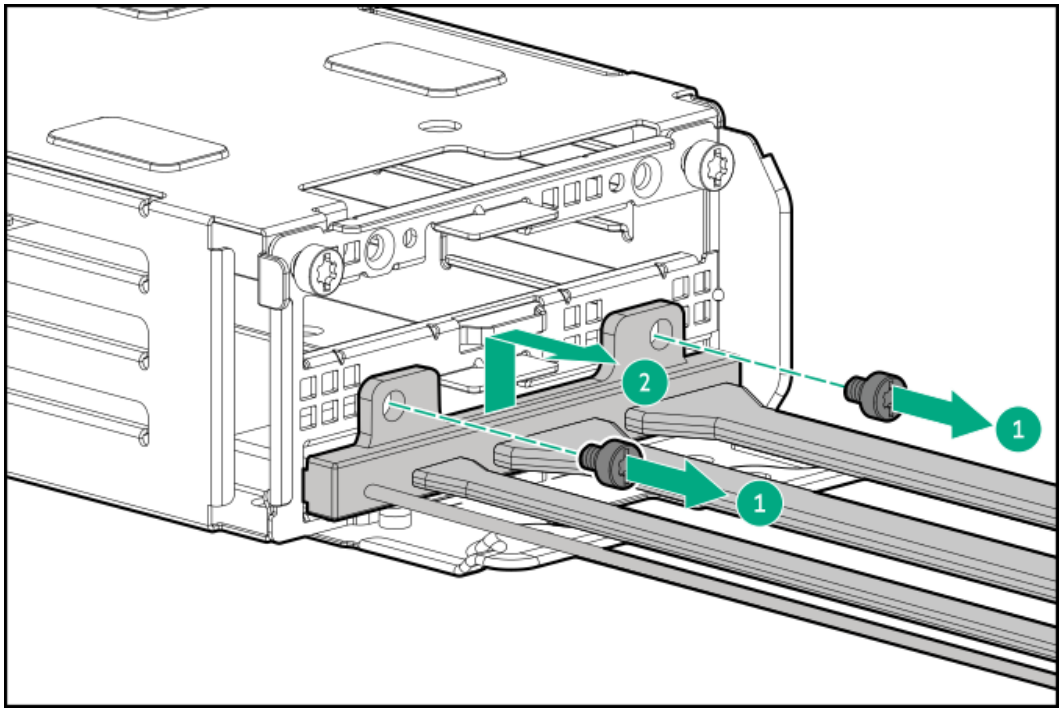


12. Remove the multipurpose cage.



13. Remove the OCP NIC.
14. Remove the OCP NIC cable.

    Bay 3 is shown. The removal procedures for Bay 1 and Bay 3 are similar.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the OCP NIC interposer

About this task

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

CAUTION

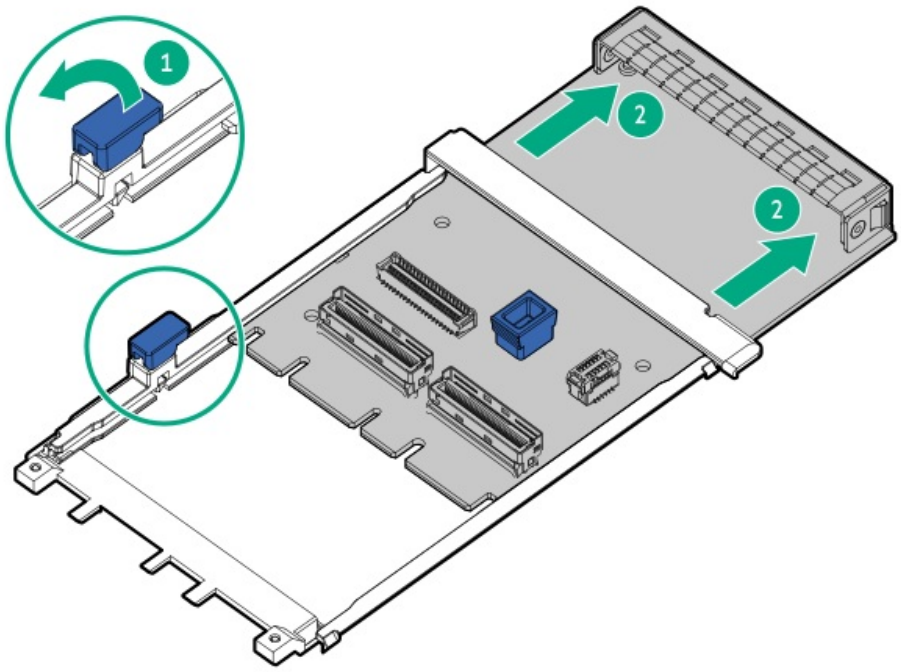
To prevent improper cooling and thermal damage, do not operate the server unless all OCP slots have either an OCP option or a slot blank installed.

Procedure

1. Back up all server data.
2. Power down the server.
3. If installed, release the cable management arm.
4. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

5. Disconnect all peripheral cables from the server.
6. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
7. Remove the access panel.
8. Remove the riser cages.
9. Do the following:
   - Disconnect the front OCP NIC cable from the OCP NIC interposer
   - Disconnect the Phy board cable from the OCP NIC interposer
10. Remove the OCP NIC interposer:
    a. Pivot the locking pin to the open (vertical) position.
    b. Push the blue touch point to disengage the interposer from the slot.
    c. Remove the interposer from the slot.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Fan replacement

Subtopics

Requirements for redundant fan support
Removing and replacing a fan
Removing and replacing a fan blank

Requirements for redundant fan support

The server must meet the minimum requirement for the number of functioning fan rotors to provide fan redundancy support. For the fan requirements, see the following table:

Fan configuration	Total number of rotors	Fan rotors required for redundancy	Fan rotors required for operation
7 standard fans (dual-rotor)	14	14	13
7 high performance fans (dual-rotor)			
5 standard fans (dual-rotor) *	10	10	9
7 liquid cooling fans (single-rotor)	7	7	6

* This is supported on servers using the one-processor configuration.

Removing and replacing a fan

Prerequisites

Before you perform this procedure, review the following:

- Fan and heatsink requirements
- Requirements for redundant fan support

About this task

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.

IMPORTANT

For optimum cooling, install fans in all primary fan locations.

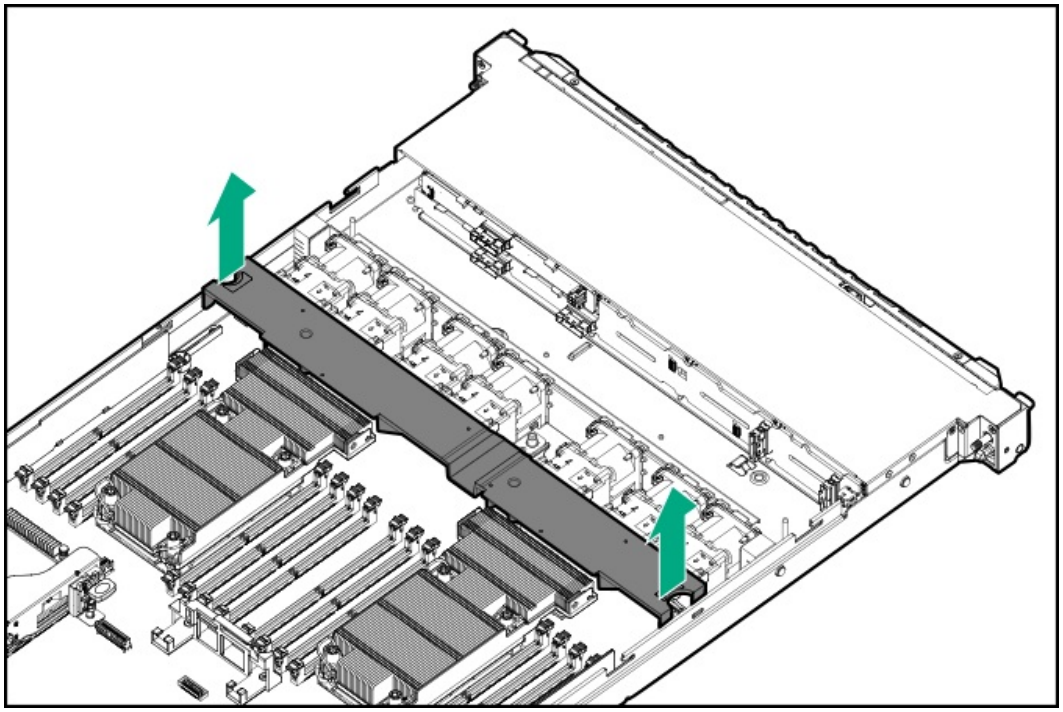
IMPORTANT

The fan setup can either be all 7 of standard or high performance fans. Do not mix fan types in the same server.

Procedure

1. Extend the server from the rack.
2. Remove the access panel.
3. If installed, remove the air baffle.

   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.



4. Remove the fan.

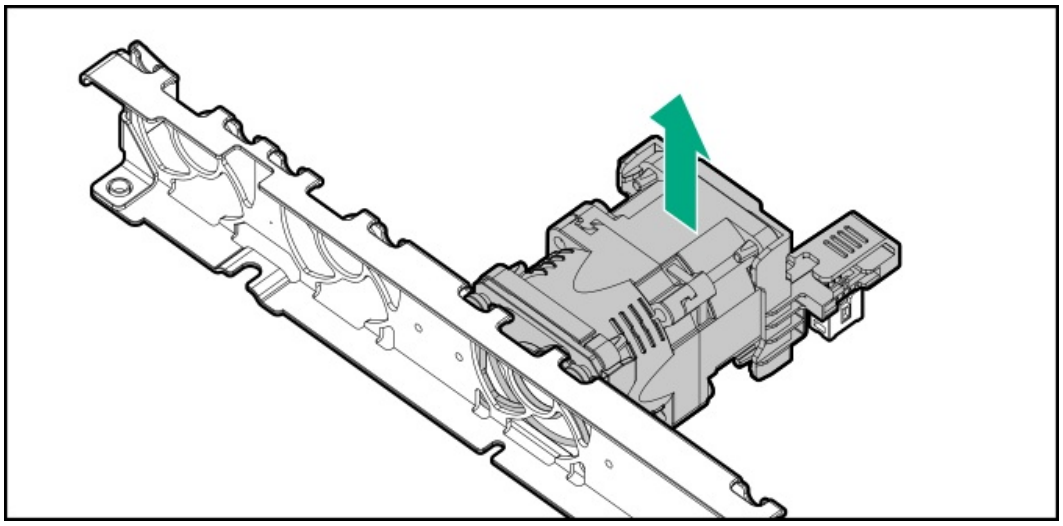
IMPORTANT

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

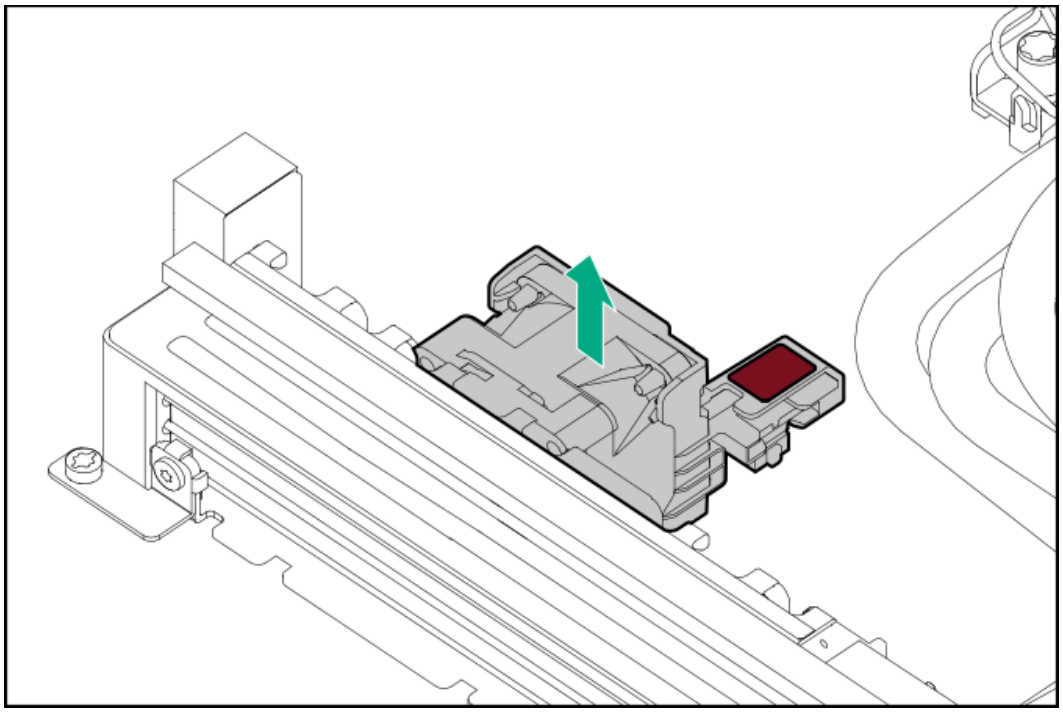
CAUTION

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

- Standard or high performance fan:



- Liquid cooling fan:



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a fan blank

About this task

CAUTION

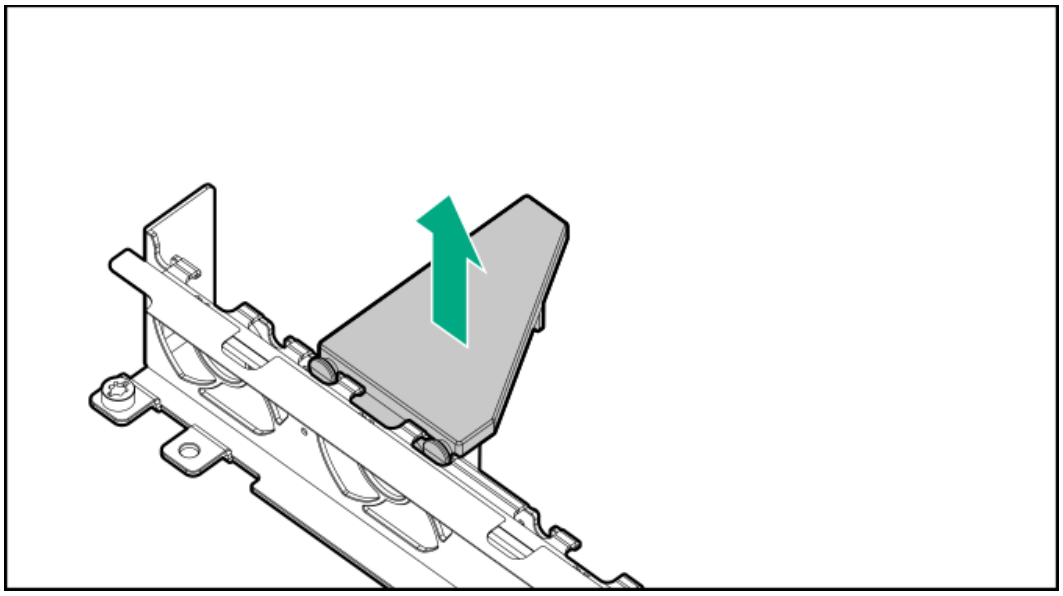
Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

IMPORTANT

For optimum cooling, install fans in all primary fan locations.

Procedure

1. Extend the server from the rack.
2. Remove the access panel.
3. Remove the fan blank.



Results

To replace the component, reverse the removal procedure.

Media device replacement

Subtopics

Removing and replacing the optical disk drive / DisplayPort / USB in the 4 LFF server
Removing and replacing the optical disk drive / DisplayPort / USB in the 8 SFF server
Removing and replacing an optical disk drive / DisplayPort / USB in drive boxes 4–5

Removing and replacing the optical disk drive / DisplayPort / USB in the 4 LFF server

About this task

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.

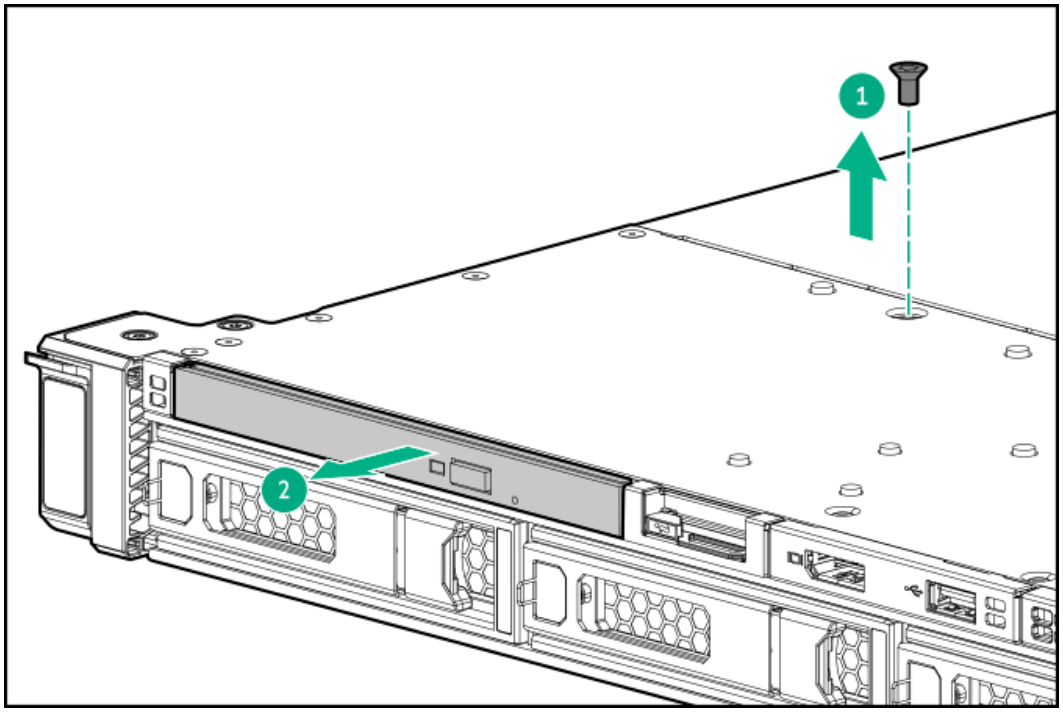
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

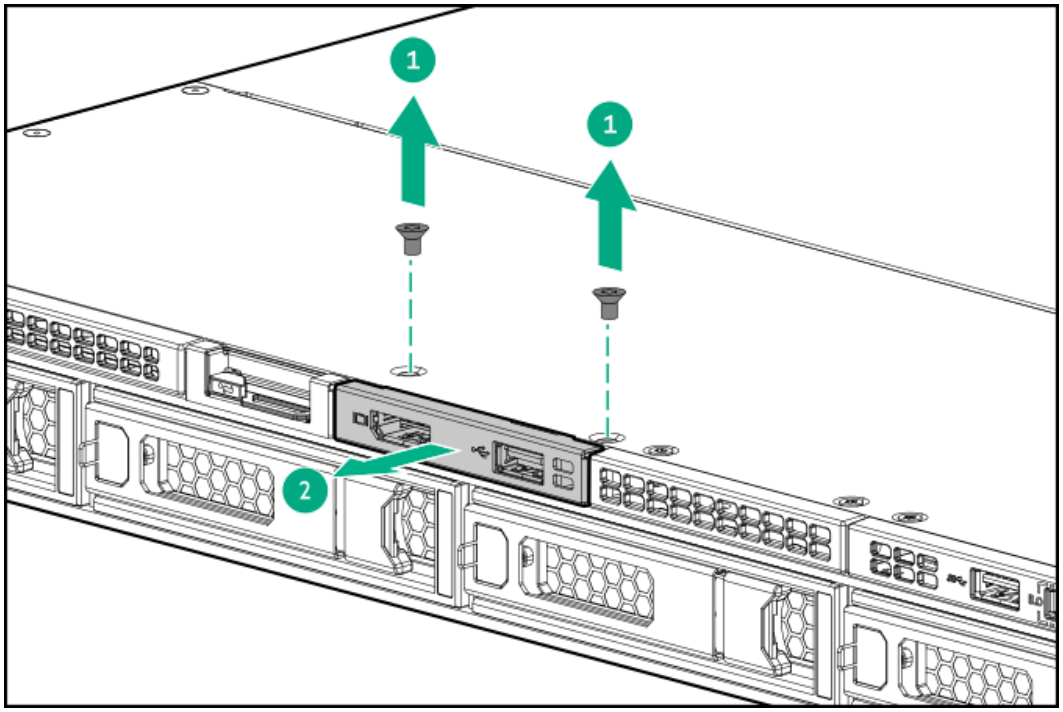
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.

- Remove the server from the rack.

4. Remove the access panel.
5. Disconnect the optical drive cable from the system board.
6. Disconnect the display port/USB cable from the system board.
7. Remove the optical disk drive.



8. Remove the DisplayPort/USB.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the optical disk drive / DisplayPort / USB in the 8 SFF server

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

CAUTION

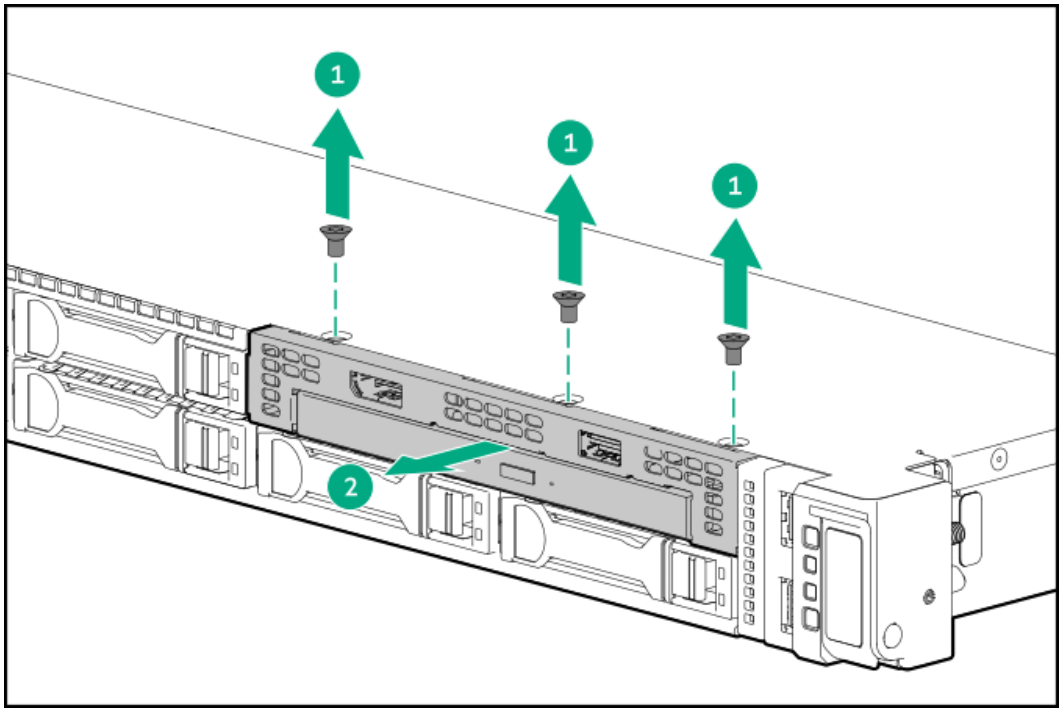
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

CAUTION

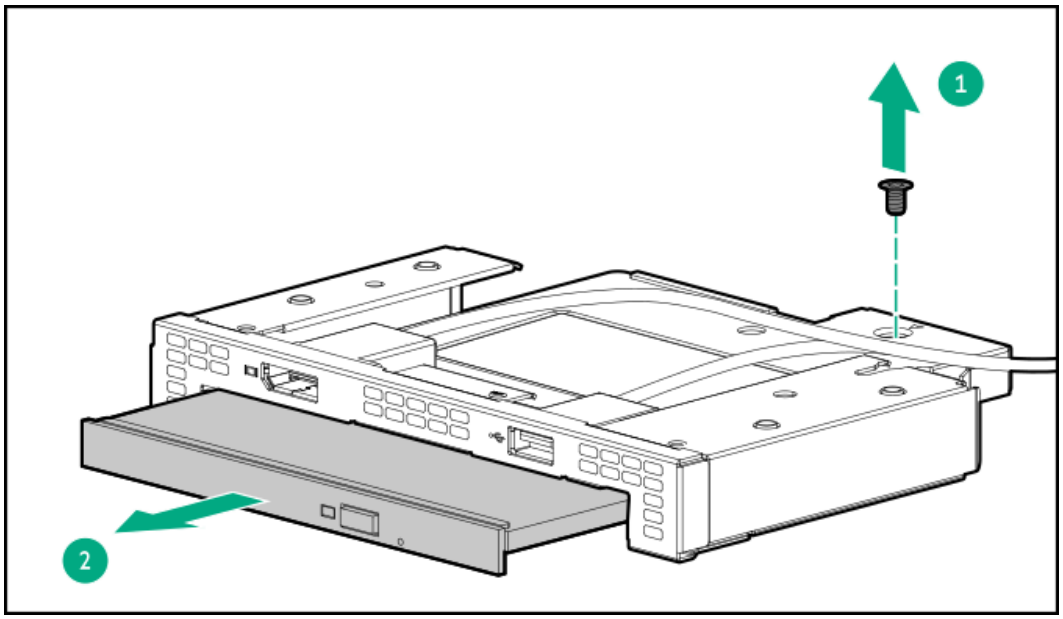
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Do the following:
   - Disconnect the DisplayPort/USB cable from the system board.
   - If installed, disconnect the optical disk drive cable from the system board and optical drive.
6. Remove the component.



7. If installed, remove the optical disk drive.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing an optical disk drive / DisplayPort / USB in drive boxes 4–5

Prerequisites

Before you perform this procedure, make sure that you have the following items available:

- T-10 Torx screwdriver
- T-15 Torx screwdriver

About this task

CAUTION

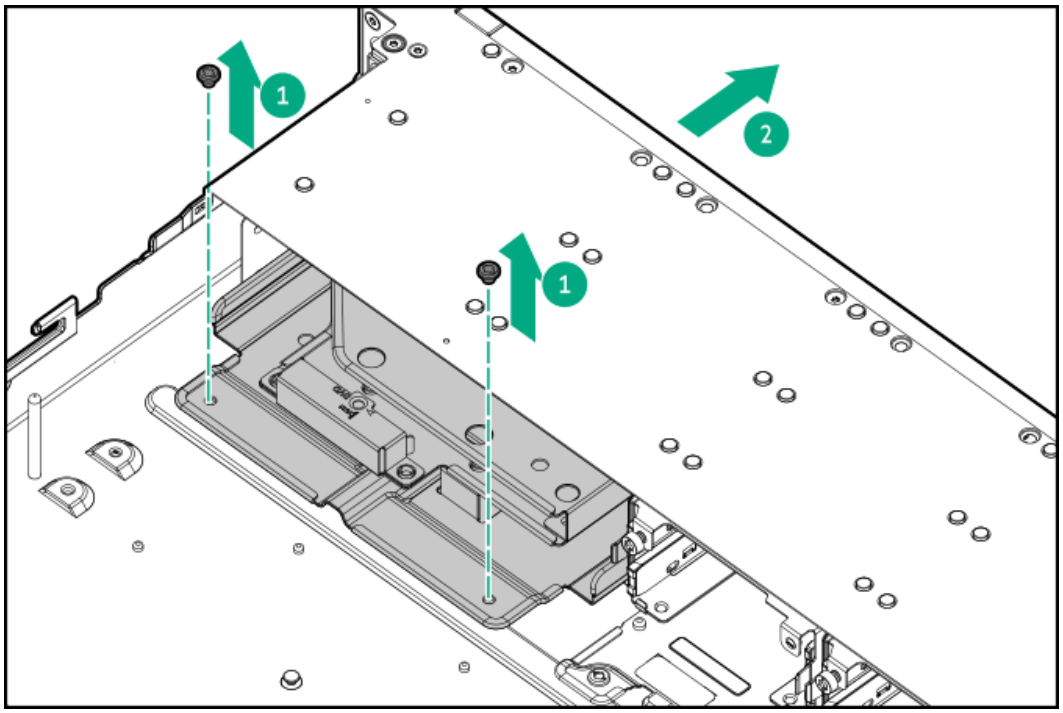
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

CAUTION

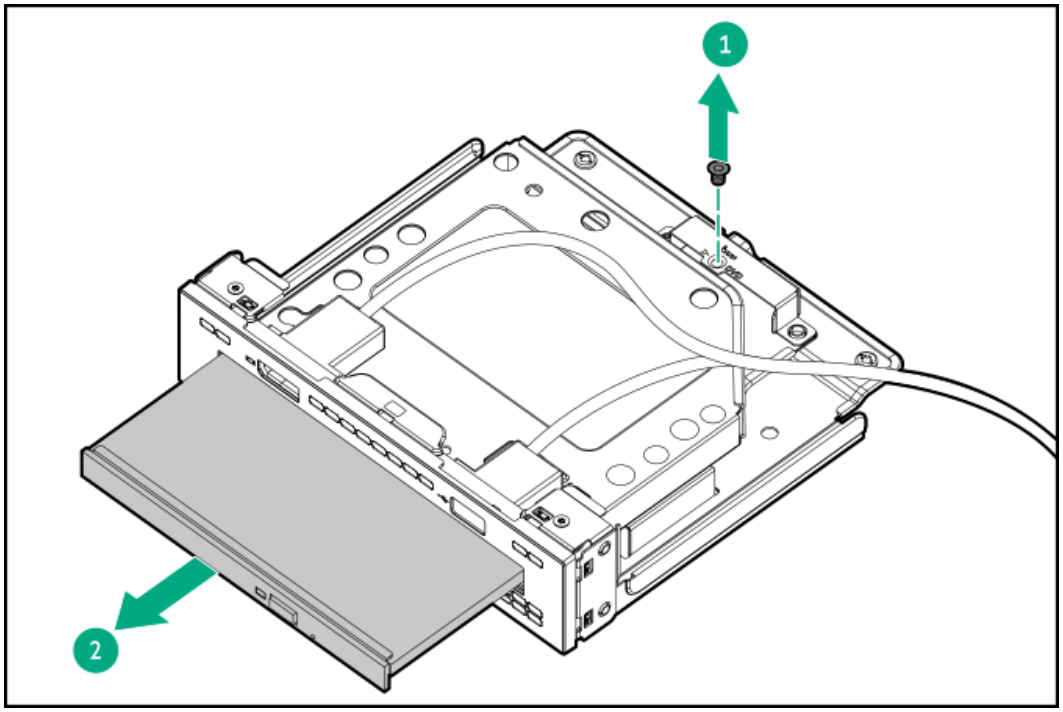
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Remove the middle cover.
6. Disconnect the DisplayPort/USB cable from the system board .
7. If installed, disconnect the optical disk drive cable from the system board and optical drive .
8. Remove the component.



9. If installed, remove the optical disk drive.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Drive backplane replacement

Subtopics

Removing and replacing the 4 LFF drive backplane
Removing and replacing the 8 SFF drive backplane
Removing and replacing the 2 SFF drive backplane in the 8 + 2 SFF drive configuration
Removing and replacing the stacked 2 SFF / 4 E3.S drive backplane in the 10 SFF / 20 E3.S server

Removing and replacing the 4 LFF drive backplane

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

https://sketchfab.com/models/6e429b876c674072af9b4d964e7c2919/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

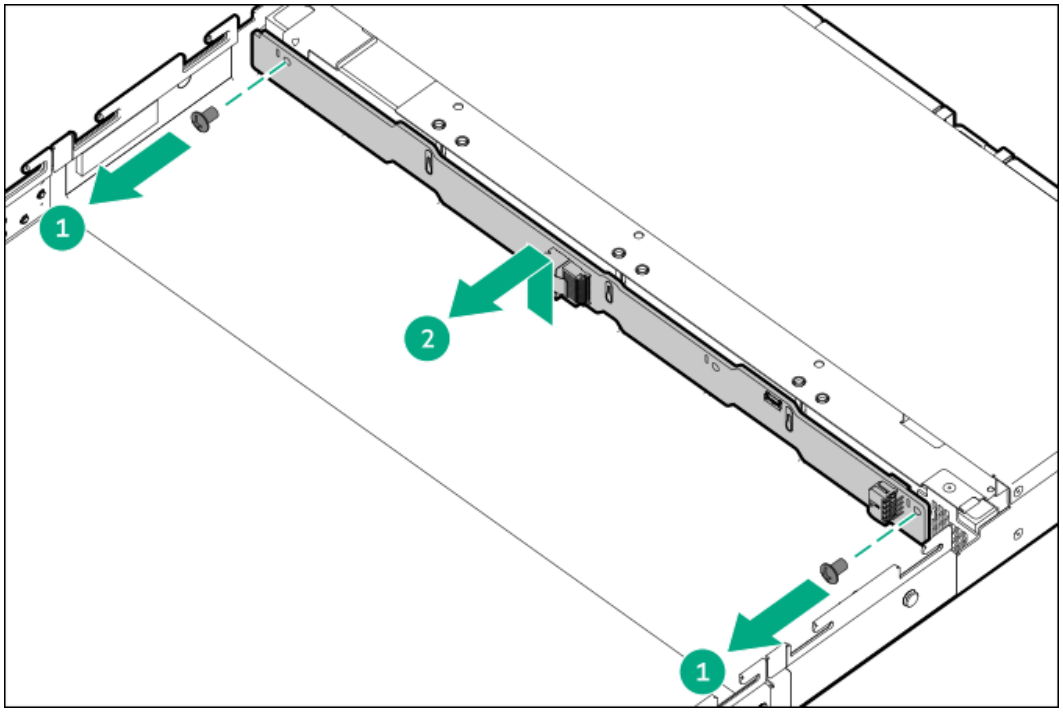
When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Remove all drives and drive blanks.

   Note where each drive is located.
8. If installed, remove the Smart Storage Battery.
9. Disconnect all cables from the drive backplane.
10. Remove the drive backplane.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the 8 SFF drive backplane

About this task

https://sketchfab.com/models/10076a77c0c244c5a8f5d783e4cbd90b/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

5. Do one of the following:

   a. Extend the server from the rack.

   b. Remove the server from the rack.

6. Remove the access panel.

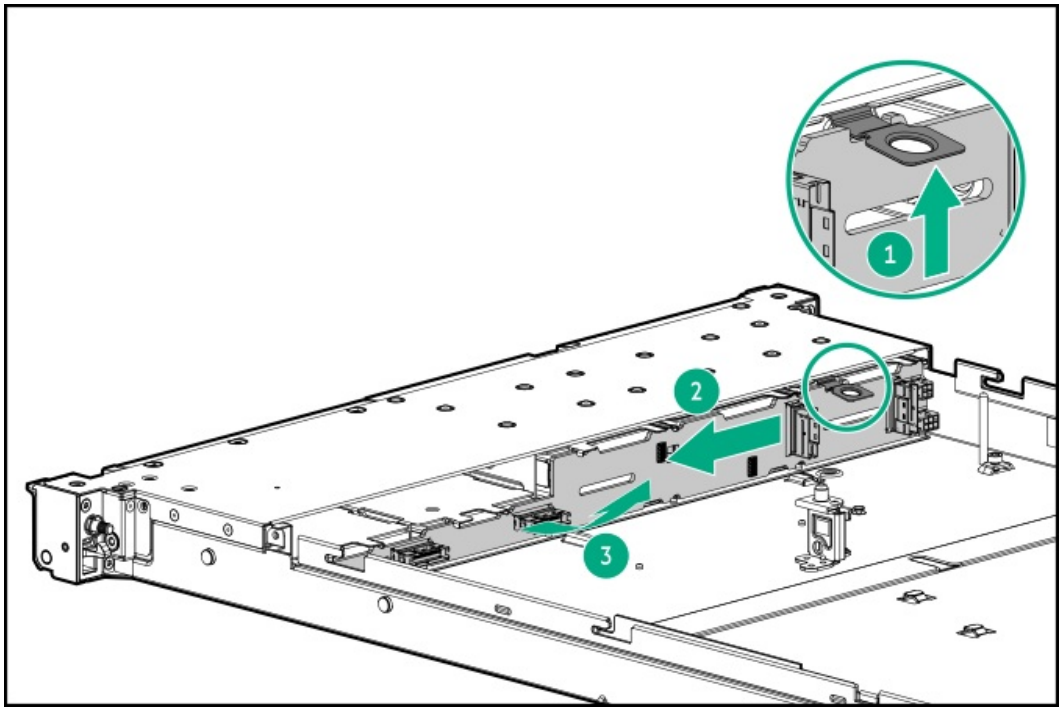
7. Remove all drives and drive blanks.

   Note where each drive is located.

8. If installed, remove the Smart Storage Battery.

9. Disconnect and remove all cables from the drive backplane.

10. Remove the drive backplane.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the 2 SFF drive backplane in the 8 + 2 SFF drive configuration

About this task

https://sketchfab.com/models/dc0184fdd0c7413bbaf526de160f5556/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

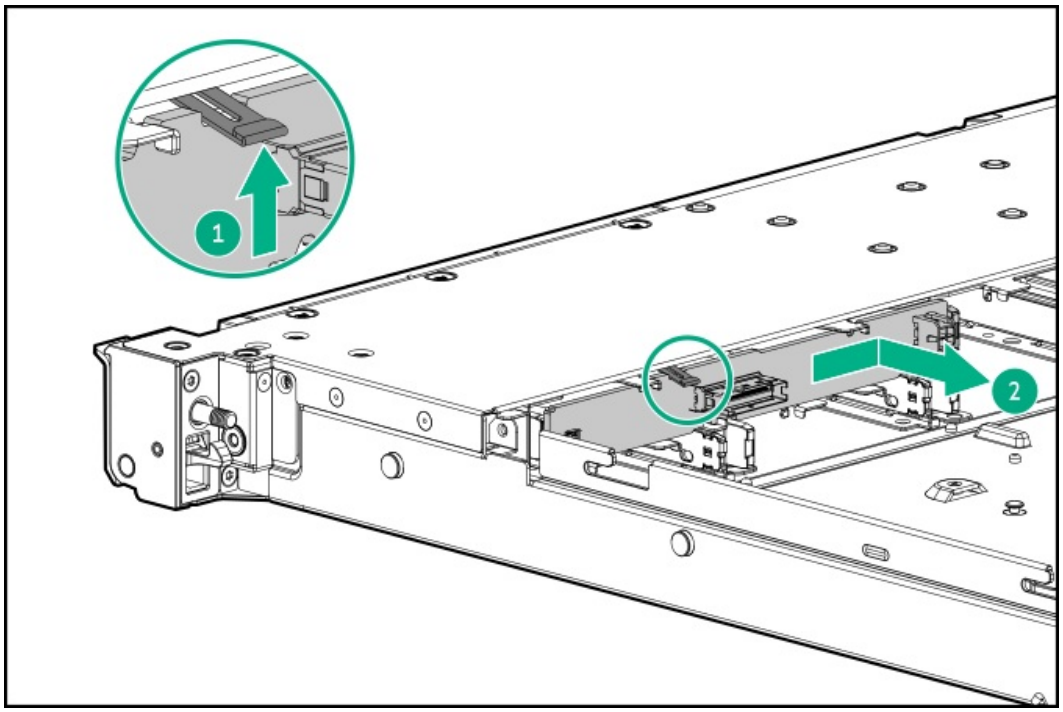
When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Remove all drives and drive blanks.

   Note where each drive is located.
8. If installed, remove the Smart Storage Battery.
9. Disconnect and remove all cables from the drive backplane.
10. Remove the drive backplane.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the stacked 2 SFF / 4 E3.S drive backplane in the 10 SFF / 20 E3.S server

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

https://sketchfab.com/models/989cb6d1a1b64442b9d9dd8d831d437b/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

A drive cage must be installed in drive box 1 to support the installation of the serial number/iLO information pull tab.

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

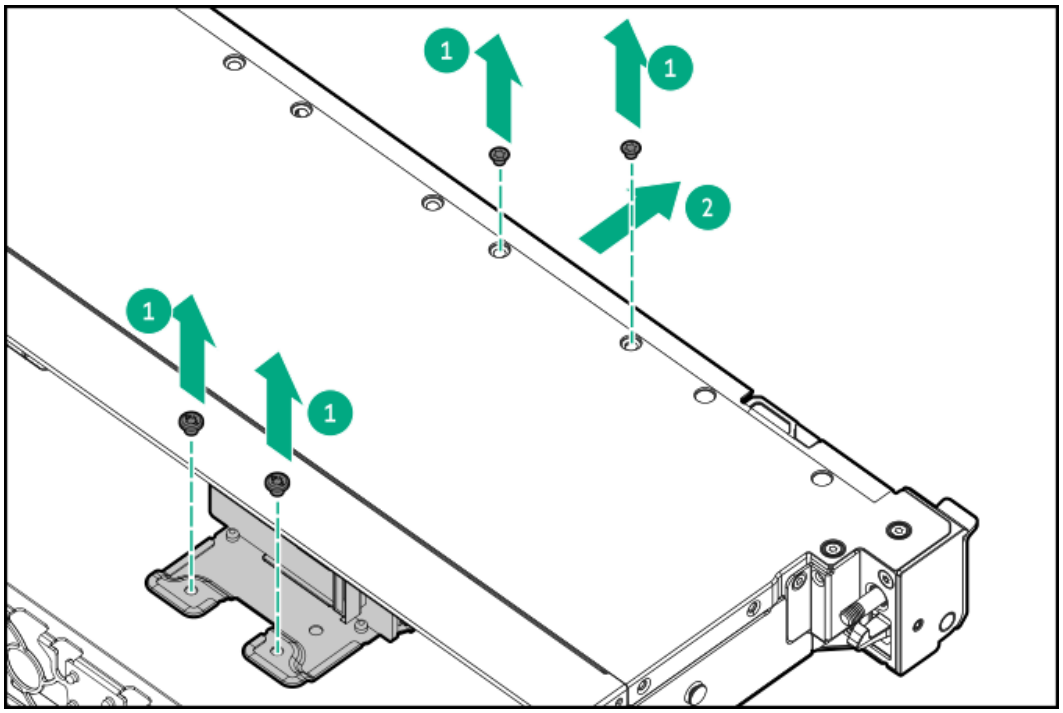
- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

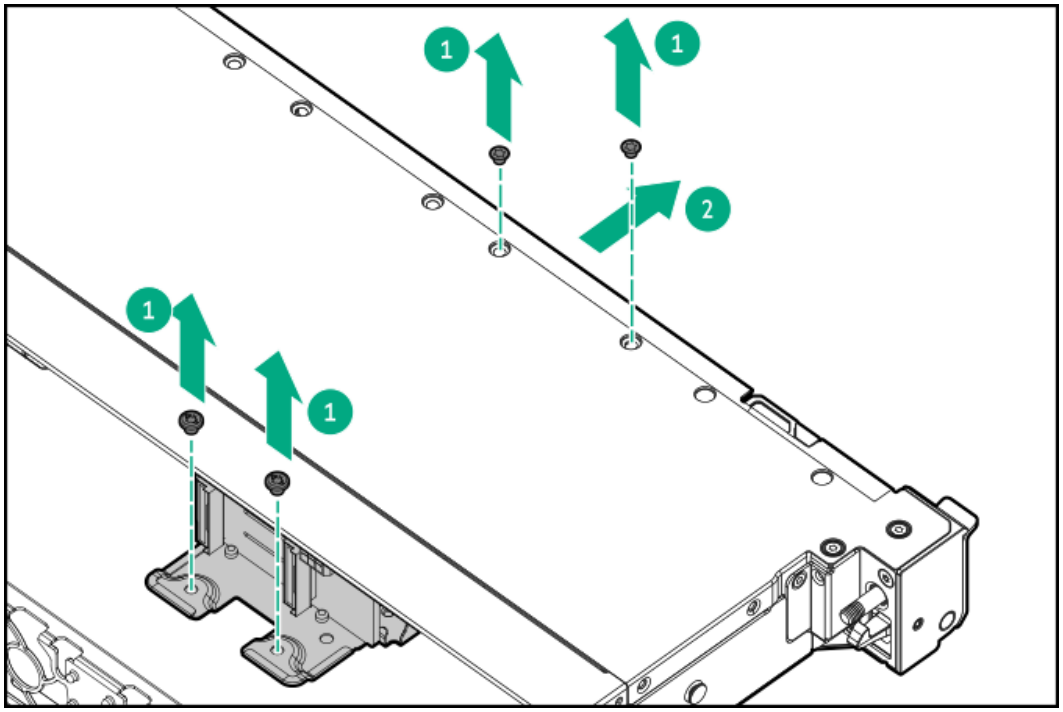
1. Back up all server data.

2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Remove all drives and drive blanks from the drive box.

   Note where each drive is located.
8. If installed, remove the Smart Storage Battery.
9. Disconnect and remove all cables from the drive backplane.
   - 2 SFF drive backplane
   - 4 E3.S drive backplane
10. Remove the drive cage from the server.
    - 2 SFF drive cage

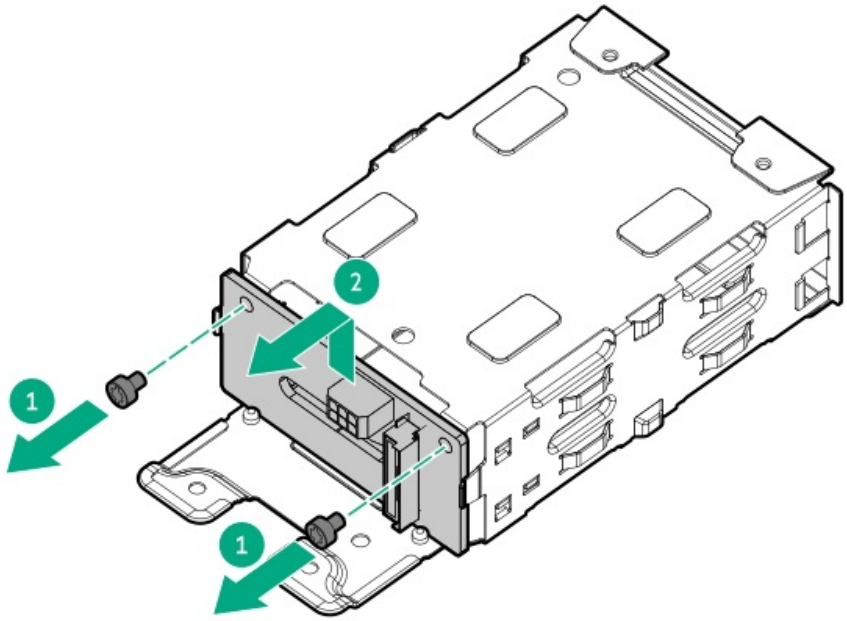


    - 4 E3.S drive cage

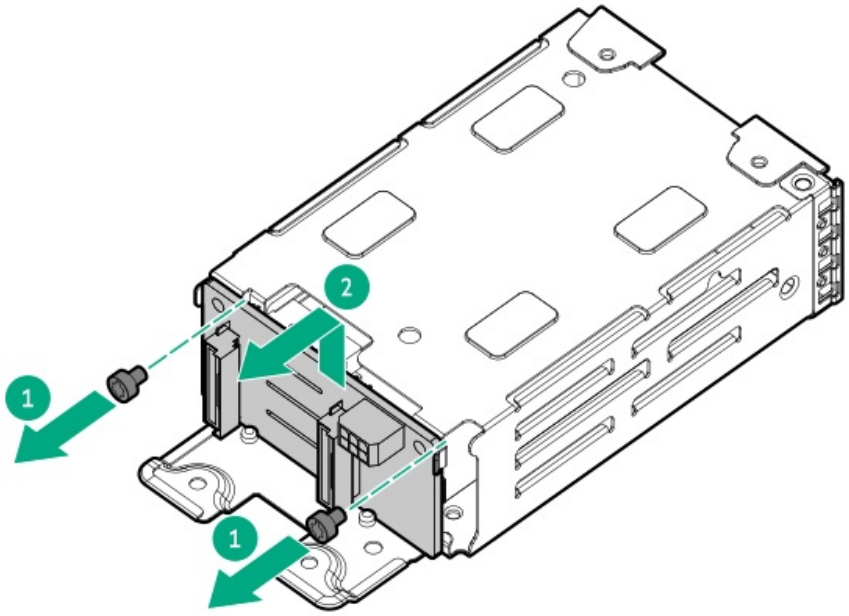


11. Remove the drive backplane from the drive cage.

- 2 SFF drive backplane



- 4 E3.S drive backplane



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing an energy pack

About this task

https://sketchfab.com/models/2b1ad8674b5f4c8dad1b70200ee64ad0/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

NOTE

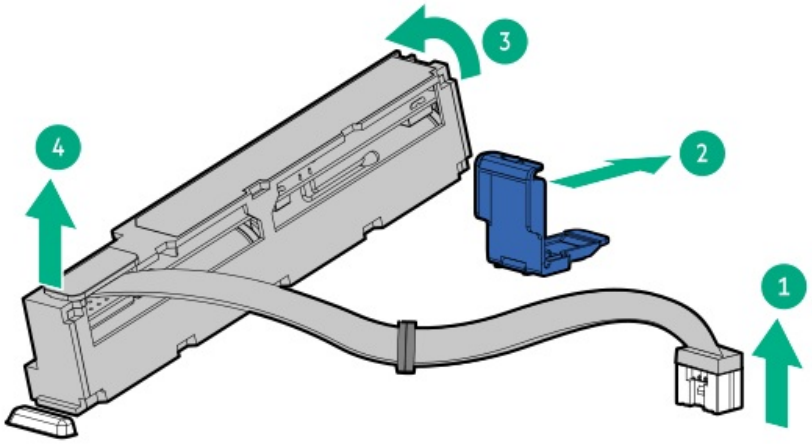
System ROM and firmware messages might display "energy pack" in place of "Smart Storage Battery." Energy pack refers to both HPE Smart Storage batteries and HPE Smart Storage Hybrid capacitors.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   a. Extend the server from the rack.

b. Remove the server from the rack.

5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Disconnect the cable and then remove the battery or capacitor pack.



When removing the cable, remove the cable and cable extender.

8. Disconnect the cable extender from the energy pack.

Retain the cable extender. The cable extender will be used to install the new energy pack spare to the system board.

Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the energy pack retention latch

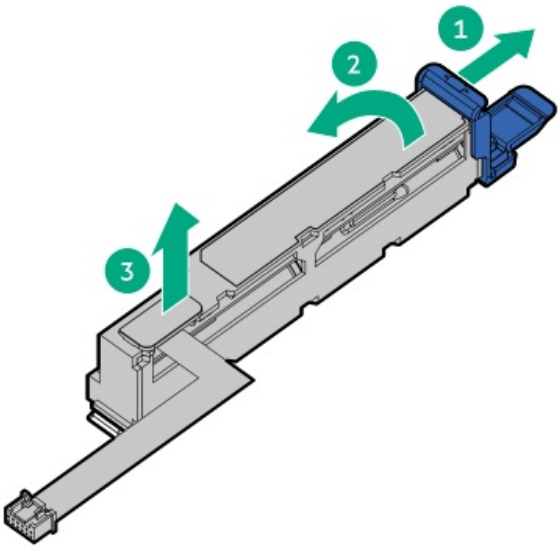
About this task

CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

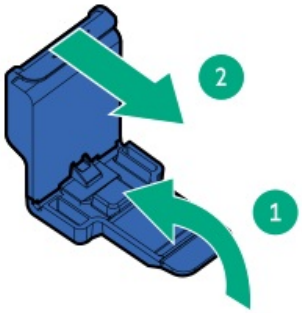
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
5. Place the server on a flat, level work surface.

6. Remove the access panel.
7. If the energy pack is installed, do the following:
   a. Disconnect the energy pack power extension cable from the system board.
   b. Remove the energy pack.



8. Remove the energy pack retention latch:
   a. Pull up and hold the latch.
   b. Push the latch to detach from the chassis.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a DIMM

Prerequisites

Before you perform this procedure, review the:

- Memory configuration and installation guidelines in the server user guide (**https://www.hpe.com/info/dl360gen12-ug**)
- DIMM slot locations

About this task

https://sketchfab.com/models/ec39e4183f8f410e93c8c34a1611b560/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

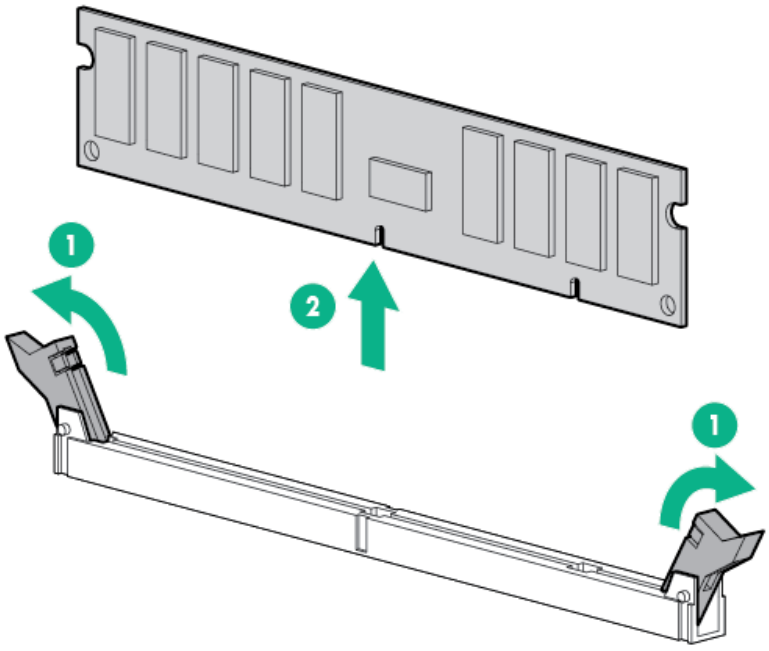
Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the DIMM.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a DIMM blank

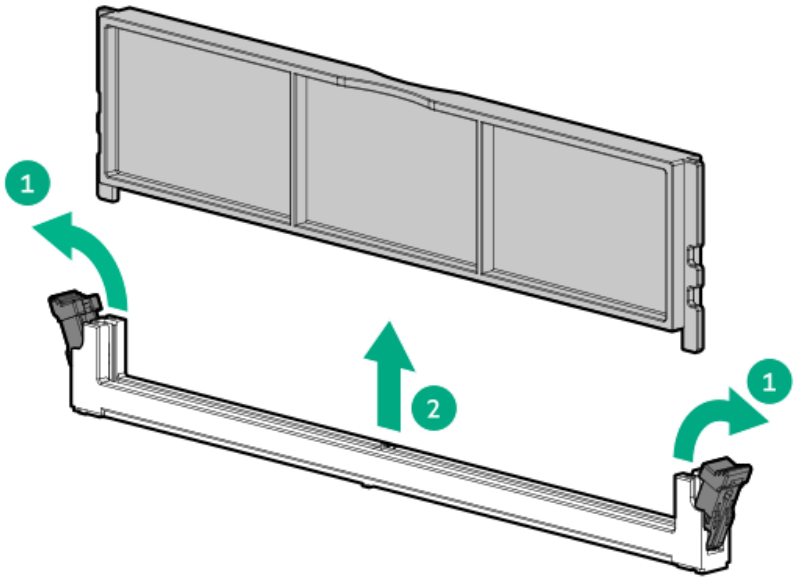
About this task

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all DIMM slots have either a DIMM or a DIMM blank installed.

Procedure

1. Power down the server.
2. If installed, release the cable management arm.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the DIMM blank.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a riser cage

About this task

Primary riser cage

https://sketchfab.com/models/6eb76f4676ee4118a9950412db0460c4/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

Secondary full-height riser cage

https://sketchfab.com/models/3305435c92a7448db3134b88e0437fbd/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

WARNING

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

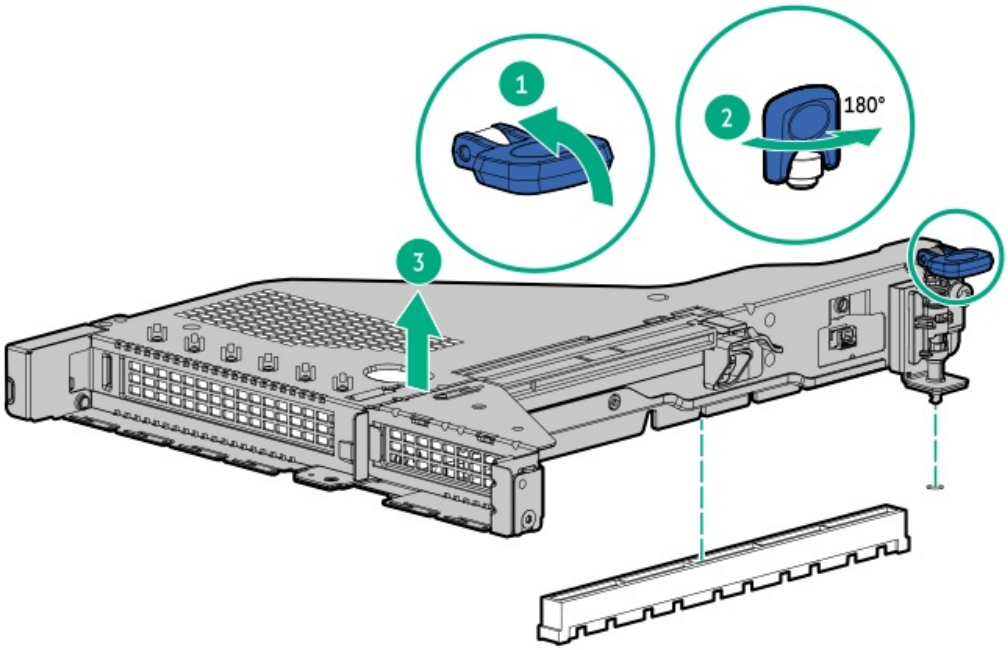
CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

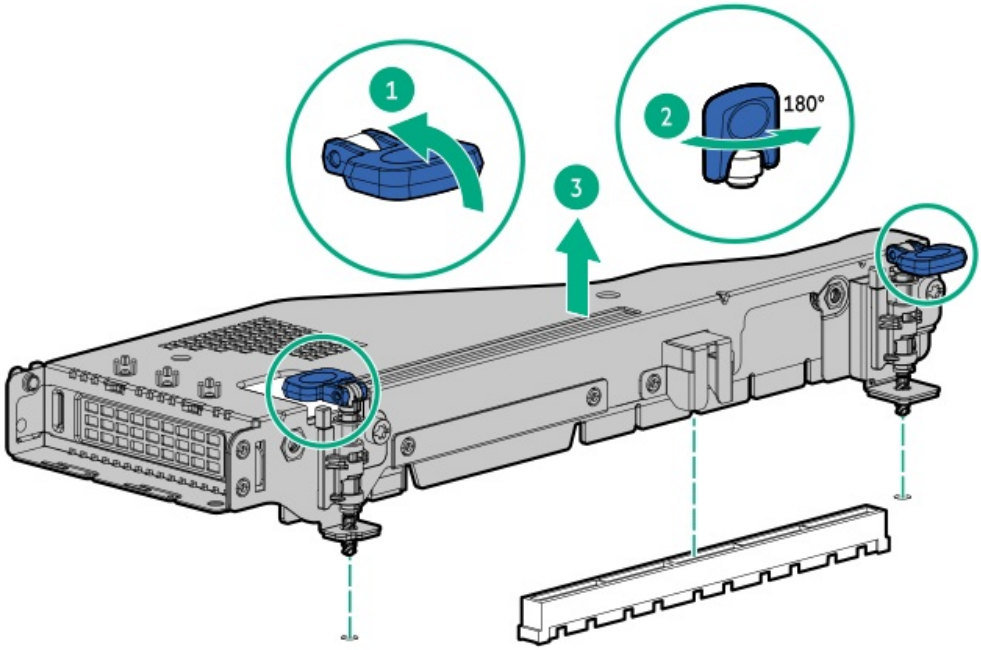
Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the riser cage.

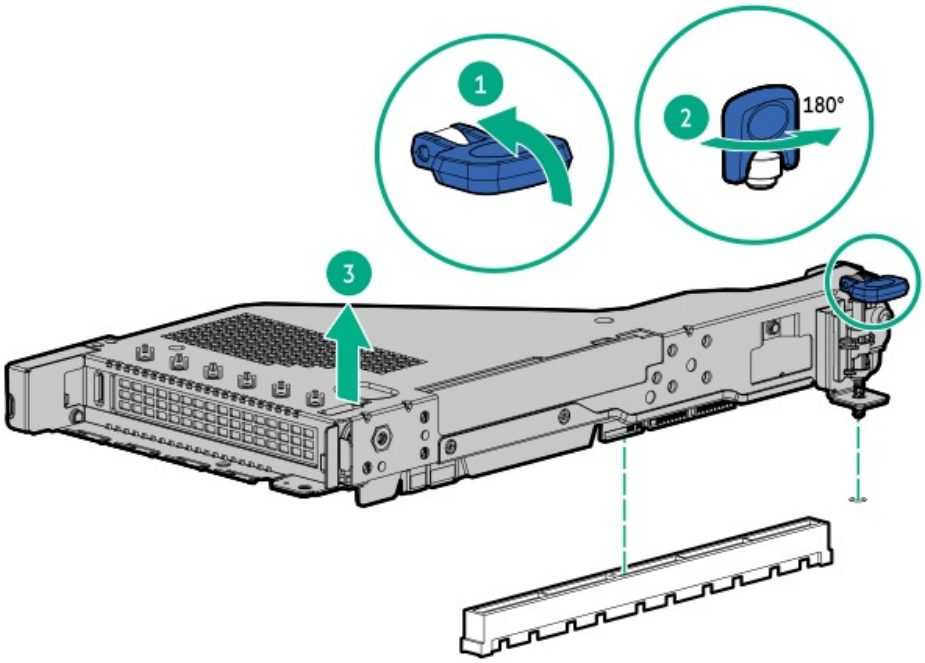
   To remove the primary riser cage:



To remove the secondary low-profile riser cage:



To remove the secondary full-height riser cage:



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing an expansion card

Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

WARNING

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

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

CAUTION

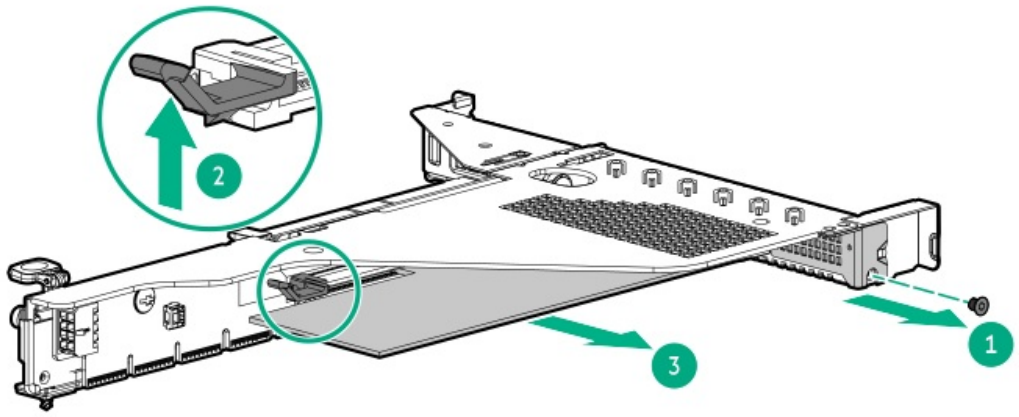
Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

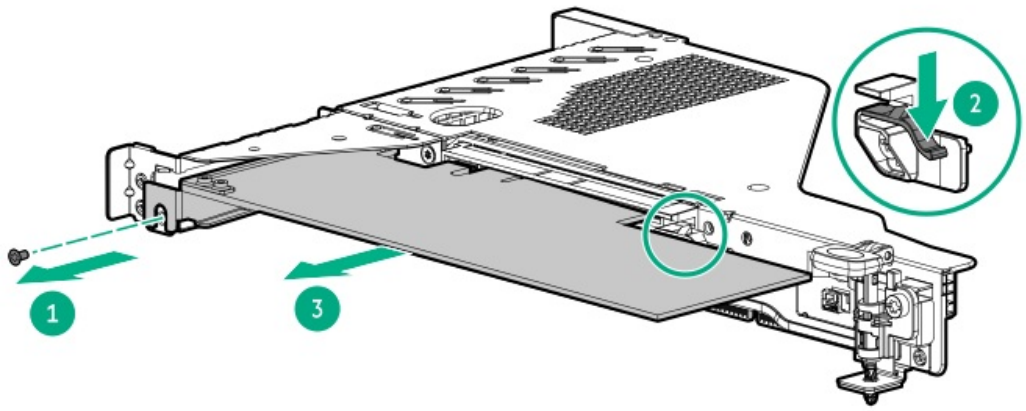
- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Power down the server.
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.
   - Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the riser cage:
   - Remove the primary riser cage.
   - Remove the secondary riser cage.
7. Remove the expansion card from the riser cage.
   - Primary slot 1



   - Primary slot 2



Results

The removal procedure is complete. To replace the component, reverse this procedure.

HPE NS204i-u Boot Device V2 replacement

Subtopics

Removing and replacing a boot device drive
Removing and replacing the HPE NS204i-u Boot Device V2 cage

Removing and replacing a boot device drive

Prerequisites

- Identify the failed drive, do one of the following:
  - Locate the boot device drive with a flashing amber or blue Online/Activity LED .
  - iLO web interface: Storage page
  - UEFI System Utilities: System Utilities > Embedded Applications > Integrated Management Log > View IML
- Before you perform this procedure, make sure that you have a Phillips No. 1 screwdriver available.

About this task

https://sketchfab.com/models/bbb61184a86a4ca792b988e9caae5278/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

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.

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

IMPORTANT

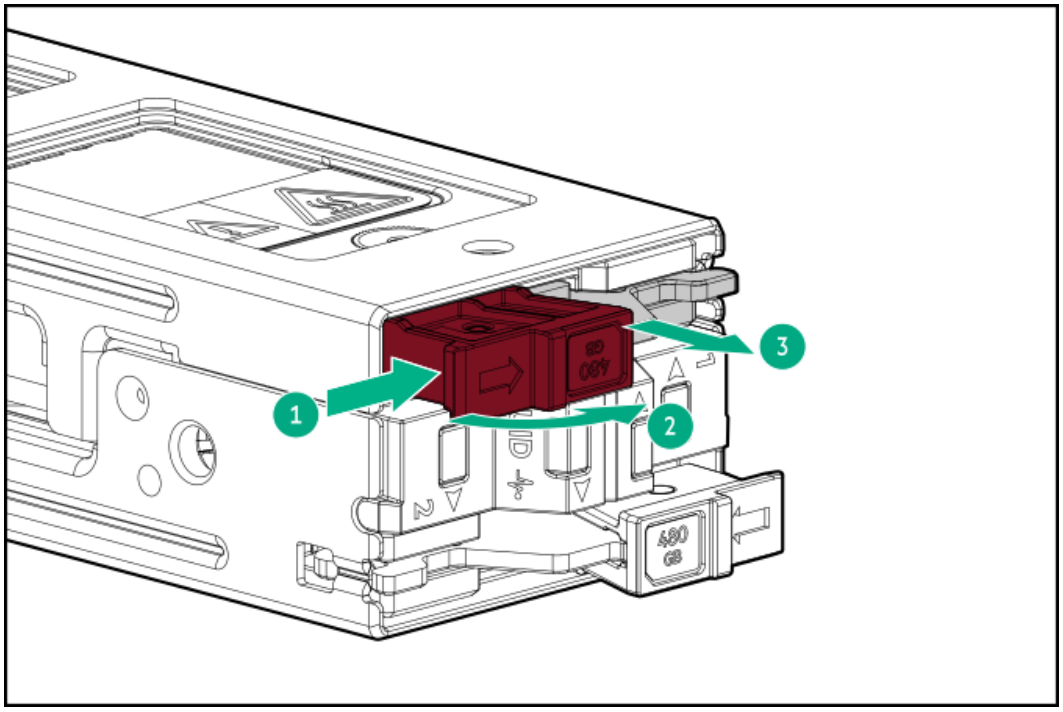
For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

- In the iLO web interface, see the Storage page.
- In UEFI System Utilities, see System Configuration > HPE NS204i Boot Controller > Physical Device Information.

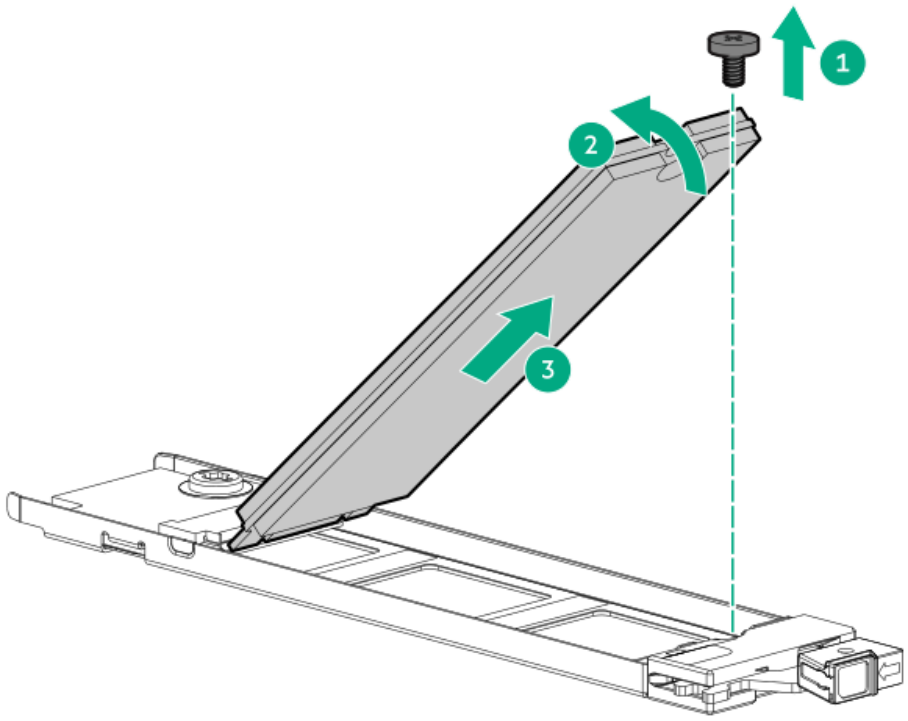
Configurations with SSDs from different manufacturers are not supported.

Procedure

1. Back up all server data.
2. Remove the failed drive and replace it with a new drive:
   a. Press and hold the carrier latch.
   b. Pivot the latch to open.
   c. Slide the carrier out from the boot device cage.

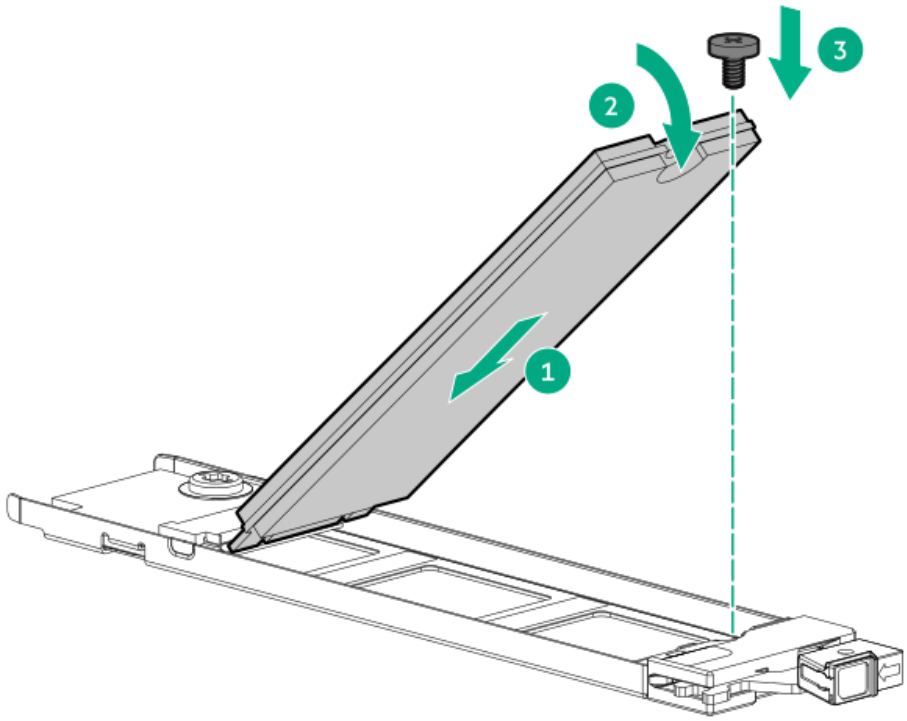


   d. Remove the SSD mounting screw.
   e. Tilt the SSD at a 45° angle, and then remove the failed SSD from the M.2 slot.



   f. Insert the new SSD into the M.2 slot at a 45° angle.
   g. Carefully press the SSD down to the horizontal position.

h. Install the SSD mounting screw.

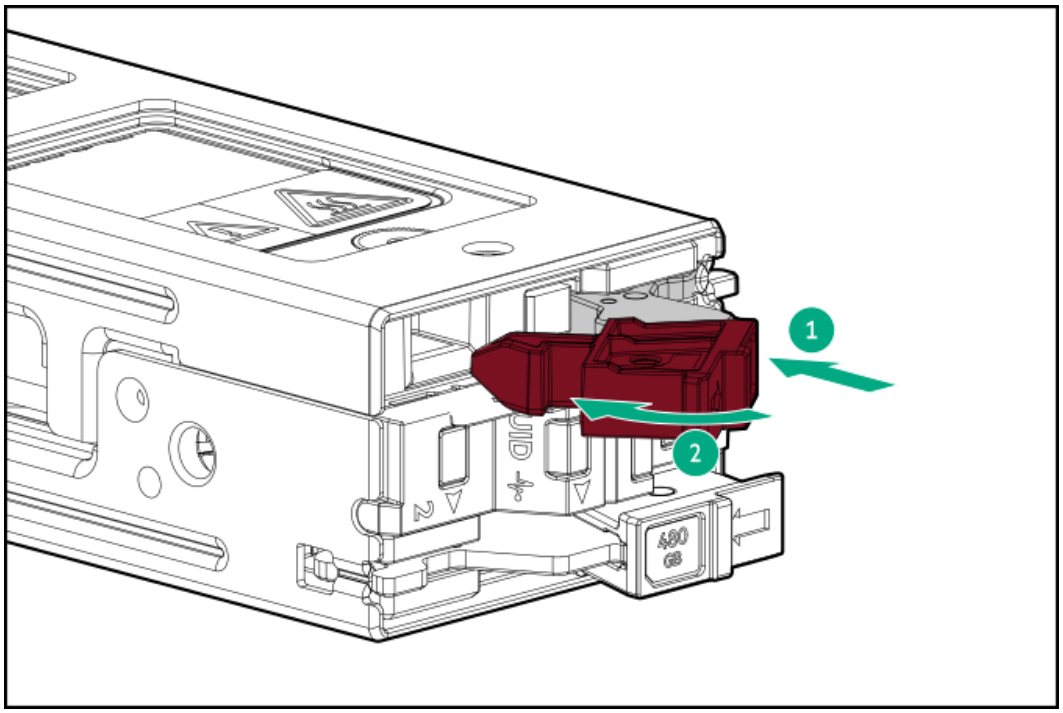


i. If closed, pivot the carrier latch to open.

j. Slide the carrier with the new SSD into the boot device cage.

k. Pivot the latch to close.

Make sure that the carrier latch is locked on the boot device cage.



The boot device automatically rebuilds the RAID 1 volume.

3. If the newly installed SSD has a different model number as the SSD on the other drive carrier, replace the other SSD with one that is of the same model number as the new SSD.

Once both SSDs are installed, the boot device automatically rebuilds the RAID 1 volume.

4. To monitor the drive rebuild status, see any of the following:

- Boot device Online/Activity LED
- iLO web interface: Storage page
- UEFI System Utilities:
  - System Utilities > System Configuration > Virtual Device Information > NS Volume > Virtual Device Detail Information
  - System Utilities > Embedded Applications > Integrated Management Log > View IML

Results

The replacement procedure is complete.

Removing and replacing the HPE NS204i-u Boot Device V2 cage

Prerequisites

- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver —

About this task

https://sketchfab.com/models/984a1645c21e40308830026b462525d5/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

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.

CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

IMPORTANT
For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

- In the iLO web interface, see the Storage page.
- In UEFI System Utilities, see System Configuration > HPE NS204i Boot Controller > Physical Device Information.

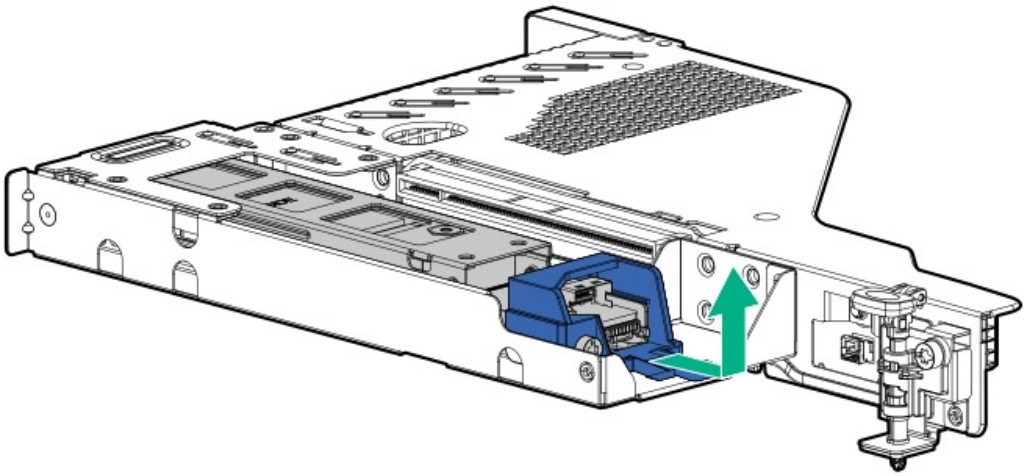
Configurations with SSDs from different manufacturers are not supported.

Procedure

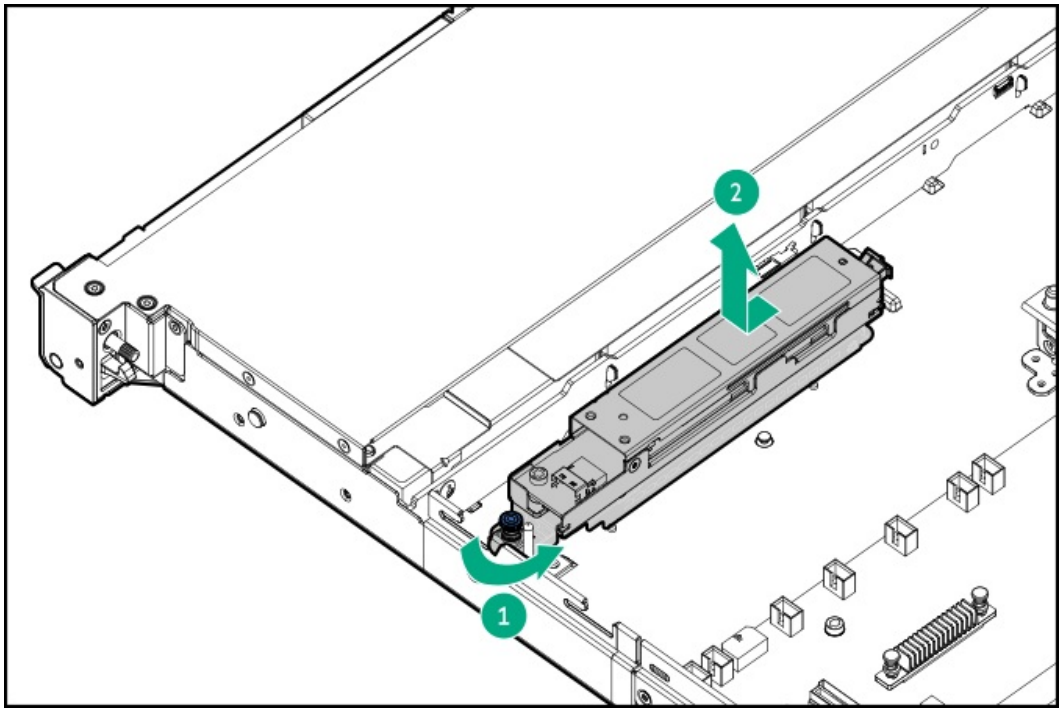
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:

- Extend the server from the rack.
- Remove the server from the rack.

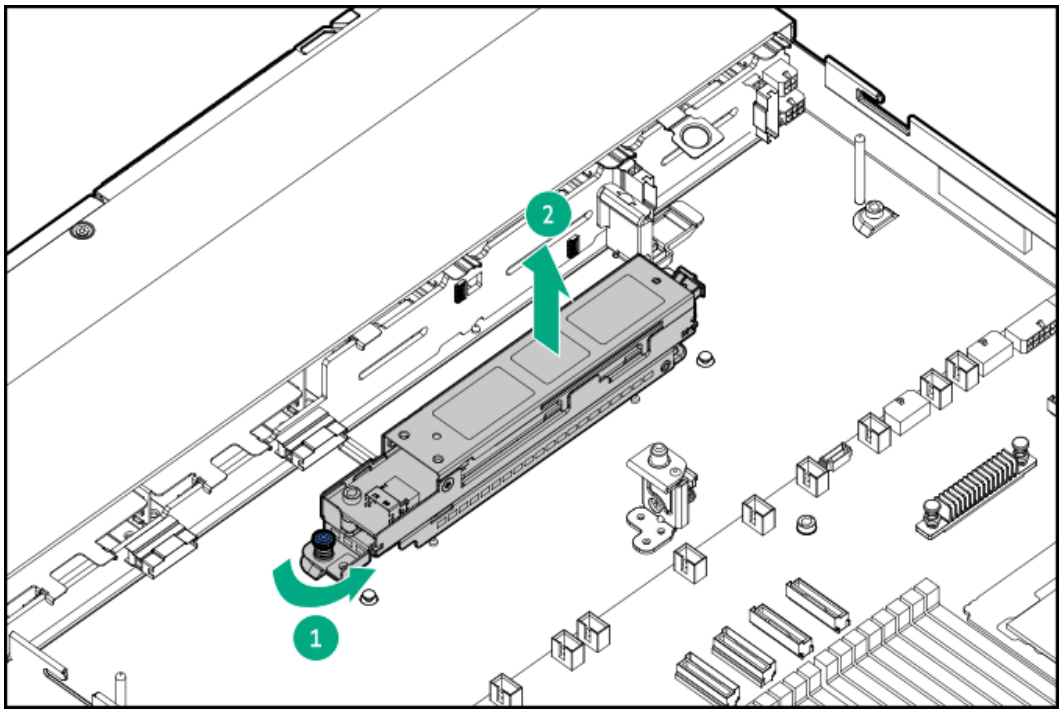
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Disconnect any cables to the boot device.
7. Remove the boot device.
   - To remove the boot device from the riser cage:
     a. Remove the drives.
        Note where each drive was installed.
     b. Remove the riser cage.
     c. Remove the boot device.



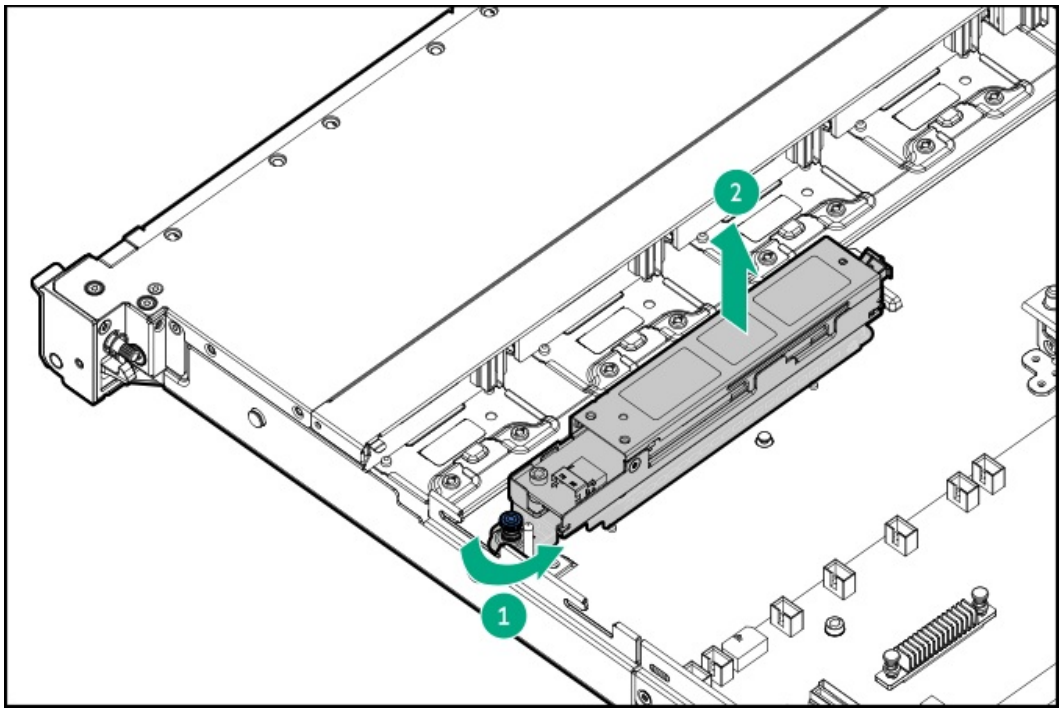
   - To remove the internal boot device:
     a. Remove the boot device.
        - 4 LFF server:



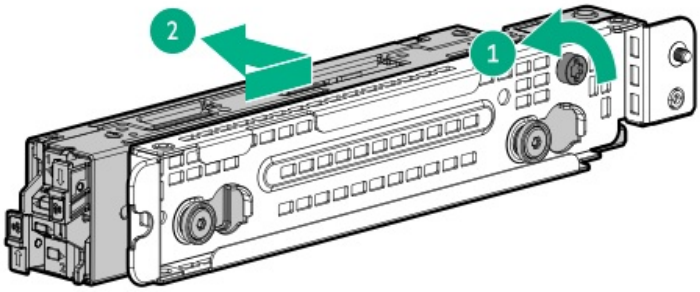
- 8 SFF server:



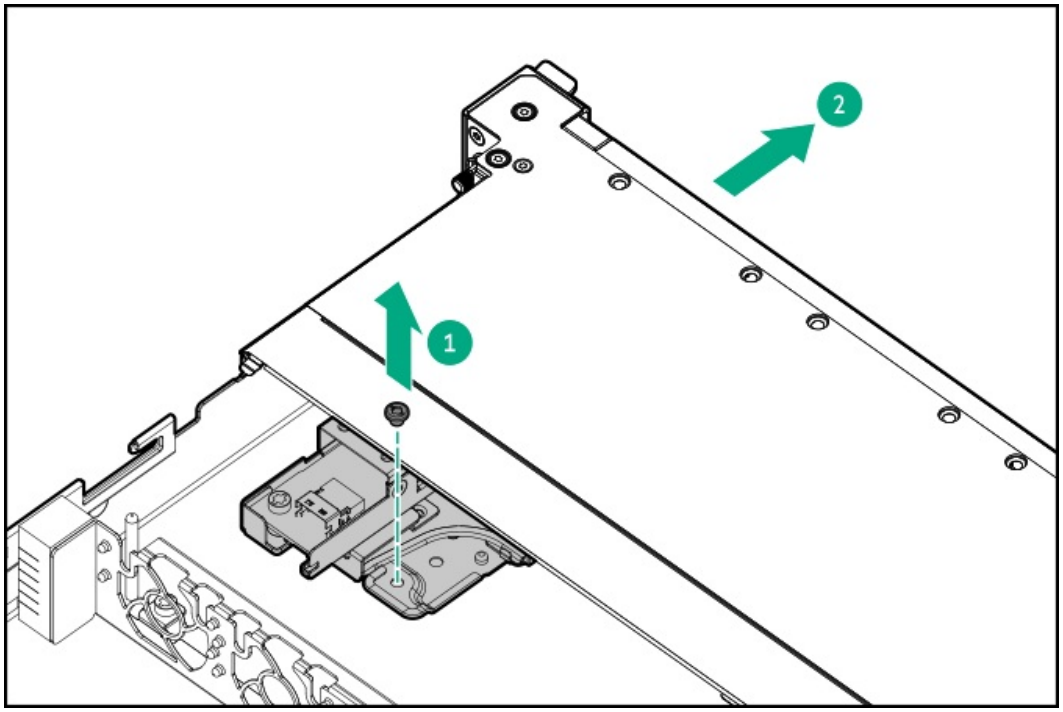
- 10 SFF / 20 E3.S server:



- Remove the support bracket

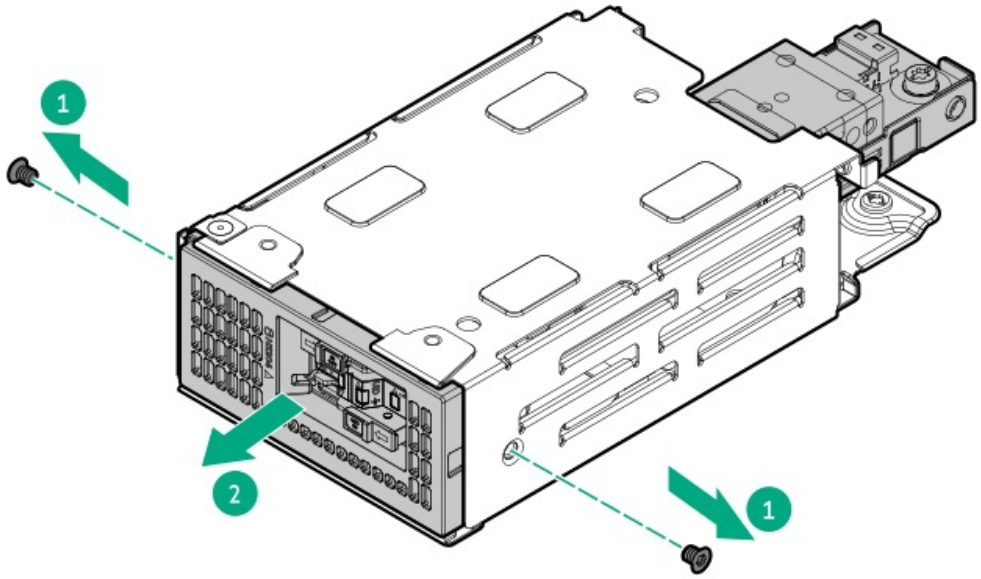


- To remove the front panel boot device:
  a. Remove the boot device and E3.S cage from the server.



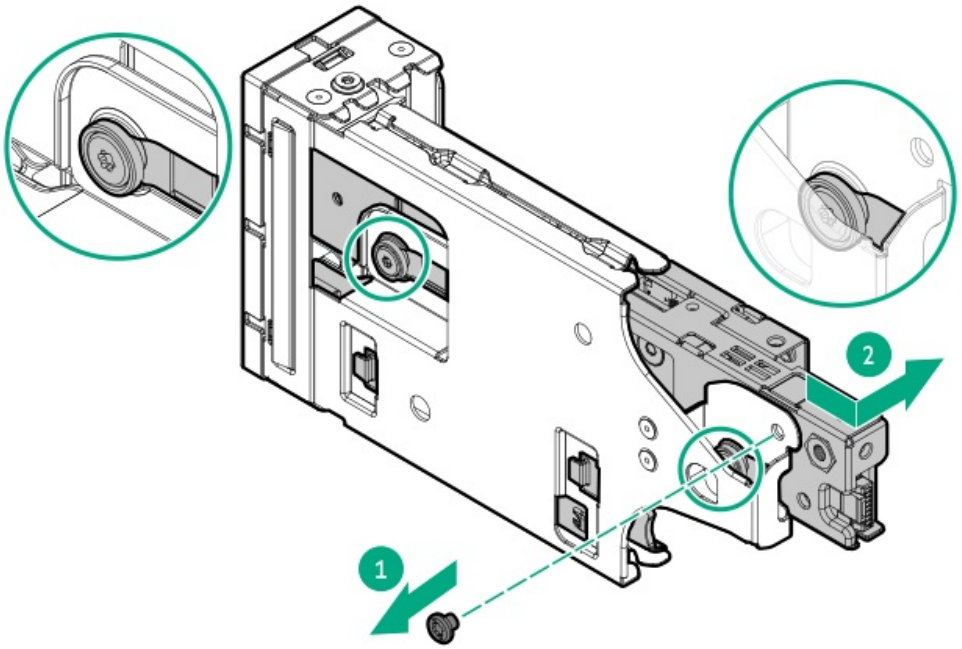
b. Remove the boot device bracket from the E3.S cage.

   Retain the screws. The screws will be used to install the boot device bracket back into the E3.S cage.

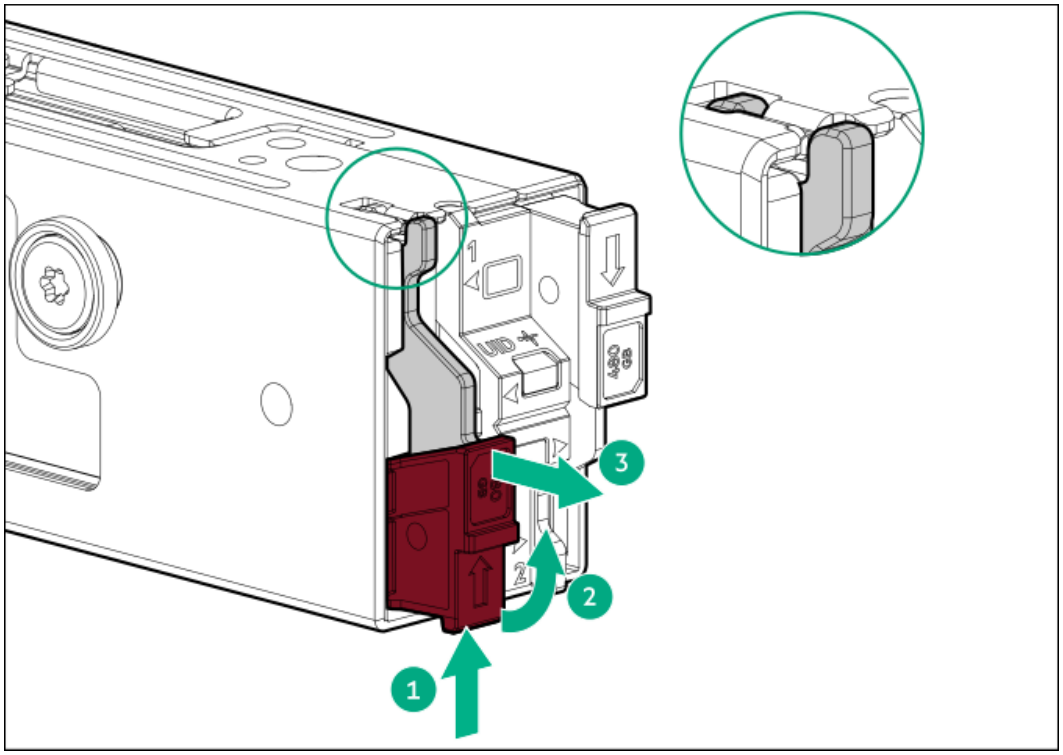


c. Remove the boot device from the bracket.

   Retain the screw. The screw will be used to install the new boot device spare.



8. Remove the boot device carriers:
   a. Press and hold the carrier latch.
   b. Pivot the latch to open.
   c. Slide the carrier out from the boot device cage.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a primary riser board

Prerequisites

- Review Riser board components.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

https://sketchfab.com/models/c64cfd9ce1524bd9bffa40fde9a562d1/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

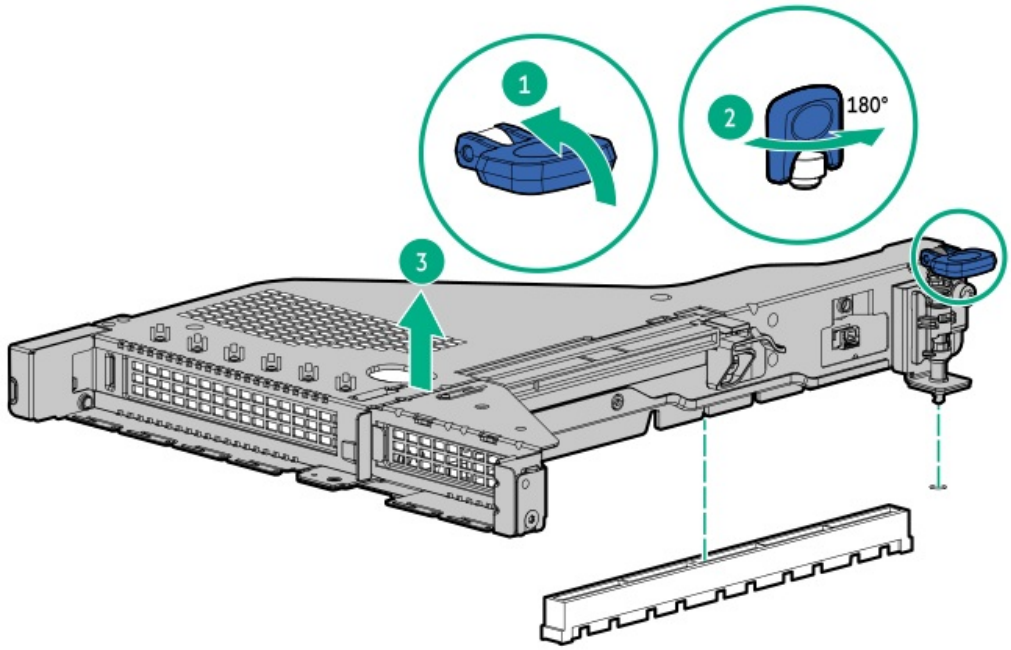
- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

CAUTION

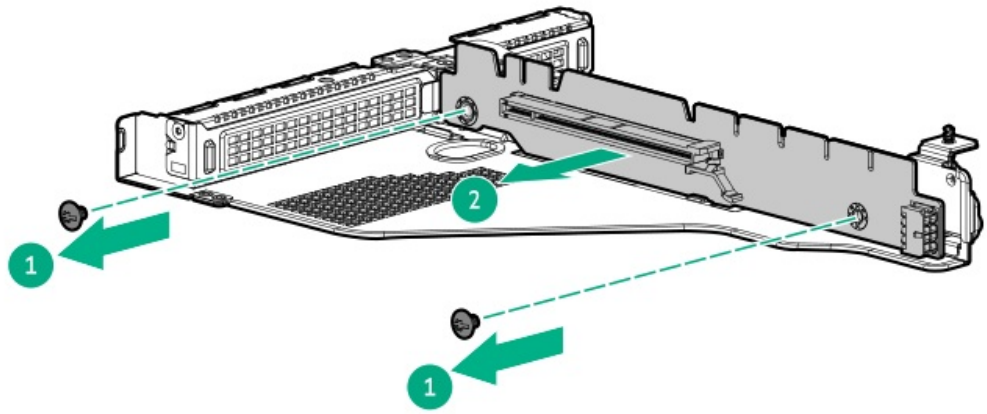
To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the riser cage.



7. Remove all expansion cards.
8. Remove the riser.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the secondary low-profile riser

Prerequisites

- Review Riser board components.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

https://sketchfab.com/models/ddb2528c65ff4cb686a40ed4aa4287a8/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

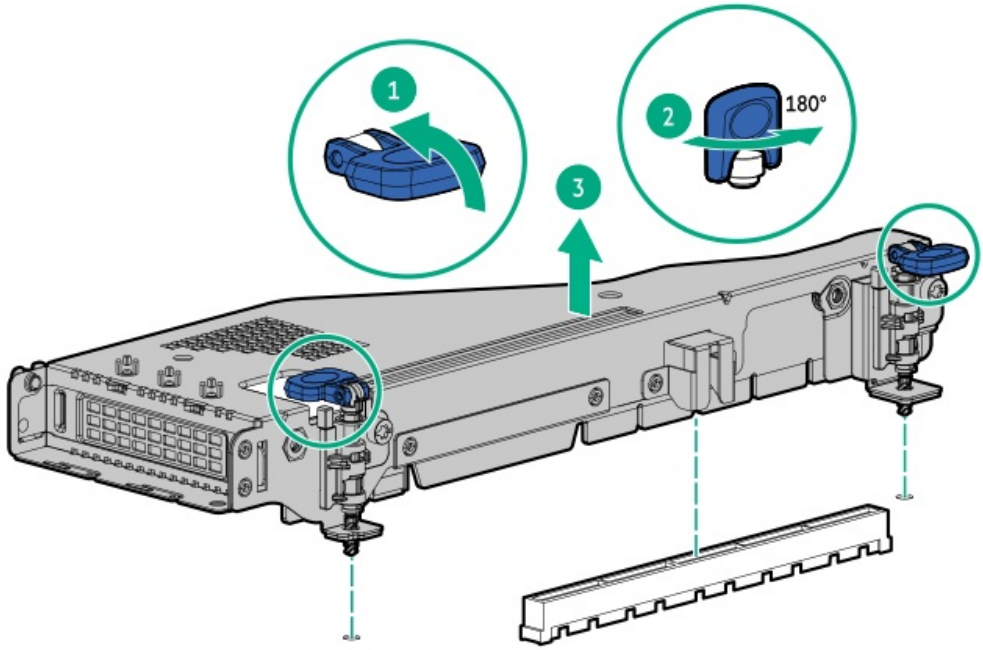
- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

CAUTION

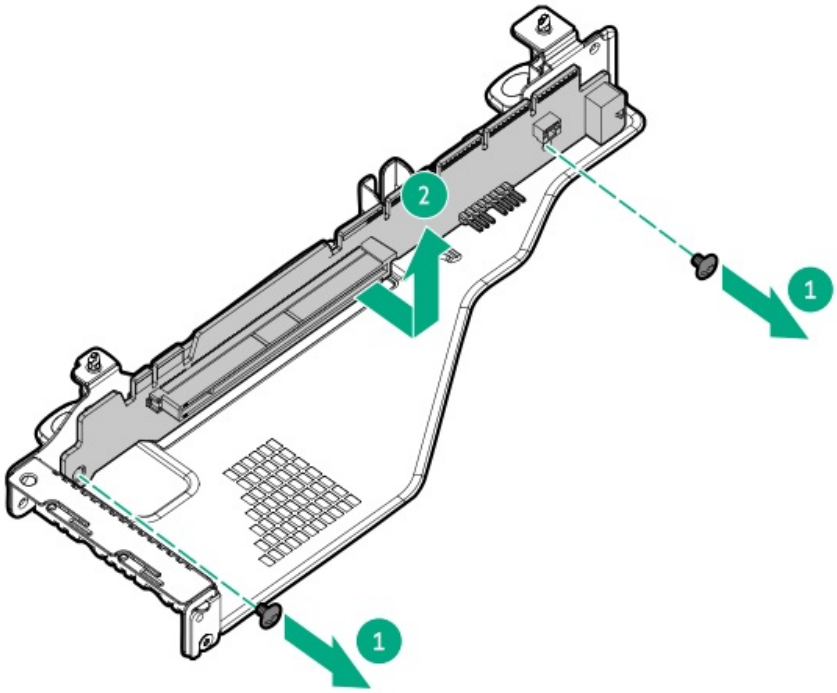
To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

Procedure

1. Power down the server.
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:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the riser cage.



7. Remove all expansion cards.
8. Remove the riser.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the serial port

Prerequisites

Be sure you have a 5 mm nut driver.

About this task

https://sketchfab.com/models/19545f2aca5b47ce8fb570196dc18c5d/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

CAUTION

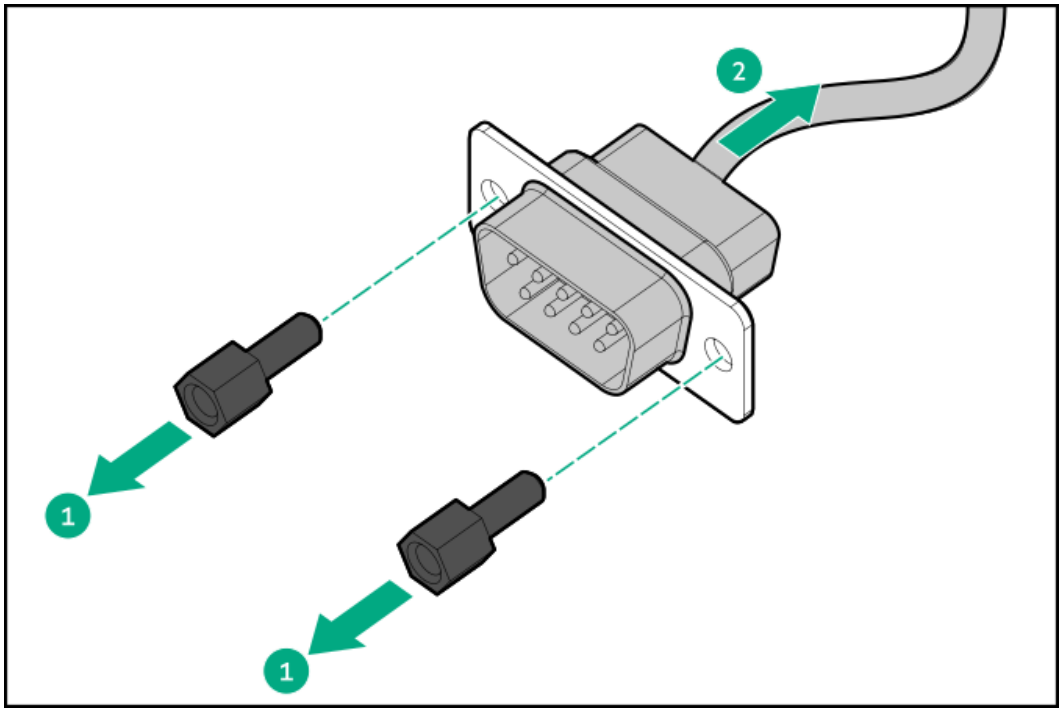
To prevent improper cooling and thermal damage, do not operate the server unless the serial port slot has either a serial port or a serial port blank installed.

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove all riser cages.
8. Disconnect the serial port cable from the system board .
9. Using a 5mm nut driver, remove the serial port.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing the chassis intrusion detection switch

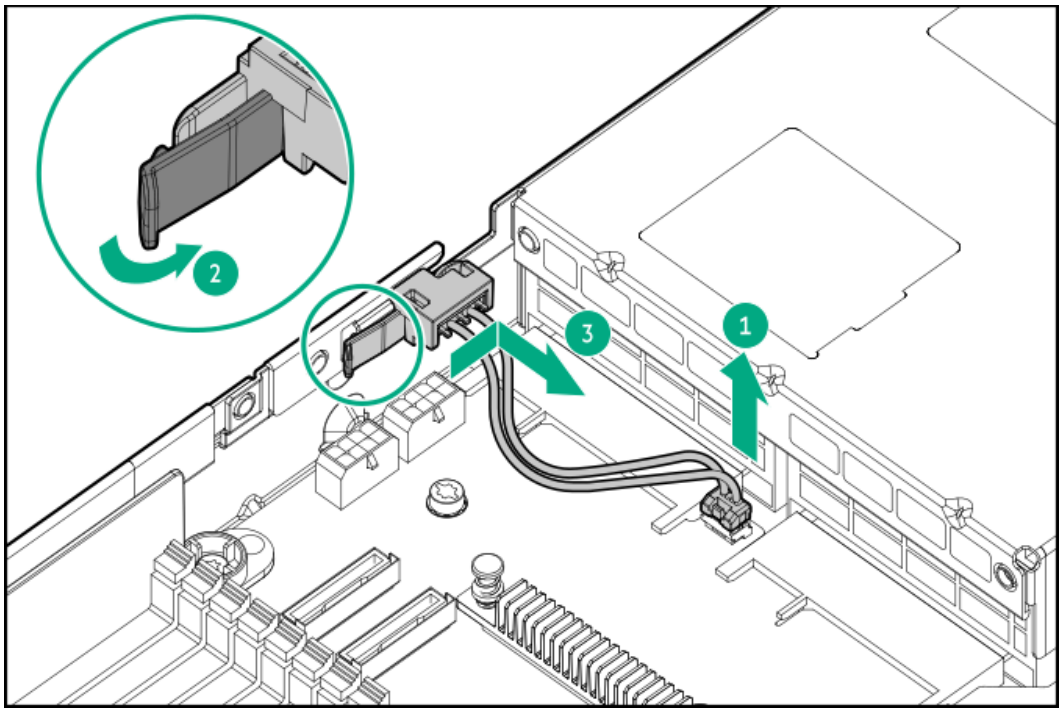
About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the chassis intrusion detection switch.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a rear OCP 3.0 network adapter

About this task

https://sketchfab.com/models/ac02ab5a52f140faa5c7e7a4444f9683/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

WARNING

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

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all OCP slots have either an OCP option or a slot blank installed.

CAUTION

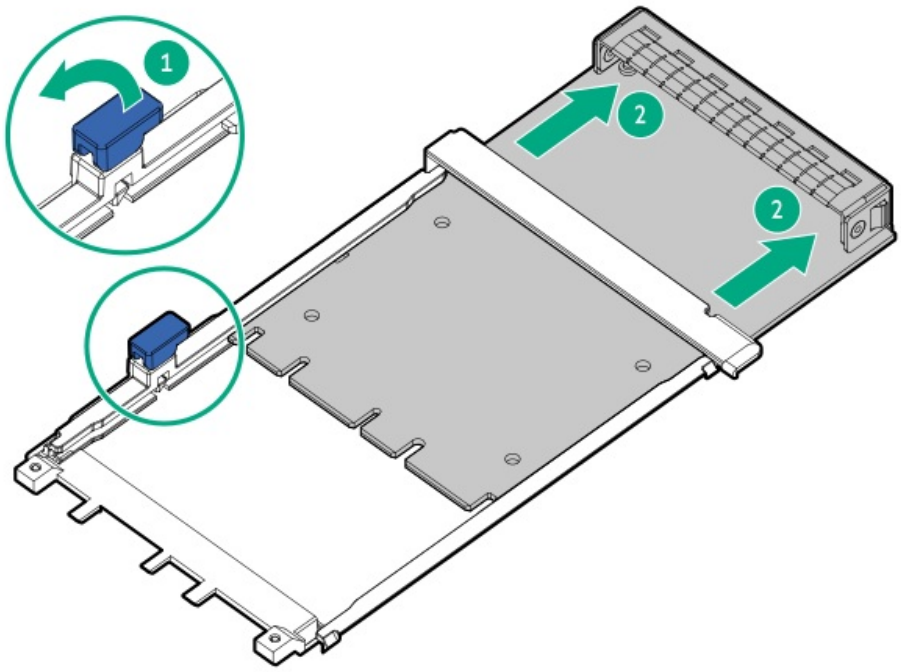
Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If installed, remove the riser cage.
8. Remove the OCP 3.0 adapter.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a type-o storage controller

About this task

https://sketchfab.com/models/ac02ab5a52f140faa5c7e7a4444f9683/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

WARNING

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

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all OCP slots have either an OCP option or a slot blank installed.

CAUTION

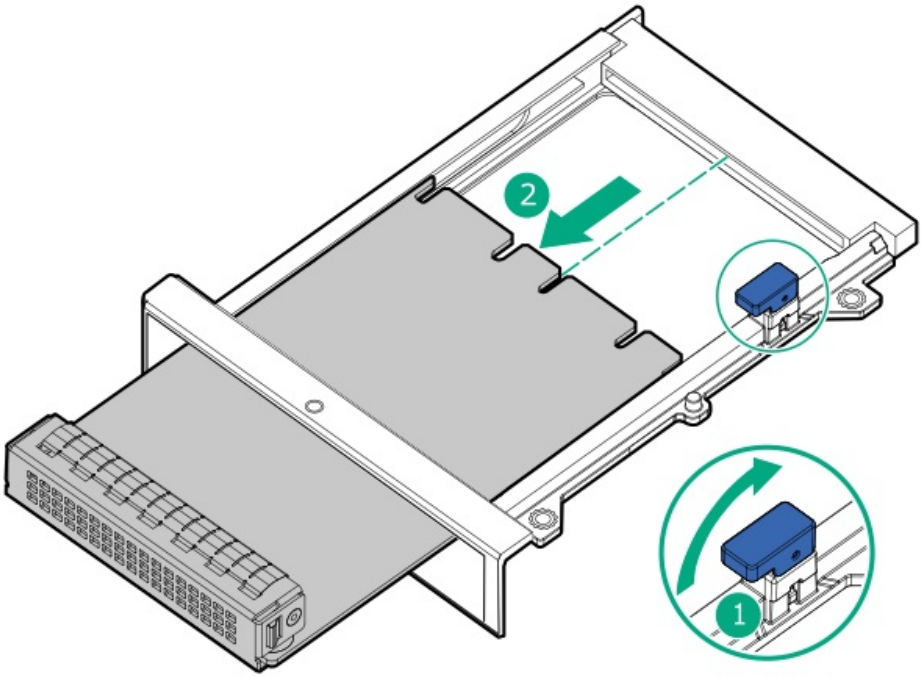
Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If installed, remove the riser cage.
8. Remove the type-o storage controller.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

Removing and replacing a type-p storage controller

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

WARNING

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

CAUTION

Before replacing a DIMM, backplane, expansion card, riser board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot.

When installing the replacement component:

- Observe antistatic precautions.
- Handle the PCA only along the edges.
- Do not touch the components and connectors on the PCA.
- Do not bend or flex the PCA.

Procedure

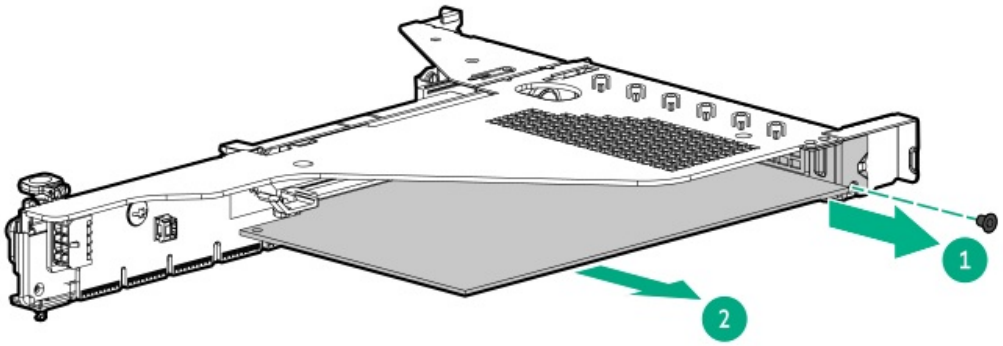
1. Power down the server.
2. Remove all power:

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.
   - Remove the server from the rack.
4. Place the server on a flat, level work surface.
5. Remove the access panel.
6. Remove the riser cage:
   - Remove the primary riser cage.
   - Remove the secondary riser cage.
7. Disconnect any cables from the storage controller.

   Note the connection for each cable.
8. Remove the storage controller from the riser cage.



Results

The removal procedure is complete. To replace the component, reverse this procedure.

System battery replacement

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

Subtopics

System battery information
Removing and replacing the system battery

System battery information

The server contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery that provides power to the real-time clock.

WARNING

If this battery is not properly handled, a risk of fire or burning exists. 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 expose the battery to low air pressure as it might lead to explosion or leakage of flammable liquid or gas.
- Do not disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

Removing and replacing the system battery

Prerequisites

- Review System battery information.
- Before you perform this procedure, make sure that you have a small flat-bladed, nonconductive tool available.

About this task

The system battery provides power to the real-time clock. If the server no longer automatically displays the correct date and time, you might need to replace the system battery.

https://sketchfab.com/models/6f2a2a1a5c8540cb9a3adc740b055e0e/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

IMPORTANT

After replacing the system battery and applying power, wait for 10 minutes before powering on the server. This lead time is required for the server to reset and reinitialize the iLO configuration settings stored in SRAM.

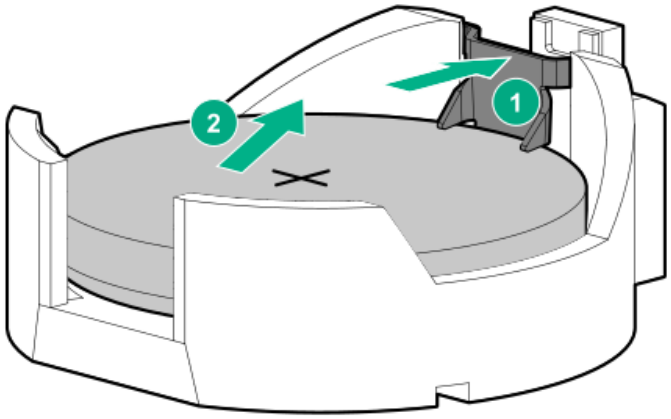
CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

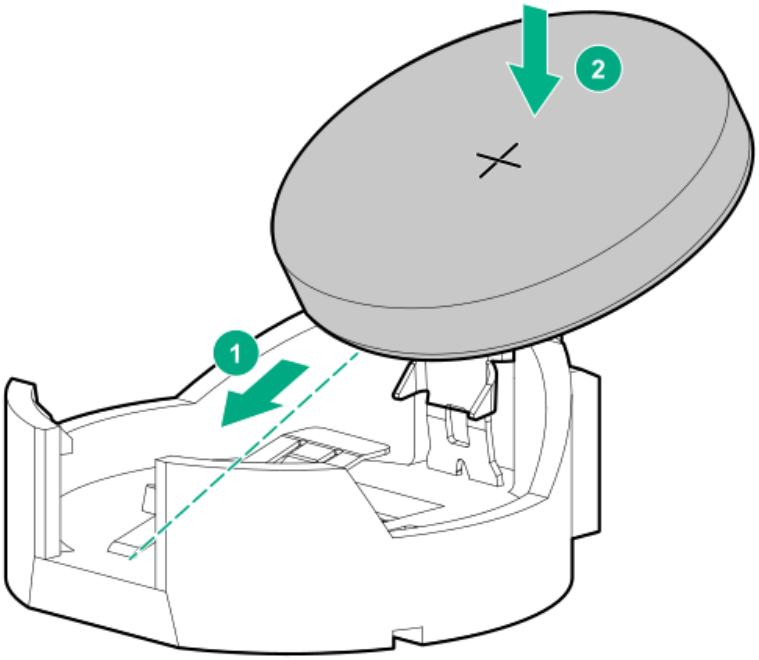
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.

7. Locate the battery on the system board .
8. Remove the system battery:
   a. Use a small flat-bladed, nonconductive tool to press the battery latch.
   b. Remove the system battery from the socket.



9. Install the system battery:
   a. With the side of the battery showing the "+" sign facing up, insert the battery into the socket.
   b. Press the system battery down until it clicks into place.



10. Wait for 10 minutes for the server to reset and reinitialize the iLO configuration settings stored in SRAM.

> **IMPORTANT**
>
> If iLO security is disabled, the configuration will not be restored. To restore the configuration manually, see **https://www.hpe.com/support/hpeilodocs-quicklinks**.

11. Install the access panel.

12. Install the server into the rack.
13. Connect all peripheral cables to the server.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.
17. Properly dispose of the old battery.

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

Results

The replacement procedure is complete.

Heatsink replacement

Subtopics

Removing a standard or high performance heatsink
Installing a standard or high performance heatsink

Removing a standard or high performance heatsink

Prerequisites

- Identify the heatsink and processor socket components.
- Review the processor cautions.
- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - Alcohol wipe
  - Processor socket dust cover—This is needed if you are not immediately installing the replacement processor-heatsink assembly.

About this task

Standard heatsink:

https://sketchfab.com/models/9fe740559dd94ff49c7da212d810cf68/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

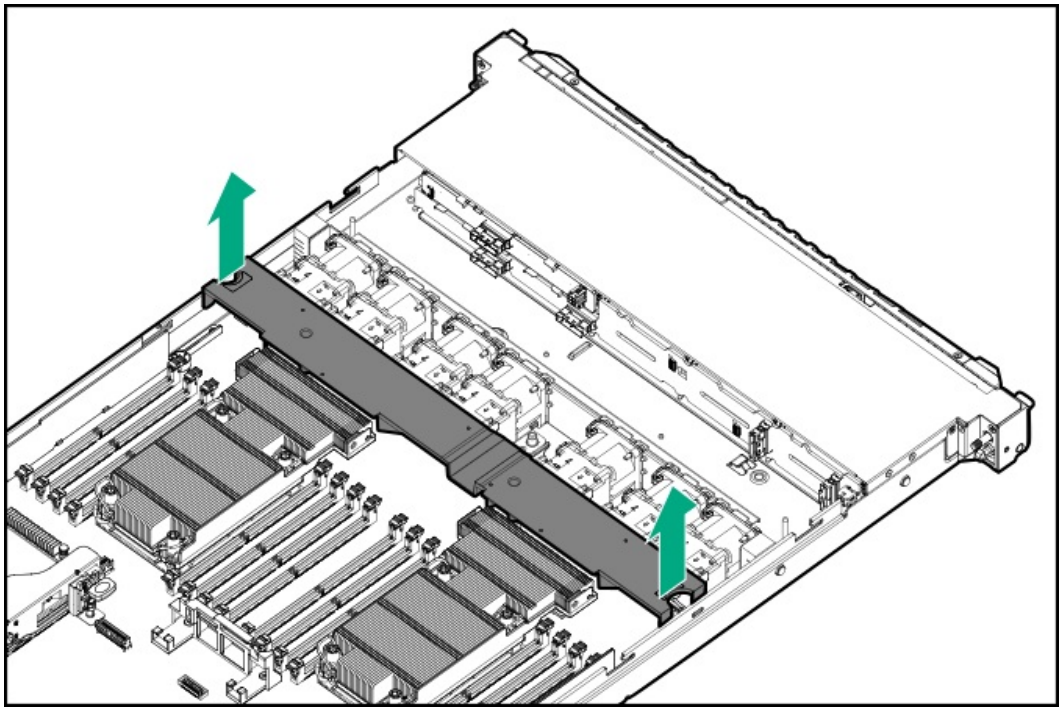
WARNING
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If the server is installed in an enclosure or a rack, remove the server and place it on a flat, level work surface.
5. Remove the access panel.
6. Allow all internal system components to cool before continuing.
7. If installed, remove the air baffle.

   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.

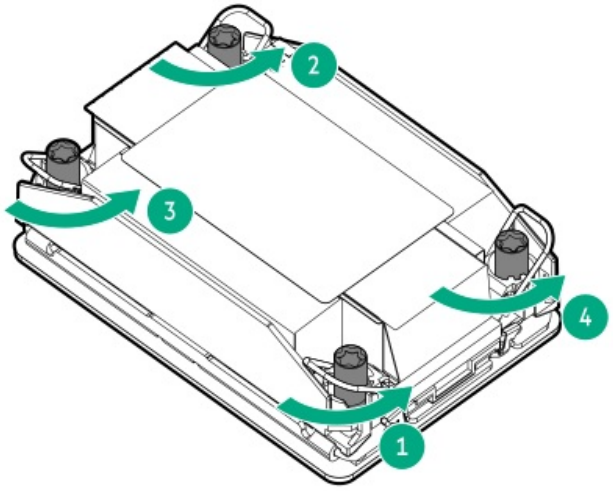


8. **CAUTION**

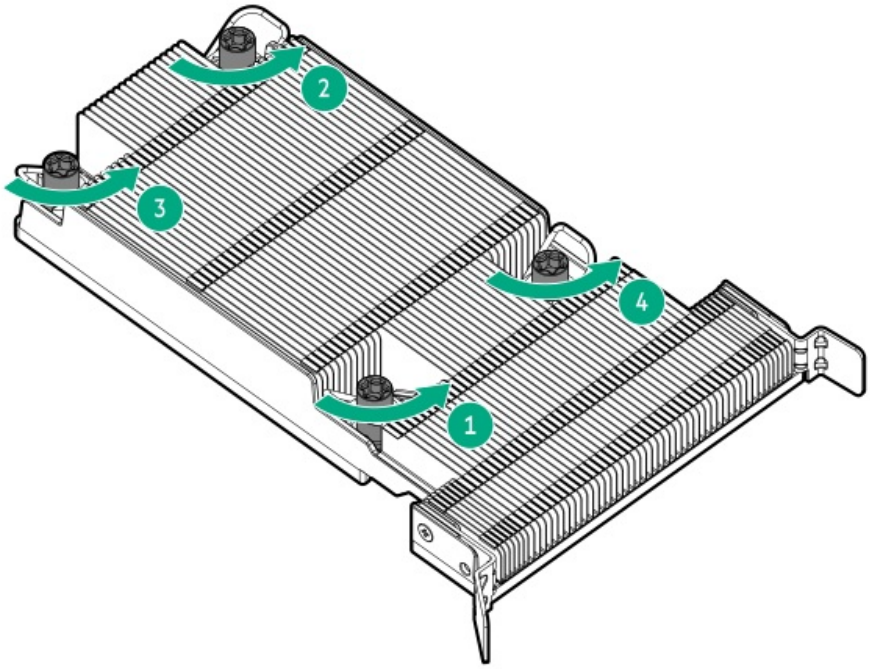
   Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

   Use a T-30 Torx screwdriver to loosen one pair of diagonally opposite heatsink screws (callouts 1 and 2), and then loosen the other pair of heatsink screws (callouts 3 and 4).

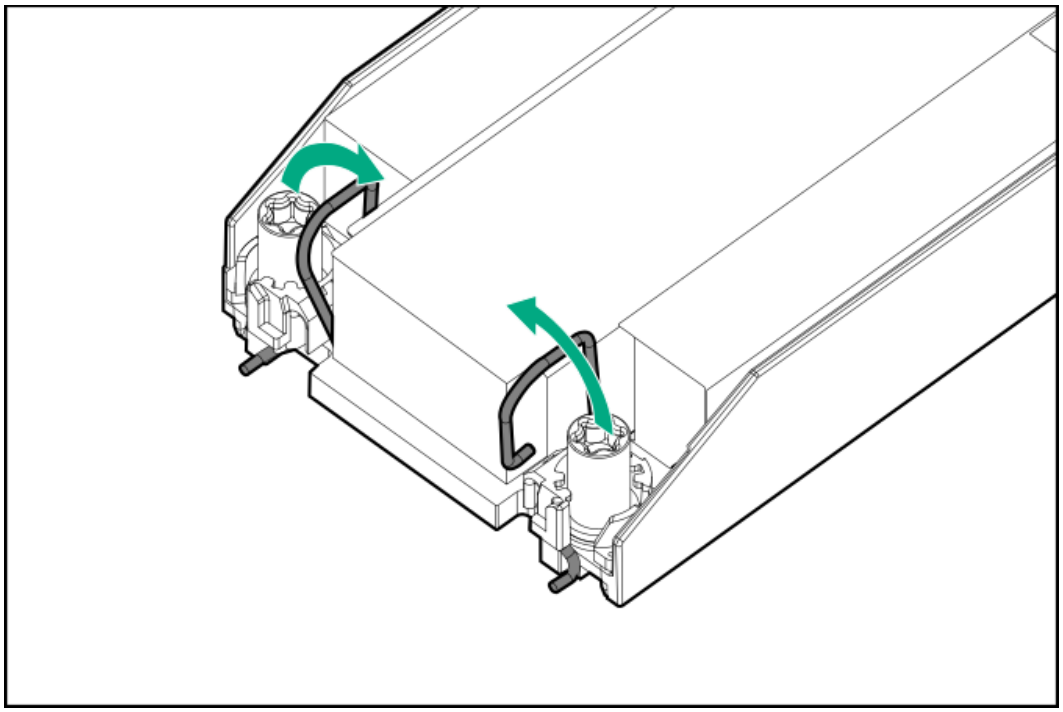
   - Standard heatsink



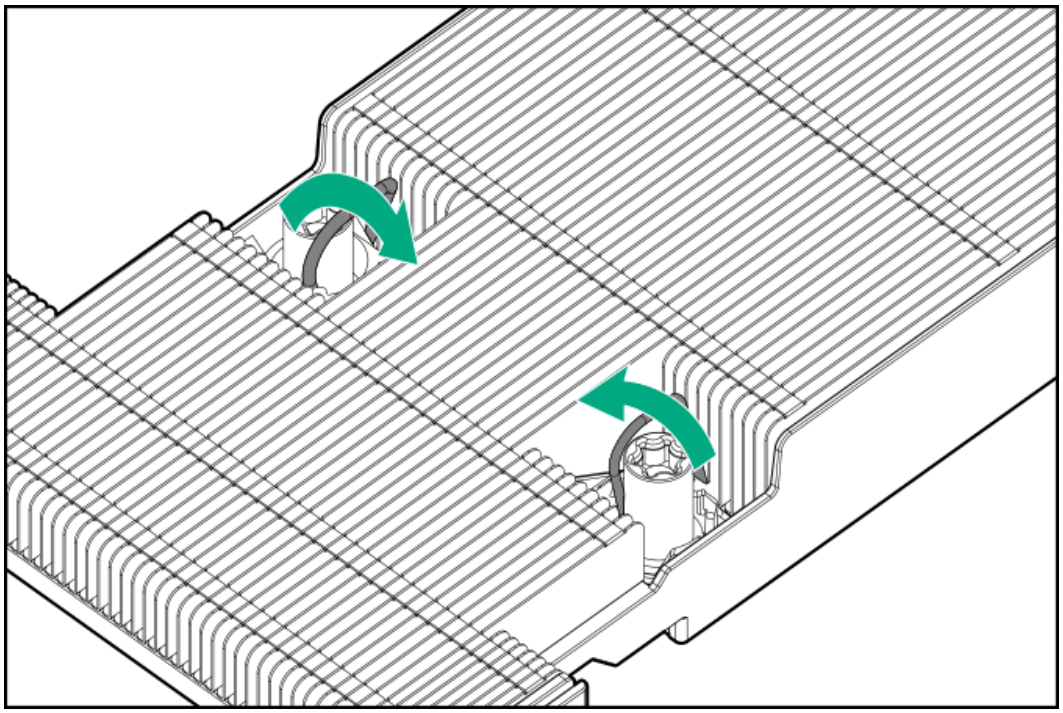
- High performance heatsink



9. Set the anti-tilt wires to the unlocked position.
   - Standard heatsink



- High performance heatsink

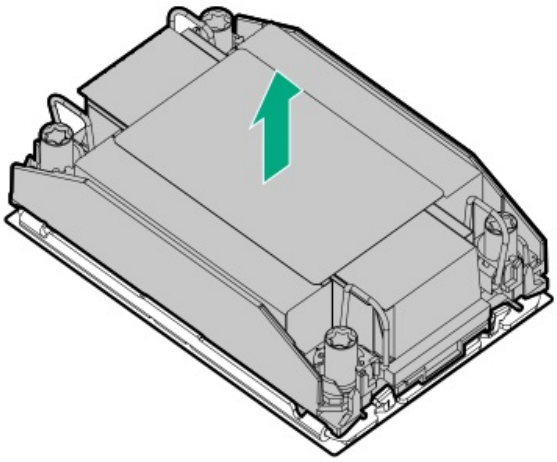


10. **CAUTION**

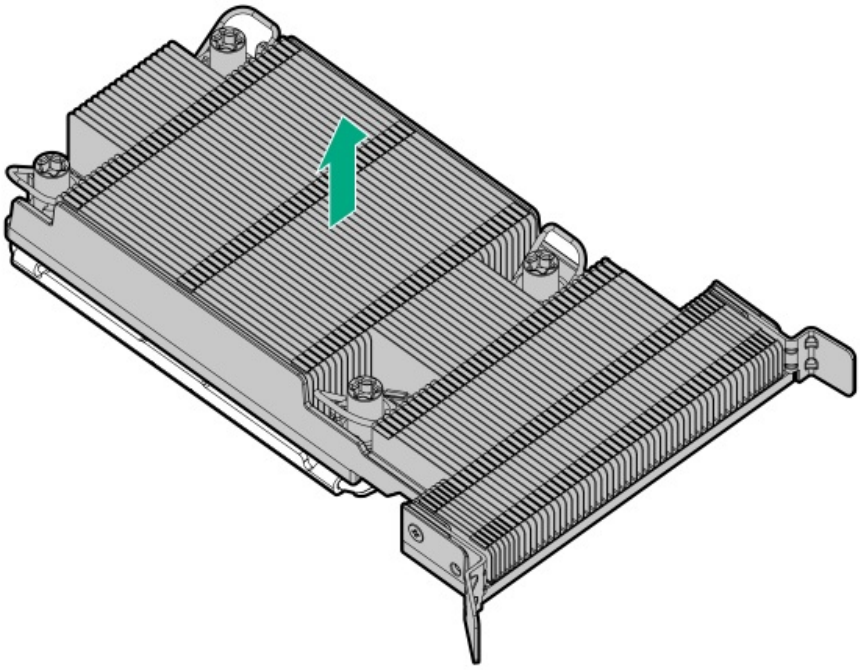
    To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

Lift the processor-heatsink module straight up from the system board.

- Standard heatsink



- High performance heatsink



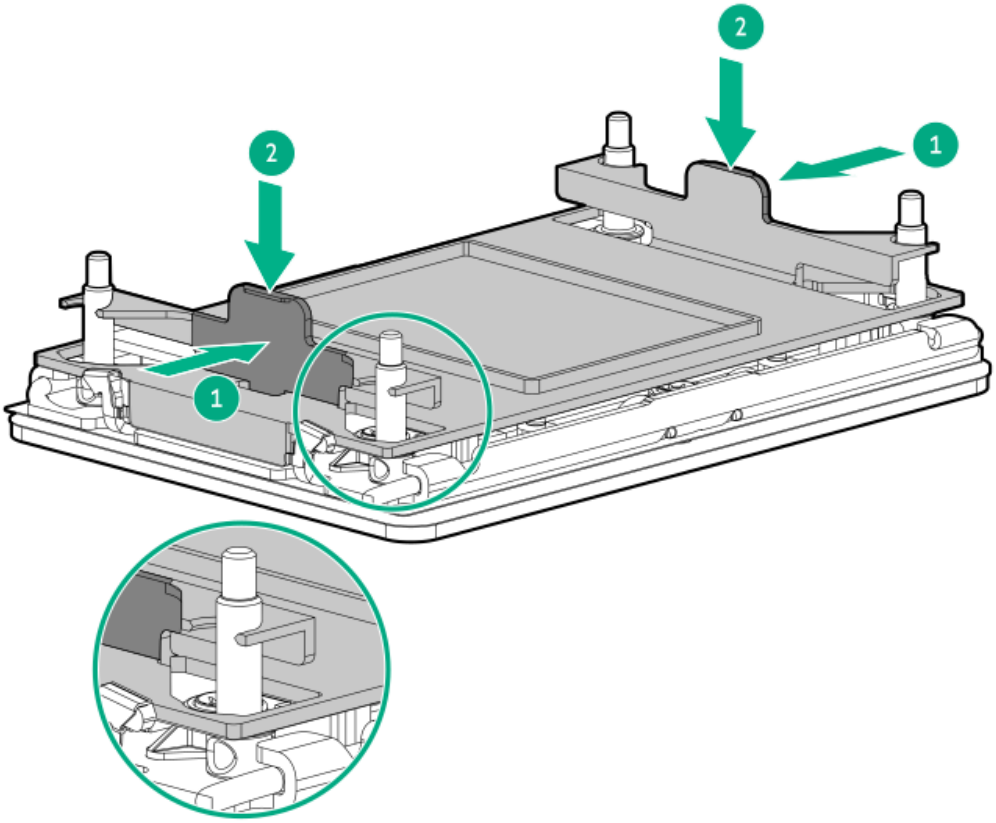
11. Place the processor-heatsink module on a flat work surface with its contact side facing up.
12. If you are not immediately installing the replacement processor-heatsink module, install the dust cover on the empty processor socket:

> **CAUTION**
>
> Do not press down on the dust cover. Pressing down on the dust cover might damage the processor socket.

a. Press and hold the grip tabs on the dust cover.

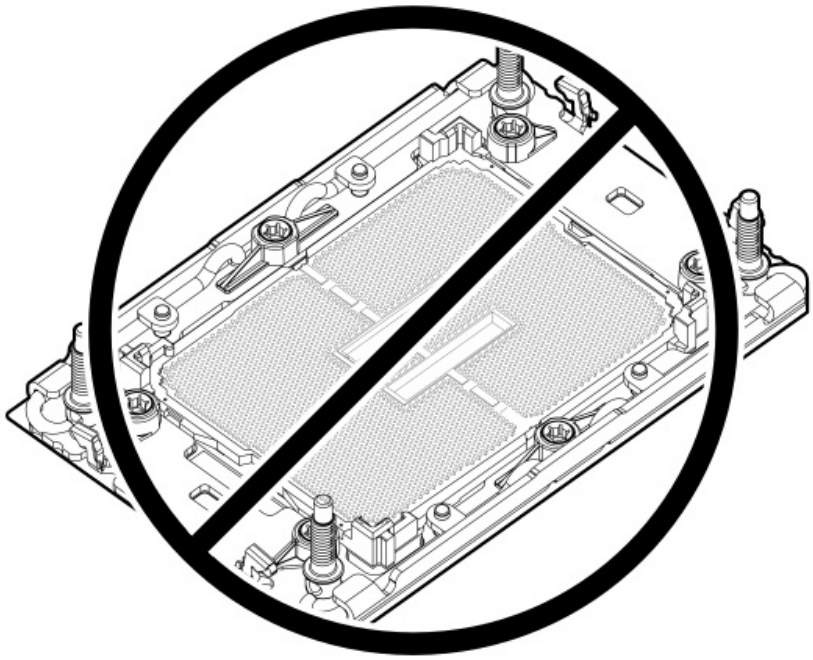
b. Carefully lower the dust cover onto the bolster plate guide posts.

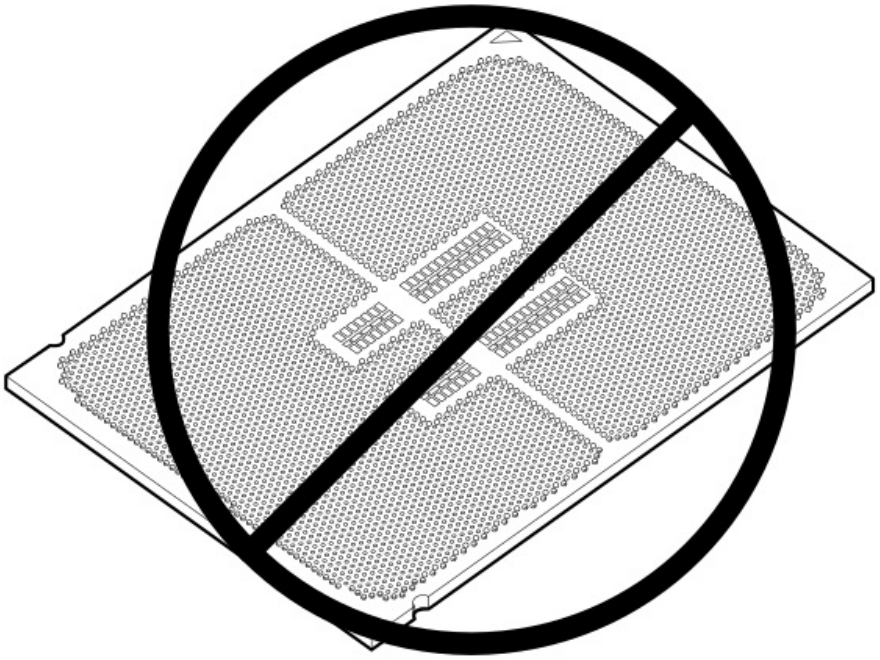
Make sure that the corner holes of the dust cover are properly engaged with the guide posts on the bolster plate.



13. Do not touch the pins on the processor socket and the processor.

> **CAUTION**
>
> **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.** Any damage to them might require replacing the system board.



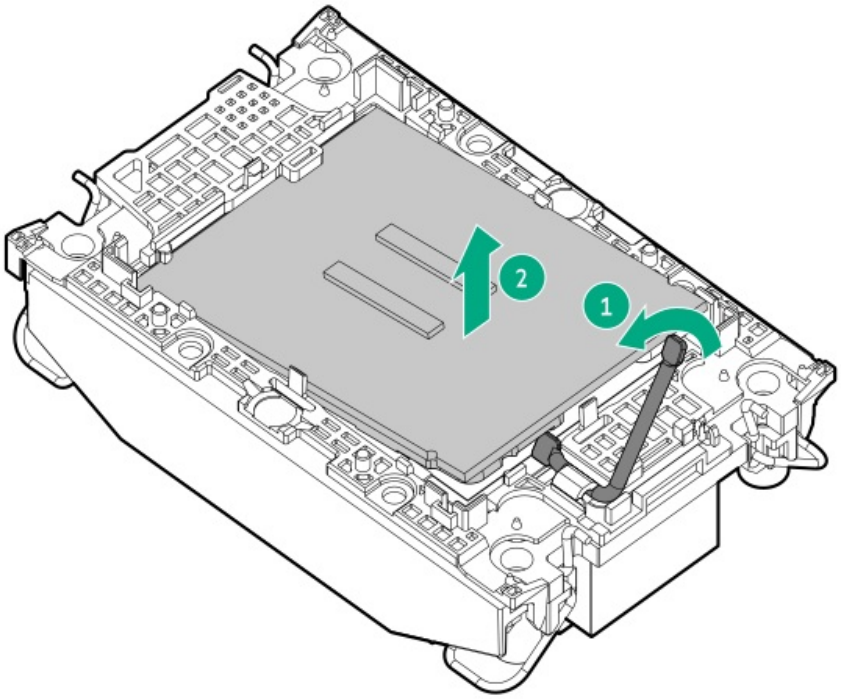


14. Remove the processor from the heatsink:

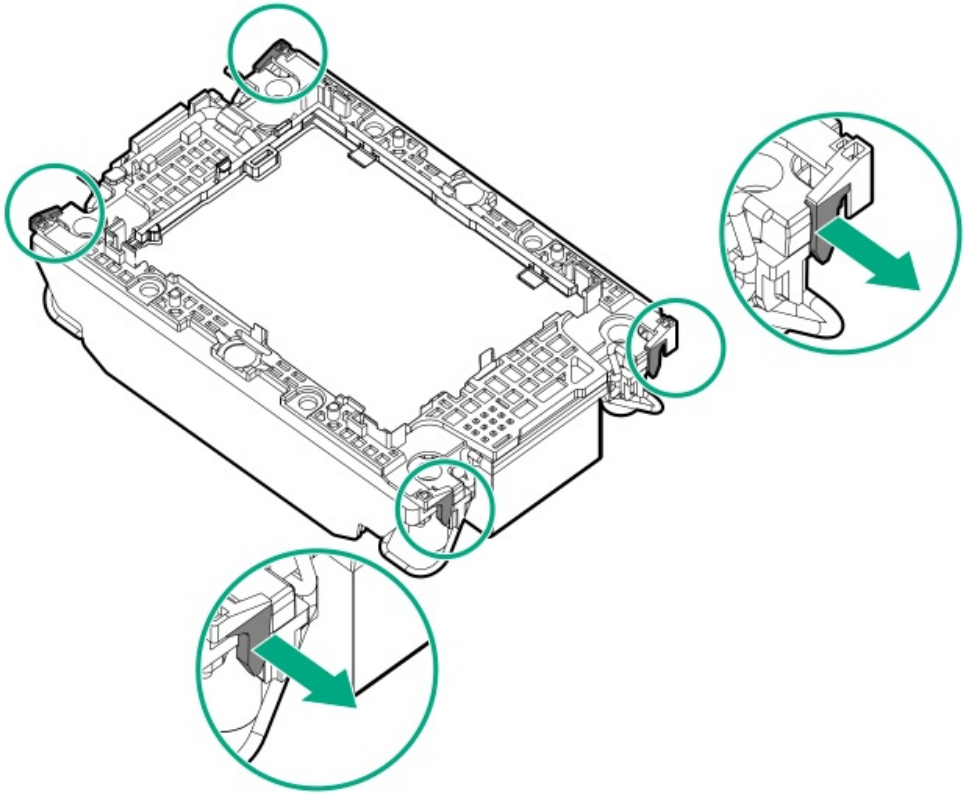
    a. Open the TIM breaker lever.

       This action breaks the adhesion between the processor and the heatsink.

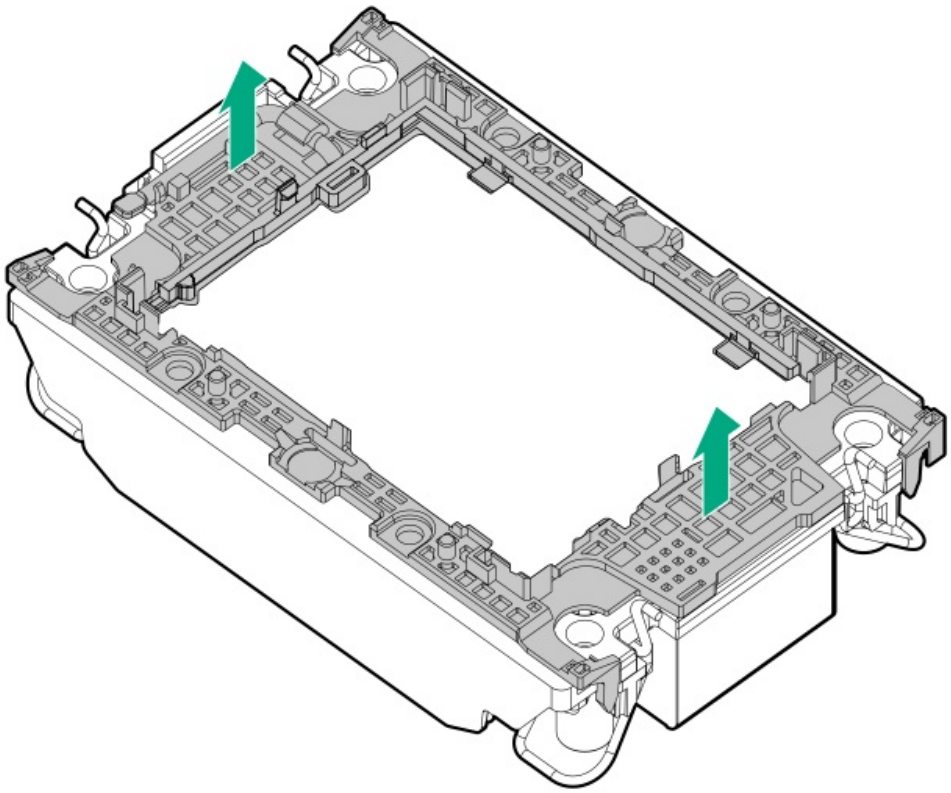
    b. Hold the processor by its edges, and then remove it from the carrier.



    c. Starting from the pin 1 corner and moving in an opposite manner, disengage the processor carrier release tabs from the heatsink.



d. Lift the processor carrier away from the heatsink.



15. Using a cleaning solvent, such as alcohol wipes, remove the existing thermal grease from the processor and heatsink.

    Allow the alcohol to evaporate before continuing.

Installing a standard or high performance heatsink

Prerequisites

- Review the following
  - Processor cautions
  - Heatsink and processor socket components
  - Fan and heatsink requirements
- Before you perform this procedure, make sure that you have a T-30 Torx screwdriver or a torque screwdriver with T-30 Torx bit available.

About this task

CAUTION

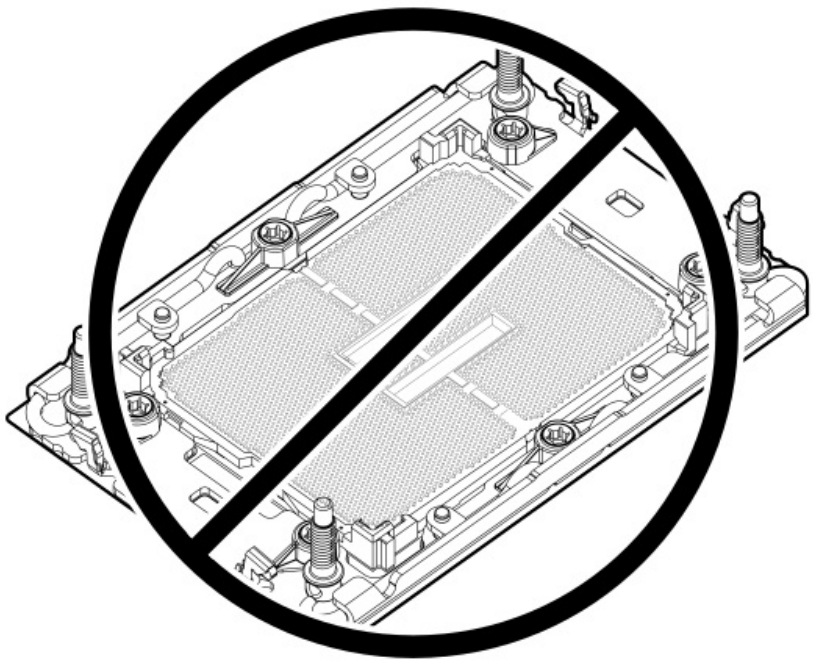
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

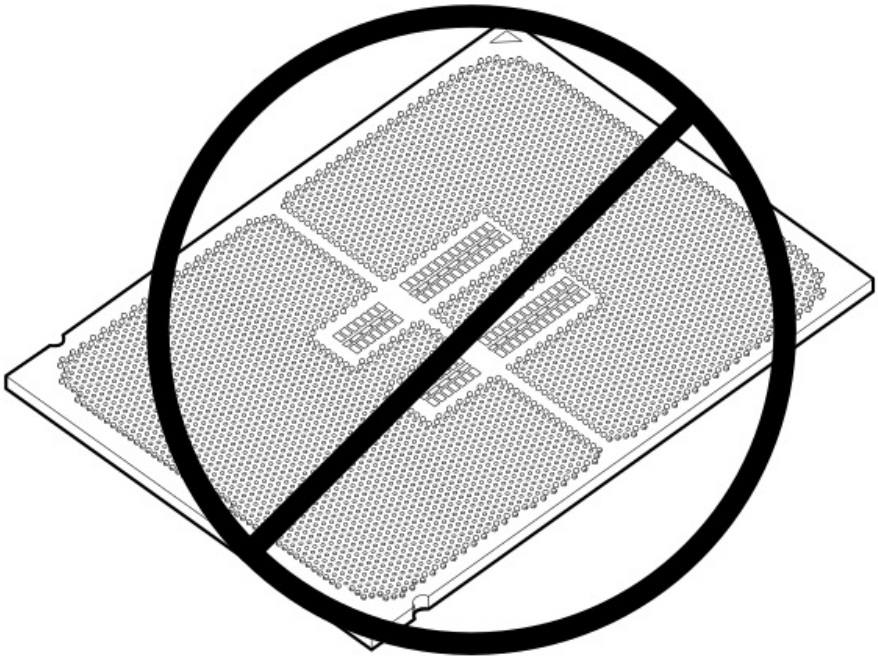
Procedure

1. Do not touch the pins on the processor socket and the processor.

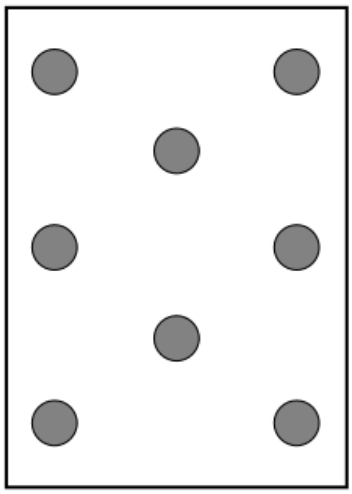
   CAUTION

   THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED. Any damage to them might require replacing the system board.

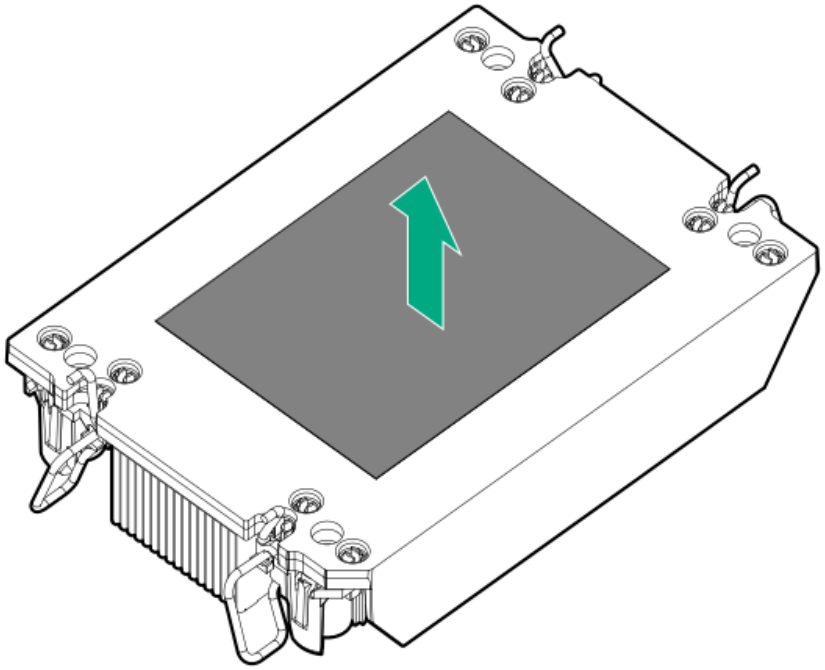




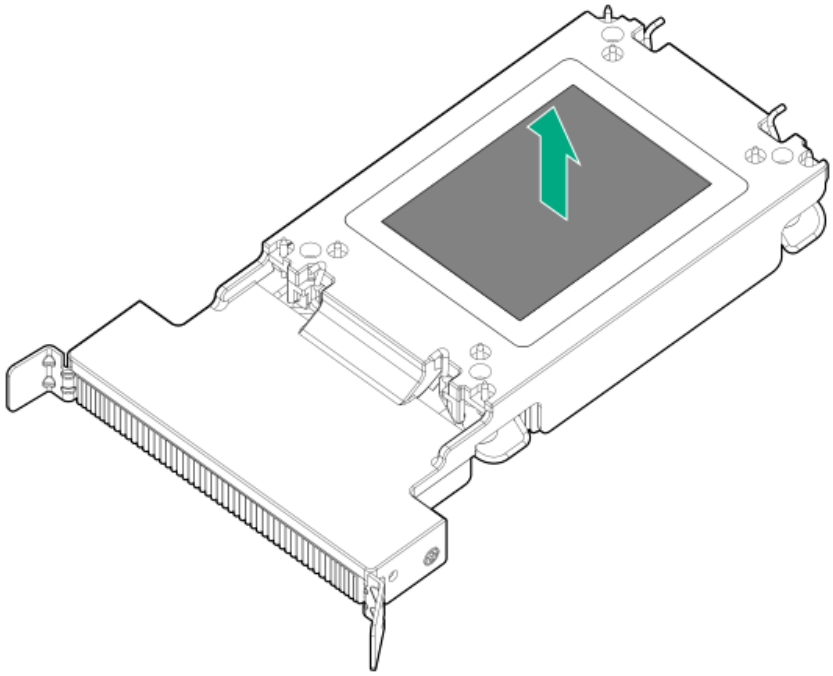
2. If you are using the same heatsink, apply the full content of the thermal grease syringes on top of the processor. Follow the pattern shown in the following image.



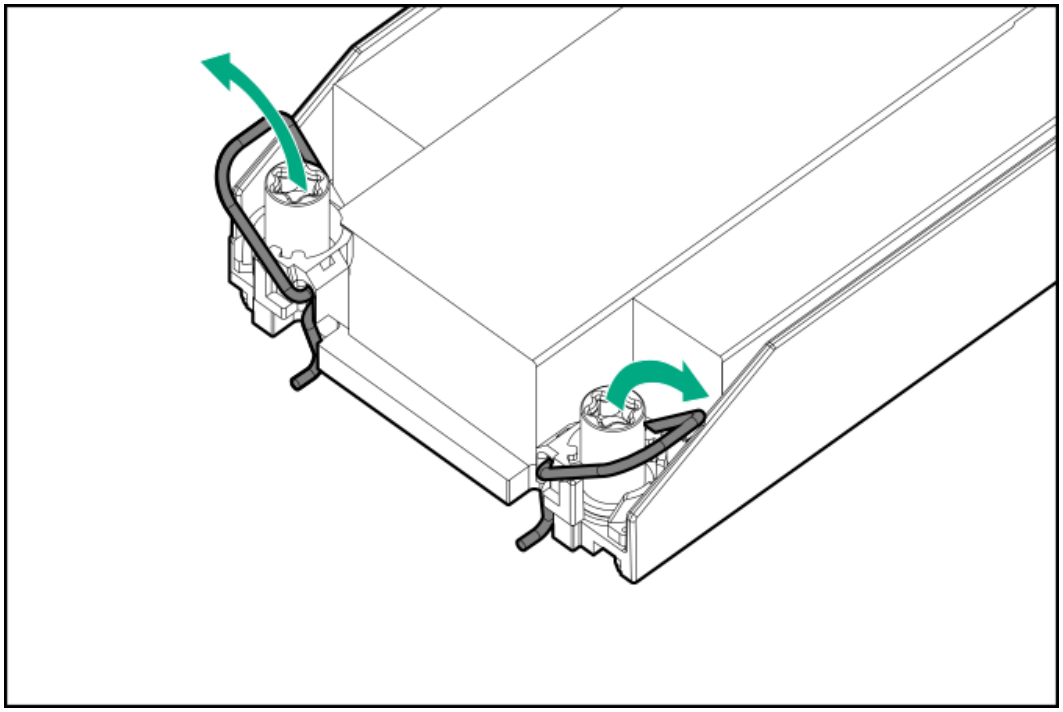
3. If you are using a new heatsink, remove the protective film from the thermal interface material.
   - Standard heatsink



- High performance heatsink

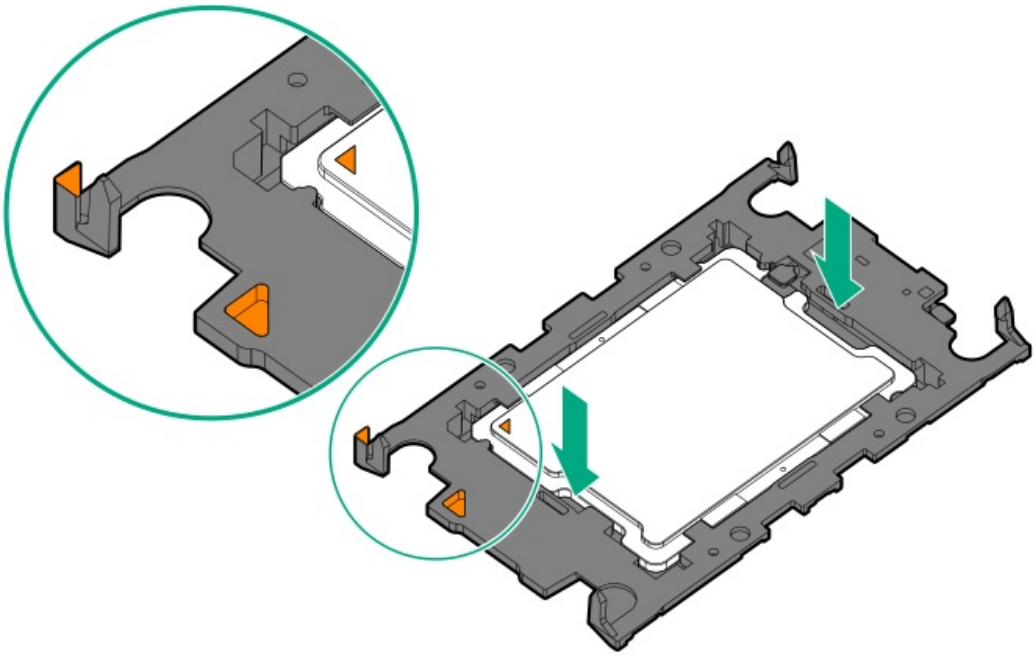


4. Set the anti-tilt wires to the locked position.

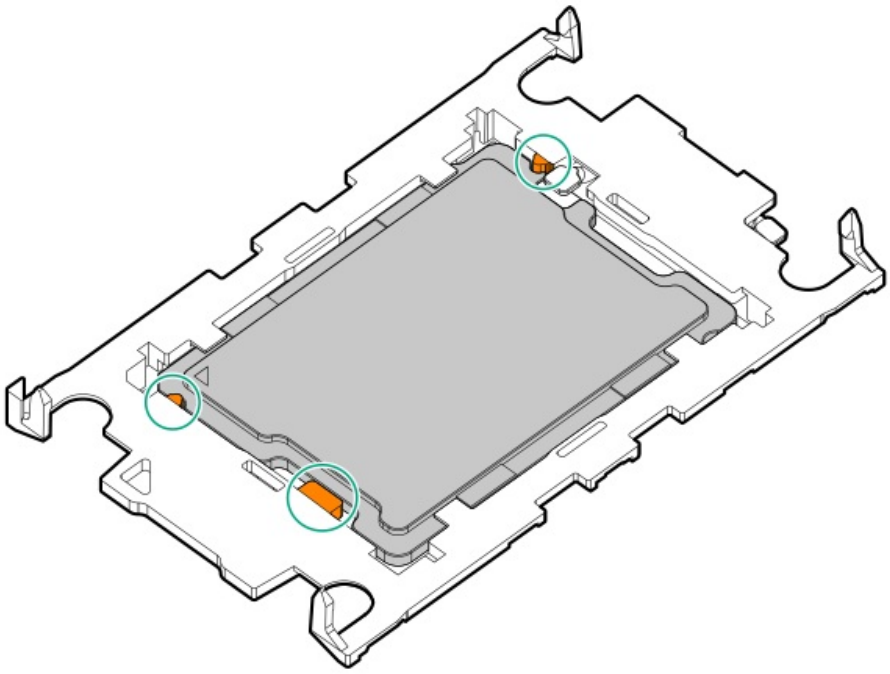


5. Install the processor carrier on the processor:

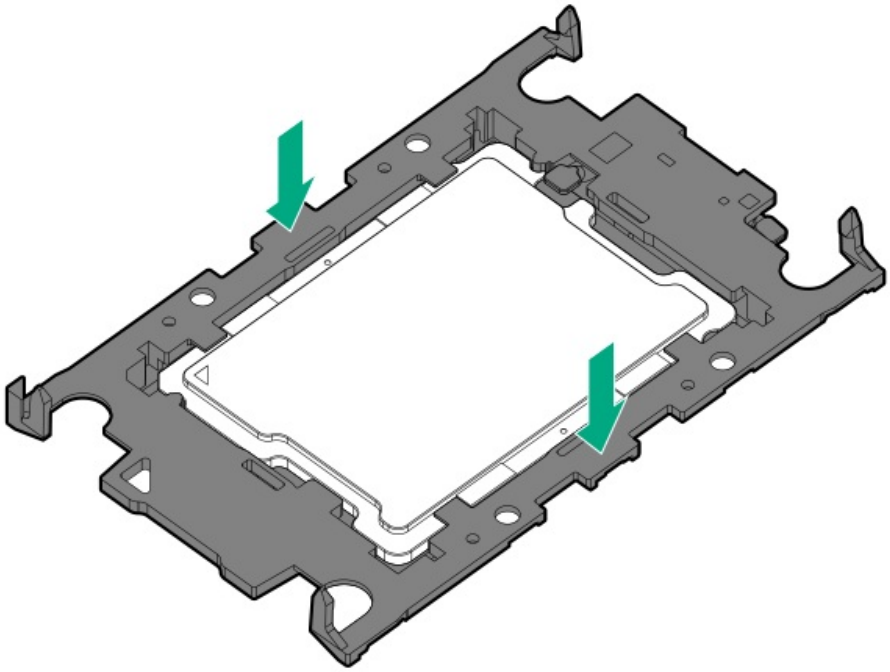
   a. Align the pin 1 indicator on the processor carrier with that on the processor, and then press on the pair of opposite sides on the TIM breaker lever of the processor carrier until it clicks into place.



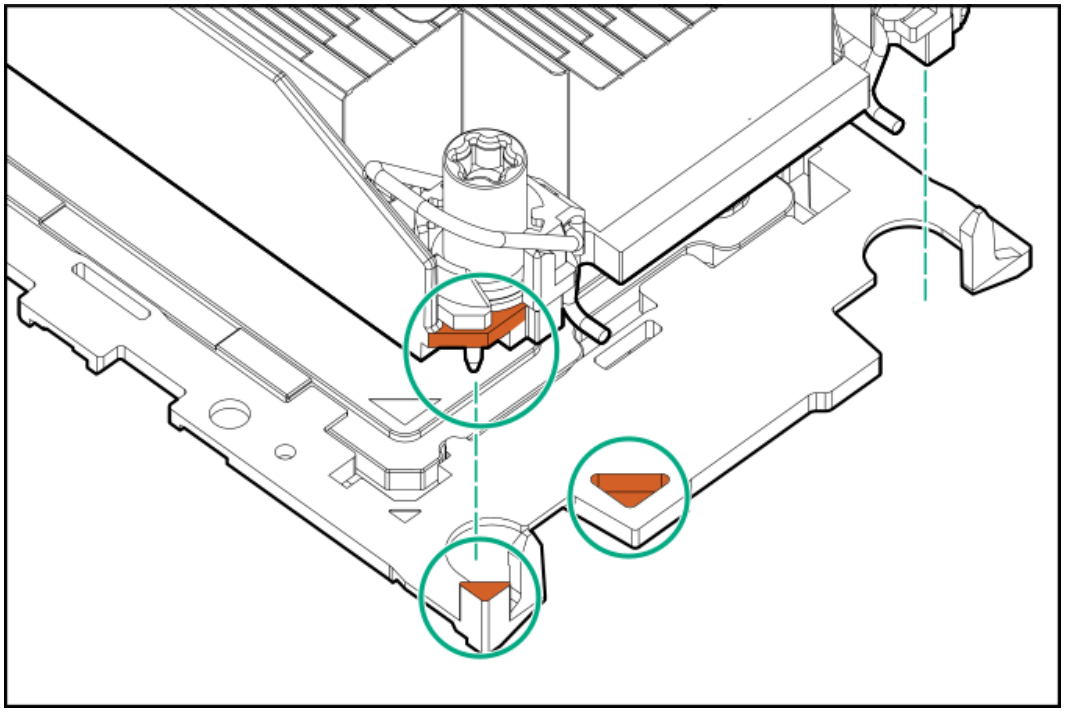
   b. Verify that the processor is properly latched on the processor carrier.



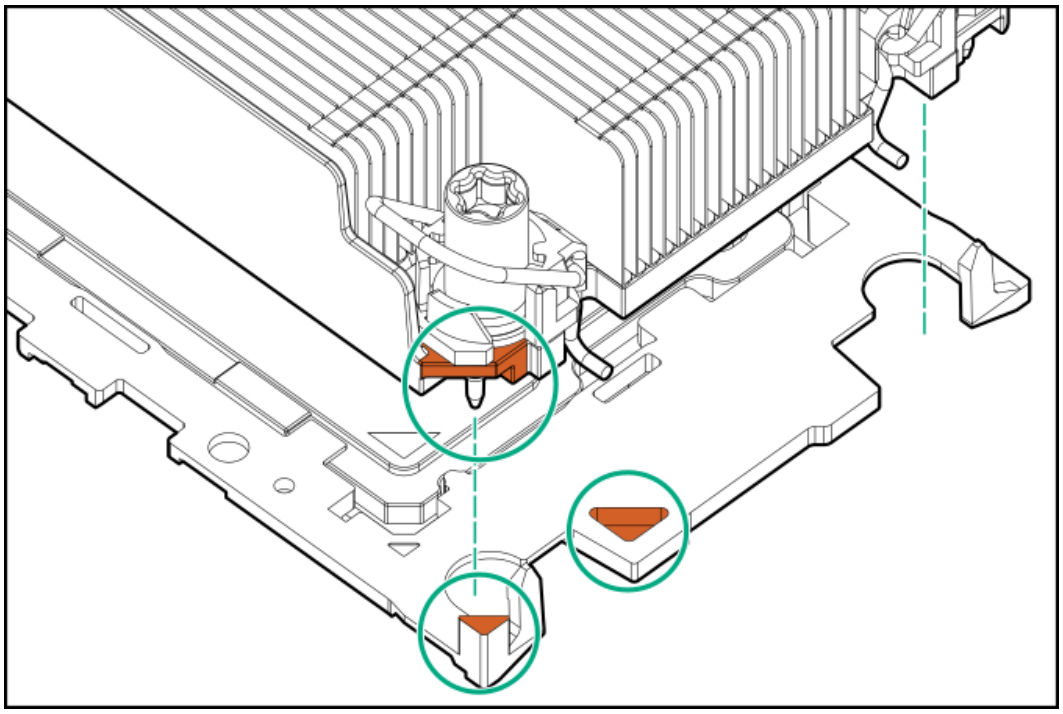
If not, press the other pair of opposite sides of the processor carrier until it clicks into place.



6. Attach the heatsink to the processor carrier:
   a. Align the pin 1 indicator on the processor carrier with that on the heatsink.
      - Standard heatsink



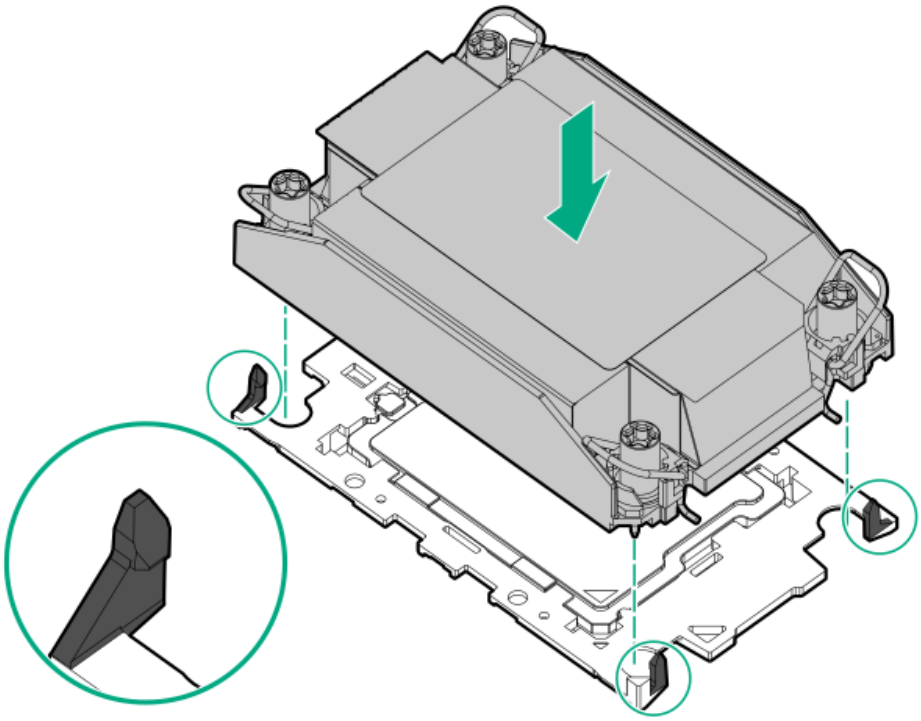
- High performance heatsink



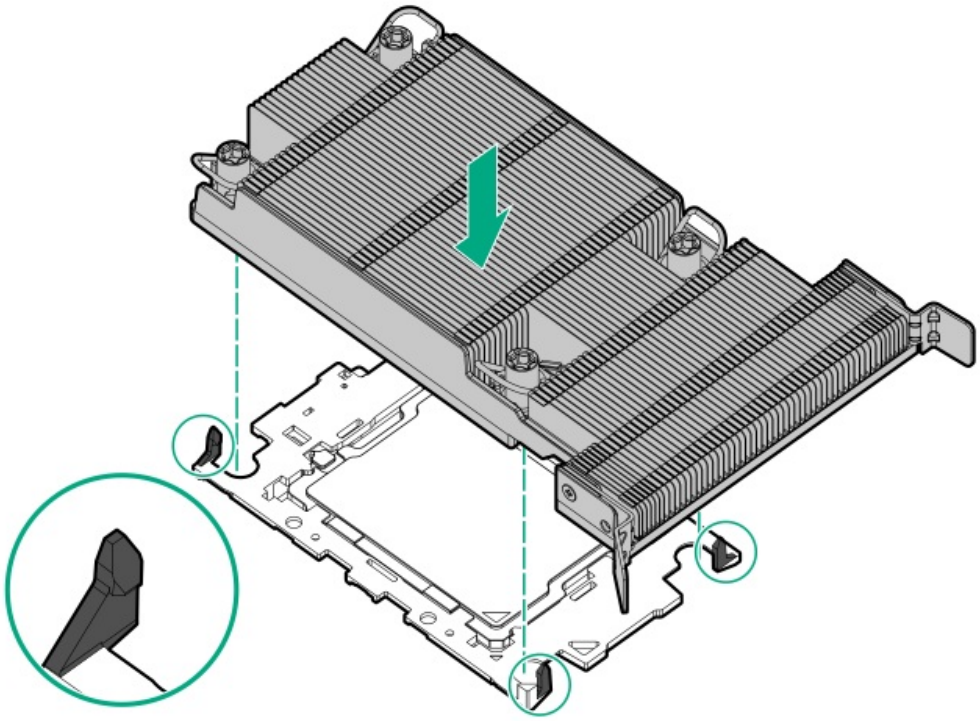
b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

   There will be an audible click to indicate that the heatsink is properly latched on the processor carrier.

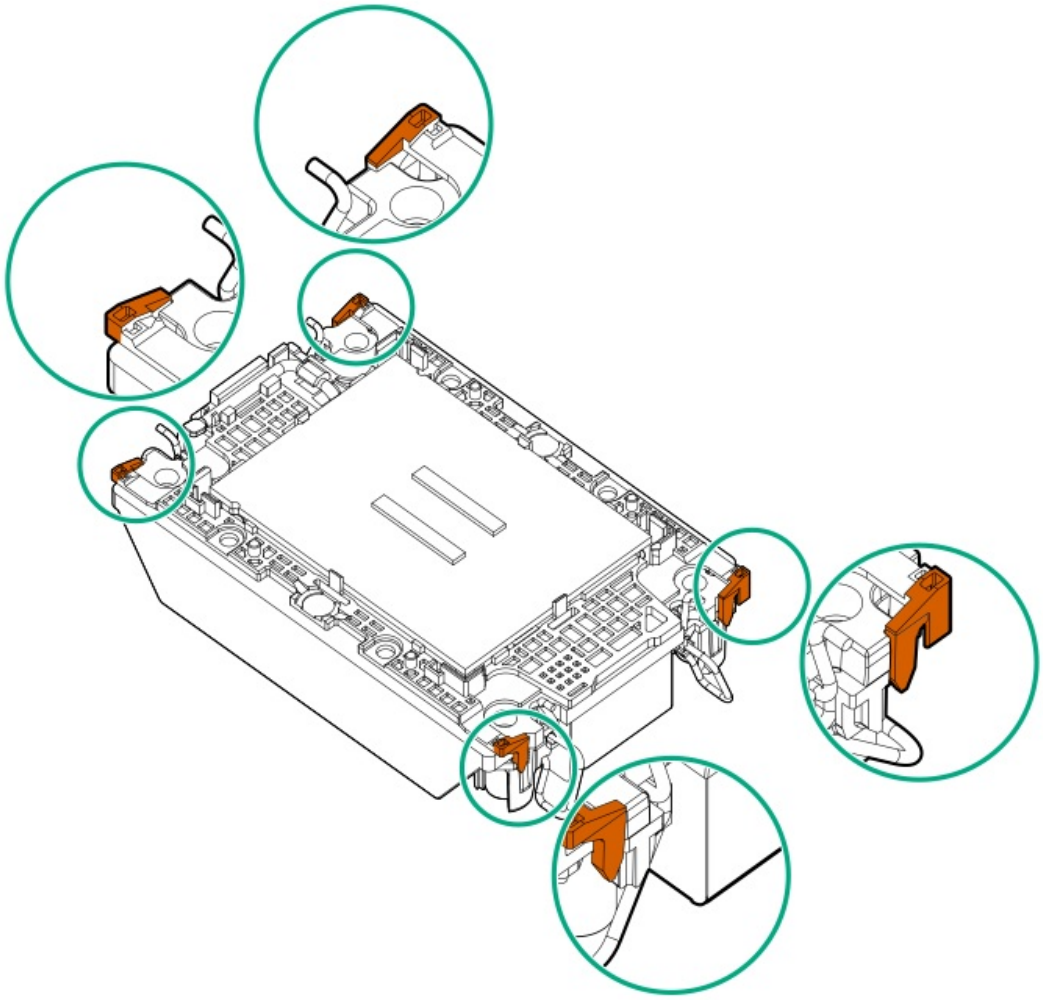
- Standard heatsink



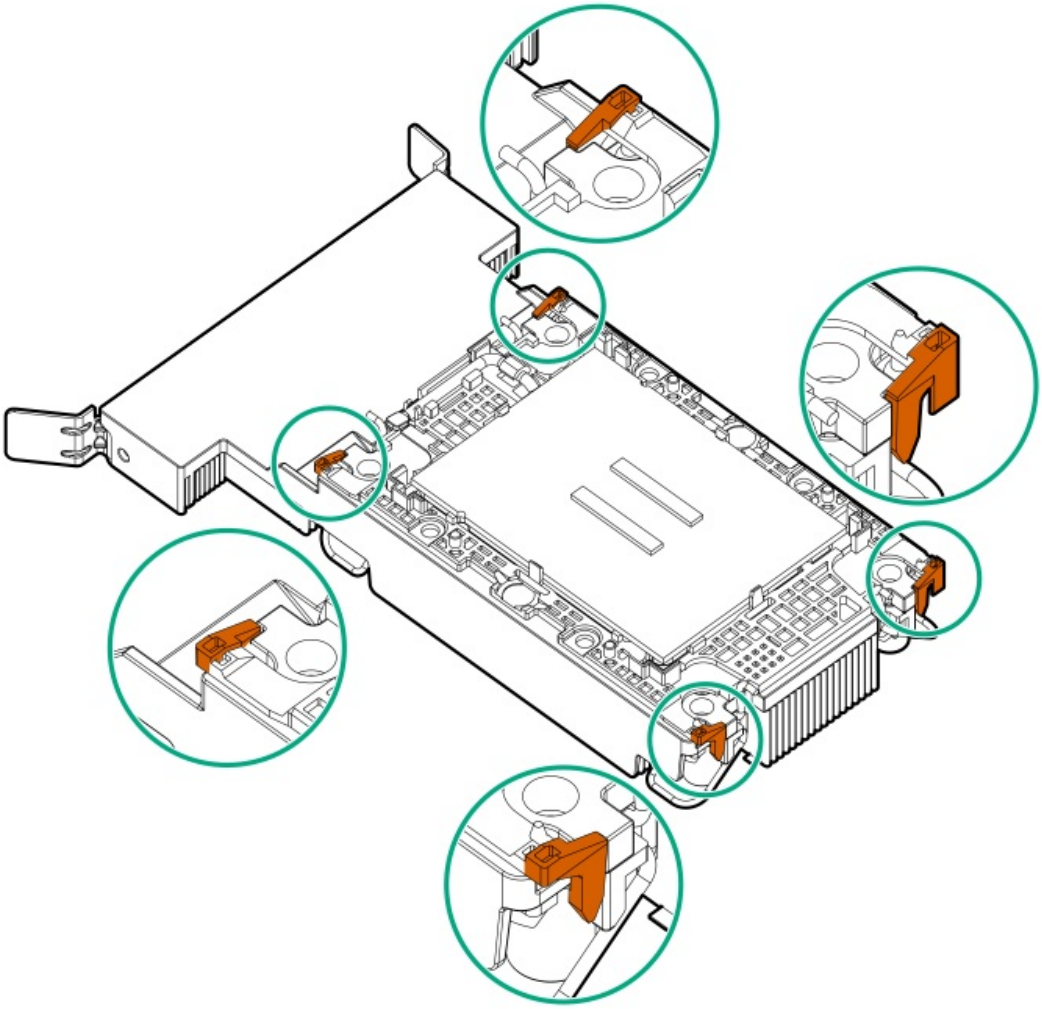
- High performance heatsink



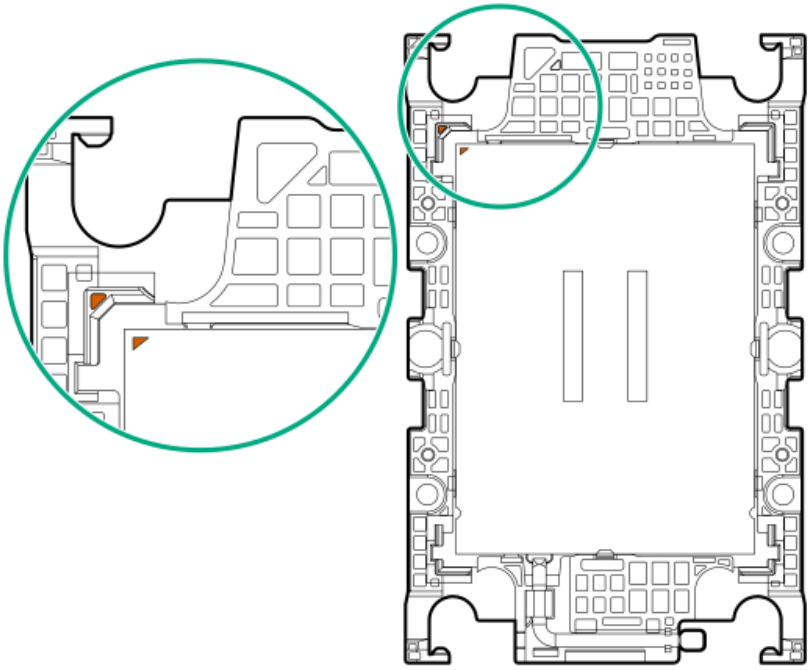
7. Perform the following verification steps:
   a. Verify that the tabs on the processor carrier are securely latched on the heatsink.
      - Standard heatsink



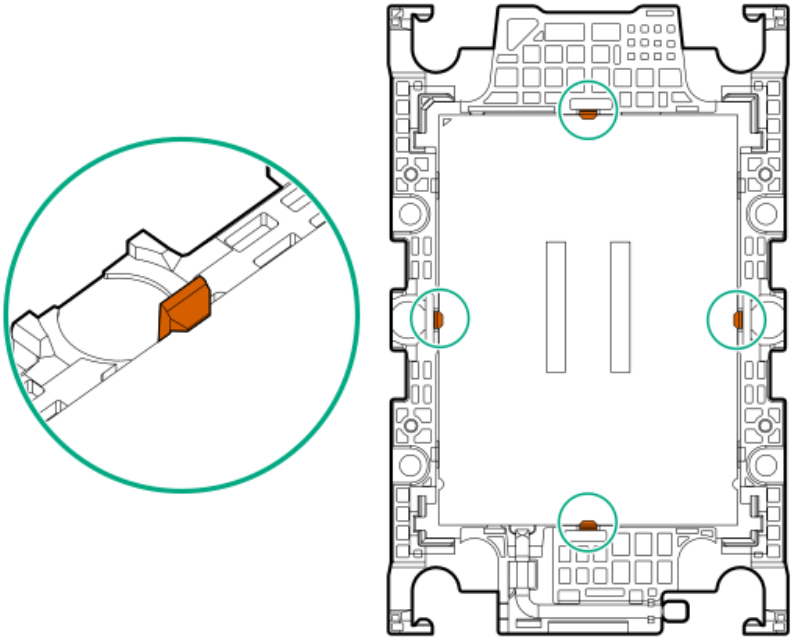
- High performance heatsink



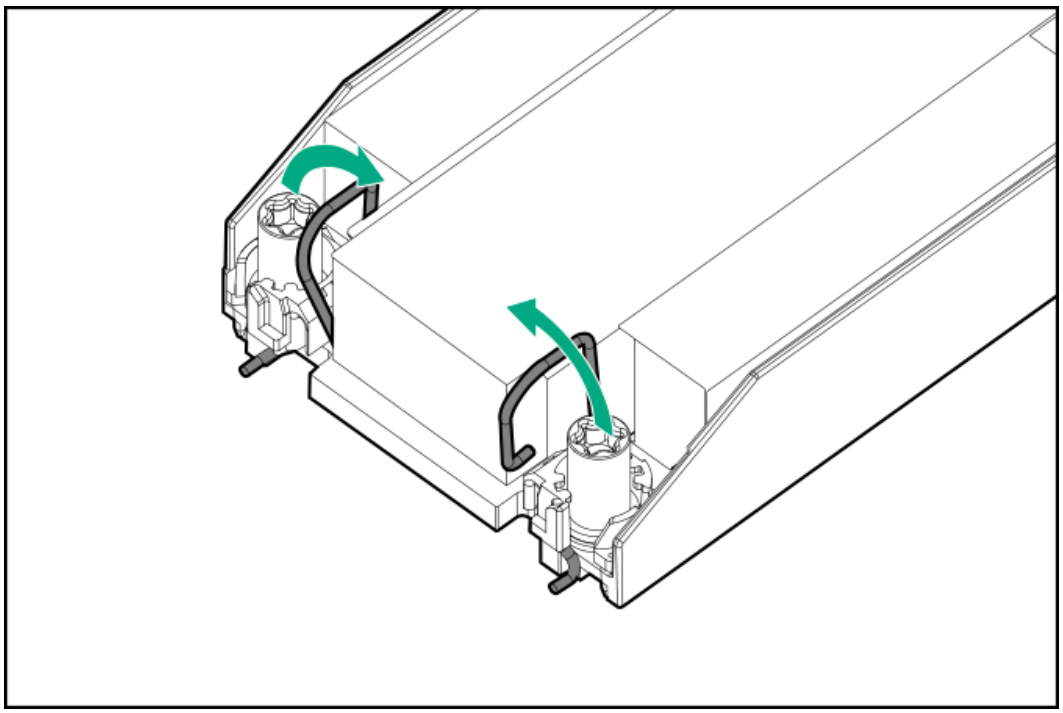
b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.



c. Verify that the processor is properly secured by the carrier snaps.



8. Set the anti-tilt wires to the unlocked position.



9. **CAUTION**

   To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

Install the processor-heatsink module:

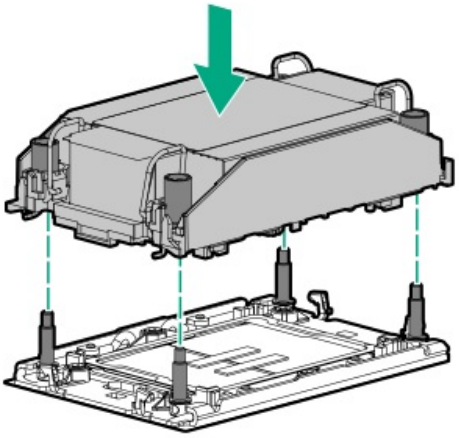
a. When using a torque wrench to tighten the heatsink screws, set 0.9 N-m (8 in-lb) of torque .

b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

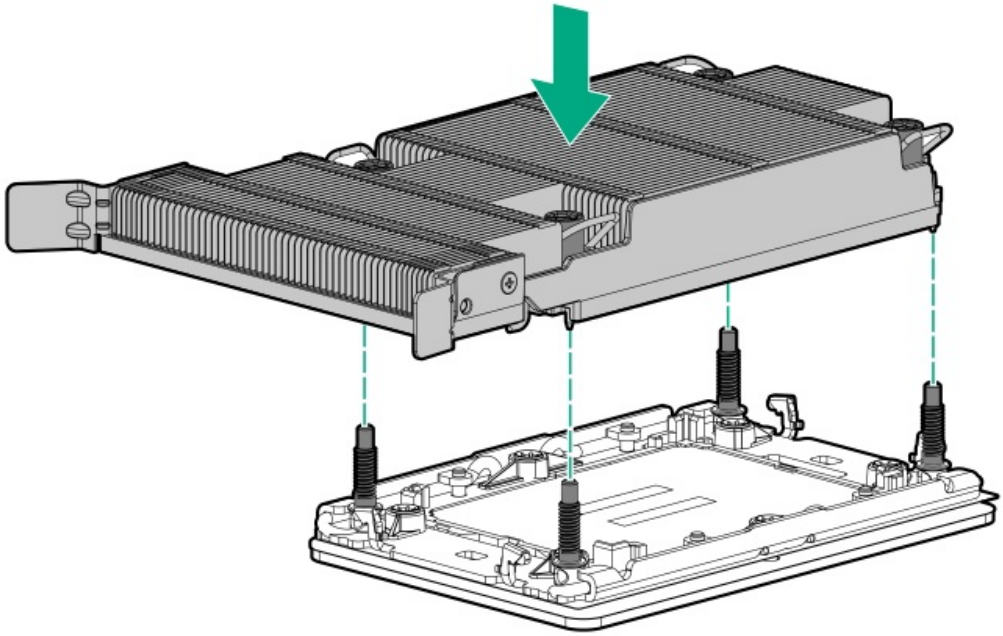
c. Carefully lower the processor-heatsink module onto the bolster plate guide posts.

The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.

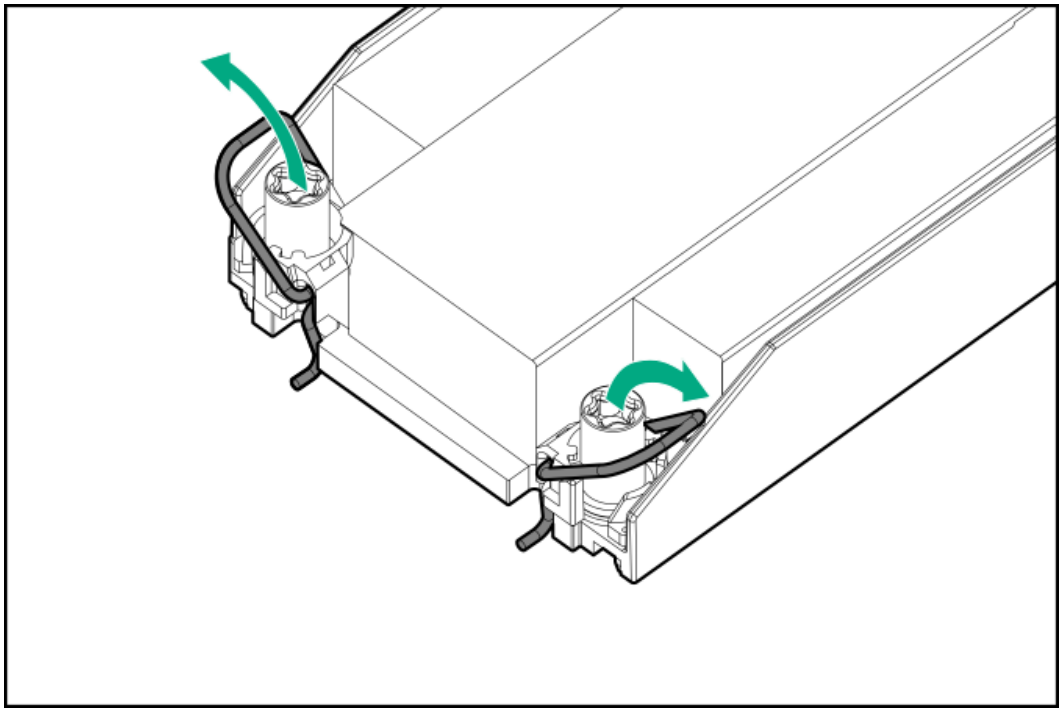
- Standard heatsink



- High performance heatsink

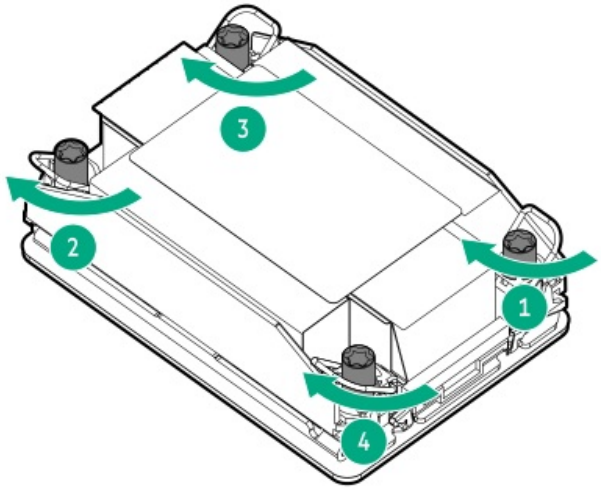


d. Set the anti-tilt wires to the locked position.

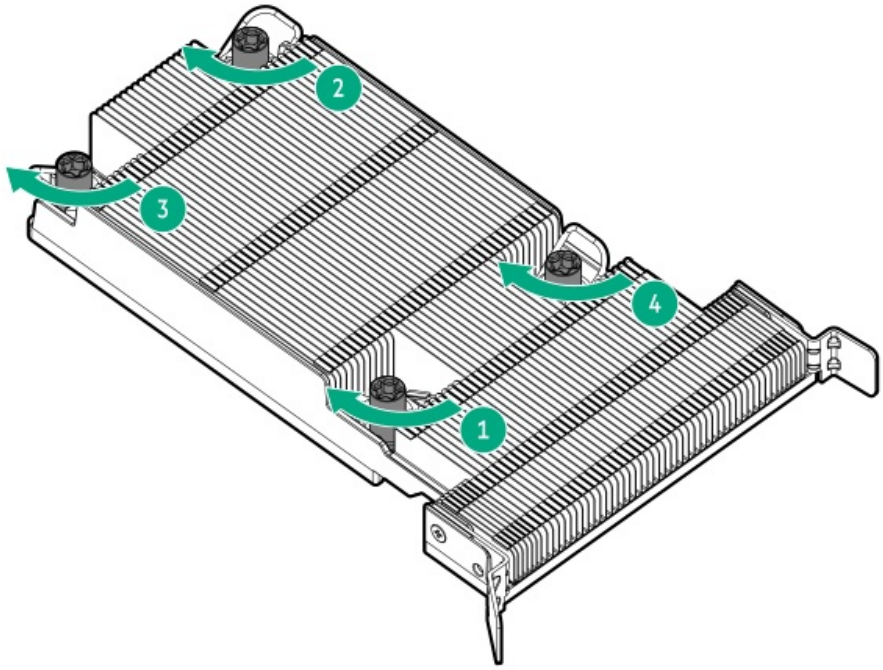


e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.

- Standard heatsink

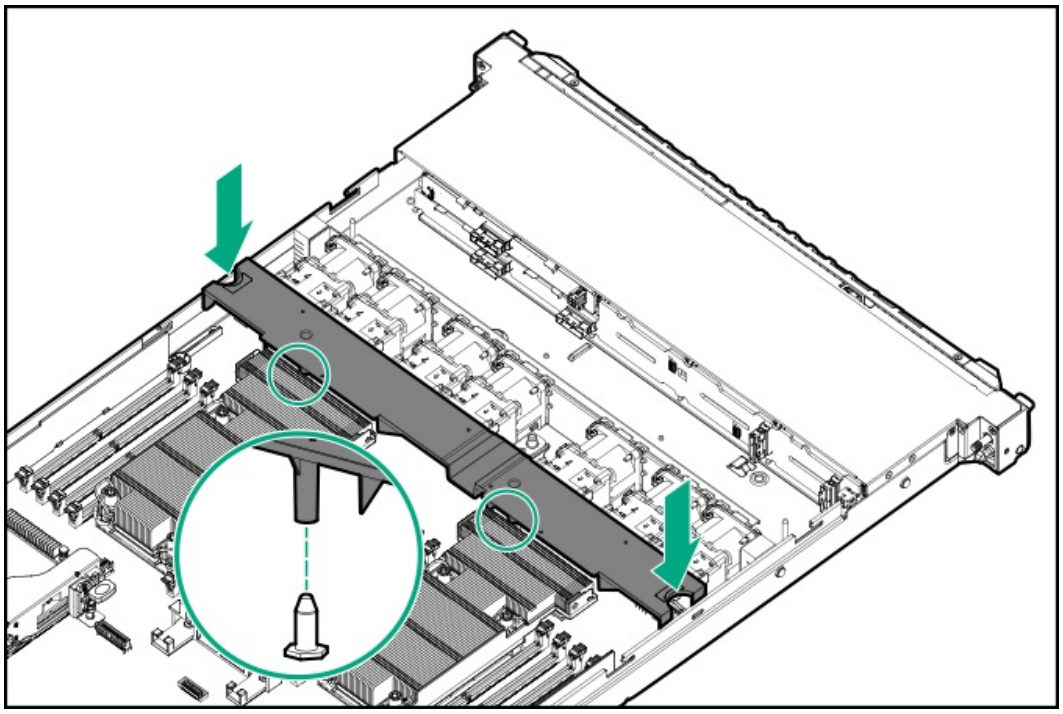


- High performance heatsink



10. (Optional) Install the air baffle.

    The air baffle is supported only when the system is configured with high performance heatsinks.



11. Install the access panel.
12. If the server was removed from an enclosure or a rack, reinstall it now.
13. Connect all peripheral cables to the server.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The replacement procedure is complete.

Liquid cooling module replacement

Subtopics

Removing the closed-loop liquid cooling module from the system board
Installing the closed-loop liquid cooling module on the system board
Disconnecting the direct liquid cooling kit
Removing the DLC cold plate module from the system board
Installing the DLC cold plate module on the system board

Removing the closed-loop liquid cooling module from the system board

Prerequisites

- Review the following:
  - Closed-loop liquid cooling (CLLC) module components
  - Heatsink and processor socket components
  - Processor cautions
  - Eye and skin protection
- If the reason for replacing the liquid cooling module is due to a coolant leak, first perform the Appendix I: Server coolant spill response procedure.
- Before you perform this procedure, make sure that you have the following items available:
  - Liquid cooling module handle that ships with the closed-loop liquid cooling module spare part
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - T-15 Torx screwdriver
  - Alcohol wipe
  - Processor socket dust cover—This is needed if you are not immediately installing the replacement processor-heatsink assembly.

About this task

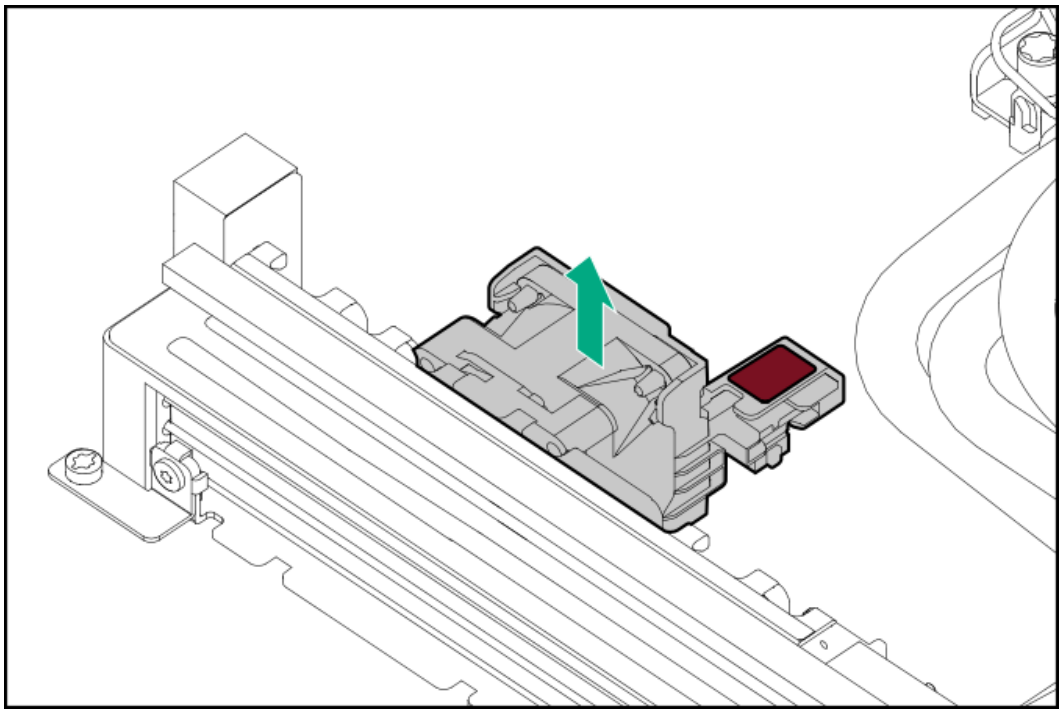
https://sketchfab.com/models/d096d52d718341fca85a81295ca4b374/embed?ui_infos=0&ui_watermark=0&ui_help=0&ui_vr=0&ui_settings=0&ui_inspector=0&ui_hint=2&ui_color=01a982&ui_theme=dark&autostart=1&camera=0&

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
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

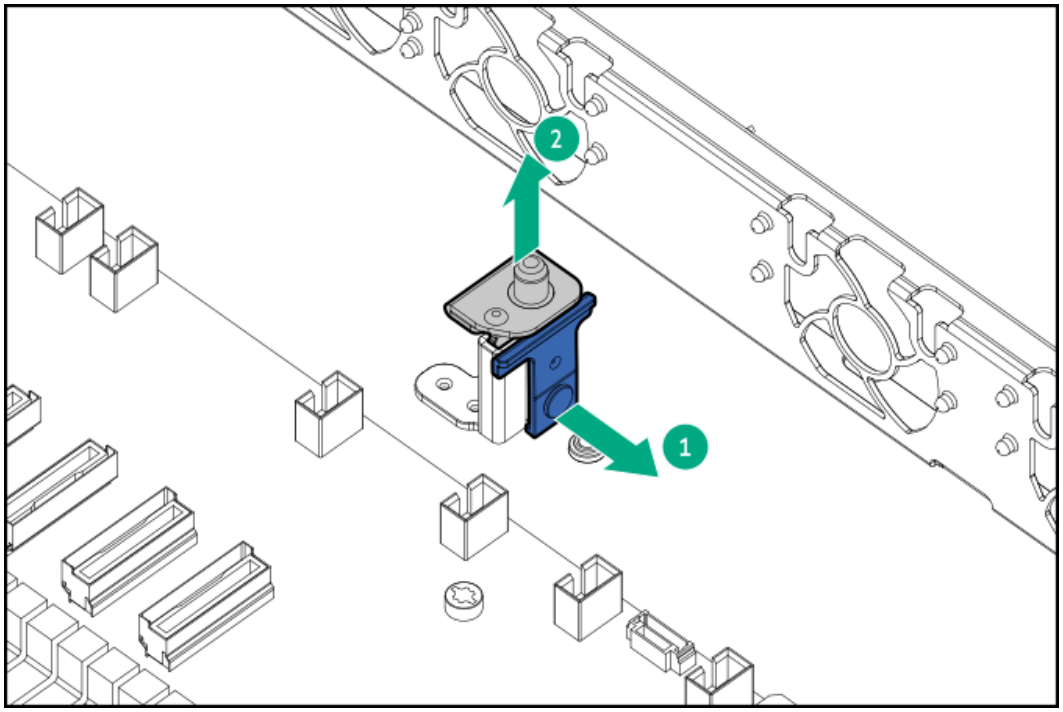
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If the server is installed in an enclosure or a rack, remove the server and place it on a flat and level work surface.
5. Remove the access panel.
6. Remove all fans.

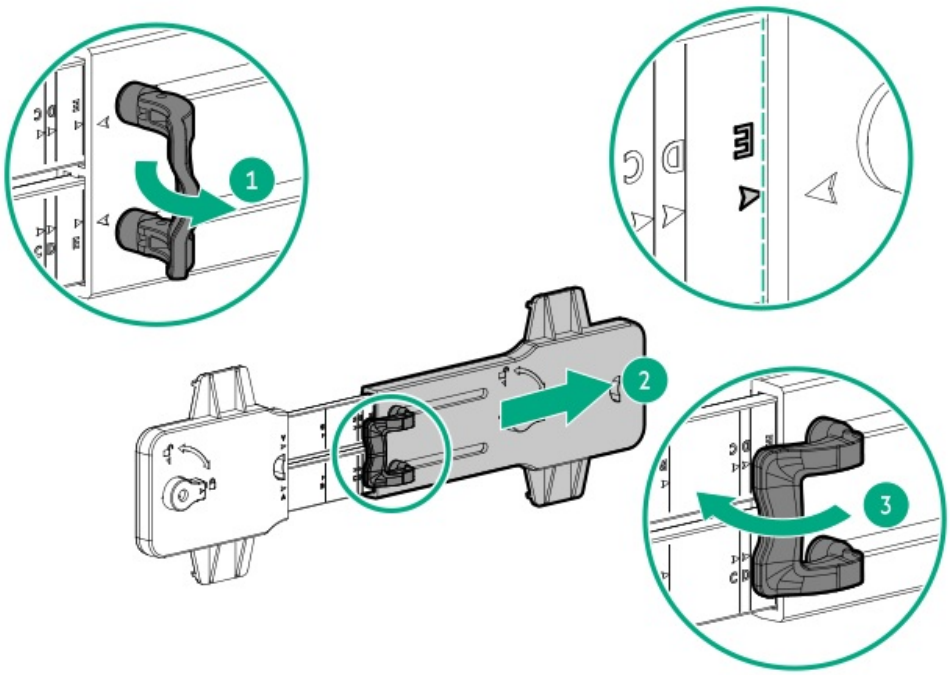


7. Remove the access panel guide pin.

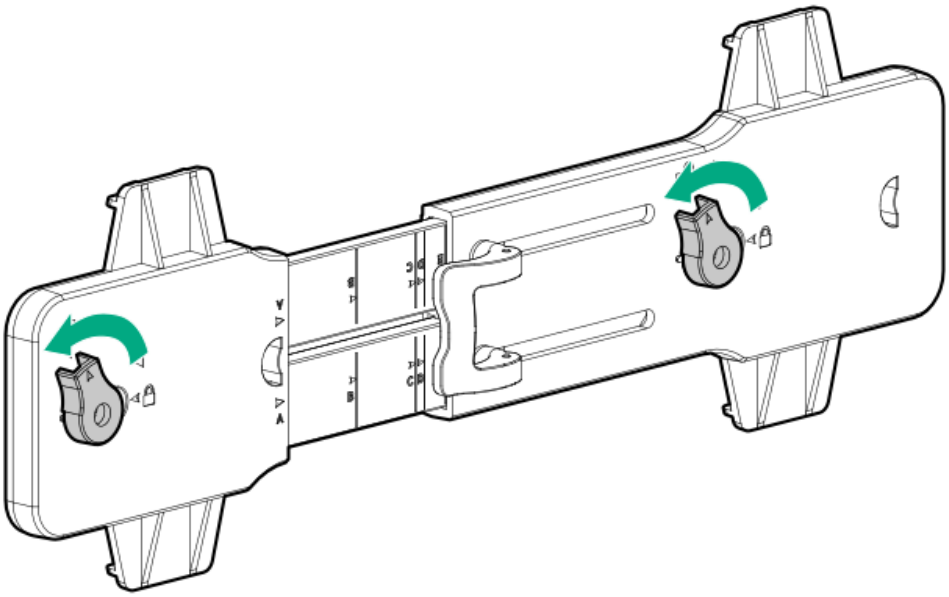
   Retain the guide pin. The guide pin will be re-installed after the new liquid cooling module is installed.



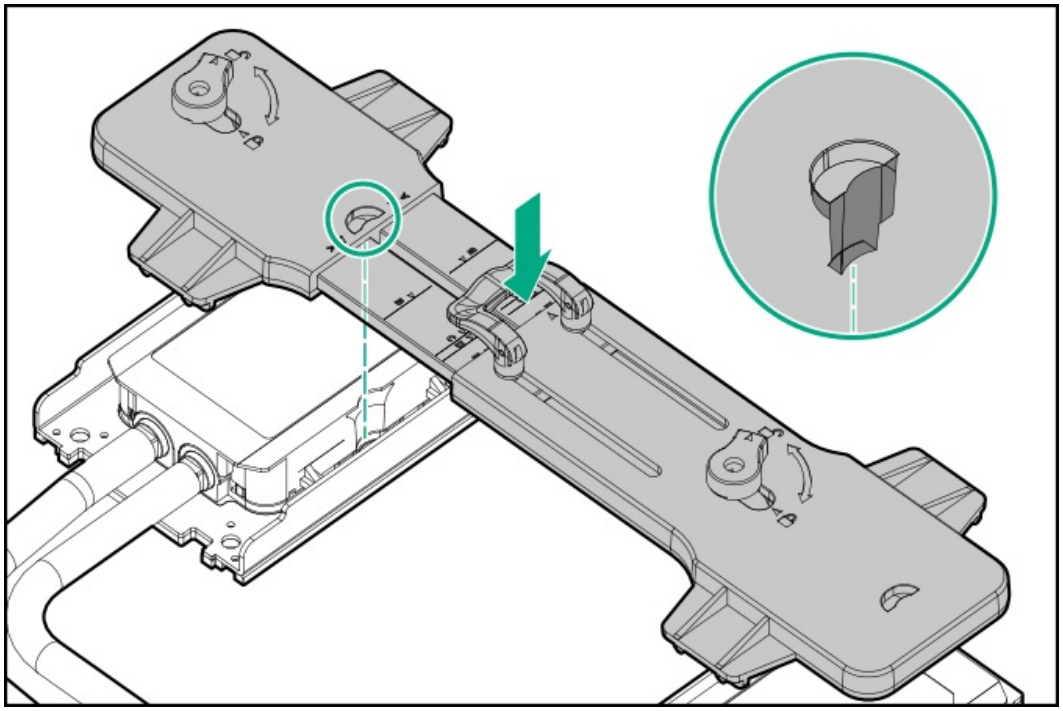
8. Set the liquid cooling module handle to the appropriate length.
   a. Disengage the locking handle.
   b. Extend the handle and align the edge to the line marked by the letter E.
   c. Engage the locking handle.



9. Attach the handle to the pump-cold plates:
   a. Rotate the handle knobs anti-clockwise to the unlocked position.

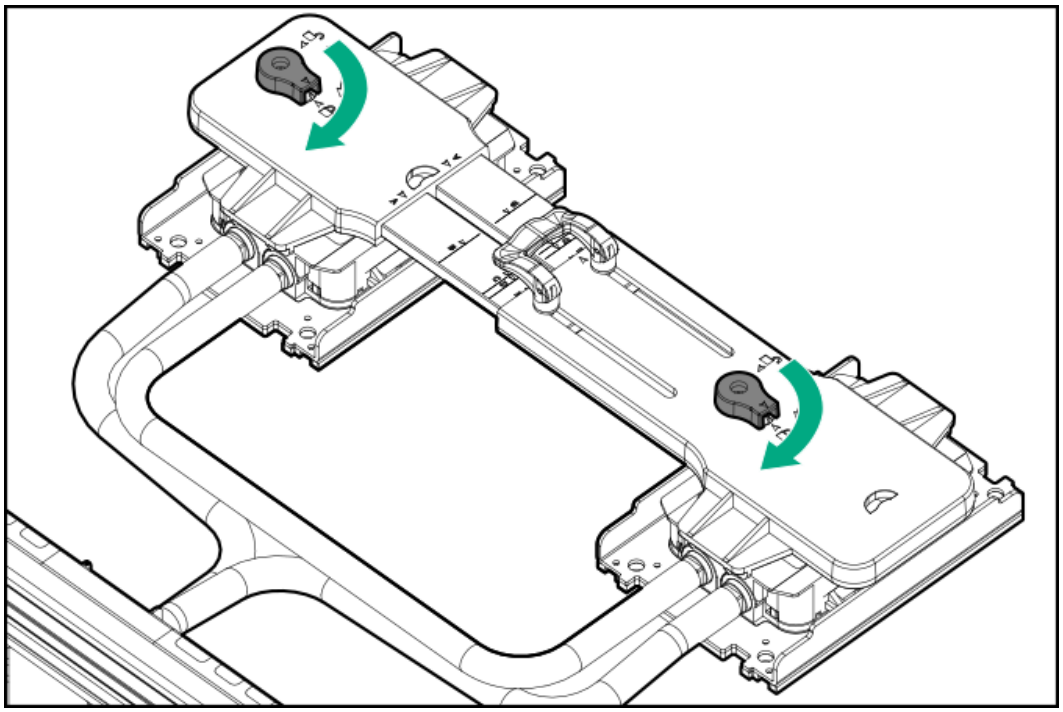


b. Align the hooks on the handle with the notches on the pump-cold plates, and then attach the handle to the pump-cold plates.



c. Turn the handle knobs to the locked position.

   Gently pull on the handle and verify that pump-cold plates are securely latched to the handle.



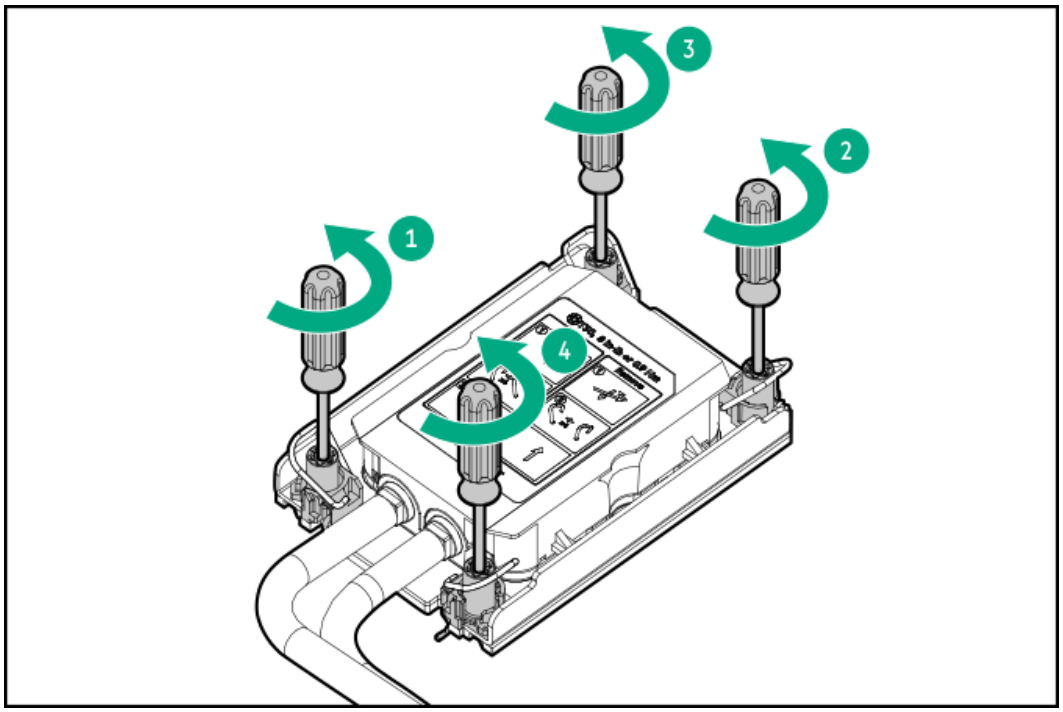
10. Loosen the pump-cold plate screws.

a.

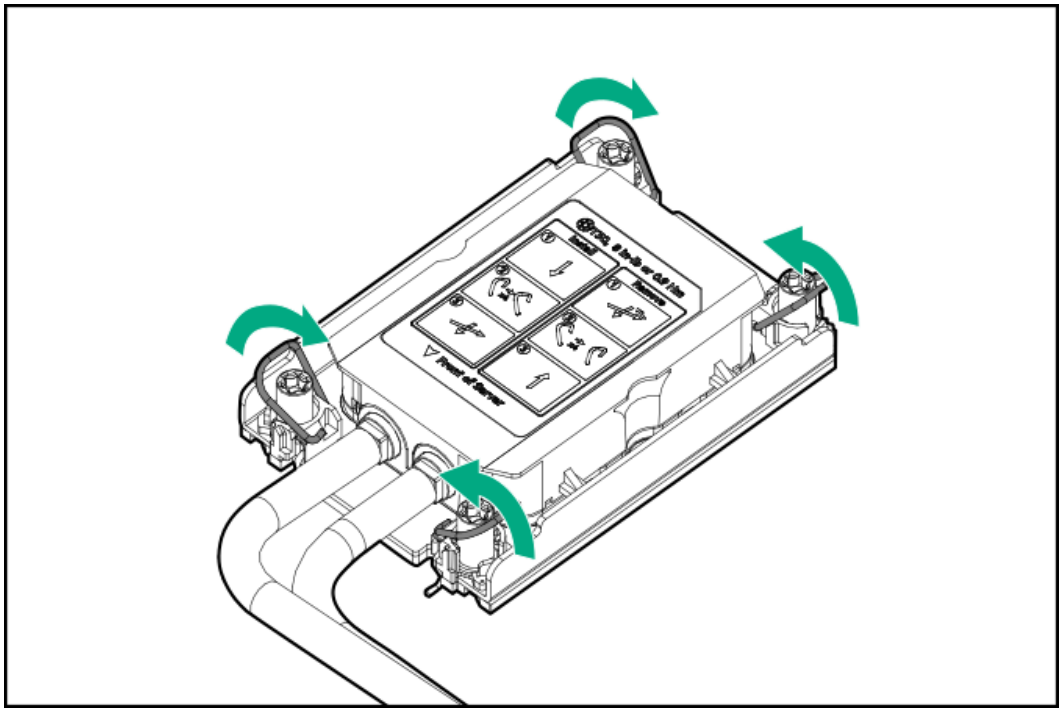
CAUTION

Cold-plate screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as it might damage the system board or the processor socket.

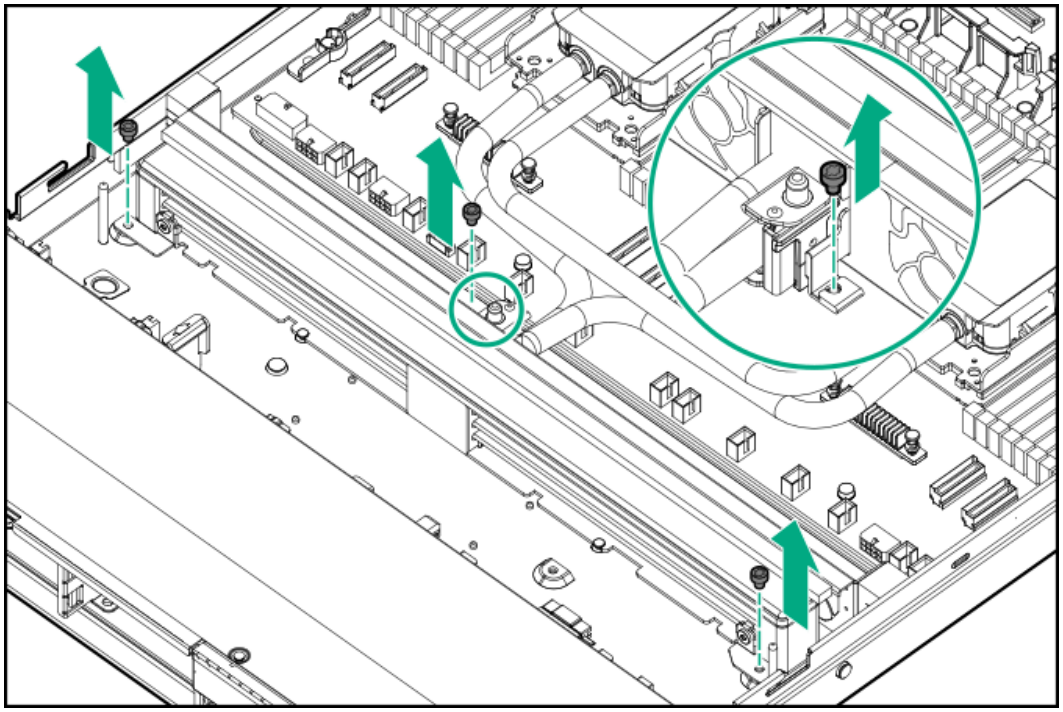
Use a T-30 Torx screwdriver to loosen one pair of diagonally opposite pump-cold plate screws (callouts 1 and 2). Then loosen the other pair of pump-cold plate screws (callouts 3 and 4).



b. Set the anti-tilt wires to the unlocked position.



11. Disconnect the pump signal cable from the system board .
12. Remove the screws from the radiator.



13. **CAUTION**

    To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

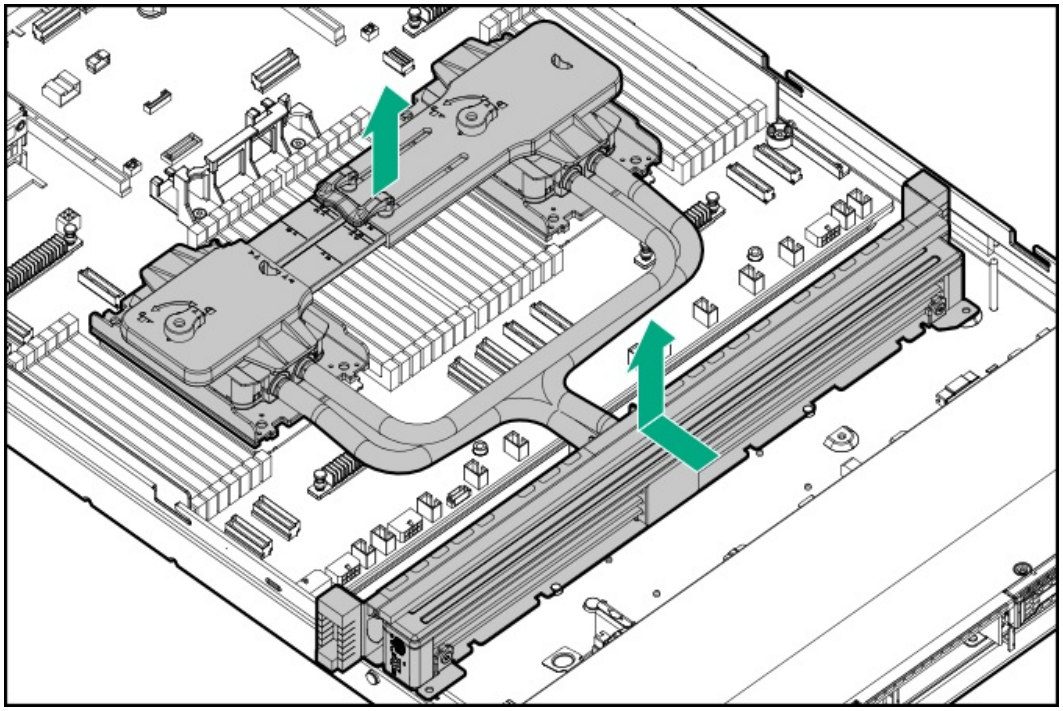
CAUTION

Extra caution is required when you are handling the liquid cooling module or processor-carrier assembly during its installation or removal process. **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.**

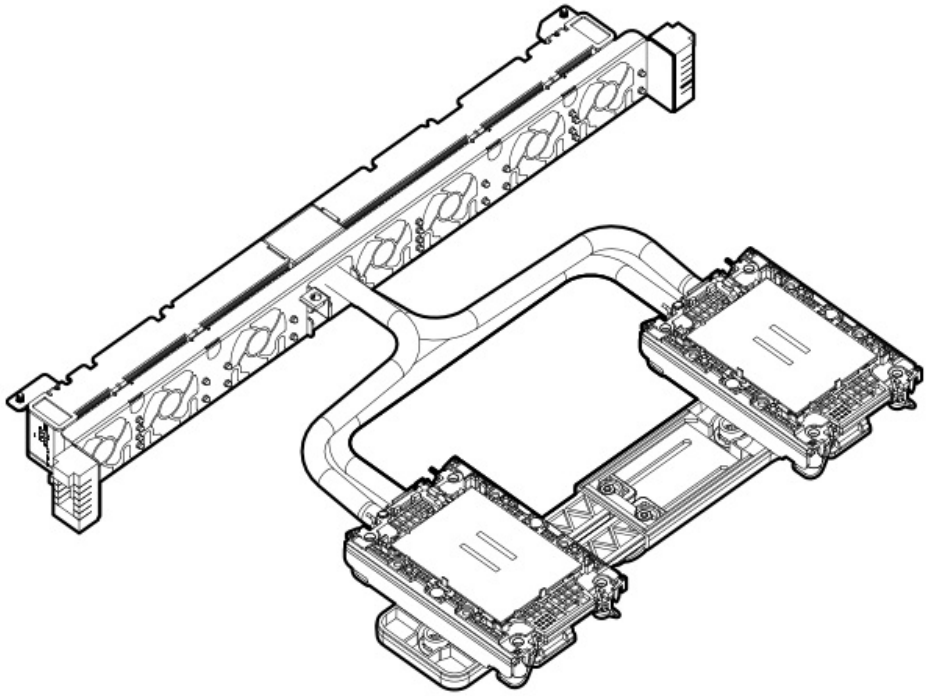
Remove the liquid cooling module:

a. Hold the radiator and handle in the middle.

b. Slide the radiator to disengage it from the spools on the chassis, and lift the handle and radiator straight up.



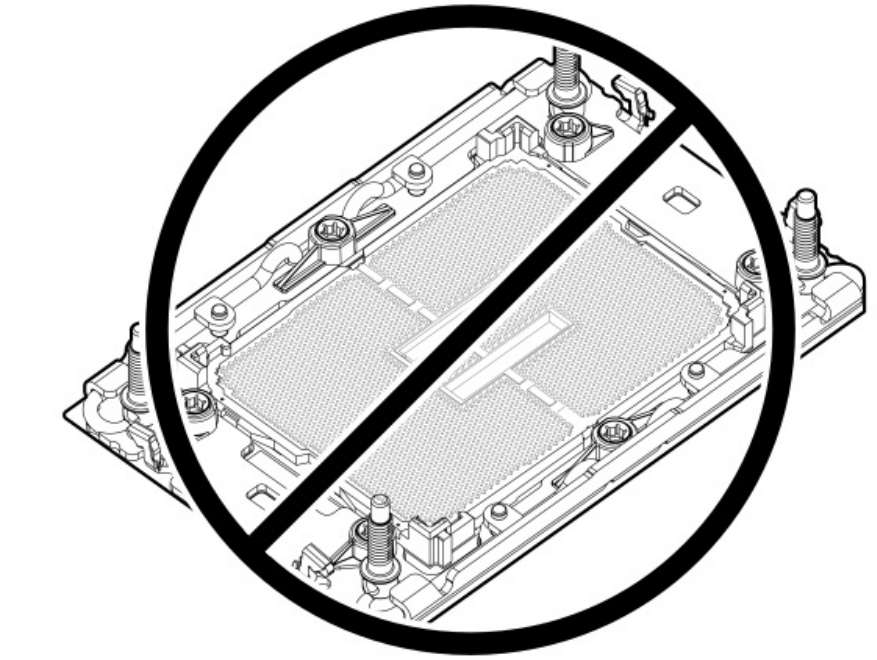
14. Place the liquid cooling module on a flat work surface with its contact side facing up.

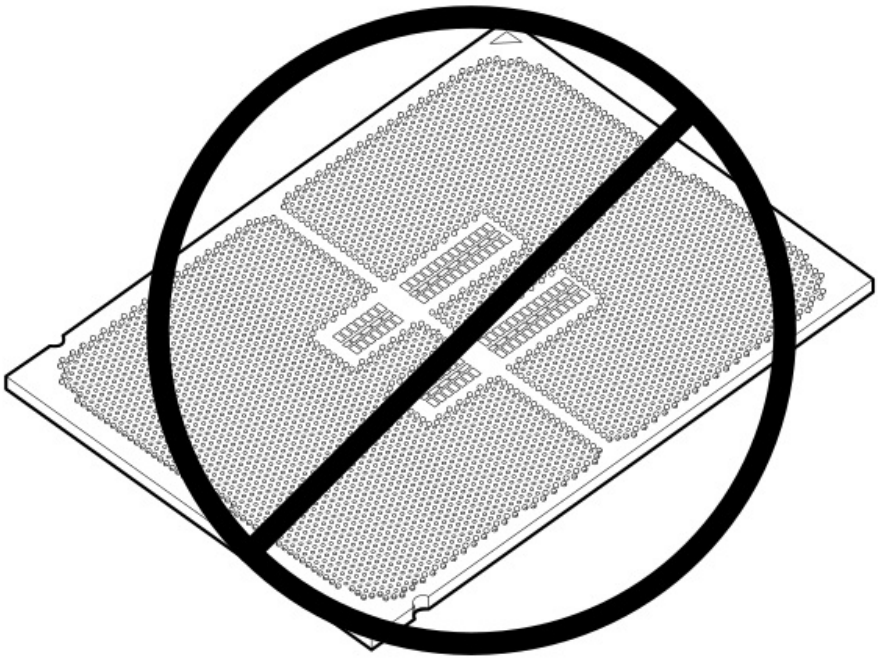


15. Do not touch the pins on the processor socket and the processor.

CAUTION

THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED. Any damage to them might require replacing the system board.





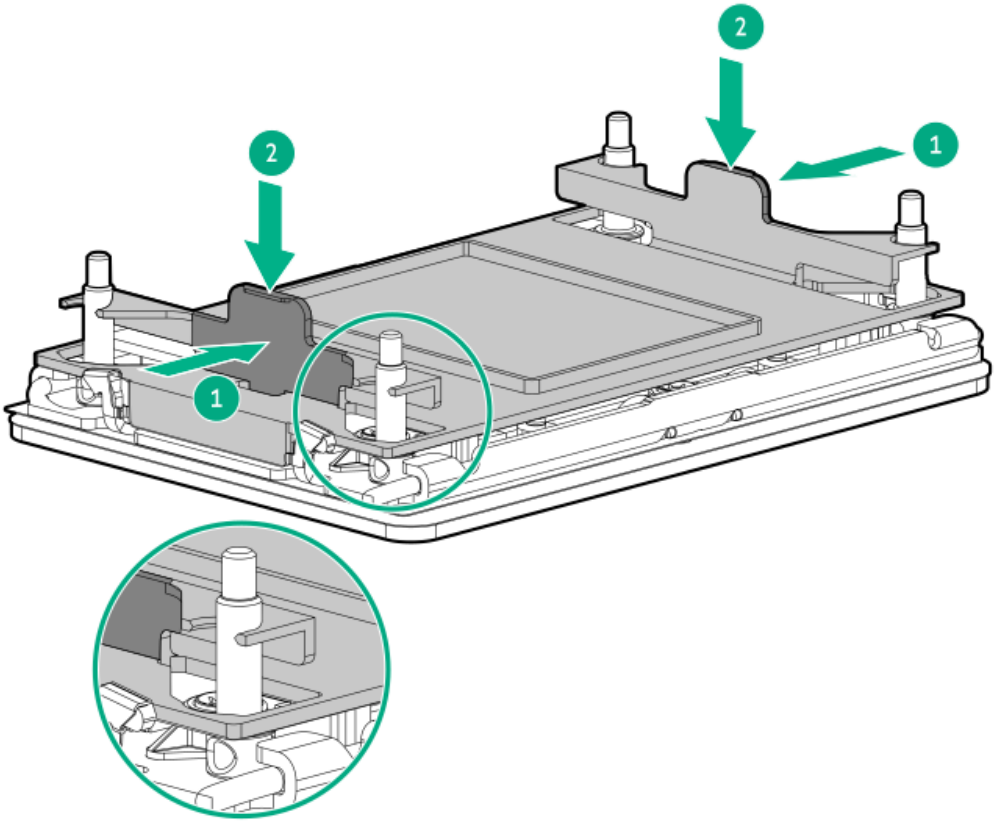
16. If you are not immediately installing the replacement processor-heatsink module, install the dust cover on the empty processor socket:

> **CAUTION**
>
> Do not press down on the dust cover. Pressing down on the dust cover might damage the processor socket.

a. Press and hold the grip tabs on the dust cover.

b. Carefully lower the dust cover onto the bolster plate guide posts.

   Make sure that the corner holes of the dust cover are properly engaged with the guide posts on the bolster plate.

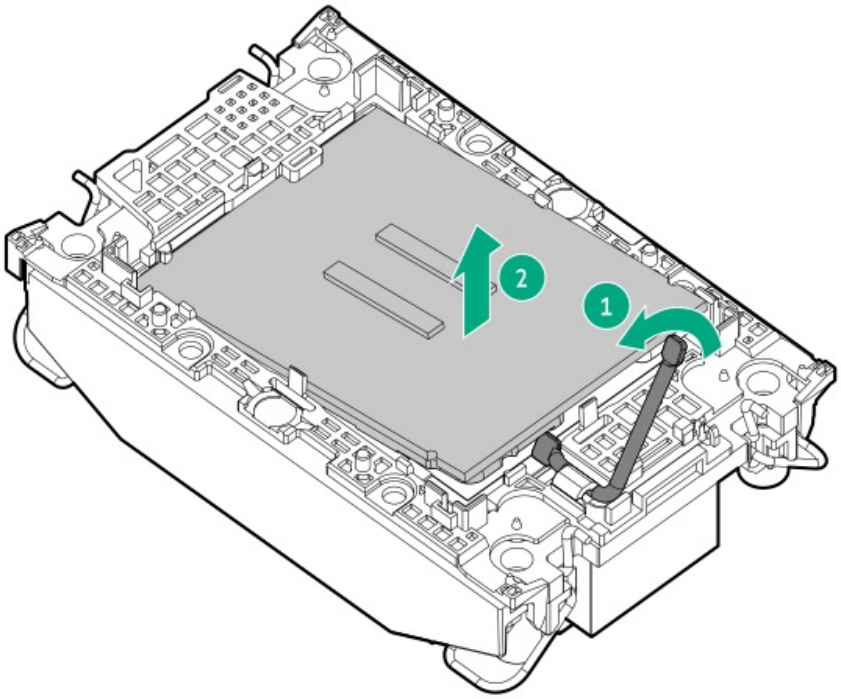


17. Remove the processor from the pump-cold plate:

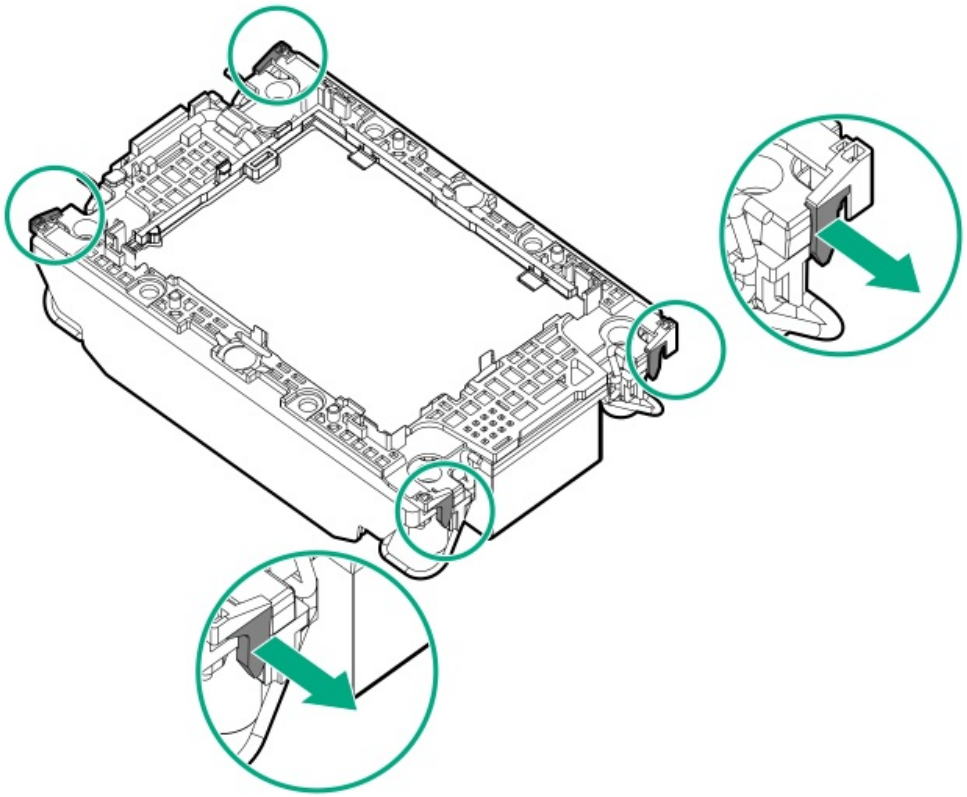
    a. Open the TIM breaker lever.

       This action breaks the adhesion between the processor and the pump-cold plate.

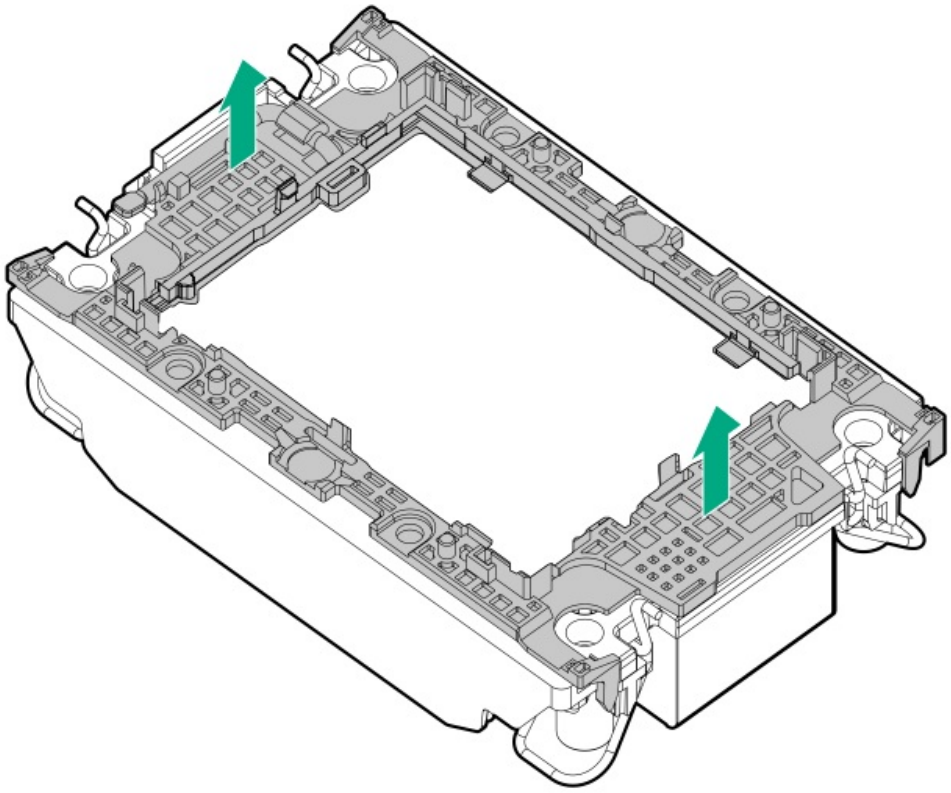
    b. Hold the processor on its edges, and then remove it from the carrier.



    c. Starting from the pin 1 corner and moving in an opposite manner, disengage the processor carrier release tabs from the pump-cold plate.



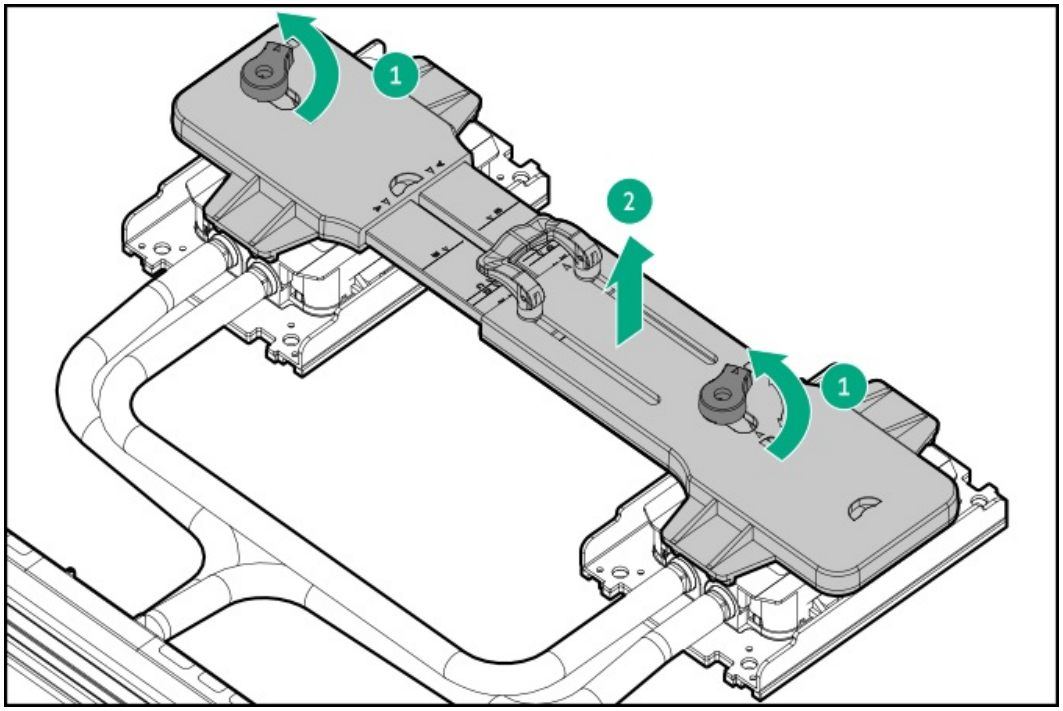
d. Lift the processor carrier away from the pump-cold plate.



18. Using an alcohol wipe to remove the existing thermal grease from the processor and pump-cold plates.

    Allow the alcohol to evaporate before continuing.

19. Remove the handle from the pump-cold plates.



Installing the closed-loop liquid cooling module on the system board

Prerequisites

- Review the following:
  - Closed-loop liquid cooling (CLLC) module components
  - Heatsink and processor socket components
  - Processor cautions
  - Eye and skin protection
- Before you perform this procedure, make sure that you have the following items available:
  - Liquid cooling module handle that ships with the closed-loop liquid cooling module spare part
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - T-15 Torx screwdriver

About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

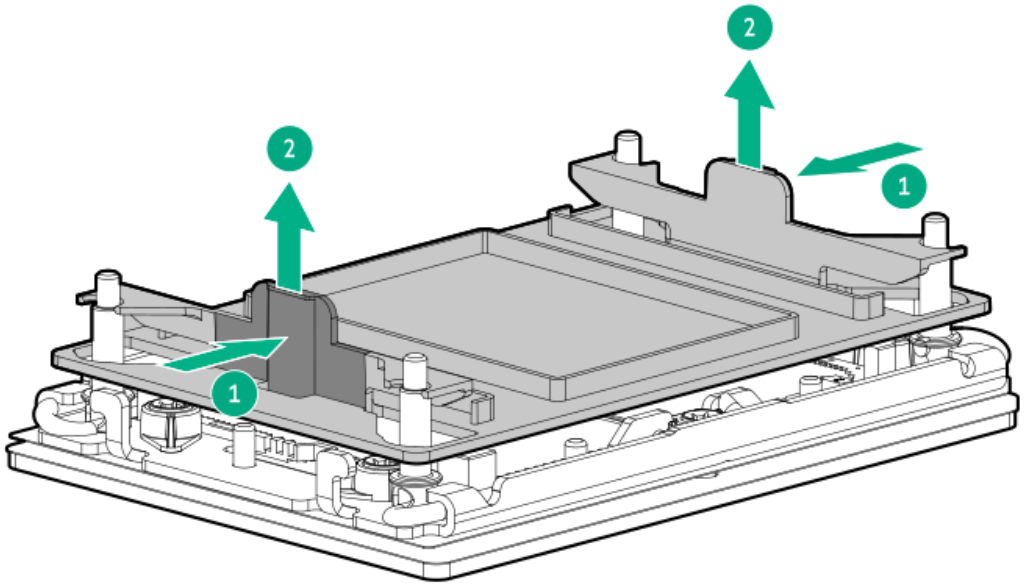
Procedure

1. **IMPORTANT**

   If you are installing or replacing the liquid cooling module in a system using the one-processor configuration, note the following:

   - To prevent any interference issues, remove the dust covers from both processor sockets before installing the cold plates.
   - Do not touch or remove the thermal interface material on the contact side of the cold plate that does not have a processor-carrier assembly installed.

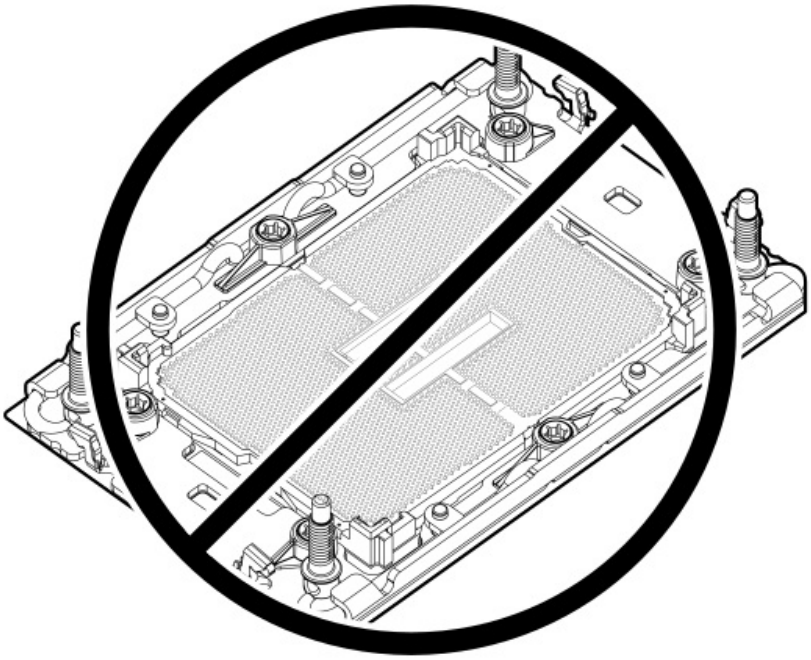
   If installed, remove the dust covers from the processor sockets:

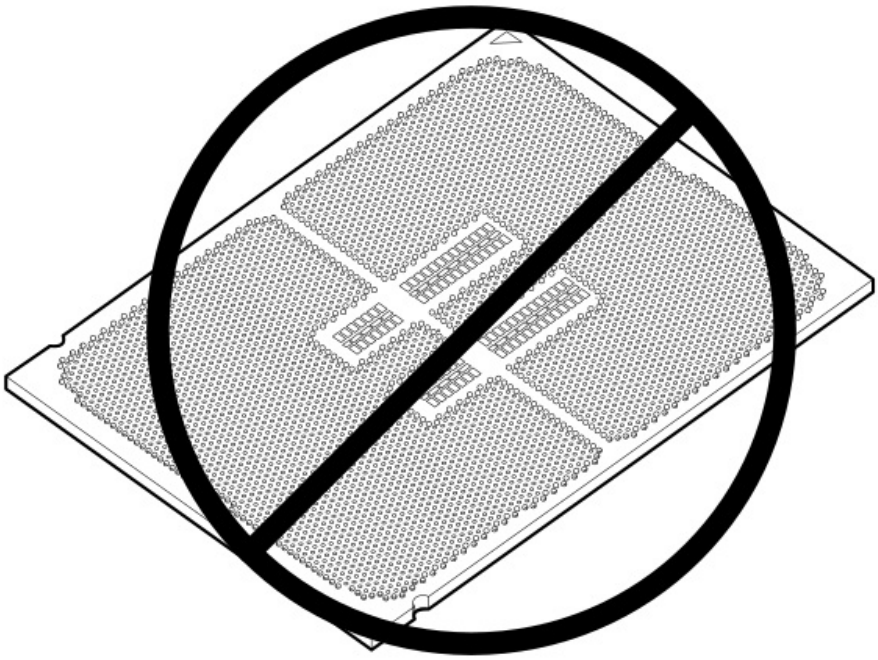


2. Do not touch the pins on the processor socket and the processor.

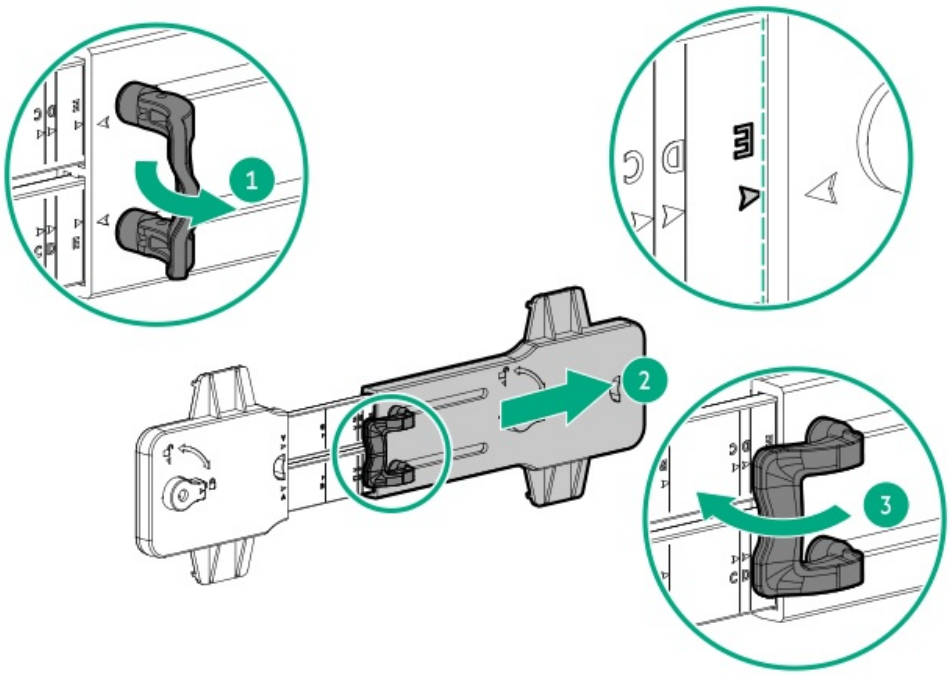
   CAUTION

   THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED. Any damage to them might require replacing the system board.



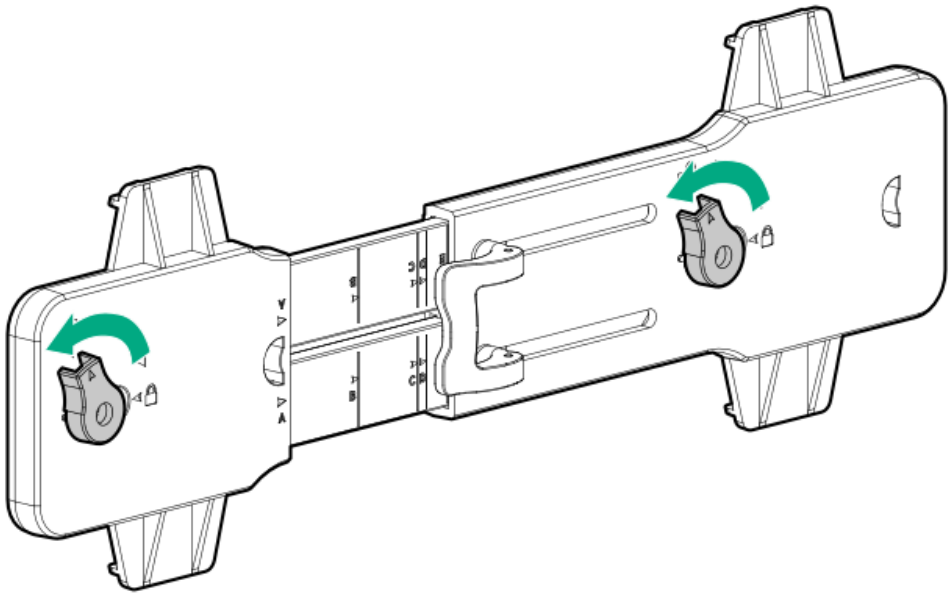


3. Set the liquid cooling module handle to the appropriate length.
   a. Disengage the locking handle.
   b. Extend the handle and align the edge to the line marked by the letter E.
   c. Engage the locking handle.

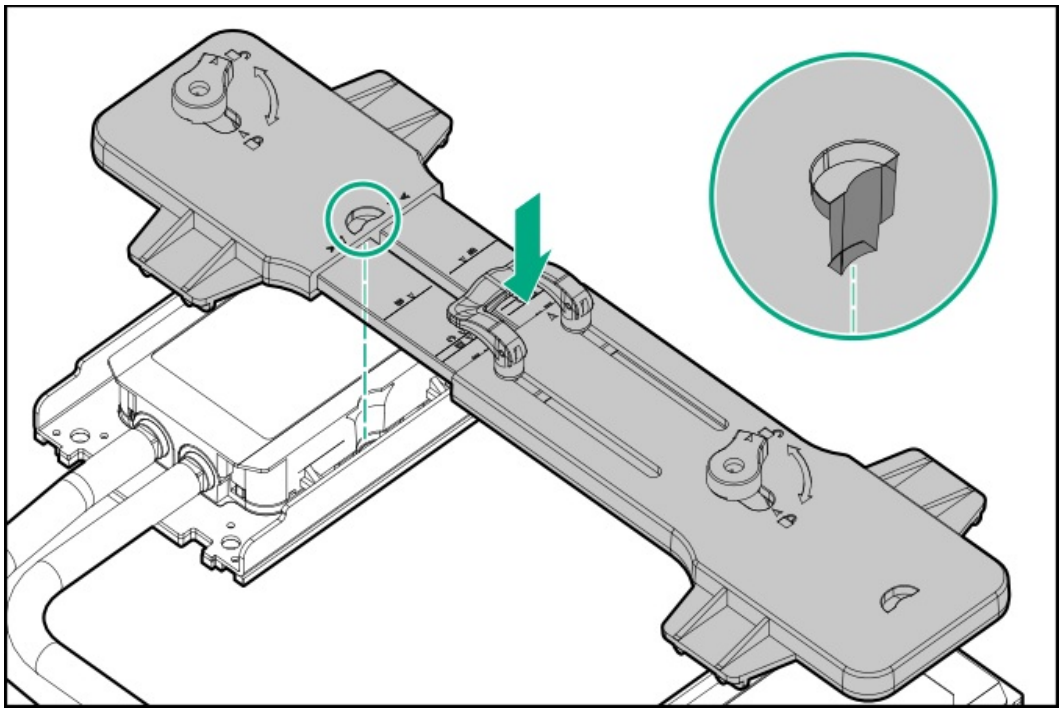


4. Attach the handle to the pump-cold plates:

   a. Rotate the handle knobs anti-clockwise to the unlocked position.

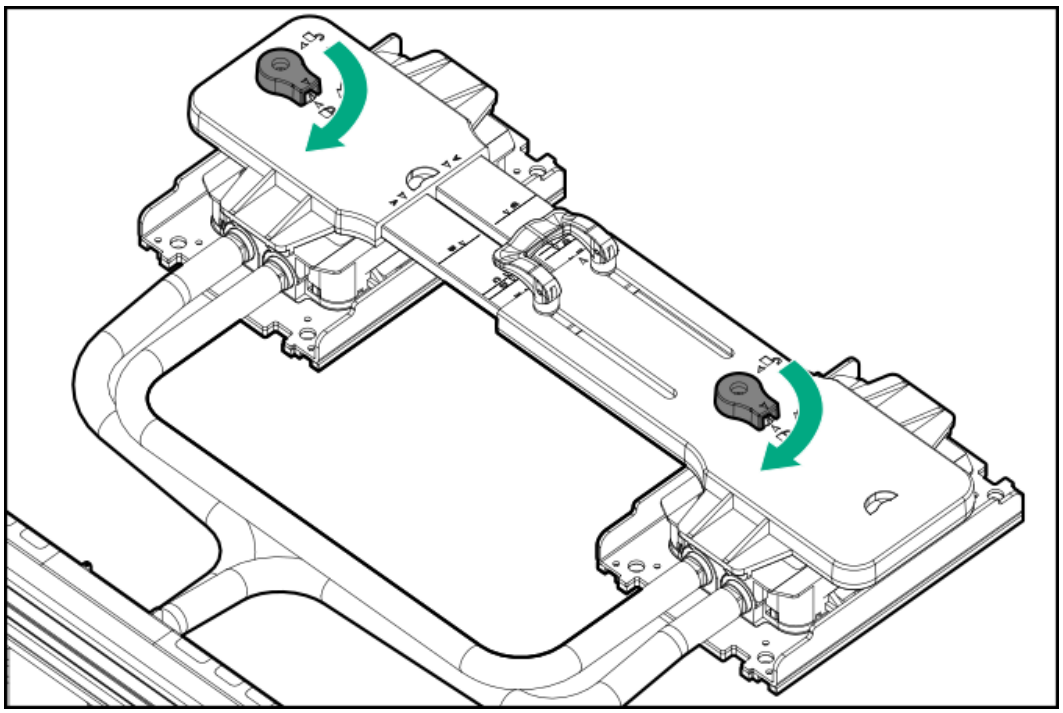


   b. Align the hooks on the handle with the notches on the pump-cold plates, and then attach the handle to the pump-cold plates.



c. Turn the handle knobs to the locked position.

Gently pull on the handle and verify that pump-cold plates are securely latched to the handle.



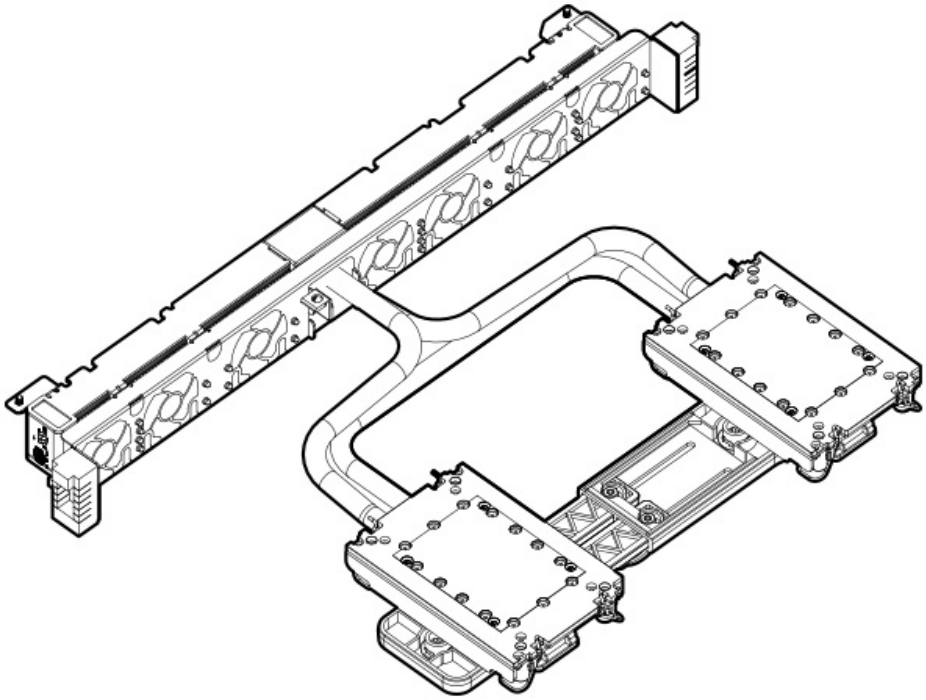
5. **CAUTION**

To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

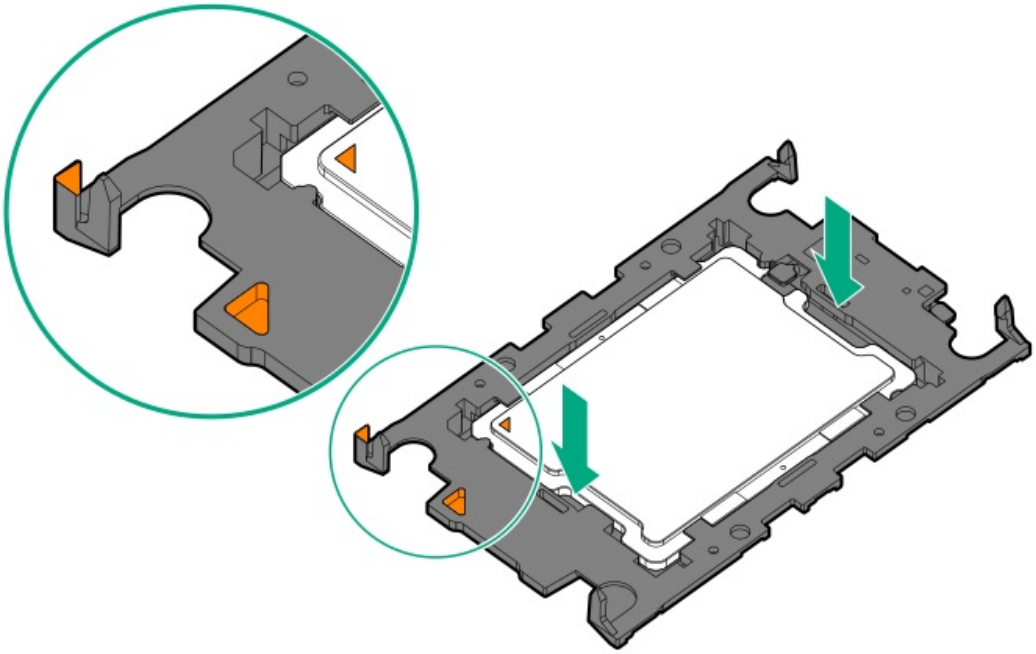
Place the liquid cooling module on a flat work surface with its contact side facing up.

a. Hold the liquid cooling module handle and radiator in the middle.

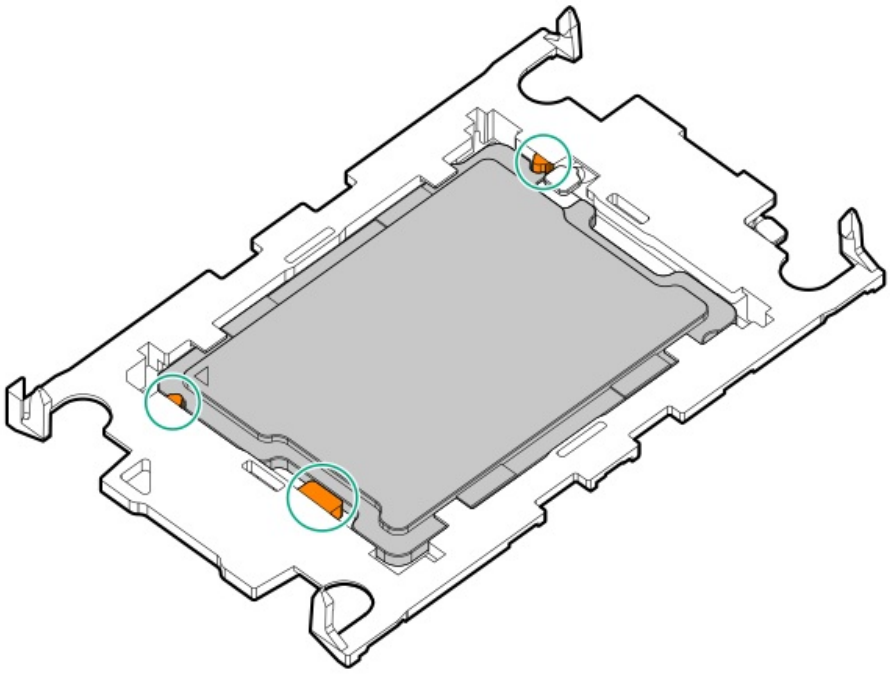
b. Lift and turn the liquid cooling module over, and place it on a flat and level surface.



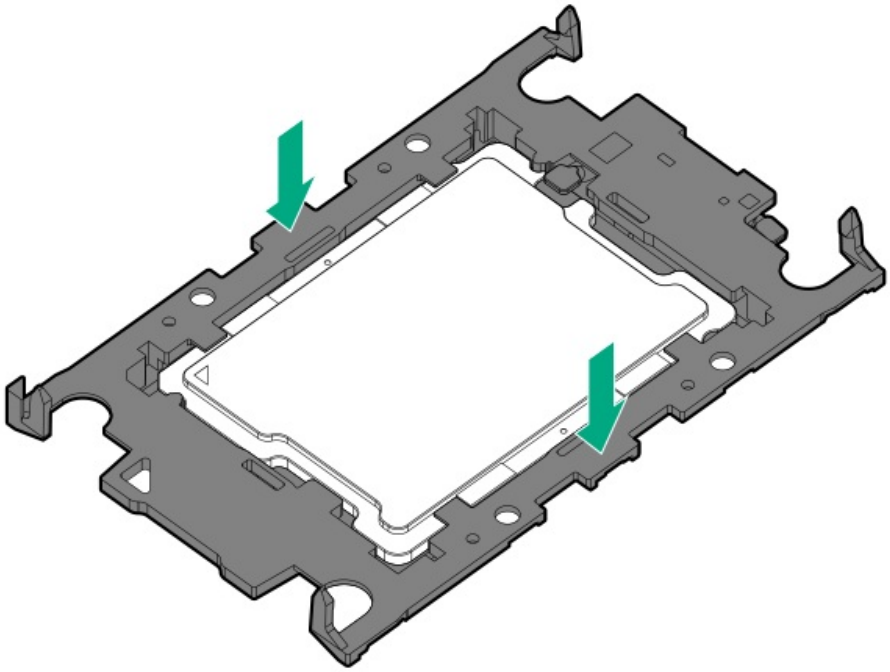
6. Remove the clear protective covers from the new liquid cooling cold plates and pumps.
7. Install the processor carrier on the processor:
   a. Align the pin 1 indicator on the processor carrier with that on the processor, and then press on the pair of opposite sides on the TIM breaker lever of the processor carrier until it clicks into place.



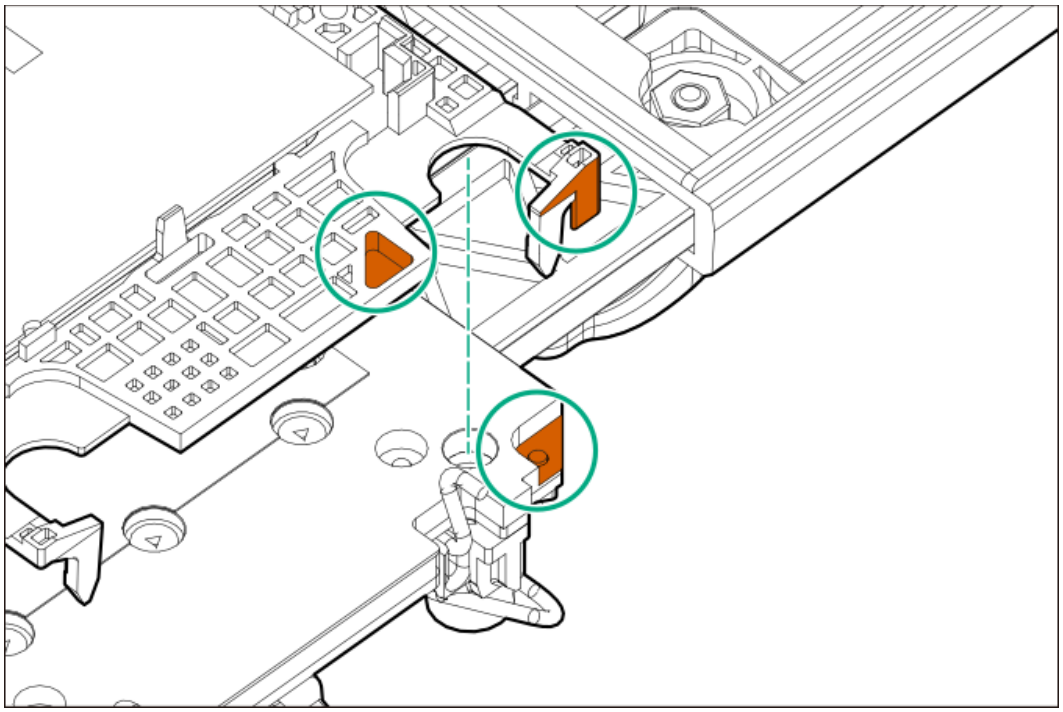
   b. Verify that the processor is properly latched on the processor carrier.



If not, press the other pair of opposite sides of the processor carrier until it clicks into place.

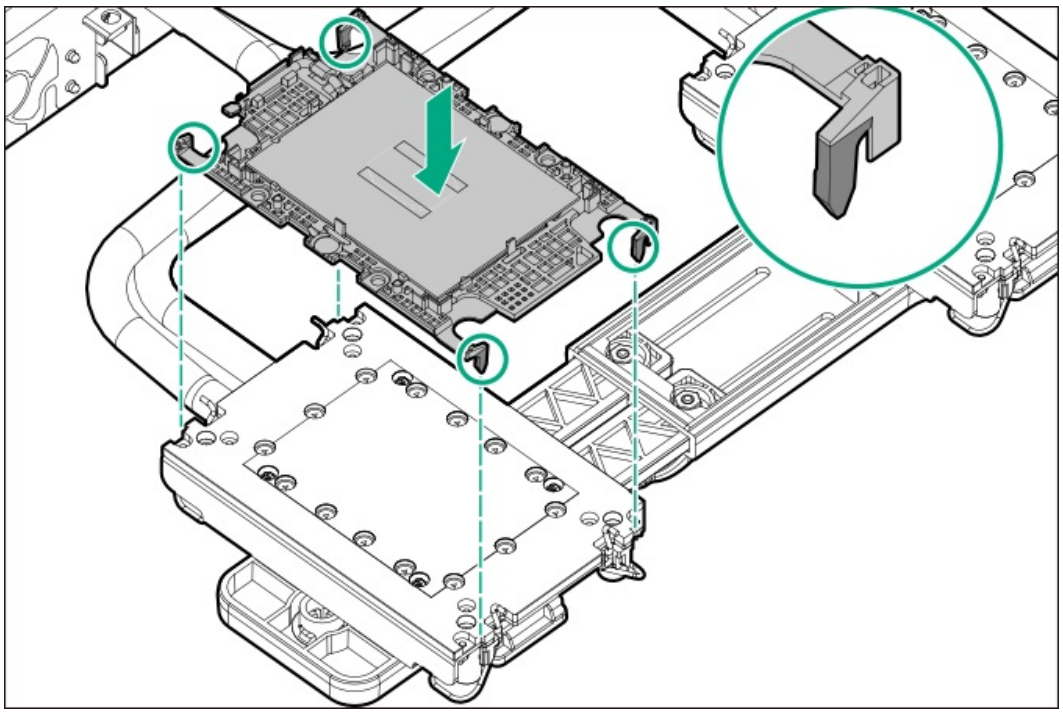


8. Attach the processor carriers to the pump-cold plates:
   a. Align the pin 1 indicator on the processor carrier with that of the pump-cold plate.



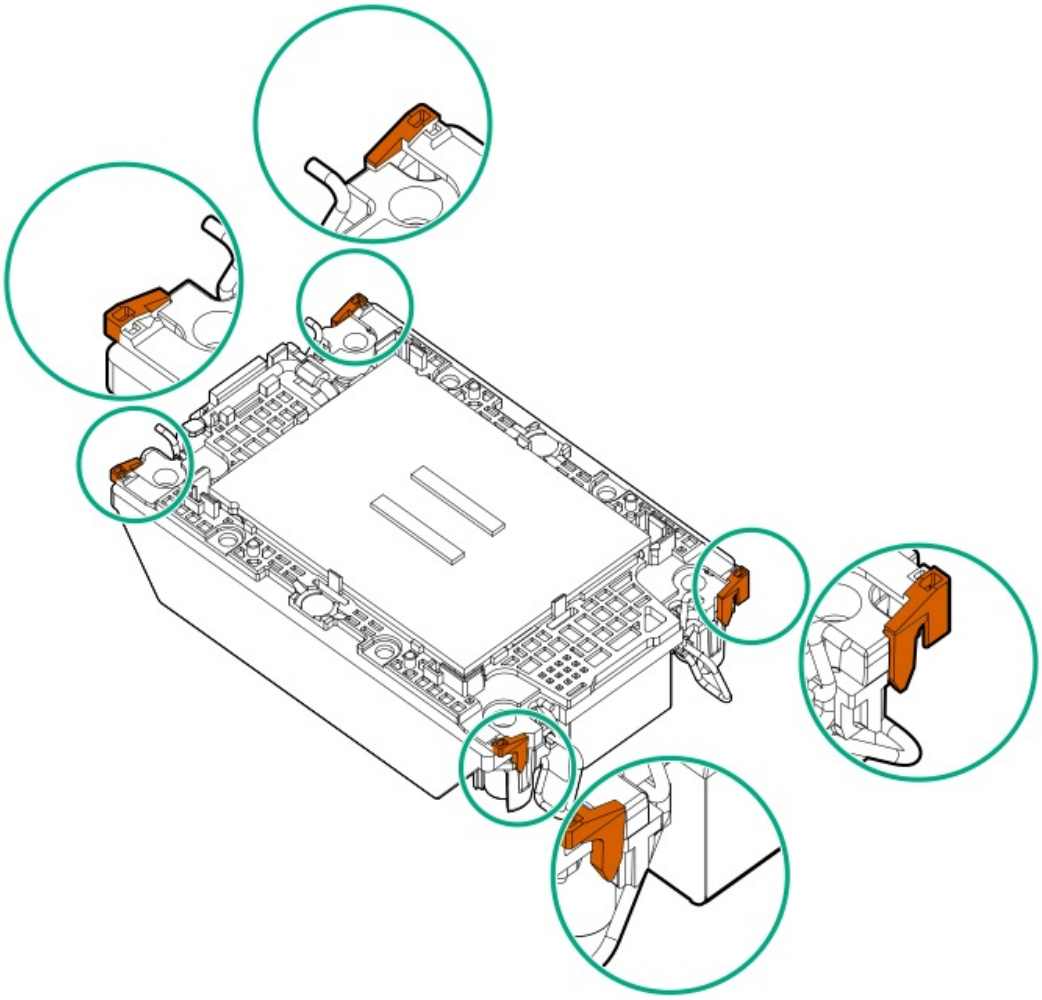
b. Lower the processor carrier on the pump-cold plate until the carrier tabs snap into place.

   There will be an audible click to indicate that the processor carrier is properly latched on the pump-cold plate.

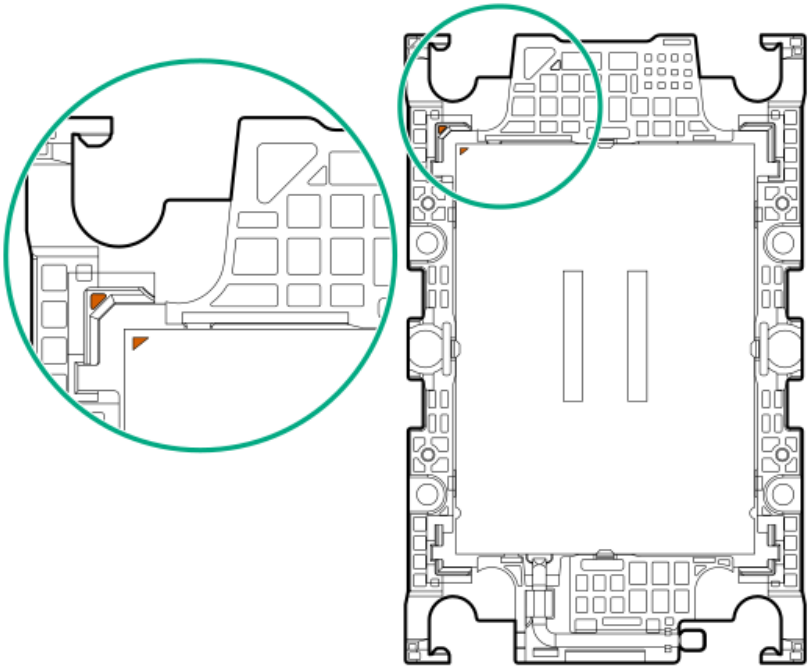


9. Perform the following verification steps:

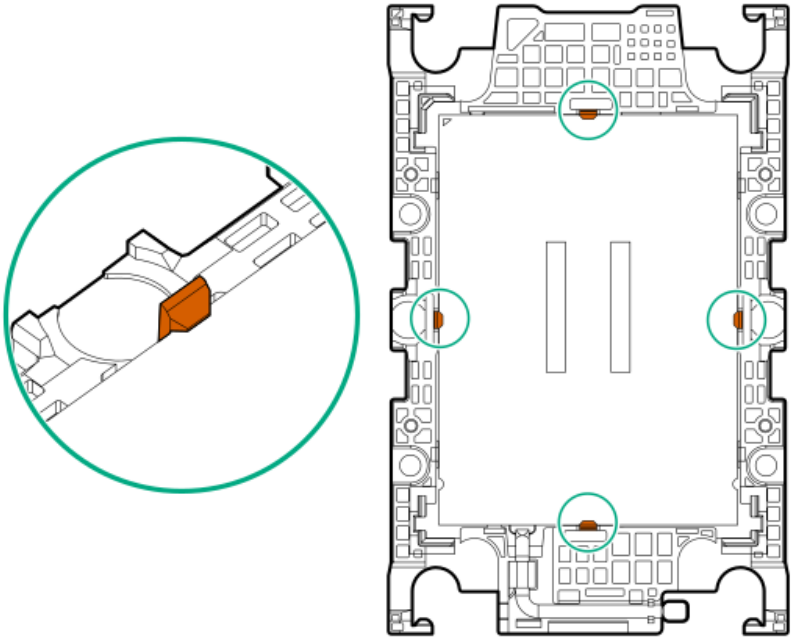
   a. Verify that the tabs on the processor carrier are securely latched on the cold plate.



b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.



c. Verity that the processor is properly secured by the carrier snaps.

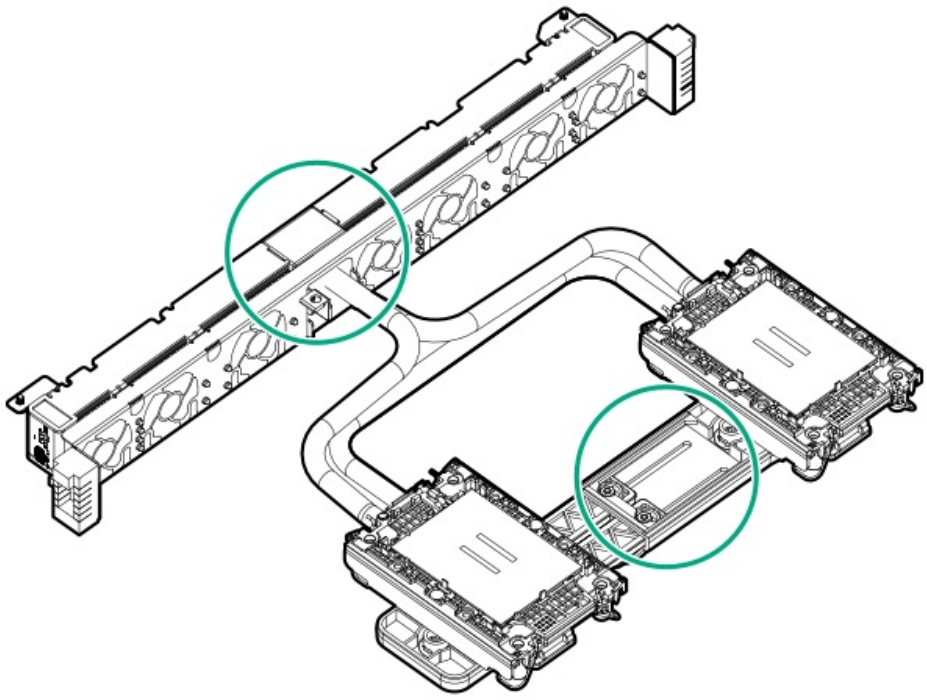


10. If you want to install a second processor, repeat the previous two steps.

11. **CAUTION**

    To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

    Hold the liquid cooling module handle and radiator in the middle.



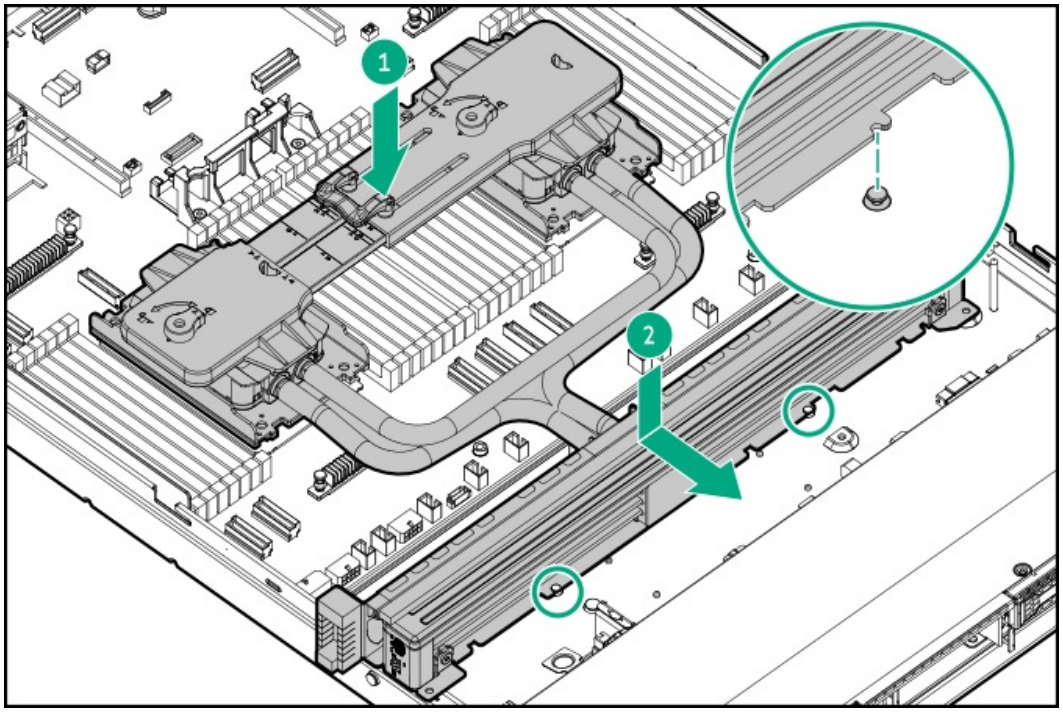
12. **CAUTION**

    Extra caution is required when you are handling the liquid cooling module or processor-carrier assembly during its installation or removal process. **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.**

CAUTION

To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

Place the liquid cooling module on the system board, and slide the radiator to engage with the spools on the chassis.



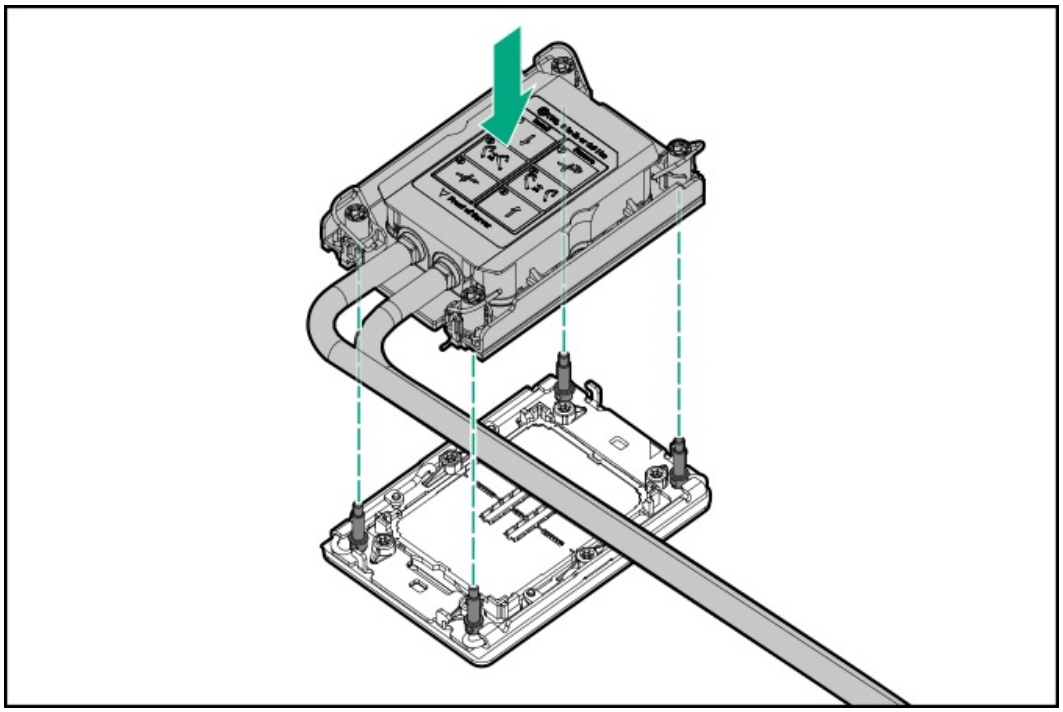
13. Install the liquid cooling cold plates and pumps:

    a. When using a torque screwdriver to tighten the pump-cold plate screws, set 0.9 N-m (8 in-lb) of torque.

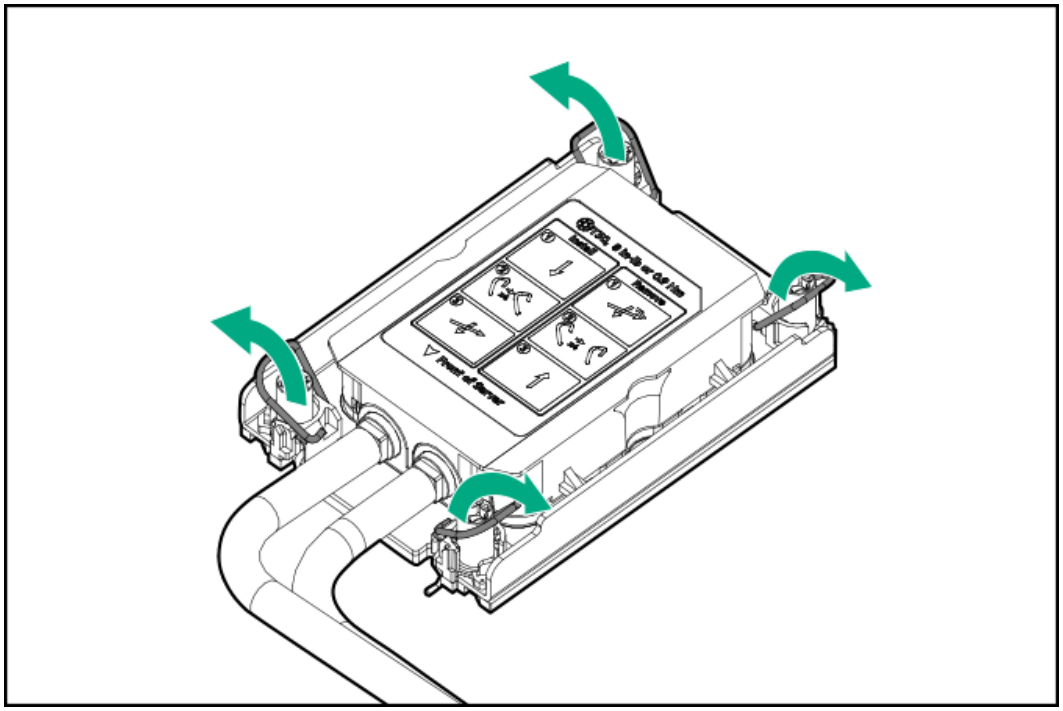
    b. Note the **Front of server** text on the pump-cold plate label to correctly orient the pump-cold plate over the bolster plate.

    c. Carefully lower the pump-cold plate onto the bolster plate guide posts.

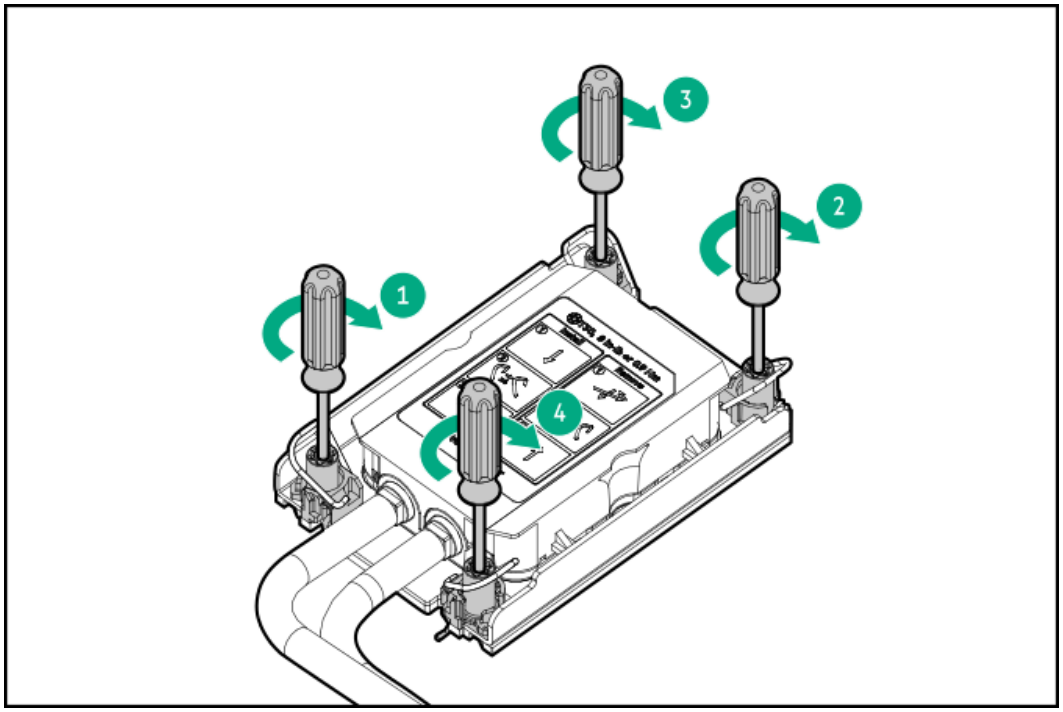
       The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



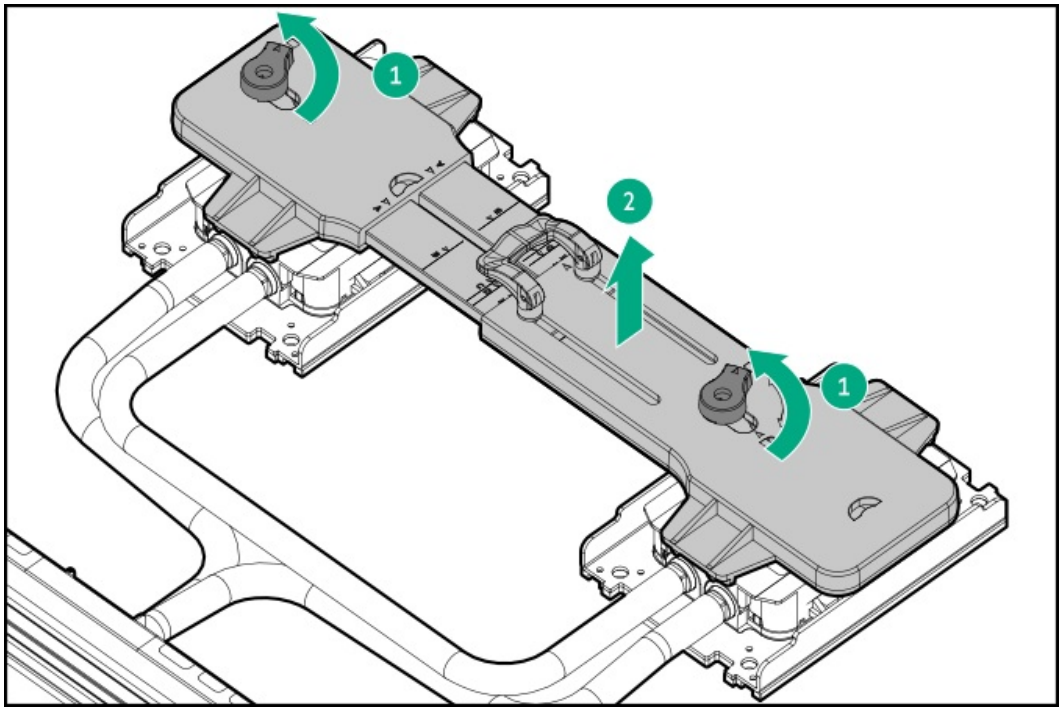
d. Set the anti-tilt wires to the locked position.



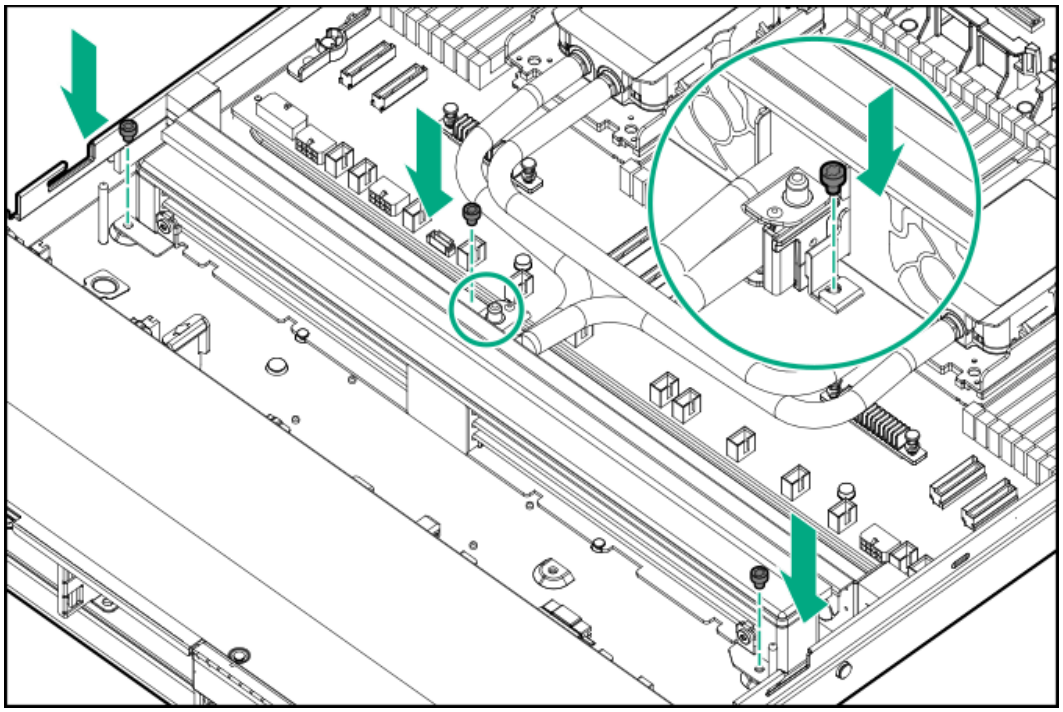
e. Tighten the pump-cold plate screws.



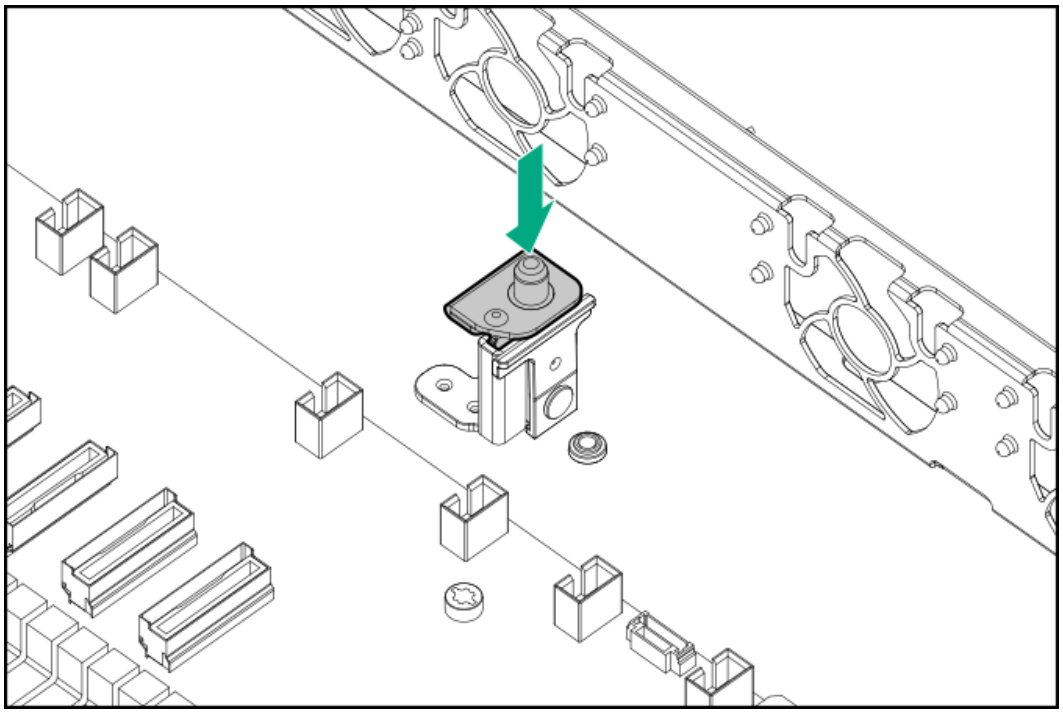
14. Remove the handle from the pump-cold plates.



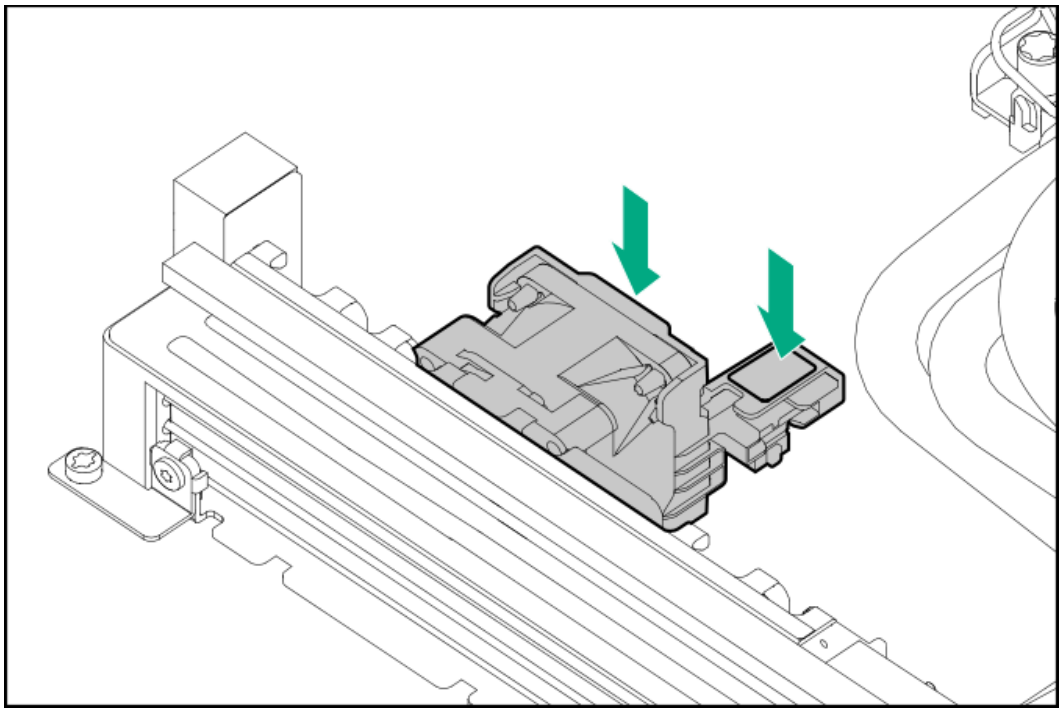
15. Install the radiator screws on the chassis.



16. Connect the pump signal cable to the system board .
17. Install the access panel guide pin.



18. Install all fans.



19. Install the access panel.
20. If the server was removed from an enclosure or a rack, reinstall it now.
21. Connect all peripheral cables to the server.
22. Connect each power cord to the server.
23. Connect each power cord to the power source.
24. Power up the server.

Results

The replacement procedure is complete.

Disconnecting the direct liquid cooling kit

Prerequisites

Before you perform this procedure, make sure that you have a small hand towel or container to catch any coolant from the DLC (Direct Liquid Cooling) system.

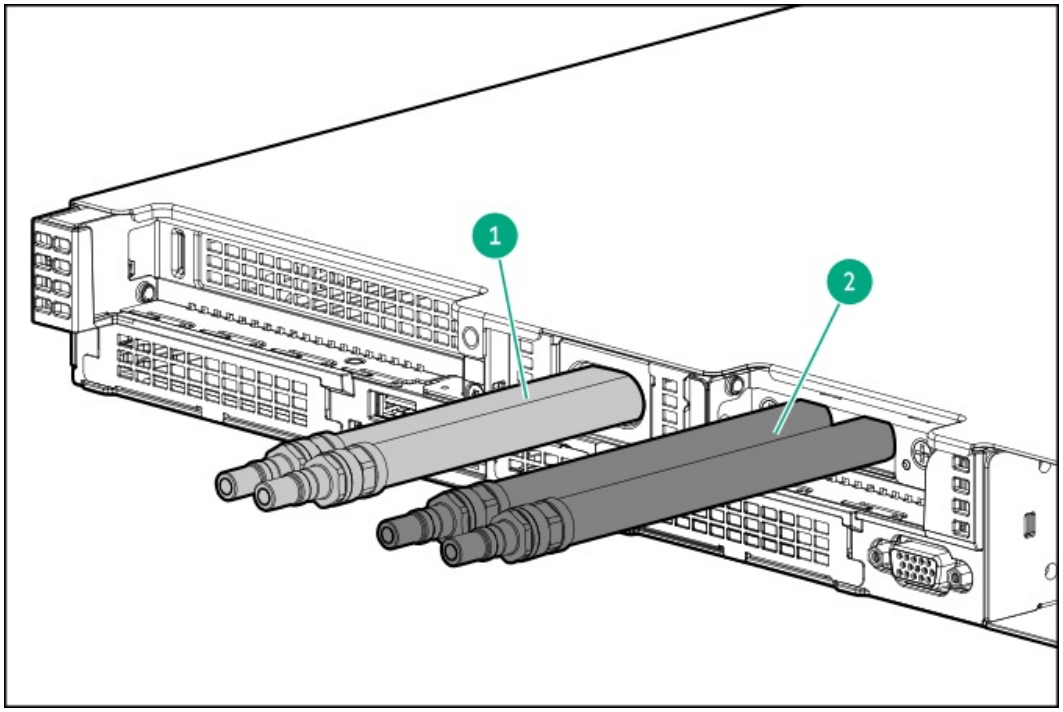
About this task

For more information on preparing the DLC manifold for DLC module replacement, see the HPE Cray XD/ProLiant Direct Liquid Cooling System Site Preparation, User and Maintenance Guide at **https://www.hpe.com/info/xdDLCguide**.

Procedure

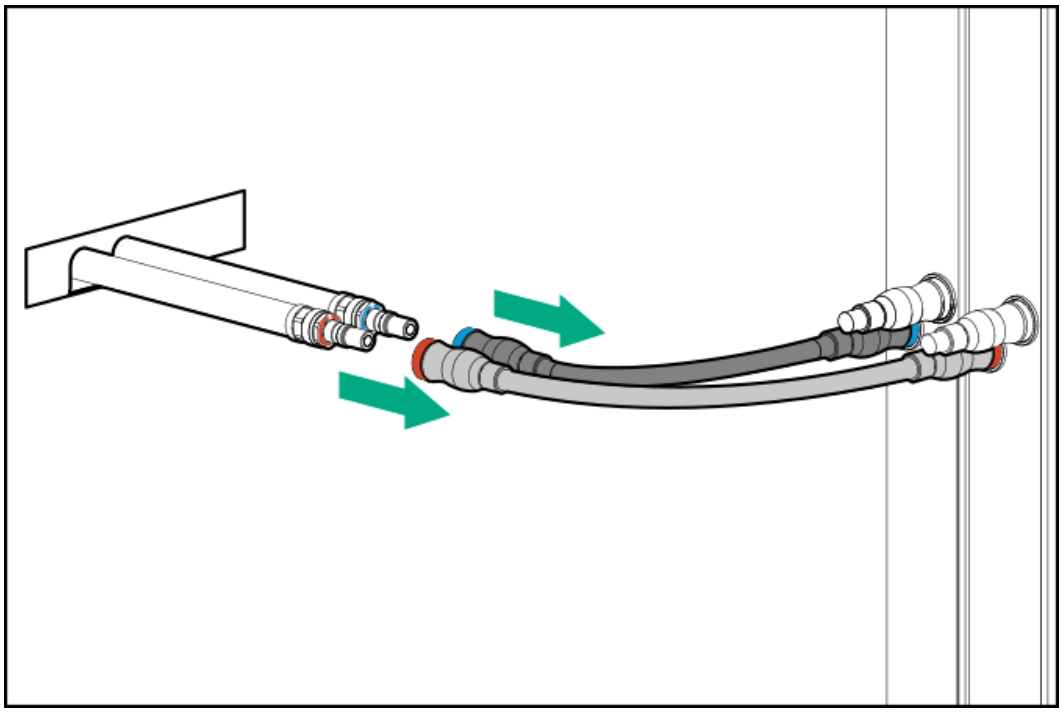
1. Locate the DLC module hoses at the rear of the server.

> **NOTE**
>
> This image shows possible hose locations. Hoses will only come from either the secondary riser cage or the rear NS204i-u bracket, not both.

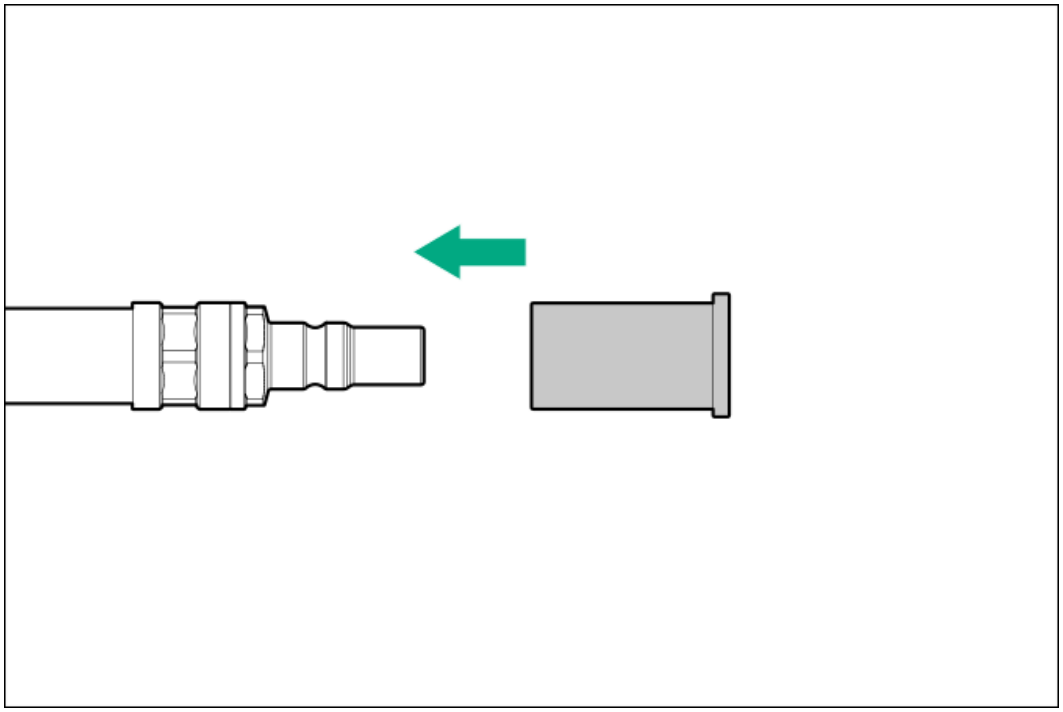


Item	Description
1	Coolant hoses coming from the rear NS204i-u bracket
2	Coolant hoses coming from PCIe Slot 3

2. Position the towels or container under the hoses and then disconnect the quick connect hoses.



3. Install the quick connect caps.



Removing the DLC cold plate module from the system board

Prerequisites

- Read the HPE Cray XD/ProLiant Direct Liquid Cooling System Site Preparation, User and Maintenance Guide :

  https://www.hpe.com/info/xdDLCguide

- Review the following:
  - Direct liquid cooling (DLC) module components
  - Heatsink and processor socket components
  - Processor cautions
  - Eye and skin protection
- If the reason for replacing the DLC module is due to a coolant leak, first perform the Appendix I: Server coolant spill response procedure .
- In addition to the tools and materials required for the DLC system, be sure that you also have the following:
  - Liquid cooling module handle (spare part number: P89110-001)
  - T-30 Torx screwdriver
  - T-10 Torx screwdriver

About this task

The entire cooling loop must be removed as one unit. Do not attempt to remove riser cages or cold plates separately.

WARNING

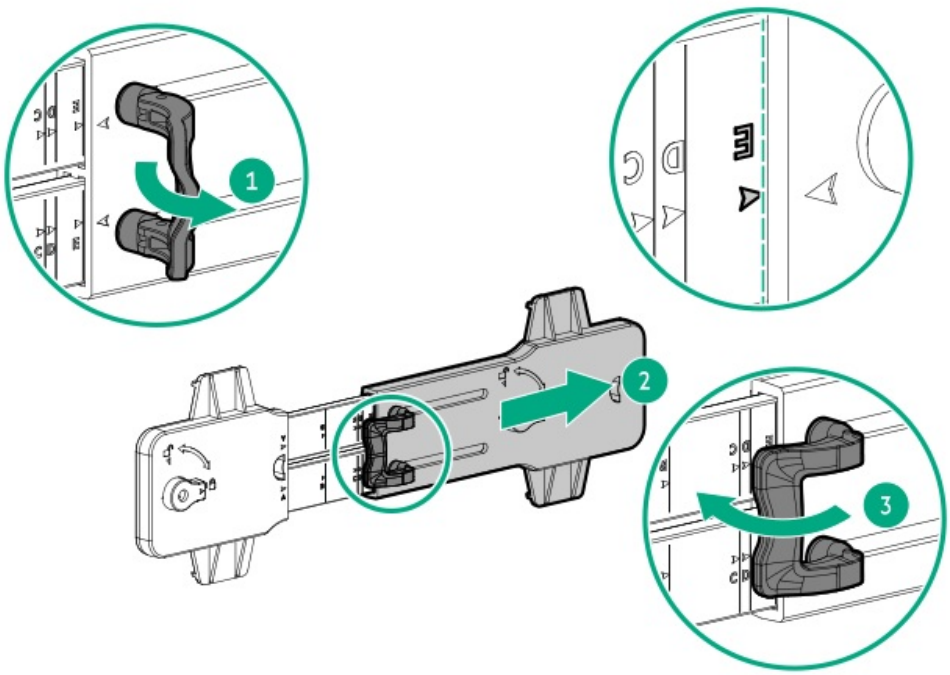
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION

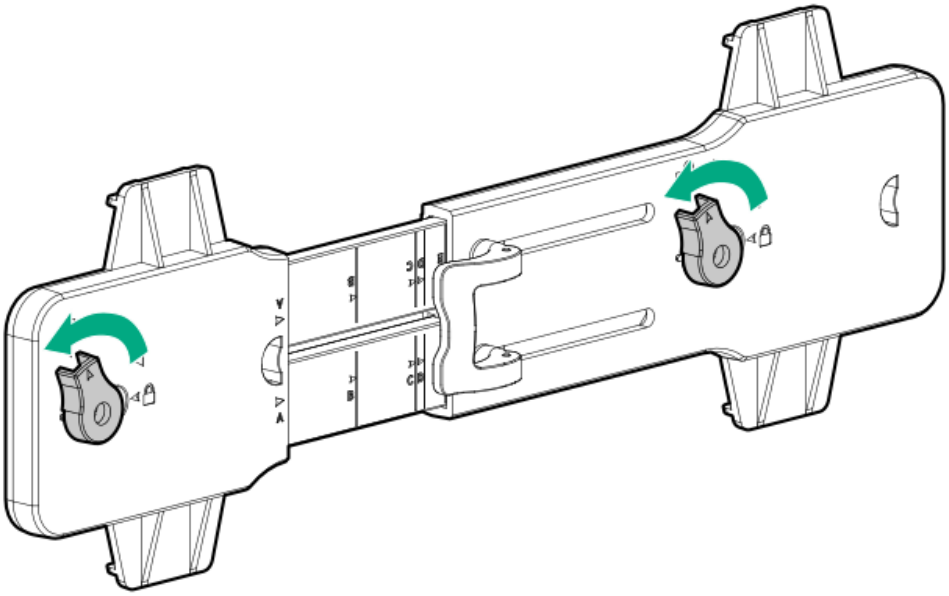
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

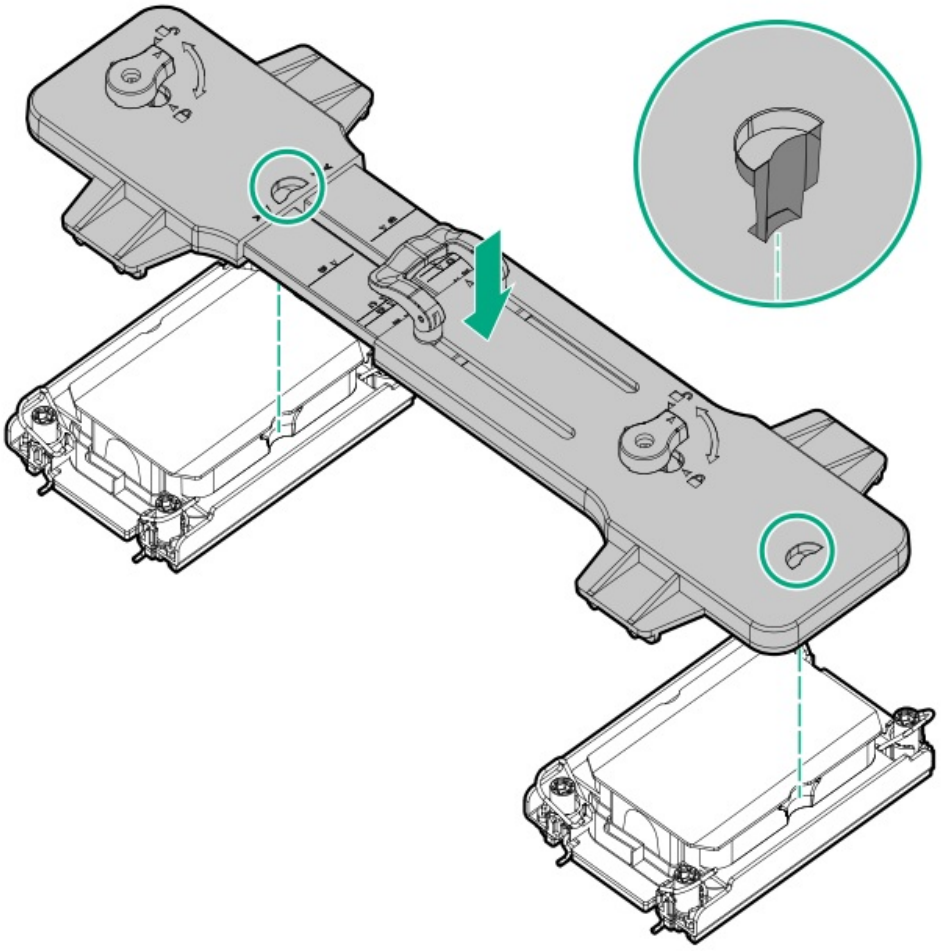
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Disconnect the hoses from the DLC manifold .
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Set the liquid cooling module handle to the appropriate length.
   a. Disengage the locking handle.
   b. Extend the handle and align the edge to the line marked by the letter E.
   c. Engage the locking handle.



9. Attach the handle to the open-loop liquid cooling cold plates:
   a. Rotate the handle knobs anti-clockwise to the unlocked position.

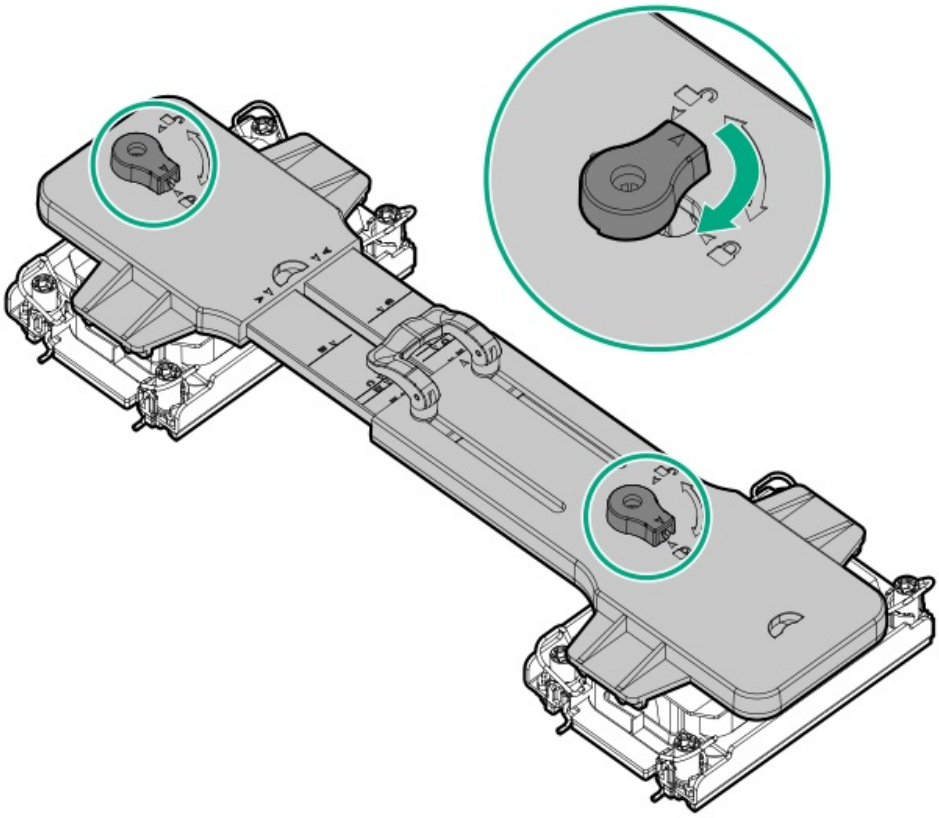


b. Align the hooks on the handle with the notches on the cold plates, and then attach the handle to the cold plates.



c. Turn the handle knobs to the locked position.

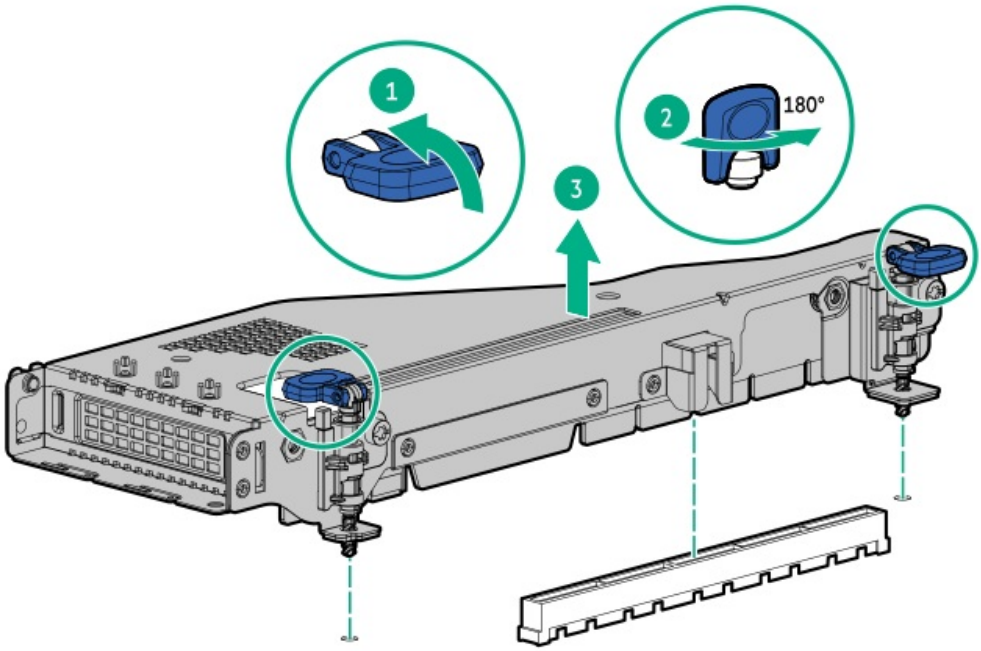
   Gently pull on the handle and verify that the cold plates are securely latched to the handle.



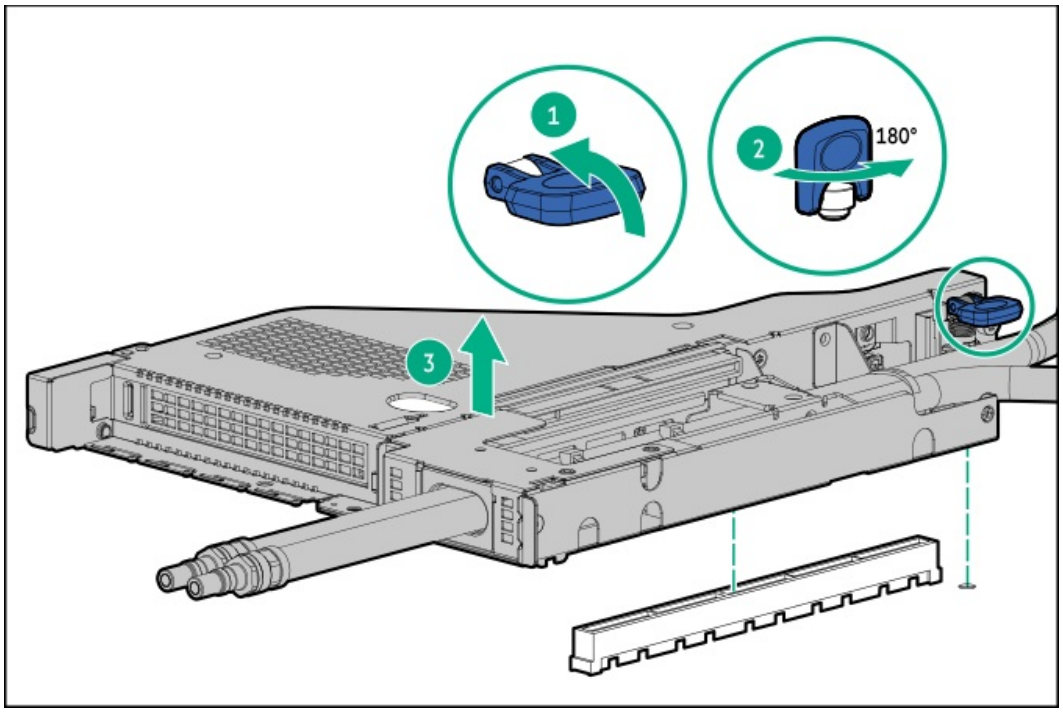
10. Loosen the riser cage that the hoses come out of. Set it on the slot while you loosen the cold plate screws.

> **NOTE**
>
> Hoses will only come from either the secondary riser cage or the rear NS204i-u bracket, not both.

- Secondary riser:



- Primary riser with NS204i-u bracket installed:

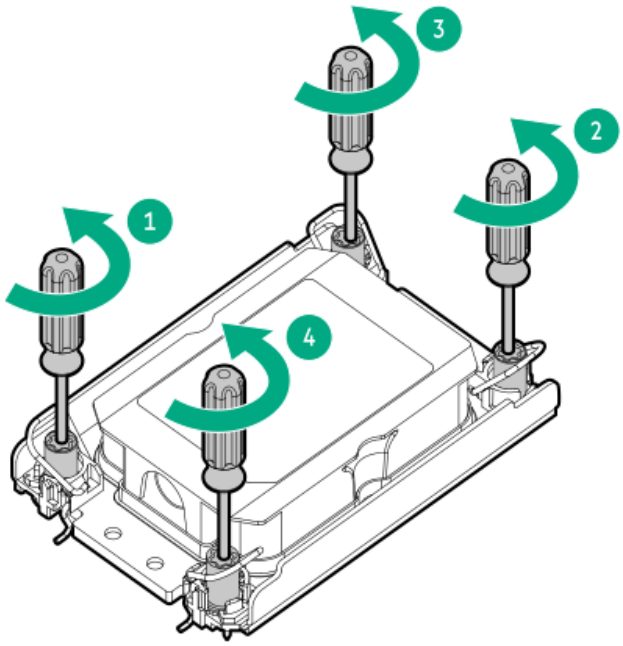


11. Loosen the screws on both cold plates.

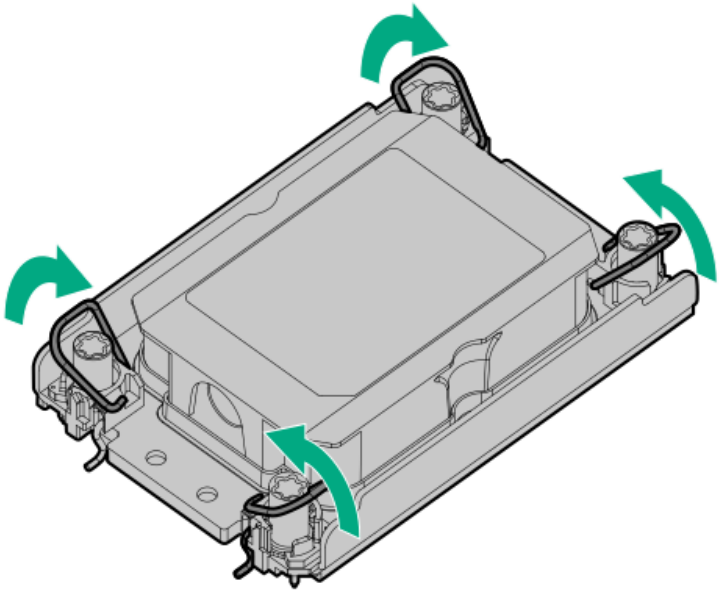
a. **CAUTION**

Cold-plate screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as it might damage the system board or the processor socket.

Use a T-30 Torx screwdriver to loosen one pair of diagonally opposite cold plate screws (callouts 1 and 2). Then loosen the other pair of cold plate screws (callouts 3 and 4).



b. Set the anti-tilt wires to the unlocked position.



12. Disconnect the signal cable from the system board .

13. **CAUTION**

    To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

    CAUTION

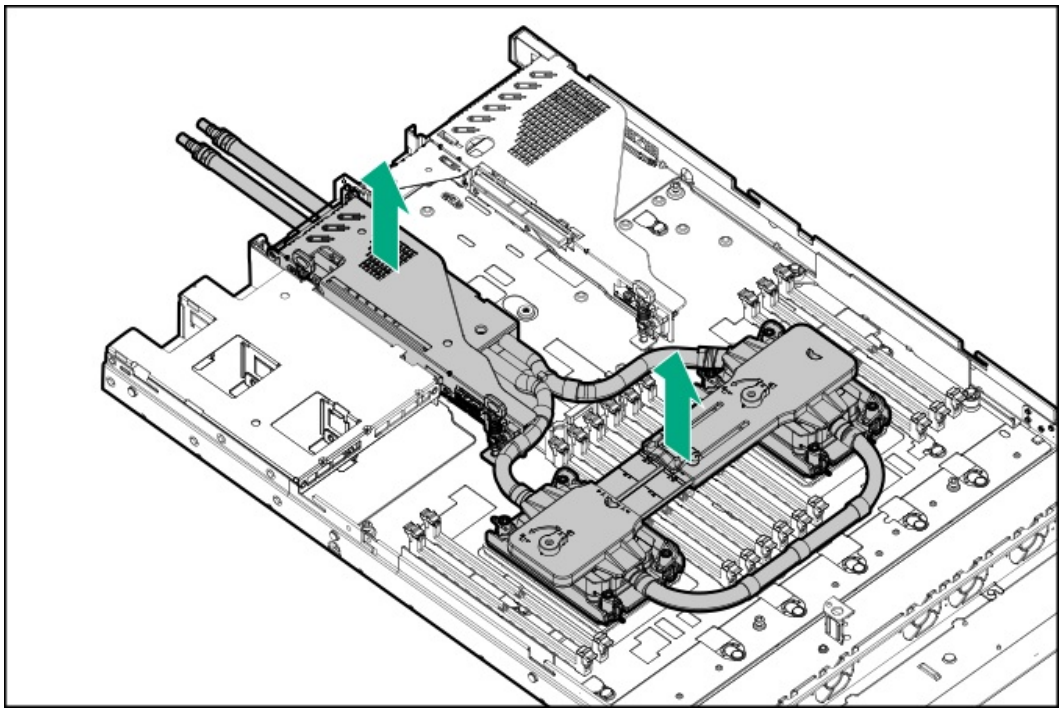
    Extra caution is required when you are handling the liquid cooling module or processor-carrier assembly during its installation or removal process. **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.**

    Remove the DLC cold plate module:

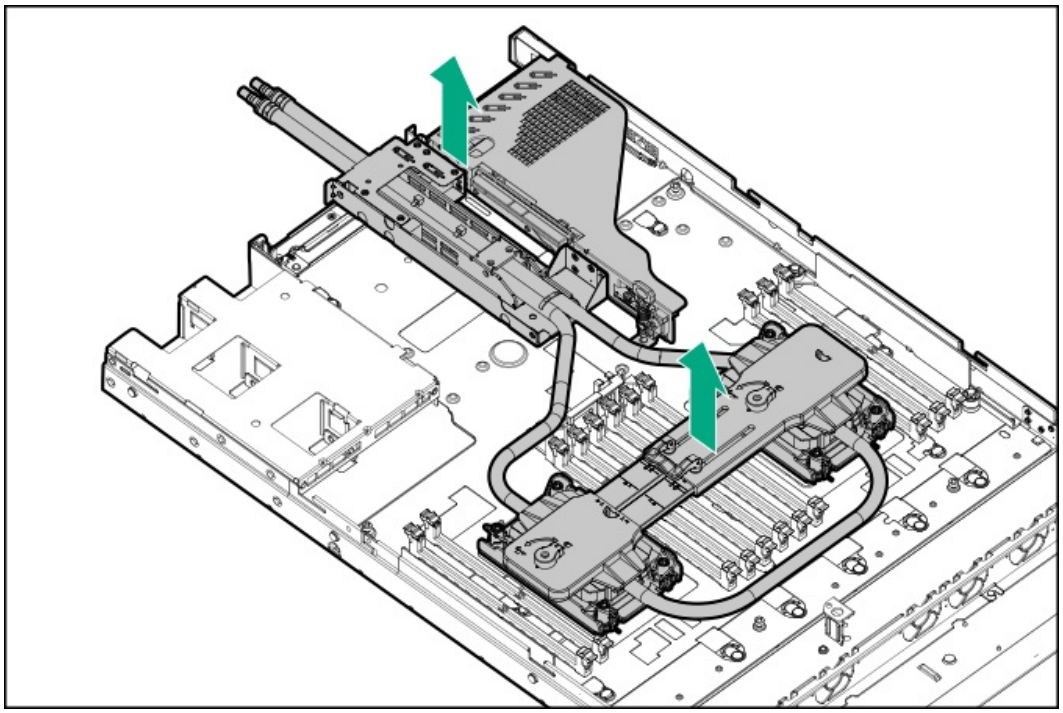
    a. Use one hand to hold the liquid cooling module handle in the middle and the other to hold the riser cage.

    b. Lift the assembly away from the server.

    - DLC cold plate module and PCIe bracket:

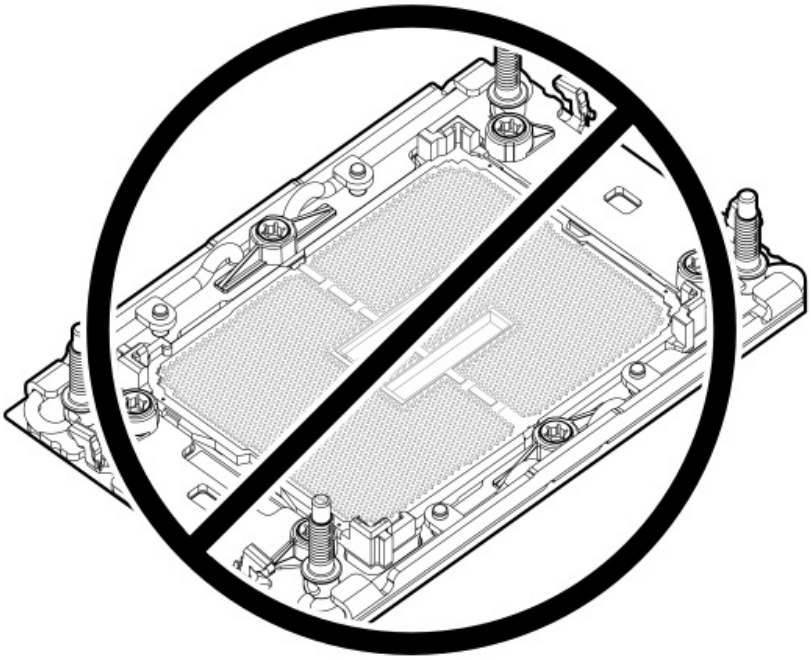


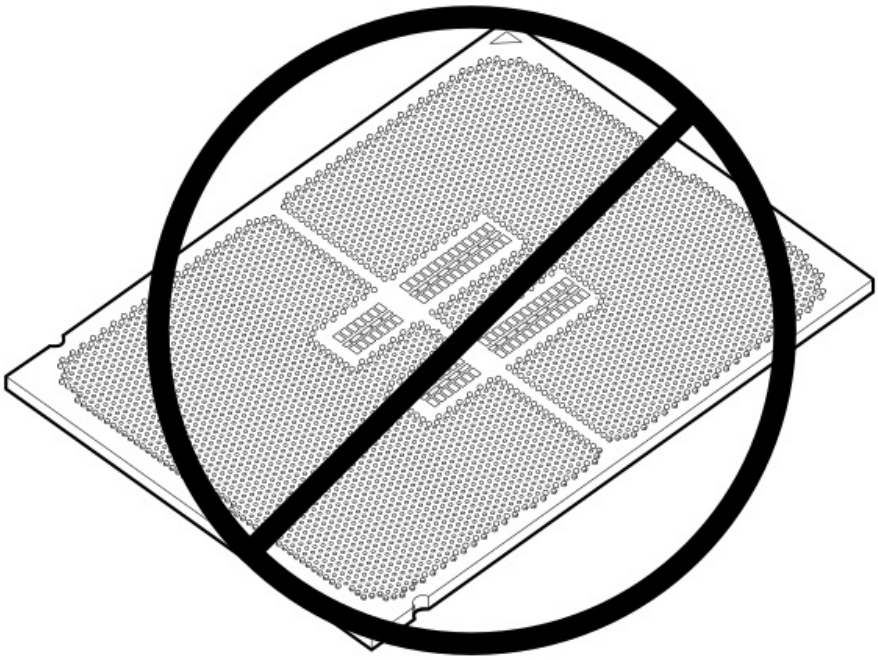
- DLC cold plate module and NS204i-u bracket:



14. Set the assembly upside down on a flat surface.
15. Do not touch the pins on the processor socket and the processor.

> **CAUTION**
>
> **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.** Any damage to them might require replacing the system board.





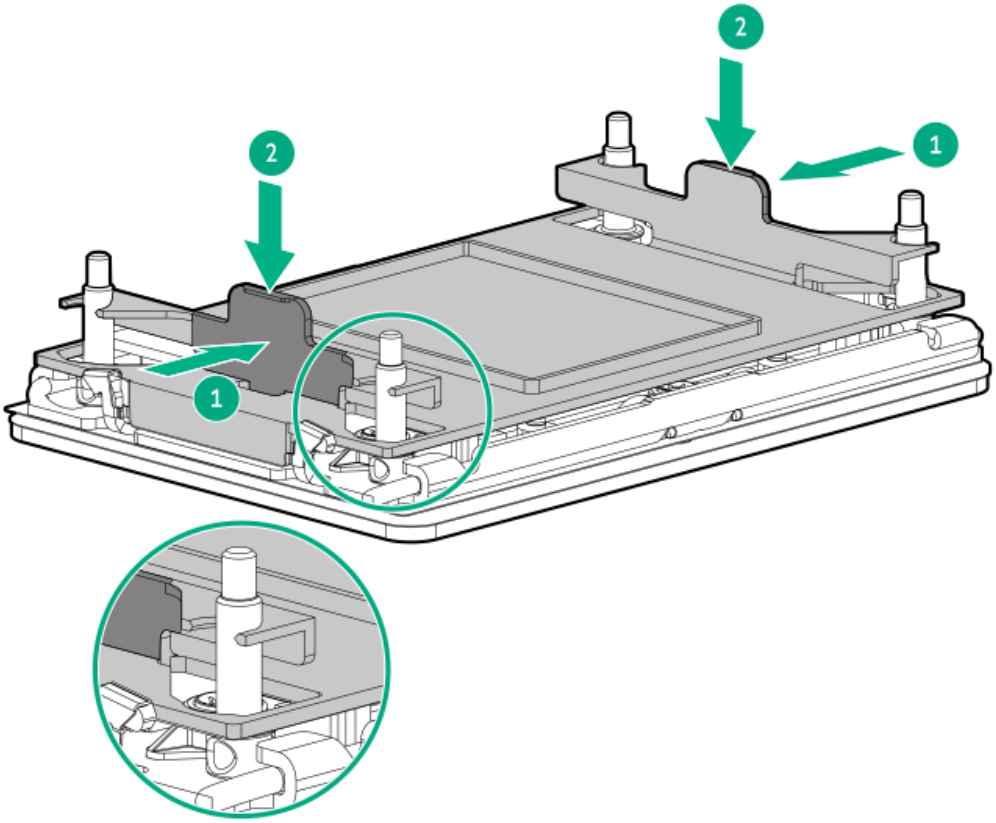
16. If you are not immediately installing the replacement processor-heatsink module, install the dust cover on the empty processor socket:

> **CAUTION**
>
> Do not press down on the dust cover. Pressing down on the dust cover might damage the processor socket.

a. Press and hold the grip tabs on the dust cover.

b. Carefully lower the dust cover onto the bolster plate guide posts.

   Make sure that the corner holes of the dust cover are properly engaged with the guide posts on the bolster plate.

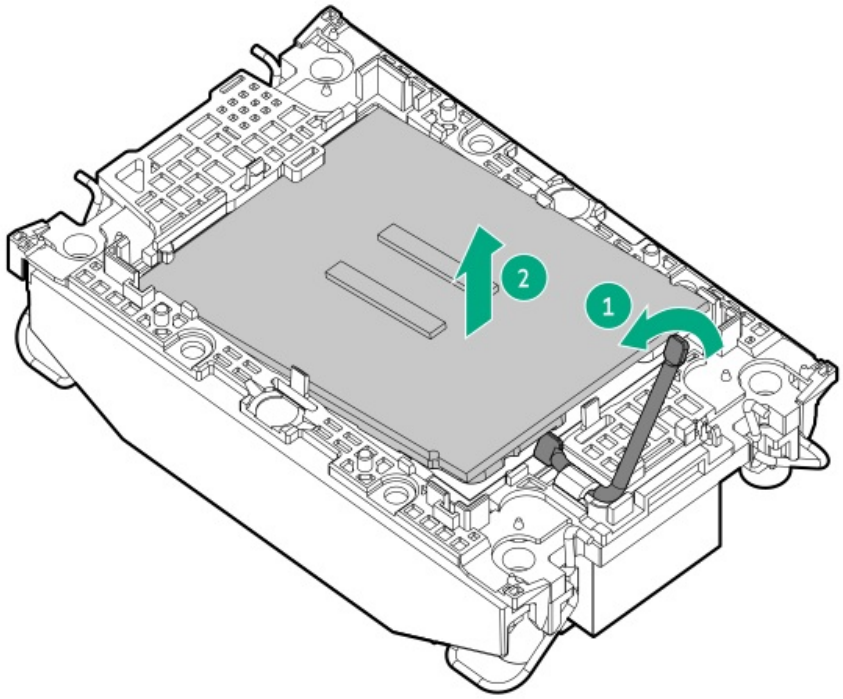


17. Remove the processors from both cold plates:

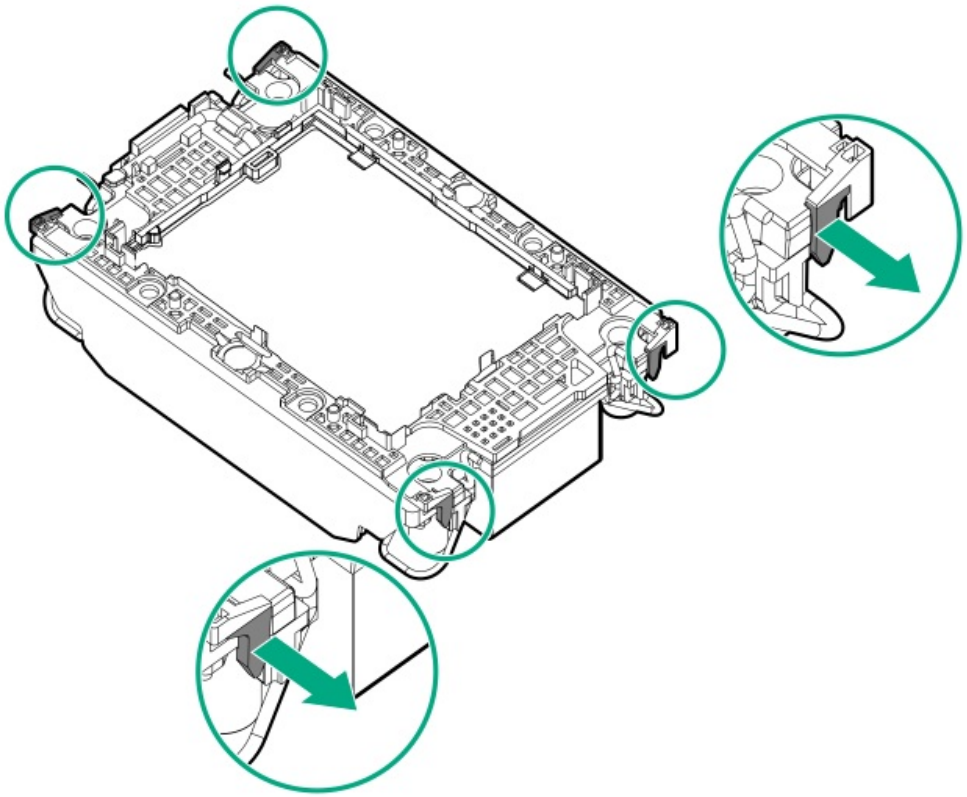
    a. Open the TIM breaker lever.

       This action breaks the adhesion between the processor and the cold plate.

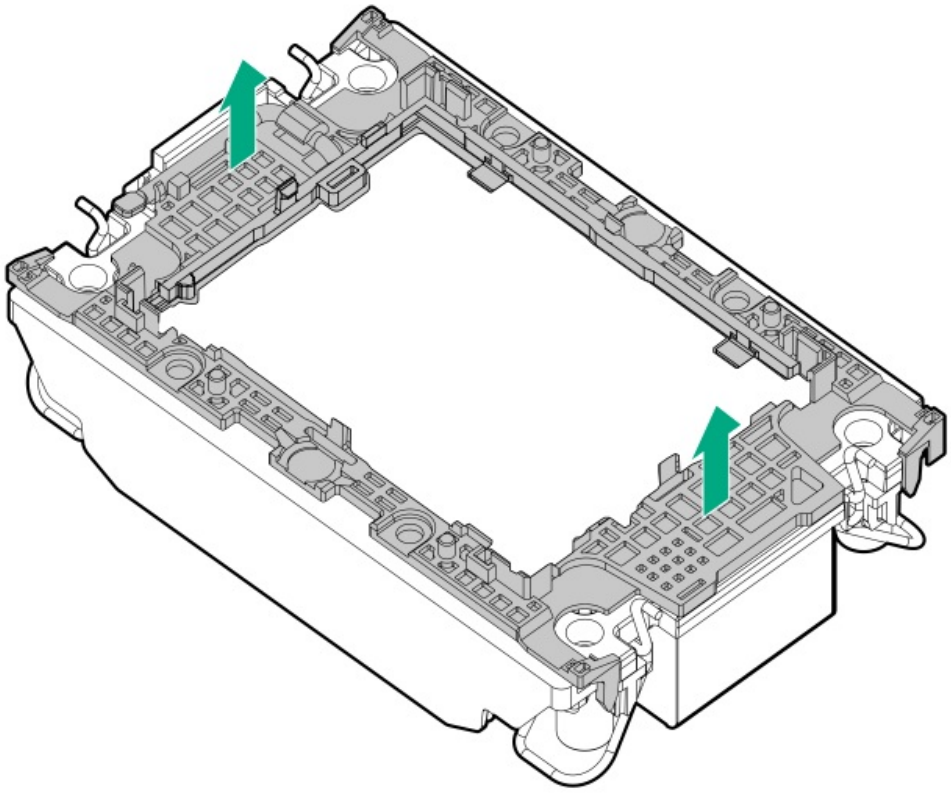
    b. Hold the processor on its edges, and then remove it from the carrier.



    c. Starting from the pin 1 corner and moving in an opposite manner, disengage the processor carrier release tabs from the cold plate.



d. Lift the processor carrier away from the cold plate.

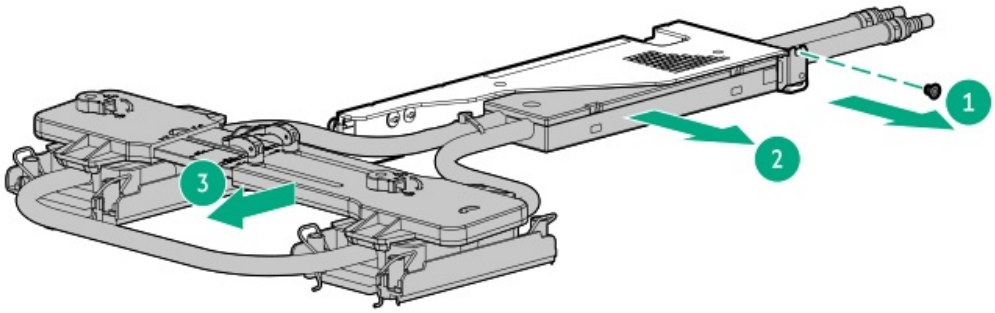


18. Using an alcohol wipe to remove the existing thermal grease from the processor and cold plates.

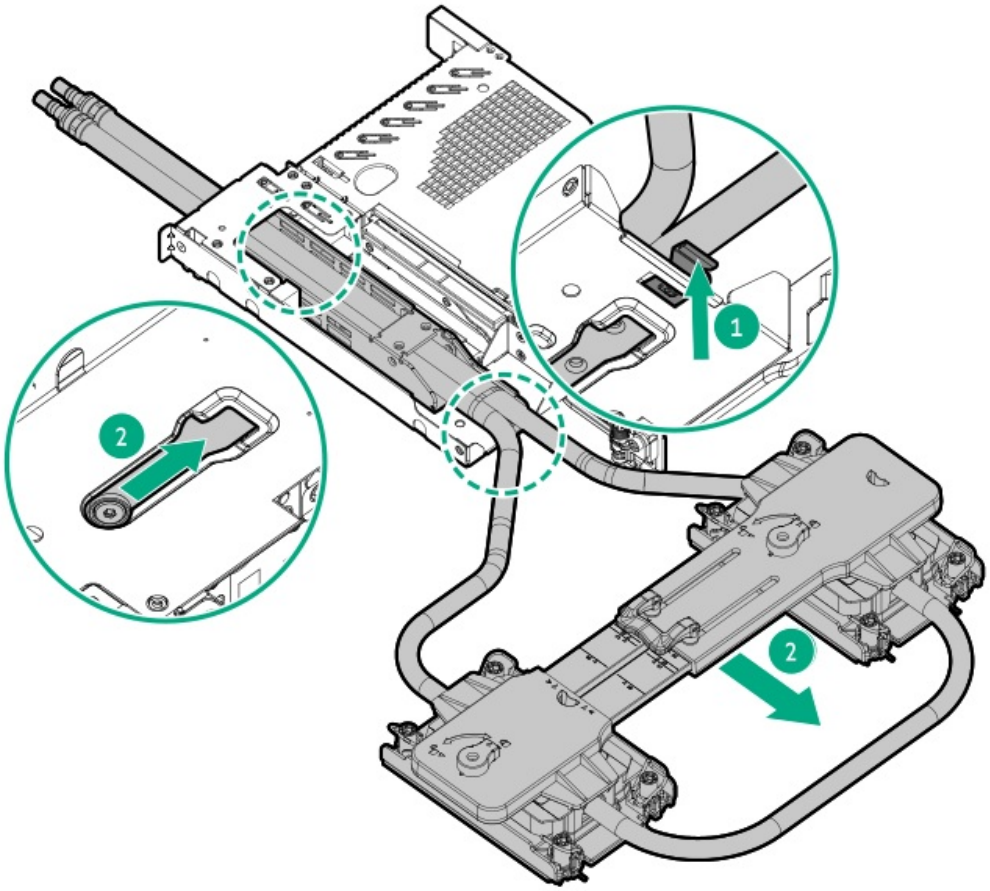
    Allow the alcohol to evaporate before continuing.

19. Remove the DLC cold plate module.

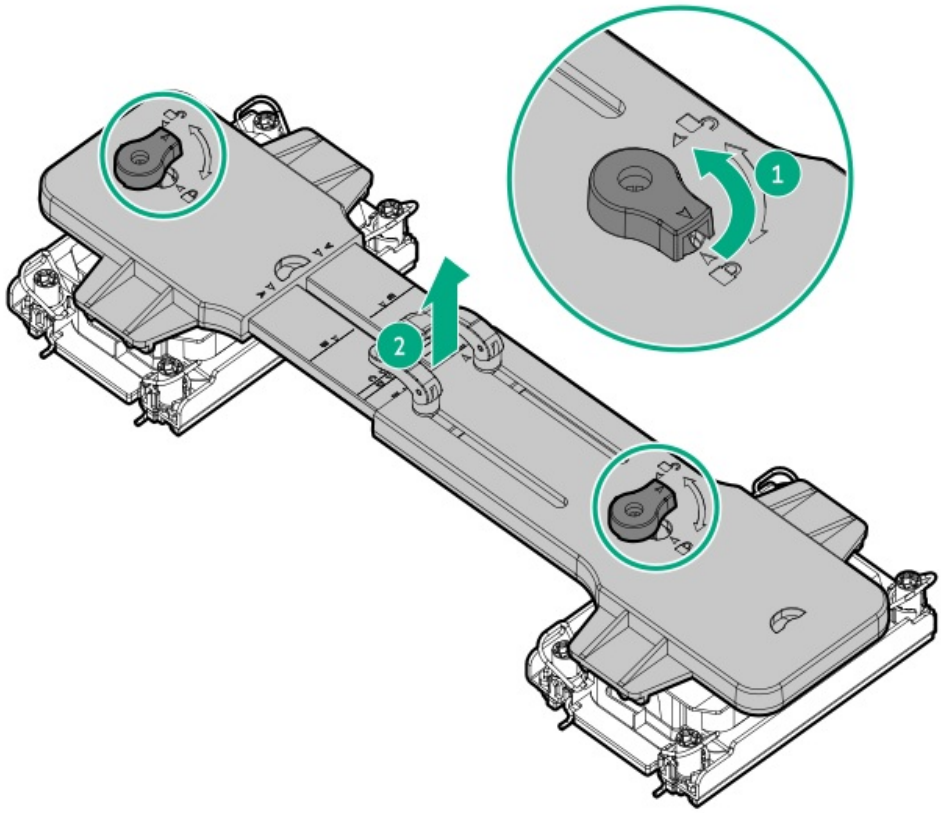
    - DLC cold plate and PCIe bracket:



    - DLC cold plate module and NS204i-u bracket:



20. Remove the handle from the cold plates.



Installing the DLC cold plate module on the system board

Prerequisites

- Read the HPE Cray XD/ProLiant Direct Liquid Cooling System Site Preparation, User and Maintenance Guide :

  https://www.hpe.com/info/xdDLCguide

- Review the following:
  - Direct liquid cooling (DLC) module components
  - Heatsink and processor socket components
  - Processor cautions
  - Eye and skin protection
- If the reason for replacing the DLC module is due to a coolant leak, first perform the Appendix I: Server coolant spill response procedure .
- In addition to the tools and materials required for the DLC system, be sure that you also have the following:
  - Liquid cooling module handle (spare part number: P89110-001)
  - T-30 Torx screwdriver
  - T-10 Torx screwdriver

About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

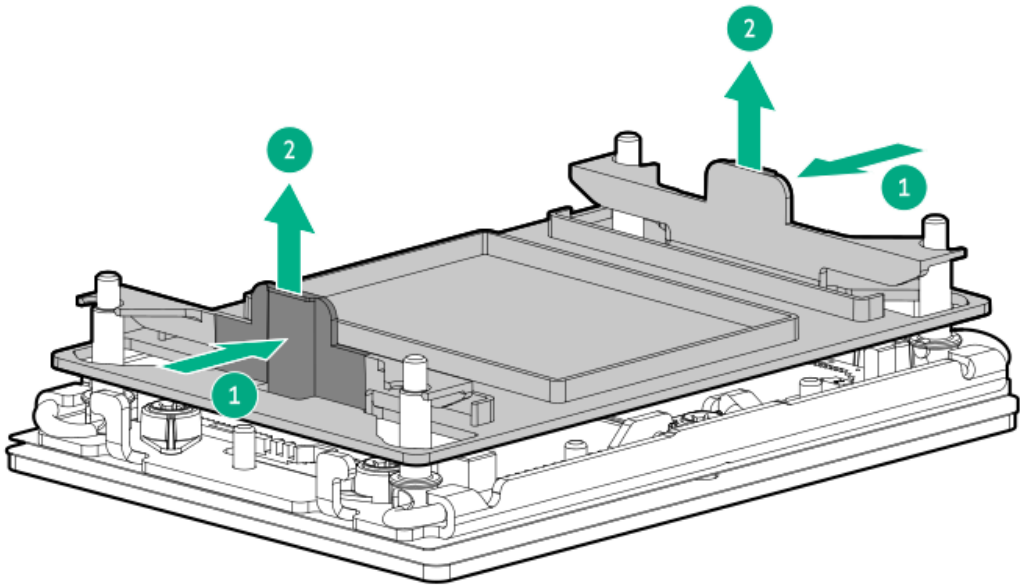
Procedure

1. **IMPORTANT**

   If you are installing or replacing the liquid cooling module in a system using the one-processor configuration, note the following:

   - To prevent any interference issues, remove the dust covers from both processor sockets before installing the cold plates.
   - Do not touch or remove the thermal interface material on the contact side of the cold plate that does not have a processor-carrier assembly installed.

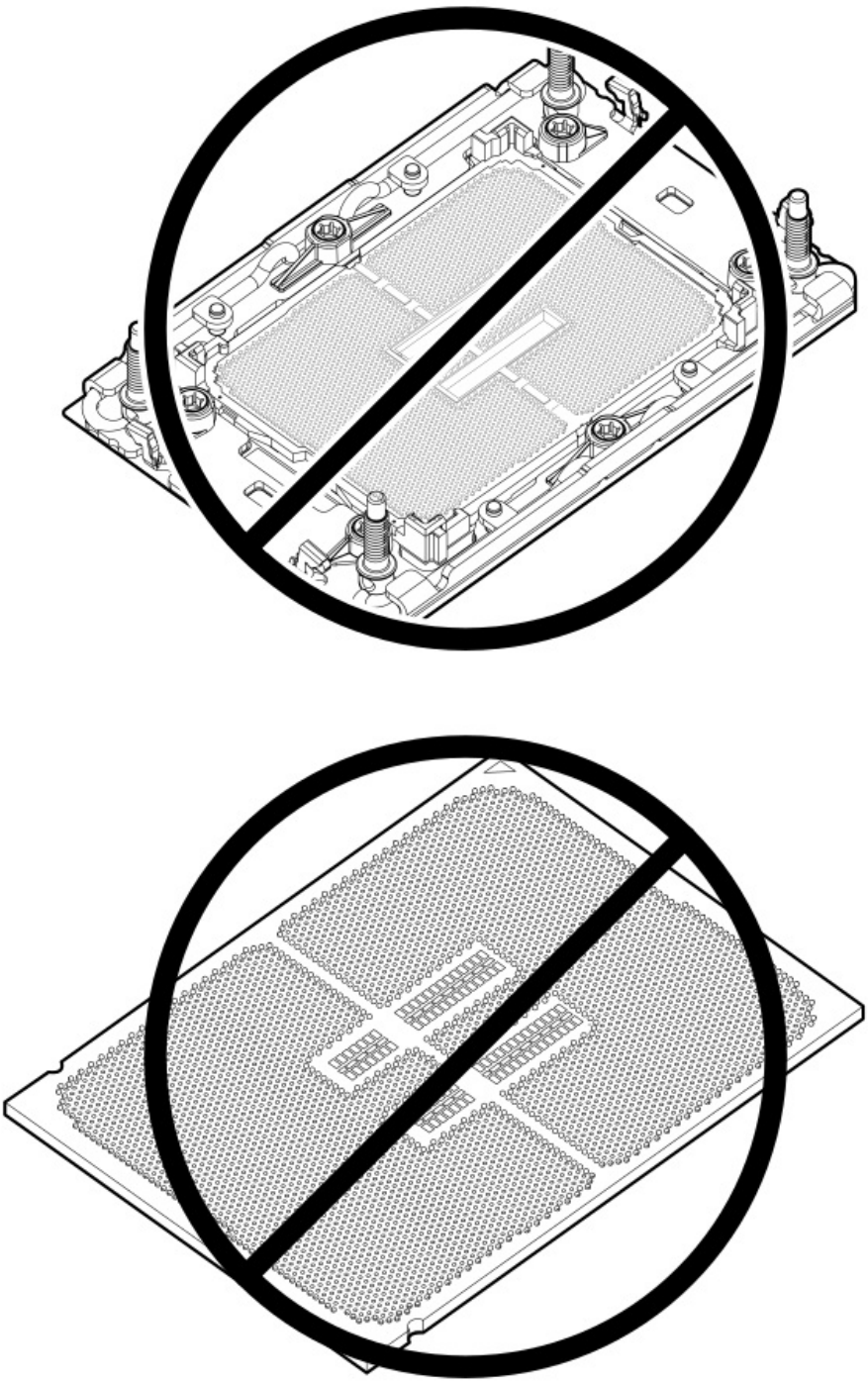
   If installed, remove the dust covers from the processor sockets:



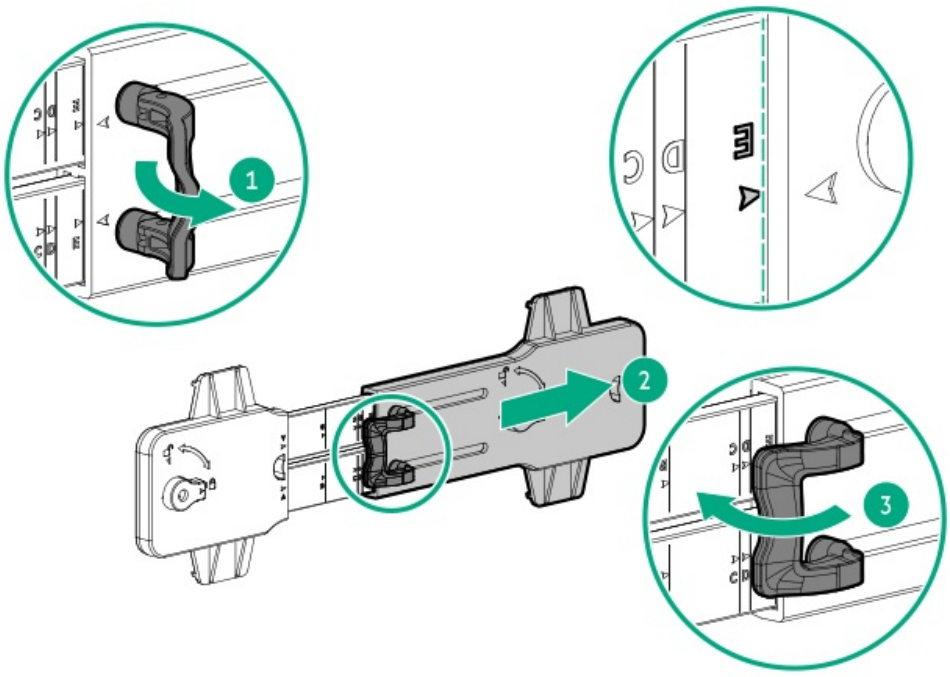
2. Do not touch the pins on the processor socket and the processor.

   CAUTION

   THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED. Any damage to them might require replacing the system board.

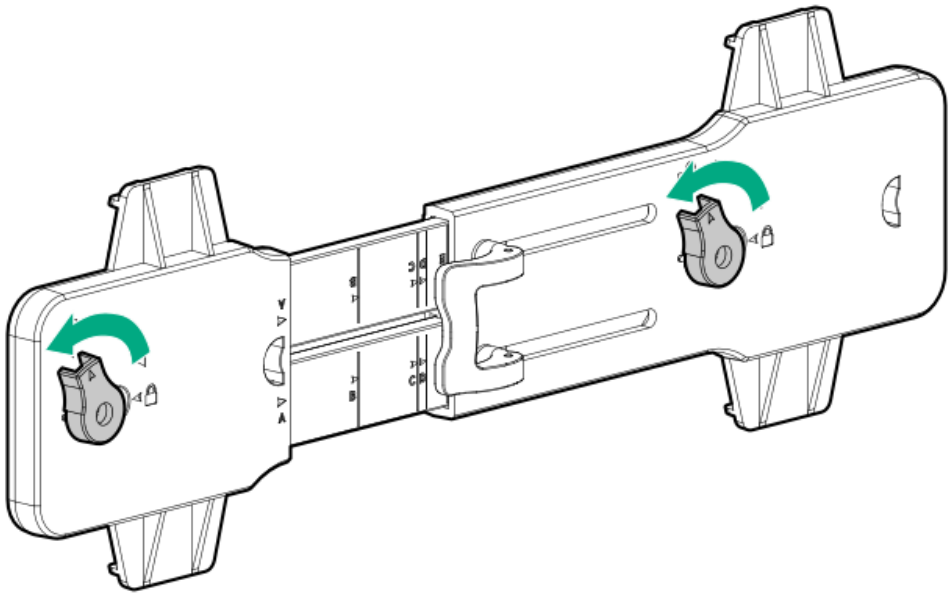


3. Set the liquid cooling module handle to the appropriate length.
   a. Disengage the locking handle.
   b. Extend the handle and align the edge to the line marked by the letter E.
   c. Engage the locking handle.

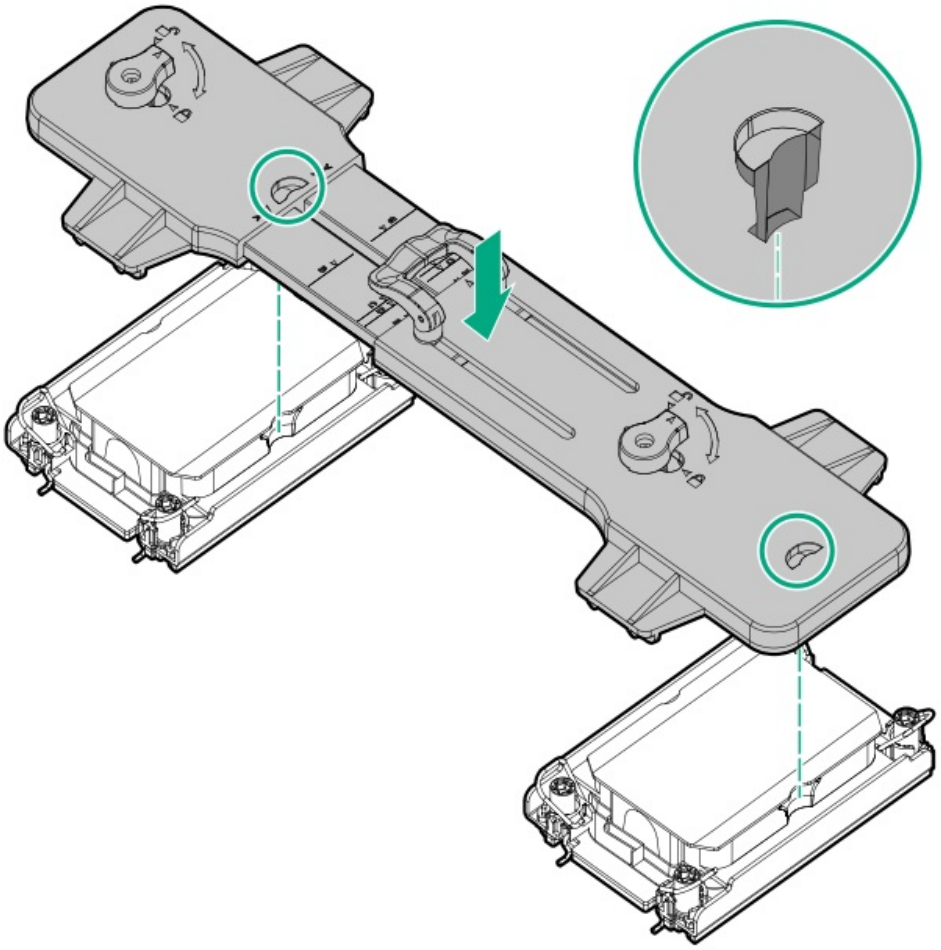


4. Attach the handle to the open-loop liquid cooling cold plates:

   a. Rotate the handle knobs anti-clockwise to the unlocked position.

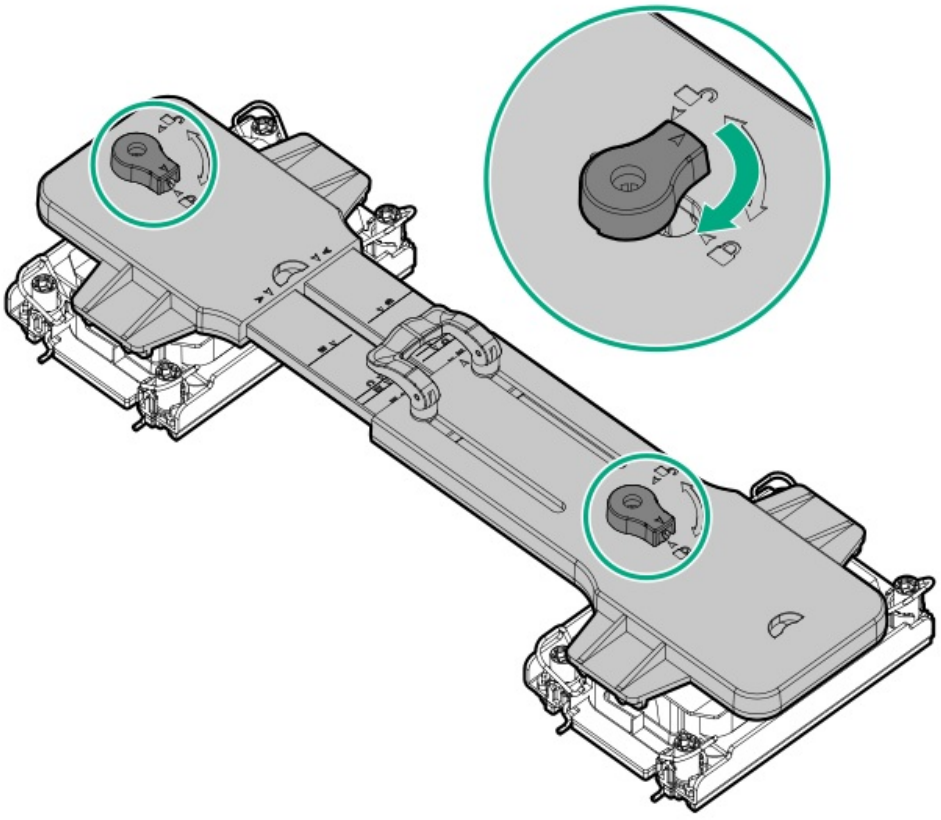


   b. Align the hooks on the handle with the notches on the cold plates, and then attach the handle to the cold plates.



c. Turn the handle knobs to the locked position.

   Gently pull on the handle and verify that the cold plates are securely latched to the handle.



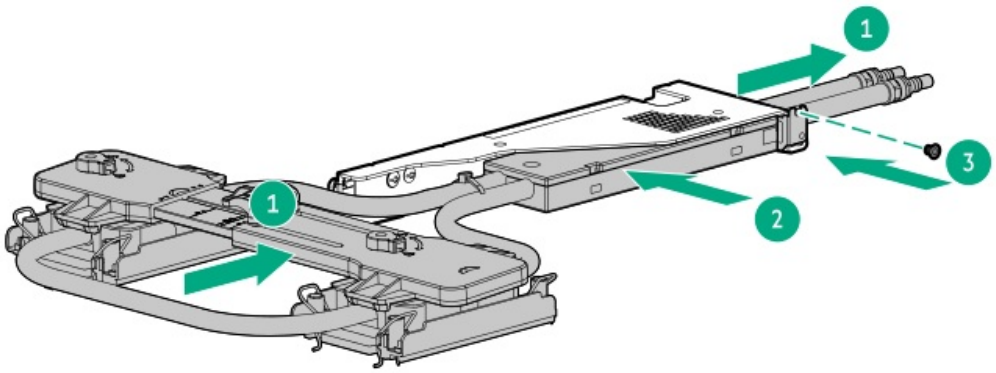
5. **CAUTION**

   To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

   Prepare the DLC module for installation.

   - DLC cold plate module and PCIe bracket:

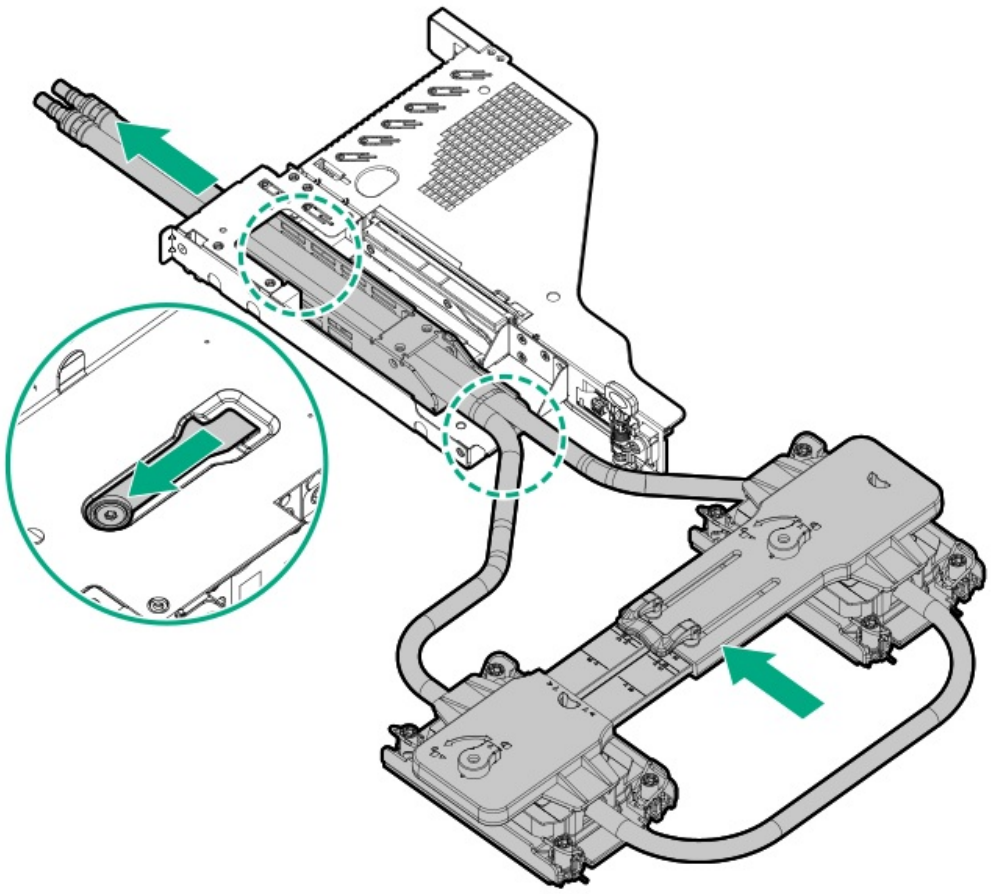
     Install the DLC cold plate module and PCIe bracket in the low-profile riser cage.



   - DLC cold plate module and NS204i-u bracket:

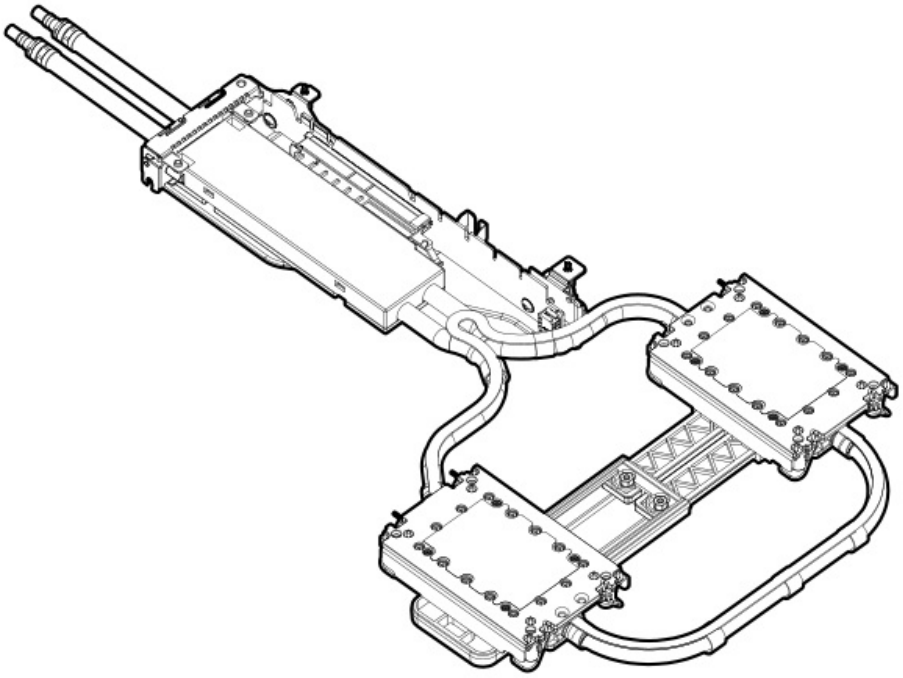
     Install the DLC cold plate module on the NS204i-u bracket and primary riser cage.

     There will be an audible click to indicate that the hose bracket is properly latched on the NS204i-u bracket.

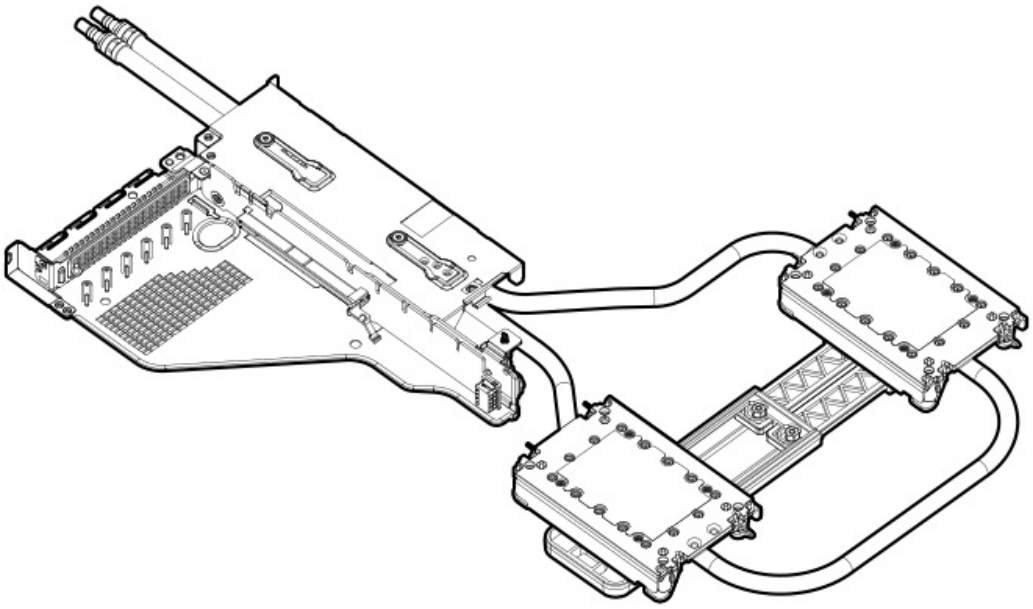


6. Set the direct liquid cooling assembly upside down on a flat surface.

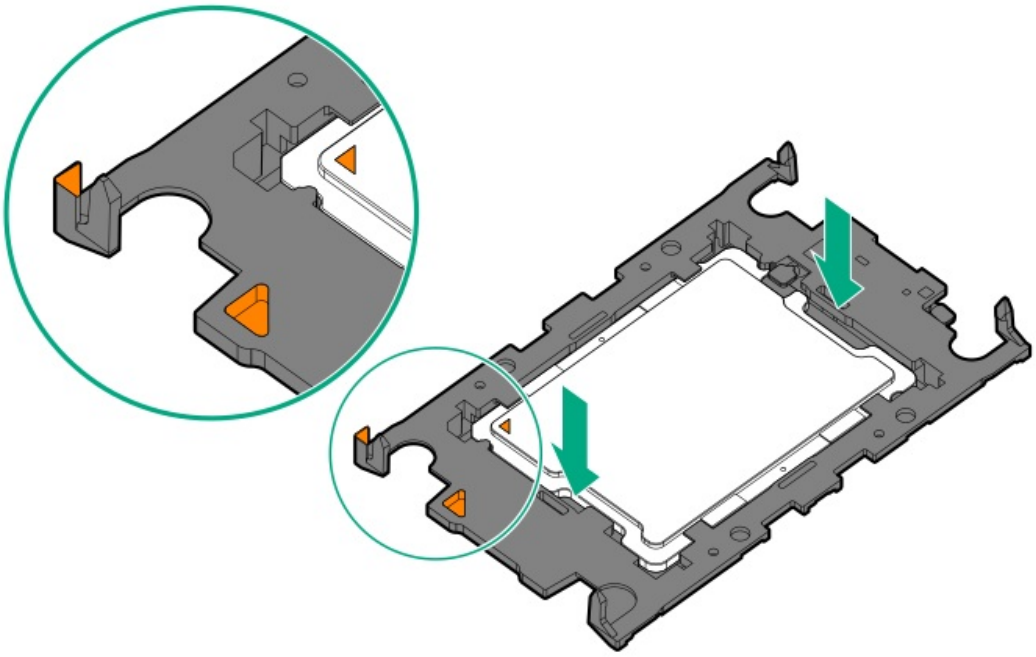
- DLC cold plate module and PCIe bracket:



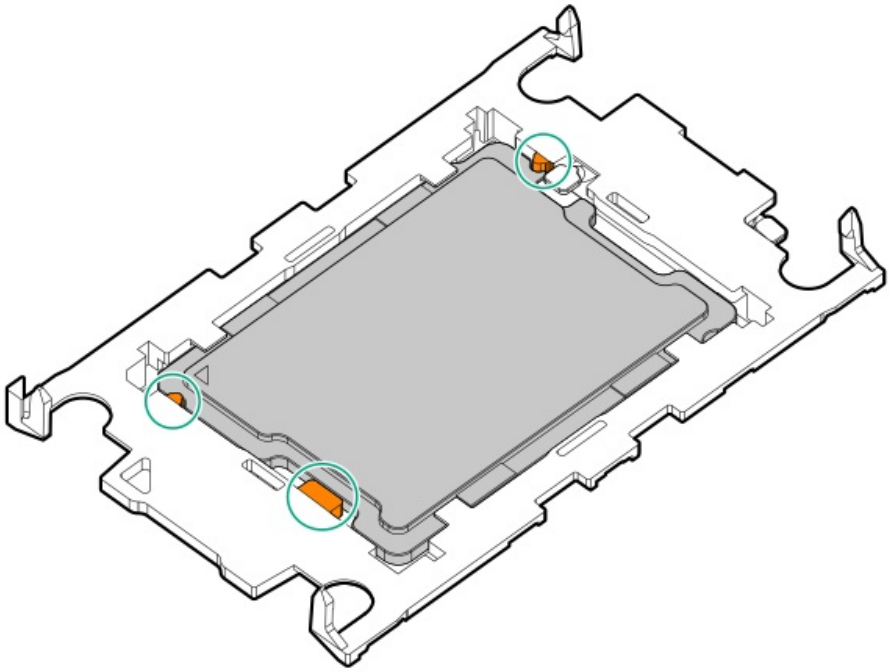
- DLC cold plate module and NS204i-u bracket:



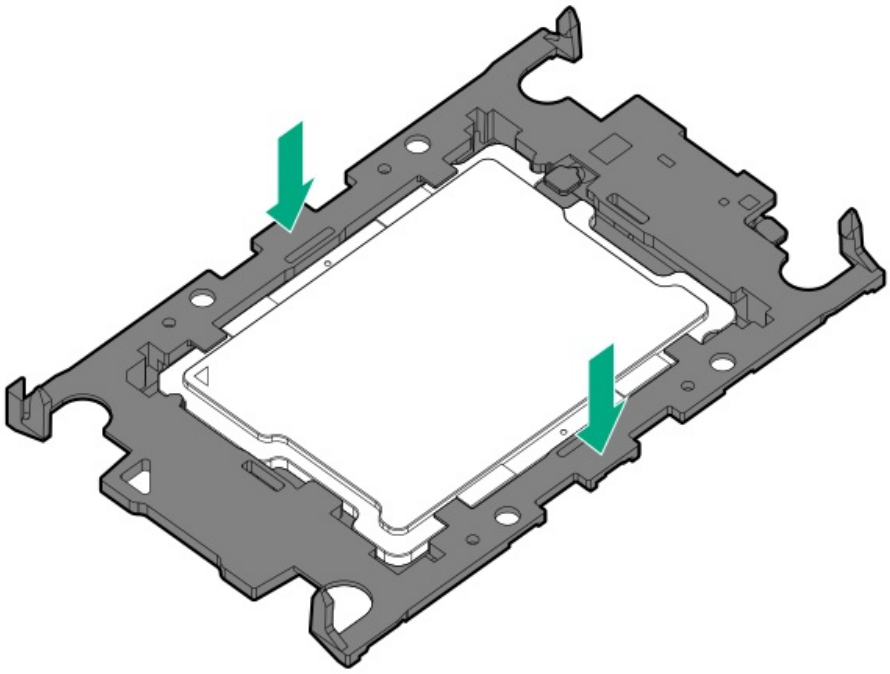
7. Remove the clear protective covers from the new open-loop liquid cooling cold plates.
8. Install the processor carrier on the processor:
   a. Align the pin 1 indicator on the processor carrier with that on the processor, and then press on the pair of opposite sides on the TIM breaker lever of the processor carrier until it clicks into place.



b. Verify that the processor is properly latched on the processor carrier.

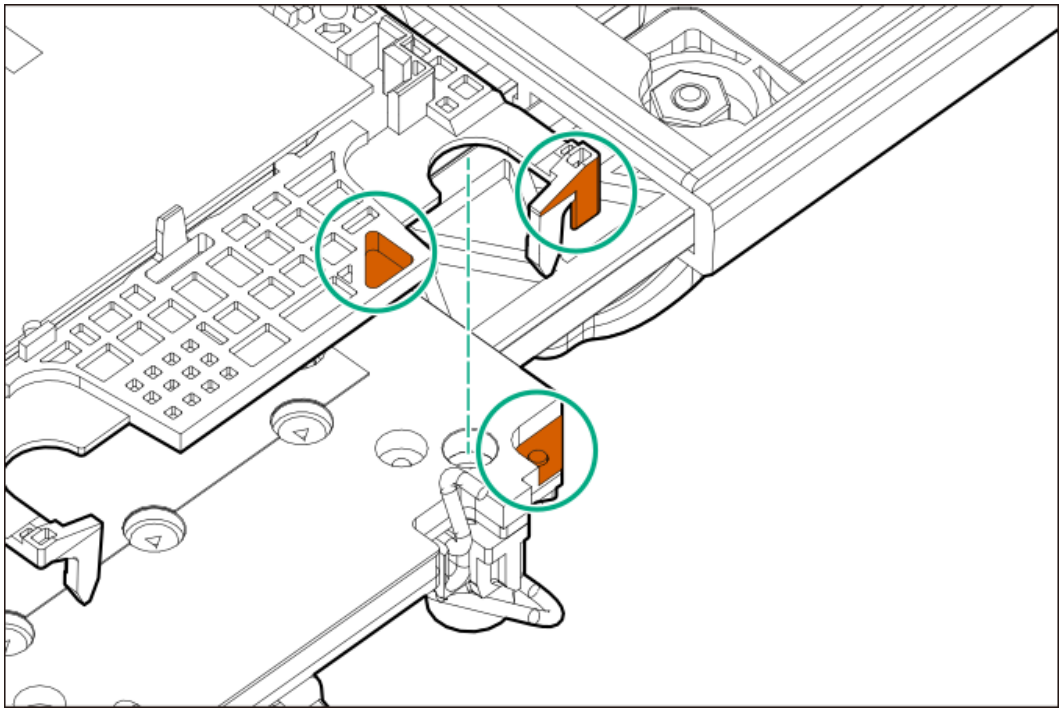


If not, press the other pair of opposite sides of the processor carrier until it clicks into place.



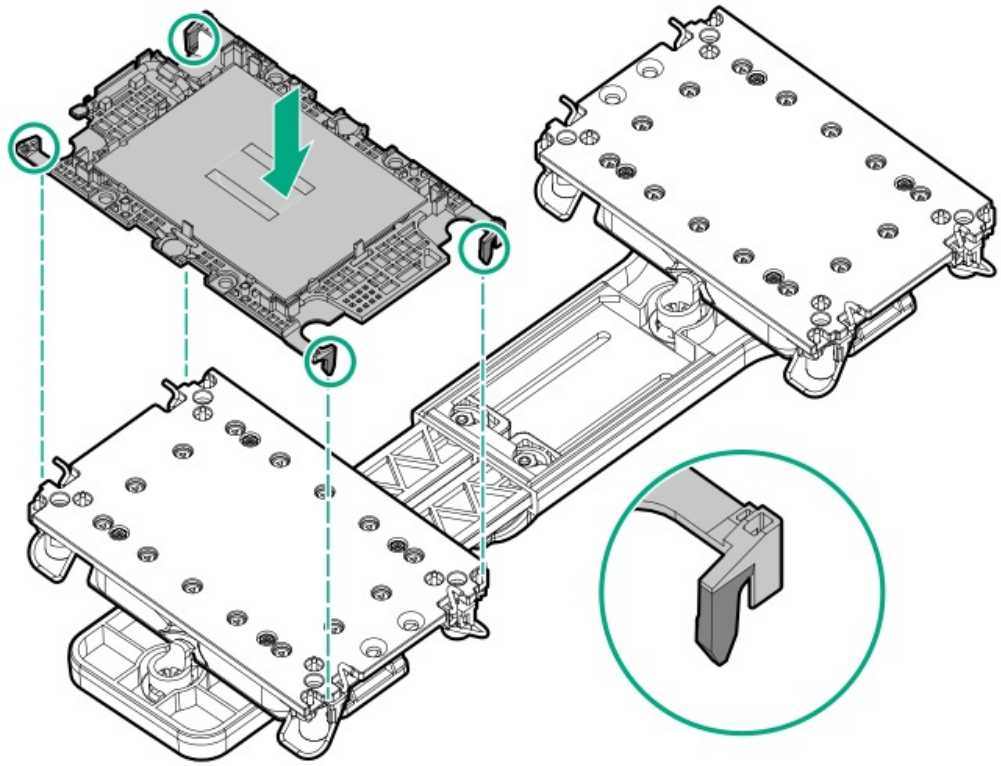
9. Attach the processor carrier to the DLC cold plate module:

   a. Align the pin 1 indicator on the processor carrier with that of the cold plate.

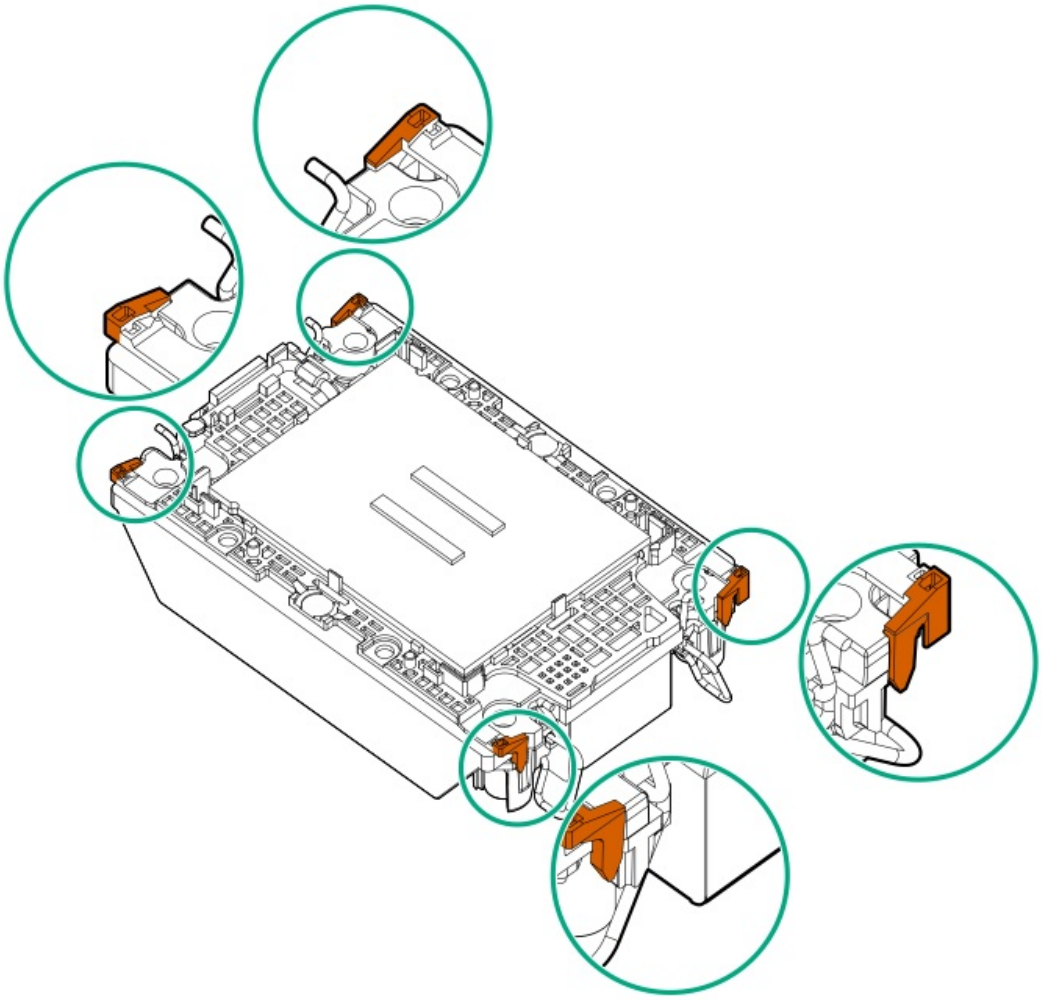


   b. Lower the processor carrier on the cold plate until the carrier tabs snap into place.

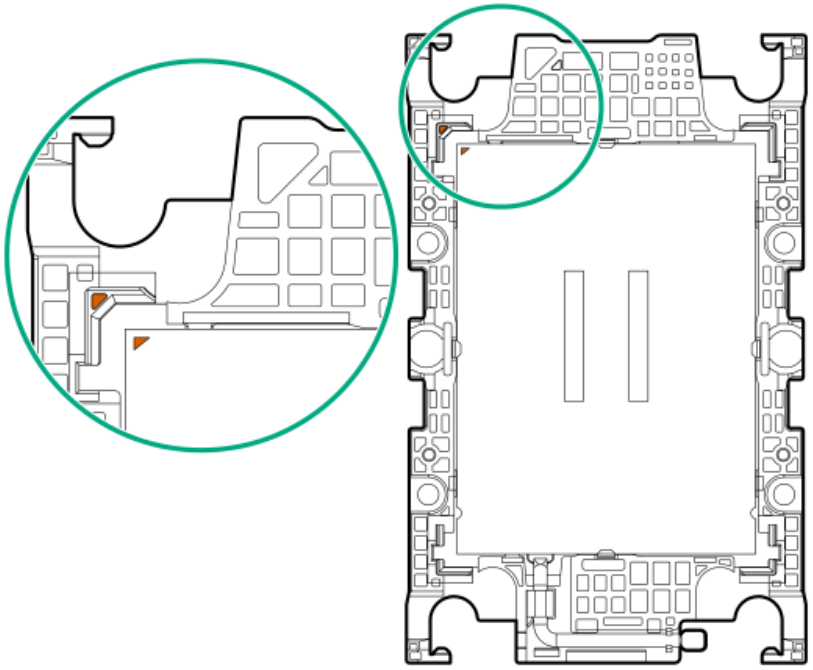
      There will be an audible click to indicate that the processor carrier is properly latched on the cold plate.



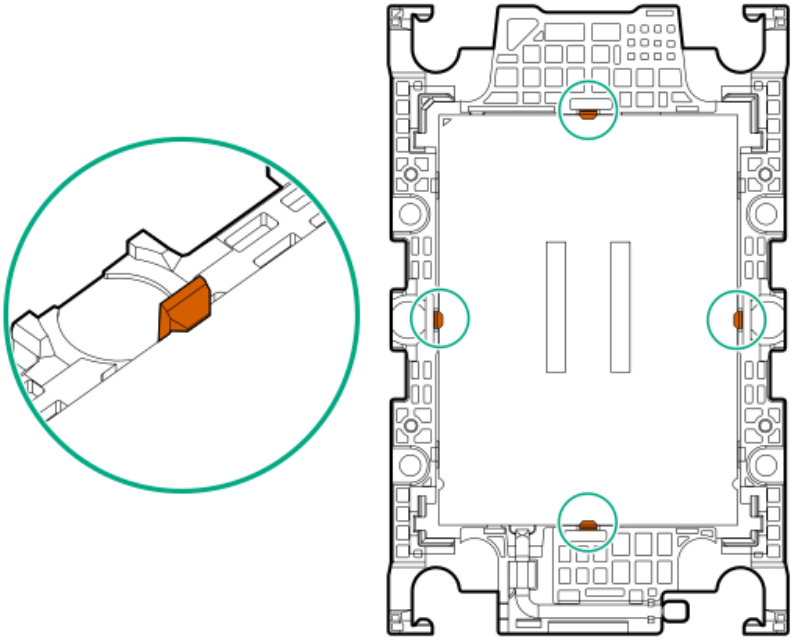
10. If you want to install a second processor, repeat the previous two steps.
11. Perform the following verification steps:
    a. Verify that the tabs on the processor carrier are securely latched on the cold plate.



b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.



c. Verity that the processor is properly secured by the carrier snaps.



12.

CAUTION

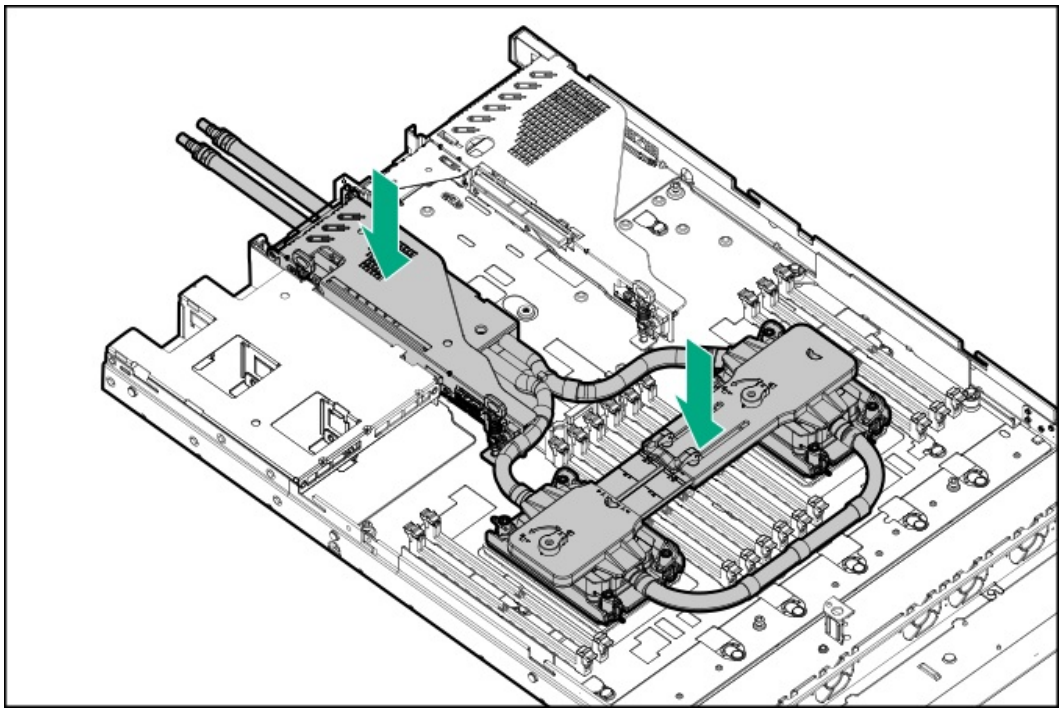
Extra caution is required when you are handling the liquid cooling module or processor-carrier assembly during its installation or removal process. **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.**

CAUTION

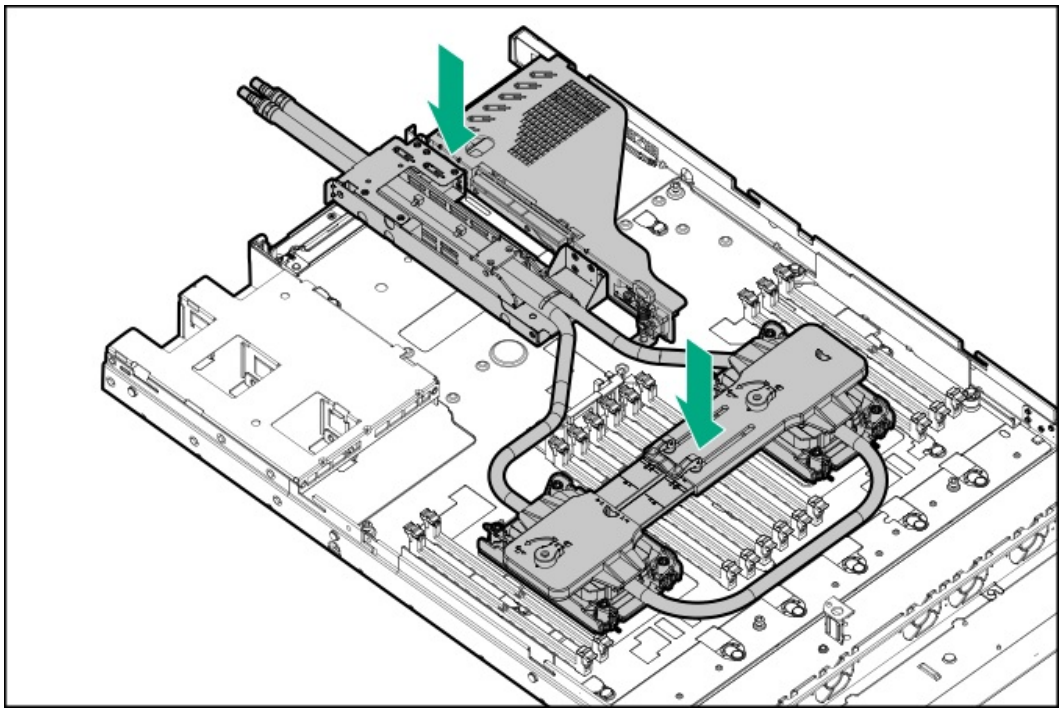
To avoid damaging the coolant hoses that might result in a coolant leak, do not bend the coolant hoses when installing or removing the liquid cooling module.

Place the liquid cooling module on the system board. Set the riser cage on the slot while you install the cold plates.

- DLC cold plate module and PCIe bracket:

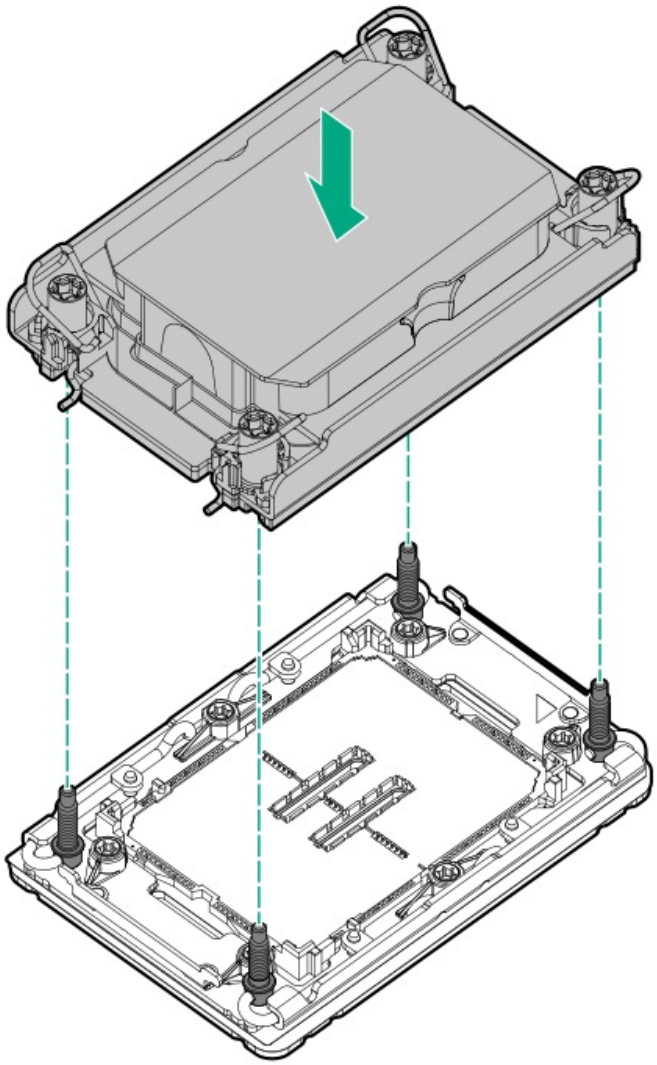


- DLC cold plate module and NS204i-u bracket:

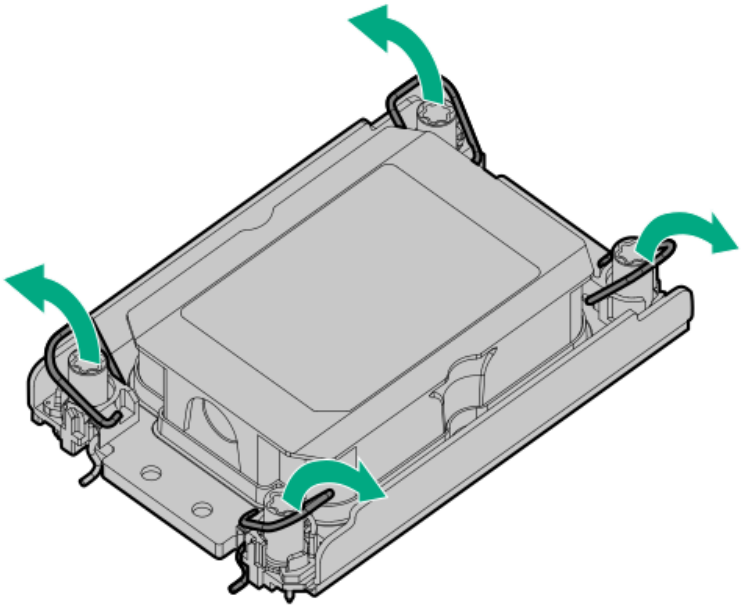


13. Tighten the screws on both cold plates:
    a. When using a torque screwdriver to tighten the cold plate screws, set 0.9 N-m (8 in-lb) of torque.
    b. Note the **Front of server** text on the cold plate label to correctly orient the cold plate over the bolster plate.
    c. Carefully lower the cold plate onto the bolster plate guide posts.

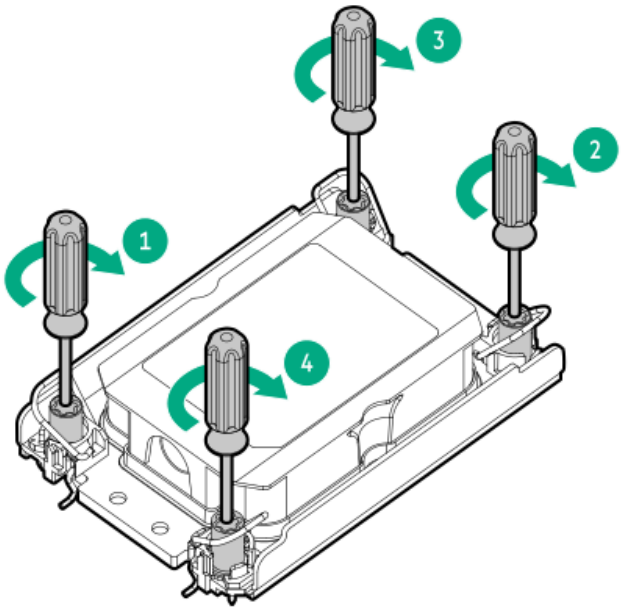
       The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



d. Set the anti-tilt wires to the locked position.

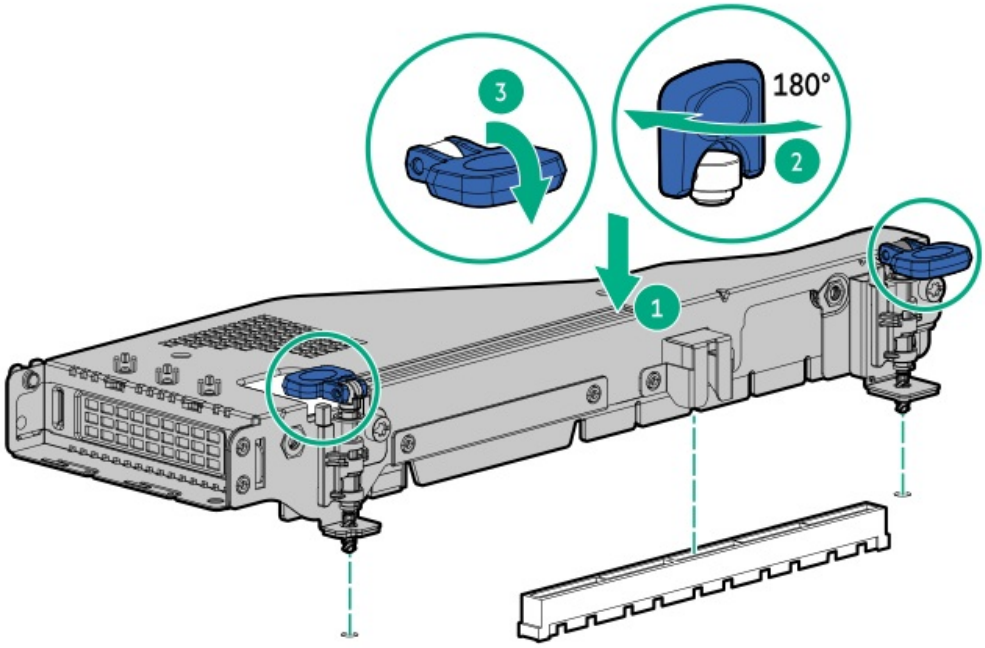


e. Tighten the cold plate screws.

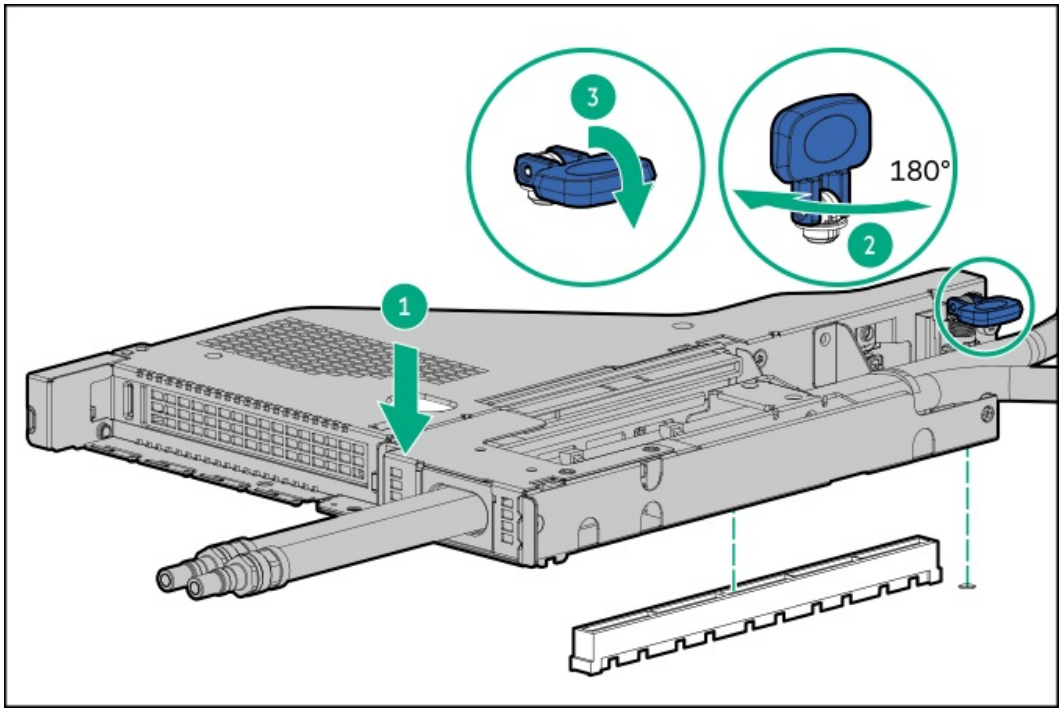


14. Install the riser cage.

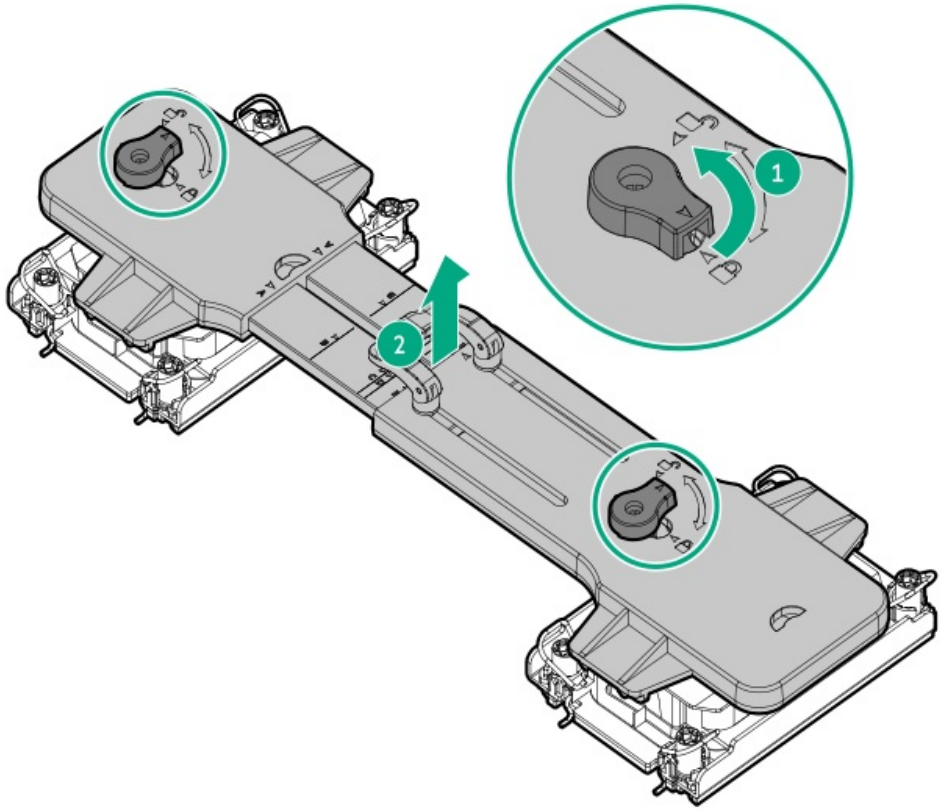
- Secondary riser cage:



- Primary riser cage with NS204i-u bracket installed:



15. Remove the handle from the cold plates.



16. Connect the signal cable to the system board .
17. Install the access panel.
18. If the server was removed from an enclosure or a rack, reinstall it now.
19. Connect the direct liquid cooling kit from the DLC manifold to the server.
20. Connect all peripheral cables to the server.
21. Connect each power cord to the server.

22. Connect each power cord to the power source.
23. Power up the server.

Checking coolant level

24. After powering up the server, wait for a few minutes for the system to stabilize.
25. Check the coolant level in the coolant distribution unit (CDU).
26. If the coolant feed (CF) pump reservoir bag is empty, or the return pressure is ≤ 10 PSIG, do one of the following:
    - Refill the CF pump reservoir bag.
    - Refill the system using a hand pump.

    For detailed procedures, see the CDU documentation.

Results

The replacement procedure is complete.

Processor replacement

Subtopics

Processor cautions
Removing a processor
Installing a processor

Processor cautions

CAUTION

To avoid damage to the processor or system board, only authorized personnel should attempt to replace or install the processor in this server.

CAUTION

To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

CAUTION

The pins on the processor socket and on the processor are very fragile and easily damaged . To avoid component damage, **do not touch these pins**. Any damage to them might require replacing the system board and/or processor.

IMPORTANT

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

IMPORTANT

If installing a processor with a faster speed, update the system ROM before installing the processor. To download firmware, go to the Hewlett Packard Enterprise Support Center website (**https://www.hpe.com/support/hpesc**).

Removing a processor

Prerequisites

- Identify the heatsink and processor socket components.
- Review the processor cautions.
- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - Alcohol wipe
  - Liquid cooling module handle—This is needed only if the system has a liquid cooling module installed. Use this handle to facilitate the removal and installation of the liquid cooling module when replacing the processor, system board, or liquid cooling module.

    The handle can be ordered as a spare (P89110-001).
- If you are not immediately installing the replacement processor-heatsink assembly, make sure that you have a processor socket dust cover.

About this task

WARNING

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

CAUTION

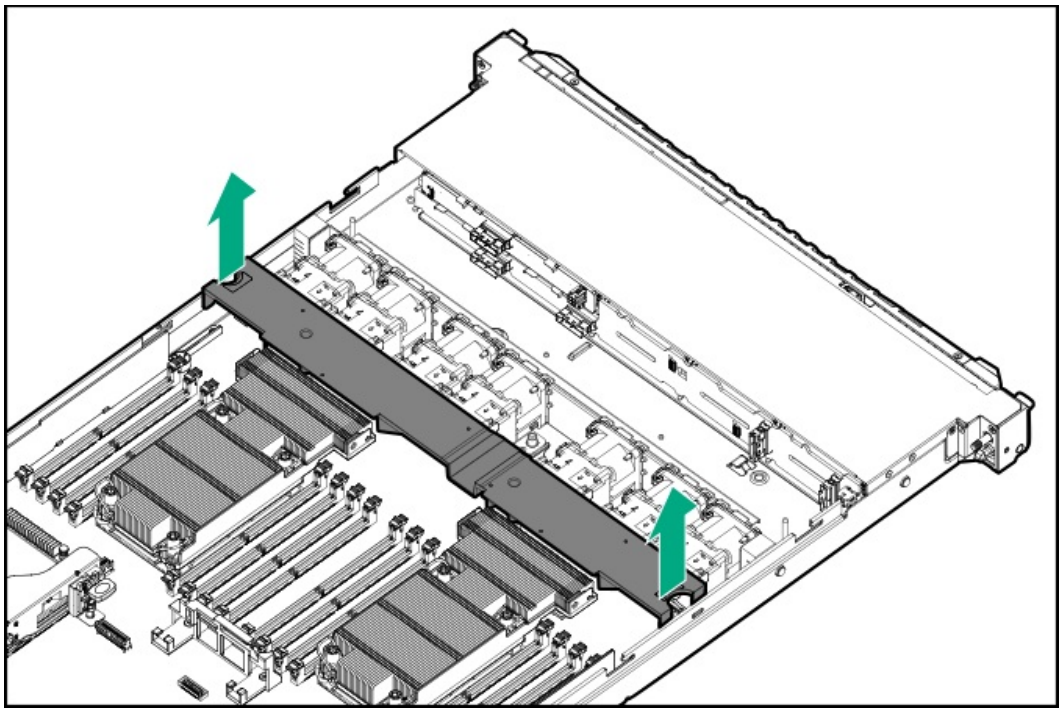
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. If the system uses direct liquid cooling, disconnect the DLC kit from the rack manifold.
4. If the server is installed in an enclosure or a rack, remove the server and place it on a flat, level work surface.
5. Remove the access panel.
6. Allow all internal system components to cool before continuing.
7. If the system uses standard or high performance heatsinks, proceed to step 8.

   If the system has a liquid cooling module installed, remove the liquid cooling module and then remove the processor from the cold plate.
8. If installed, remove the air baffle.

   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.

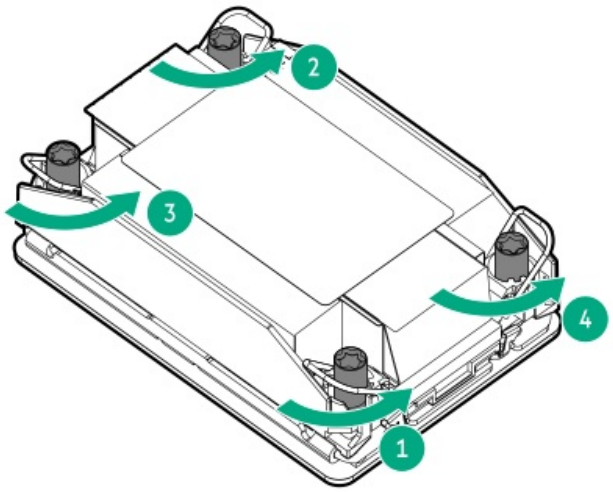


9. **CAUTION**

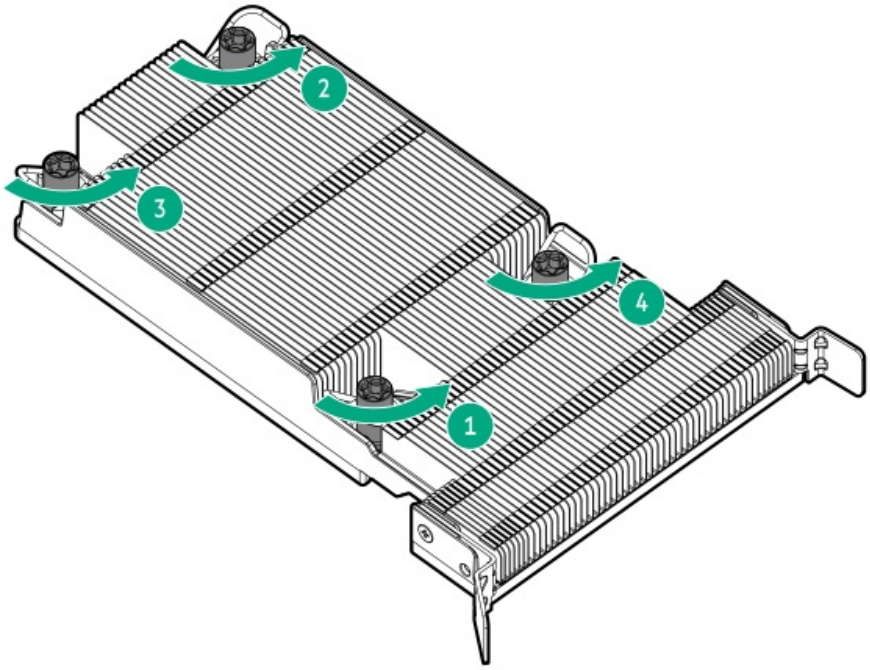
   Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

Use a T-30 Torx screwdriver to loosen one pair of diagonally opposite heatsink screws (callouts 1 and 2), and then loosen the other pair of heatsink screws (callouts 3 and 4).

- Standard heatsink

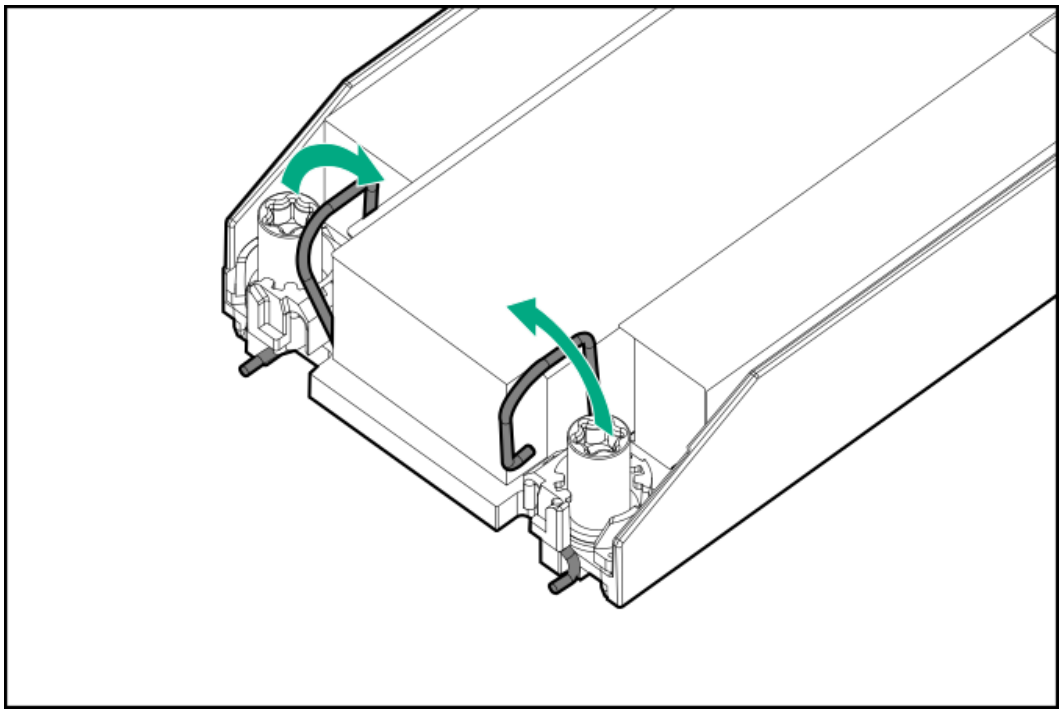


- High performance heatsink

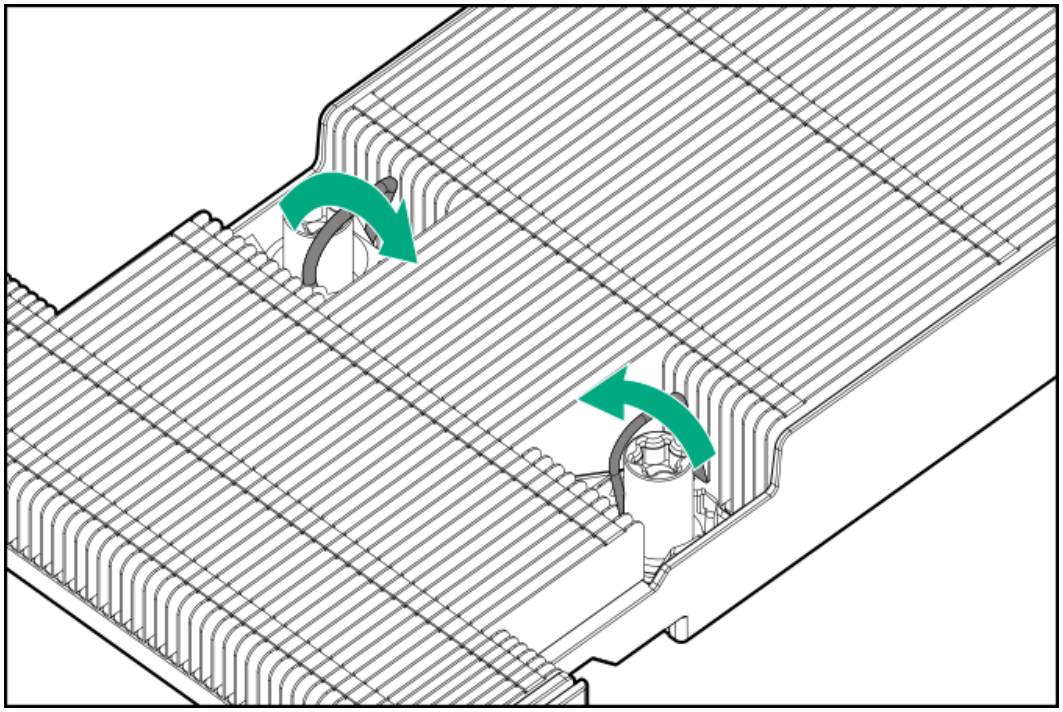


10. Set the anti-tilt wires to the unlocked position.

- Standard heatsink



- High performance heatsink

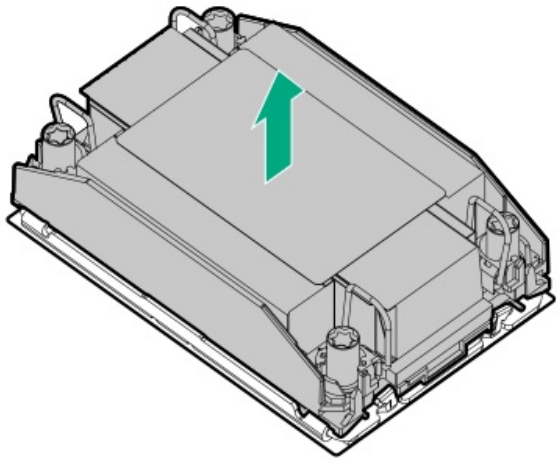


11. **CAUTION**

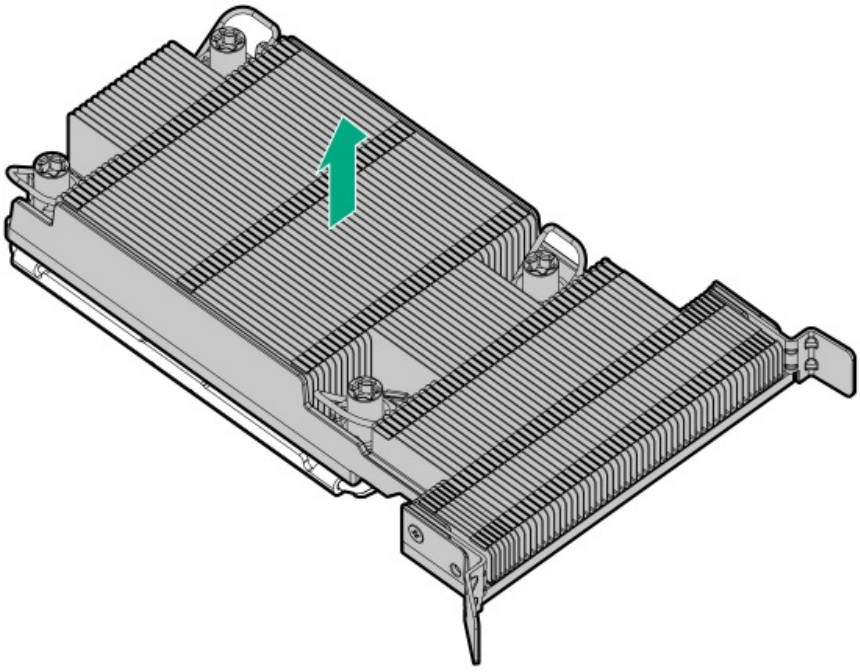
    To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

Lift the processor-heatsink module straight up from the system board.

- Standard heatsink



- High performance heatsink



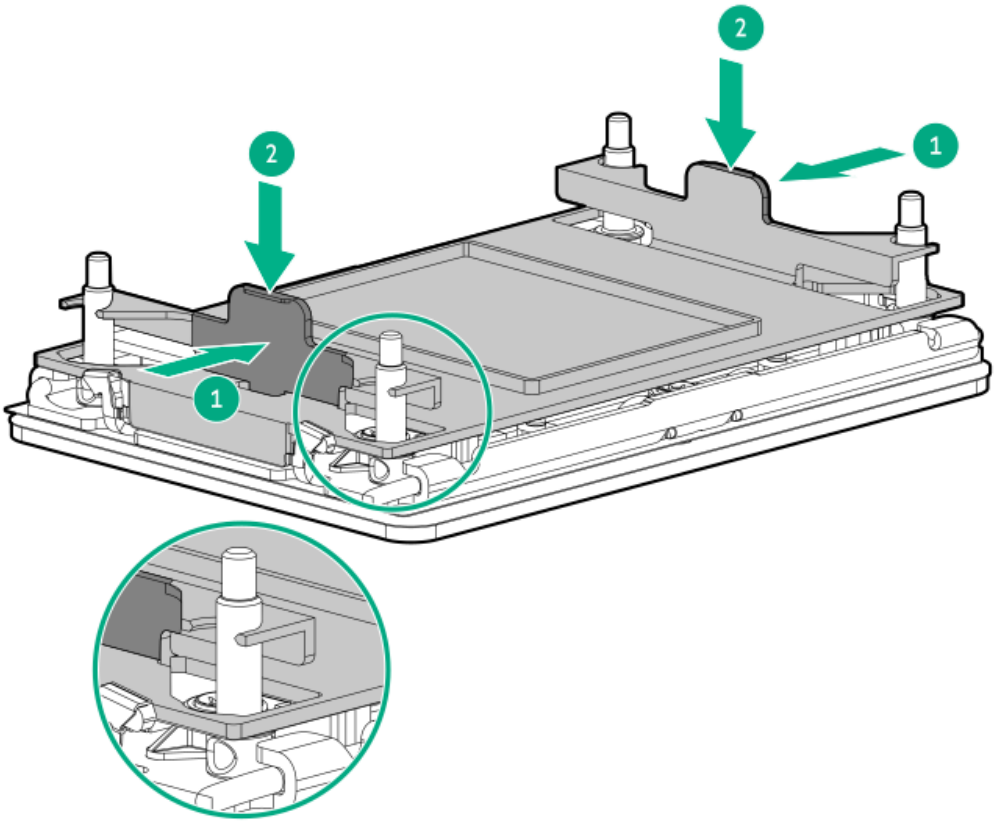
12. Place the processor-heatsink module on a flat work surface with its contact side facing up.
13. If you are not immediately installing the replacement processor-heatsink module, install the dust cover on the empty processor socket:

> **CAUTION**
>
> Do not press down on the dust cover. Pressing down on the dust cover might damage the processor socket.

a. Press and hold the grip tabs on the dust cover.

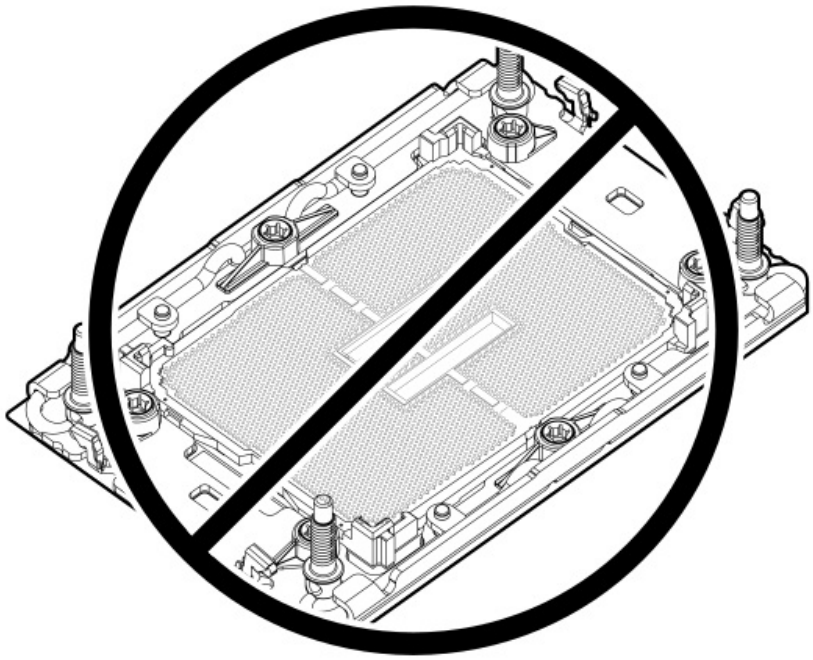
b. Carefully lower the dust cover onto the bolster plate guide posts.

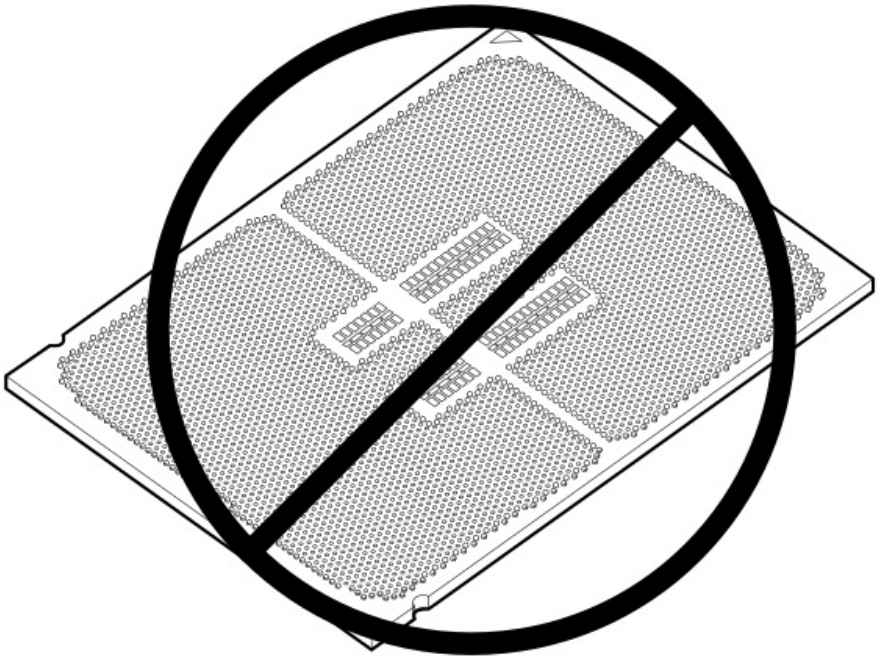
   Make sure that the corner holes of the dust cover are properly engaged with the guide posts on the bolster plate.



14. Do not touch the pins on the processor socket and the processor.

> **CAUTION**
>
> **THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED.** Any damage to them might require replacing the system board.



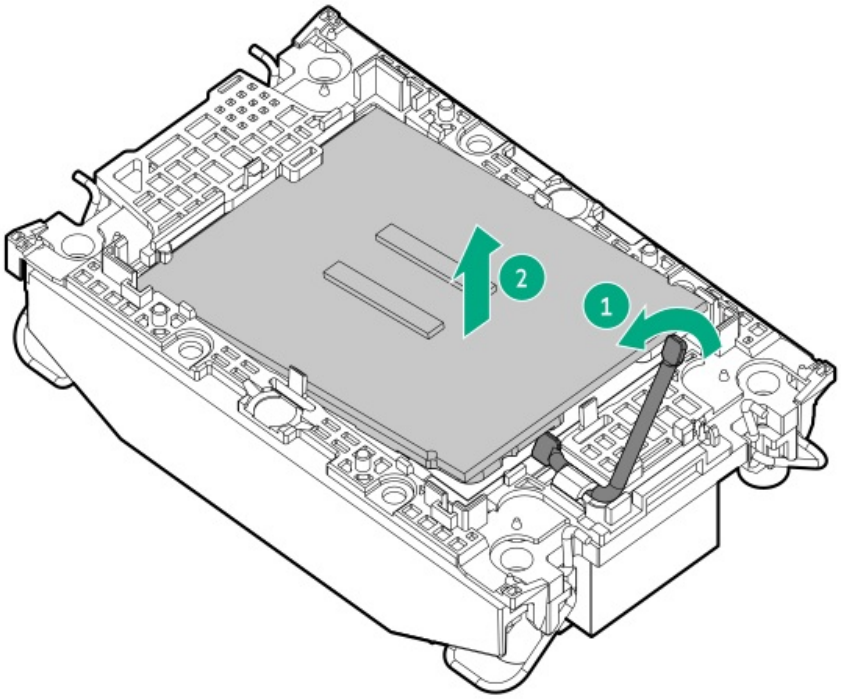


15. Remove the processor from the heatsink:

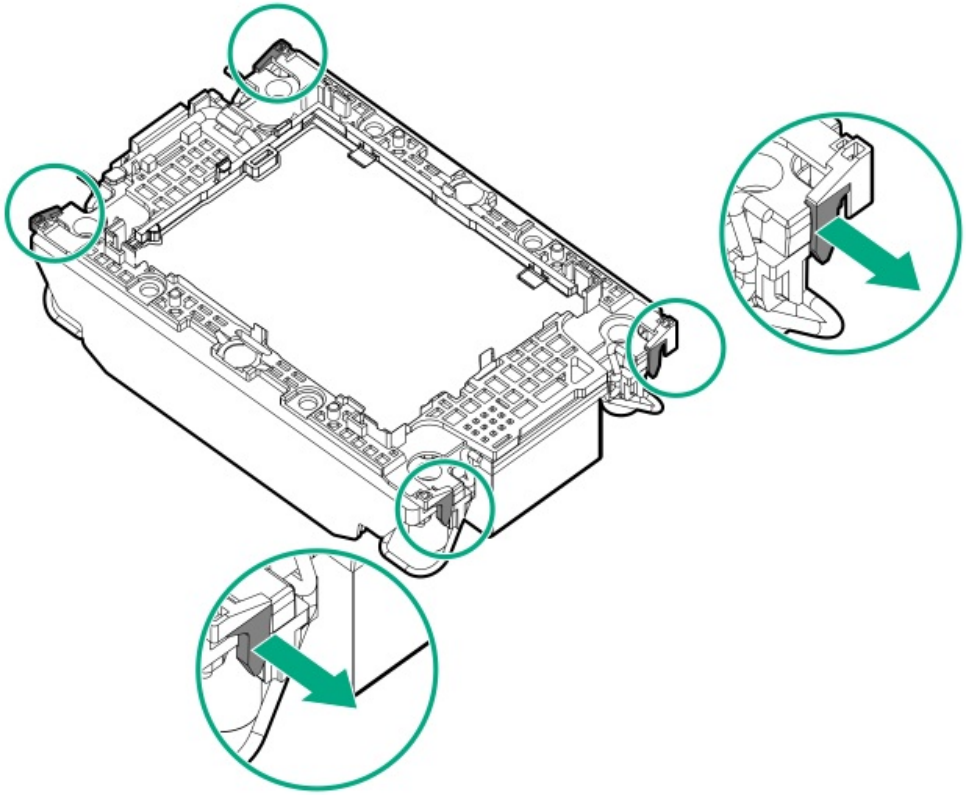
    a. Open the TIM breaker lever.

       This action breaks the adhesion between the processor and the heatsink.

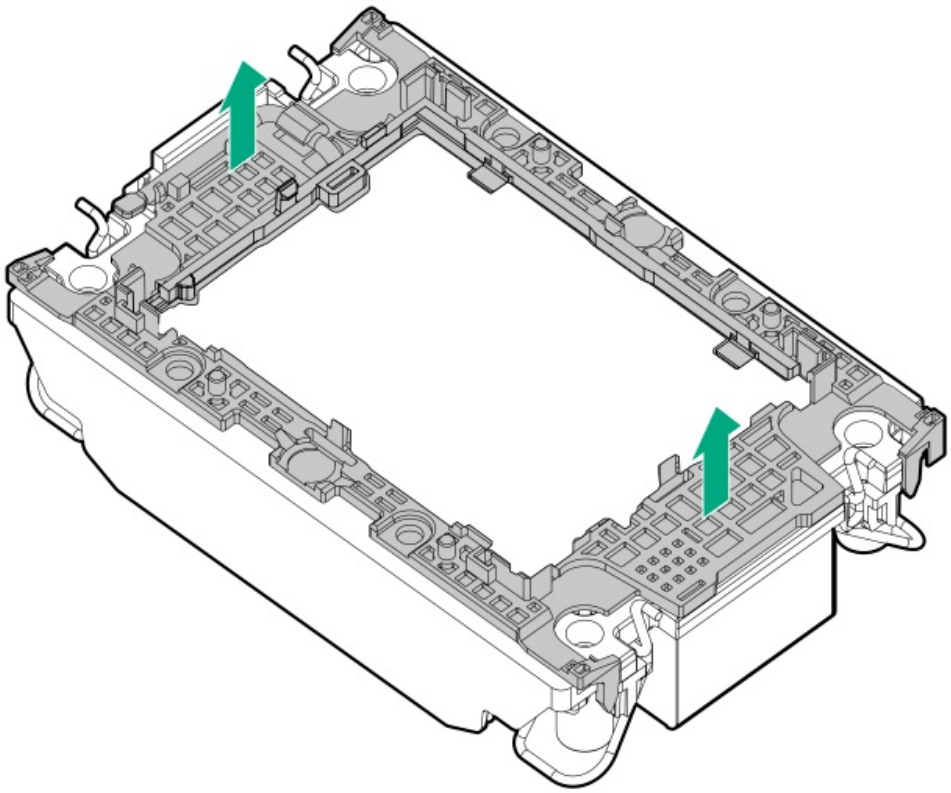
    b. Hold the processor by its edges, and then remove it from the carrier.



    c. Starting from the pin 1 corner and moving in an opposite manner, disengage the processor carrier release tabs from the heatsink.



d. Lift the processor carrier away from the heatsink.



16. Using a cleaning solvent, such as alcohol wipes, remove the existing thermal grease from the processor and heatsink.

    Allow the alcohol to evaporate before continuing.

Installing a processor

Prerequisites

- Review the following:
  - Heatsink and processor socket components
  - Processor cautions
  - Fan and heatsink requirements
- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - Liquid cooling module handle—This is needed only if the system has a liquid cooling module installed. Use this handle to facilitate the removal and installation of the liquid cooling module when replacing the processor, system board, or liquid cooling module.

    The handle can be ordered as a spare (P89110-001).

About this task

CAUTION

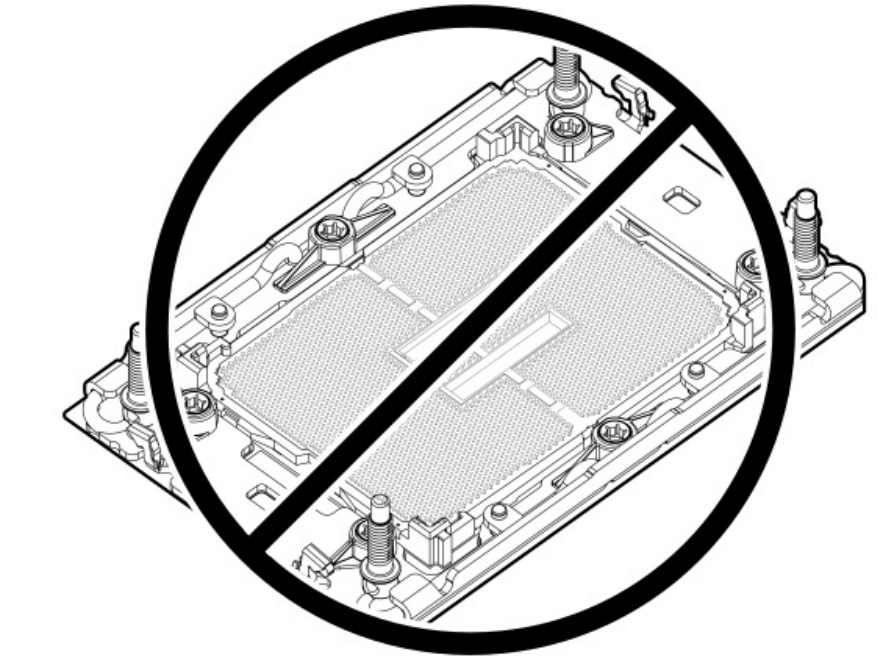
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

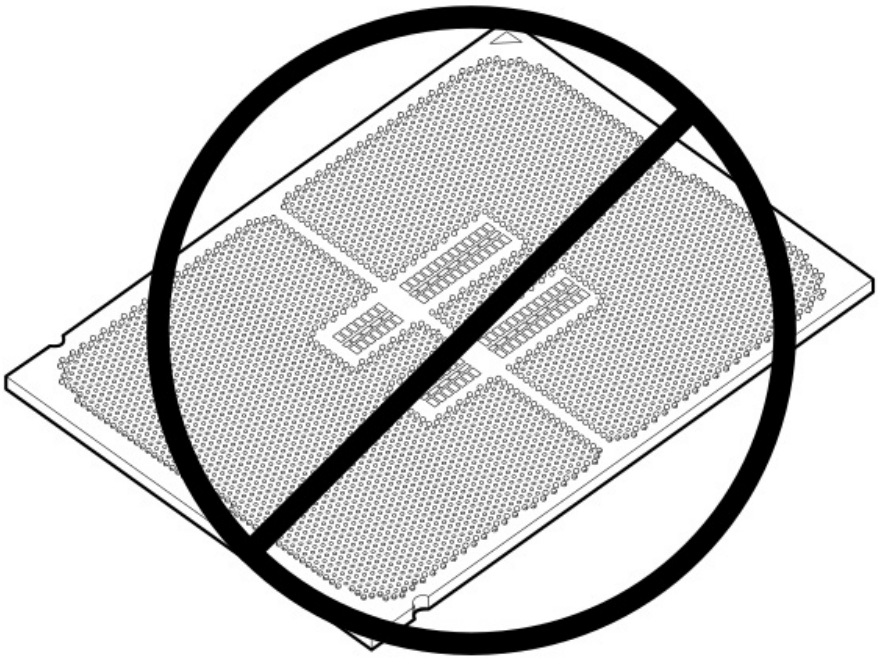
Procedure

1. Do not touch the pins on the processor socket and the processor.

   CAUTION

   THE PINS ON THE PROCESSOR SOCKET AND ON THE PROCESSOR ARE VERY FRAGILE AND EASILY DAMAGED. Any damage to them might require replacing the system board.

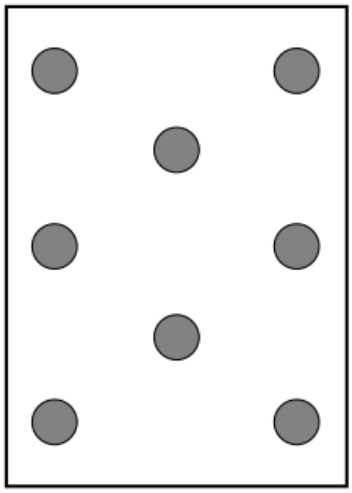




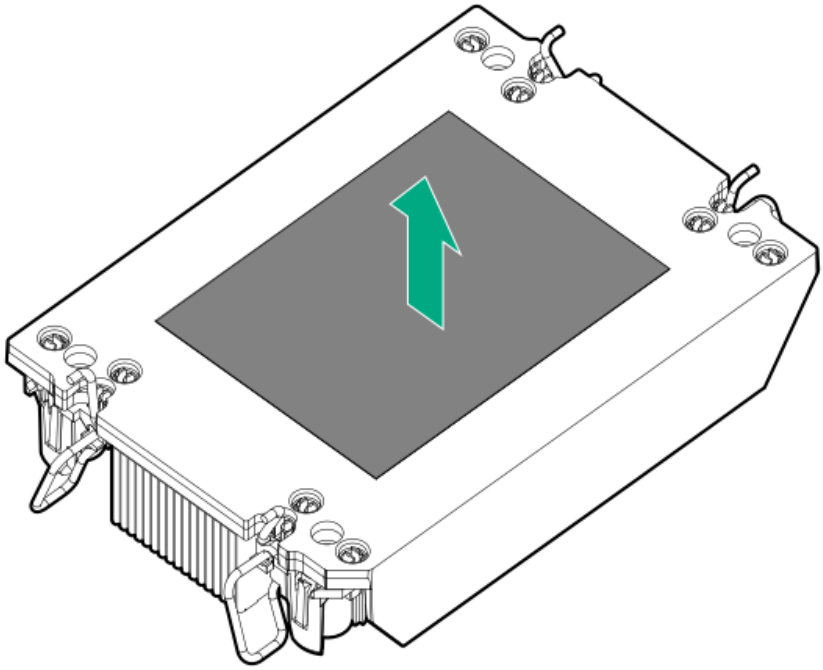
2. If the system uses standard or high performance heatsinks, proceed to step 3.

   If the system uses liquid cooling, install the processor carrier on the cold plate and then install the liquid cooling module . After completing these steps, proceed to step 12.

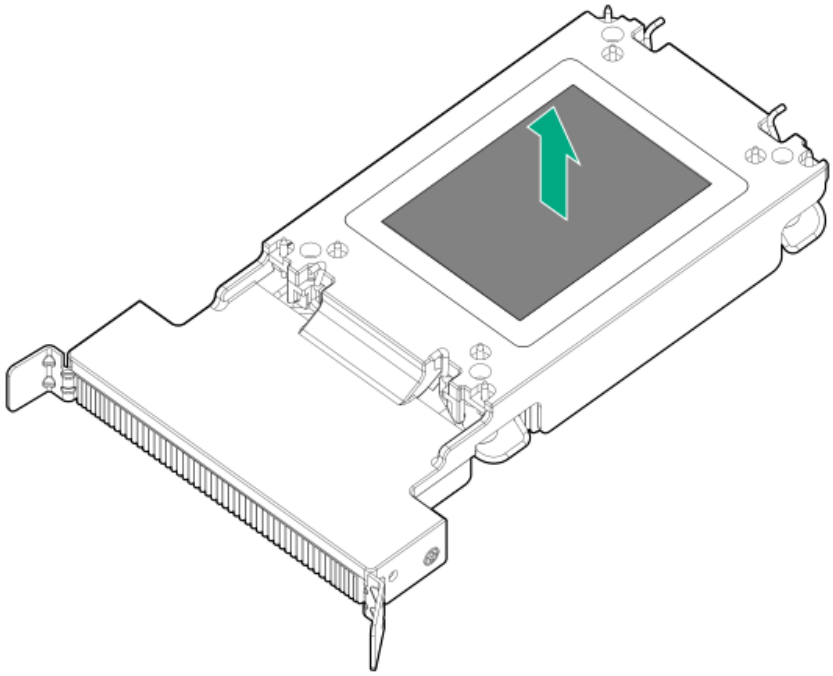
3. If you are using the same heatsink, apply the full content of the thermal grease syringes on top of the processor. Follow the pattern shown in the following image.



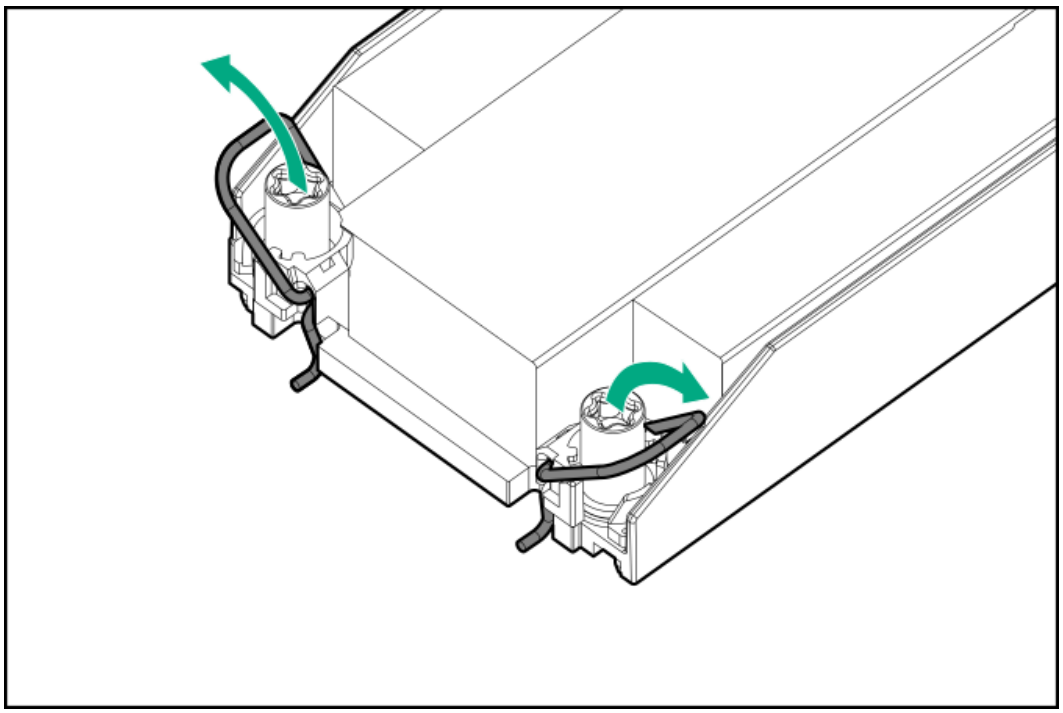
4. If you are using a new heatsink, remove the protective film from the thermal interface material.
   - Standard heatsink



   - High performance heatsink

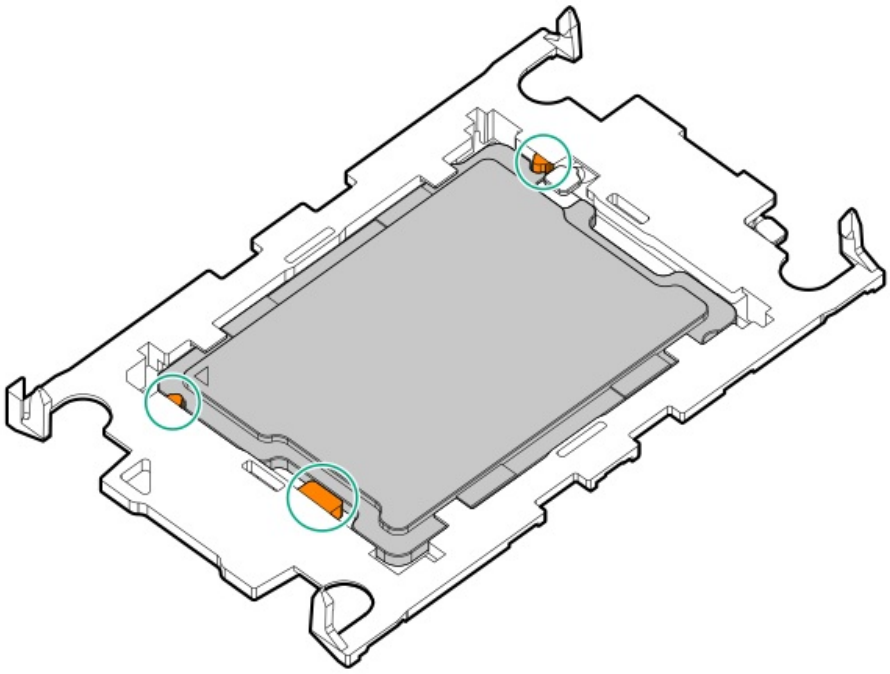


5. Set the anti-tilt wires to the locked position.

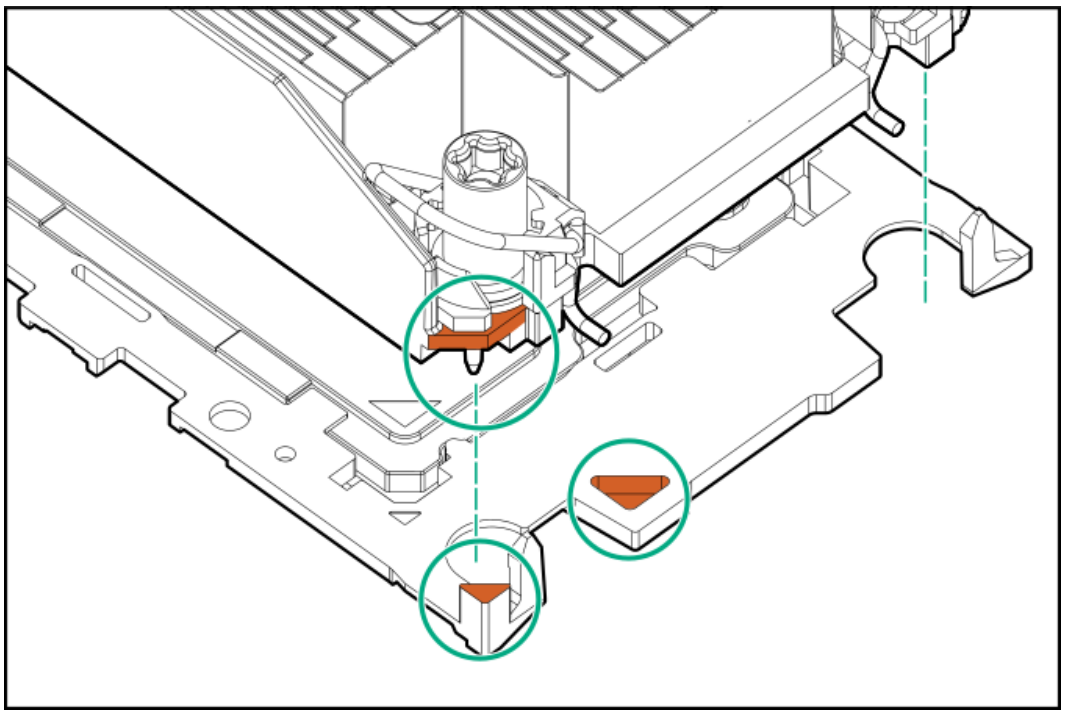


6. Verify that the processor is securely latched to the processor carrier.

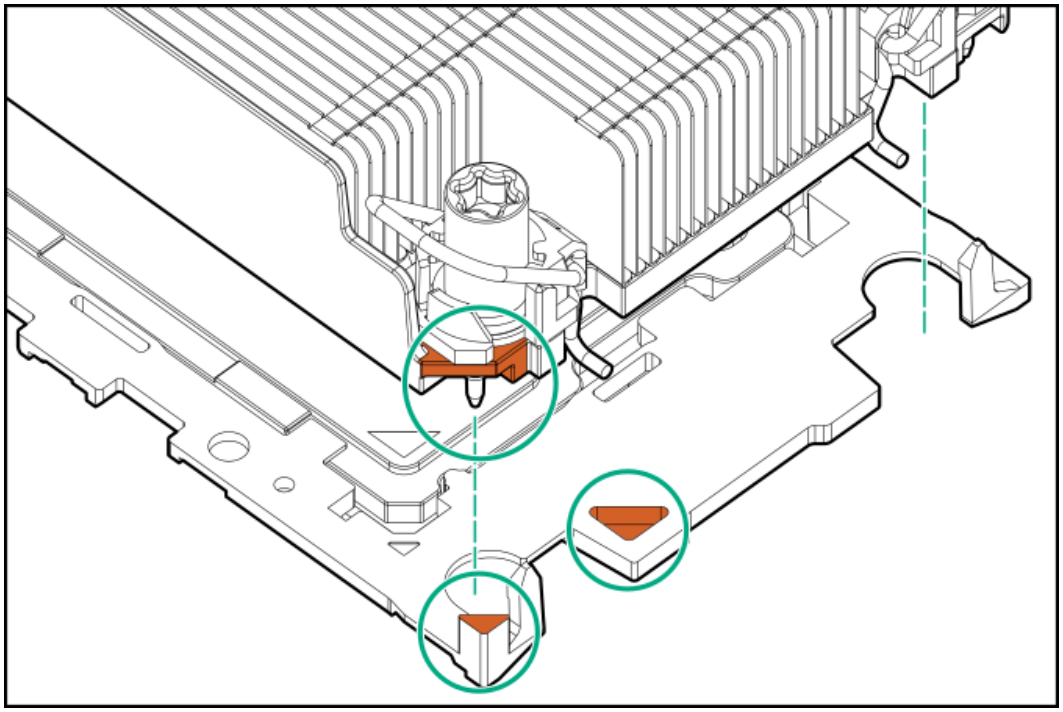
   The following illustration calls out the keying feature tabs that secure the processor. Different processor carriers will have these tabs in different locations.



7. Attach the heatsink to the processor carrier:
   a. Align the pin 1 indicator on the processor carrier with that on the heatsink.
      - Standard heatsink



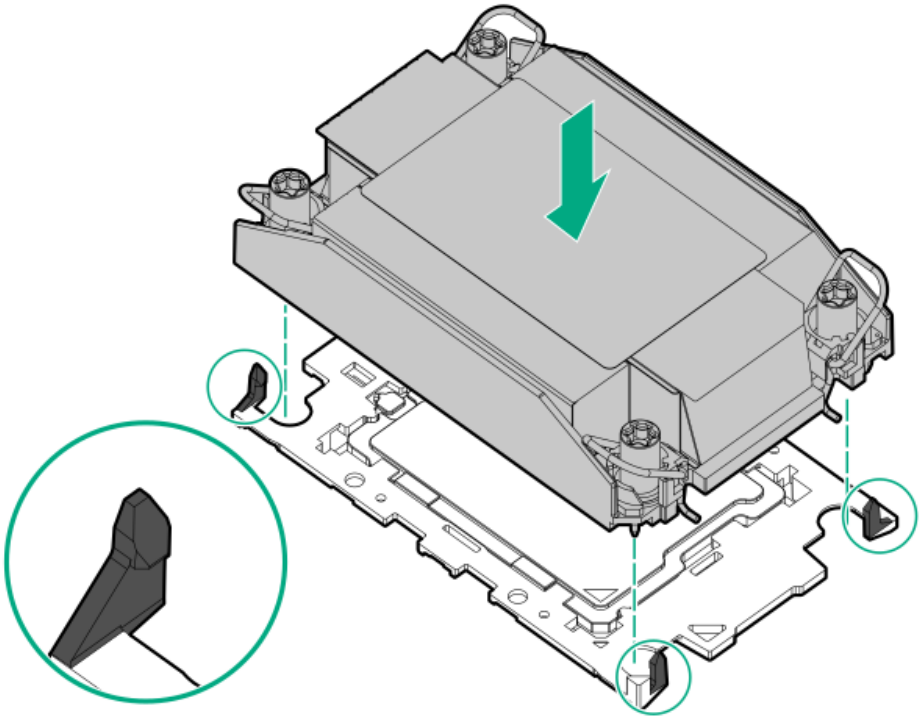
      - High performance heatsink



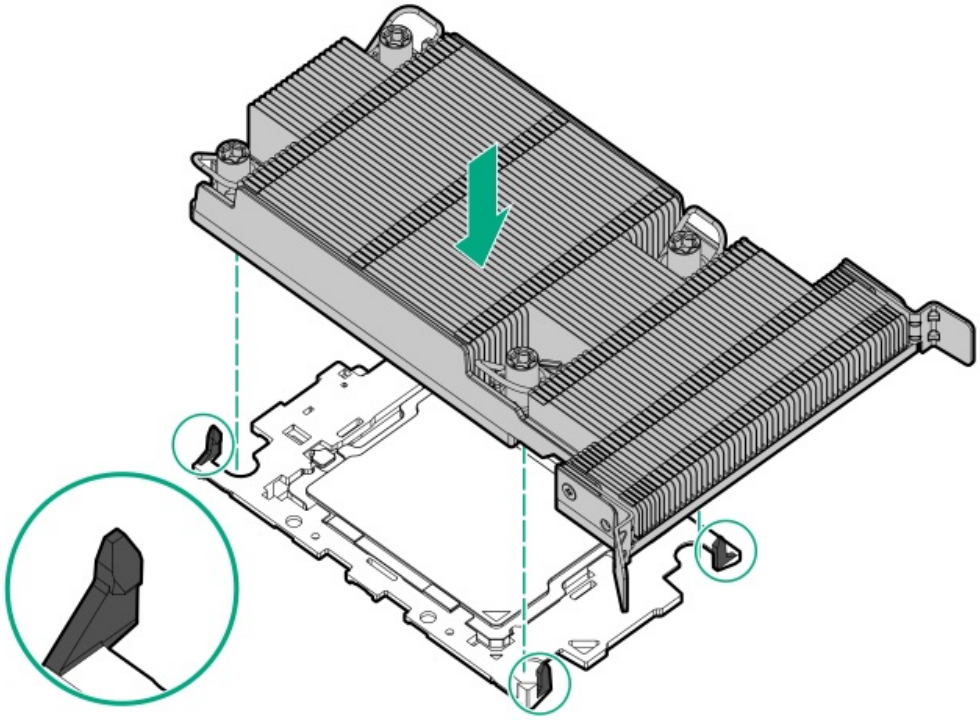
b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

   There will be an audible click to indicate that the heatsink is properly latched on the processor carrier.

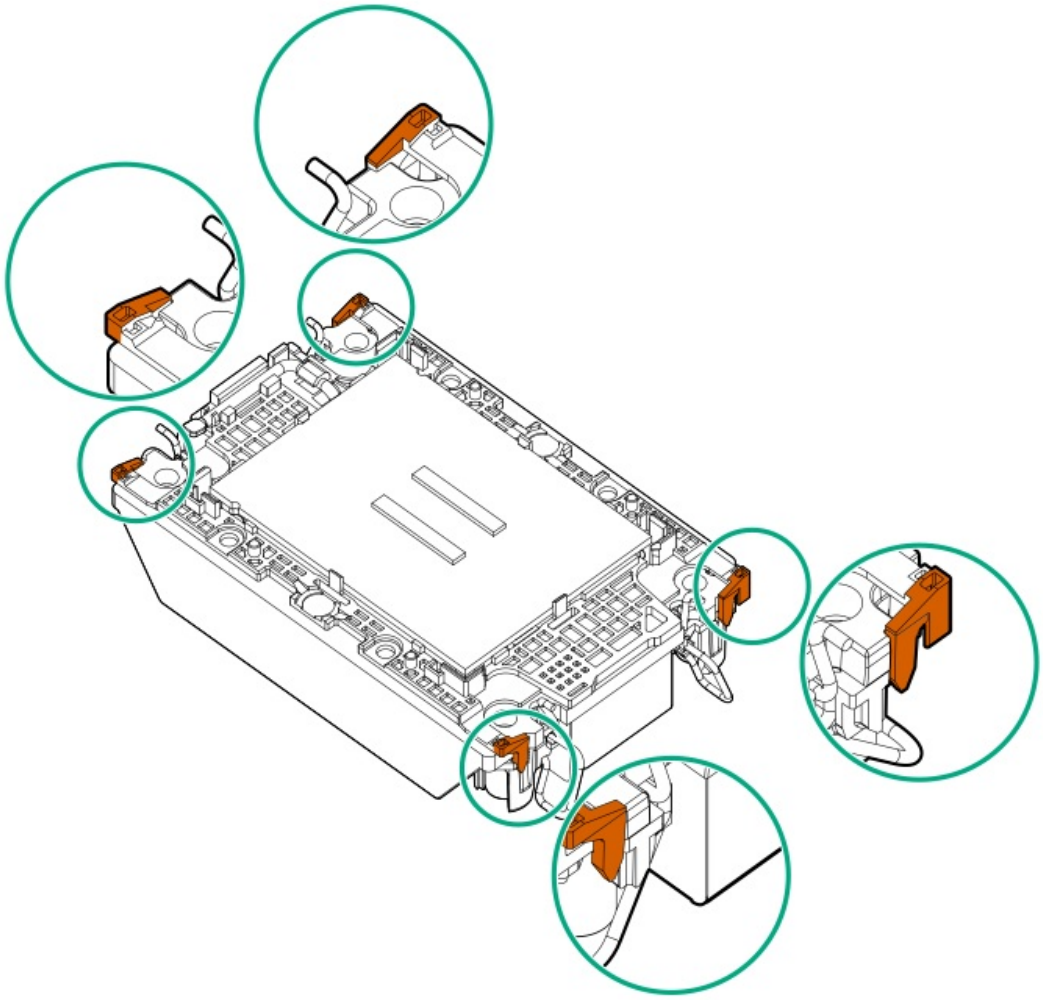
   - Standard heatsink



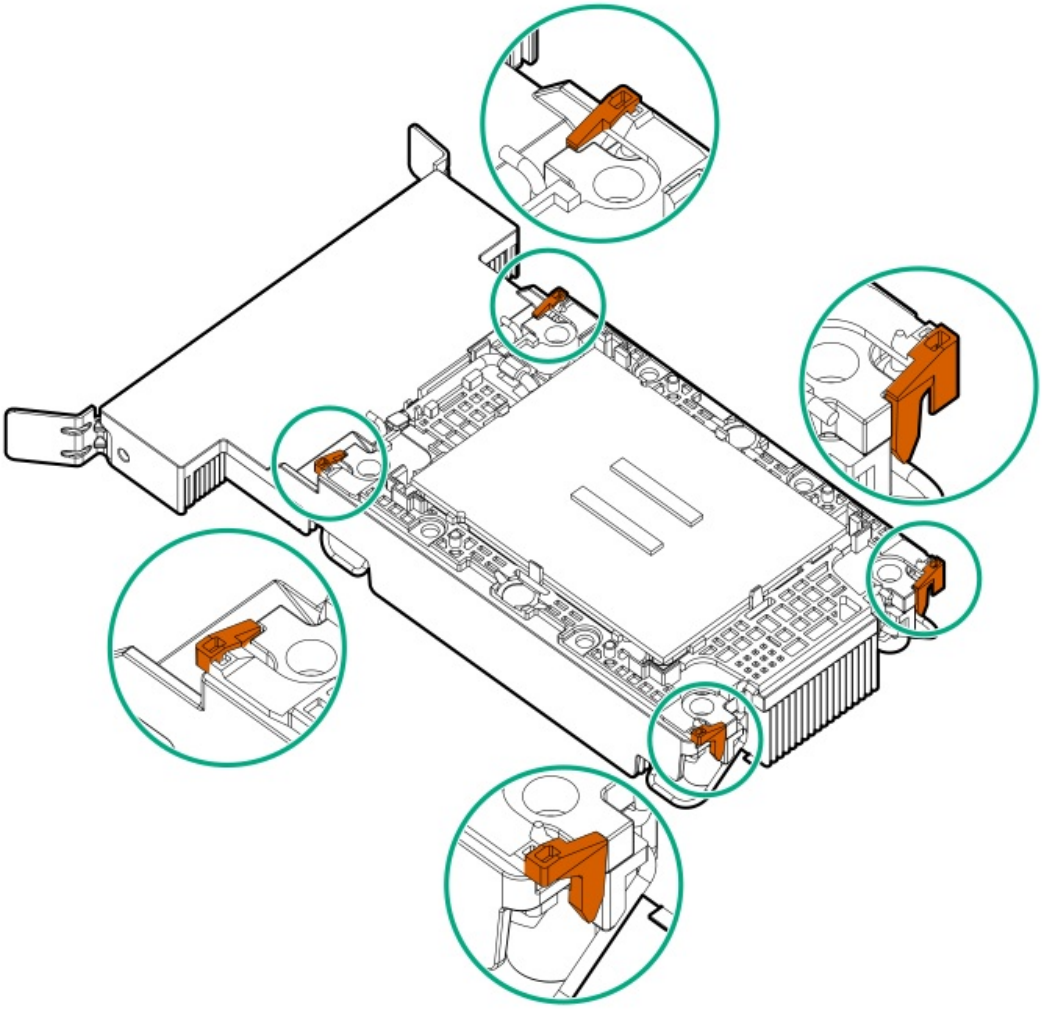
   - High performance heatsink



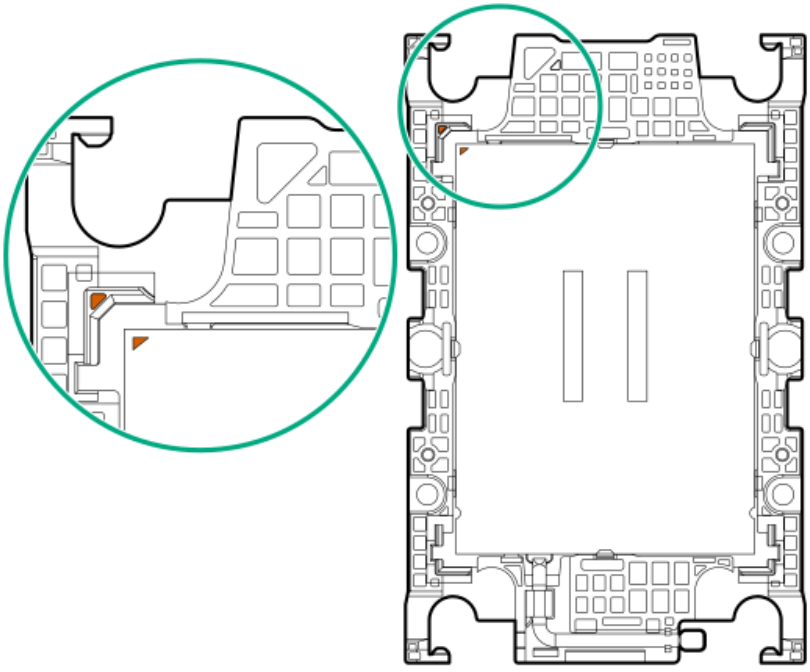
8. Perform the following verification steps:
   a. Verify that the tabs on the processor carrier are securely latched on the heatsink.
      - Standard heatsink



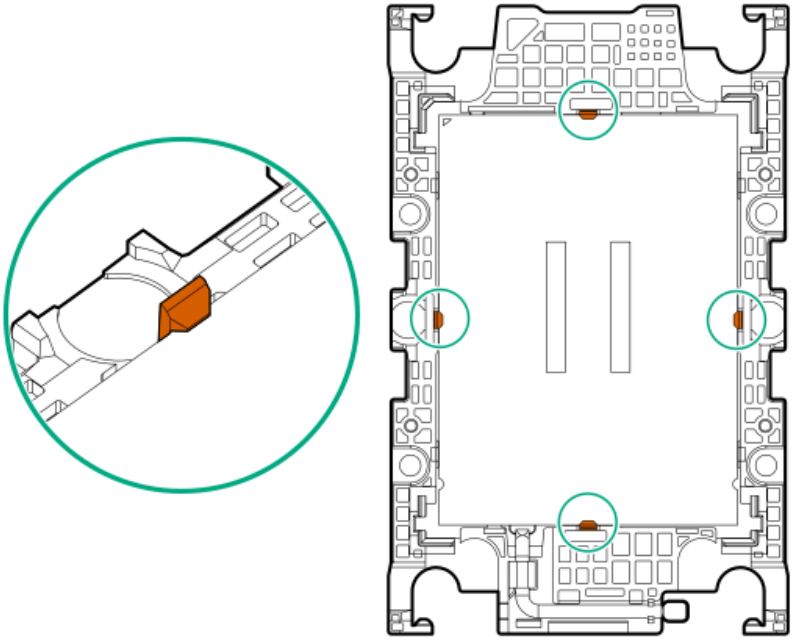
- High performance heatsink



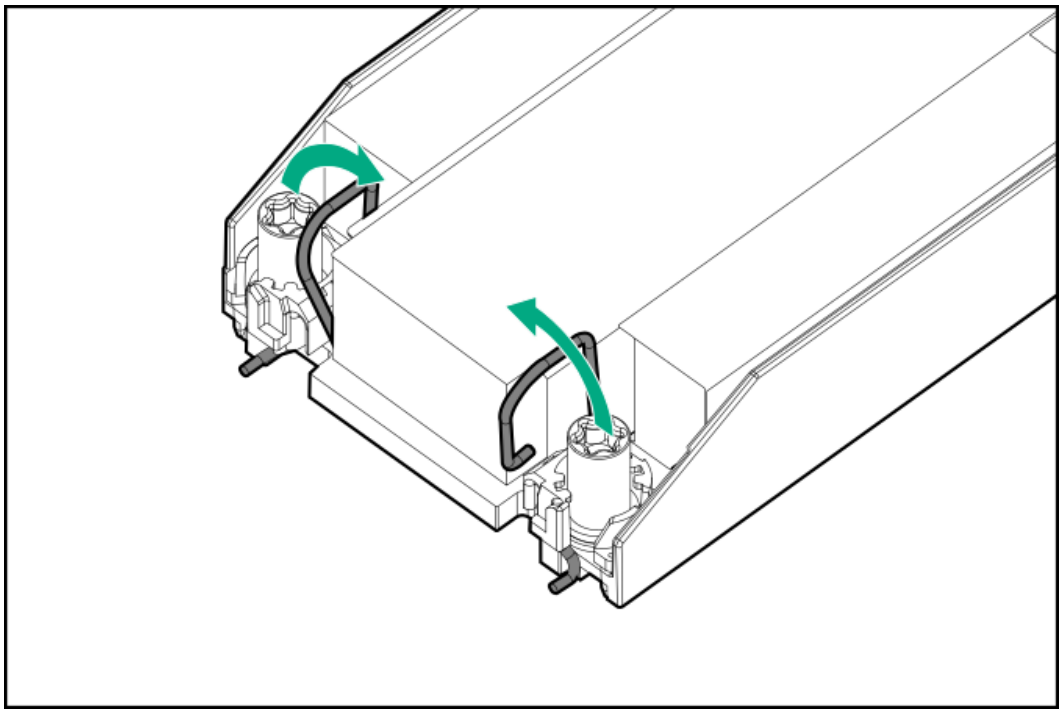
b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.



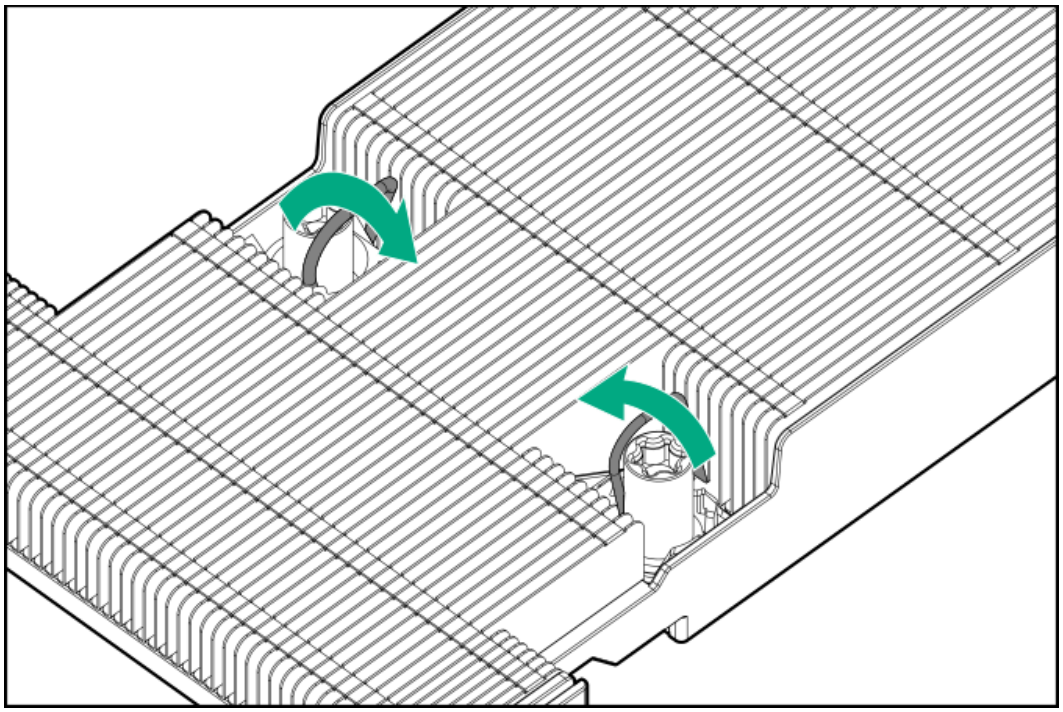
c. Verify that the processor is properly secured by the carrier snaps.



9. Set the anti-tilt wires to the unlocked position.
   - Standard heatsink



   - High performance heatsink



10. **CAUTION**

    To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

Install the processor-heatsink module:

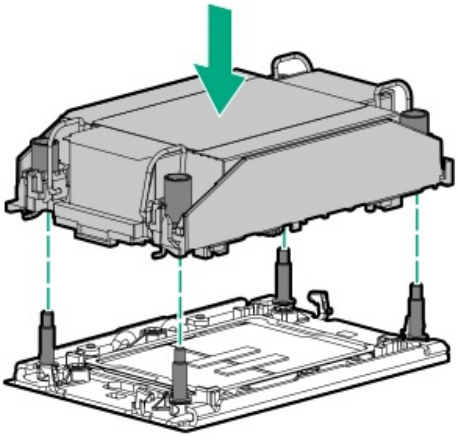
a. When using a torque wrench to tighten the heatsink screws, set 0.9 N-m (8 in-lb) of torque .

b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

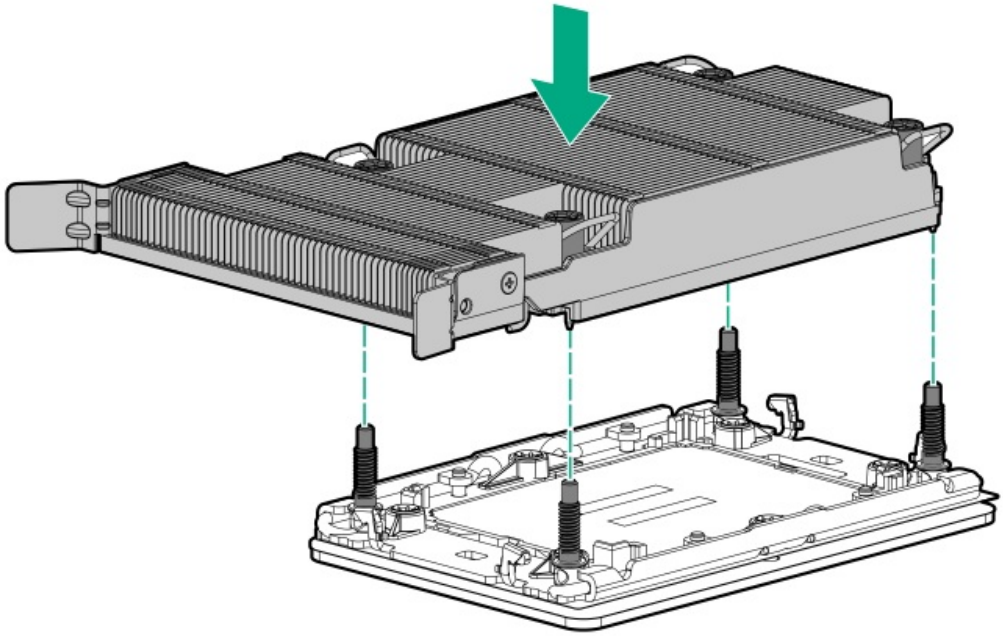
c. Carefully lower the processor-heatsink module onto the bolster plate guide posts.

   The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.

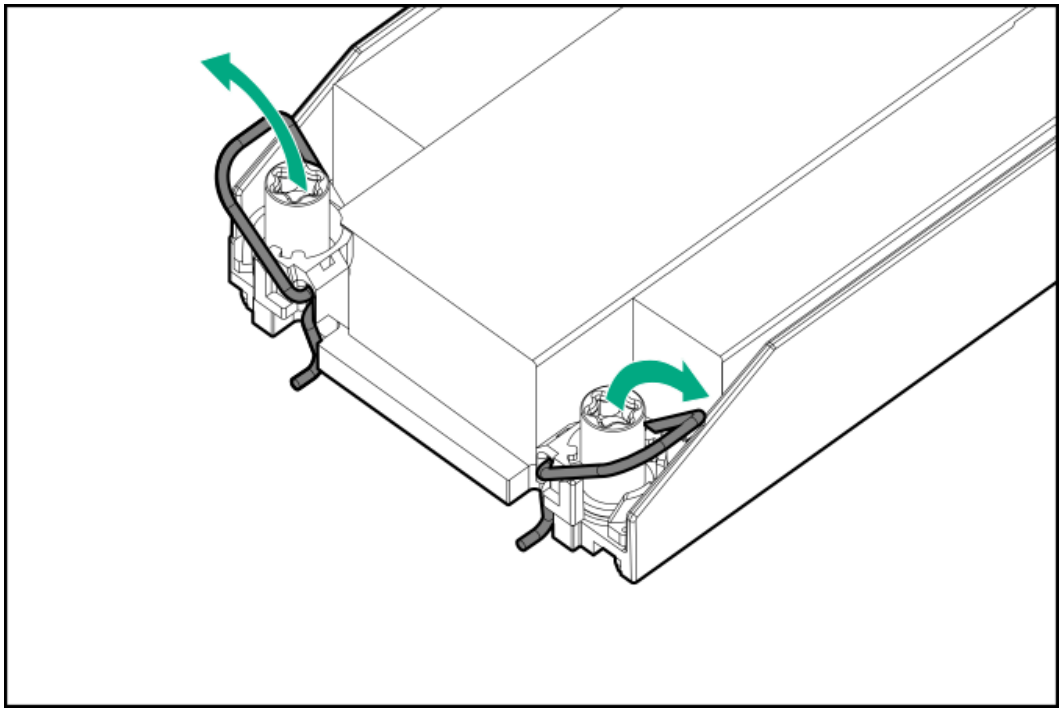
   - Standard heatsink



   - High performance heatsink

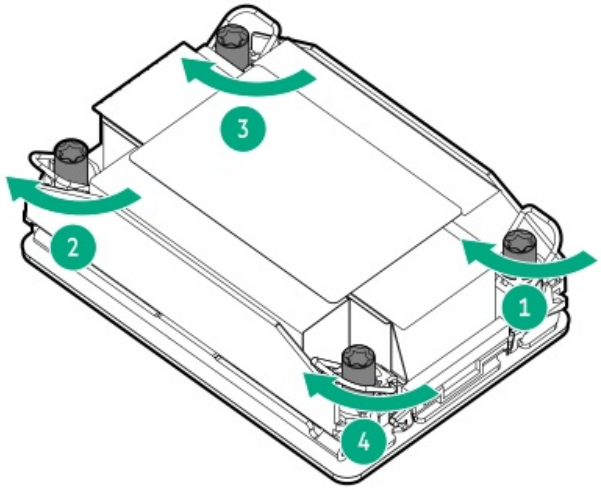


d. Set the anti-tilt wires to the locked position.

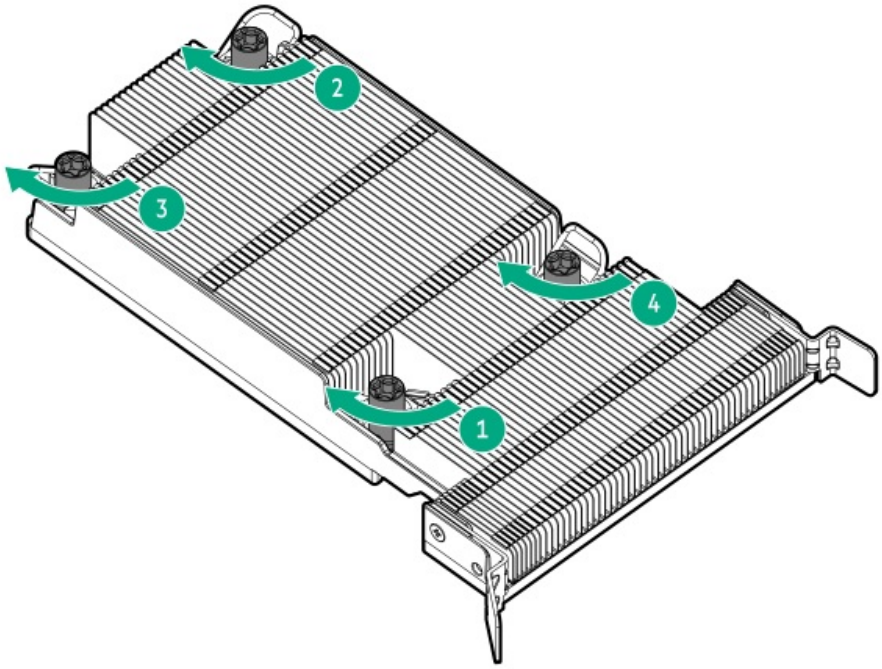


e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.

- Standard heatsink

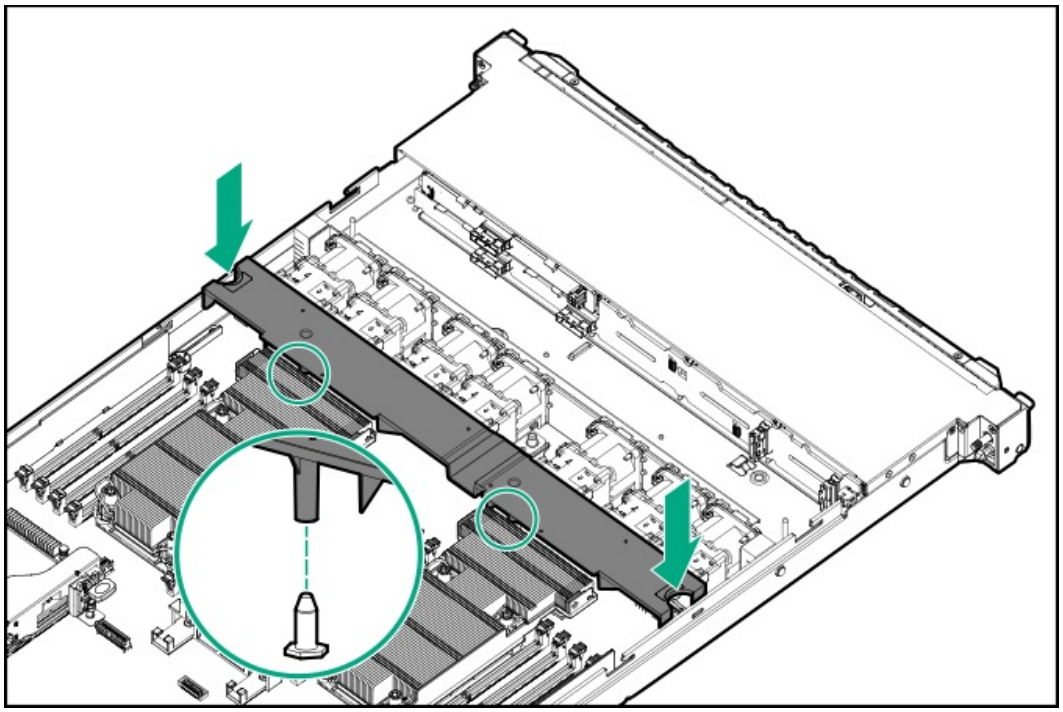


- High performance heatsink



11. (Optional) Install the air baffle.

    The air baffle is supported only when the system is configured with high performance heatsinks.



12. Install the access panel.
13. If the server was removed from an enclosure or a rack, reinstall it now.
14. If the system uses direct liquid cooling, connect the DLC kit to the rack manifold.
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.

Results

The replacement procedure is complete.

System board replacement

Subtopics

Removing the system board assembly
Installing the system board assembly
Re-entering the server serial number and product ID
Resetting the iLO login credentials

Removing the system board assembly

Prerequisites

CAUTION
Be sure to have the BitLocker recovery key/password prior to replacing the system board. If you do not have the key/password, you will need to reinstall the OS.

- Perform a backup of critical server data.
- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - T-15 Torx screwdriver
  - Liquid cooling module handle—This is needed only if the system has a liquid cooling module installed. Use this handle to facilitate the removal and installation of the liquid cooling module when replacing the processor, system board, or liquid cooling module.

    The handle can be ordered as a spare (P89110-001).

About this task

WARNING

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

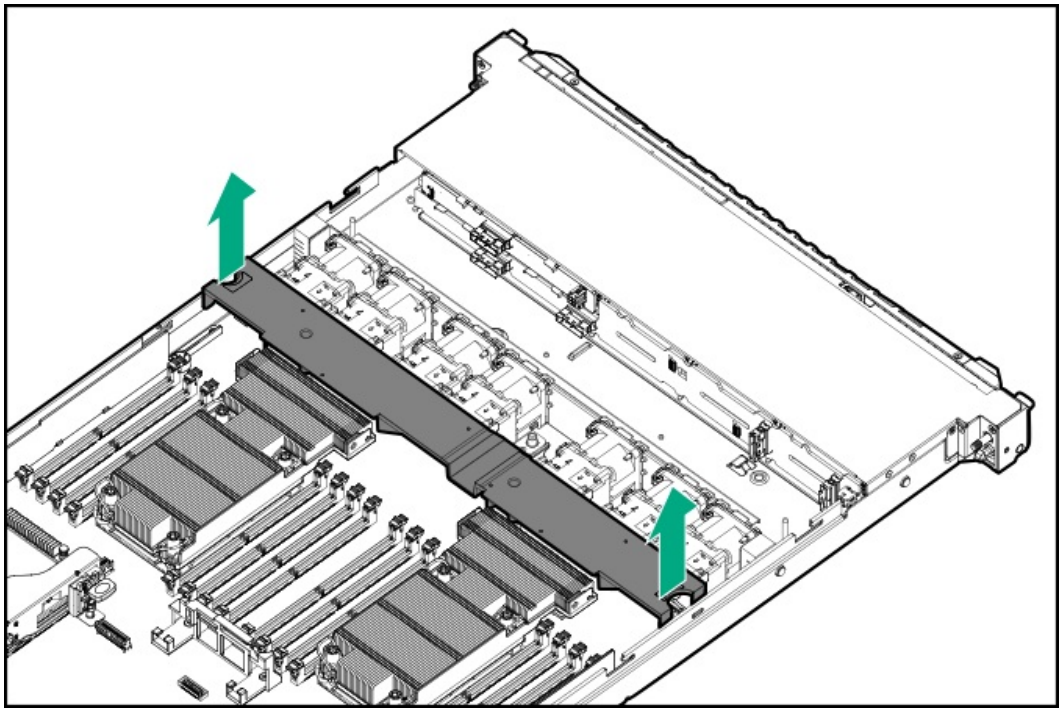
CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

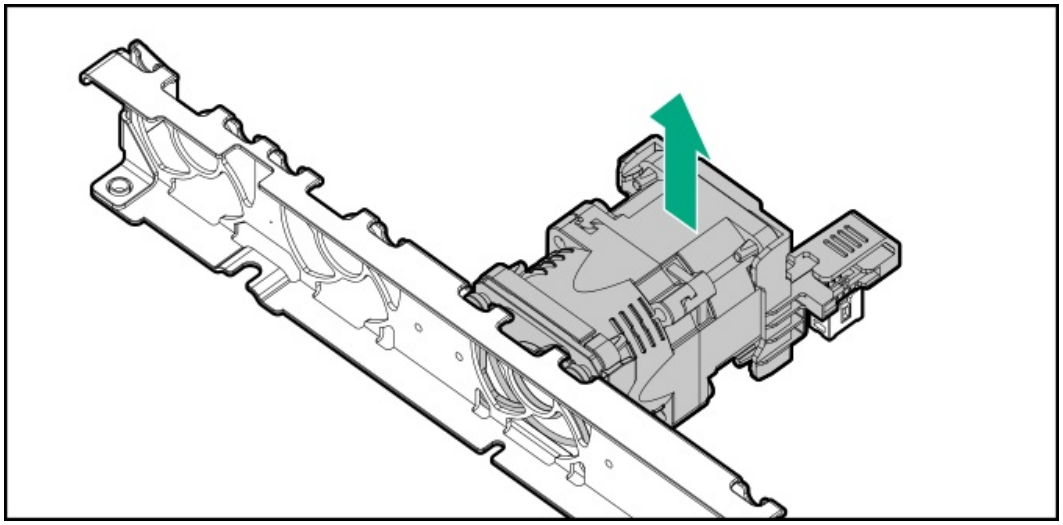
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If the system uses direct liquid cooling, disconnect the DLC kit from the rack manifold.
5. If the server is installed in an enclosure or a rack, remove the server and place it on a flat, level work surface.
6. Remove all power supplies.
7. Remove the access panel.
8. If installed, remove the air baffle.

   An 8 SFF server is shown. The removal procedure is the same for all drive configurations.

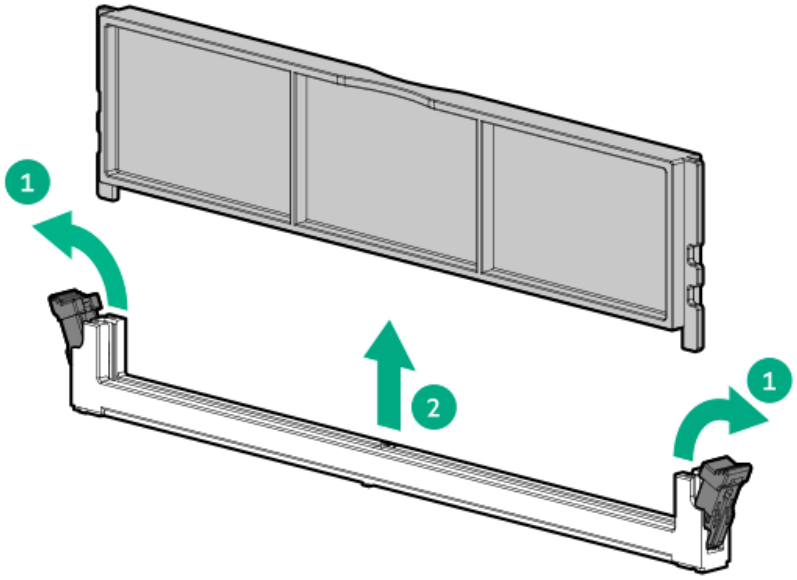


9. Take note of port numbers and cable connections to risers and the system board.
10. Disconnect and remove all cables that are connected to risers or the system board.
11. Remove all riser cages.
12. Remove the controller.
13. Remove all fans.



14. Remove the OCP adapter.
15. Remove all DIMMs.

    Be sure to note the DIMM slot locations in which each DIMM is installed. These components must be installed in the same locations on the new system board.
16. Remove all DIMM blanks.



17. If the system uses standard or high performance heatsinks, proceed to step 18.

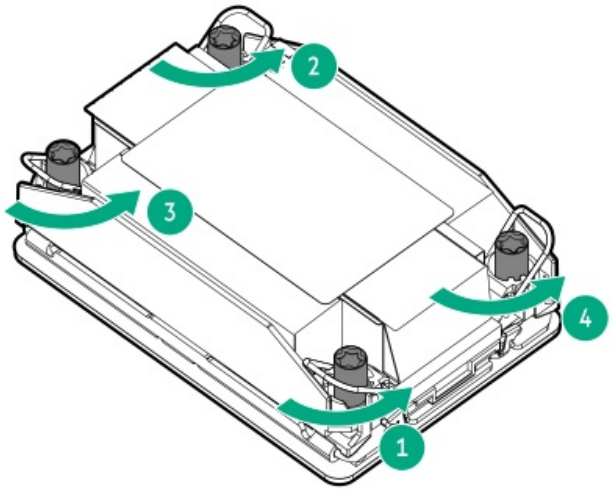
    If the system has a liquid cooling module installed, remove the liquid cooling module and then proceed to step 22 to remove the system board.

18. **CAUTION**

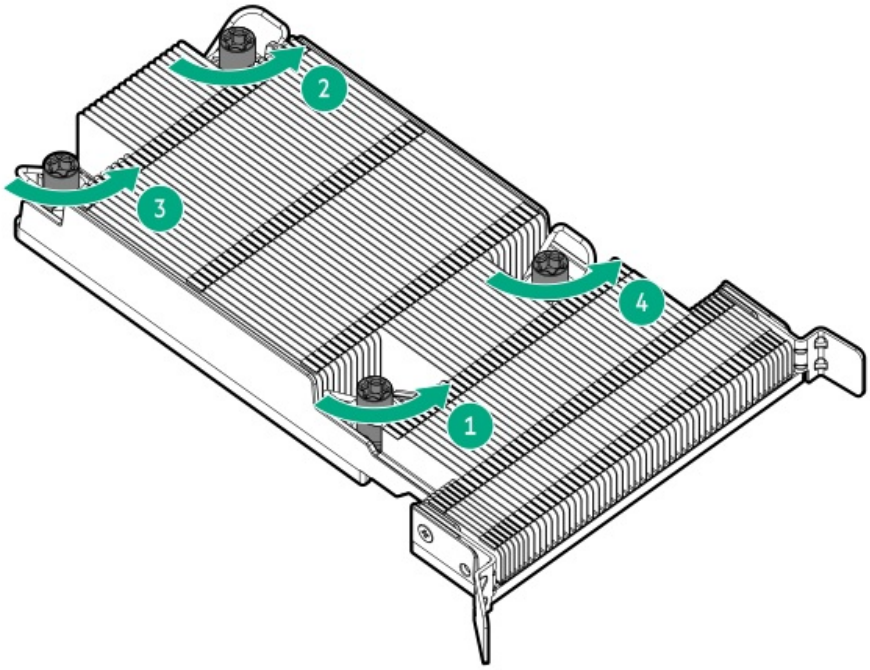
    Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

    Use a T-30 Torx screwdriver to loosen one pair of diagonally opposite heatsink screws (callouts 1 and 2), and then loosen the other pair of heatsink screws (callouts 3 and 4).

    - Standard heatsink

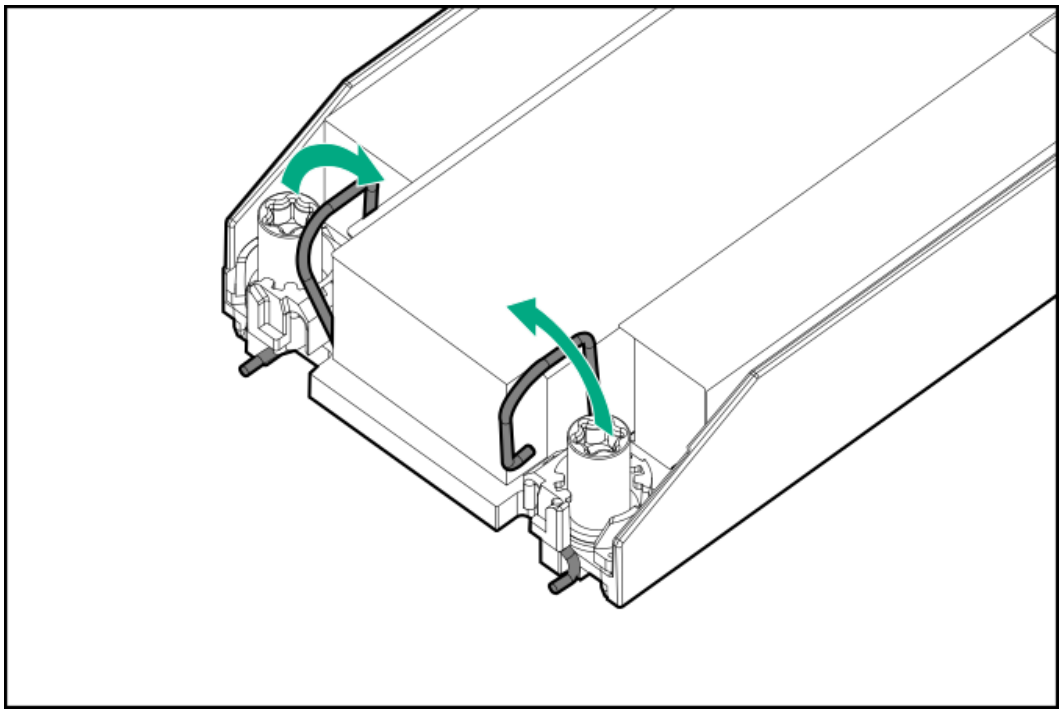


    - High performance heatsink

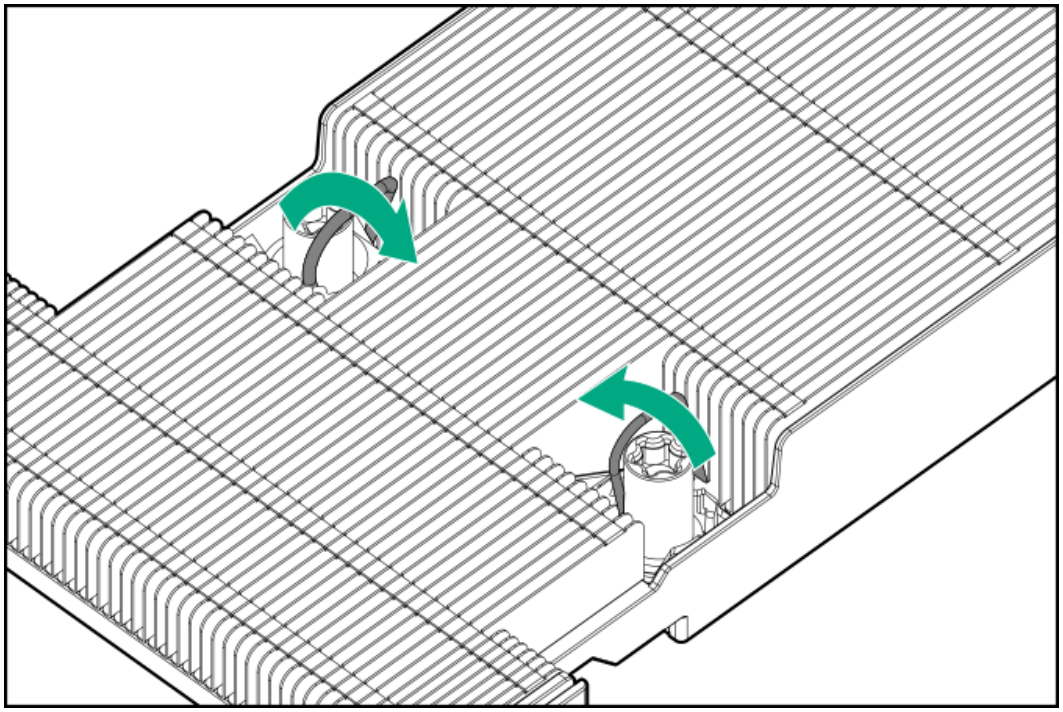


19. Set the anti-tilt wires to the unlocked position.

- Standard heatsink



- High performance heatsink

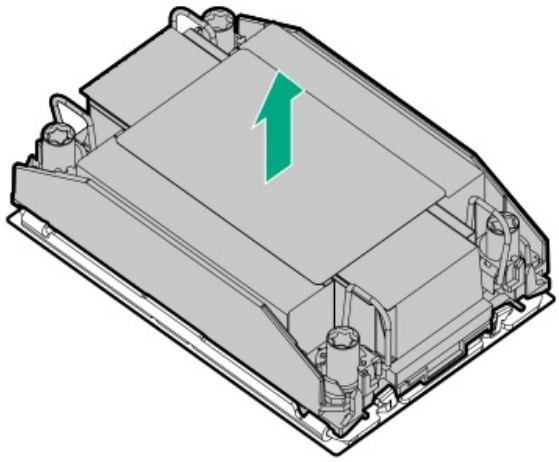


20. **CAUTION**

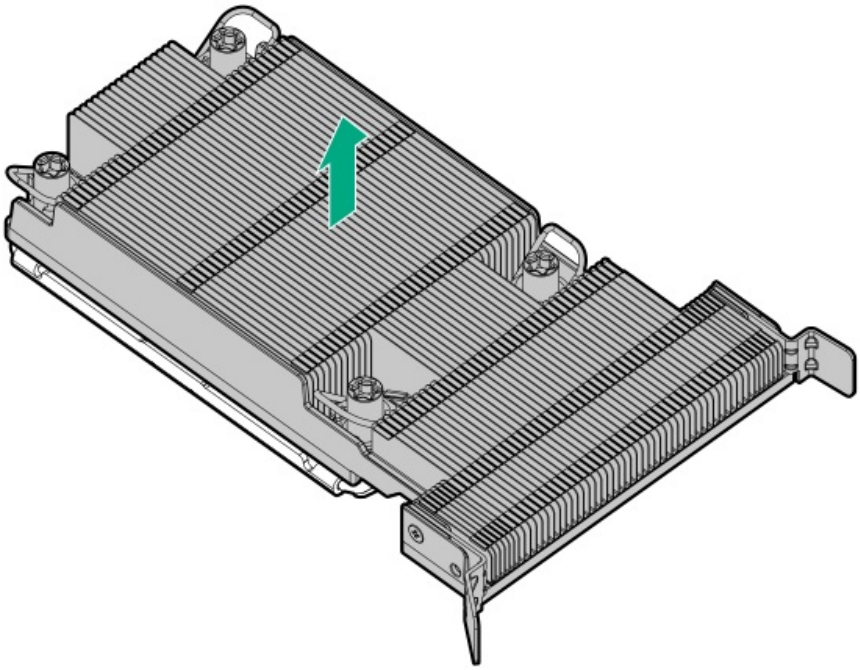
    To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

Lift the processor-heatsink module straight up from the system board.

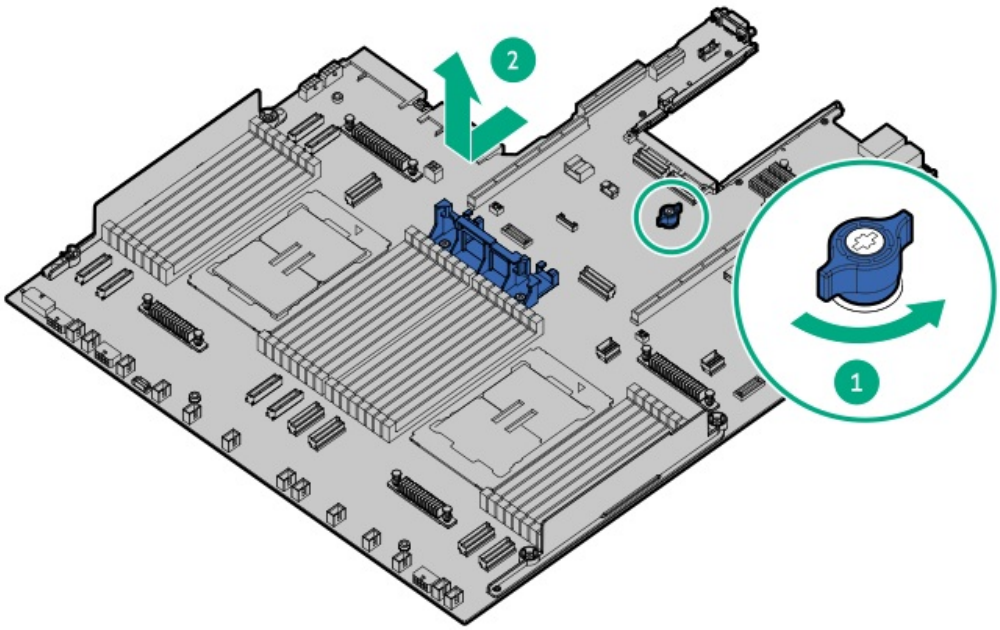
- Standard heatsink



- High performance heatsink



21. Place the processor-heatsink module on a flat work surface with its contact side facing up.
22. Loosen the system board thumbscrew, and then remove the system board.



Installing the system board assembly

Prerequisites

CAUTION

Be sure to have the BitLocker recovery key/password prior to replacing the system board. If you do not have the key/password, you will need to reinstall the OS.

CAUTION

Do not use One-button secure erase (OBSE). OBSE should only be used to decommission or repurpose a system. **This option erases all data. Be sure to disconnect any drives, SANs, NAS, or other shared/external storage devices that you do not want erased.**

- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver or a bit driver with T-30 Torx bit
  - T-15 Torx screwdriver
  - Thermal grease
  - Liquid cooling module handle—This is needed only if the system has a liquid cooling module installed. Use this handle to facilitate the removal and installation of the liquid cooling module when replacing the processor, system board, or liquid cooling module.

    The handle can be ordered as a spare (P89110-001).

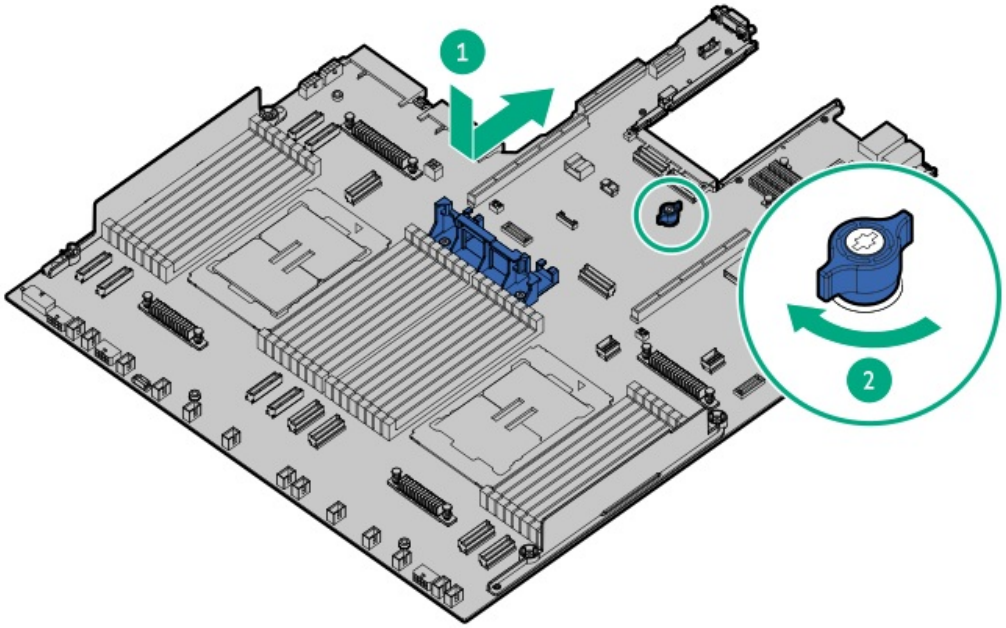
About this task

CAUTION

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

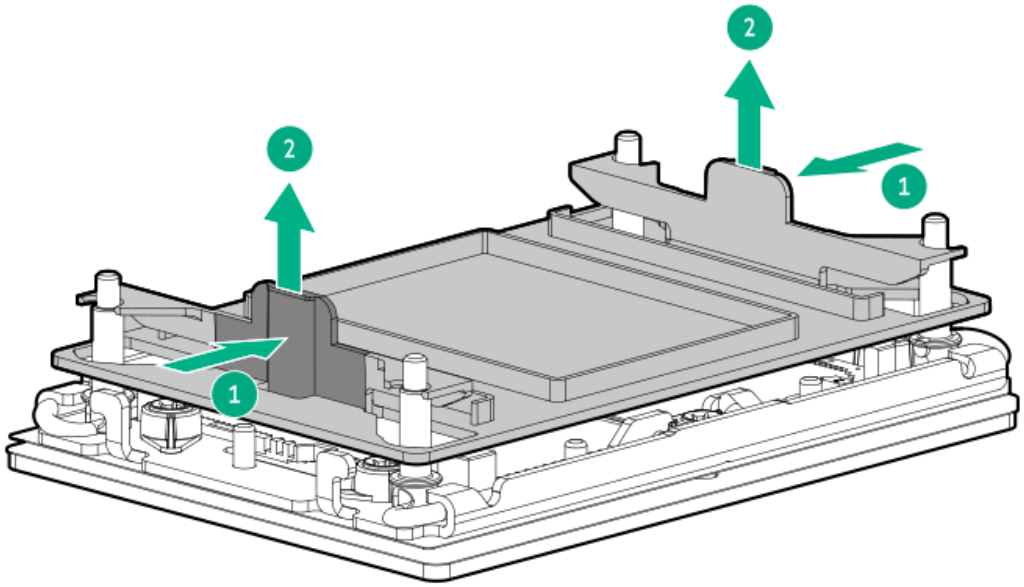
Procedure

1. Install the spare system board.



2. Remove the dust cover from the processor socket:
   a. Press and hold the grip tabs on the dust cover.
   b. Lift the dust cover away from the bolster plate.

      Retain the cover for future use.



3. If the system uses standard or high performance heatsinks, proceed to step 4.

   If the system uses liquid cooling, install the liquid cooling module first, and then proceed to step 5.

4. **CAUTION**

   To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

   Install the processor-heatsink module:

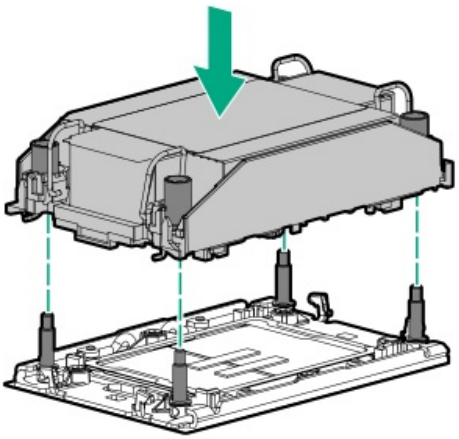
   a. When using a torque wrench to tighten the heatsink screws, set 0.9 N-m (8 in-lb) of torque .

   b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

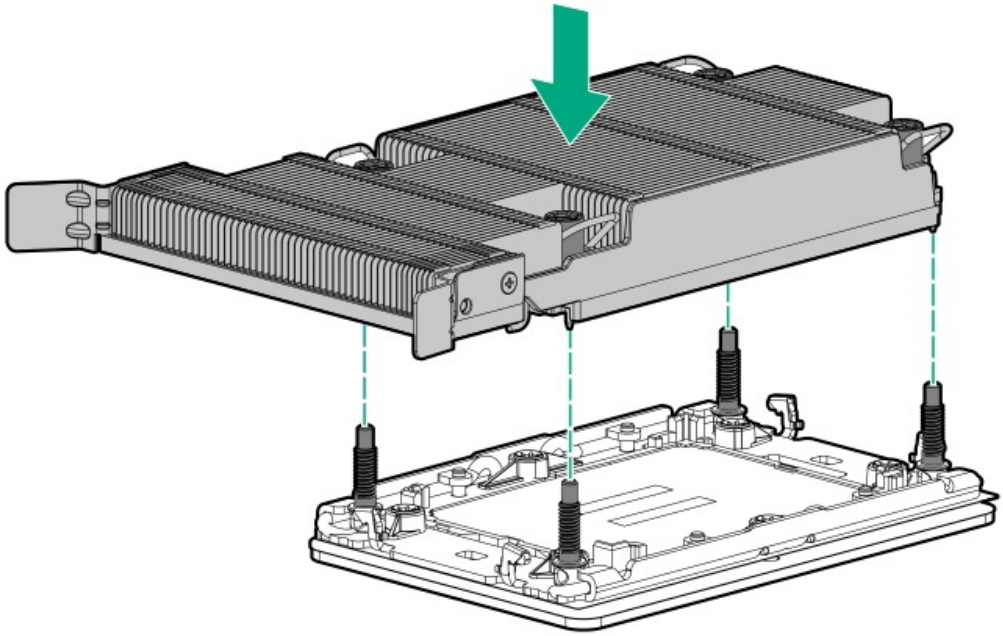
   c. Carefully lower the processor-heatsink module onto the bolster plate guide posts.

      The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.

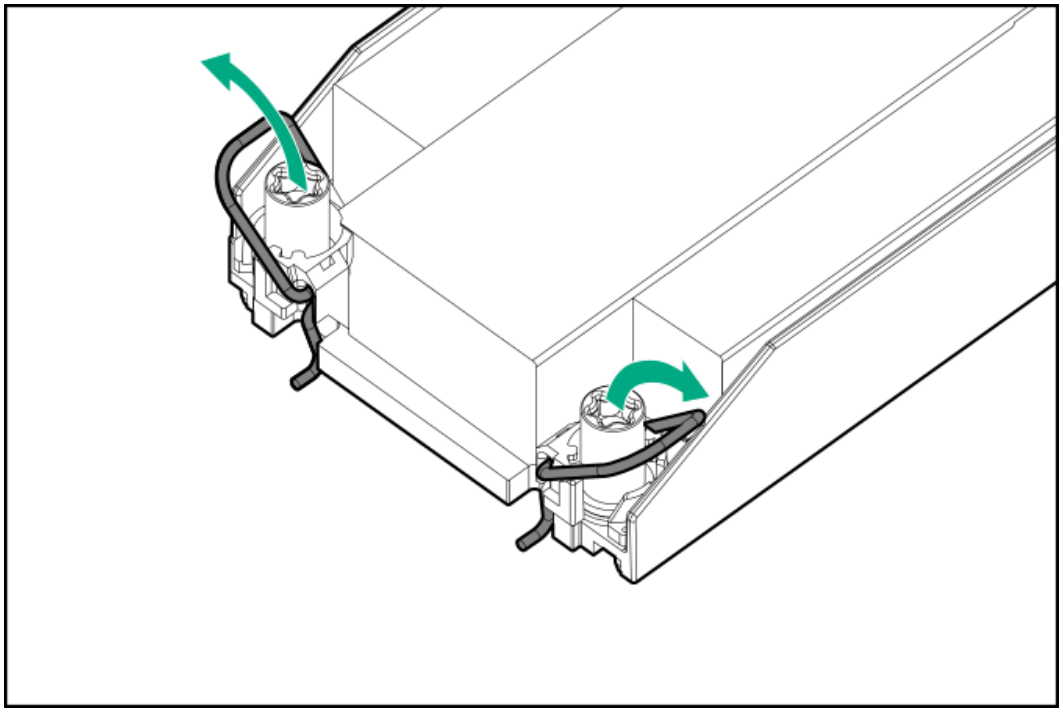
      - Standard heatsink



      - High performance heatsink

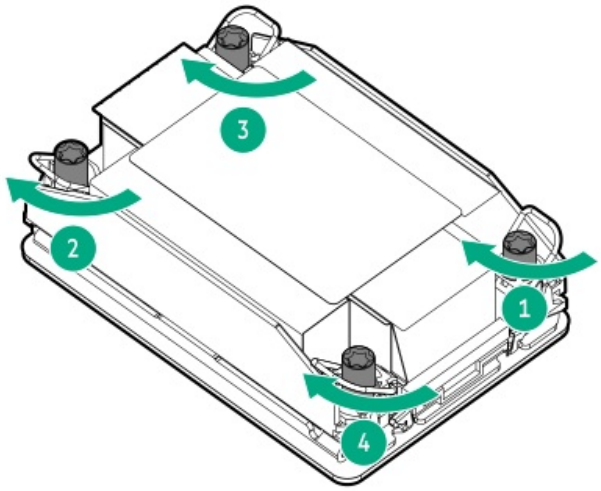


d. Set the anti-tilt wires to the locked position.

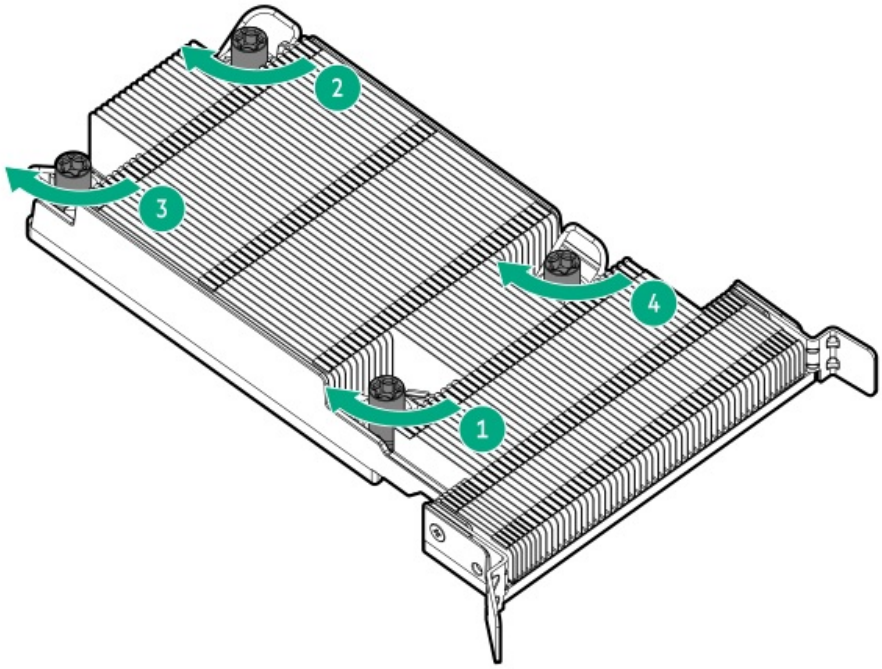


e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.

- Standard heatsink



- High performance heatsink

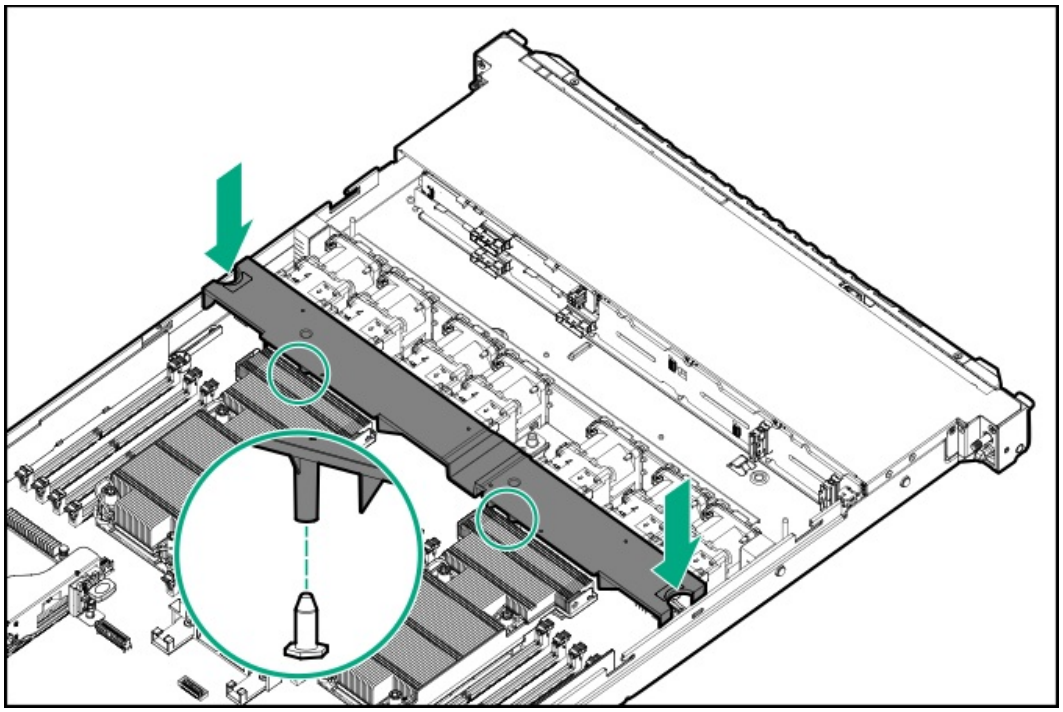


5. Install all components removed from the failed system board.

   Be sure to install the DIMMs in the same DIMM slots as the failed system board.

6. Install all fans.
7. Install the air baffle.

   Installation of the air baffle requires high performance heatsinks. The air baffle is secured by two system board standoffs in the chassis. These standoffs are preinstalled on the system. If your system does not include the required standoffs, contact **HPE support**.



8. Install the access panel.
9. Install all power supplies.
10. If the server was removed from an enclosure or a rack, reinstall it now.
11. If the system uses direct liquid cooling, connect the DLC kit to the rack manifold.
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.
16. Update all firmware to the same versions as before .
17. Re-enter the server serial number and product ID.
18. Re-enter any Secure Boot keys that were previously added in the Secure Boot configuration.
19. See the applicable OS documentation for procedures and recommendations on restoring the OS and accessing drive data.

CAUTION

(For Microsoft Windows only) After replacing the system board, we recommend using BitLocker Recovery to restore the OS and access drive data. The recovery key/password previously generated during the initial server installation and BitLocker setup is required to enter Recovery Mode.

For more information about BitLocker Recovery, see the **Microsoft website**.

Results

The replacement procedure is complete.

Re-entering the server serial number and product ID

About this task

After replacing the system board, re-enter the system serial number and product ID.

Procedure

1. Access the UEFI System Utilities. During POST, press **F9**.
2. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced Service Options.
3. Select Serial Number, and then press **Enter**.

   The following warning appears:

   ```
   The serial number is modified by qualified service personnel and must
   match the serial number located on the chassis.
   ```

4. Click OK.
5. Type the serial number, and then press **Enter**.
6. Select Product ID, and then press **Enter**.

   The following warning appears:

   ```
   Product ID is modified only by qualified service personnel. This value
   must match the product ID located on the chassis.
   ```

7. Type the product ID, and then press **Enter**.
8. To confirm and save the settings, press **F12**.

   The server automatically reboots.

Results

The installation procedure is complete.

Resetting the iLO login credentials

Prerequisites

- The server has a UID button
- Physical access to the server
- An external monitor is connected

Procedure

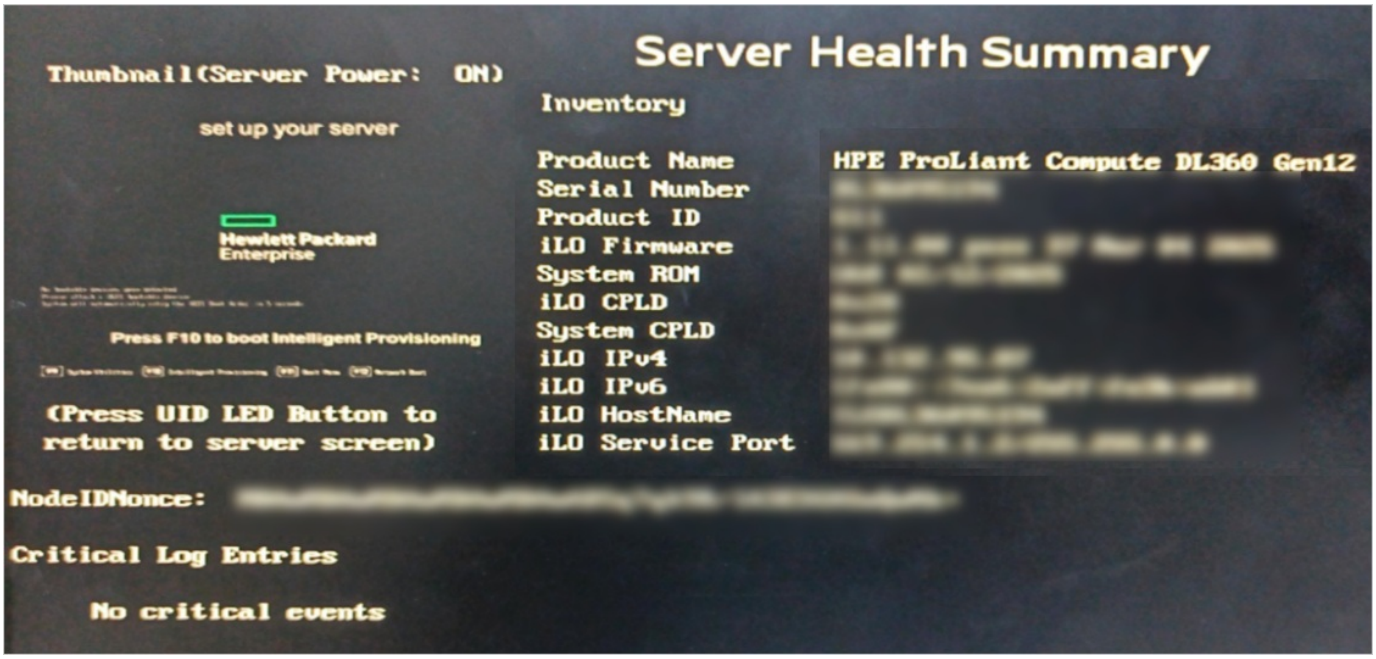
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Change the system maintenance switch position 1 to the **ON** position.

   A plastic ball-point pen can be used to flip the system maintenance switch to the **ON** position.
4. Connect each power cord to the server.
5. Connect each power cord to the power source.
6. Power up the server.

7. Press the server UID button.

> **CAUTION**
>
> Press and release the UID button. Holding it down at any time for more than 5 seconds initiates a graceful iLO reboot or a hardware iLO reboot. Data loss might occur during a hardware iLO reboot.

The Server Health Summary screen appears on the external monitor. Record the NODEIDNONCE.



8. Send an email with the NODEIDNONCE record to an HPE support representative.

   For more information, go to the **HPE Support Center**.

   Hewlett Packard Enterprise recommends adding the following information in the email:

   - Server location
   - Customer address with a disclaimer to proceed with the factory reset of the server while performing password recovery
   - nodeBatch.csv file with information about every server that needs to be factory reset

     The format of the file must be `NodeID,email,Customer: [location]`

     For example, `fevxba9876643260fedbbd9876545210, abc@test.com, Customer: Abc Canada`

   The Signed NodeID is sent to your registered email. It might take a day or two to receive the Signed NodeID.

9. Use the Signed NodeID received on the email to reset the iLO password using one of the following tools:

   - iLO web interface
   - iLO RESTful API

Subtopics

Recovering the iLO default password using the iLO web interface
Recovering the iLO login credentials using iLO RESTful API

Recovering the iLO default password using the iLO web interface

Prerequisites

Make sure that the system maintenance switch 1 is set to the **ON** position.

Procedure

1. In the iLO login screen, click Recover Password.

   Recover Password window appears.

2. Enter the Signed NodeID.

   The Signed NodeID cannot be used multiple times. A login delay occurs after multiple failed attempts.

   For more information on generating the Signed NodeID, see the iLO troubleshooting guide (**https://www.hpe.com/support/hpeilodocs-quicklinks**).

3. Enter the New Password.

   The password must be 8-15 characters. If Password Complexity is enabled, the password must have one uppercase letter, one lowercase letter, and one digit.

   Upon successful validation, iLO resets and the new password is set. After the reset, log in to iLO with the default user name (Administrator) and the new password.

4. Click Cancel.
5. Click ✕ to close the Recover Password window.
6. Log in to iLO with the default user name (Administrator) and the new password.
7. Change the position of switch 1 to the **OFF** position.

Recovering the iLO login credentials using iLO RESTful API

Prerequisites

Make sure that the system maintenance switch 1 is set to the **ON** position.

- The server has a UID button
- Physical access to the server
- An external monitor is connected

Procedure

1. Use the PATCH command `https://<ilo-ip>/redfish/v1/AccountService/Accounts/65536`.
2. Provide the user name as `HpeNodeRecover` and password Signed NodeID.
3. Specify the Payload in the following JSON format:

   ```
   {
     "Password": "new_password"
   }
   ```

   The password must have 8-15 characters. If Password Complexity is enabled, the password must have one uppercase letter, one lowercase letter, and one digit.

4. Log in to iLO with the default user name (Administrator) and the new password.
5. Change the position of switch 1 to the **OFF** position.

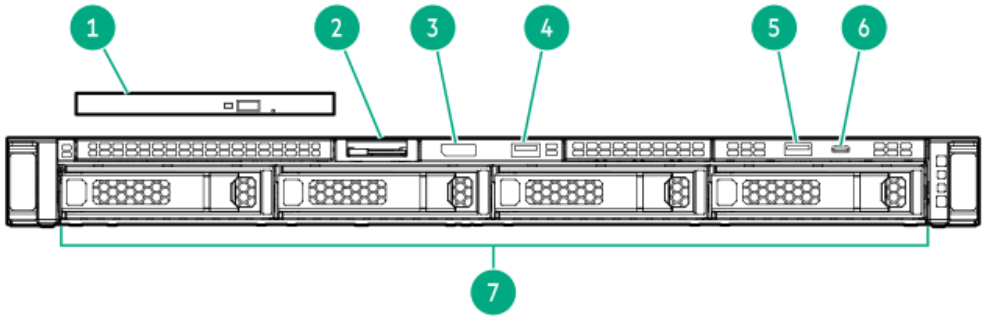
Component identification

Subtopics

- Front panel components
- Front panel LEDs and buttons
- Rear panel components
- Rear panel LEDs
- Component touchpoints
- System board components
- Drive bay numbering
- Drive backplane naming
- OCP NIC 3.0 slot numbering
- HPE Basic Drive LED definitions
- EDSFF SSD LED definitions
- Fan numbering
- Heatsink and processor socket components
- Closed-loop liquid cooling (CLLC) module components
- Direct liquid cooling (DLC) module components
- Liquid cooling guidelines
- HPE NS204i-u Boot Device V2 components
- HPE NS204i-u Boot Device V2 LED definitions
- Riser board components
- Riser slot numbering

Front panel components

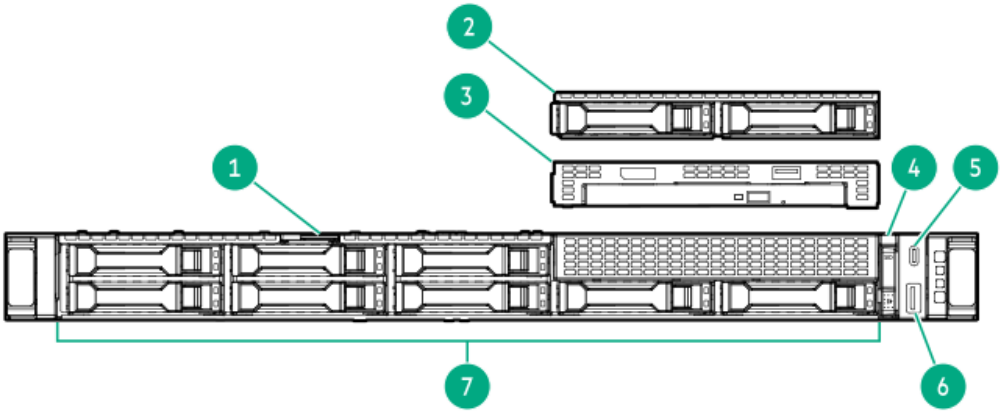
4 LFF



Item	Description
1	Optical drive (optional) [1]
2	Serial number/iLO information pull tab [2]
3	Display port (optional)
4	USB 2.0 port (optional)
5	USB 3.2 Gen 1 port
6	iLO service port (USB Type C) [3]
7	Drive bays

1 This option replaces a blank shown on the front panel.
2 The serial number / iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
3 The operating system does not recognize this port as a USB port.

8 + 2 SFF



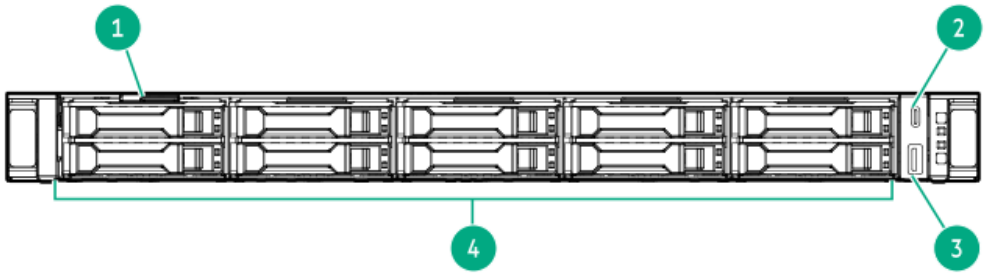
Item	Description
1	Serial number/iLO information pull tab [1]
2	2 SFF side-by-side drive cage assembly (optional) [2]
3	Display port / USB 2.0 / optical drive (optional) [2]
4	System Insight Display (optional) [3]
5	iLO service port (USB Type C) [4]
6	USB 3.2 Gen 1 port
7	Drive bays

[1] The serial number / iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
[2] This option replaces a blank shown on the front panel.
[3] This System Insight Display is only supported in the 8 SFF drive configuration.
[4] The operating system does not recognize this port as a USB port.

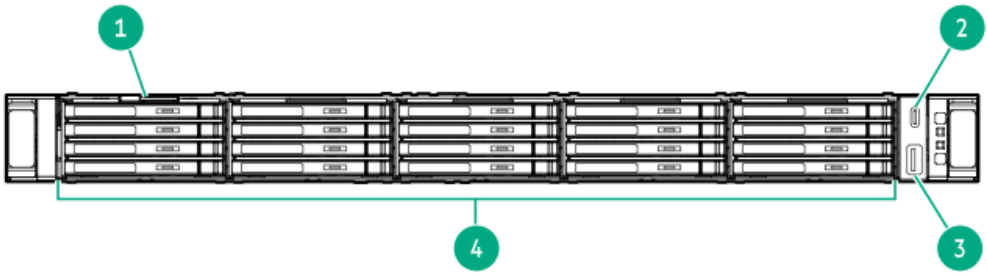
10 SFF / 20 E3.S

The 10 SFF / 20 E3.S server supports hardware options for the mixed drive type configuration.

- 10 SFF



- 20 E3.S



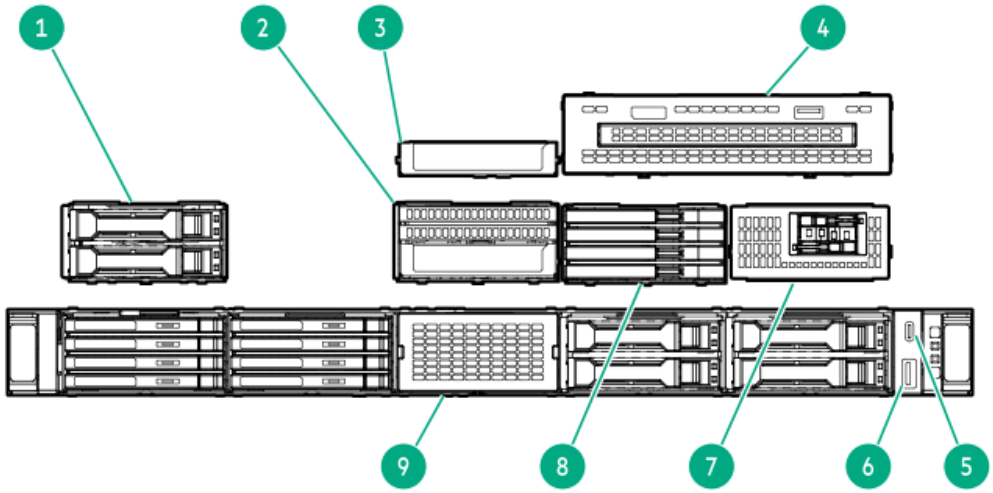
Item	Description
1	Serial number/iLO information pull tab [1] [2]
2	iLO service port (USB Type C) [3]
3	USB 3.2 Gen 1 port
4	Drive bays

[1] The serial number / iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
[2] A 2 SFF / 4 E3.S stacked drive cage must be installed in Drive Box 1 to support the serial number/iLO information pull tab.
[3] The operating system does not recognize this port as a USB port.

Mixed drive type configuration with options

On the servers supporting mixed drive types, each of the drive boxes can have a different drive cage option or media device option installed.

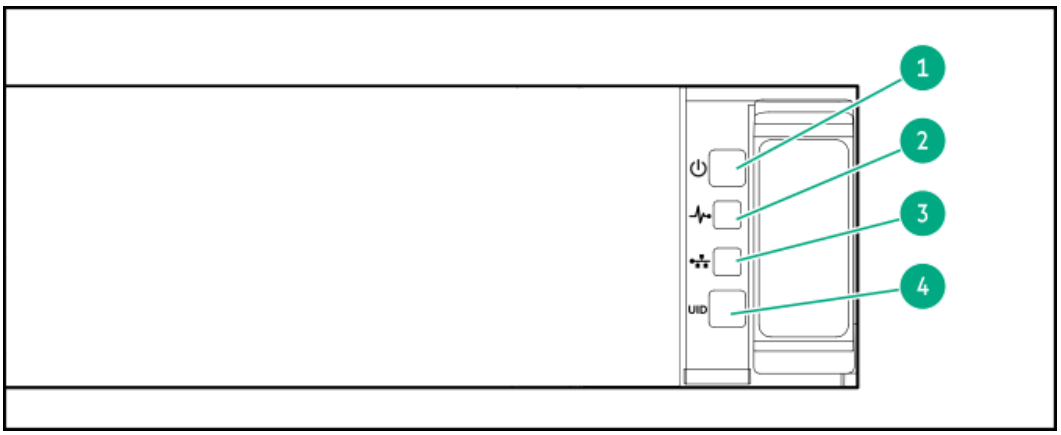
For more information on the supported front drive cage options, see the product QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/quickspecs**).



Item	Description
1	Stacked 2 SFF drive cage assembly (optional)
2	Primary front OCP NIC enablement kit (optional) [1]
3	Secondary front OCP NIC enablement kit (optional)
4	Display port / USB 2.0 / optical drive (optional) [2]
5	iLO service port (USB Type C) [3]
6	USB 3.2 Gen 1 port
7	Front NS204i-u enablement kit (optional) [4]
8	Stacked 4 E3.S drive cage assembly (optional)
9	Drive box blank [5]

1 The front OCP option is supported in Box 3.
2 The media device option is supported in Boxes 4-5.
3 The operating system does not recognize this port as a USB port.
4 The front NS204i-u is supported in Box 5.
5 This blank is required if the drive box does not have an option installed.

Front panel LEDs and buttons



Item	Description	Status
1	Power On/Standby button and system power LED [1]	Solid green = System on Flashing green = Performing power on sequence Solid amber = System in standby Off = No power present [1]
2	Health LED [1]	Solid green = Normal Flashing green = iLO is rebooting. Flashing amber = System degraded Flashing red = System critical [2]
3	NIC status LED [1, 3]	Solid green = Link to network Flashing green = Network active Off = No network activity
4	UID button/LED [4]	Solid blue = Activated Flashing blue: • 1 Hz = Remote management or firmware upgrade in progress • 4 Hz = iLO manual reboot sequence initiated • 8 Hz = iLO manual reboot sequence in progress Off = Deactivated

1 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.
2 If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.
3 NIC status LED does not support NIC LED ACT/LINK indication from OCP NICs without Scan Chain feature, or PCIe NICs.
4 When all four LEDs described in this table flash simultaneously, a power fault has occurred.

Subtopics

UID button functionality

System Insight Display LEDs
System Insight Display combined LED descriptions

UID button functionality

The UID button can be used to identify a specific server in a rack or display the Server Health Summary when the server will not power on. For more information, see the latest HPE iLO User Guide on the Hewlett Packard Enterprise website.

System Insight Display LEDs

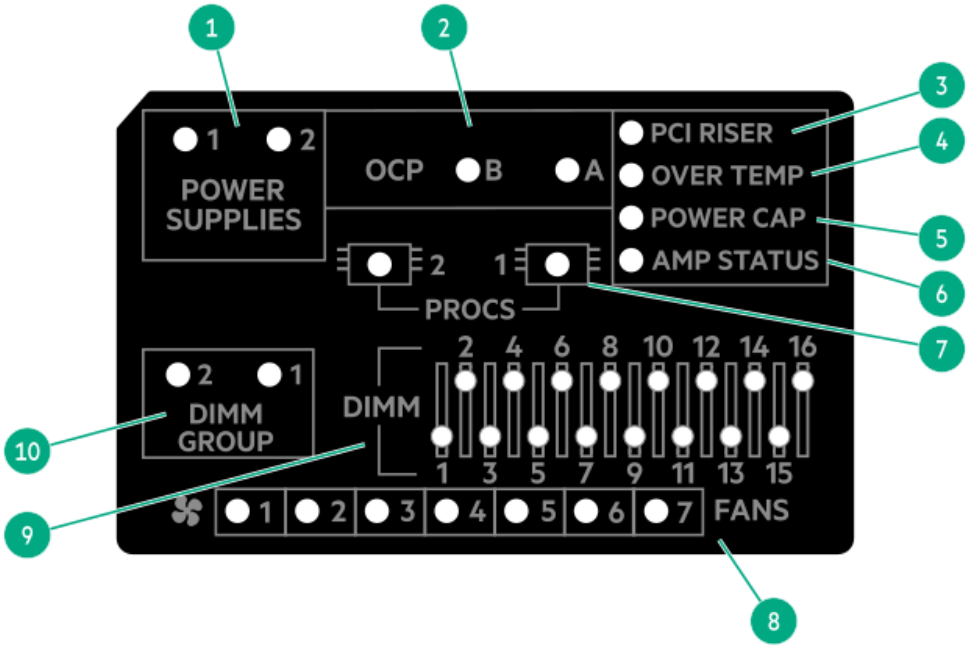
The System Insight Display (SID) LEDs represent components on the system board. The display enables component issue diagnosis even with the access panel installed.

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.

For information about memory population rules, see the relevant memory technical paper in:

https://www.hpe.com/docs/server-memory



Item	LED	Status	Description
1	Power supply LEDs	Off	Normal
		Solid amber	One or more of the following conditions exists: • Power subsystem degraded • Power supply failure • Input power lost
2	OCP LEDs	Solid green	Network link
		Flashing green	Network active
		Off	No network link
3	PCI riser LED	Off	Normal
		Solid amber	Incorrectly installed PCI riser cage
4	Over temp LED	Off	Normal
		Solid amber	High system temperature detected
5	Power cap LED	Solid green	Power cap applied
		Off	One or more of the following conditions exists: • System is in standby • No cap is set
6	AMP [1]	Solid green	AMP mode enabled
		Solid amber	Failover
		Flashing amber	Invalid configuration
		Off	AMP modes disabled
7	Processor LED	Off	Normal
		Solid amber	Failed processor
8	Fan LEDs	Off	Normal
		Solid amber	Failed fan or missing fan
9	DIMM LEDs	Off	Normal
		Solid amber	Failed DIMM or configuration issue
10	DIMM group LEDs	Off	Normal
		Solid amber	Failed DIMM group or configuration issue

[1] To enable Advanced Memory Protection (AMP), see the UEFI user guide (**https://www.hpe.com/support/hpeuefisystemutilities-quicklinks**).

When the health LED on the front panel illuminates either amber or red, the server is experiencing a health event. For more information on the combination of these LEDs, see System Insight Display combined LED descriptions.

System Insight Display combined LED descriptions

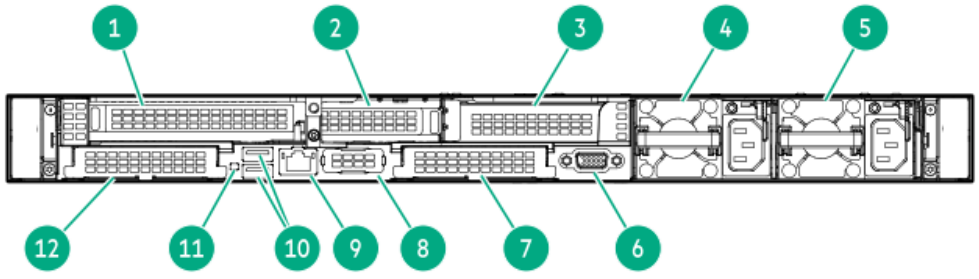
The combined illumination of the following LEDs indicates a system condition:

- SID LEDs
- System power LED
- Health LED

SID LED status	Health LED status	System power LED status	Definition
Power supply (solid amber)	Flashing red	Solid amber	One or more of the following conditions exist: • Only one power supply is installed and that power supply is in standby. • Power supply fault. • System board fault.
	Flashing amber	Solid green	One or more of the following conditions exist: • 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.
PCI riser (solid amber)	Flashing red	Solid green	The PCI riser cage is not seated properly.
Over temp (solid amber)	Flashing amber	Solid green	The Health Driver has detected a cautionary temperature level.
	Flashing red	Solid amber	The server has detected a hardware critical temperature level.
Power cap (solid green)	—	Solid green	Power is available.
Power cap (solid green)	—	Flashing green	Waiting for power
Power cap (flashing amber)	—	Solid amber	Power is not available.
Power cap (off)	—	Solid amber	Standby
Processor (solid amber)	Flashing red	Solid amber	One or more of the following conditions might exist: • 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.
	Flashing amber	Solid green	Processor in socket X is in a pre-failure condition.
Fan (solid amber)	Flashing amber	Solid green	One fan has failed or has been removed.
	Flashing red	Solid green	Two or more fans have failed or been removed.
DIMM (solid amber)	Flashing red	Solid green	One or more DIMMs have failed.
	Flashing amber	Solid green	DIMM in slot X is in a pre-failure condition.

Rear panel components

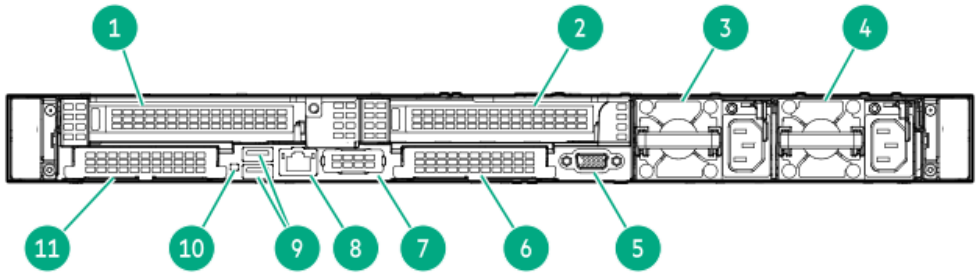
Rear panel with 3 PCIe slots



Item	Description
1	Slot 1 PCIe5 [1]
2	Slot 2 PCIe5 [2]
3	Slot 3 PCIe5 (optional - requires the secondary processor) [3]
4	Power supply 2 (PS2)
5	Power supply 1 (PS1)
6	Video (VGA) port
7	OCP 3.0 slot B (Slot 15)
8	Serial port (optional)
9	iLO Management Port
10	USB 3.2 Gen 1 ports
11	Rear UID button / LED
12	OCP 3.0 slot A (Slot 14)

1 This slot supports the full-height PCIe form factor.
2 This slot supports the low-profile PCIe form factor.
3 This slot requires the low-profile riser kit option (P48903-B21).

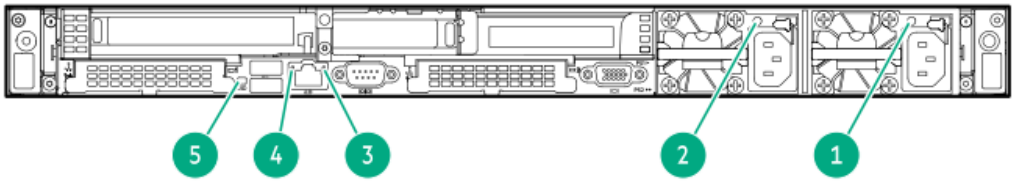
Rear panel with 2 PCIe slots



1	Slot 1 PCIe5 [1]
2	Slot 3 PCIe5 (optional - requires the secondary processor) [2]
3	Power supply 2 (PS2)
4	Power supply 1 (PS1)
5	Video (VGA) port
6	OCP 3.0 slot B (Slot 15)
7	Serial port (optional)
8	iLO Management Port
9	USB 3.2 Gen 1 ports
10	Rear UID button / LED
11	OCP 3.0 slot A (Slot 14)

1 This slot supports the full-height PCIe form factor.
2 This slot requires the full-height riser kit option (P72598-B21).

Rear panel LEDs



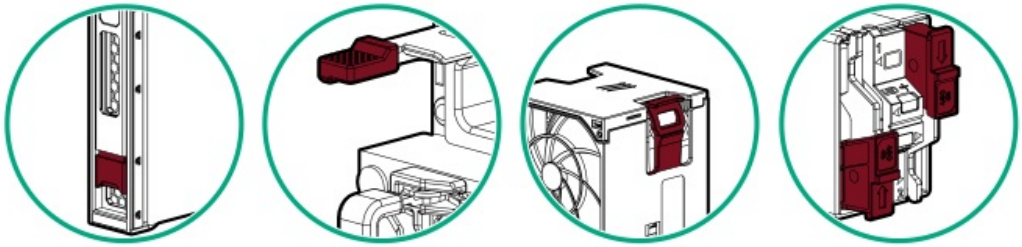
Item	Description	Status
1	Power supply 1 LED	Solid green — Normal Off — One or more of the following conditions exists: • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit. • Power cord is not attached.
2	Power supply 2 LED	Solid green — Normal Off — One or more of the following conditions exists: • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit. • Power cord is not attached.
3	iLO status	Solid green — Linked to network Flashing green — Network active Off — No network activity
4	iLO link	Solid green — Link exists. Off — No link exists.
5	UID LED	Solid blue — Identification is activated. Flashing blue — System is being managed remotely. Off — Identification is deactivated.

Component touchpoints

Certain components are color-coded. These colors represent the recommended touch areas for a removal process and indicate whether components require a system shutdown before removal.

The following diagrams are examples only.

HPE hot-plug red

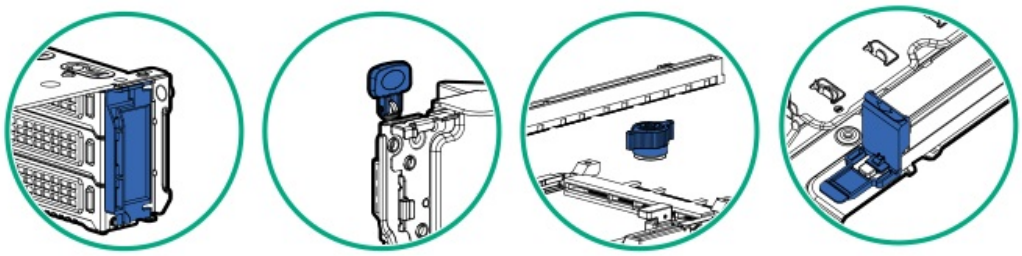


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

Component examples:

- Power supplies in a redundant power configuration
- Hot-plug fans
- Hot-plug drives
- M.2 SSDs in a hot-plug boot device

HPE touchpoint blue

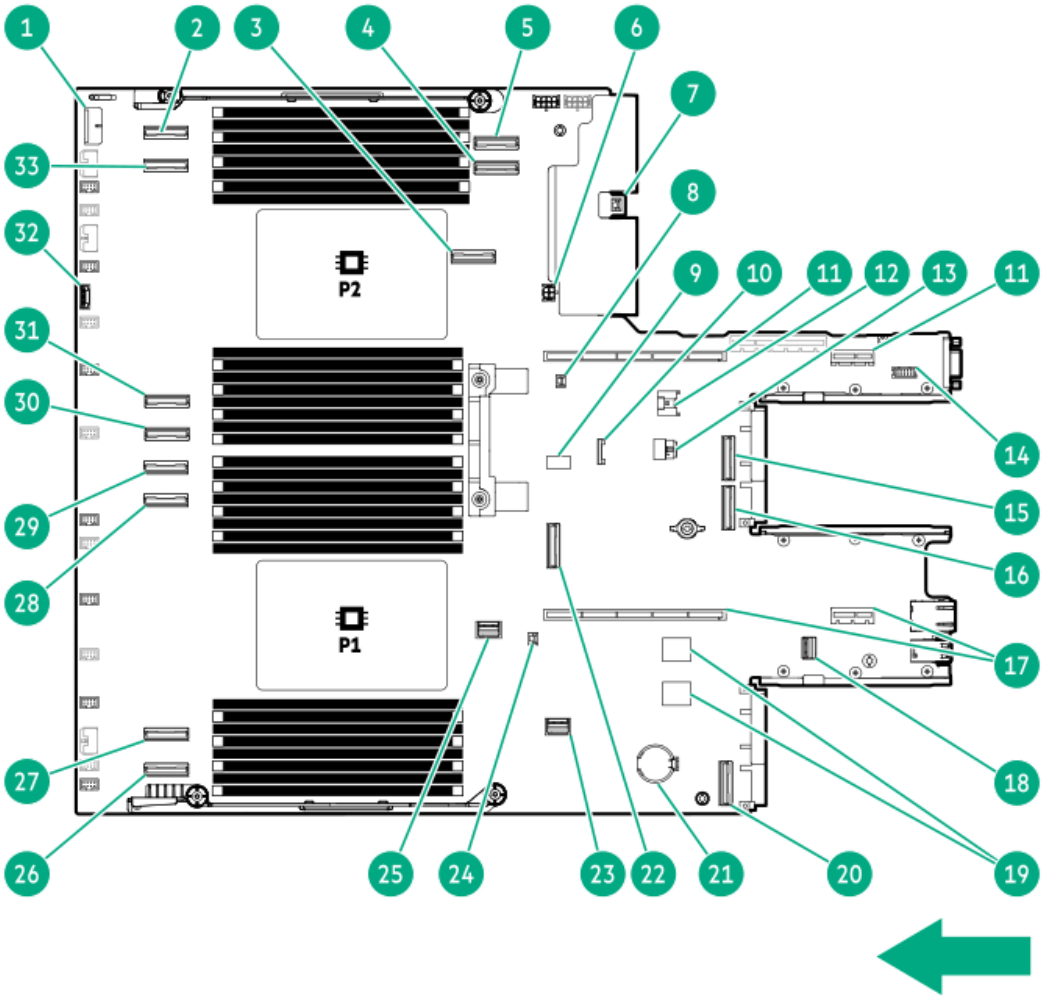


Touchpoint blue indicates cold-pluggable components. These components require a system shutdown. Failure to do so might result in system failure or data loss. Cold-pluggable components might also indicate touchpoints on non-electrical components.

Component examples:

- Storage devices
- Fan cages
- System boards
- Energy packs

System board components


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P2
P1

Item	Description
1	Box 1 drive backplane power connector
2	MCIO port 8
3	MCIO port 11
4	MCIO port 10
5	MCIO port 9
6	SmartNIC 4-pin power connector [1]
7	Chassis Intrusion Detection switch connector
8	Storage backup power connector 2
9	System maintenance switch
10	SID connector
11	Secondary riser connectors
12	Energy pack connector
13	NS204i-u power connector
14	Serial port connector
15	OCP B internal port 1
16	OCP B internal port 2
17	Primary riser connectors
18	Front DisplayPort/USB 2.0 connector
19	Internal dual USB 3.2 Gen1 ports
20	OCP A internal port 1
21	System battery
22	MCIO port 12
23	Front I/O connector & USB 3.2 Gen 1 port connector
24	Storage backup power connector 1
25	NS204i-u signal connector
26	MCIO port 1
27	MCIO port 2
28	MCIO port 3
29	MCIO port 4
30	MCIO port 5
31	MCIO port 6
32	Cooling module connector
33	MCIO port 7

[1] There is no available SmartNIC 4-pin power cable option.

Subtopics

System maintenance switch descriptions
DIMM label identification
DIMM slot locations
PCIe connector and processor matrix

System maintenance switch descriptions

Position	Default	Function
S1	Off	• Off—iLO 7 security is enabled. • On—iLO 7 security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5	Off	• Off—Power-on password is enabled. • On—Power-on password is disabled.
S6 [1], [2]	Off	• Off—No function • On—Restore default manufacturing settings
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

1 When the system maintenance switch position 6 is set to the On position, the system is prepared to restore all configuration settings to their manufacturing defaults.

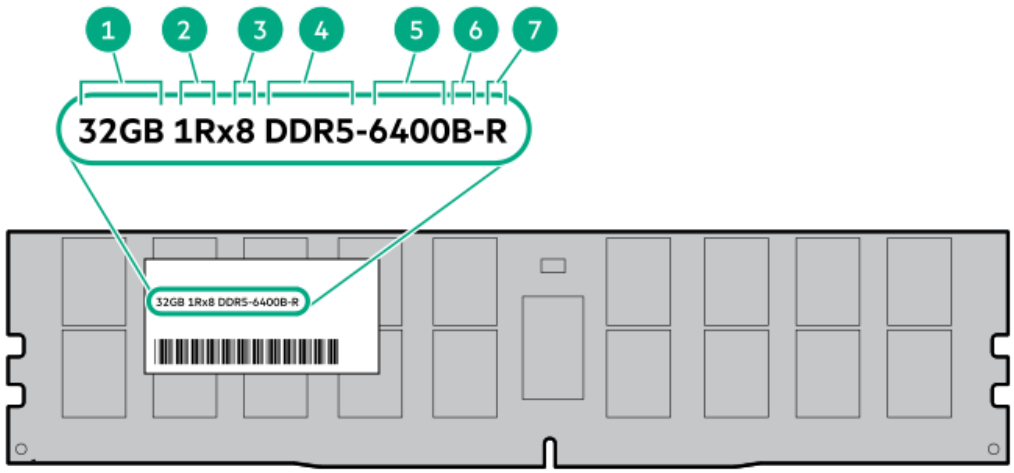
2 When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see Configuring the server.

DIMM label identification

To determine DIMM characteristics, see the label attached to the DIMM. The information in this section helps you to use the label to locate specific information about the DIMM.

For more information about product features, specifications, options, configurations, and compatibility, see the HPE DDR5 SmartMemory QuickSpecs:

https://www.hpe.com/docs/server-memory

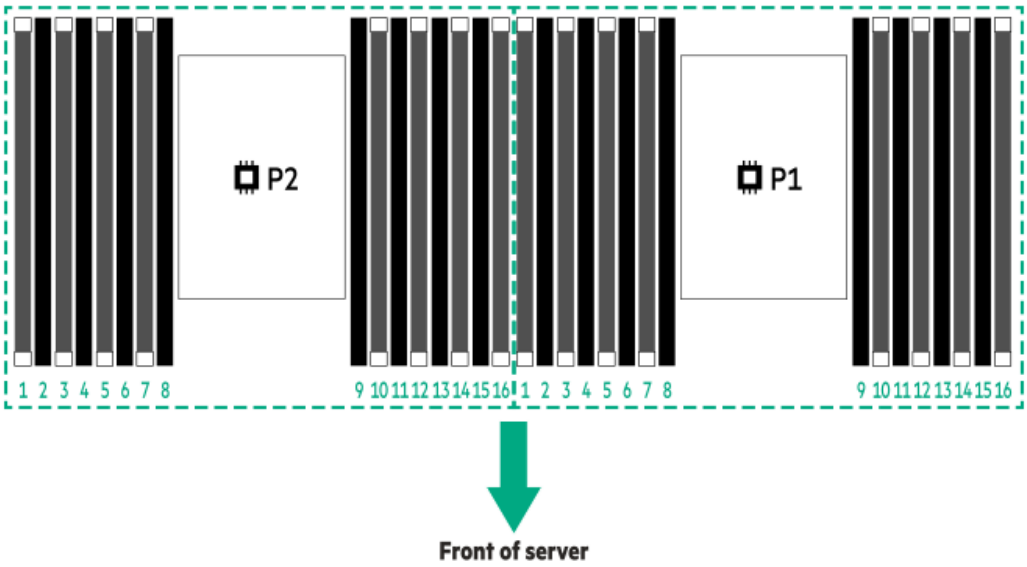


Item	Description	Example
1	Capacity*	16 GB 32 GB 64 GB 96 GB 128 GB 256 GB
2	Rank	1R—Single rank 2R—Dual rank 4R—Quad rank
3	Data width on DRAM	x4—4-bit x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed*	6400 MT/s
6	CAS latency	B—42-42-42
7	DIMM type	R—RDIMM (registered)

* The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.

DIMM slot locations

DIMM slots are numbered sequentially (1 through 16) for each processor.



PCIe connector and processor matrix

The server's system board connectors support PCIe Gen5. Use the following table to identify the processors and the specific PCIe connectors to which devices are connected.

System board connector	PCIe lane configuration	Processor [1]
MCIO port 1	x8	Processor 1
MCIO port 2	x8	Processor 1
MCIO port 3	x8	Processor 1
MCIO port 4	x8	Processor 1
MCIO port 5	x8	Processor 2
MCIO port 6	x8	Processor 2
MCIO port 7	x8	Processor 2
MCIO port 8	x8	Processor 2
MCIO port 9	x8	Processor 2
MCIO port 10	x8	Processor 2
MCIO port 11	x8	Processor 2
MCIO port 12	x8	Processor 1
Primary riser slot 1 [2]	x16	Processor 1
Primary riser slot 2 [2]	x16	
Secondary riser slot 3	x16	Processor 2
NS204i-u signal	x4	Processor 1
Rear OCP A [3]	x8	Processor 1

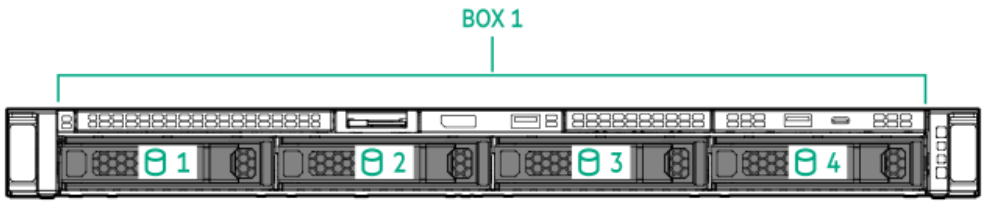
1 Certain PCIe lanes are reserved for system functions and are not routed to a physical connector for use by PCIe devices.
2 The primary riser supports two PCIe slots in the system.
3 Rear OCP B is connected to the processor using a cable option. For more information on the PCIe connection to rear OCP B in the system, see OCP NIC 3.0 slot numbering.

Drive bay numbering

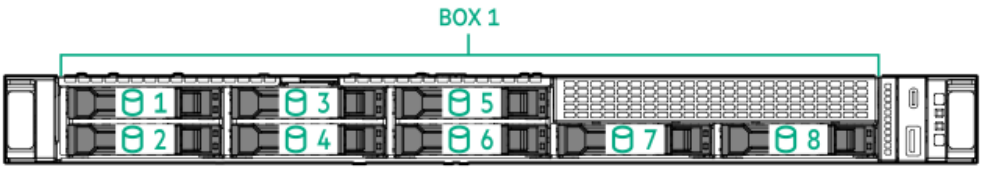
CAUTION

When a server is purchased without any drive installed, some drive bays might be empty while other drive bays might be populated with drive blanks. To maintain proper system cooling, do not operate the server without a drive or a drive blank installed.

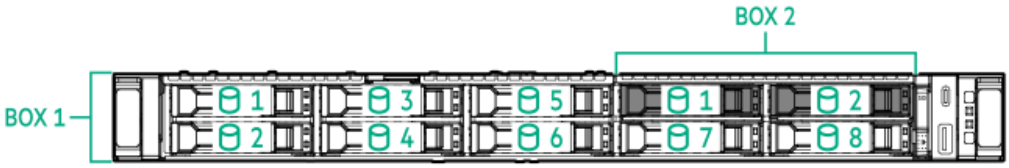
4 LFF drive bay numbering



8 SFF drive bay numbering

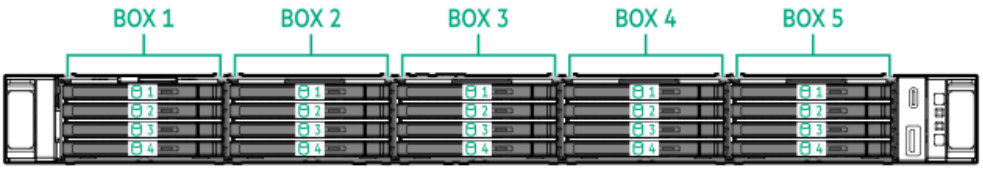


8 + 2 SFF drive bay numbering



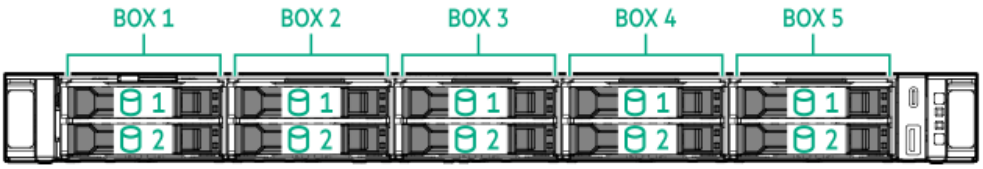
20 E3.S drive bay numbering

This configuration supports mixed drive types in the front drive cages.



10 SFF drive bay numbering

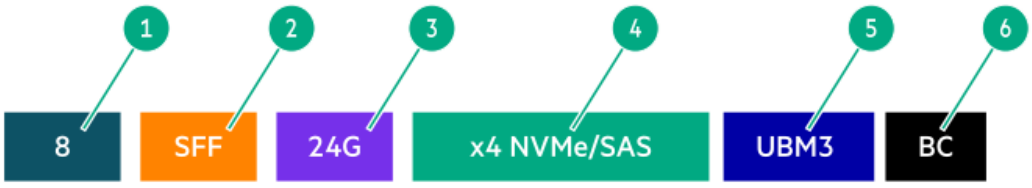
This configuration supports mixed drive types in the front drive cages.



Drive backplane naming

This topic explains the features represented in the drive backplane naming. This naming convention was adopted starting in the HPE Gen11 server release. Your server might not support all the features listed in this topic. For server-specific support information, see the server guides:

- Drive backplane support, see Drive bay numbering.
- Drive backplane cabling, see Storage cabling.



Item	Description	Values
1	Drive bay count	Number of drive bays supported by the backplane.
2	Drive form factor	LFF—Large Form Factor
		SFF—Small Form Factor
		E3S—Enterprise and Datacenter Standard Form Factor (EDSFF E3.S)
3	Maximum link rate per lane (GT/s)	12G
		16G
		24G
		32G
4	Port link width and interface	x1 NVMe/SAS—U.3 NVMe, SAS, or SATA [1]
		x4 NVMe/SAS—U.3 NVMe, SAS, or SATA [2]
		x4 NVMe—NVMe [3]
		x4 NVMe—E3.S
5	Universal backplane manager (UBM) model	The UBM model defines the UBM firmware used by the backplane. Examples of UBM models: UBM2, UBM3, and etc.
6	Drive carrier type	BC—Basic carrier (SFF)
		LP—Low-profile carrier (LFF)
		EC—E3.S carrier

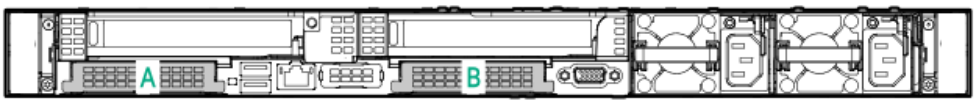
1 Tri-mode controller support for x1 U.3 NVMe, SAS, and SATA drives. System board connection supports SATA drives only.
2 CPU direct attach or tri-mode controller support for x4 U.3 NVMe, x2 (via a splitter cable) U.3 NVMe, or x1 SAS and SATA drives.
3 CPU direct attach or tri-mode controller support for x4 NVMe drives.

OCP NIC 3.0 slot numbering

This server supports up to two OCP NIC 3.0 SFF slots in either the rear or the front panel.

Rear OCP NIC 3.0 slots

The rear OCP NIC 3.0 slots are standard in the system.



Item	Slot number	Supported options
1	Slot 14 OCP A PCIe5 x16 [1, 2, 3]	• OCP NIC • Type-o storage controller
2	Slot 15 OCP B PCIe5 x16 [3, 4, 5, 6]	

1 When installing a single OCP NIC, install it in Slot 14 OCP A.
2 Slot 14 OCP A by default supports x8 connection from processor 1. To upgrade to x16 connection, an OCP A x16 enablement cable option (P72201-B21) is required.
3 The PCIe lane configuration for rear OCP slots varies depending on processor count and drive placement. For more information, see OCP connection and direct attached drives.
4 To support Slot 15 OCP B x8 connection in a single-processor configuration, a CPU1-to-OCP-B cable option (P72203-B21) is required.
5 To support Slot 15 OCP B x8 connection in a dual-processor configuration, a CPU2-to-OCP-B cable option (P72205-B21) is required.
6 To upgrade to x16 connection in a dual processor configuration, an OCP B x 16 enablement cable option (P72207-B21) is required.

OCP connection and direct attached drives

In systems that use 4 EDSFF or 2 SFF stacked drives direct attached to the system board, the OCP PCIe connection varies based on the processor count and drive placement. When a data cable from Drive Box 5 occupies MCIO port 12, rear OCP B support may be affected. See the following table for detailed configuration options.

One processor:

Drives [1]	OCP slot	Connection bandwidth	OCP cable option
2 SFF stacked drives in Box 5	OCP A	x8 connection	Not required
	OCP B	Not supported	—
2 SFF stacked drives in Box 3 (relocated from Box 5) [2]	OCP A	Up to x16 connection	Required
	OCP B	Not supported	—
2 SFF stacked drives in Box 3 (relocated from Box 5) [2]	OCP A	x8 connection	Not required
	OCP B	x8 connection	Required

1 During the order configuration of the 10 SFF / 20 E3.S server, when multiple drive backplanes are selected, the drive boxes will be populated in the following sequence: 1, 2, 4, 5, and 3.

2 Choose either x16 bandwidth for OCP A or x8 bandwidth for both OCP A and OCP B.

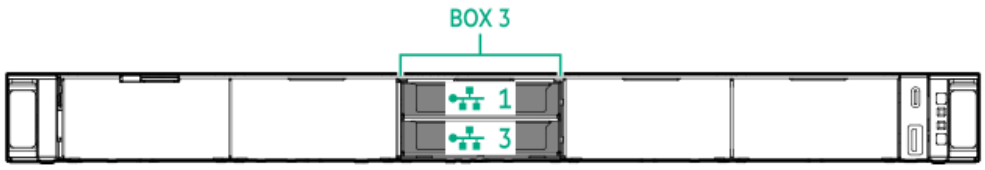
Two processors:

Drives	OCP slot	Connection bandwidth	OCP cable option
4 EDSFF stacked drives in Box 5	OCP A	x8 connection	Not required
	OCP B	Up to x16 connection	Required

OCP NICs designed for PCIe x16 can still operate using a x8 connection and achieve maximum throughput with PCIe Gen5 when installed in the rear OCP A slot. For more information on the available OCP NIC options, see the product QuickSpecs (**https://www.hpe.com/info/quickspecs**).

Front OCP NIC 3.0 slots

The front OCP NIC 3.0 slots require the front OCP NIC enablement option kits (Bay 1: P72597-B21, Bay 3: P72596-B21). These slots support OCP NIC options.



Bay	Slot number
1—Secondary *	Box 3: Bay 1 OCP slot PCIe5 x16
3—Primary	Box 3: Bay 3 OCP slot PCIe5 x16

* The secondary front OCP NIC option requires a dual-processor configuration.

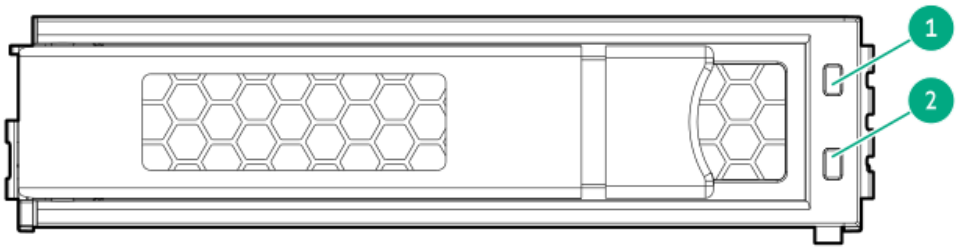
HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

- Amber/blue LED—Managed by the drive backplane in conjunction with the storage controller and is used to indicate drive status.
- Green LED—Managed by the drive itself and indicates the drive activity.

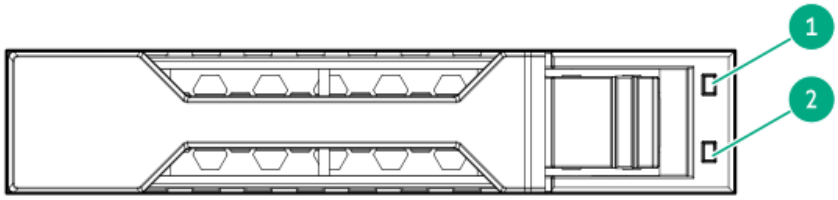
LFF low-profile drive carrier

The LFF low-profile drive carrier supports hot-plug SAS or SATA.



SFF basic drive carrier

The SFF basic drive carrier supports hot-plug U.3 NVMe drives.

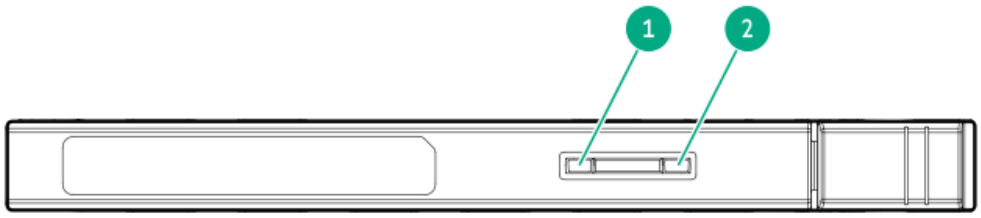


Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

EDSFF SSD LED definitions

The EDSFF drive carrier has two LEDs:

- Amber/blue LED—Managed by the drive backplane in conjunction with the storage controller and is used to indicate drive status.
- Green LED—Managed by the drive itself and indicates the drive activity.

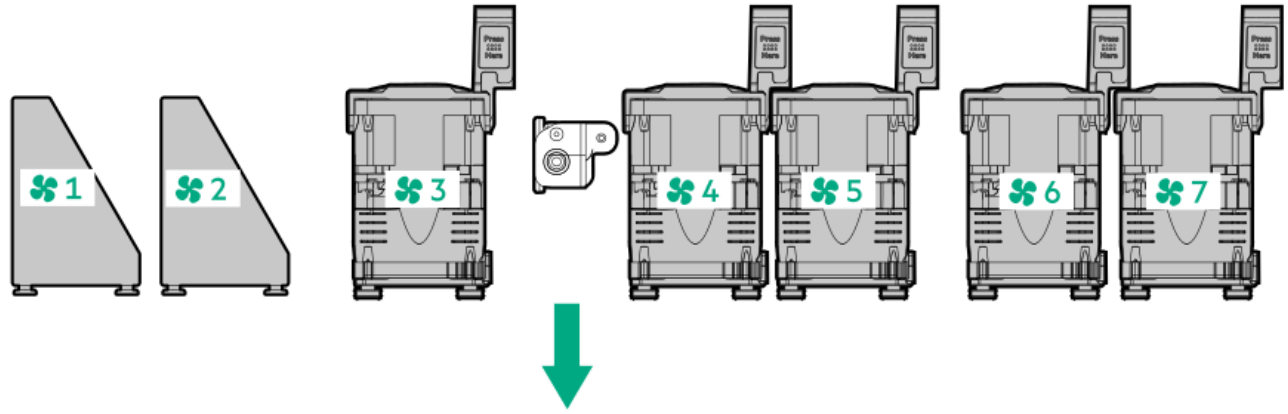


Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	No power present.

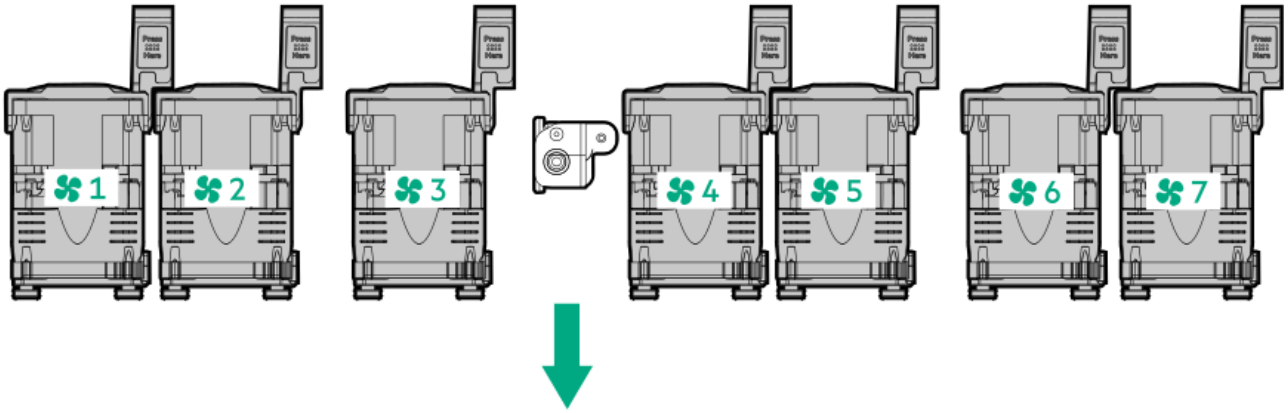
Fan numbering

The arrow points to the front of the server.

Single processor



Single or dual processor



Subtopics

Fan and heatsink requirements

Fan and heatsink requirements

Fan and heatsink type

Processor TDP	Fan type	Heatsink type	Availability
Processor TDP ≤ 185 W	Standard fan	Standard heatsink	Full support
Processor TDP 186–250 W	High performance fan	High performance heatsink [1]	Full support
Processor TDP 251–270 W	High performance fan	High performance heatsink [1]	Limited configuration [2]
Processor TDP 271–350 W	High performance fan	High performance heatsink [1]	Limited configuration [2]
Processor TDP ≤ 270 W (One-processor configuration)	Closed-loop liquid cooling heatsink and fan		Full support
Processor TDP 271–350 W	Closed-loop liquid cooling heatsink and fan		Full support
Processor TDP ≤ 350 W	DLC CPM	DLC fan kit (High performance fan kit)	Full support

[1] To support the installation of the optional air baffle, the high performance heatsink must be installed.
[2] For additional information on limited configuration, see the product QuickSpecs on the Hewlett Packard Enterprise website (https://www.hpe.com/info/quickspecs).

Some hardware options require a specific fan or heatsink type.

Hardware option	Fan type	Heatsink type
SAS/SATA drives	Standard fan	Standard or high performance heatsink
E3.S / NVMe / SAS4 drives / HPE NS204i-u Boot Device V2	High performance fan	Standard or high performance heatsink
256 GB or higher capacity DIMMs [1]	High performance fan	Standard or high performance heatsink
Type-p Ethernet adapters or type-o InfiniBand adapters ≥ 100 Gb	High performance fan	Standard or high performance heatsink
OCP NIC 3.0 adapters ≥ 100 Gb	High performance fan	Standard or high performance heatsink
GPU cards	High performance fan	Standard or high performance heatsink

[1] DIMM blank requirements may vary depending on the hardware configuration. For more information on DIMM blank requirements, see the product QuickSpecs on the Hewlett Packard Enterprise website (https://www.hpe.com/info/quickspecs).

Fan population

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

CAUTION
To avoid damage to the equipment, do not operate the server for extended periods of time if the server does not have the optimal number of fans installed. Although the server might boot, we do not recommend operating the server without the required fans installed and operating.

Air cooling

Processor configuration	Fan bay 1	Fan bay 2	Fan bays 3–7
One-processor configuration	Fan blank	Fan blank	Standard fan
	High performance fan	High performance fan	High performance fan
Dual-processor configuration	Standard fan	Standard fan	Standard fan
	High performance fan	High performance fan	High performance fan

Closed-loop liquid cooling and direct liquid cooling

Cooling component	Fan bays 1–7
Closed-loop liquid cooling heatsink and fan	Liquid cooling fan
Direct liquid cooling kit	High performance fan

The server operates at variable fan speeds. The fans operate at a minimum speed until a temperature change requires the fan speed to increase and cool the server. If a single-rotor fan fails, redundancy is lost. If two single-rotor fans or one dual-rotor fan fails, the server initiates a shutdown. The server shuts down during the following temperature-related scenarios:

- At POST and in the OS, iLO 7 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 the BIOS/Platform Configuration (RBSU), iLO 7 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.

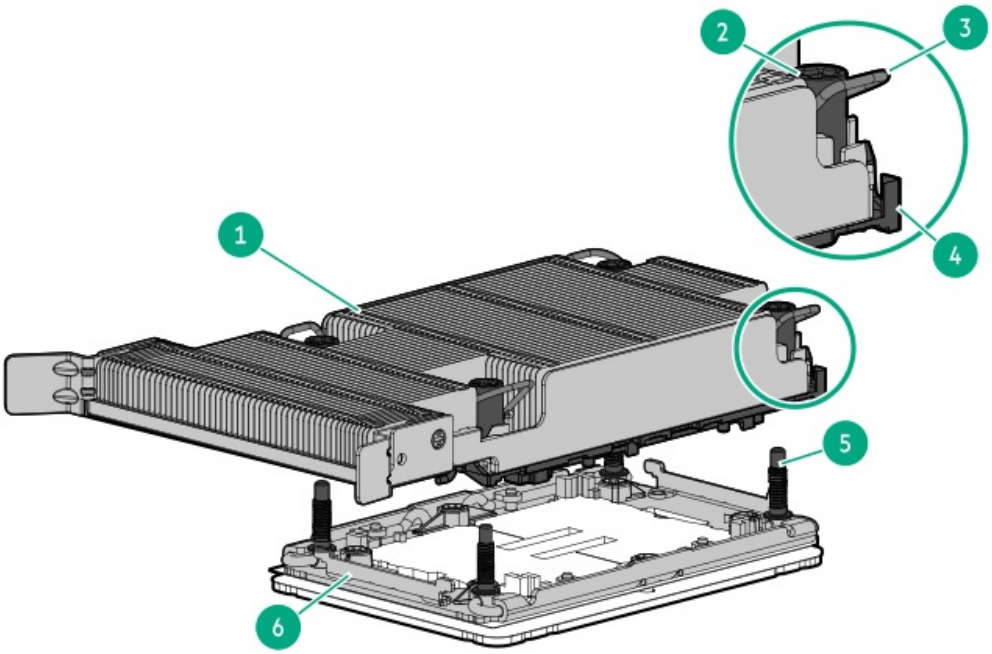
CAUTION

A thermal event can damage server components when the Thermal Shutdown feature is disabled in the BIOS/Platform Configuration (RBSU).

High performance fans are required for ASHRAE-compliant configurations. For more information on ASHRAE, see the Hewlett Packard Enterprise website (**https://www.hpe.com/support/ASHRAEGen12**).

Heatsink and processor socket components

A high performance heatsink is shown. Your heatsink might look different.

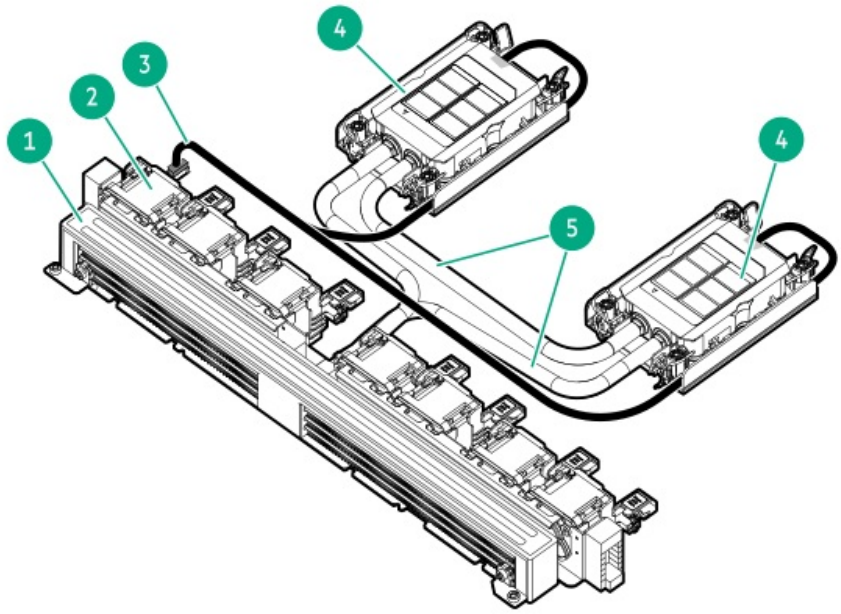


Item	Description
1	Processor-heatsink module [1]
2	Heatsink nuts
3	Heatsink latches
4	Processor carrier latches
5	Alignment screws
6	Bolster plate

1 This module consists of the heatsink attached to the processor that is already secured in its carrier.

Closed-loop liquid cooling (CLLC) module components

For more information, see Liquid cooling guidelines.



Item	Description
1	Radiator
2	Fans
3	Power and signal cable
4	Cold plates and pumps [1]
5	Coolant hoses
6	Leak detection cable [2]

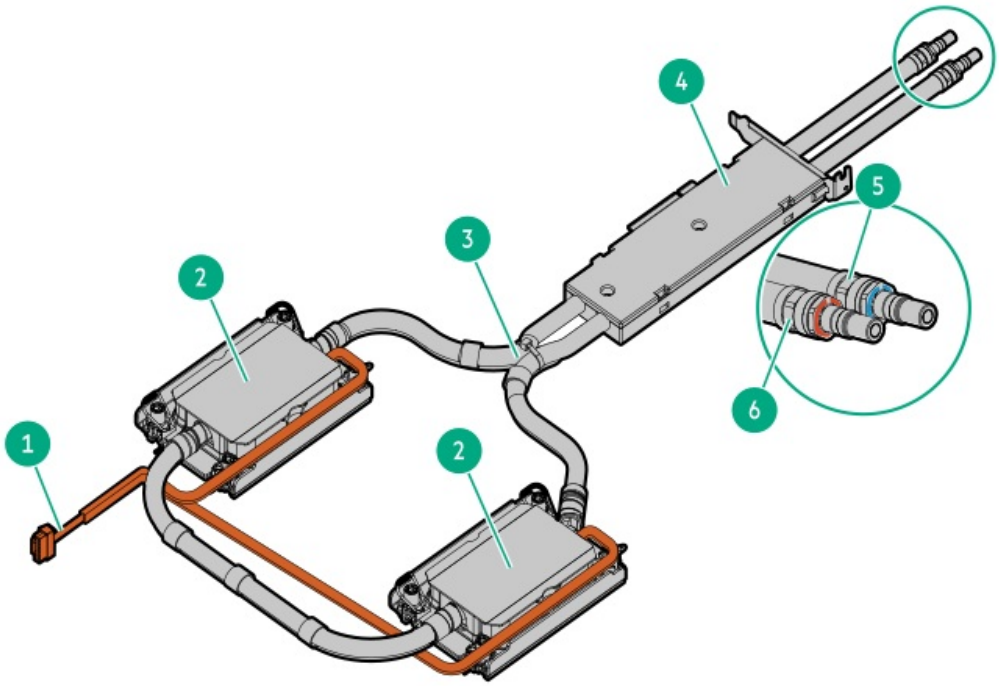
[1] Each of the closed-loop liquid cooling cold plates has two pumps for redundancy.
[2] Not shown

Direct liquid cooling (DLC) module components

For more information, see Liquid cooling guidelines.

The cable color is for illustration purpose only. There are two available DLC solutions:

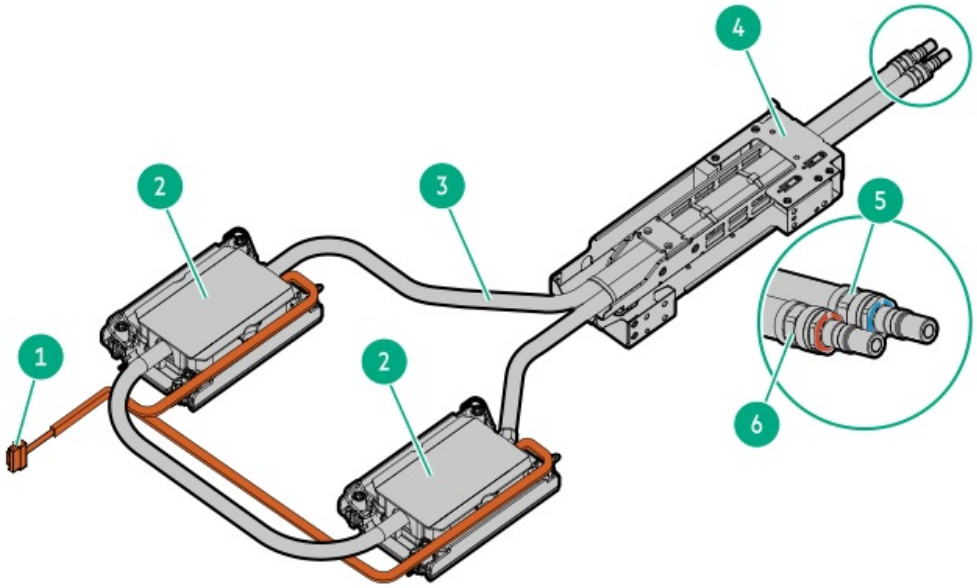
- DLC cold plate module from PCIe (P74208-B21)



Item	Description
1	Power and signal cable
2	Open-loop liquid cooling cold plates
3	Coolant hoses
4	DLC hose holder
5	Supply hose
6	Return hose
7	Leak detection cable*

* Not shown

- DLC cold plate module from NS204 PCIe Slot 2（P79273-B21）



Item	Description
1	Power and signal cable
2	Open-loop liquid cooling cold plates
3	Coolant hoses
4	NS204i-u boot device bracket
5	Supply hose
6	Return hose
7	Leak detection cable *

* Not shown

DLC cold plate modules on this server are available as factory-installed options. For additional information, see the product QuickSpecs on the Hewlett Packard Enterprise website:

https://www.hpe.com/info/quickspecs

Liquid cooling guidelines

The closed-loop liquid cooling (CLLC) module hoses are prefilled with coolant. The coolant is a mixture of purified water and ethylene glycol with additional corrosion-resistant additives. The direct liquid cooling (DLC) module coolant is fed into the hoses through the rack manifolds.

CLLC module lifespan

HPE recommends replacing the module every five years. The coolant anti-corrosion additives degrade over time resulting in potential leaks in the system. For additional information on protecting the system, contact your local HPE representative.

Coolant leakage detection

If a liquid cooling module coolant leakage occurs, the following happens:

- iLO automatically detects it and:
  - Sends an iLO REST alert and Simple Network Management Protocol (SNMP) trap

- Records the event in the Integrated Management Log (IML)

- The system initiates an immediate shutdown. The system will not power on until the leakage event is cleared, and a REST API operation for system recovery is performed.
- Follow the recommended procedure in Appendix I: Server coolant spill response of the server maintenance guide.

Do not attempt to replace the coolant in the CLLC module. For service inquiries, contact your local service provider.

Storage temperature

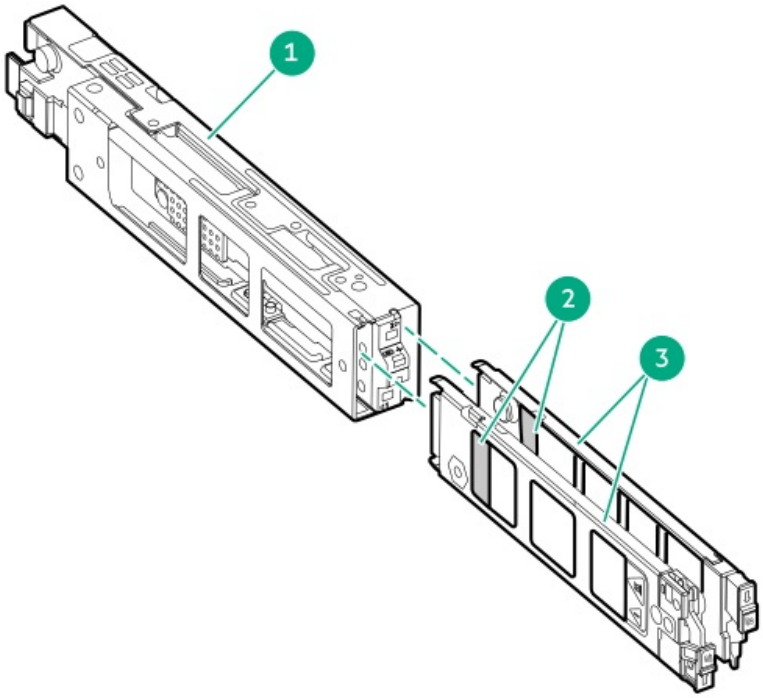
When storing a server with a liquid cooling module, maintain a temperature of -10°C to 60°C (14°F to 140°F). Allowing the liquid cooling module coolant to freeze can damage its metallic microstructures.

Facility water supply temperature

To maintain optimal cooling performance and prevent equipment damage from overheating:

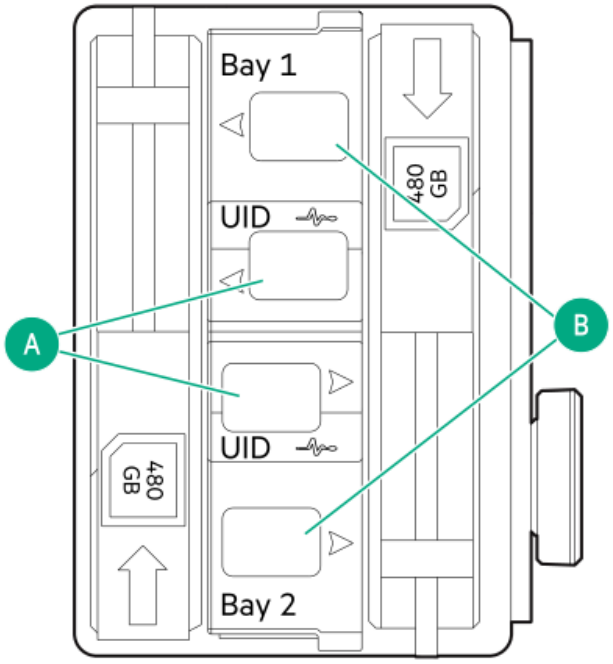
- Do not allow the facility water supply temperature to exceed 40°C (104°F).
- Monitor environmental conditions year-round to anticipate temperature fluctuations.
- Install insulated plumbing as needed to ensure the water supply remains at or below 40°C (104°F).

HPE NS204i-u Boot Device V2 components



Item	Description
1	Boot device cage
2	M.2 slots
3	Boot device carriers

HPE NS204i-u Boot Device V2 LED definitions



NOTE

The bay number can be found on the SSD carrier handle.

Item	LED	Status	Definition
A	Fault or Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally.
		Flashing amber or blue (one flash per second)	Drive has failed, or a predictive failure alert is received for the drive.
		Flashing amber (one flash per second)	Drive predictive failure alert is received. Replace the drive as soon as possible.
		Off	Drive is operating normally and is not identified by any application.
B	Online/Activity	Solid green	Drive is online and has no activity.
		Flashing green (one flash per second)	Drive is doing one of the following: • Rebuilding or performing a RAID • Erasing
		Flashing green (4 flashes per second)	Drive is operating normally and has activity.
		Off	Drive is not configured by a RAID controller.

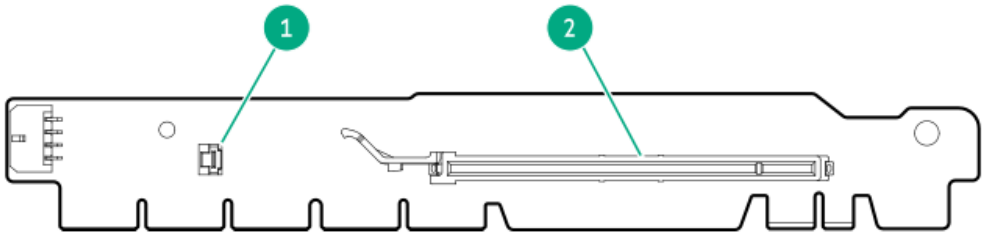
Riser board components

All riser slots are PCIe5 x16 (16, 8, 4, 1) and are rated for a maximum power draw of 75 W each.

Primary riser

This riser board supports Slots 1 and 2 in the three-slot configuration, or Slot 1 in the two-full-height slot configuration.

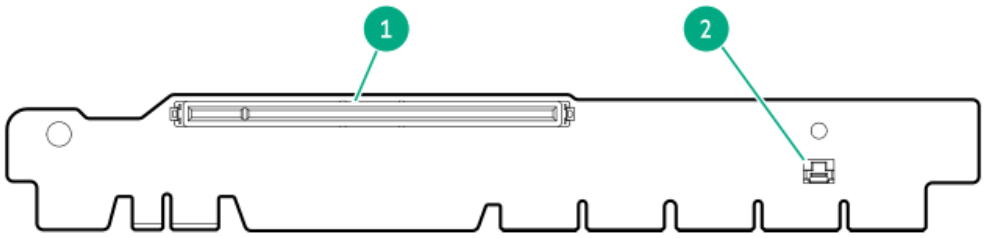
- Front: Slot 1



Item	Description	Supported form factors
1	Controller storage backup power connector	—
2	PCIe5 x16 (16, 8, 4, 1)	Full-height, up to 9.5" (or half-length)

- Back: Slot 2 in the three-slot configuration

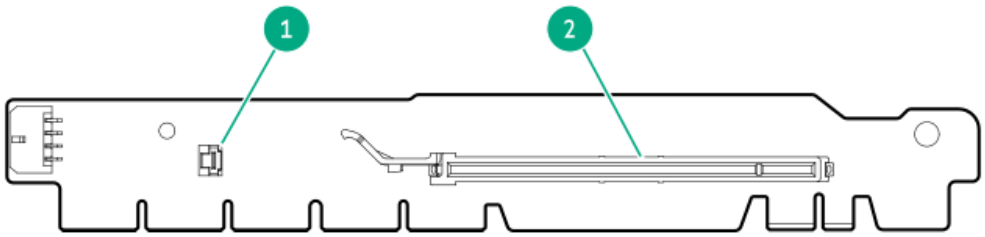
  This slot is not supported in the two-full-height-slot configuration.



Item	Description	Supported form factors
1	PCIe5 x16 (16, 8, 4, 1)	Half-height, half-length (low-profile) *
2	Controller storage backup power connector	—

Secondary full-height riser

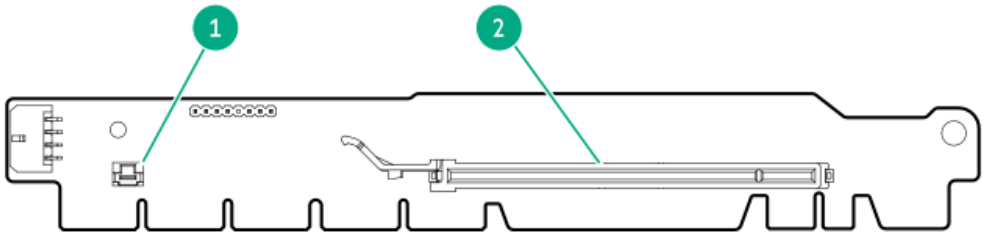
This riser board supports Slot 3 in the two-full-height-slot configuration, and is included in the secondary x16 full-height riser kit (P72598-B21).



Item	Description	Supported form factors
1	Controller storage backup power connector	—
2	PCIe5 x16 (16, 8, 4, 1)	Full-height, up to 9.5" (or half-length)

Secondary low-profile riser

This riser board supports Slot 3 in the three-slot configuration, and is included in the secondary x16 low-profile riser kit (P48903-B21).



Item	Description	Supported form factors
1	Controller storage backup power connector	—
2	PCIe5 x16 (16, 8, 4, 1)	Half-height, half-length (low-profile)

Riser slot numbering

Slot 3 requires the secondary processor.

Three-slot configuration



Two-full-height-slot configuration



Troubleshooting

Subtopics

- NMI functionality
- Front panel LED power fault codes
- Troubleshooting resources

NMI functionality

An NMI crash dump enables administrators to create crash dump files when a system is not responding to traditional debugging methods.

An analysis of the crash dump log is an essential part of diagnosing reliability problems, such as hanging operating systems, device drivers, and applications. Many crashes freeze a system, and the only available action for administrators is to cycle the system power. Resetting the system erases any information that could support problem analysis, but the NMI feature preserves that information by performing a memory dump before a hard reset.

To force the OS to initiate the NMI handler and generate a crash dump log, the administrator can use the iLO Generate NMI feature.

Front panel LED power fault codes

The following table provides a list of power fault codes, 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
OCP adapter	5 flashes
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed in riser board	11 flashes
Chassis	12 flashes
GPU card	13 flashes

Troubleshooting resources

If you need help troubleshooting, see the latest articles for your server.

https://www.hpe.com/info/dl360gen12-troubleshooting

Cabling

Subtopics

- Cabling guidelines
- Cabling diagrams
- Internal cabling management
- Storage cabling
- Drive power cabling
- Energy pack cabling
- Optical disk drive cabling
- Front DisplayPort / USB cabling
- Internal boot device cabling
- Front OCP NIC cabling
- OCP bandwidth enablement cabling
- Serial port cabling
- Chassis intrusion detection switch cabling
- Front I/O cabling
- System Insight Display cabling
- Liquid cooling module cabling

Cabling guidelines

Observe the following:

NOTE
The colors in the cabling diagrams are for illustration purposes only.

CAUTION
To avoid damaging connectors, avoid repeated installation and removal of cables. Excessive handling can shorten the lifespan of the cable.

- For cable option kits, see the product QuickSpecs.
- For cable spare part numbers, see the Illustrated parts catalog in the maintenance and service guide.
- Some diagrams show alphabetical callouts such as A, B, C, etc. These callouts correspond to labels near the connectors on the cable.
- Some cables have more than one connector, such as a Y-cable, but not all connectors are used.
- Observe all guidelines when working with server cables.

Before connecting cables

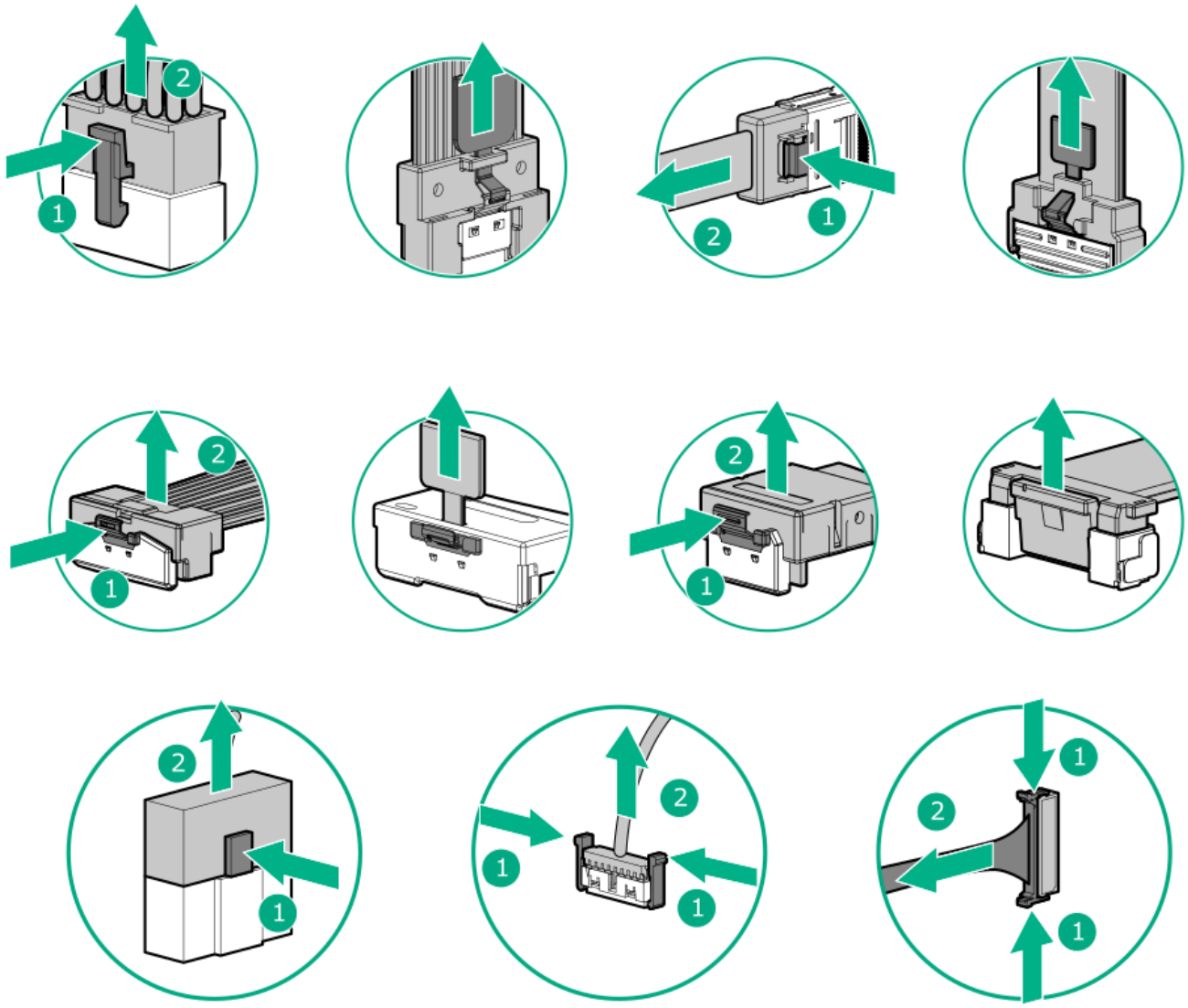
- Note the port labels on the PCA components. Not all these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion board ports (controllers, retimers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. This label indicates the destination port for the cable connector.
- Some data cables are prebent. Do not unbend or manipulate the cables.
- To prevent mechanical damage or depositing oil that is present on your hands, and other contamination, do not touch the ends of the connectors.

When connecting cables

- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Use the internal cable management features to properly route and secure the cables.
- When routing cables, be sure that the cables are not in a position where they can be pinched or crimped.
- Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.
- Make sure that the excess length of cables is properly secured to avoid excess bends, interference issues, and airflow restriction.
- Before installing a new component or closing up the server, make sure that all cables are in their appropriate routing position. This cable check prevents component damage and potential signal interference.

When disconnecting cables

- Grip the body of the cable connector. Do not pull on the cable itself because this action can damage the internal wires of the cable or the pins on the port.
- If a cable does not disconnect easily, check for any release latch that must be pressed to disconnect the cable.



- Remove cables that are no longer being used. Retaining them inside the server can restrict airflow. If you intend to use the removed cables later, label and store them for future use.

Cabling diagrams

Observe the following:

- Before cabling components, see the Cabling guidelines.
- Use the cable part number or search feature to find your diagram.

Component cabling	Cable part number
Storage controller cabling: 4 LFF drive configuration	—
4 LFF controller cable: type-p controller in the primary riser	P48970-001
4 LFF controller cable: type-o controller in Slot 14 OCP A	P48958-001
Storage controller cabling: 8 SFF drive configuration	—

Component cabling	Cable part number
8 SFF Box 1 x1 NVMe controller cable: type-o controller in Slot 14 OCP A	P48960-001
8 SFF Box 1 x1 NVMe controller cable: type-p controller in the primary riser	P45610-001
8 SFF Box 1 x1 NVMe controller cable: type-p controller in the primary riser	P79151-001 [1]
Storage controller cabling: 8 + 2 SFF drive configuration	—
8 SFF + 2 SFF x4 NVMe controller cables: type-o controller in Slot 14 OCP A	P48960-001 P48962-001
8 SFF + 2 SFF x4 NVMe controller cables: type-o controller in Slot 15 OCP B	P55357-001 P48961-001
8 SFF x1 NVMe + 2 SFF NVMe controller cables: type-p controller in Slot 1	P45610-001 P45611-001
8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 direct attach	P48960-001 P75946-001
8 SFF x1 NVMe to type-o controller + 2 SFF NVMe to type-p controller	P48960-001 P45611-001
8 SFF x1 NVMe to Slot 1 type-p controller + 2 SFF x4 NVMe to type-o controller in Slot 14 OCP A	P45610-001 P48962-001
8 SFF x1 NVMe to Slot 1 type-p controller + 2 SFF direct attach	P45610-001 P75946-001
8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF to type-p controller in Slot 2	P55357-001 P45611-001
8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF x4 NVMe direct attach	P55357-001 P75946-001
8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF x4 NVMe to type-o controller in Slot 14 OCP A	P55357-001 P48962-001
8 SFF x1 NVMe + 2 SFF x4 NVMe to type-p controller in Slot 2	P45610-001 P45611-001
8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 NVMe to type-o controller in Slot 15 OCP B	P48960-001 P48961-001
8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 NVMe to Slot 2 type-p controller	P48960-001 P45611-001
8 SFF x1 NVMe + 2 SFF x4 NVMe to type-p controller in Slot 1	P79151-001 [1] P76443-001 [1]
8 SFF x1 NVMe to type-o controller + 2 SFF x4 NVMe to type-p controller in Slot 1	P48960-001 [1] P76443-001 [1]
8 SFF x1 NVMe to type-p controller in Slot 1 + 2 SFF x4 NVMe to type-o controller	P79151-001 [1] P48962-001 [1]
Storage controller cabling: 4 EDSFF stacked in the 10 SFF / 20 E3.S server	—

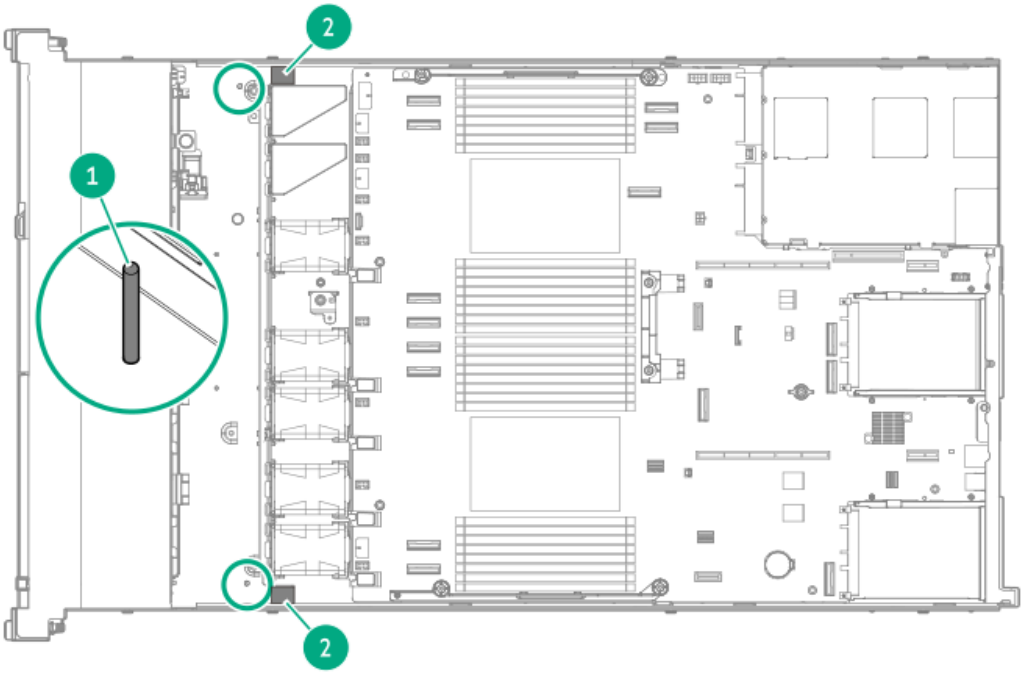
Component cabling	Cable part number
4 EDSFF Box 1: direct attach cable (unbalanced, 1 CPU)	P75568-001
4 EDSFF Box 1: direct attach cable (unbalanced)	P75568-001 P75278-001
4 EDSFF Box 1: secondary riser type-p controller cable	P74805-001
4 EDSFF Box 2: direct attach cable (unbalanced, 1 CPU)	P75567-001
4 EDSFF Box 2: direct attach cable (unbalanced)	P75317-001
4 EDSFF Box 3 x4 NVMe: direct attach cable	P75278-001
4 EDSFF Box 4 x4 NVMe: direct attach cable	P74806-001 P75278-001
4 EDSFF Box 4 x4 NVMe: type-p controller in Slot 1	P75590-001
4 EDSFF Box 4 x4 NVMe: type-p controller in Slot 2	P75590-001
4 EDSFF Box 5 x4 NVMe: direct attach cable	P75278-001 P75567-001
4 EDSFF Box 5 x4 NVMe: type-p controller in Slot 1	P76443-001 P75574-001
4 EDSFF Box 5 x4 NVMe: type-p controller in Slot 2	P76443-001 P75574-001
4 EDSFF Box 5 x4 NVMe: type-o controller cable (CPU1 and CPU2)	P75589-001
8 EDSFF Boxes 1–2 x4: direct attach cable	P75568-001 P75278-001 P75317-001
8 EDSFF Boxes 1–2 x4 NVMe to type-p controller in Slot 1 (1 CPU)	P75318-001 [1]
8 EDSFF Boxes 1–2 x4 NVMe to type-p controller in Slot 3	P75318-001 [1]
8 EDSFF Boxes 4–5 x4 NVMe to type-p controller in Slot 1	P75570-001 [1] P75569-001 [1]
8 EDSFF Boxes 1 and 4 x4 NVMe to type-p controller in Slot 1 (1 CPU)	P75570-001 [1] P75318-001 [1]
8 EDSFF Boxes 1 and 5 x4 NVMe to type-p controller in Slot 1 (1 CPU)	P75318-001 [1] P75570-001 [1] P75569-001 [1]
Storage controller cabling: 2 SFF stacked in the 10 SFF / 20 E3.S server	—
2 SFF Box 1 x4 NVMe: direct attach cable (1 CPU)	P75568-001
2 SFF Box 1 x4 NVMe: type-p controller in Slot 1	P75590-001
2 SFF Box 1 x4 NVMe: direct attach cable	P75317-001
2 SFF Box 1 x4 NVMe: type-p controller in Slot 3	P75590-001
2 SFF Box 2 x4 NVMe: direct attach cable (1 CPU)	P75568-001
2 SFF Box 2 x4 NVMe: direct attach cable (CPU1 and CPU2)	P75278-001

Component cabling	Cable part number
2 SFF Box 2 x4 NVMe: type-p controller in Slot 1	P75590-001
2 SFF Box 2 x4 NVMe: type-p controller in Slot 3	P75590-001
2 SFF Box 3 x4 NVMe: direct attach (1 CPU)	P75278-001
2 SFF Box 3 x4 NVMe: direct attach (1 CPU and supporting OCP B)	P75567-001
2 SFF Box 3 x4 NVMe: type-o controller in Slot 14 OCP A (1 CPU)	P75589-001
2 SFF Box 3 x4 NVMe: type-o controller in Slot 15 OCP B	P75587-001
2 SFF Box 3 x4 NVMe: type-p controller in the primary riser	P75590-001
2 SFF Box 4 x4 NVMe: direct attach cable (1 CPU)	P75317-001
2 SFF Box 4 x4 NVMe: direct attach cable	P75567-001
2 SFF Box 4 x4 NVMe: type-o controller in Slot 14 OCP A	P75589-001
2 SFF Box 4 x4: type-o controller in Slot 15 OCP B	P75589-001
2 SFF Box 4 x4 NVMe: type-p controller in Slot 1	P76443-001
2 SFF Box 4 x4 NVMe: type-p controller in Slot 2	P76443-001
2 SFF Box 5 x4 NVMe: direct attach cable (1 CPU)	P75567-001
2 SFF Box 5 x4 NVMe: direct attach cable (1 CPU and supporting OCP B)	
2 SFF Box 5 x4 NVMe: type-p controller in Slot 2 (1 CPU and supporting OCP B)	P75590-001
2 SFF Box 5 x4: type-o controller in Slot 14 OCP A	P75589-001
2 SFF Box 5 x4: type-o controller in Slot 15 OCP B	
2 SFF Box 5 x4 NVMe: type-p controller in Slot 1	P76443-001
2 SFF Box 5 x4 NVMe: type-p controller in Slot 2	P76443-001
2 SFF Box 5 x4 NVMe: type-o controller cable	P75589-001
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-p controller in Slot 1	P75593-001
2 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-p controller in Slot 2	P75593-001
4 SFF Boxes 1–2 (x2 BW) NVMe: type-o controller in Slot 14 OCP A	P75571-001
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-o controller in Slot 14 OCP A	P75571-001
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-o controller in Slot 15 OCP B	P75573-001
4 SFF Boxes 1–2 x4 NVMe to type-p controller in Slot 1	P75318-001 [1]
4 SFF Boxes 4–5 x4 NVMe: direct attach cables	P75567-001 P75278-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-o controller in Slot 14 OCP A	P75573-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-o controller in Slot 15 OCP B	P75571-001
4 SFF Boxes 4–5 x4: type-o controller in Slot 15 OCP B	P75589-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-p controller in Slot 1	P75572-001
4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-p controller in Slot 2	P75572-001
4 SFF Boxes 4–5 x4 NVMe to type-p controller in Slot 1	P75570-001 [1]
10 SFF Boxes 1–5 NVMe: type-p controller in Slot 1	P79152-001 [1] P79153-001 [1] P75275-001 [1]
Power cabling	—
4 LFF backplane power cable	P75565-001
8 SFF backplane power cable	P75566-001
2 SFF backplane power cable	869667-001

Component cabling	Cable part number
Stacked SFF / EDSFF backplane power cable in the 10 SFF / 20 E3.S server	P75316-001
Storage backup power cable	—
Energy pack cabling	—
Energy pack extension power cable	P45618-001
Optical drive cabling	—
Optical drive cable in the 4 LFF, 8 SFF, or 10 SFF / 20 E3.S server	P73776-002
Front I/O cabling	—
Front DisplayPort / USB cable in the 4 LFF, 8 SFF, or 10 SFF / 20 E3.S server	P73948-001
HPE NS204i-u Boot Device V2 cabling	—
HPE NS204i-u Boot Device V2 power cable	P48956-001
HPE NS204i-u Boot Device V2 signal cable	P74839-001
Riser cage HPE NS204i-u Boot Device V2 power cable	P54088-001
Riser cage HPE NS204i-u Boot Device V2 signal cable	P71913-001
OCP bandwidth enablement cabling	—
Slot 14 OCP A x16 enablement cable	P74890-001
CPU1 to Slot 15 OCP B x8 enablement cable	P74889-001
CPU2 to Slot 15 OCP B x8 / x16 enablement cable	P74891-001
Font OCP enablement cabling	—
Front OCP Bay 1 / 3 cable	P71942-001
Phy board cable	P73927-001
Miscellaneous component cabling	—
Serial port cable	P45623-001
Chassis intrusion detection switch cable	P47751-001
Front I/O cable (included in the right chassis ear assembly)	P71909-002
System Insight Display cable	P48971-001
Liquid cooling module cable	—

1 This configuration uses the controller cable with the MR932i-p storage controller.

Internal cabling management



Item	Description
1	Cable routing posts
2	Cable routing foams

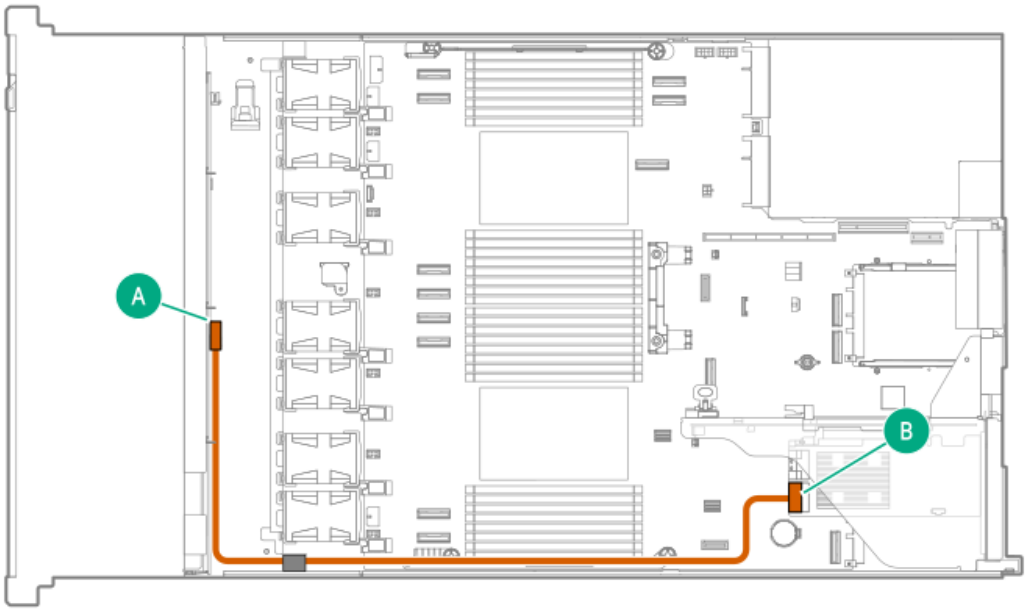
Storage cabling

Subtopics

4 LFF drive backplane cabling
8 SFF drive backplane cabling
8 + 2 SFF drive backplane cabling
4 E3.S stacked drive backplane cabling
2 SFF stacked drive backplane cabling
Storage controller backup power cabling

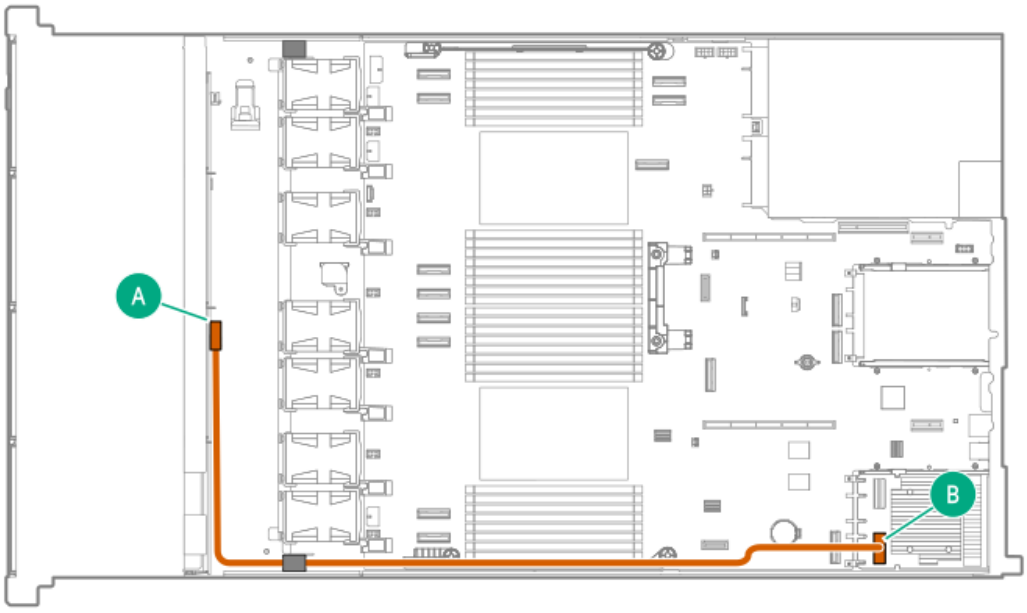
4 LFF drive backplane cabling

4 LFF Box 1: type-p controller in the primary riser



Cable part number	Color	From	To
P48970-001	Orange	Drive backplane	Slot 1 type-p controller Port 1i

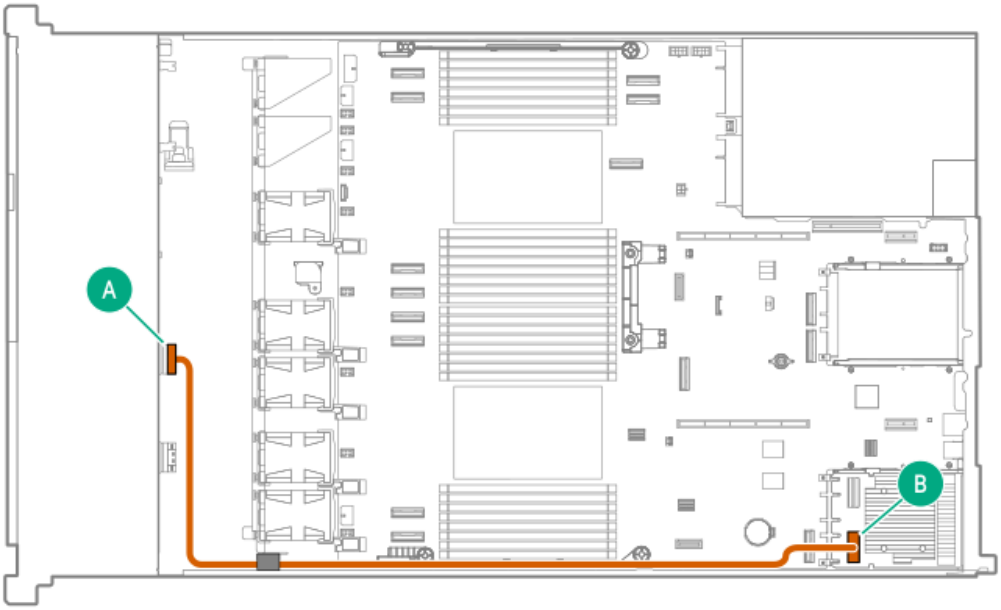
4 LFF Box 1: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P48958-001	Orange	Drive backplane	Slot 14 OCP A type-o controller Port 1i

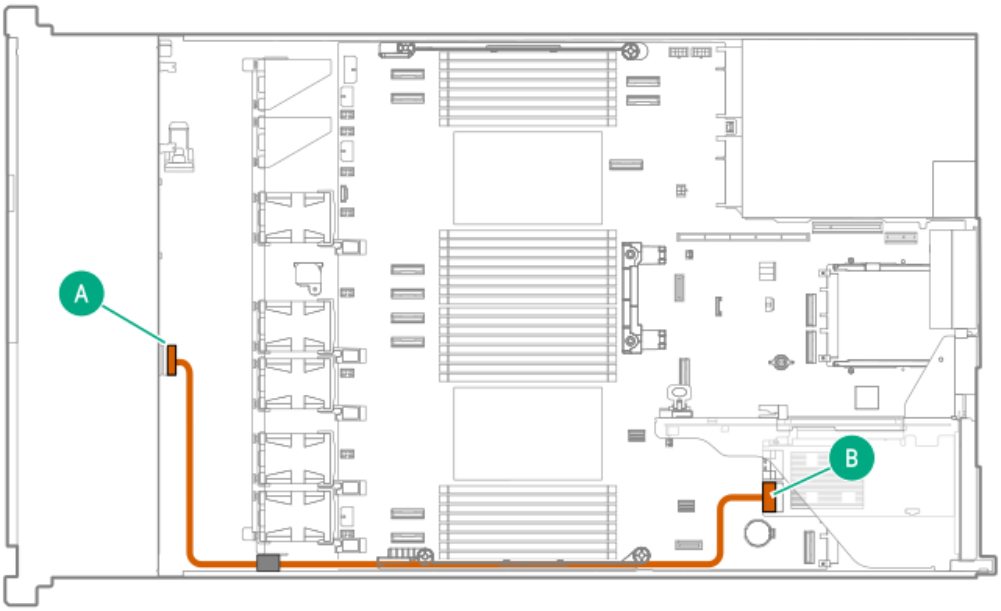
8 SFF drive backplane cabling

8 SFF Box 1 x1 NVMe controller cabling: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P48960-001	Orange	Drive backplane	Slot 14 OCP A type-o controller Port 1i

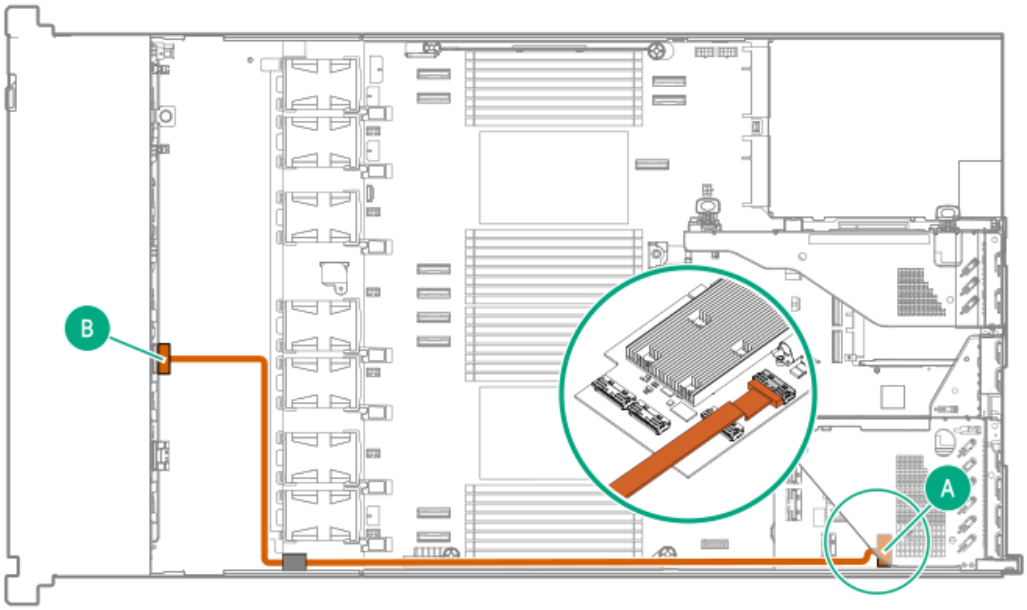
8 SFF Box 1 x1 NVMe controller cabling: type-p controller in the primary riser



Cable part number	Color	From	To
P45610-001	Orange	Drive backplane	Primary type-p controller Port 1i

8 SFF Box 1 x1 NVMe controller cabling: type-p controller in the primary riser

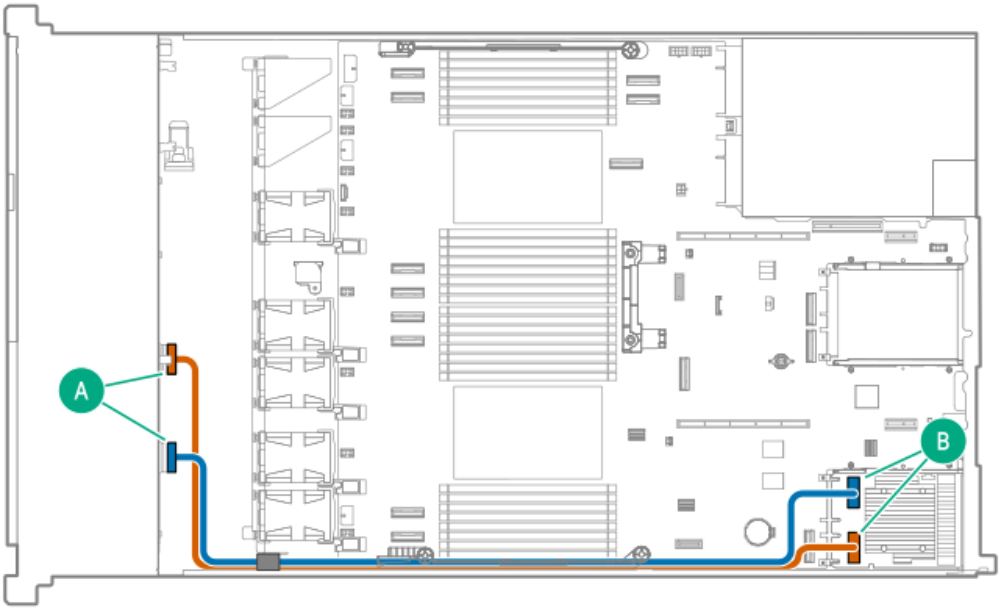
MR932i-p:



Cable part number	Color	From	To
P79151-001	Orange	Drive backplane	Primary type-p controller Port 3i

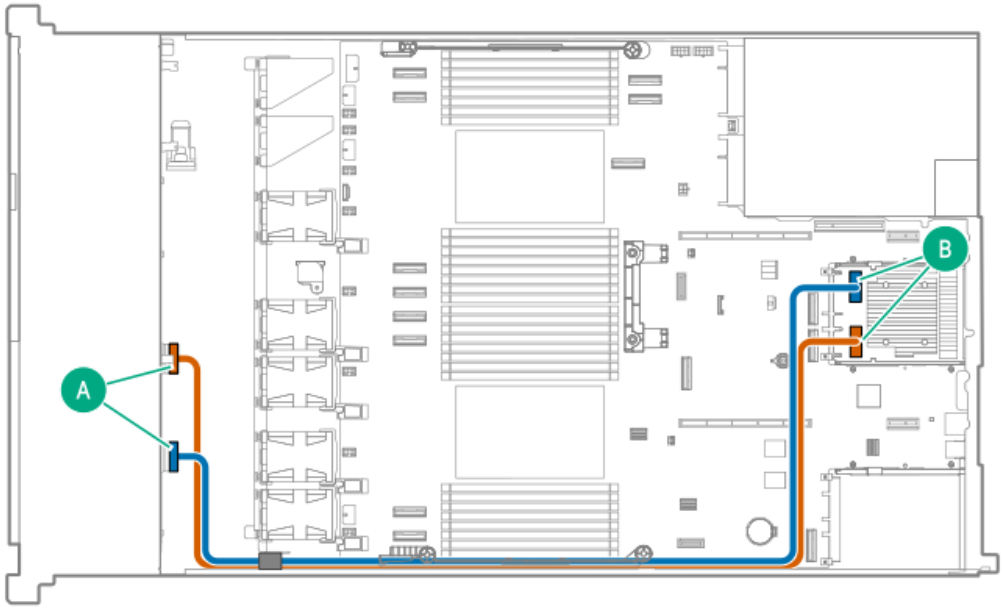
8 + 2 SFF drive backplane cabling

8 SFF x1 NVMe + 2 SFF x4 NVMe controller cabling: type-o controller in Slot 14 OCP A



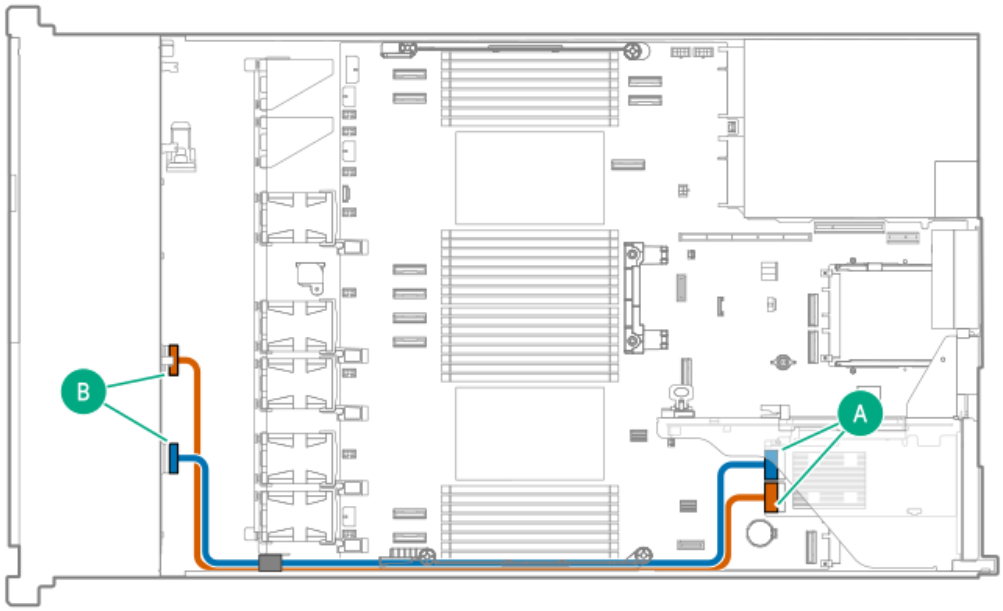
Cable part number	Color	From	To
P48960-001	Orange	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i
P48962-001	Blue	2 SFF drive backplane	Slot 14 OCP A type-o controller Port 2i

8 SFF x1 NVMe + 2 SFF x4 NVMe controller cabling: type-o controller in Slot 15 OCP B



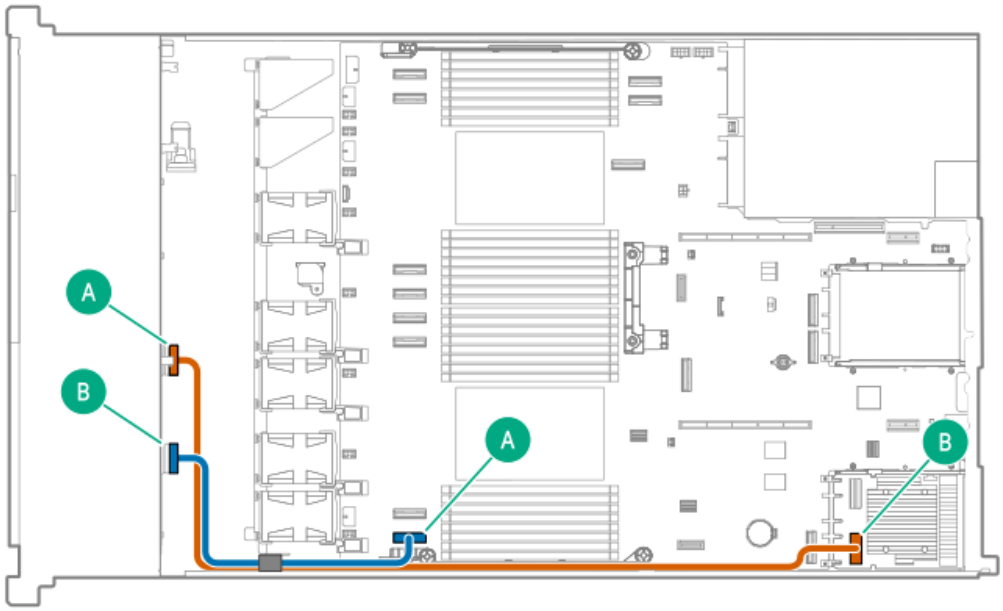
Cable part number	Color	From	To
P55357-001	Orange	8 SFF drive backplane	Slot 15 OCP B type-o controller Port 1i
P48961-001	Blue	2 SFF drive backplane	Slot 15 OCP B type-o controller Port 2i

8 SFF x1 NVMe + 2 SFF x4 NVMe controller cabling: type-p controller in Slot 1



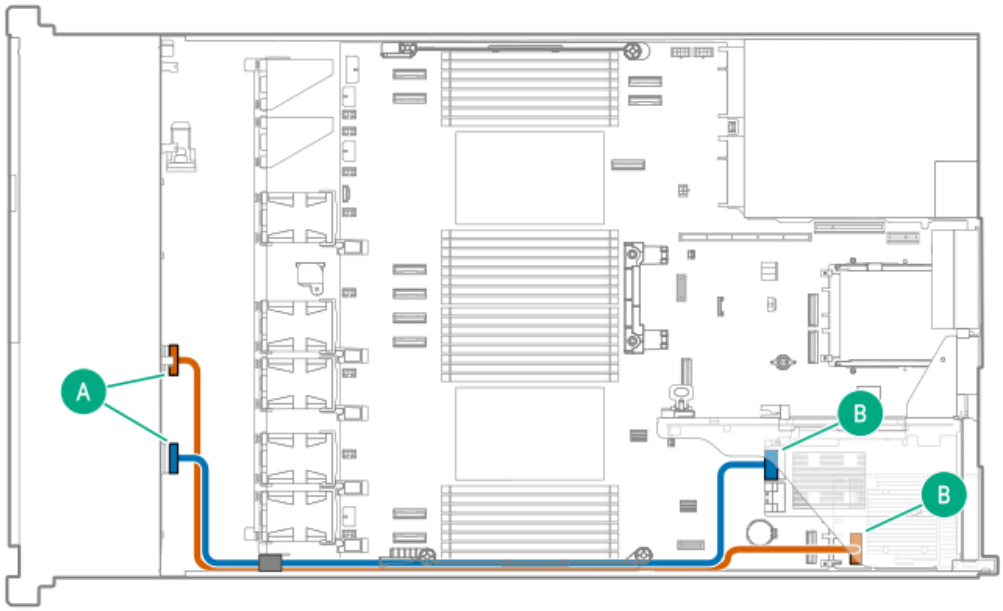
Cable part number	Color	From	To
P45610-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 1i
P45611-001	Blue	2 SFF drive backplane	Slot 1 type-p controller Port 2i

8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 direct attach



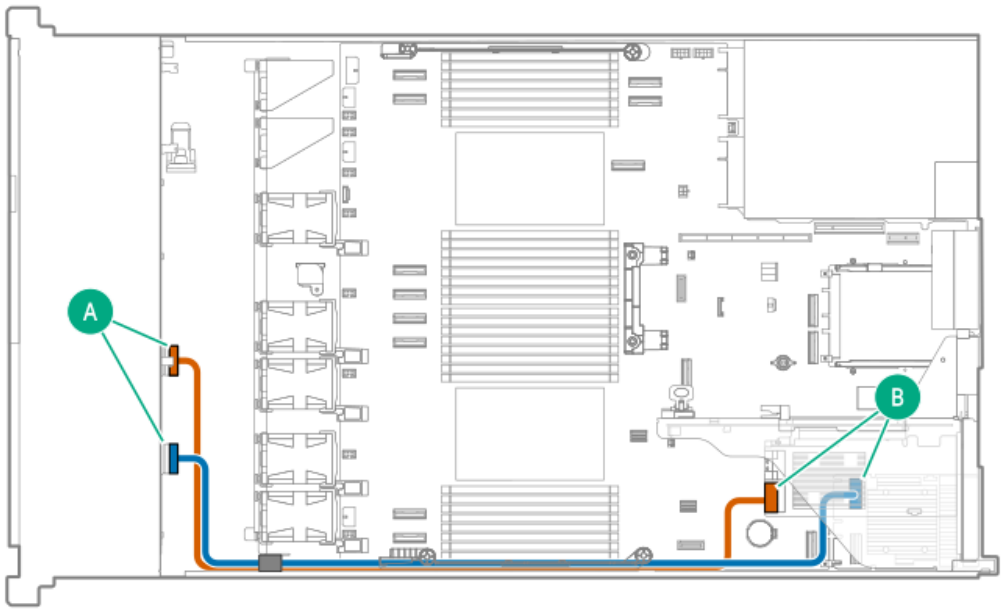
Cable part number	Color	From	To
P48960-001	Orange	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i
P75946-001	Blue	2 SFF drive backplane	MCIO port 1

8 SFF x1 NVMe to type-o controller + 2 SFF x4 NVMe to type-p controller



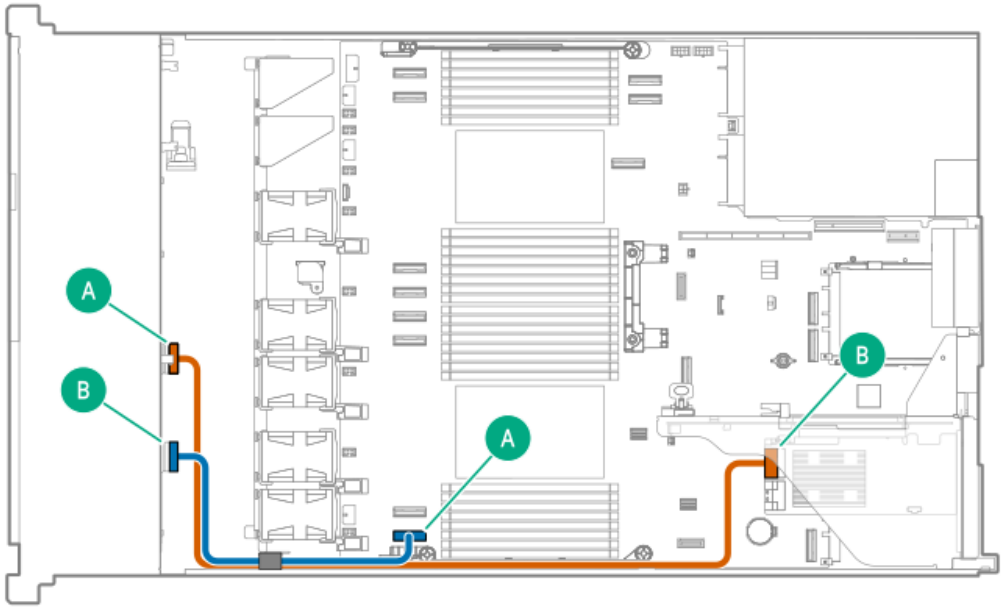
Cable part number	Color	From	To
P48960-001	Orange	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i
P45611-001	Blue	2 SFF drive backplane	Slot 1 type-p controller Port 2i

8 SFF x1 NVMe to Slot 1 type-p controller + 2 SFF x4 NVMe to type-o controller in Slot 14 OCP A



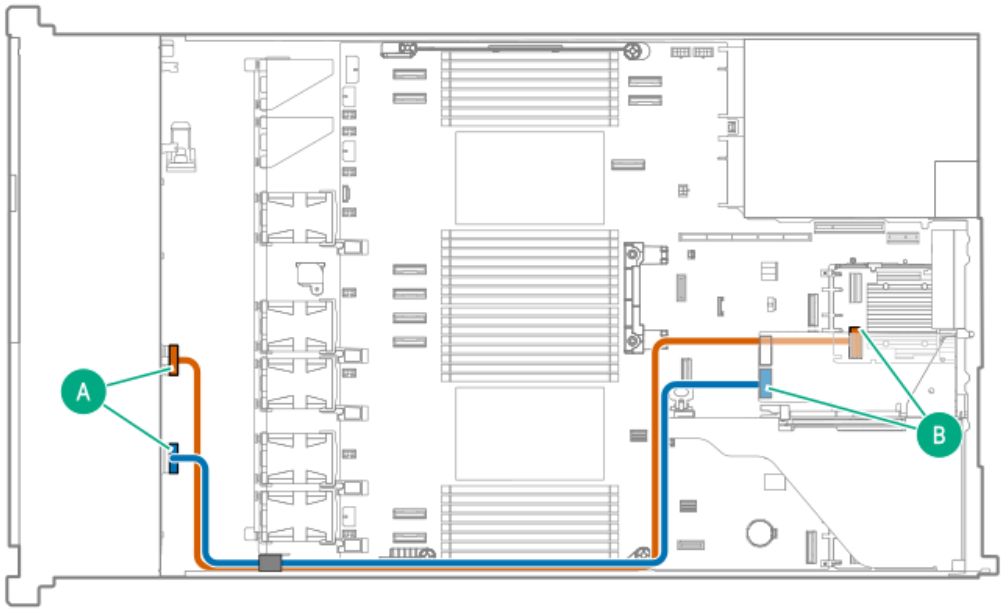
Cable part number	Color	From	To
P45610-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 1i
P48962-001	Blue	2 SFF drive backplane	Slot 14 OCP A type-o controller Port 2i

8 SFF x1 NVMe to Slot 1 type-p controller + 2 SFF direct attach



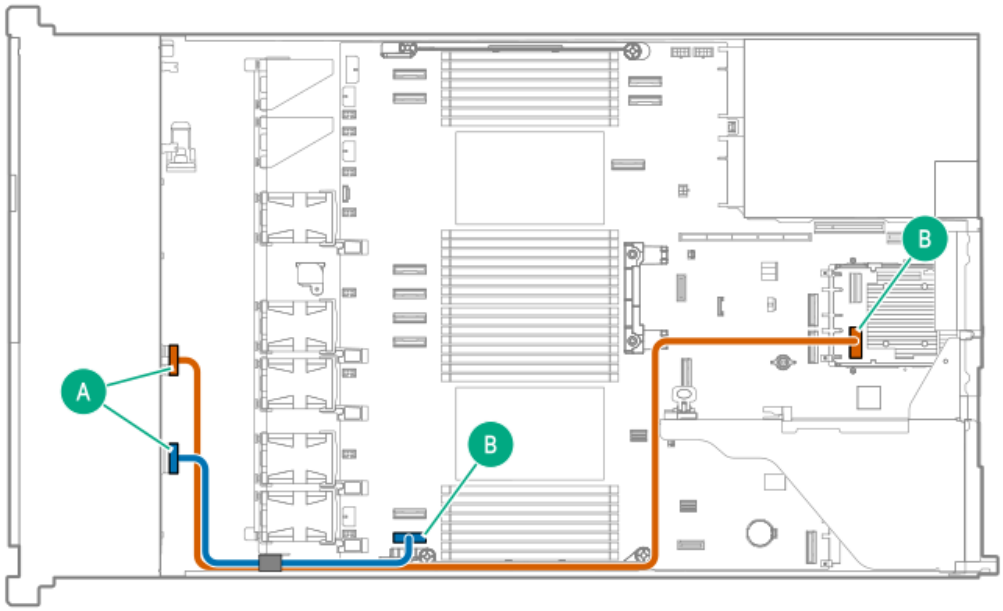
Cable part number	Color	From	To
P45610-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 1i
P75946-001	Blue	2 SFF drive backplane	MCIO port 1

8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF x4 NVMe to type-p controller in Slot 2



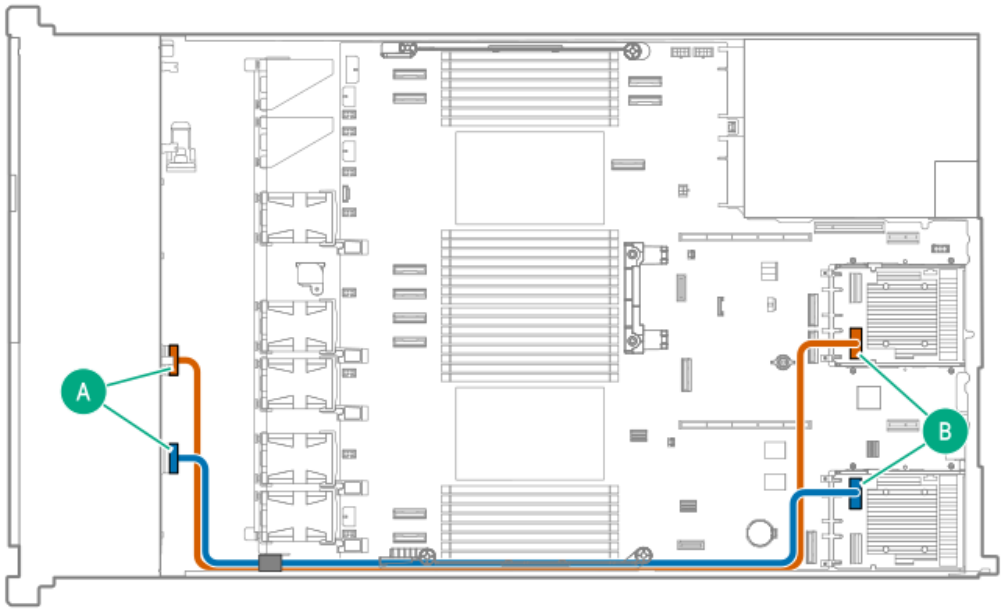
Cable part number	Color	From	To
P55357-001	Orange	8 SFF drive backplane	Slot 15 OCP B type-o controller Port 1i
P45611-001	Blue	2 SFF drive backplane	Slot 2 type-p controller Port 2i

8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF x4 NVMe direct attach



Cable part number	Color	From	To
P55357-001	Orange	8 SFF drive backplane	Slot 15 OCP B type-o controller Port 1i
P75946-001	Blue	2 SFF drive backplane	MCIO port 1

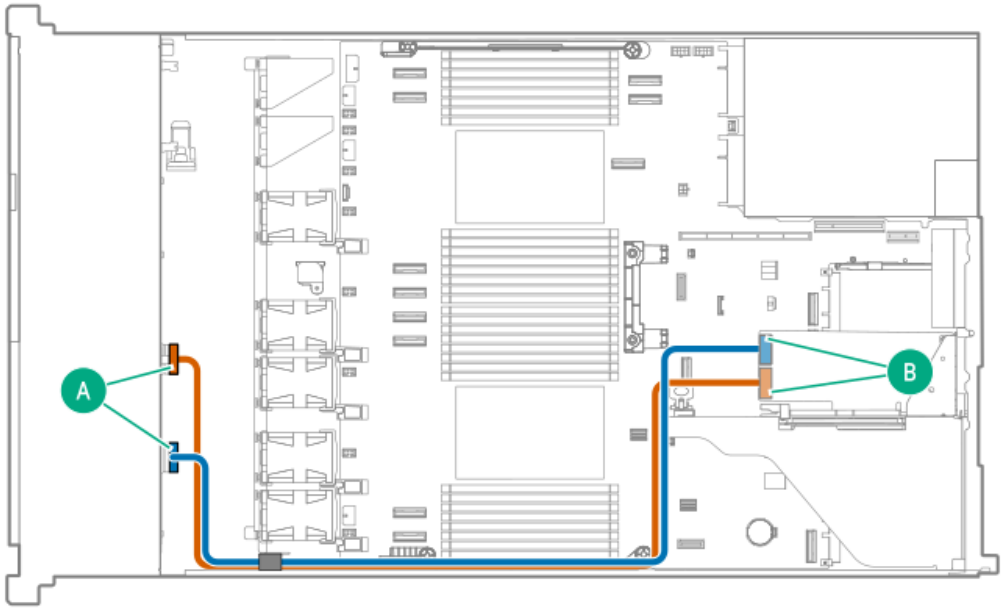
8 SFF x1 NVMe to type-o controller in Slot 15 OCP B + 2 SFF x4 NVMe to type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P55357-001	Orange	8 SFF drive backplane	Slot 15 OCP B type-o controller Port 1i
P48962-001	Blue	2 SFF drive backplane	Slot 14 OCP A type-o controller Port 2i [1]

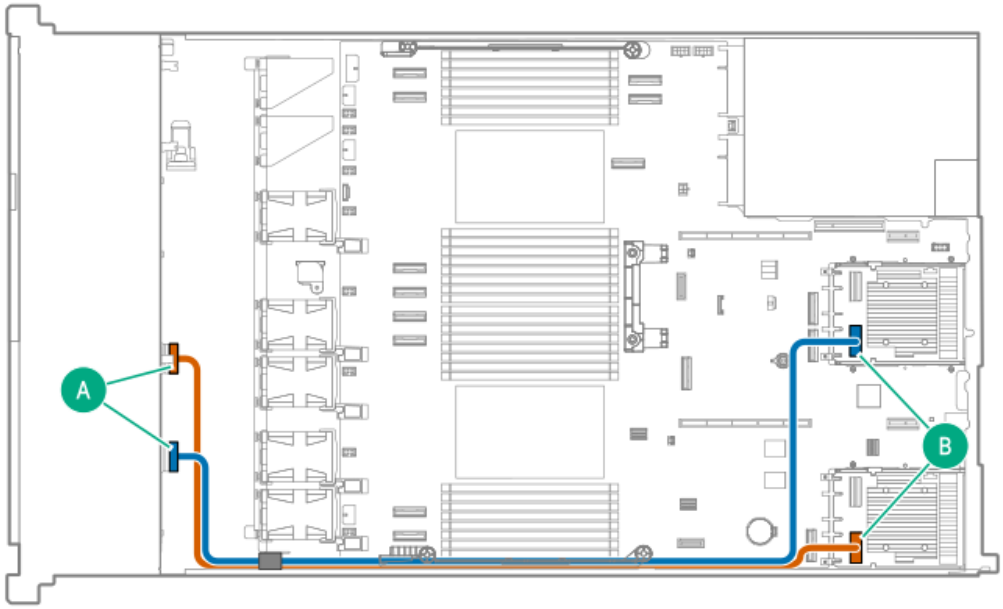
1 When the MR408i-o is installed in OCP A, the cable is routed to Port 1i of the controller.

8 SFF x1 NVMe + 2 SFF x4 NVMe to type-p controller in Slot 2



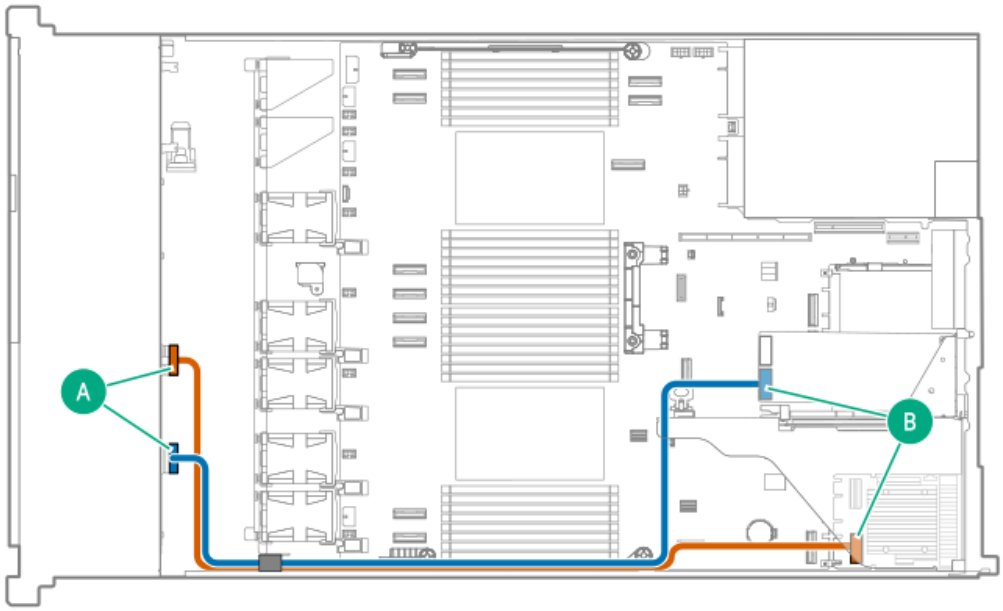
Cable part number	Color	From	To
P45610-001	Orange	8 SFF drive backplane	Slot 2 type-p controller Port 2i
P45611-001	Blue	2 SFF drive backplane	Slot 2 type-p controller Port 1i

8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 NVMe to type-o controller in Slot 15 OCP B



Cable part number	Color	From	To
P48960-001	Orange	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i
P48961-001	Blue	2 SFF drive backplane	Slot 15 OCP B type-o controller Port 1i

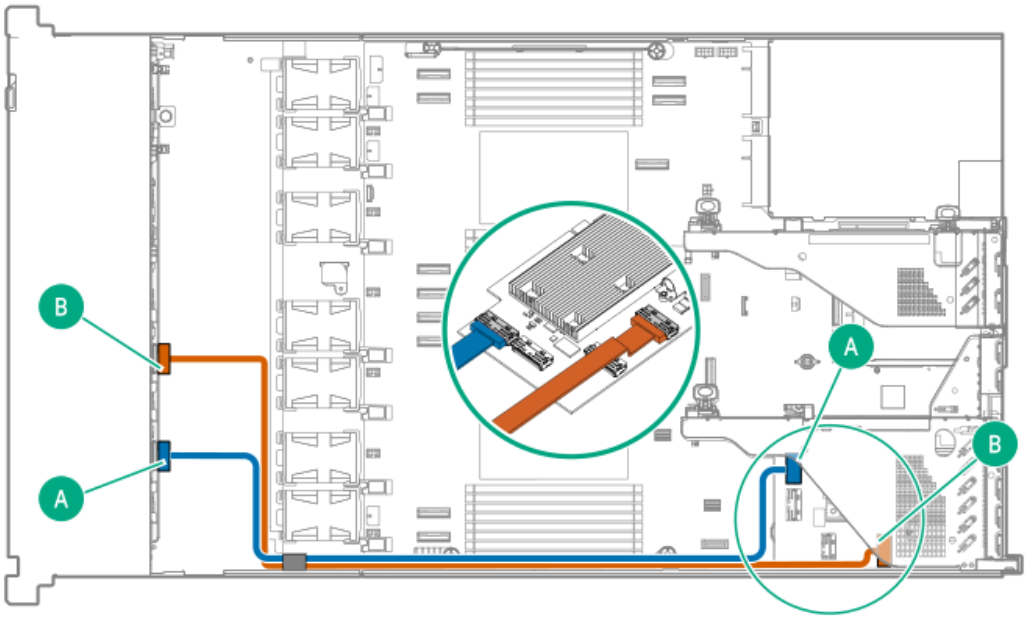
8 SFF x1 NVMe to type-o controller in Slot 14 OCP A + 2 SFF x4 NVMe to Slot 2 type-p controller



Cable part number	Color	From	To
P48960-001	Orange	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i
P45611-001	Blue	2 SFF drive backplane	Slot 2 type-p controller Port 2i

8 SFF x1 NVMe + 2 SFF x4 NVMe to type-p controller in Slot 1

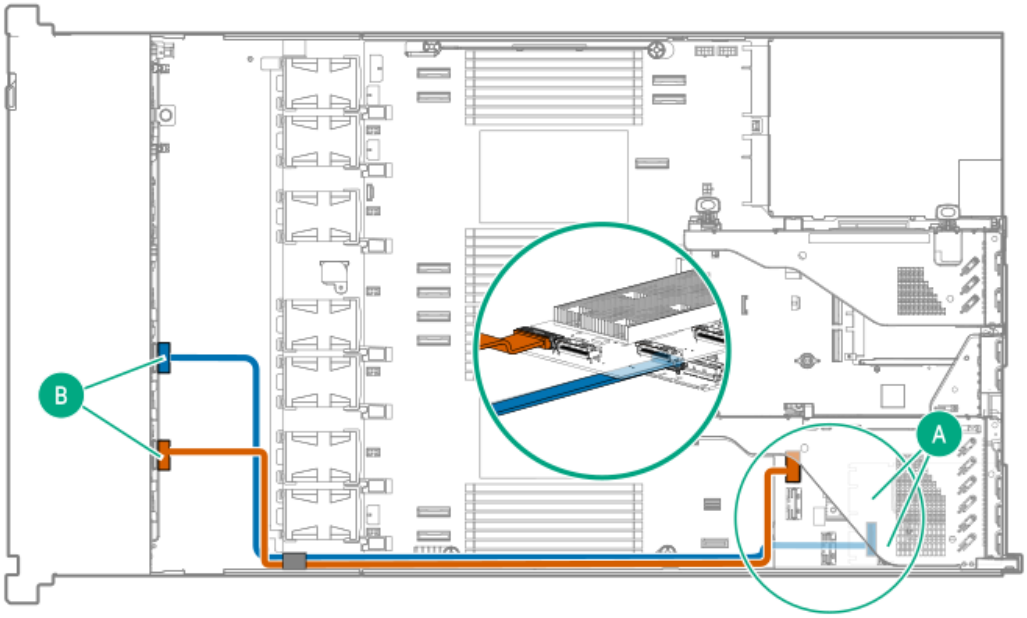
MR932i-p:



Cable part number	Color	From	To
P79151-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 3i
P76443-001	Blue	2 SFF drive backplane	Slot 1 type-p controller Port 2i

8 SFF x1 NVMe to type-o controller + 2 SFF x4 NVMe to type-p controller in Slot 1

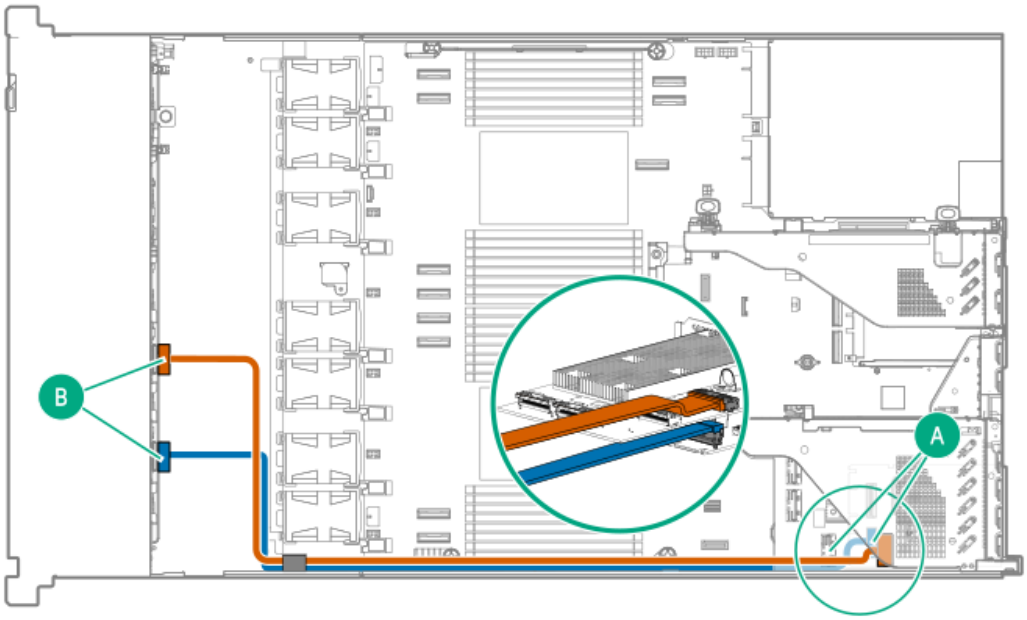
MR932i-p:



Cable part number	Color	From	To
P76443-001	Orange	2 SFF drive backplane	Slot 1 type-p controller Port 2i
P48960-001	Blue	8 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i

8 SFF x1 NVMe to type-p controller in Slot 1 + 2 SFF x4 NVMe to type-o controller

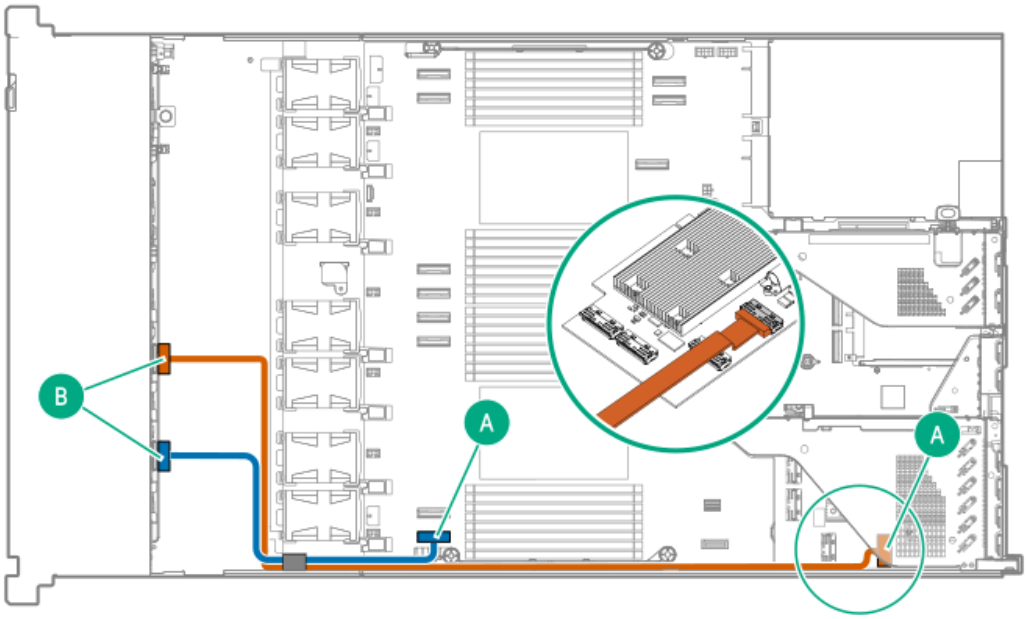
MR932i-p:



Cable part number	Color	From	To
P79151-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 3i
P48962-001	Blue	2 SFF drive backplane	Slot 14 OCP A type-o controller Port 1i

8 SFF x1 NVMe to type-p controller in Slot 1 + 2 SFF x4 NVMe direct attach

MR932i-p:



Cable part number	Color	From	To
P79151-001	Orange	8 SFF drive backplane	Slot 1 type-p controller Port 3i
P75946-001	Blue	2 SFF drive backplane	MCIO port 1

4 E3.S stacked drive backplane cabling

The 4 E3.S stacked drive backplane is supported in the 10 SFF / 20 E3.S server or servers using the mixed drive type configuration.

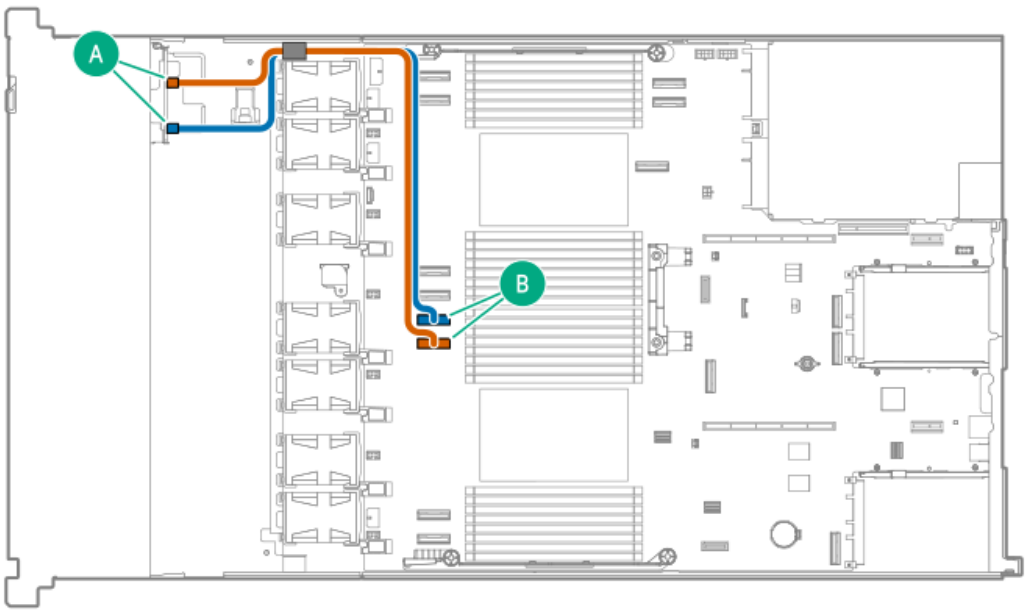
Subtopics

Drive Box 1 cabling
Drive Box 2 cabling
Drive Box 3 cabling
Drive Box 4 cabling
Drive Box 5 cabling
Drive box cabling for Boxes 1–2
Drive box cabling for boxes 1 and 4
Drive box cabling for boxes 1 and 5
Drive box cabling for boxes 4–5

Drive Box 1 cabling

4 EDSFF Box 1: direct attach (unbalanced, 1 CPU)

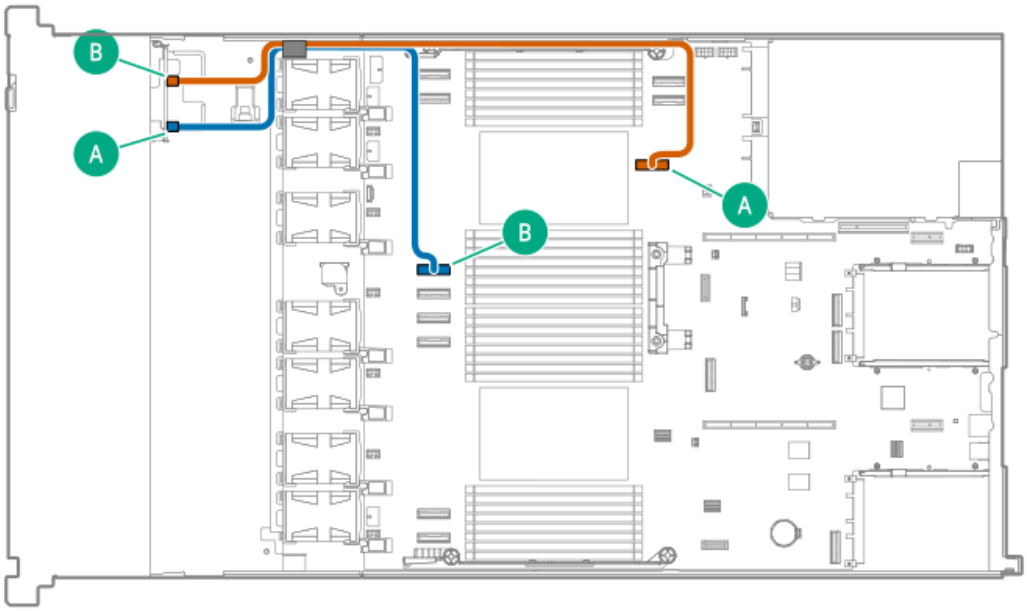
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75568-001	Orange	Drive backplane port 1	MCIO port 3
P75568-001	Blue	Drive backplane port 2	MCIO port 4

4 EDSFF Box 1: direct attach (unbalanced)

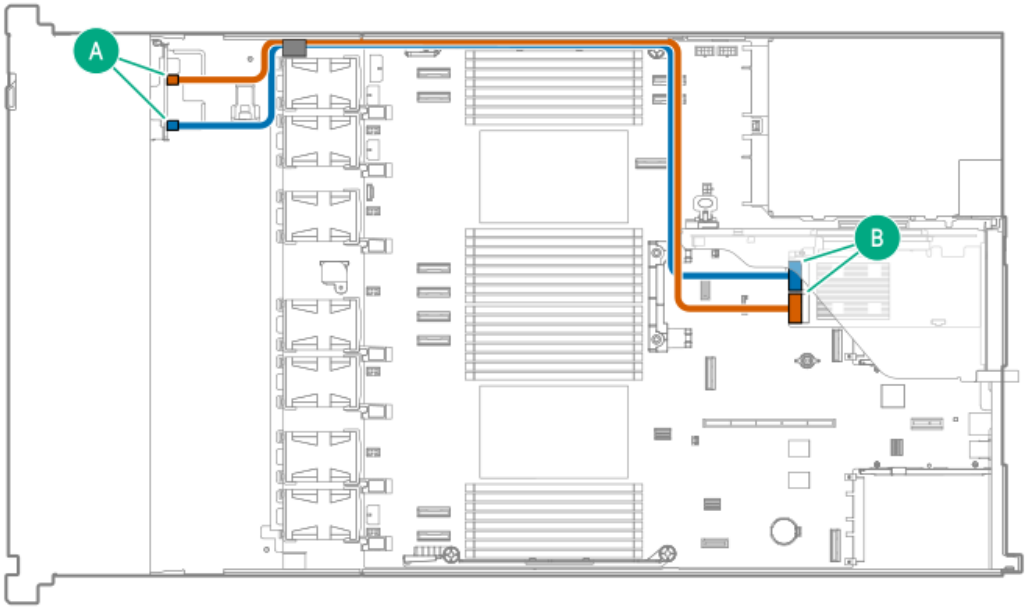
This cable routing is compatible with a dual-processor configuration.



Cable part number	Color	From	To
P75568-001	Orange	Drive backplane port 1	MCIO port 11
P75278-001	Blue	Drive backplane port 2	MCIO port 6

4 EDSFF Box 1: Type-p controller in the secondary riser

This configuration supports the closed-loop liquid cooling kit.

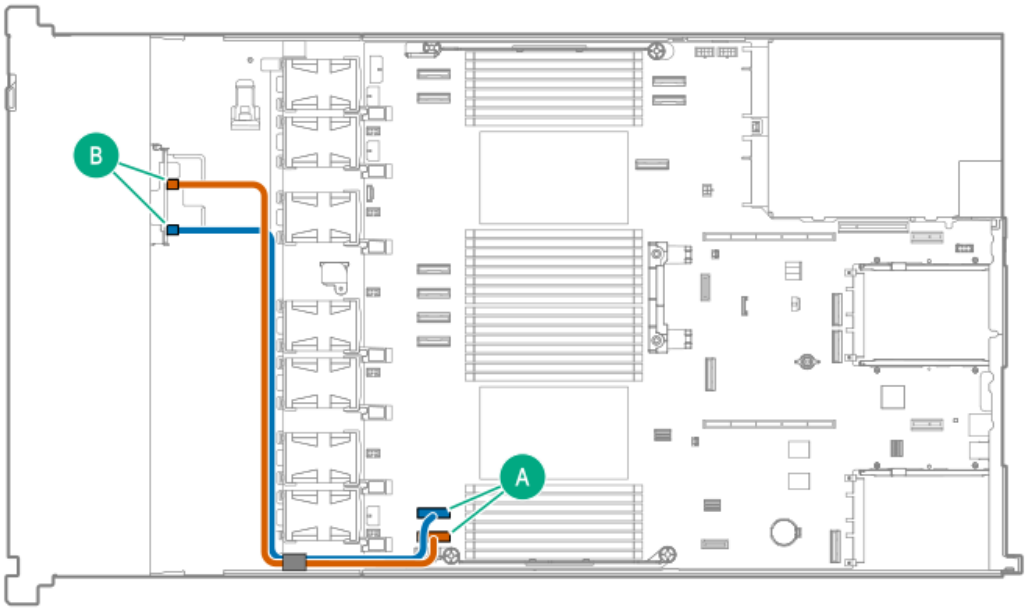


Cable part number	Color	From	To
P74805-001	Orange	Drive backplane port 1	Slot 3 type-p controller Port 1i
P74805-001	Blue	Drive backplane port 2	Slot 3 type-p controller Port 2i

Drive Box 2 cabling

4 EDSFF Box 2: direct attach (unbalanced, 1 CPU)

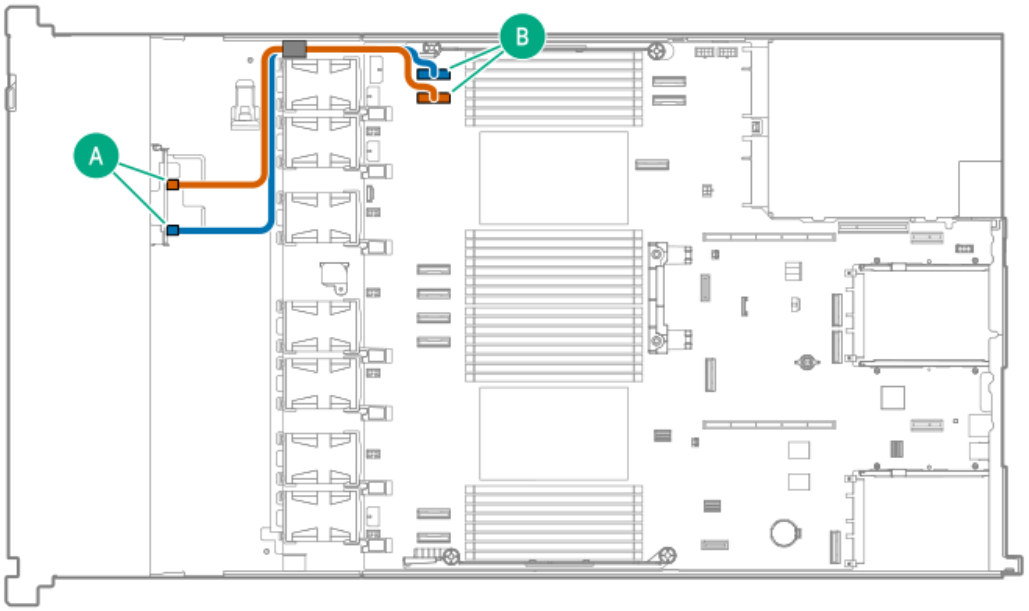
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75567-001	Orange	Drive backplane port 1	MCIO port 1
P75567-001	Blue	Drive backplane port 2	MCIO port 2

4 EDSFF Box 2: direct attach (unbalanced)

This cable routing is compatible with a dual-processor configuration.

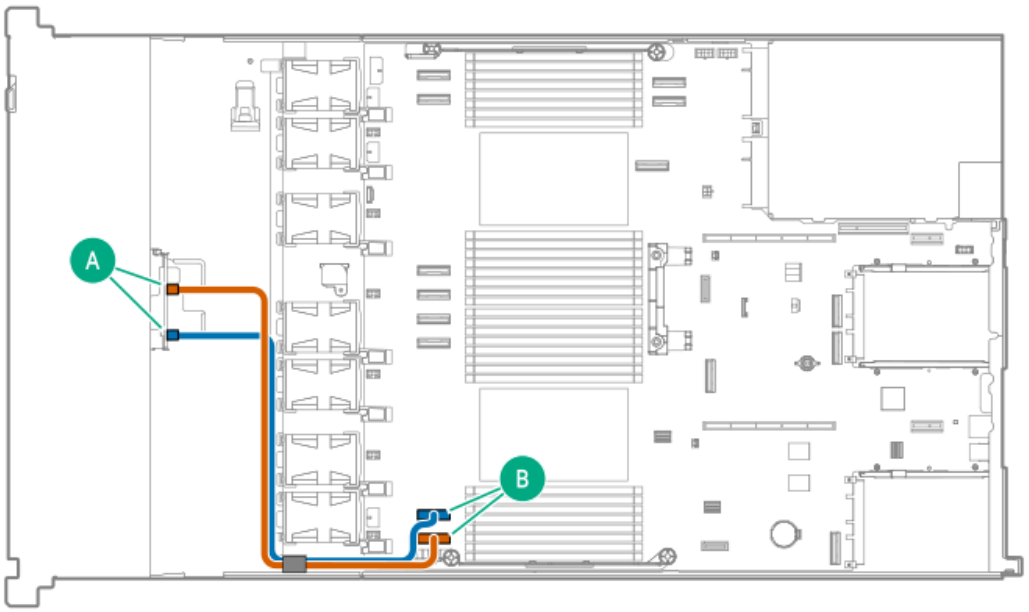


Cable part number	Color	From	To
P75317-001	Orange	Drive backplane port 1	MCIO port 7
P75317-001	Blue	Drive backplane port 2	MCIO port 8

Drive Box 3 cabling

4 EDSFF Box 3 x4 NVMe: direct attach

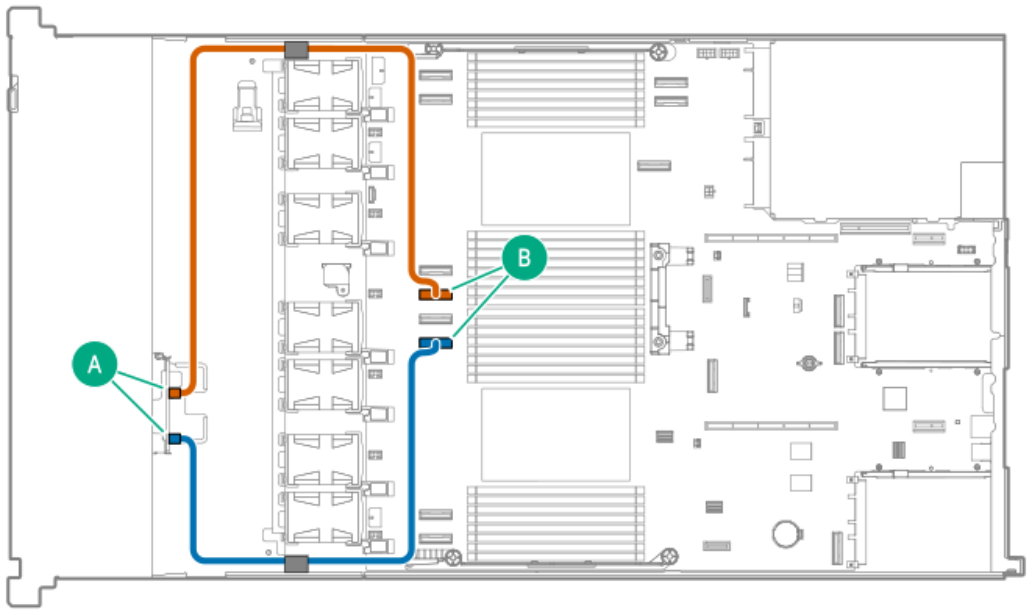
This cable routing is compatible with a dual-processor configuration.



Cable part number	Color	From	To
P75278-001	Orange	Drive backplane port 1	MCIO port 1
P75278-001	Blue	Drive backplane port 2	MCIO port 2

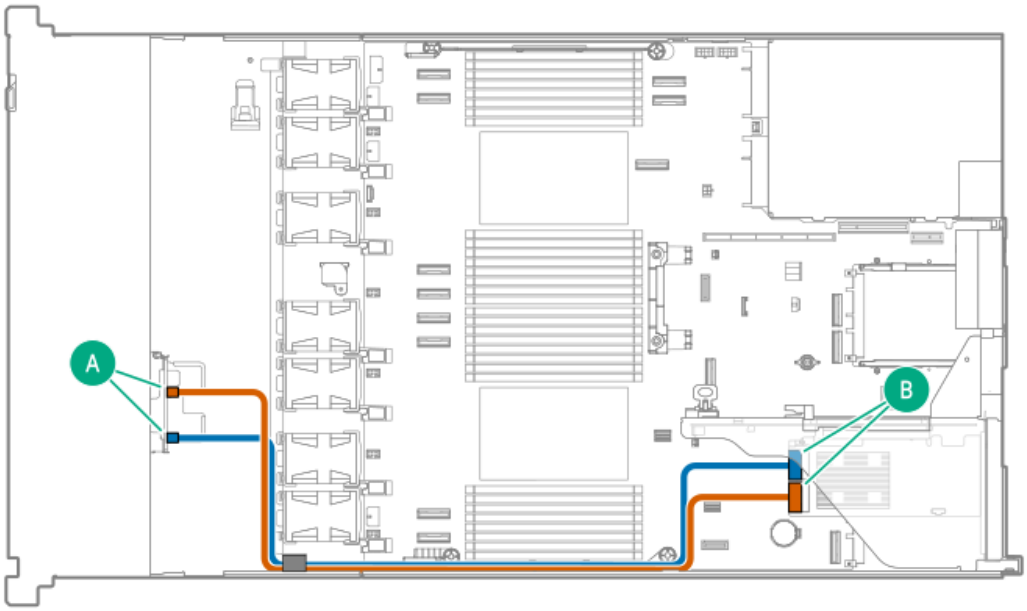
Drive Box 4 cabling

4 EDSFF Box 4 x4 NVMe: direct attach



Cable part number	Color	From	To
P74806-001	Orange	Drive backplane port 1	MCIO port 5
P75278-001	Blue	Drive backplane port 2	MCIO port 3

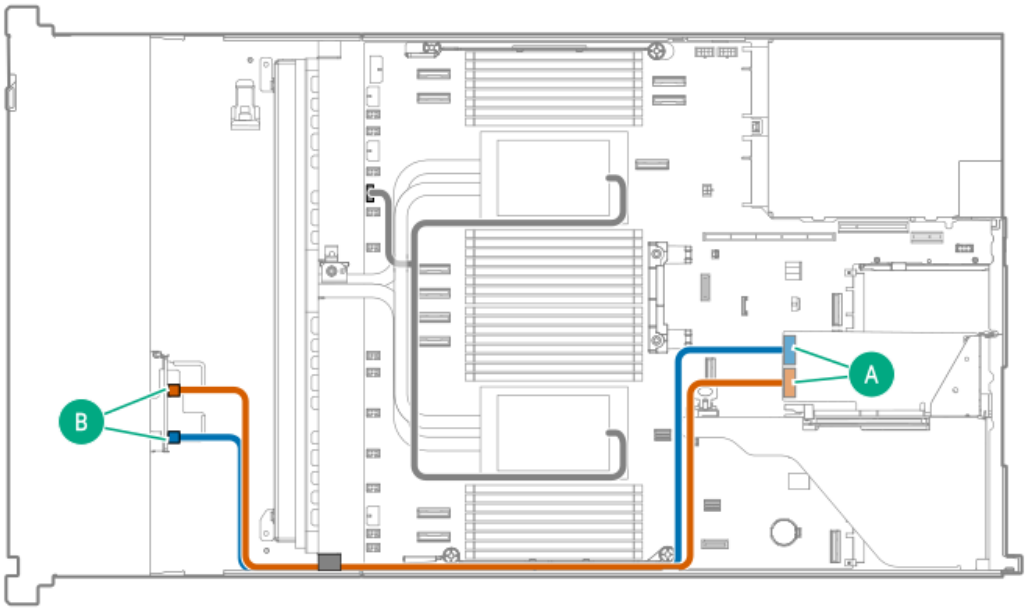
4 EDSFF Box 4 x4 NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P75590-001	Orange	Drive backplane port 1	Primary type-p controller Port 1i
	Blue	Drive backplane port 2	Primary type-p controller Port 2i

4 EDSFF Box 4 x4 NVMe: type-p controller in Slot 2

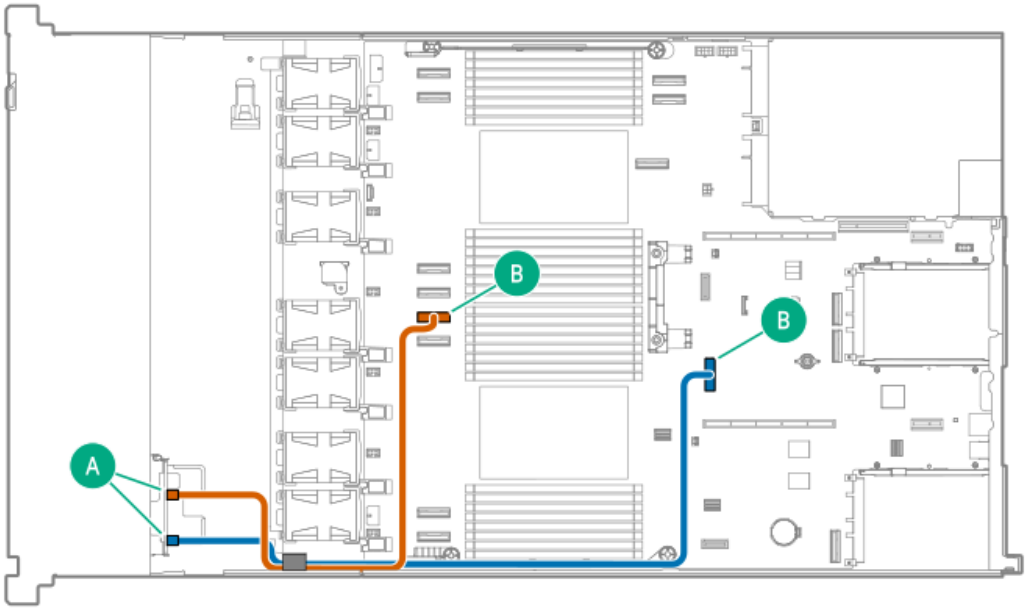
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75590-001	Orange	Drive backplane port 1	Primary type-p controller Port 2i
	Blue	Drive backplane port 2	Primary type-p controller Port 1i

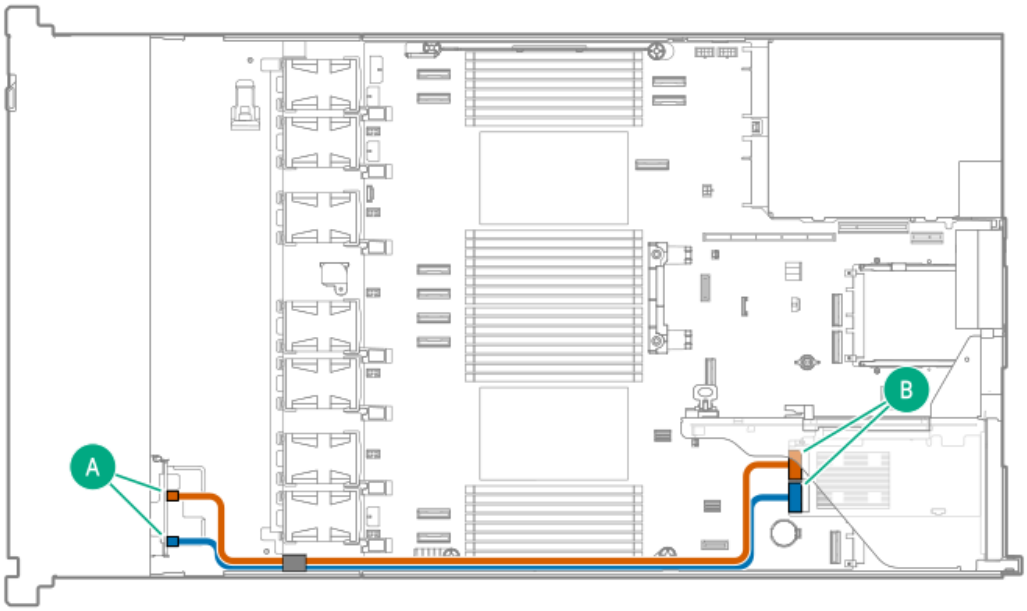
Drive Box 5 cabling

4 EDSFF Box 5 x4 NVMe: direct attach



Cable part number	Color	From	To
P75278-001	Orange	Drive backplane port 1	MCIO port 4
P75567-001	Blue	Drive backplane port 2	MCIO port 12

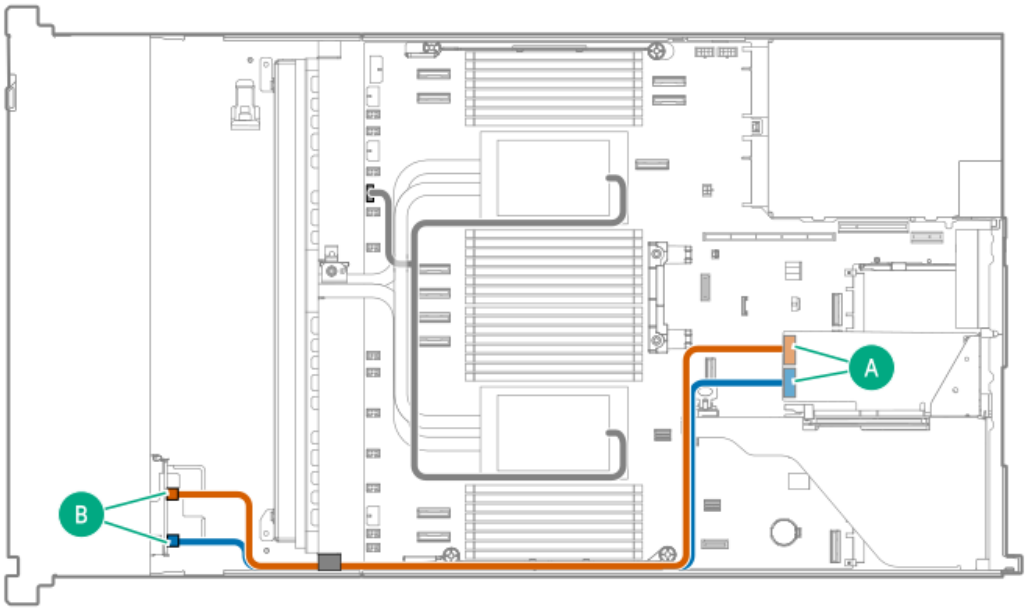
4 EDSFF Box 5 x4 NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P76443-001	Orange	Drive backplane port 1	Slot 1 type-p controller Port 2i
P75574-001	Blue	Drive backplane port 2	Slot 1 type-p controller Port 1i

4 EDSFF Box 5 x4 NVMe: type-p controller in Slot 2

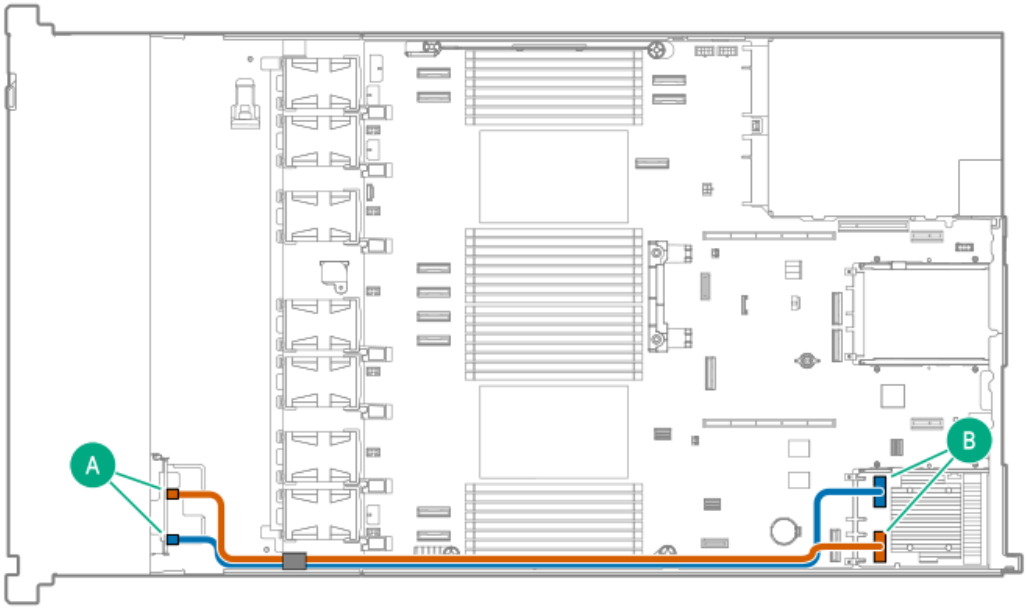
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P76443-001	Orange	Drive backplane port 1	Slot 2 type-p controller Port 1i
P75574-001	Blue	Drive backplane port 2	Slot 1 type-p controller Port 2i

4 EDSFF Box 5 x4 NVMe: type-o controller

This cable routing is compatible with a dual-processor configuration.

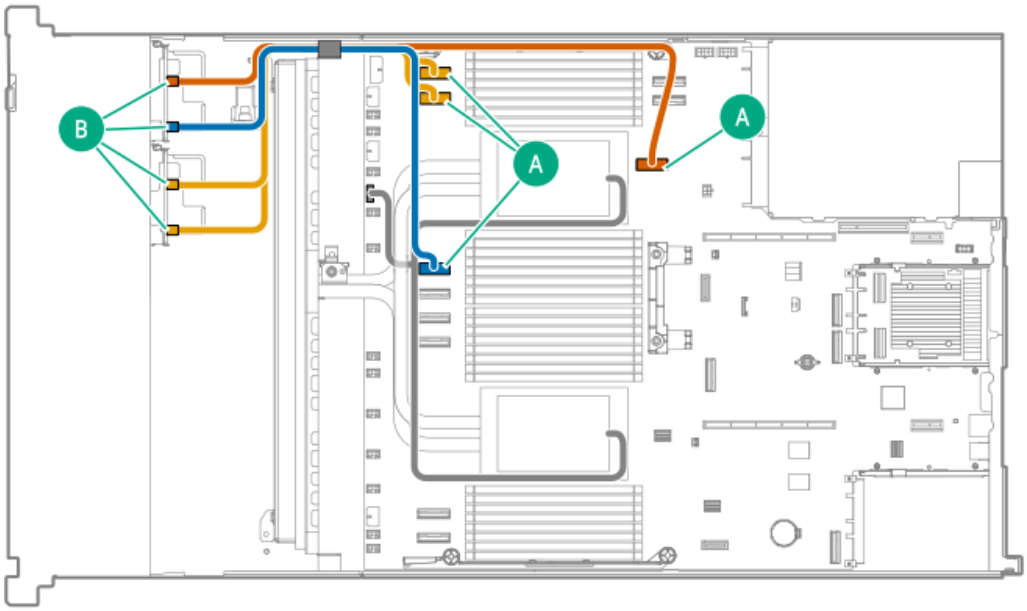


Cable part number	Color	From	To
P75589-001	Orange	Drive backplane port 1	Type-o controller Port 1i in Slot 14 OCP A
P75589-001	Blue	Drive backplane port 2	Type-o controller Port 2i in Slot 14 OCP A

Drive box cabling for Boxes 1–2

8 EDSFF Boxes 1–2: direct attach

This configuration supports the closed-loop liquid cooling kit.

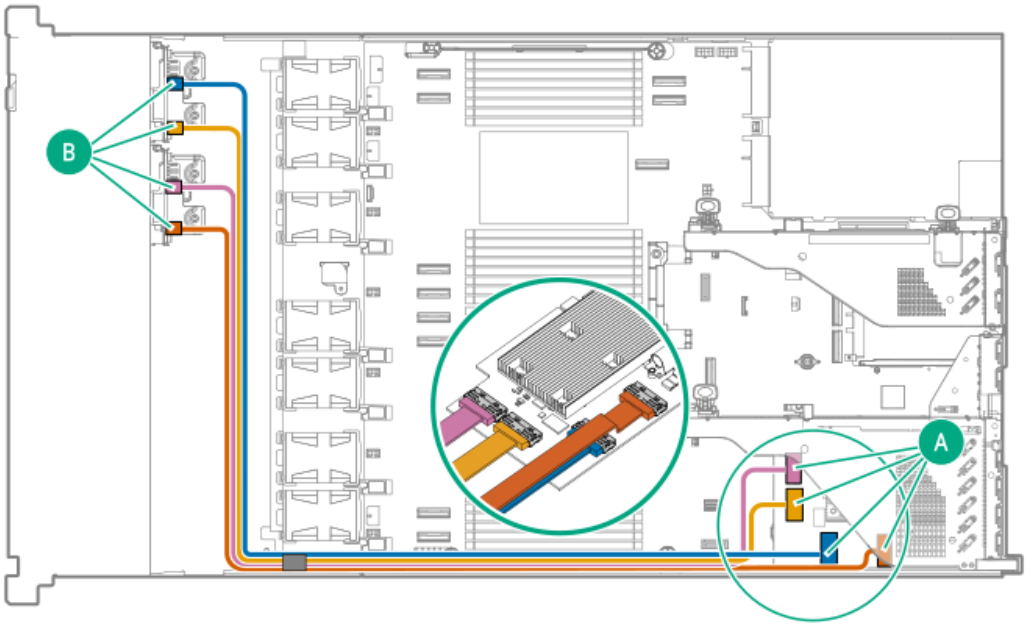


Cable part number	Color	From	To
P75568-001	Orange	Box 1: Drive backplane port 1	MCIO port 11
P75278-001	Blue	Box 1: Drive backplane port 2	MCIO port 6
P75317-001	Gold	Box 2: Drive backplane port 1	MCIO port 7
		Box 2: Drive backplane port 2	MCIO port 8

8 EDSFF Boxes 1–2 x4 NVMe to type-p controller in Slot 1 (1 CPU)

This cable routing is compatible with a single-processor configuration.

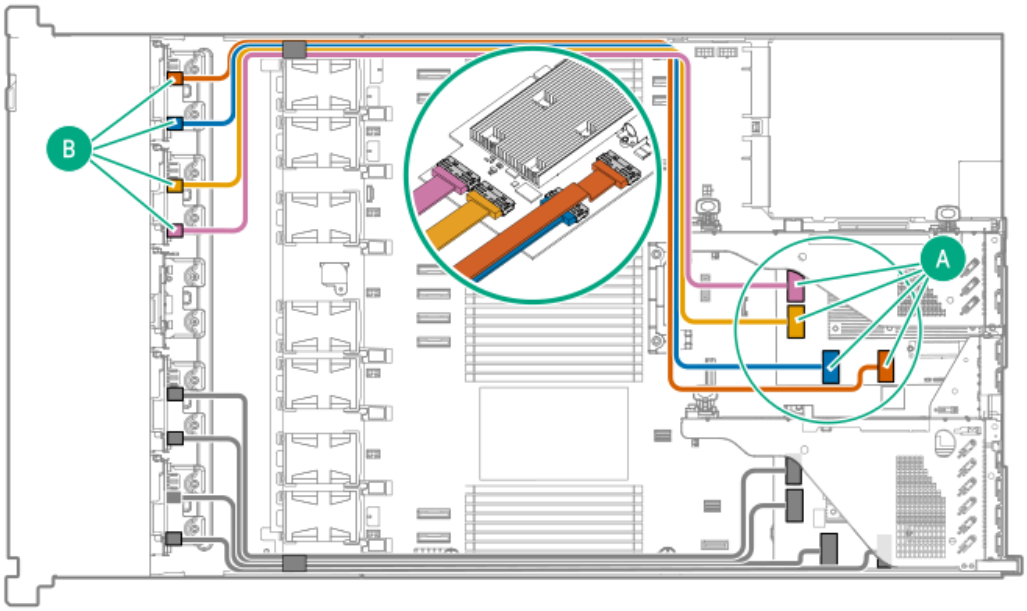
MR932i-p:



Cable part number	Color	From	To
P75318-001	Blue	Box 1: Drive backplane port 1	Slot 1 type-p controller Port 4i
	Gold	Box 1: Drive backplane port 2	Slot 1 type-p controller Port 1i
	Pink	Box 2: Drive backplane port 1	Slot 1 type-p controller Port 2i
	Orange	Box 2: Drive backplane port 2	Slot 1 type-p controller Port 3i

8 EDSFF x4 Boxes 1–2 NVMe to type-p controller in Slot 3

MR932i-p:



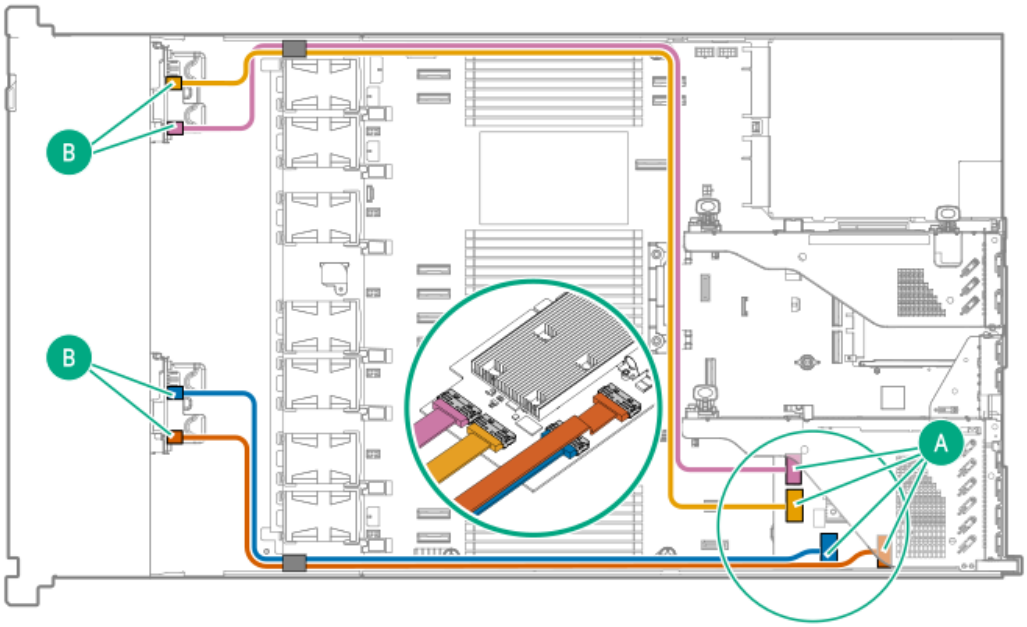
Cable part number	Color	From	To
P75318-001	Orange	Box 1: Drive backplane port 1	Slot 3 type-p controller Port 3i
	Blue	Box 1: Drive backplane port 2	Slot 3 type-p controller Port 4i
	Gold	Box 2: Drive backplane port 1	Slot 3 type-p controller Port 1i
	Pink	Box 2: Drive backplane port 2	Slot 3 type-p controller Port 2i

Drive box cabling for boxes 1 and 4

8 EDSFF Boxes 1 and 4 x4 NVMe to type-p controller in Slot 1 (1 CPU)

This cable routing is compatible with a single-processor configuration.

MR932i-p:



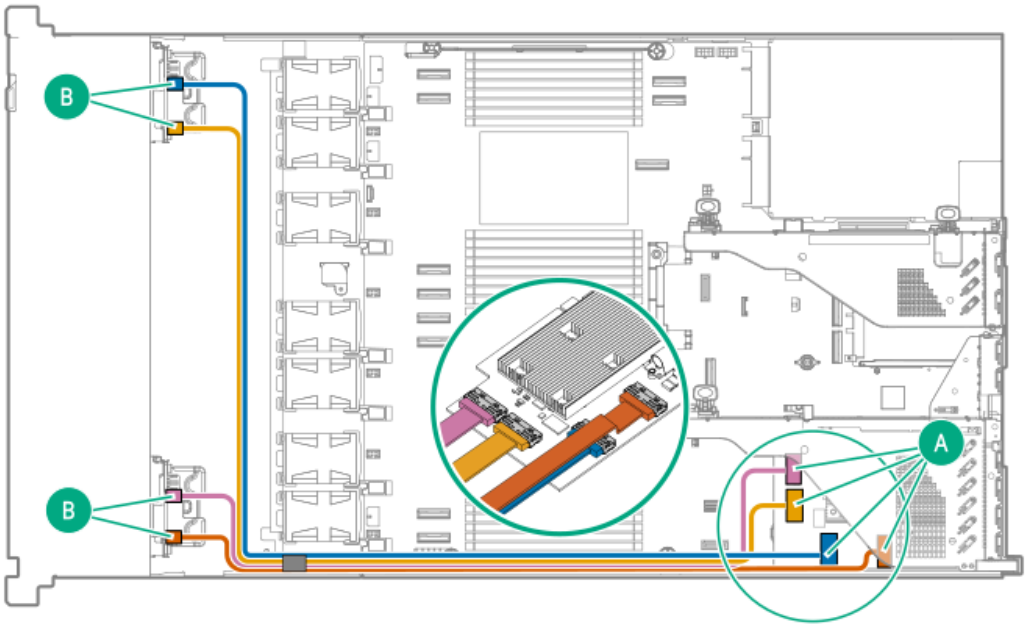
Cable part number	Color	From	To
P75318-001	Gold	Box 1: Drive backplane port 1	Slot 1 type-p controller Port 1i
	Pink	Box 1: Drive backplane port 2	Slot 1 type-p controller Port 2i
P75570-001	Blue	Box 4: Drive backplane port 1	Slot 1 type-p controller Port 4i
	Orange	Box 4: Drive backplane port 2	Slot 1 type-p controller Port 3i

Drive box cabling for boxes 1 and 5

8 EDSFF Boxes 1 and 5 x4 NVMe to type-p controller in Slot 1 (1 CPU)

This cable routing is compatible with a single-processor configuration.

MR932i-p:

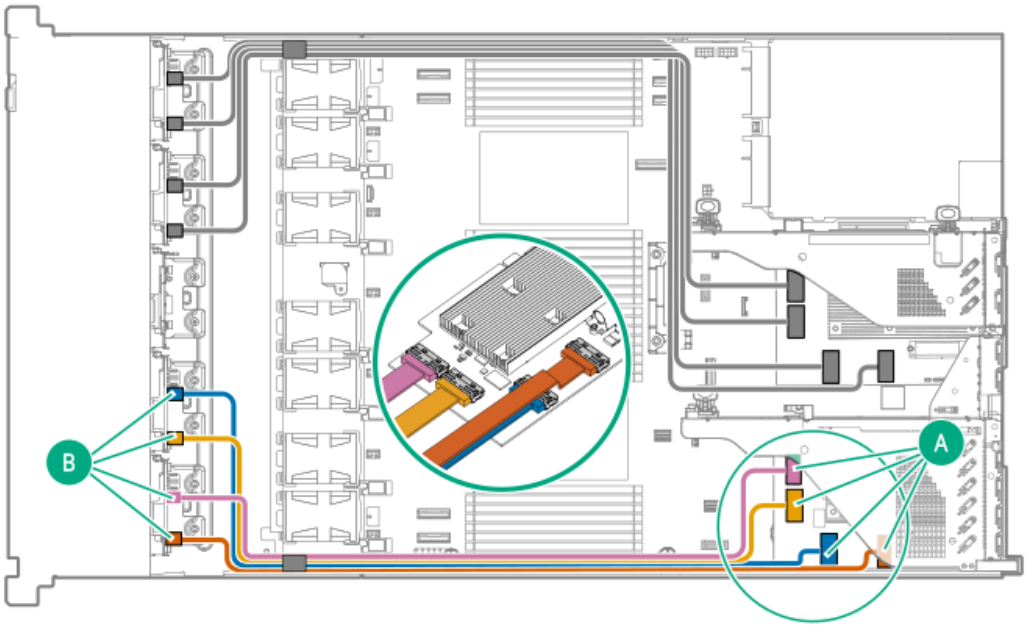


Cable part number	Color	From	To
P75318-001	Blue	Box 1: Drive backplane port 1	Slot 1 type-p controller Port 4i
	Gold	Box 1: Drive backplane port 2	Slot 1 type-p controller Port 1i
P75570-001	Pink	Box 5: Drive backplane port 1	Slot 1 type-p controller Port 2i
P75569-001	Orange	Box 5: Drive backplane port 2	Slot 1 type-p controller Port 3i

Drive box cabling for boxes 4–5

8 EDSFF Boxes 4–5 x4 NVMe to type-p controller in Slot 1

MR932i-p:



Cable part number	Color	From	To
P75570-001	Blue	Box 4: Drive backplane port 1	Slot 1 type-p controller Port 4i
	Gold	Box 4: Drive backplane port 2	Slot 1 type-p controller Port 1i
	Pink	Box 5: Drive backplane port 1	Slot 1 type-p controller Port 2i
P75569-001	Orange	Box 5: Drive backplane port 2	Slot 1 type-p controller Port 3i

2 SFF stacked drive backplane cabling

The 2 SFF stacked drive backplane is supported in the 10 SFF / 20 E3.S server or servers using the mixed drive type configuration.

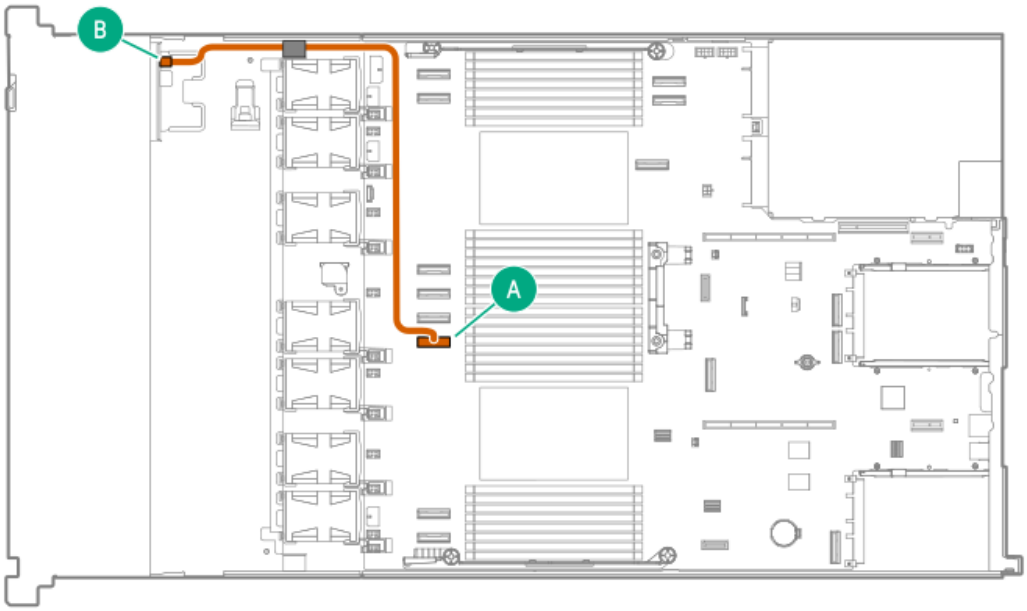
Subtopics

Drive Box 1 cabling
Drive Box 2 cabling
Drive Box 3 cabling
Drive Box 4 cabling
Drive Box 5 cabling
Drive box cabling for boxes 1–2
Drive box cabling for boxes 4–5
Drive box cabling for boxes 1–5

Drive Box 1 cabling

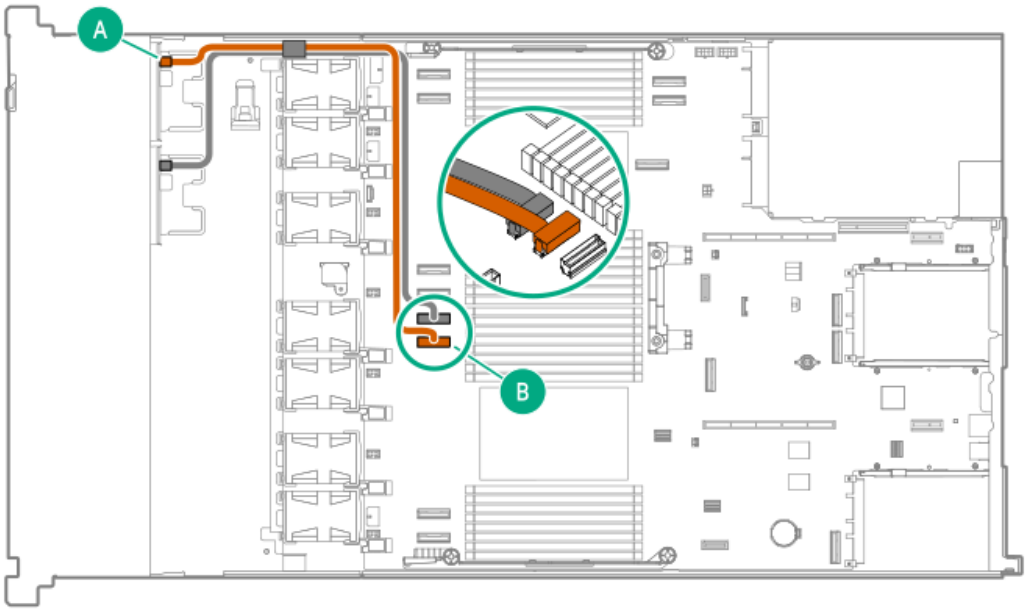
2 SFF Box 1 x4 NVMe: direct attach (1 CPU)

This cable routing is compatible with a single-processor configuration.



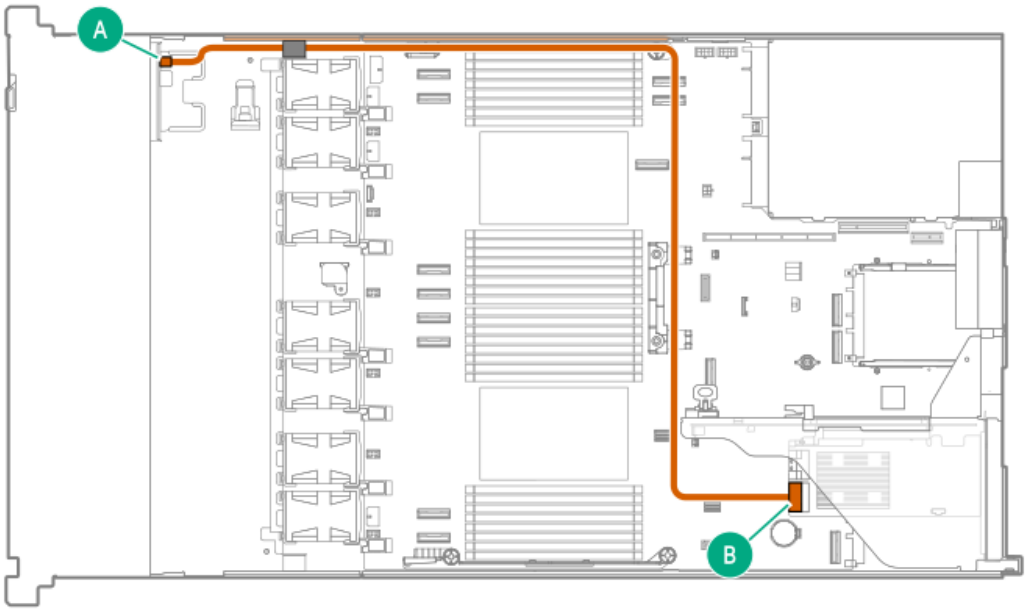
Cable part number	Color	From	To
P75568-001	Orange	Drive backplane	MCIO port 3

2 SFF Box 1 x4 NVMe: Direct attach



Cable part number	Color	From	To
P75317-001	Orange	Box 1 and 2: Drive backplane	MCIO port 5

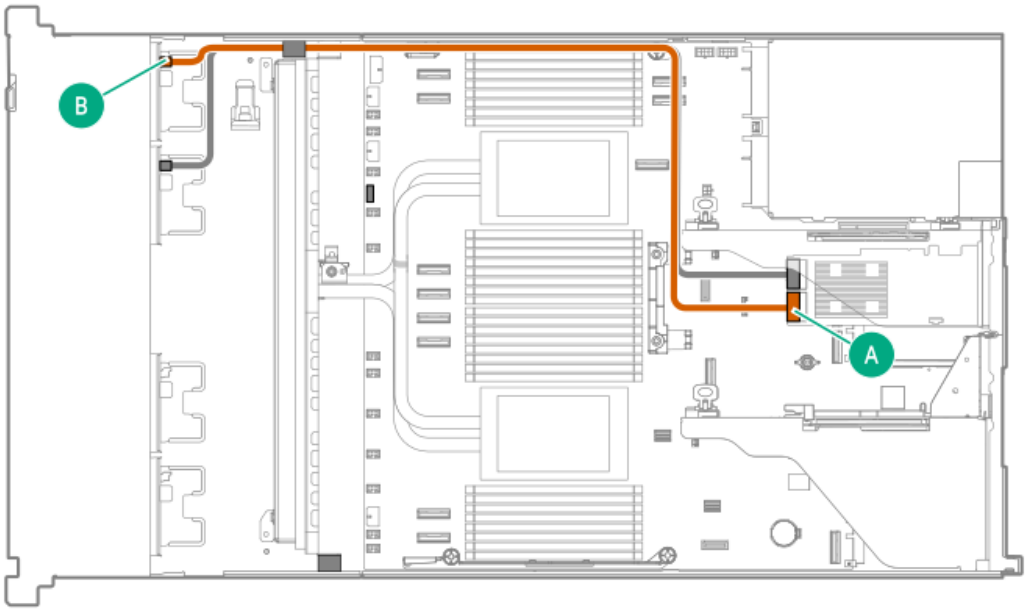
2 SFF Box 1 x4 NVMe: type-p controller



Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Primary type-p controller Port 1i

2 SFF Box 1 x4 NVMe: type-p controller in Slot 3

This configuration supports the closed-loop liquid cooling kit.

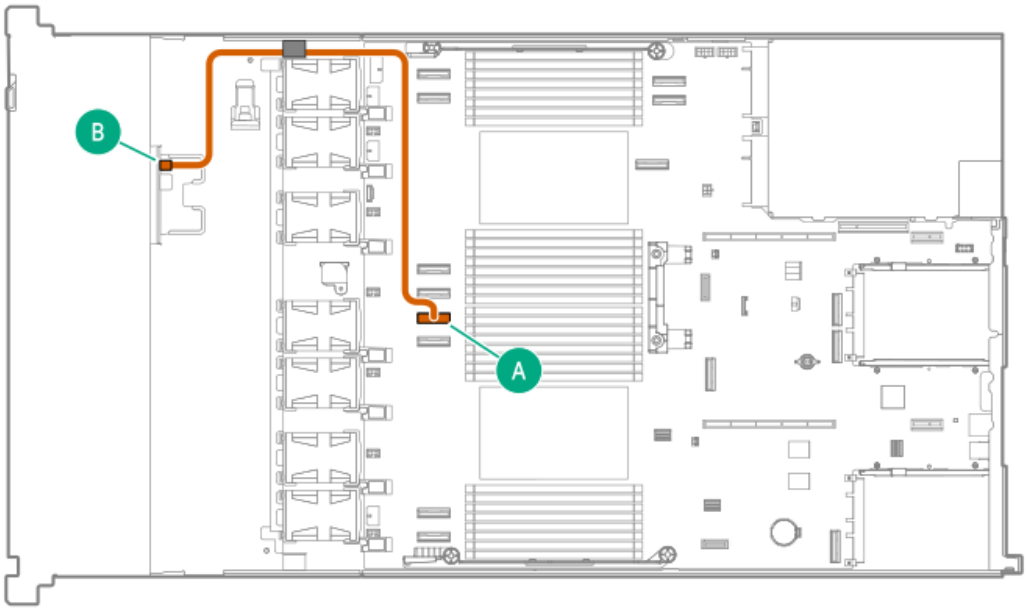


Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Slot 3 type-p controller Port 1i

Drive Box 2 cabling

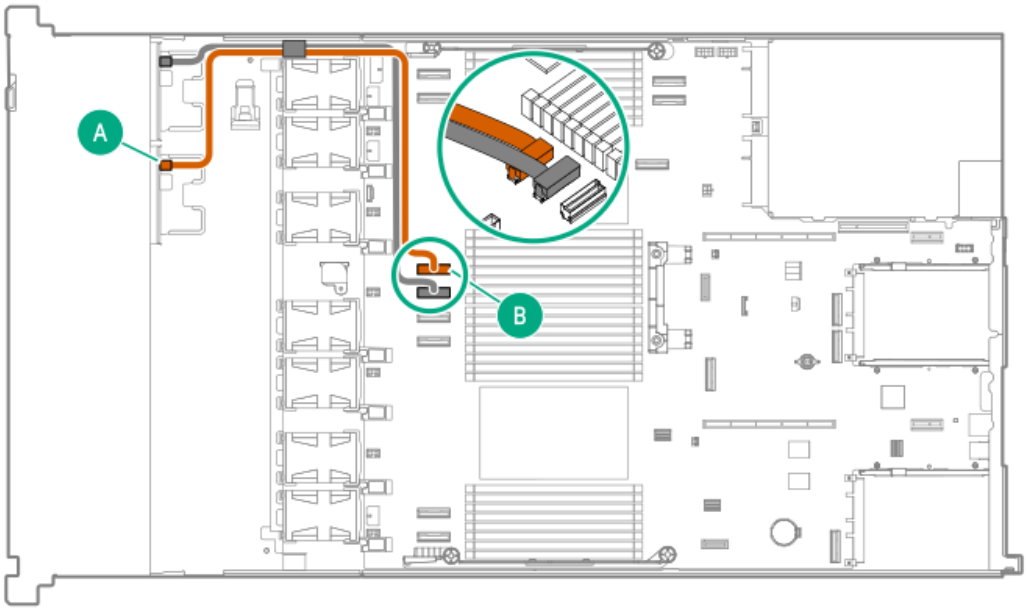
2 SFF Box 2 x4 NVMe: direct attach (1 CPU)

This cable routing is compatible with a single-processor configuration.



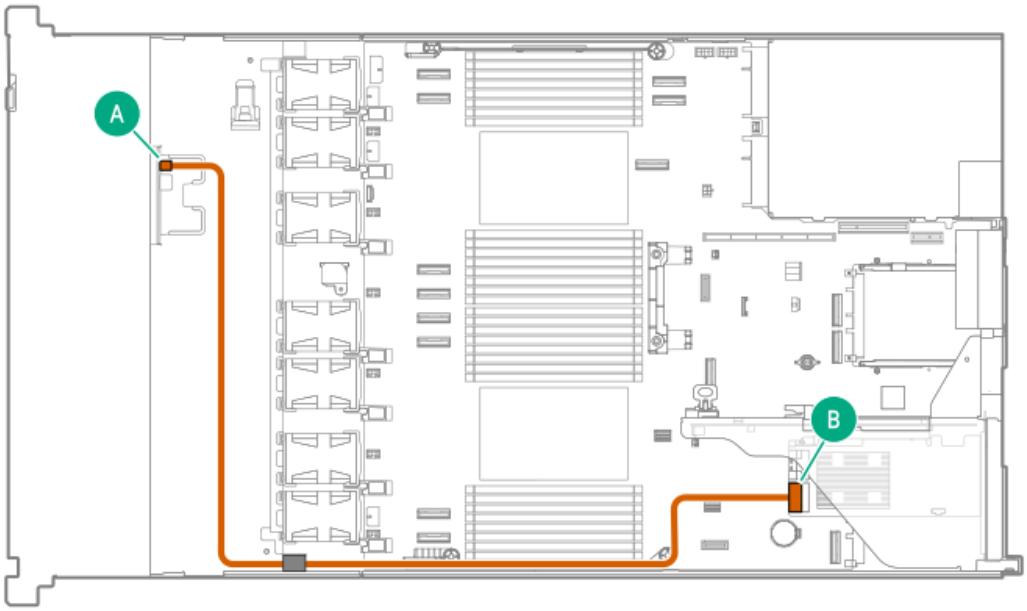
Cable part number	Color	From	To
P75568-001	Orange	Drive backplane	MCIO port 4

2 SFF Box 2 x4 NVMe: direct attach



Cable part number	Color	From	To
P75278-001	Orange	Drive backplane	MCIO port 6

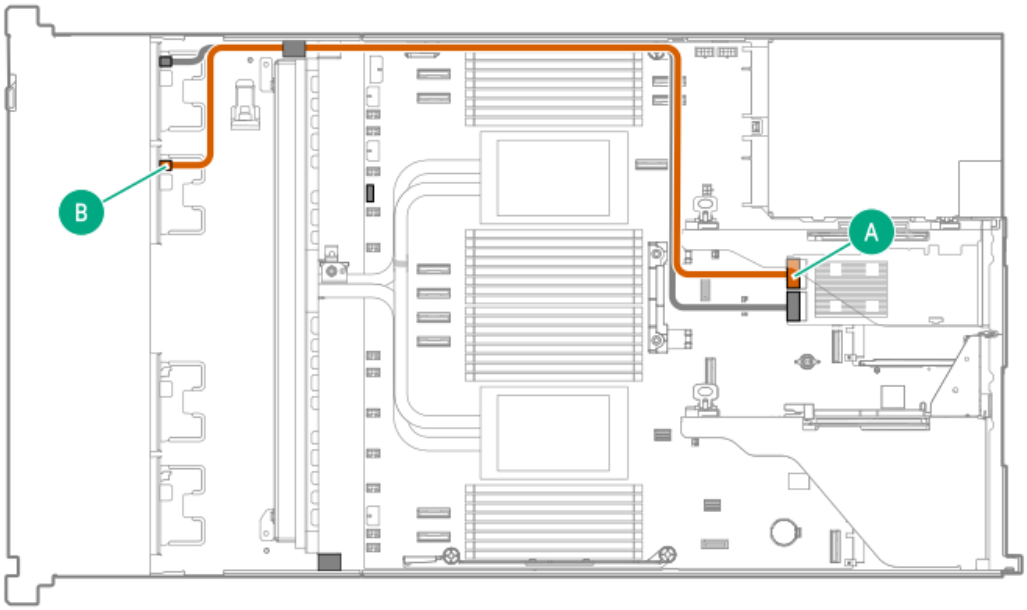
2 SFF Box 2 x4 NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Primary type-p controller Port 1i

2 SFF Box 2 x4 NVMe: type-p controller in Slot 3

This configuration supports the closed-loop liquid cooling kit.

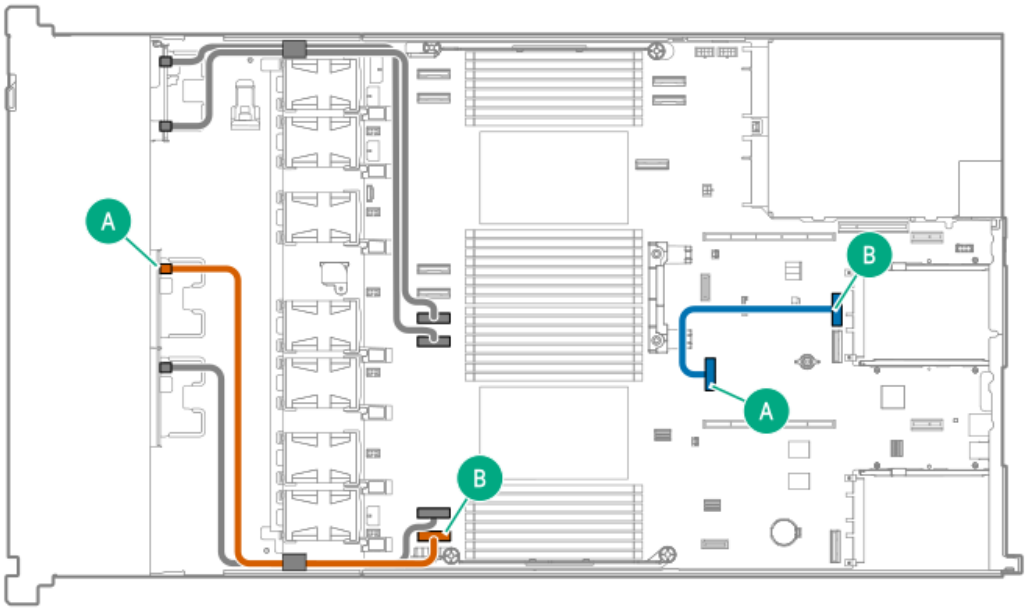


Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Slot 3 type-p controller Port 2i

Drive Box 3 cabling

2 SFF Box 3 x4 NVMe: direct attach cable and CPU1-to-OCP-B cable (1 CPU)

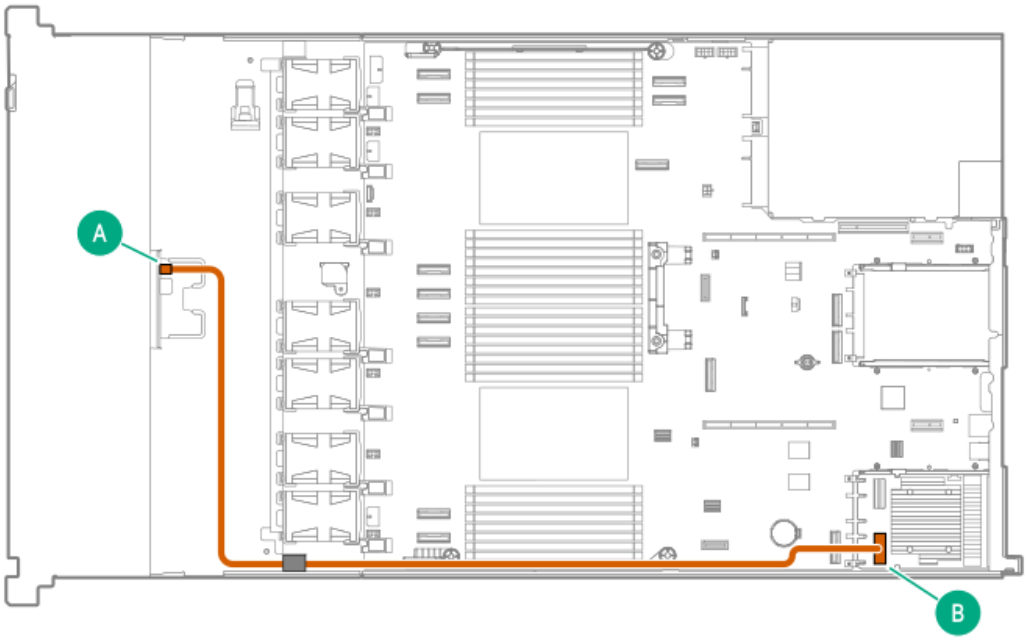
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75567-001	Orange	Drive backplane	MCIO port 1
P74889-001	Blue	OCP B internal port 1	MCIO port 12

2 SFF Box 3 x4 NVMe: type-o controller in Slot 14 OCP A (1 CPU)

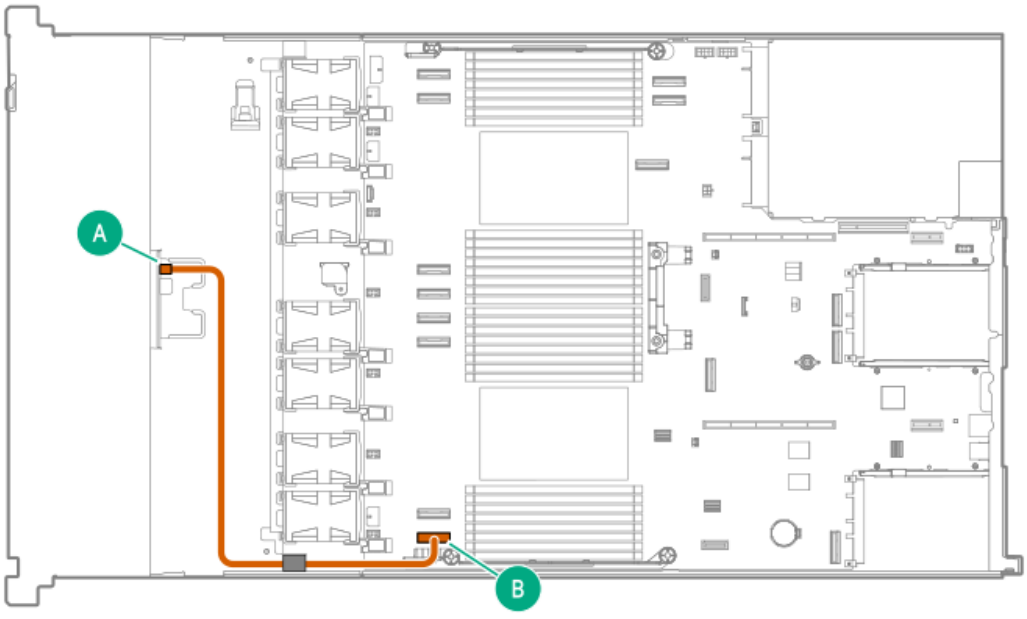
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75589-001	Orange	Drive backplane	Slot 14 OCP A type-o controller Port 1i

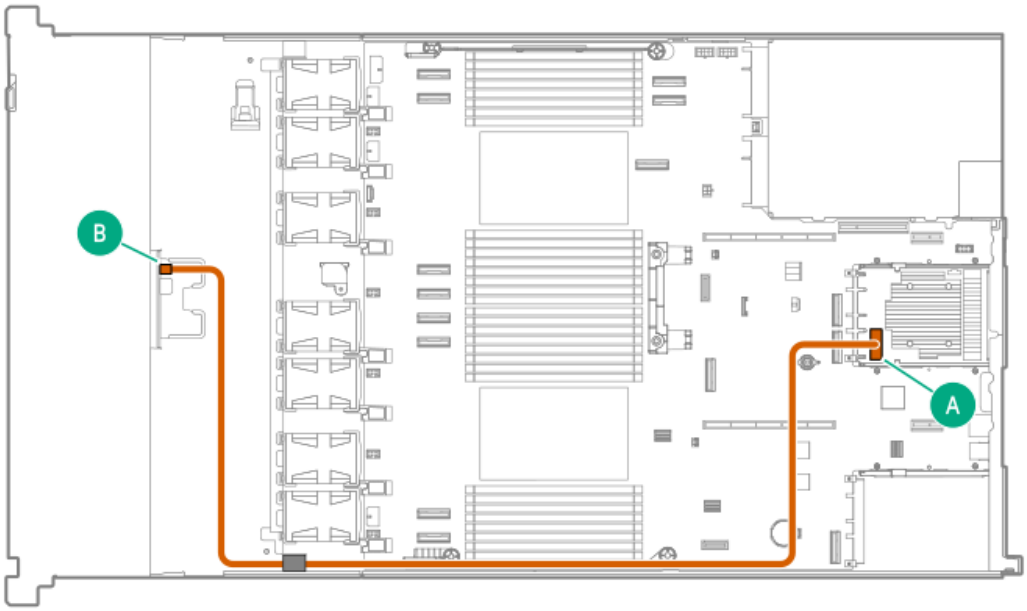
2 SFF Box 3 x4 NVMe: direct attach

This cable routing supports both single-processor and dual-processor configurations.



Cable part number	Color	From	To
P75278-001	Orange	Drive backplane	MCIO port 1

2 SFF Box 3 x4 NVMe: type-o controller in Slot 15 OCP B

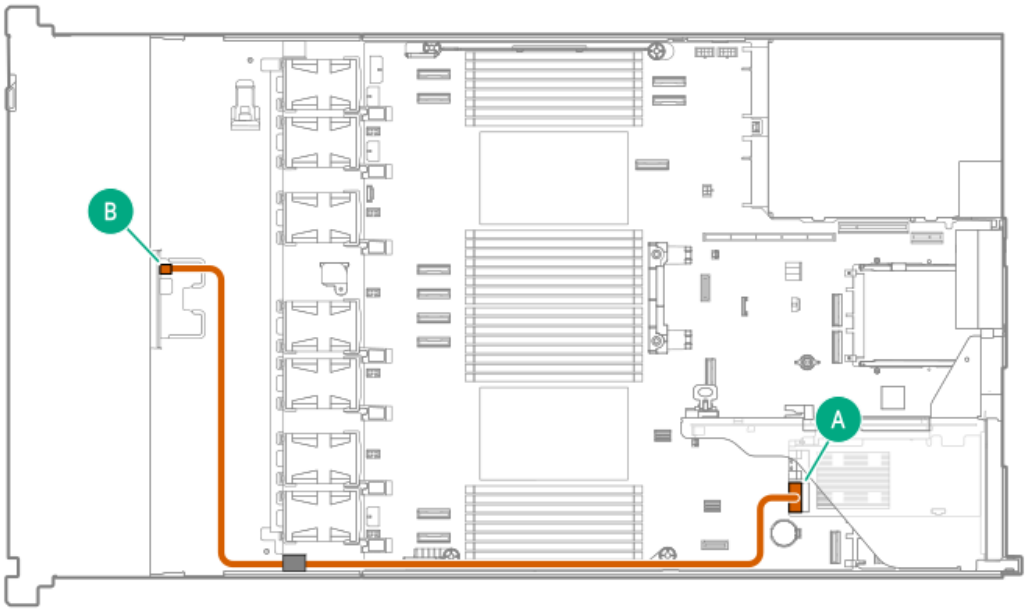


Cable part number	Color	From	To
P75587-001	Orange	Drive backplane	Slot 15 OCP B type-o controller Port 1i

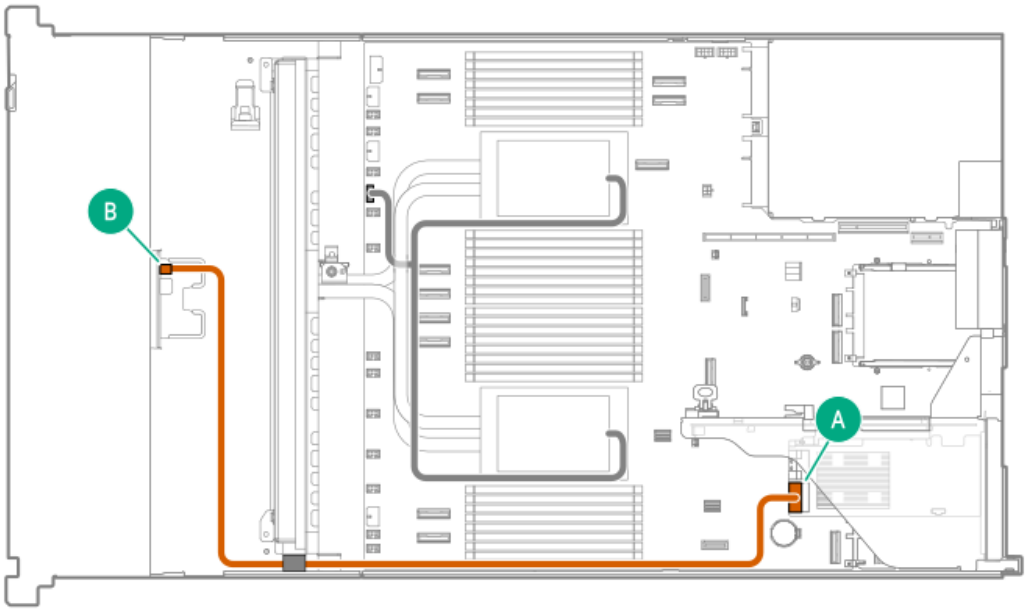
2 SFF Box 3 x4 NVMe: type-p controller in Slot 1

MR416i-p / MR216i-p / MR408i-p in Slot 1

- Air-cooled system



- Liquid-cooled system (CLLC)

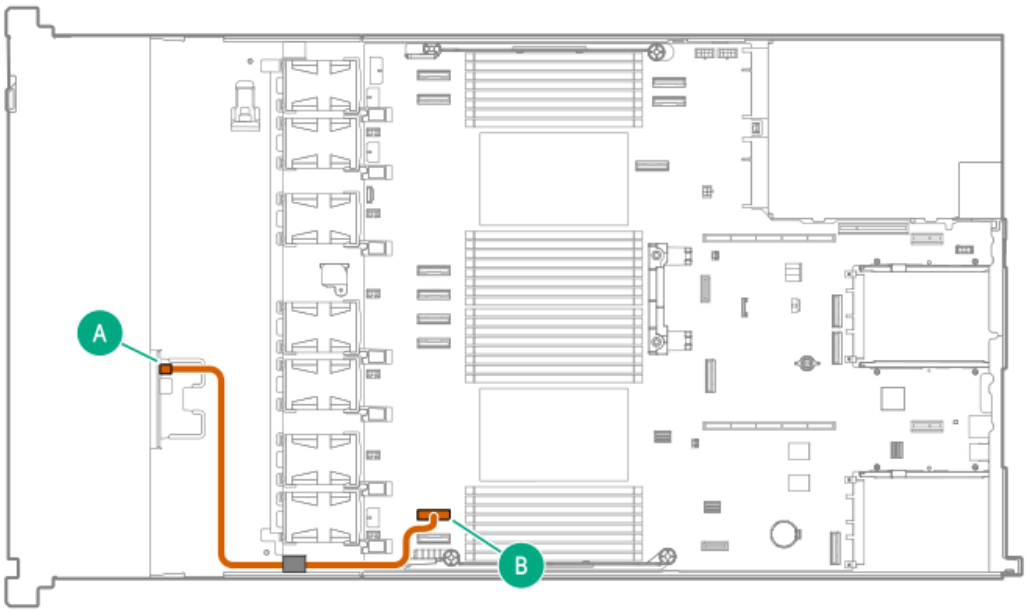


Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Primary type-p controller Port 1i

Drive Box 4 cabling

2 SFF Box 4 x4 NVMe: direct attach (1 CPU)

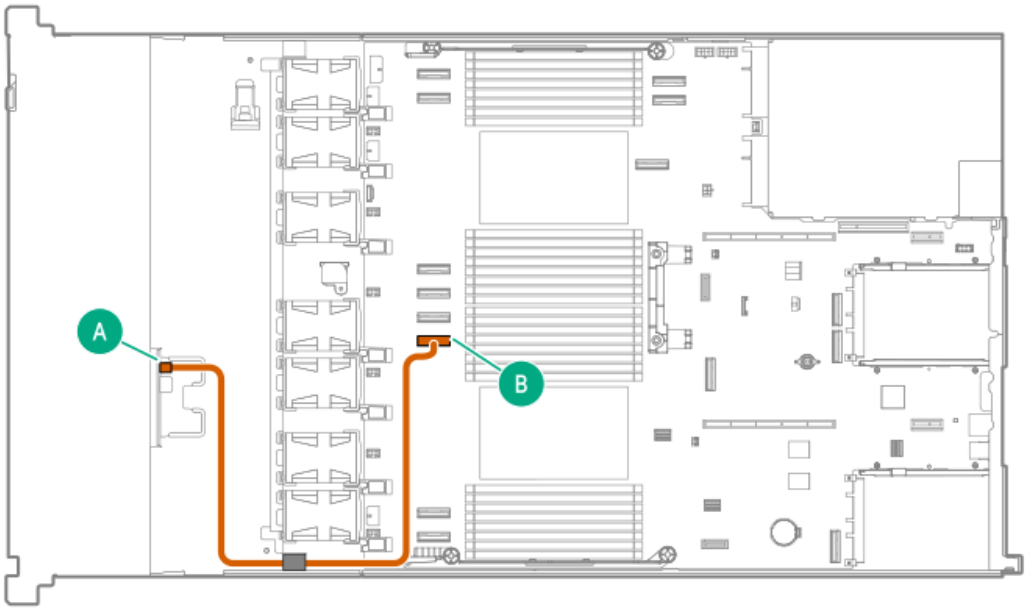
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75317-001	Orange	Drive backplane	MCIO port 2

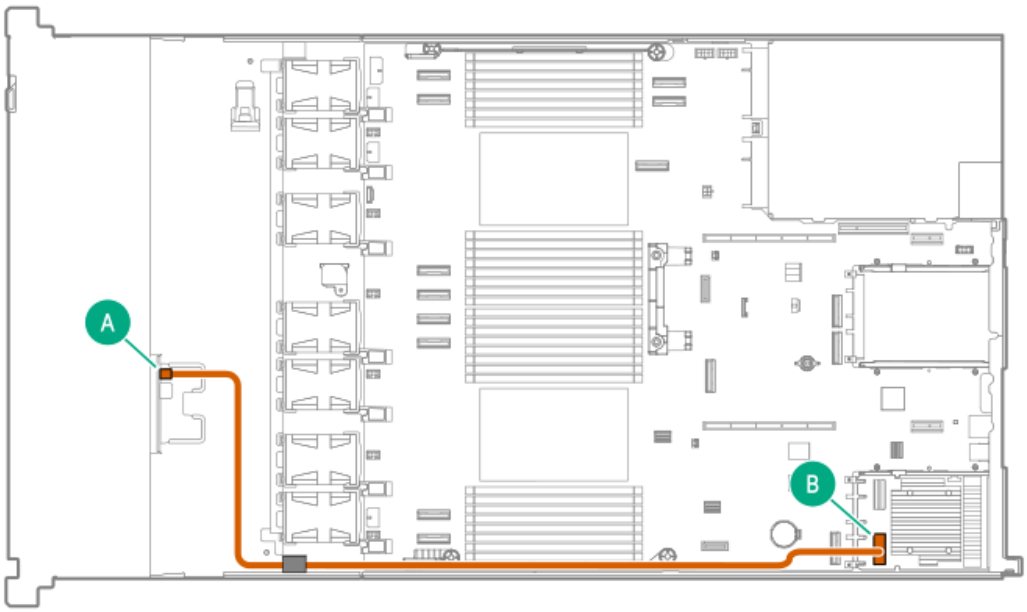
2 SFF Box 4 x4 NVMe: direct attach

This cable routing is compatible with a dual-processor configuration.



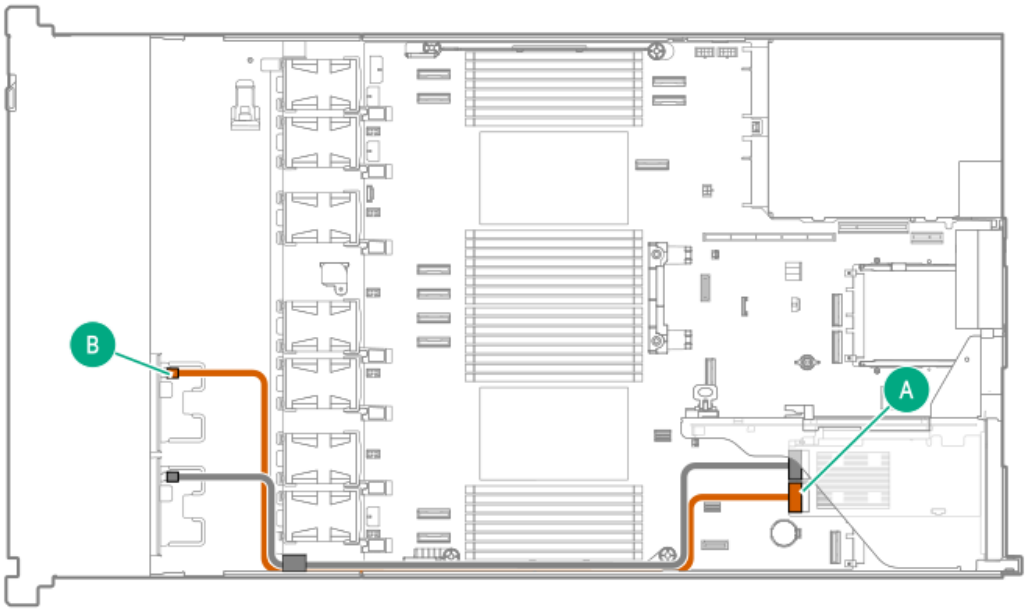
Cable part number	Color	From	To
P75567-001	Orange	Drive backplane	MCIO port 3

2 SFF Box 4 x4 NVMe: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P75589-001	Orange	Drive backplane	Slot 14 OCP A type-o controller Port 1i

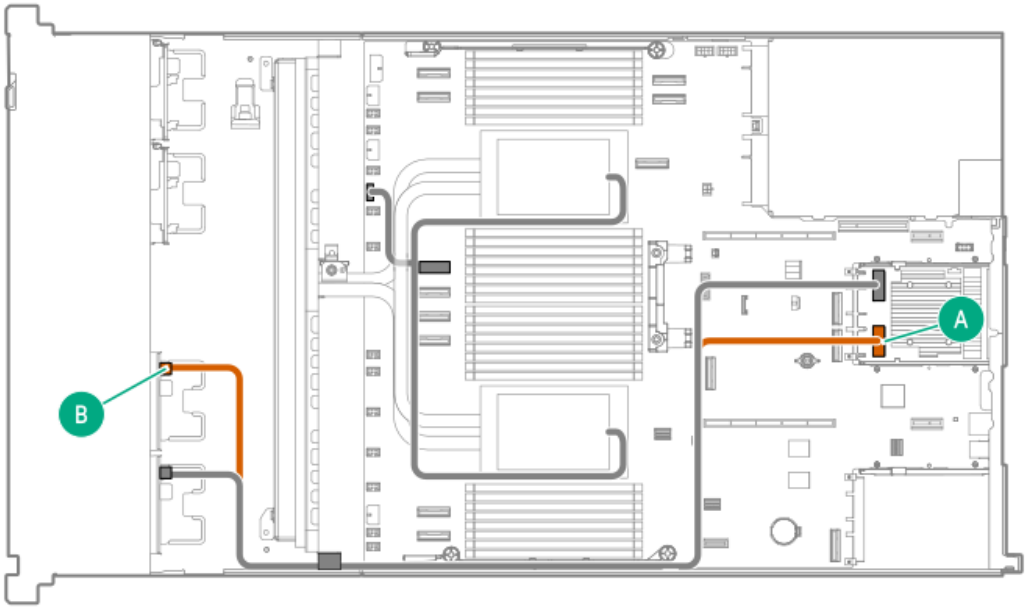
2 SFF Box 4 x4 NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P76443-001	Orange	Drive backplane	Primary type-p controller Port 1i

2 SFF Box 4 x4: type-o controller in Slot 15 OCP B

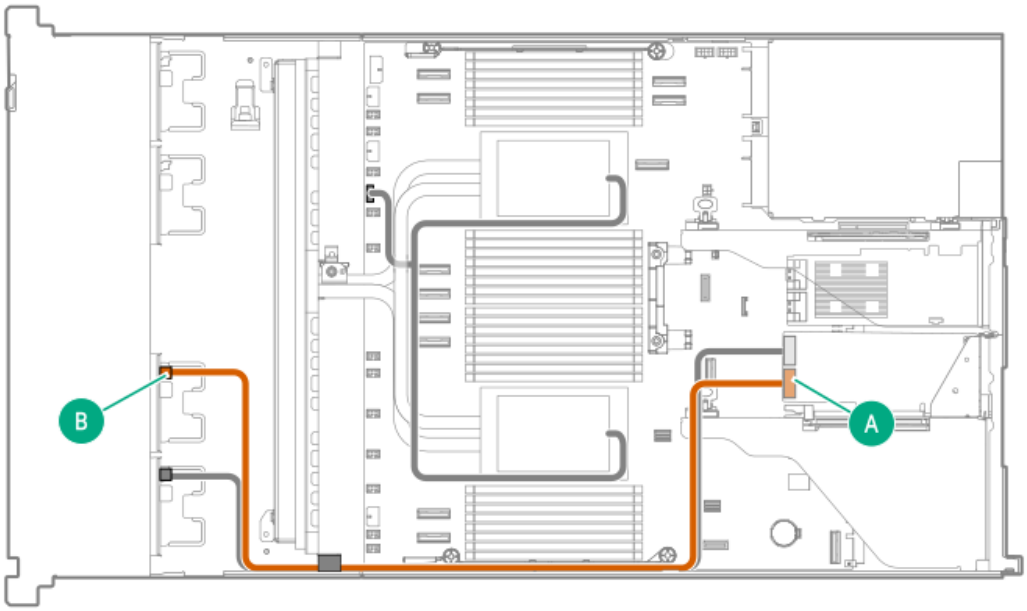
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75589-001	Orange	Drive backplane	Slot 15 OCP B type-o controller Port 1i

2 SFF Box 4 x4 NVMe: type-p controller in Slot 2

This configuration supports the closed-loop liquid cooling kit.

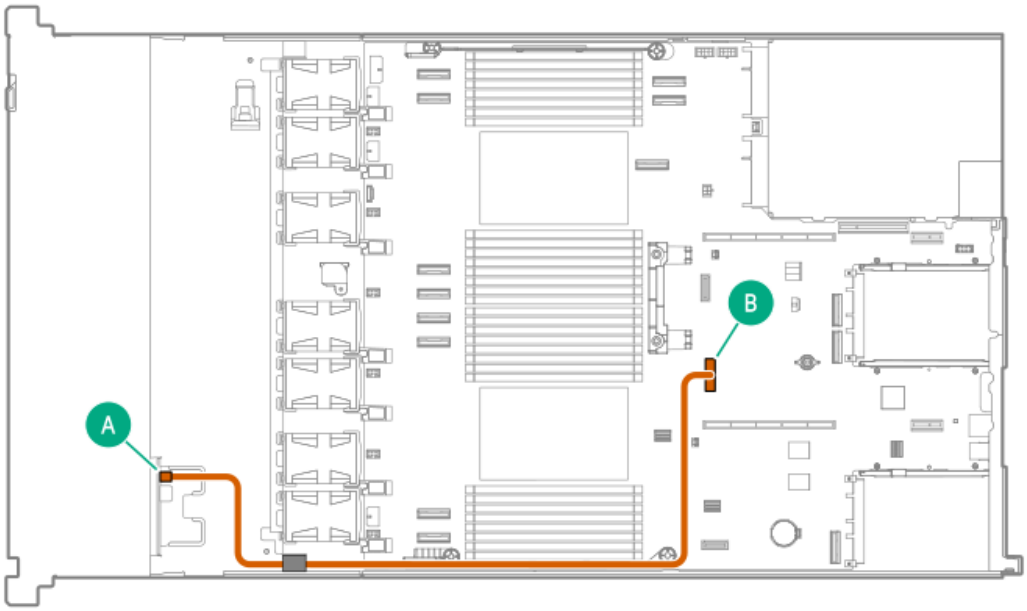


Cable part number	Color	From	To
P76443-001	Orange	Drive backplane	Slot 2 type-p controller Port 2i

Drive Box 5 cabling

2 SFF Box 5 x4 NVMe: direct attach (1 CPU)

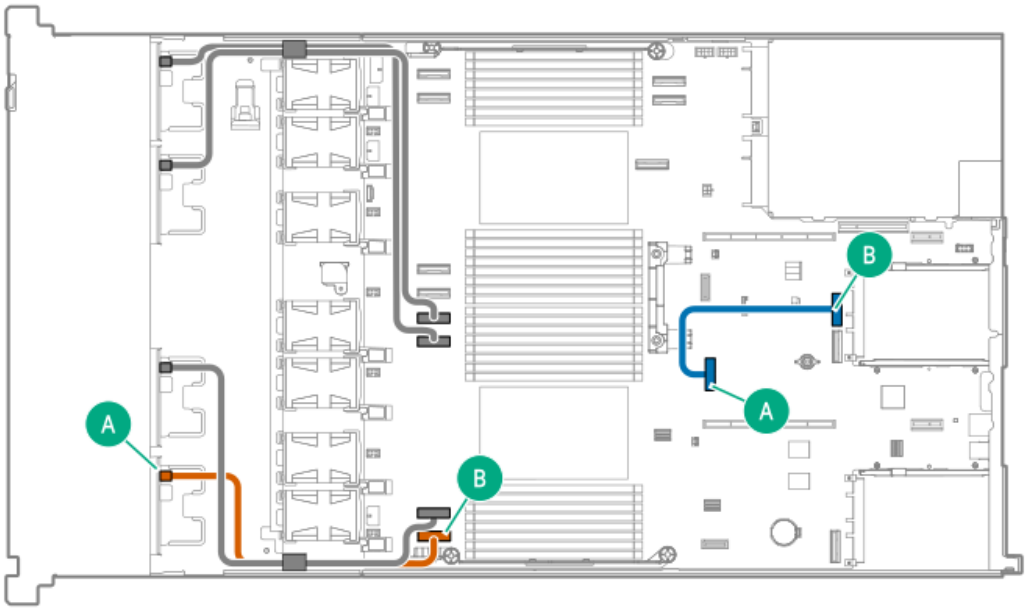
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75567-001	Orange	Drive backplane	MCIO port 12

2 SFF Box 5 x4 NVMe direct attach cable and CPU1-to-OCP-B cable (1 CPU)

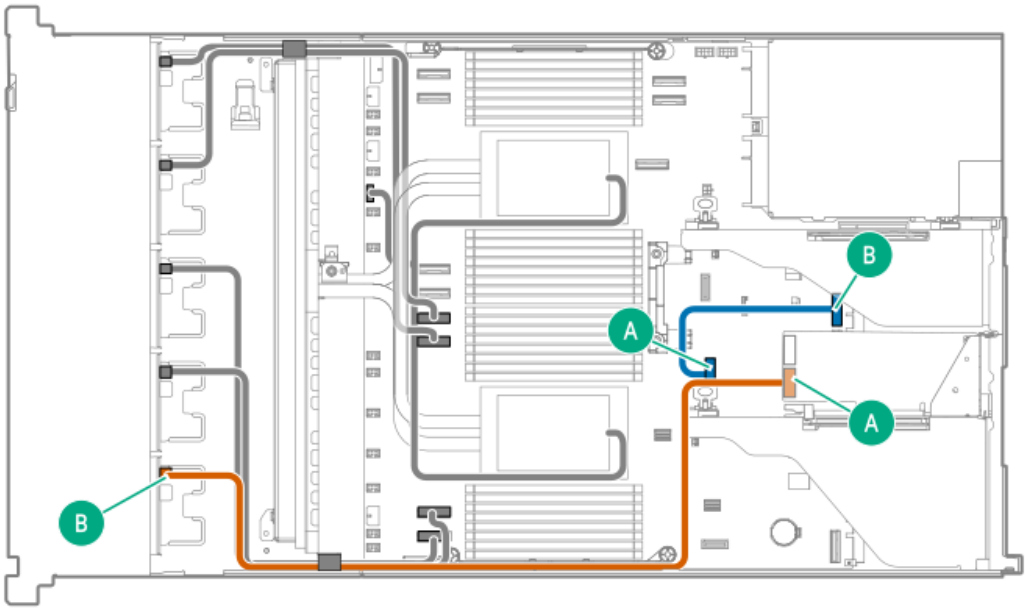
This cable routing is compatible with a single-processor configuration.



Cable part number	Color	From	To
P75567-001	Orange	Drive backplane	MCIO port 1
P74889-001	Blue	OCP B internal port 1	MCIO port 12

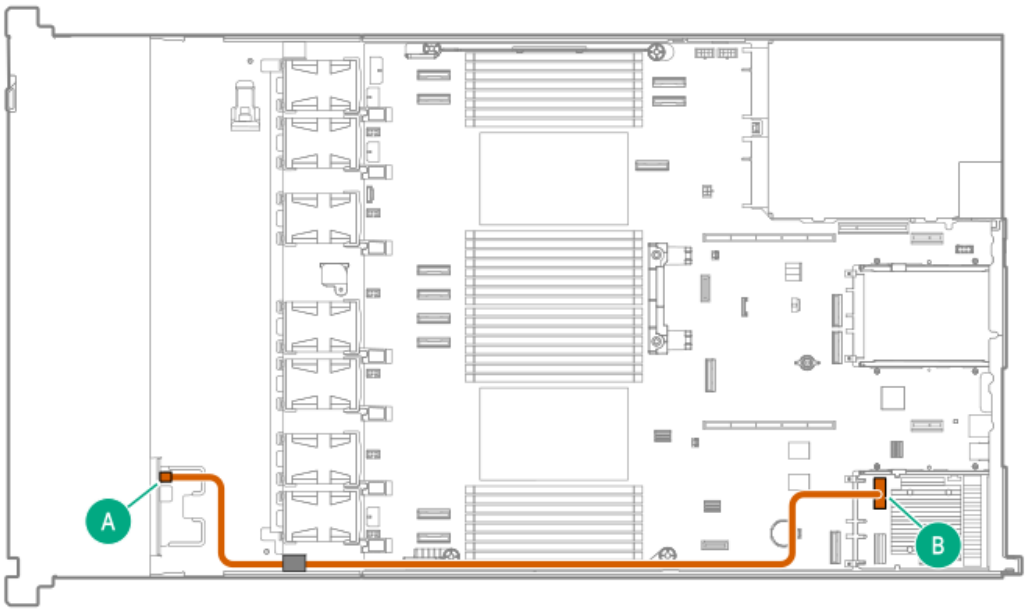
2 SFF Box 5 x4 NVMe type-p controller cable and CPU1-to-OCP-B cable (1 CPU)

This cable routing supports the closed-loop liquid cooling kit in the single-processor configuration.



Cable part number	Color	From	To
P75590-001	Orange	Drive backplane	Slot 2 type-p controller Port 2i
P74889-001	Blue	OCP B internal port 1	MCIO port 12

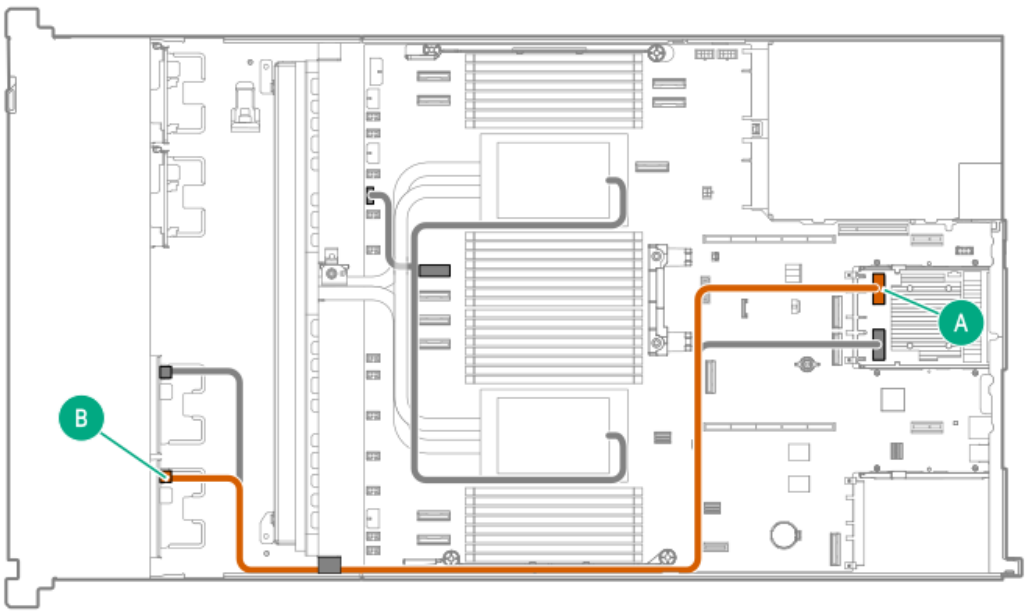
2 SFF Box 5 x4 NVMe: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P75589-001	Orange	Drive backplane	Slot 14 OCP A type-o controller Port 2i

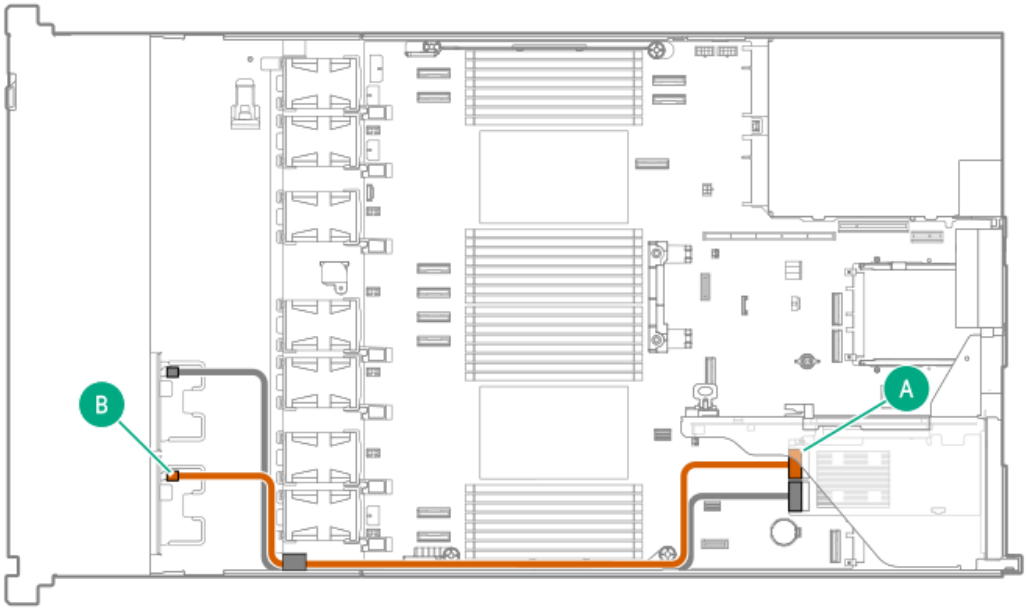
2 SFF Box 5 x4 NVMe: type-o controller in Slot 15 OCP B

This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75589-001	Orange	Drive backplane	Slot 15 OCP B type-o controller Port 2i

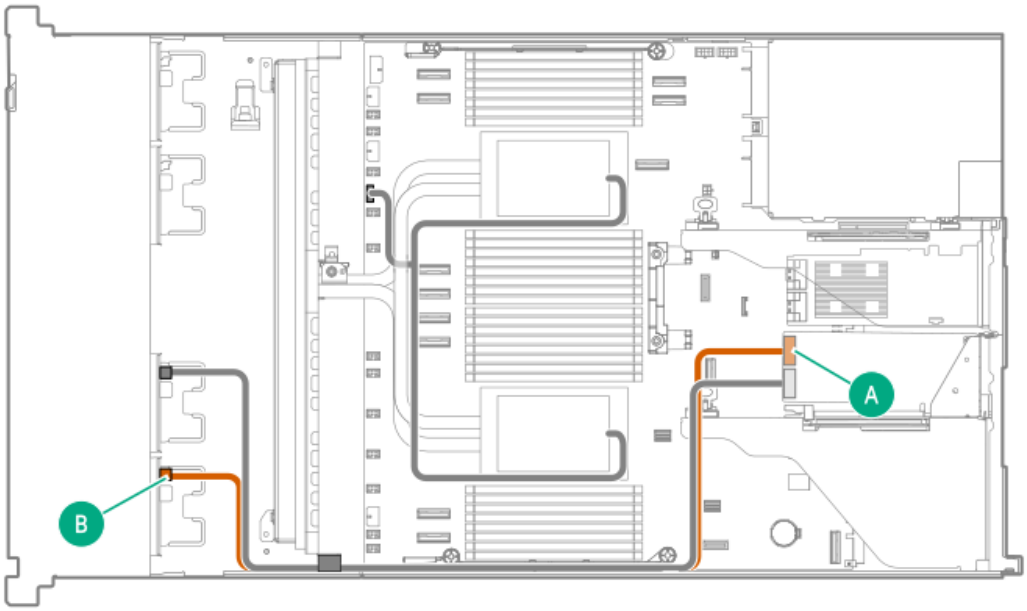
2 SFF Box 5 x4 NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P76443-001	Orange	Drive backplane	Primary type-p controller Port 2i

2 SFF Box 5 x4 NVMe: type-p controller in Slot 2

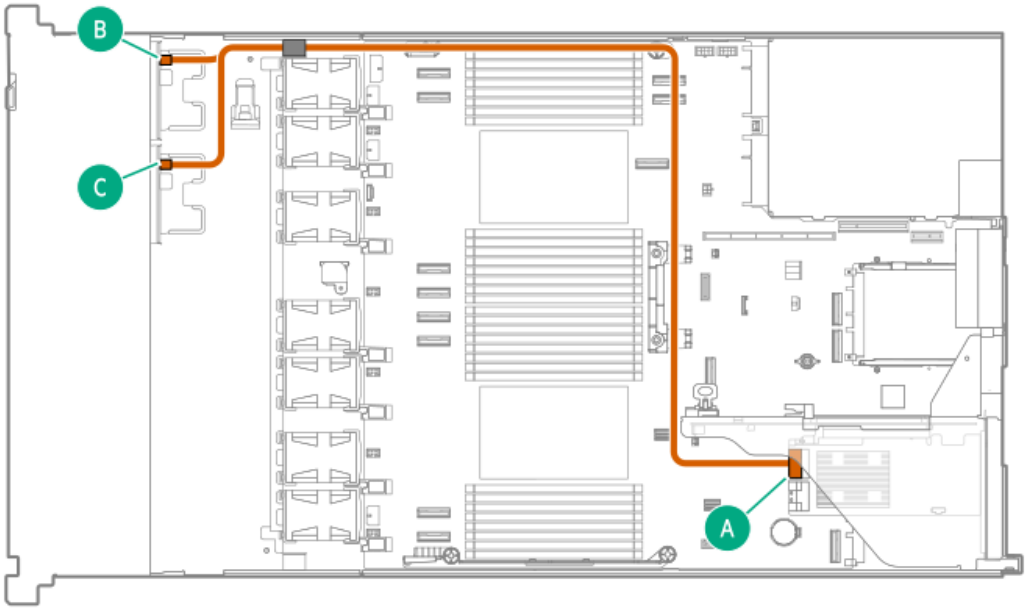
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P76443-001	Orange	Drive backplane	Slot 2 type-p controller Port 1i

Drive box cabling for boxes 1–2

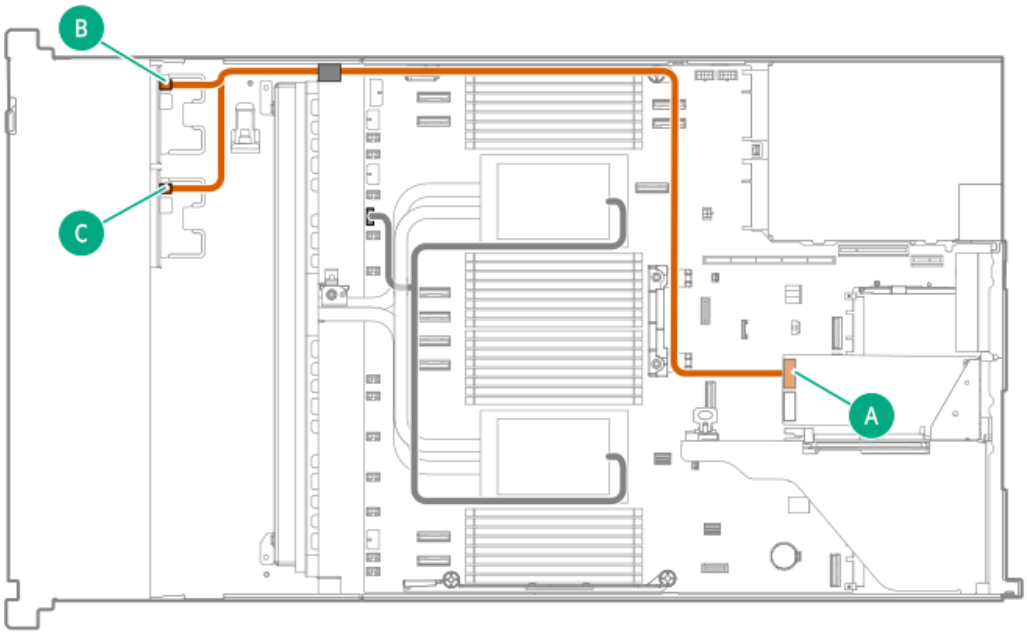
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P75593-001	Orange	Boxes 1–2: Drive backplane	Slot 1 type-p controller Port 2i

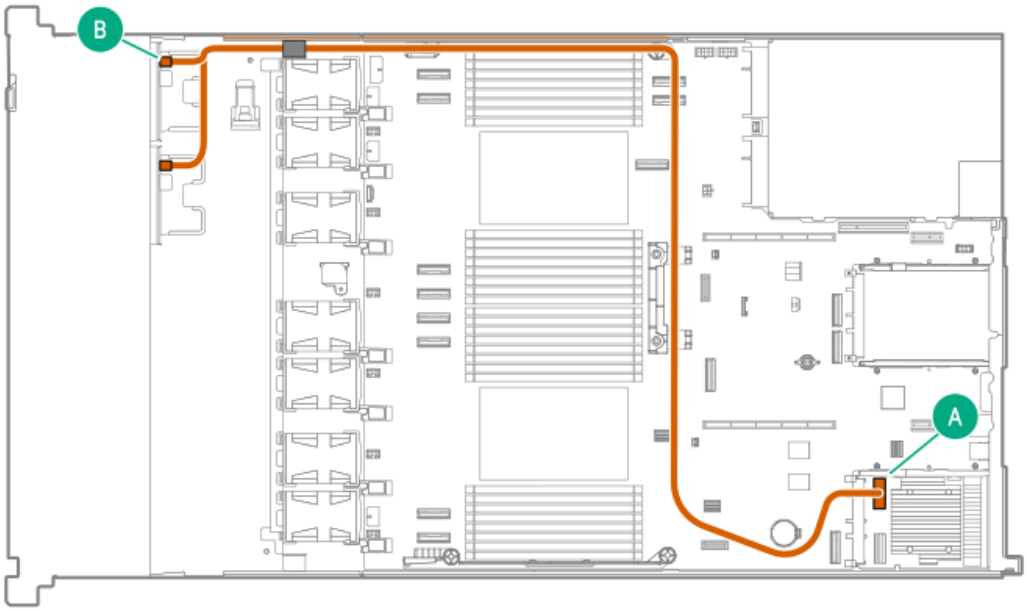
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-p controller in Slot 2

This configuration supports the closed-loop liquid cooling kit.



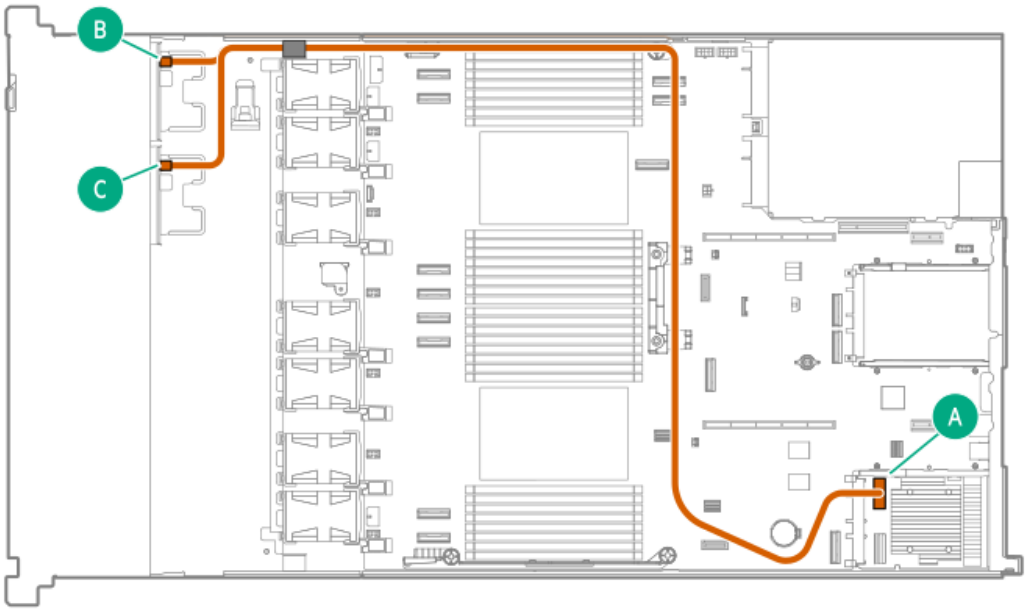
Cable part number	Color	From	To
P75593-001	Orange	Boxes 1–2: Drive backplane	Slot 2 type-p controller Port 1i

4 SFF Boxes 1–2 (x2 BW) NVMe: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P75571-001	Orange	Boxes 1–2: Drive backplane	Slot 14 OCP A type-o controller Port 2i

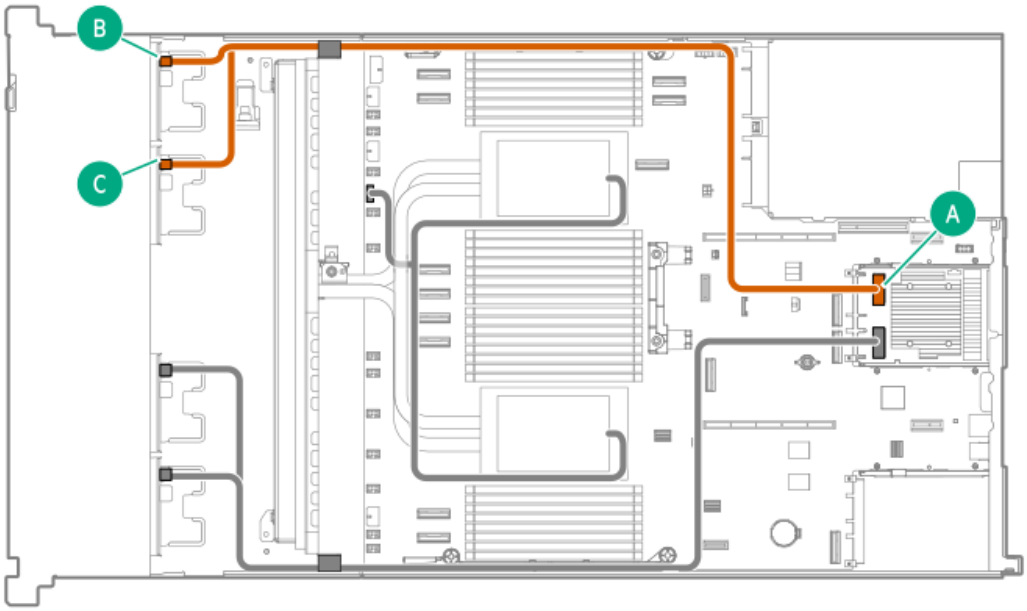
4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-o controller in Slot 14 OCP A



Cable part number	Color	From	To
P75571-001	Orange	Boxes 1–2: Drive backplane	Slot 14 OCP A type-o controller Port 2i

4 SFF Boxes 1–2 x4 (x2 BW) NVMe: type-o controller in Slot 15 OCP B

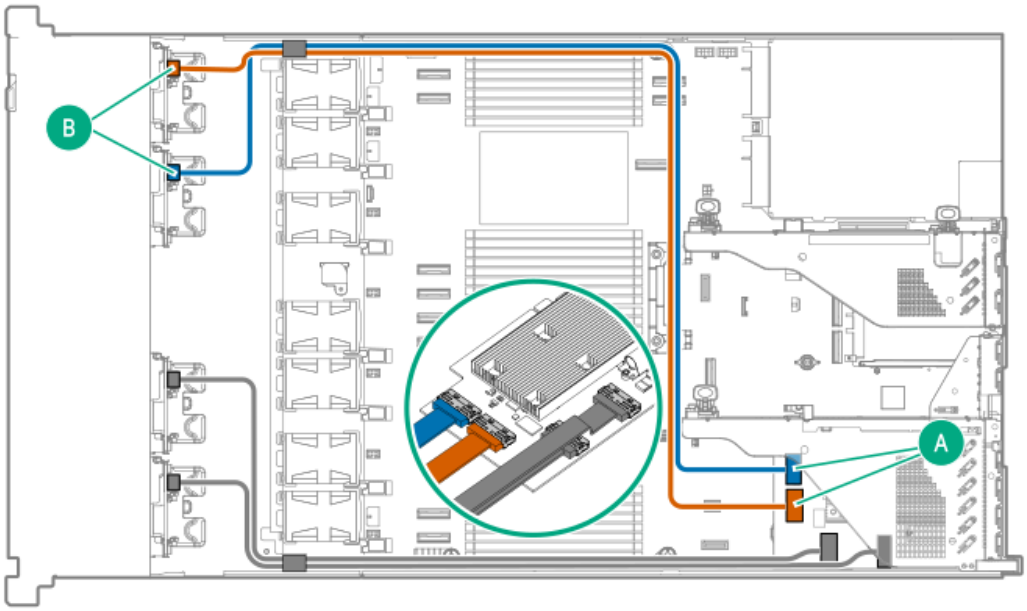
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75573-001	Orange	Boxes 1–2: Drive backplane	Slot 15 OCP B type-o controller Port 2i

4 SFF Boxes 1–2 x4 NVMe to type-p controller in Slot 1

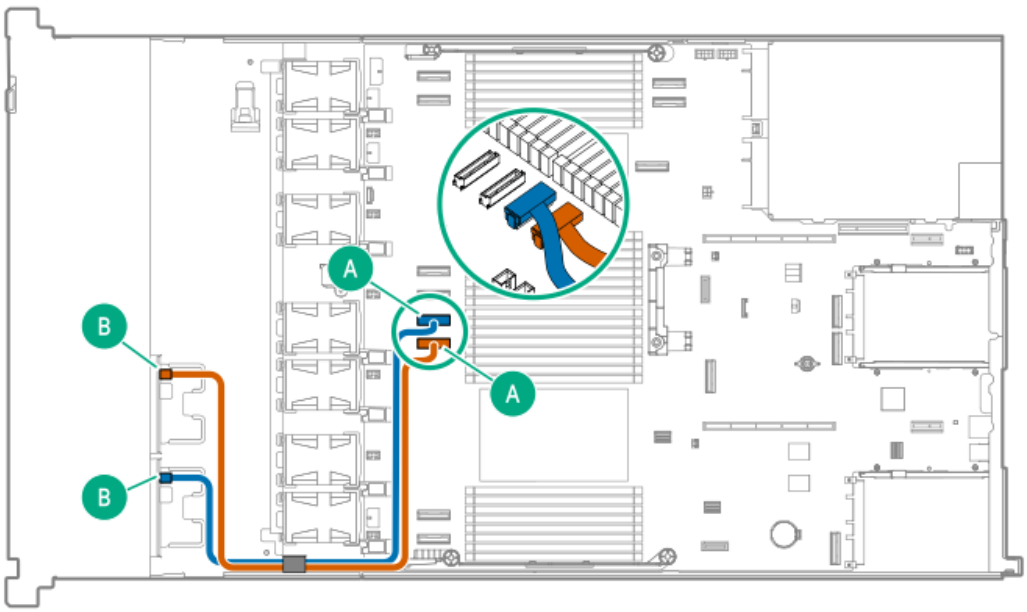
MR932i-p:



Cable part number	Color	From	To
P75318-001	Orange	Box 1: Drive backplane port	Slot 1 type-p controller Port 1i
	Blue	Box 2: Drive backplane port	Slot 1 type-p controller Port 2i

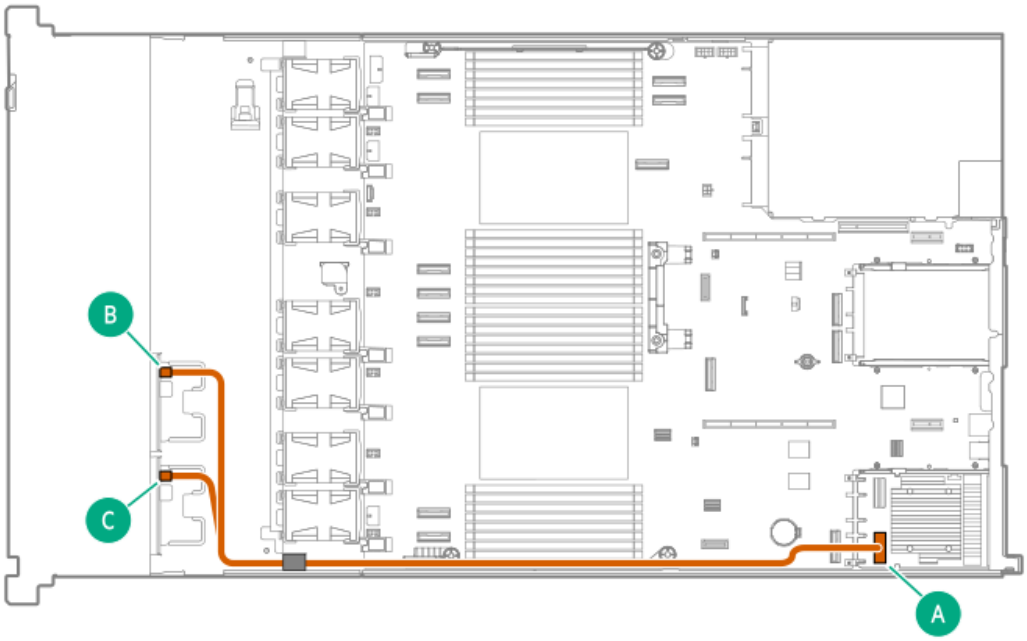
Drive box cabling for boxes 4–5

4 SFF Boxes 4–5 x4 NVMe: direct attach



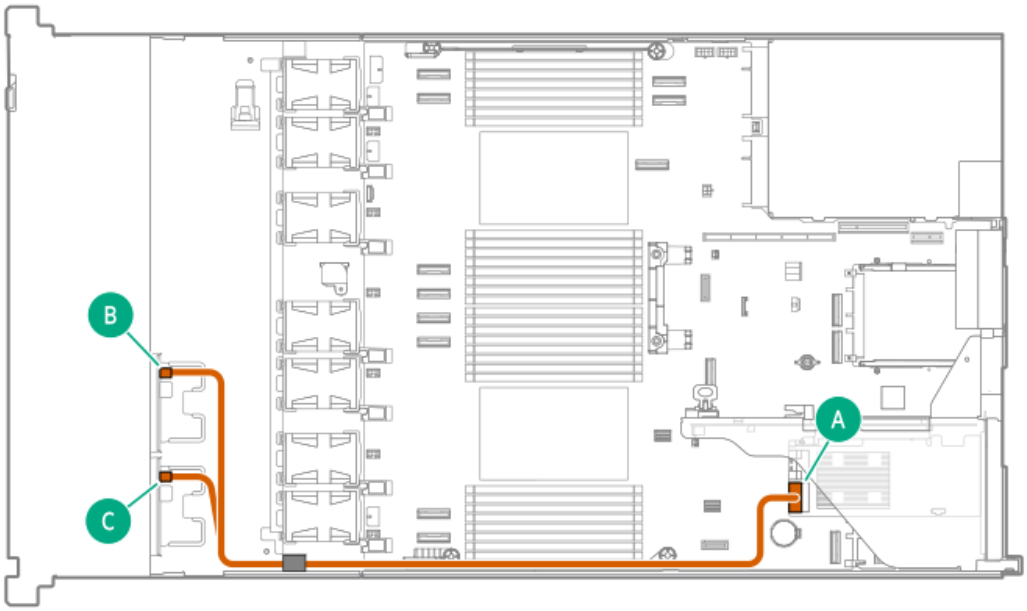
Cable part number	Color	From	To
P75567-001	Orange	Box 4: drive backplane	MCIO port 3
P75278-001	Blue	Box 5: drive backplane	MCIO port 4

4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-o controller in Slot 14 OCP A



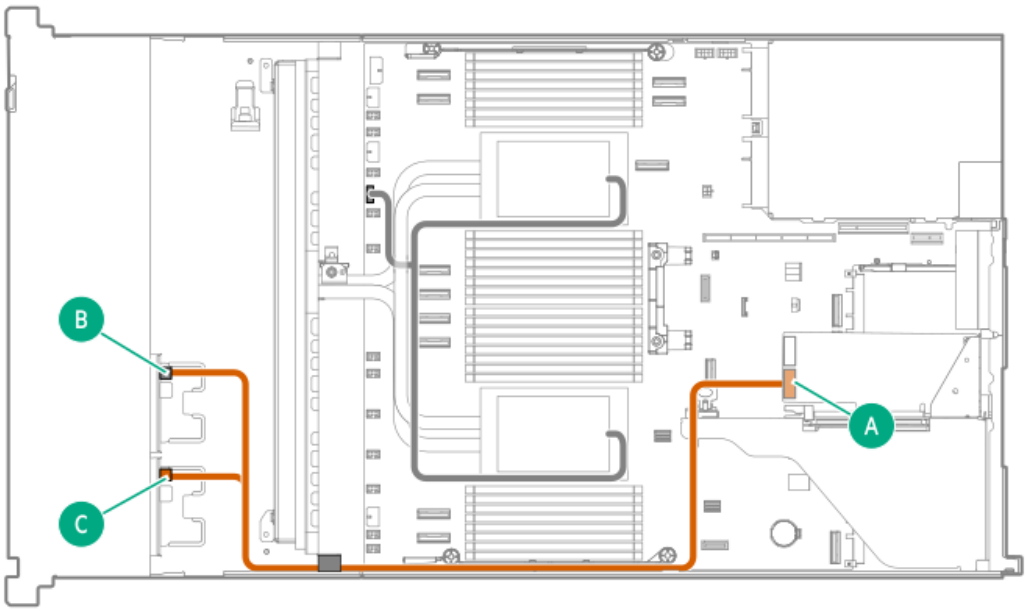
Cable part number	Color	From	To
P75573-001	Orange	Boxes 4–5: drive backplane	Slot 14 OCP A type-o controller Port 1i

4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-p controller in Slot 1



Cable part number	Color	From	To
P75572-001	Orange	Boxes 4–5: drive backplane	Slot 1 type-p controller Port 1i

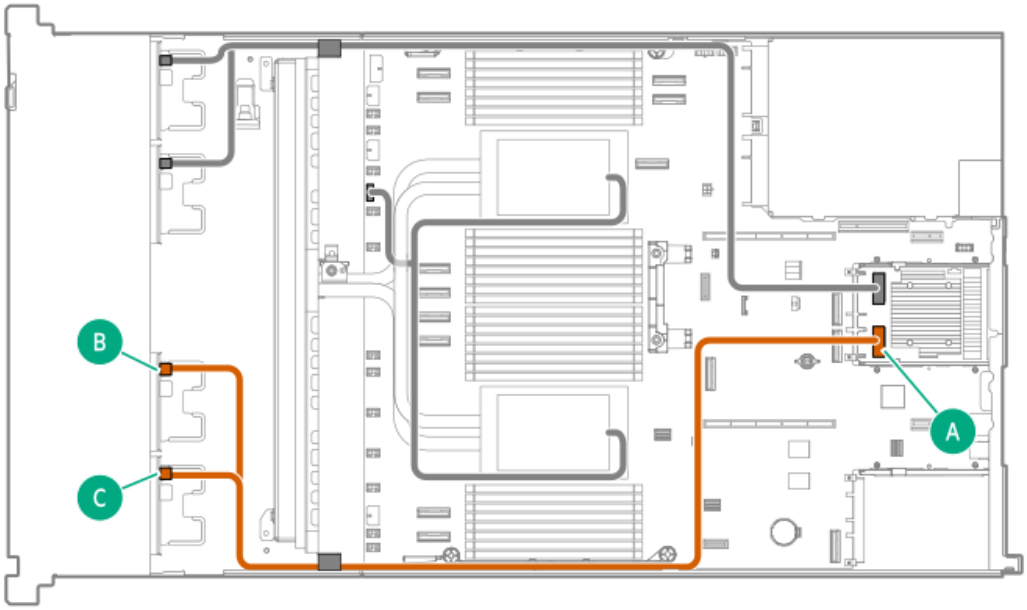
4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-p controller in Slot 2



Cable part number	Color	From	To
P75572-001	Orange	Boxes 4–5: drive backplane	Slot 2 type-p controller Port 2i

4 SFF Boxes 4–5 x4 (x2 BW) NVMe: type-o controller in Slot 15 OCP B

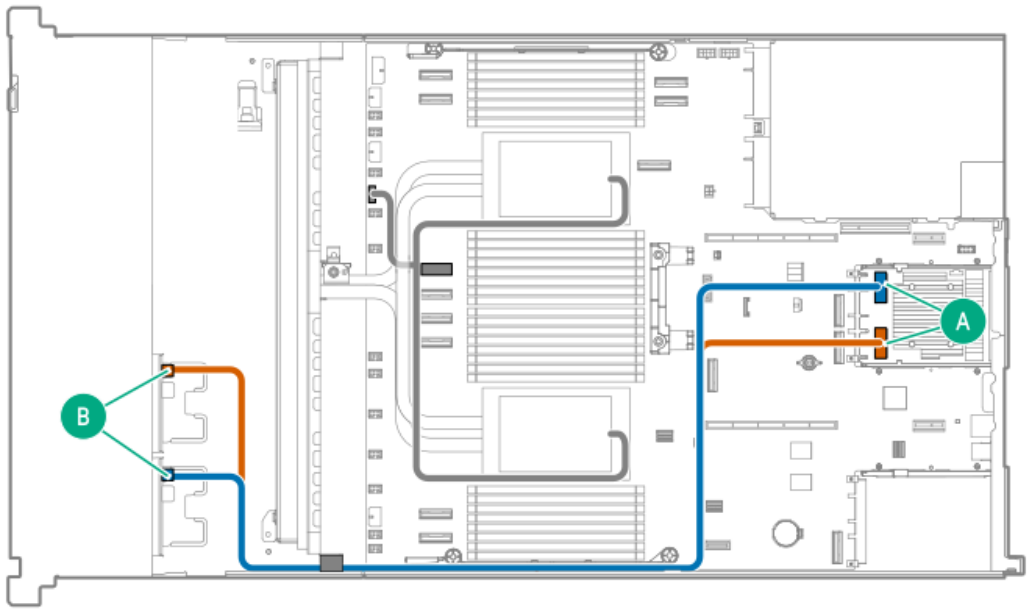
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75571-001	Orange	Boxes 4–5: drive backplane	Slot 15 OCP B type-o controller Port 2i

4 SFF Boxes 4–5 x4 NVMe: type-o controller in Slot 15 OCP B

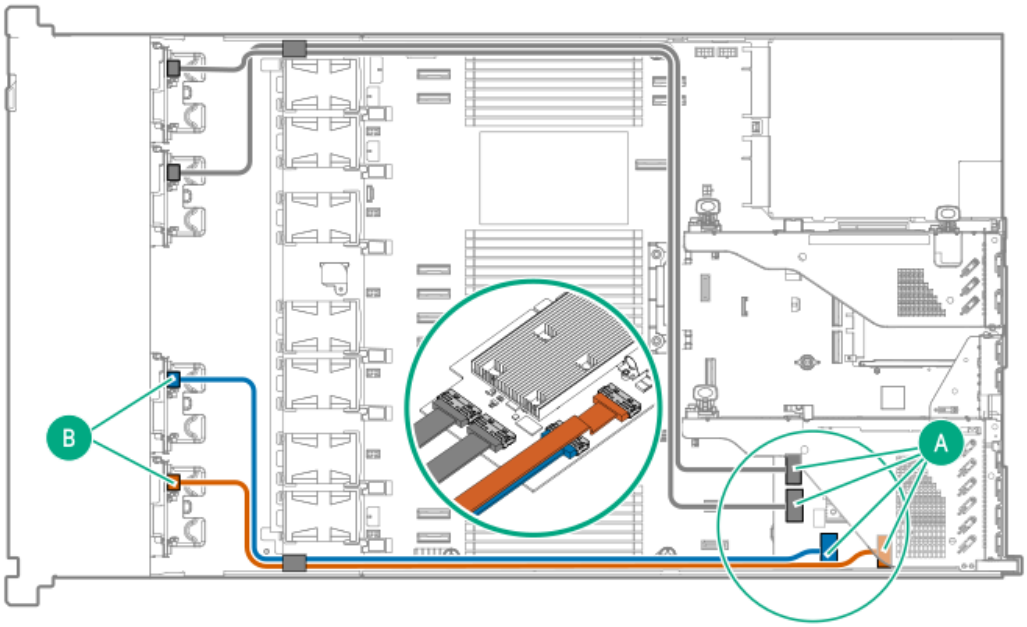
This configuration supports the closed-loop liquid cooling kit.



Cable part number	Color	From	To
P75589-001	Orange	Box 4: drive backplane	Slot 15 OCP B type-o controller Port 1i
	Blue	Box 5: drive backplane	Slot 15 OCP B type-o controller Port 2i

4 SFF Boxes 4–5 x4 NVMe to type-p controller in Slot 1

MR932i-p:

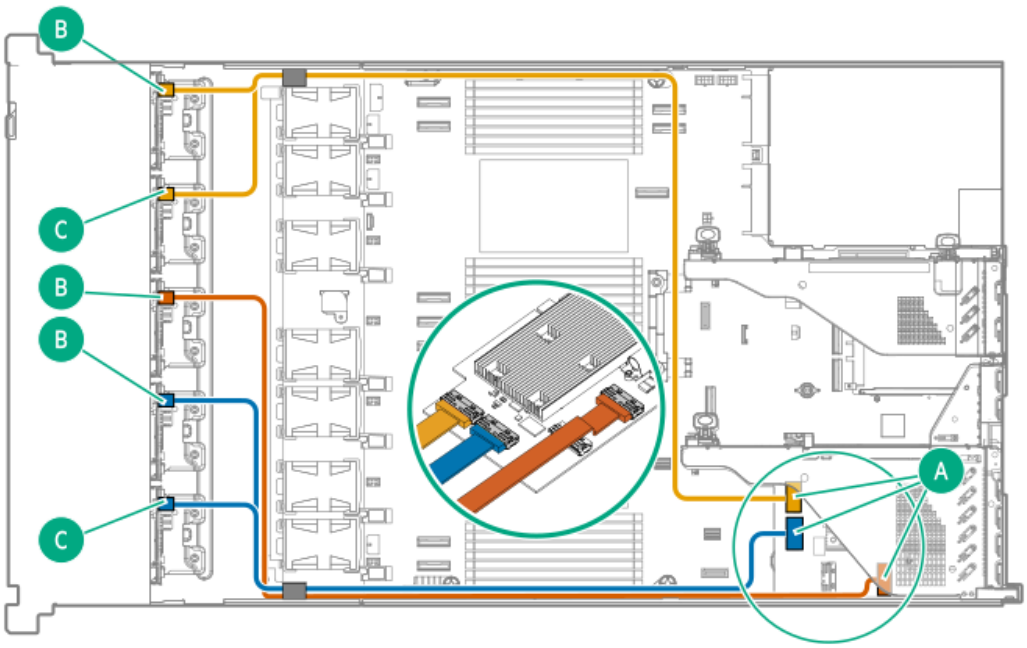


Cable part number	Color	From	To
P75570-001	Blue	Box 4: drive backplane port	Slot 1 type-p controller Port 4i
	Orange	Box 5: drive backplane port	Slot 1 type-p controller Port 3i

Drive box cabling for boxes 1–5

8 SFF Boxes 1–5 x4 (x2 BW) NVMe + 2 SFF x4 NVMe to type-p controller in Slot 1

MR932i-p:



Cable part number	Color	From	To
P79152-001	Gold	Boxes 1–2: Drive backplane	Slot 1 type-p controller Port 2i
P79153-001	Orange	Box 3: Drive backplane	Slot 1 type-p controller Port 3i
P75275-001	Blue	Boxes 4–5: Drive backplane	Slot 1 type-p controller Port 1i

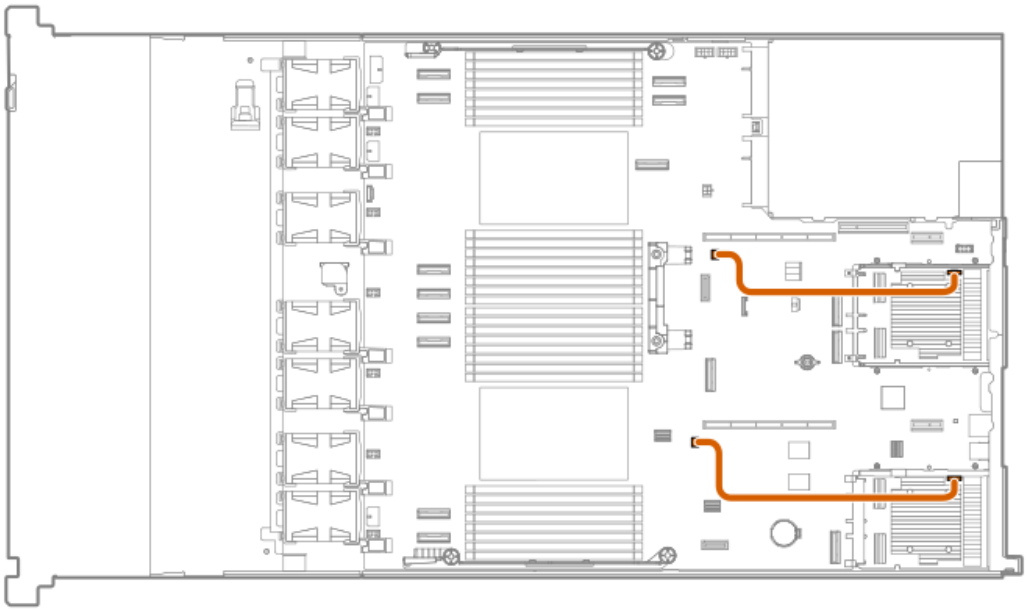
Storage controller backup power cabling

The exact route of the storage controller backup power cabling will depend on:

- The riser or OCP slot where the controller is installed
- The location of the backup power cable connector on the controller

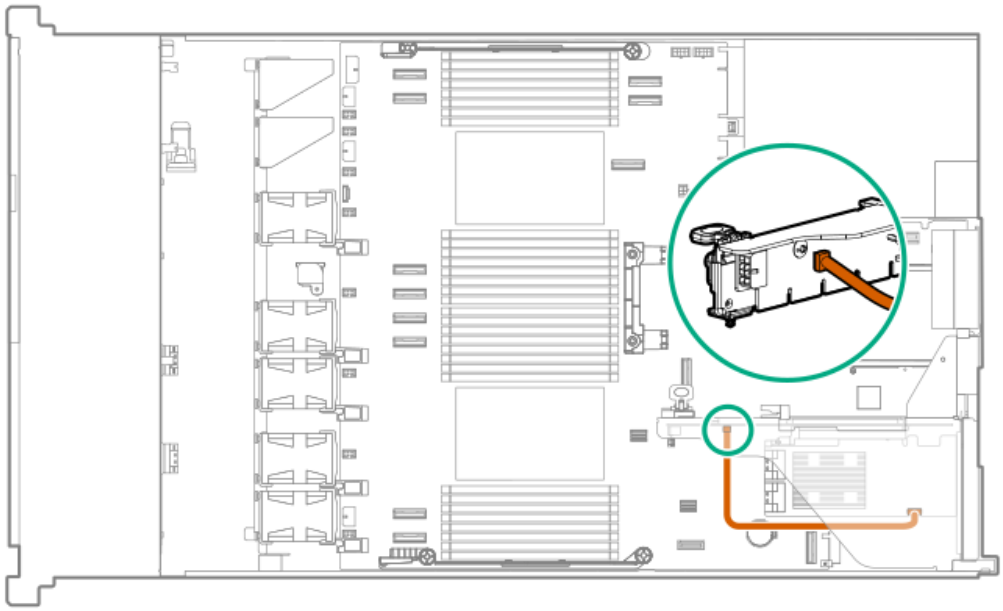
Use the following diagrams for reference only.

Storage controller backup power cabling: type-o storage controllers



Cable color	From	To
Orange	Storage backup power connector 1	Slot 14 OROC storage backup power cable connector
	Storage backup power connector 2	Slot 15 OROC storage backup power cable connector

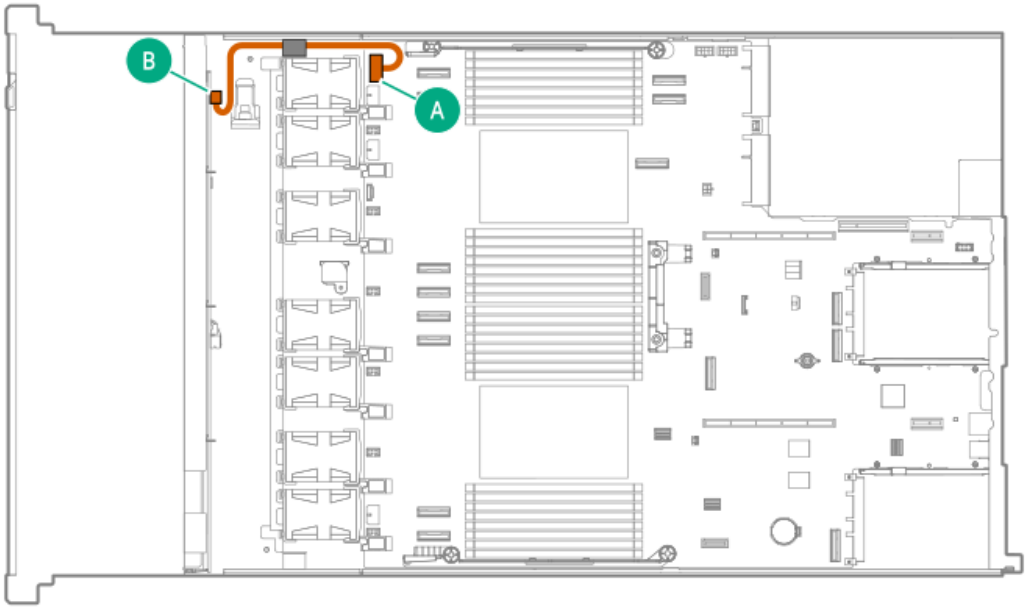
Storage controller backup power cabling: type-p storage controller in the primary riser



Cable color	From	To
Orange	Slot 1 primary butterfly riser: storage backup power connector	Primary type-p controller: storage backup power cable connector

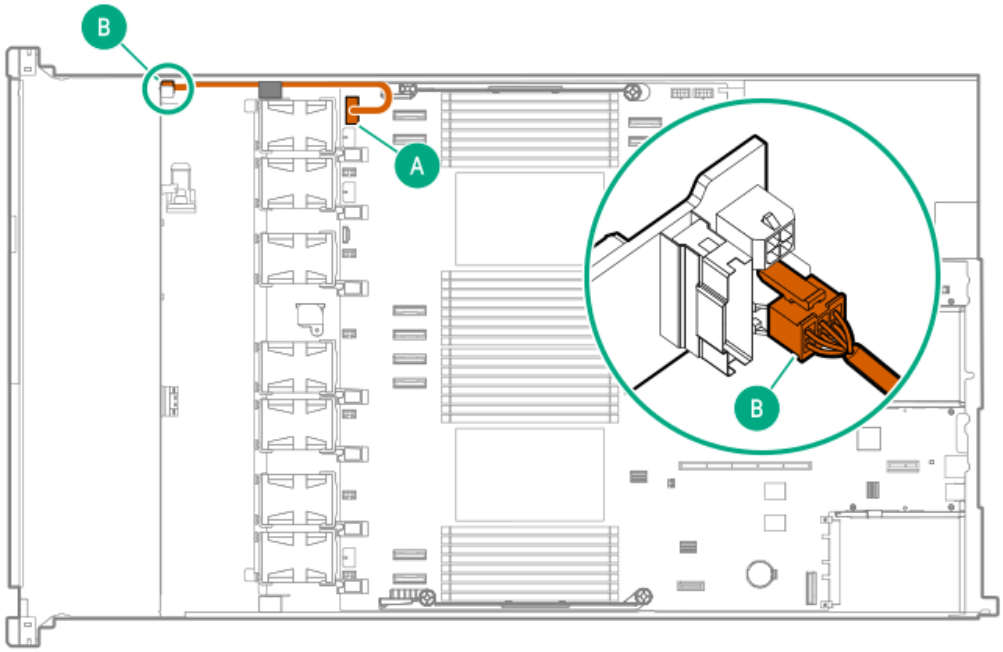
Drive power cabling

4 LFF backplane power



Cable part number	Color	From	To
P75565-001	Orange	4 LFF backplane	Backplane Box 1 power connector

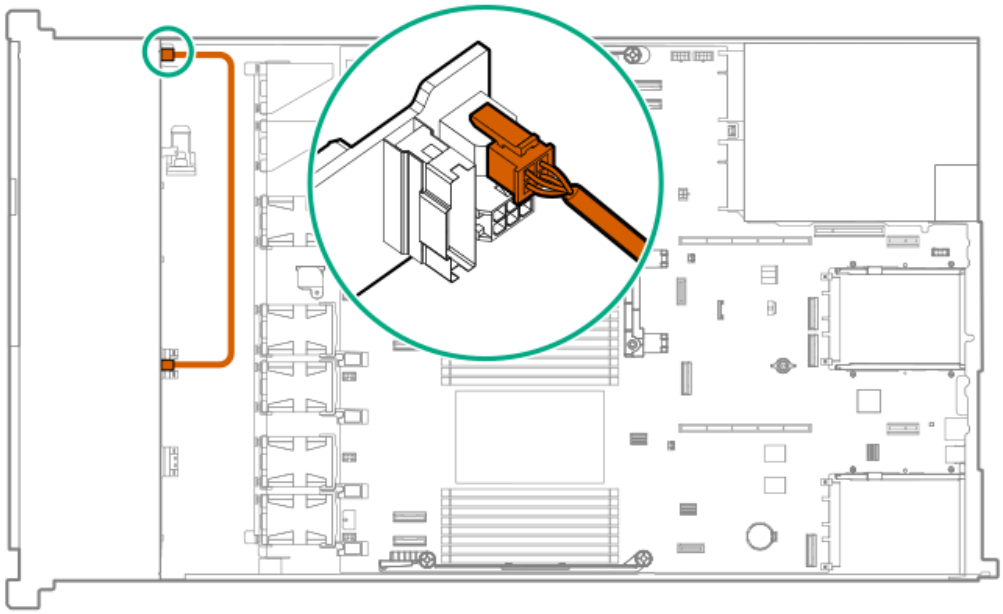
8 SFF backplane power



Cable part number	Color	From	To
P75566-001	Orange	8 SFF backplane	Backplane Box 1 power connector

2 SFF backplane power

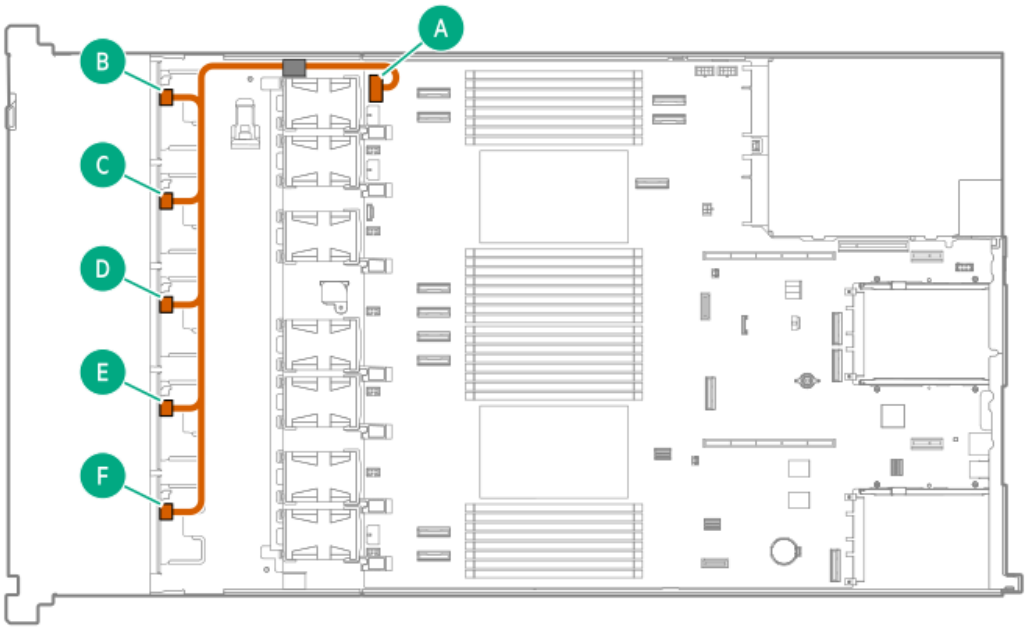
This cable is supported in the 8 SFF drive configuration.



Cable part number	Color	From	To
869667-001	Orange	2 SFF backplane	8 SFF backplane

10 SFF / 20 E3.S server: Stacked 2 SFF / 4 EDSFF backplane power

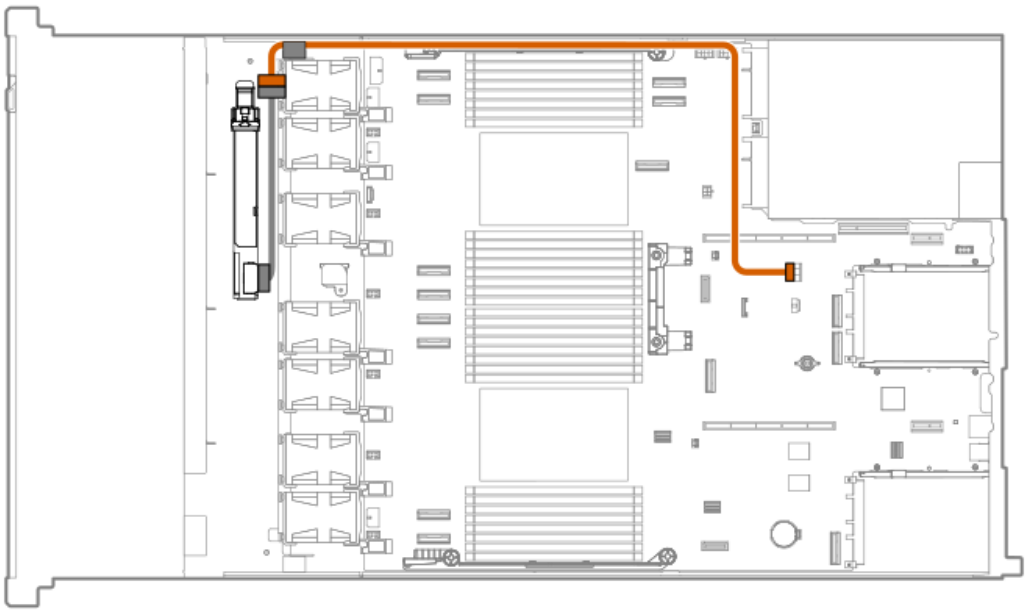
This cable is supported in the 10 SFF / 20 E3.S server or servers using the mixed drive type configuration.



Cable part number	Color	From	To
P75316-001	Orange	SFF/ EDSFF backplane	Backplane power connector

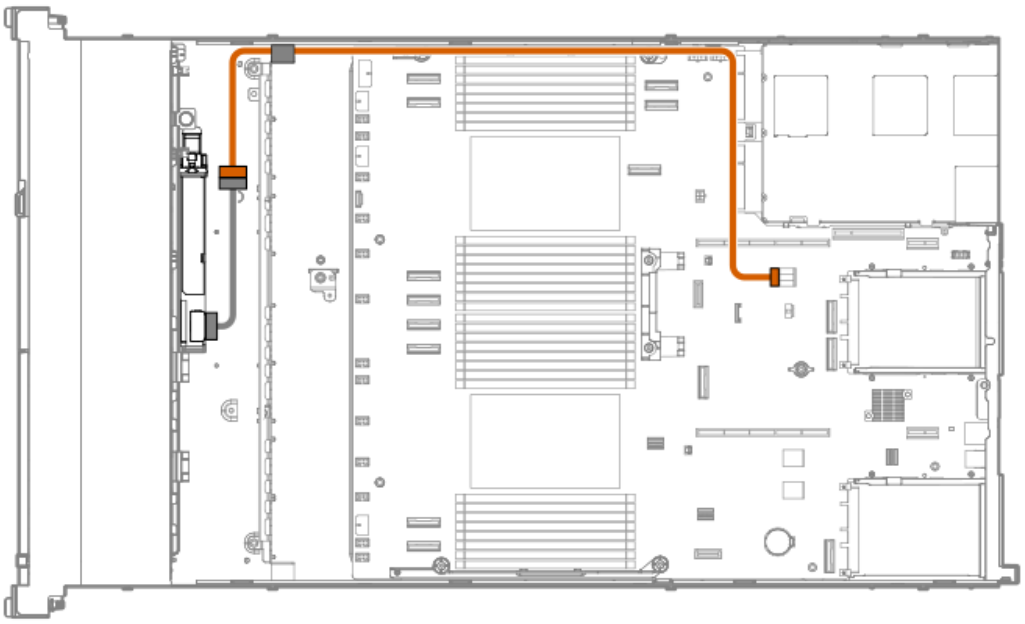
Energy pack cabling

Energy pack cabling: 4 LFF drive configuration



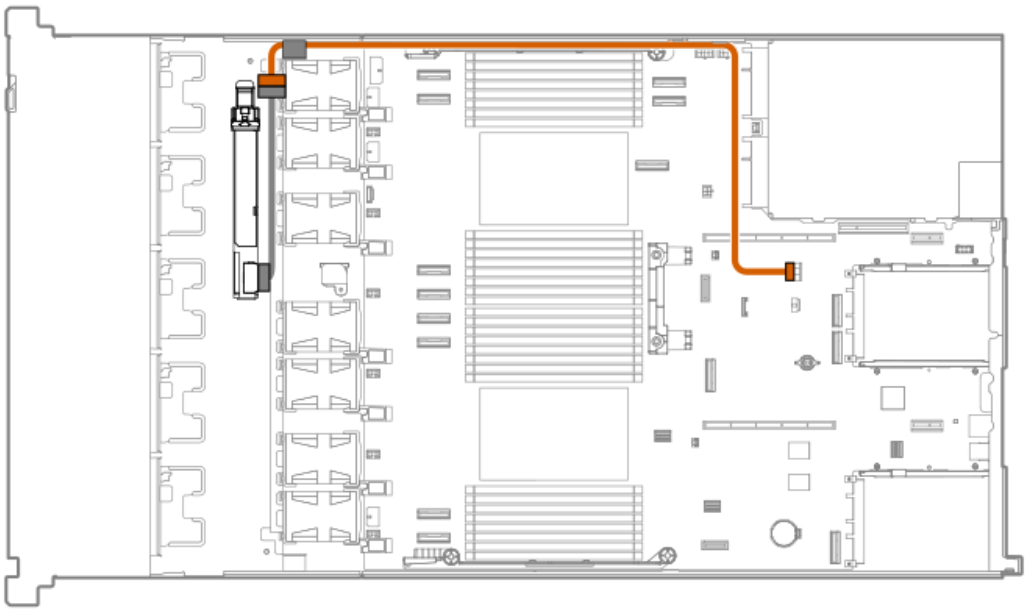
Cable part number	Color	From	To
P45618-001	Orange	Energy pack	Energy pack connector

Energy pack cabling: 8 SFF drive configuration



Cable part number	Cable color	From	To
P45618-001	Orange	Energy pack	Energy pack connector

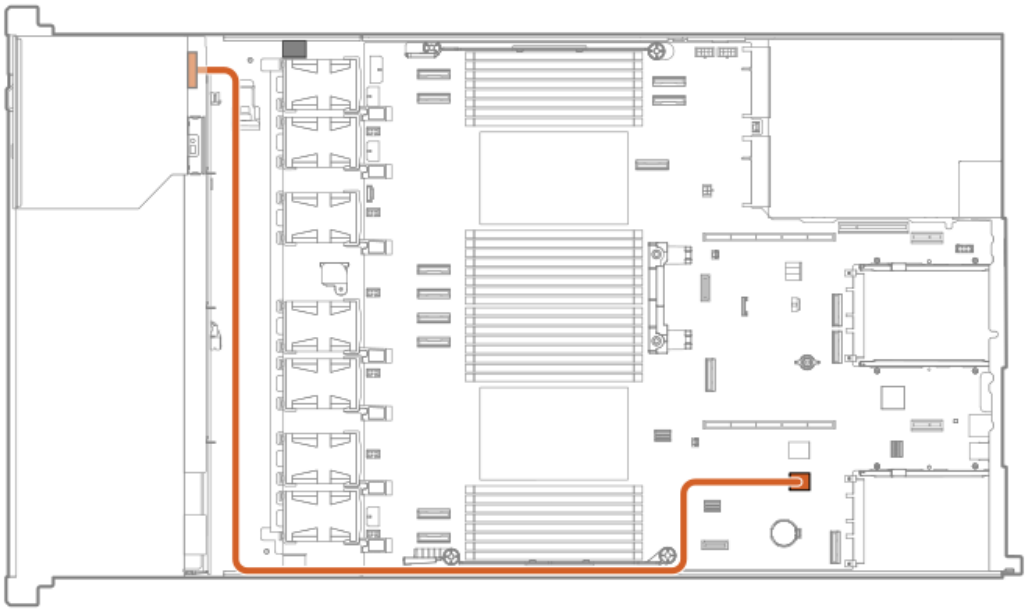
Energy pack cabling: 10 SFF / 20 E3.S server



Cable part number	Cable color	From	To
P45618-001	Orange	Energy pack	Energy pack connector

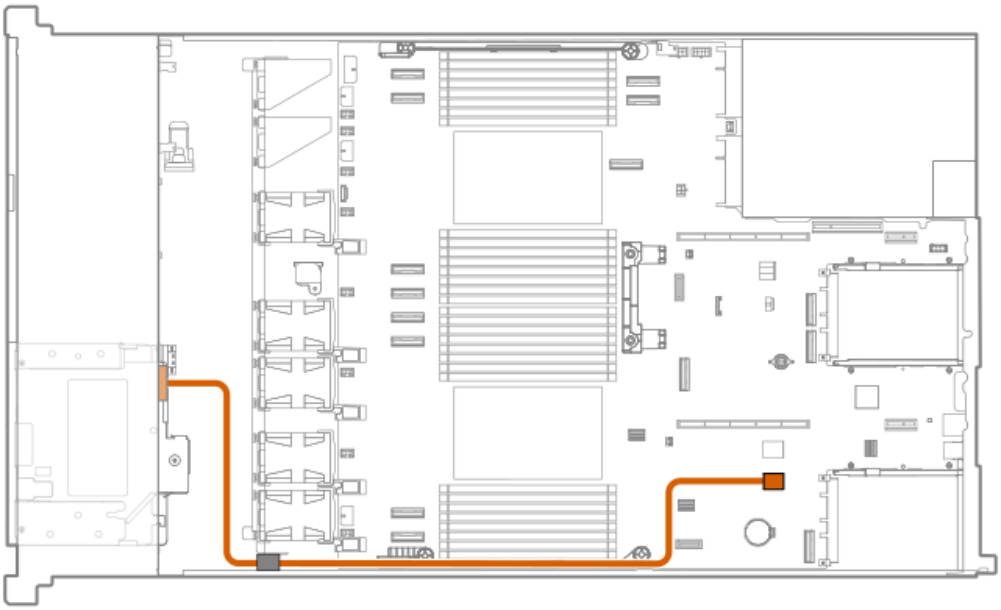
Optical disk drive cabling

4 LFF drive configuration: optical disk drive cabling



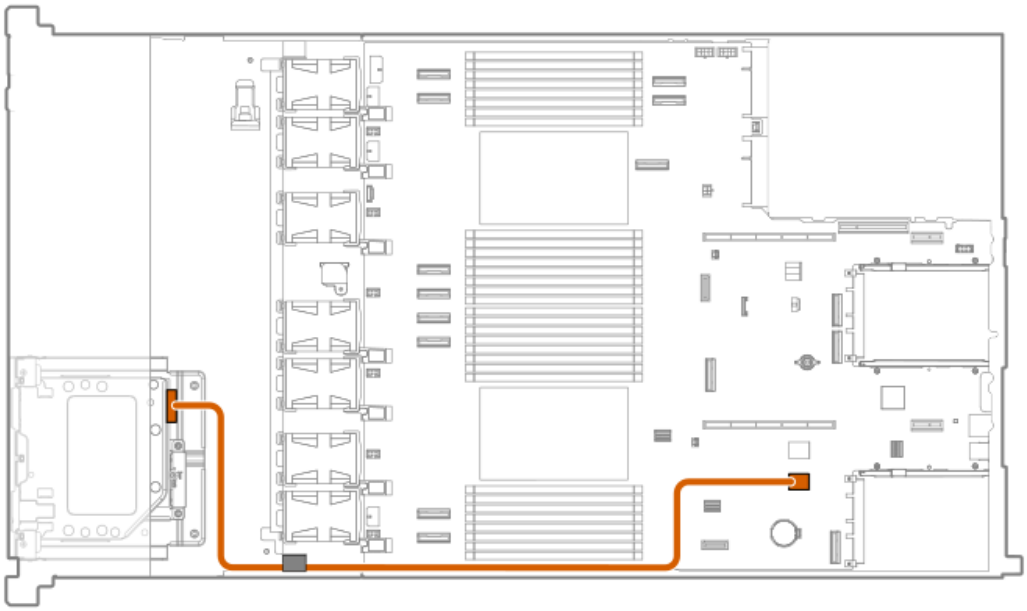
Cable part number	Color	From	To
P73776-002	Orange	Optical disk drive	Internal USB 3.2 Gen1 port

8 SFF drive configuration: optical disk drive cabling



Cable part number	Color	From	To
P73776-002	Orange	Optical disk drive	Internal USB 3.2 Gen1 port

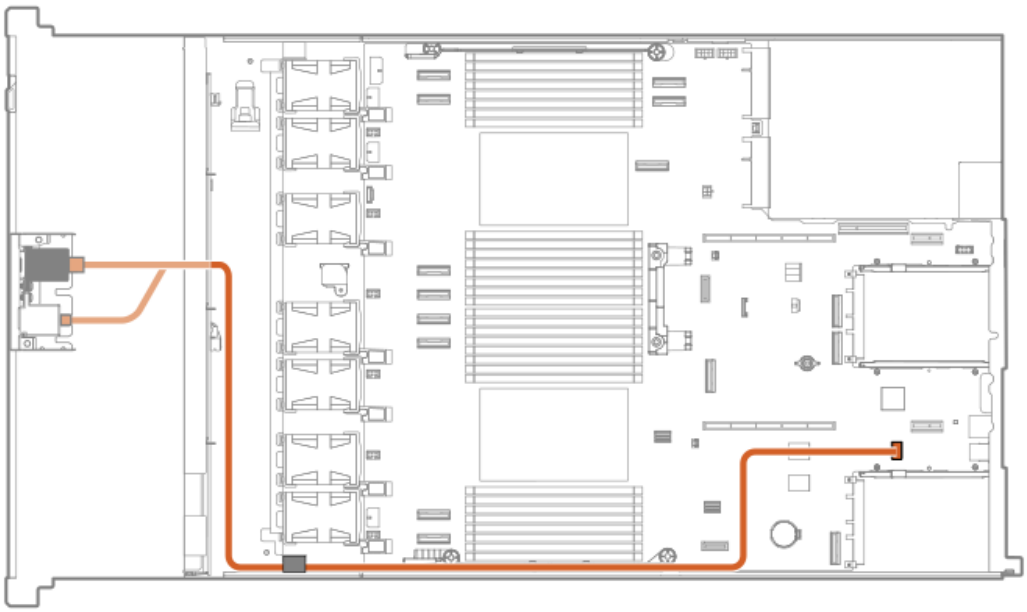
Mixed drive type configuration: optical disk drive cabling



Cable part number	Color	From	To
P73776-002	Orange	Optical disk drive	Internal USB 3.2 Gen1 port

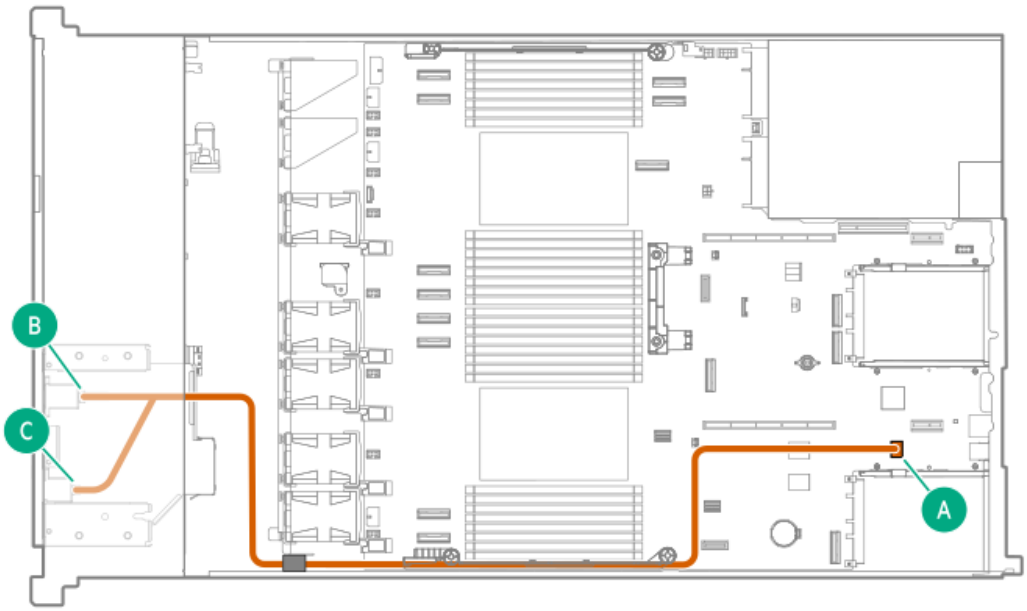
Front DisplayPort / USB cabling

4 LFF drive configuration: DisplayPort / USB cabling



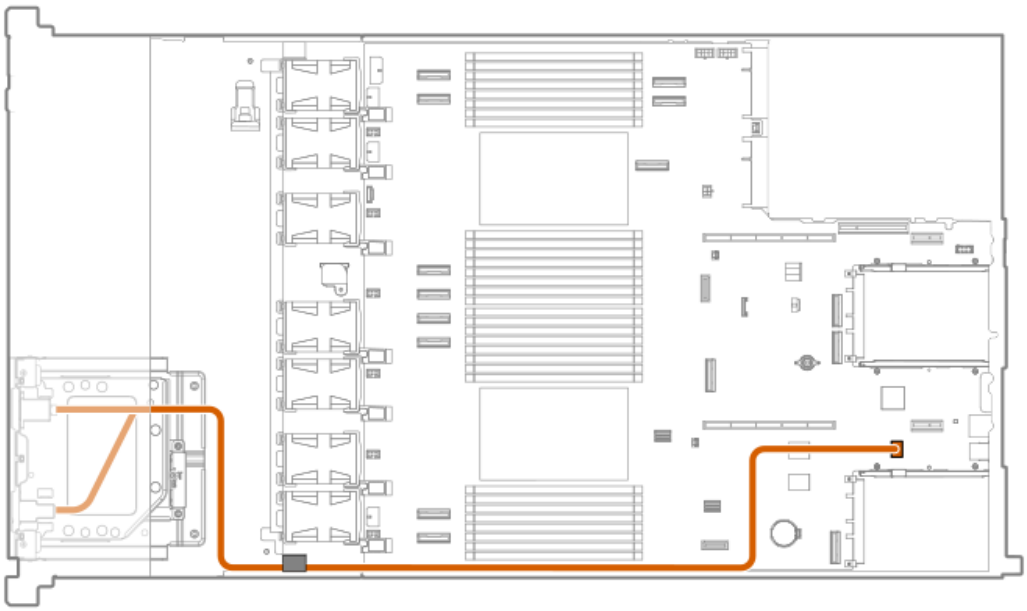
Cable part number	Color	From	To
P73948-001	Orange	4 LFF front display/USB	DisplayPort and USB 2.0 port

8 SFF drive configuration: DisplayPort / USB cabling



Cable part number	Color	From	To
P73948-001	Orange	8 SFF display/USB/ODD	DisplayPort and USB 2.0 port

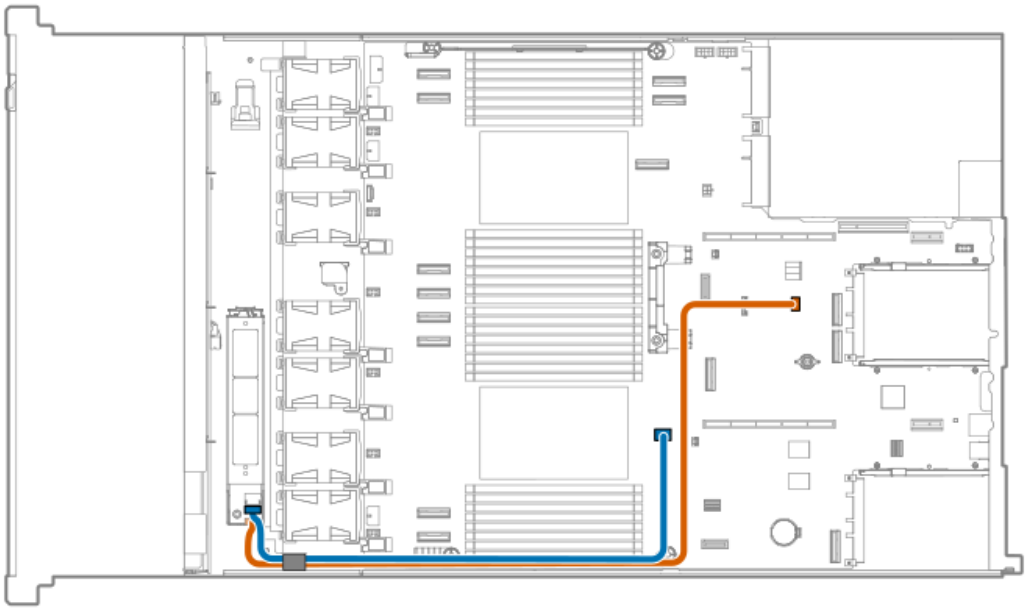
Mixed drive type configuration: DisplayPort / USB cabling



Cable part number	Color	From	To
P73948-001	Orange	Mixed drive type display/USB/ODD	DisplayPort and USB 2.0 port

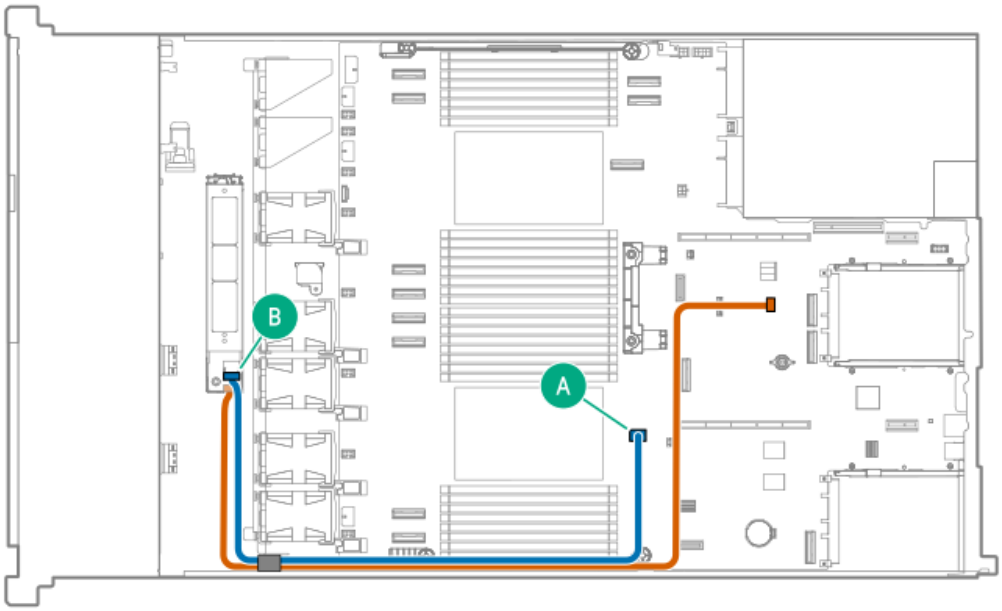
Internal boot device cabling

- **4 LFF server**



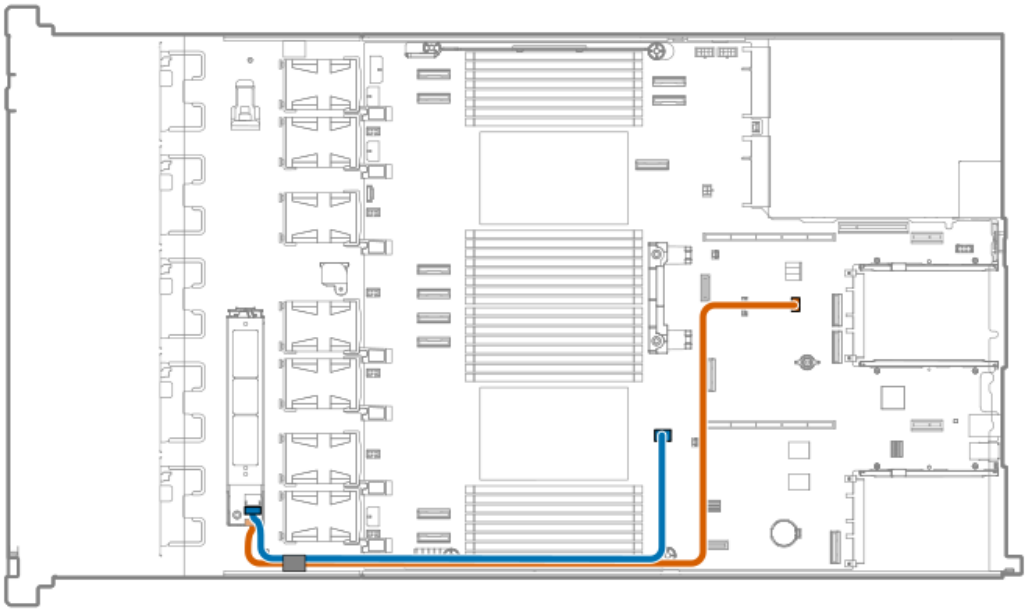
Cable part number	Color	From	To
P48956-001	Orange	Boot device power connector	NS204i-u power connector
P74839-001	Blue	Boot device signal connector	NS204i-u signal connector

- **8 SFF server**



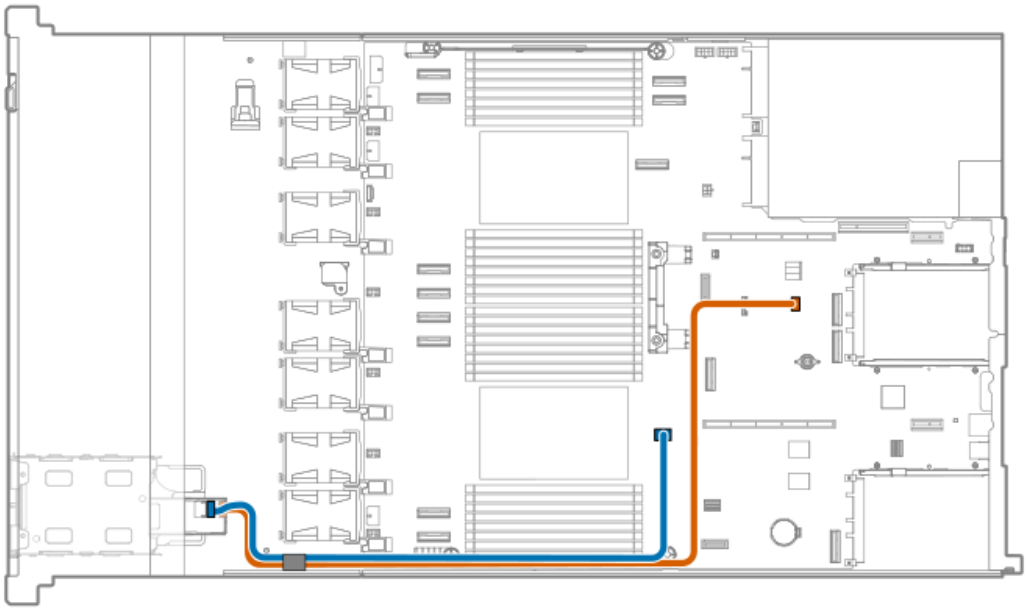
Cable part number	Color	From	To
P48956-001	Orange	Boot device power connector	NS204i-u power connector
P74839-001	Blue	Boot device signal connector	NS204i-u signal connector

- **10 SFF / 20 E3.S server**



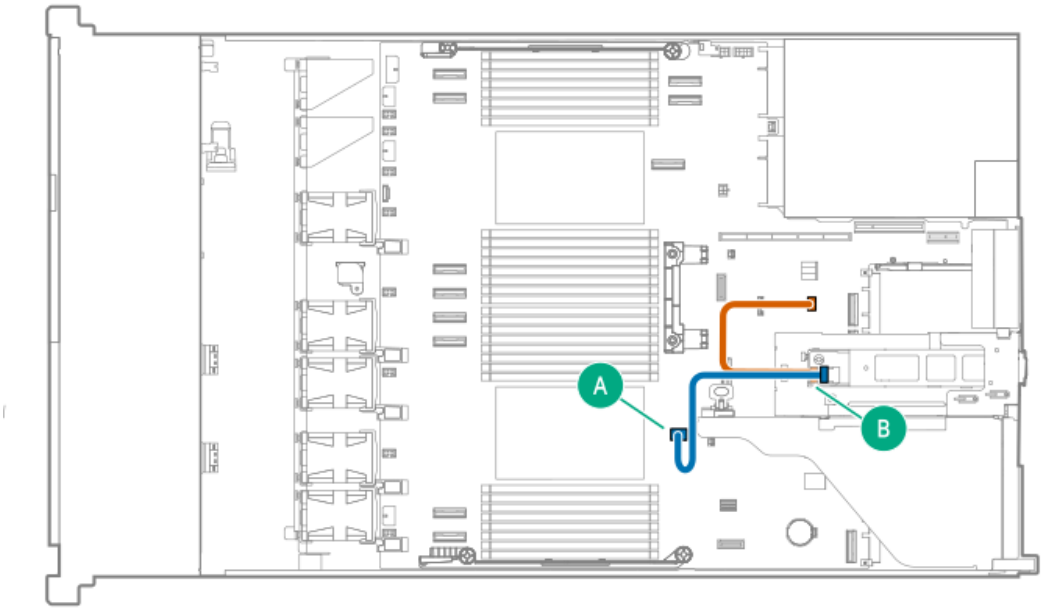
Cable part number	Color	From	To
P48956-001	Orange	Boot device power connector	NS204i-u power connector
P74839-001	Blue	Boot device signal connector	NS204i-u signal connector

Front panel boot device in the 10 SFF / 20 E3.S server or mixed drive type configuration



Cable part number	Color	From	To
P48956-001	Orange	Boot device power connector	NS204i-u power connector
P74839-001	Blue	Boot device signal connector	NS204i-u signal connector

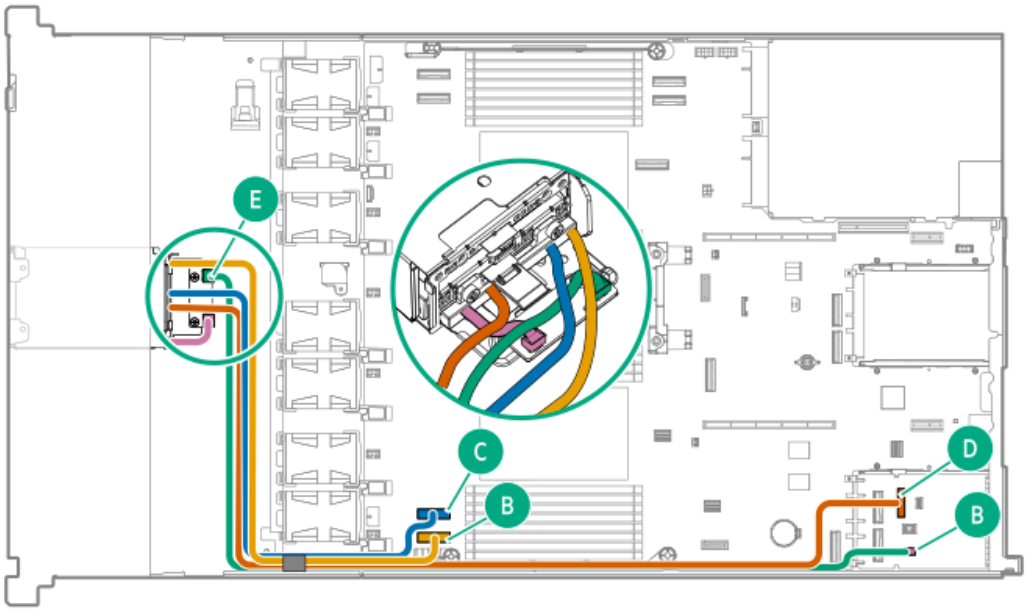
Riser cage boot device cabling



Cable part number	Color	From	To
P54088-001	Orange	Boot device power connector	NS204i-u power connector
P71913-001	Blue	Boot device signal connector	NS204i-u signal connector

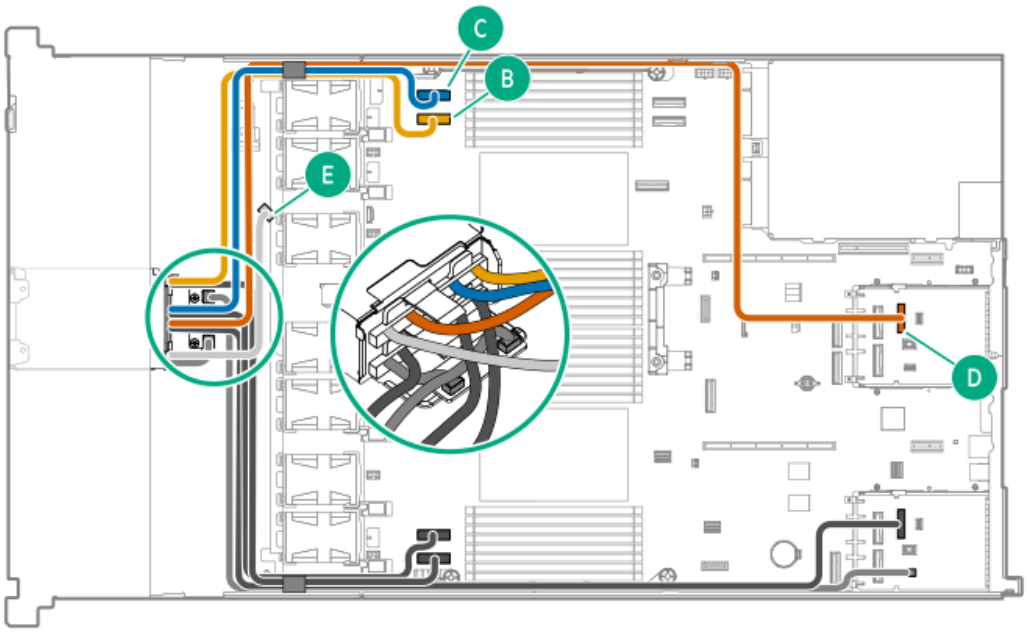
Front OCP NIC cabling

Primary front OCP NIC cabling



Cable part number	Color	From	To
P71942-001	Gold	Front OCP NIC cable	MCIO port 1
	Blue		MCIO port 2
	Orange		OCP NIC interposer: J35
	Pink		PHY board: J1 (to-INT)
P73927-001	Green	PHY board: J2 (to-OCP)	OCP NIC interposer: J4 (to-PHY)

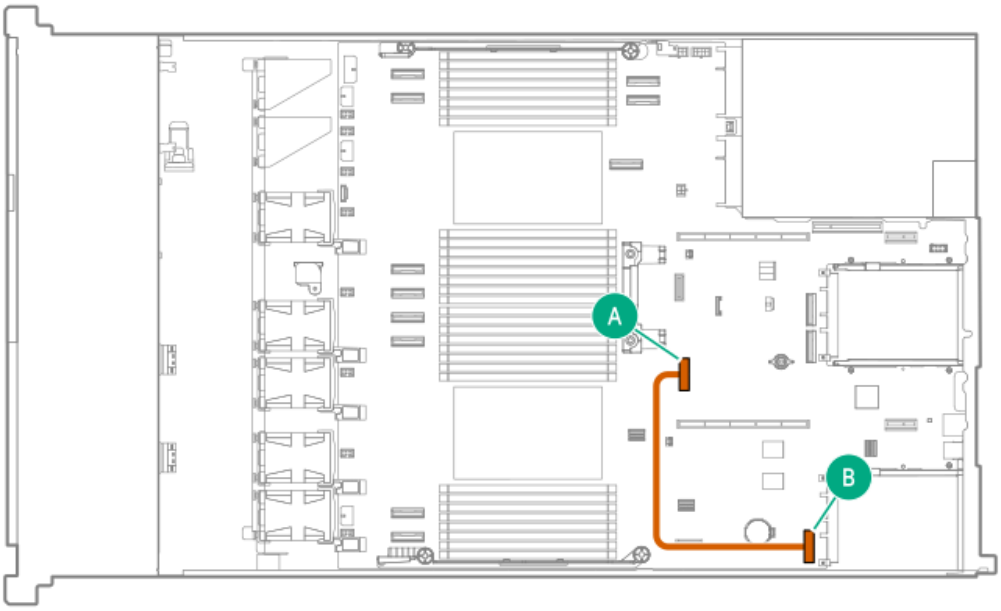
Secondary front OCP NIC cabling



Cable part number	Color	From	To
P71942-001	Gold	Front OCP NIC cable	MCIO port 7
	Blue		MCIO port 8
	Orange		OCP NIC interposer: J35
	Light gray		—

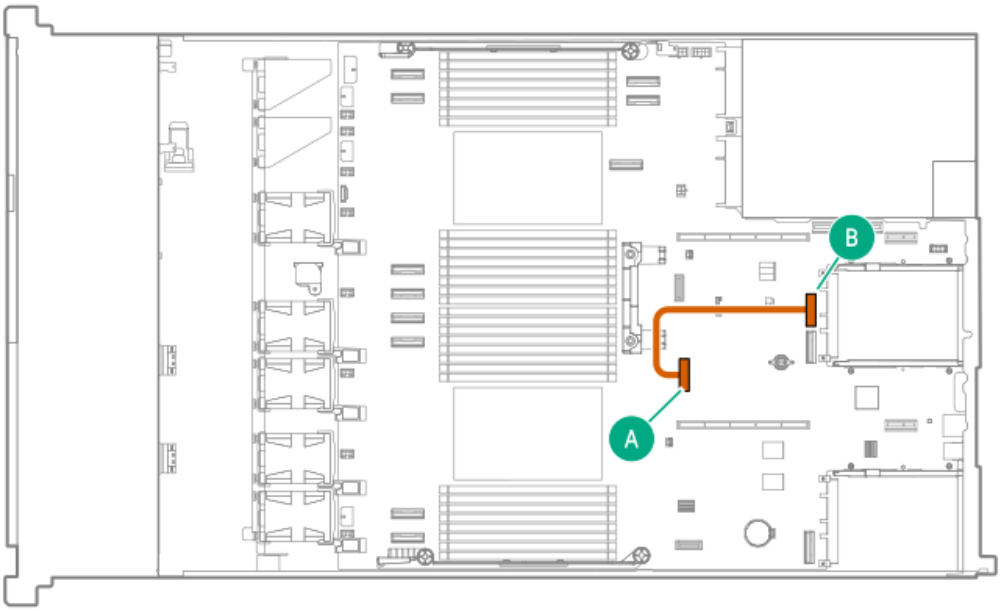
OCP bandwidth enablement cabling

Slot 14 OCP A x16 enablement



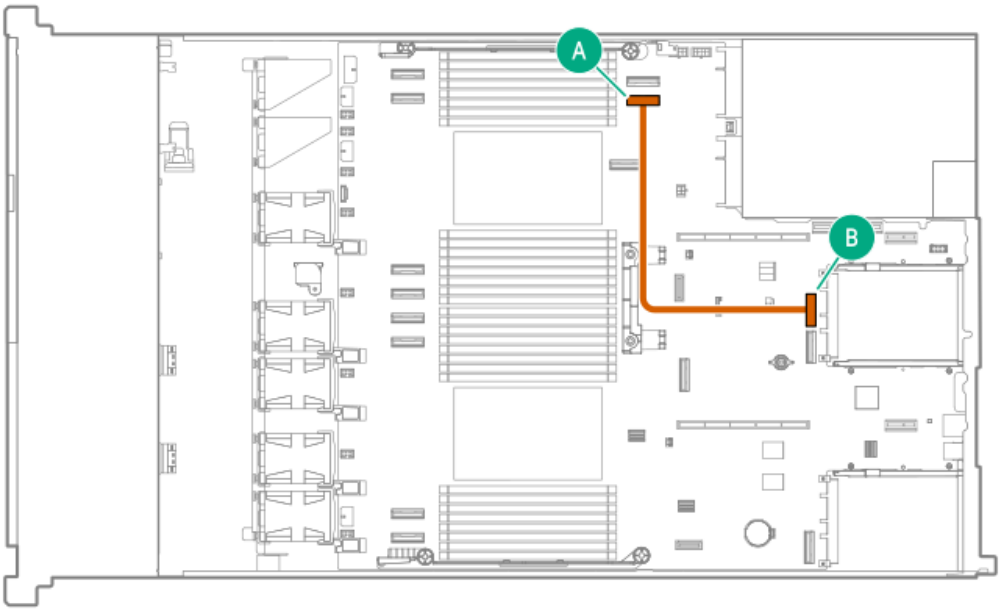
Cable part number	Color	From	To
P74890-001	Orange	OCP A internal port 1	MCIO port 12

CPU1 to Slot 15 OCP B x8 enablement



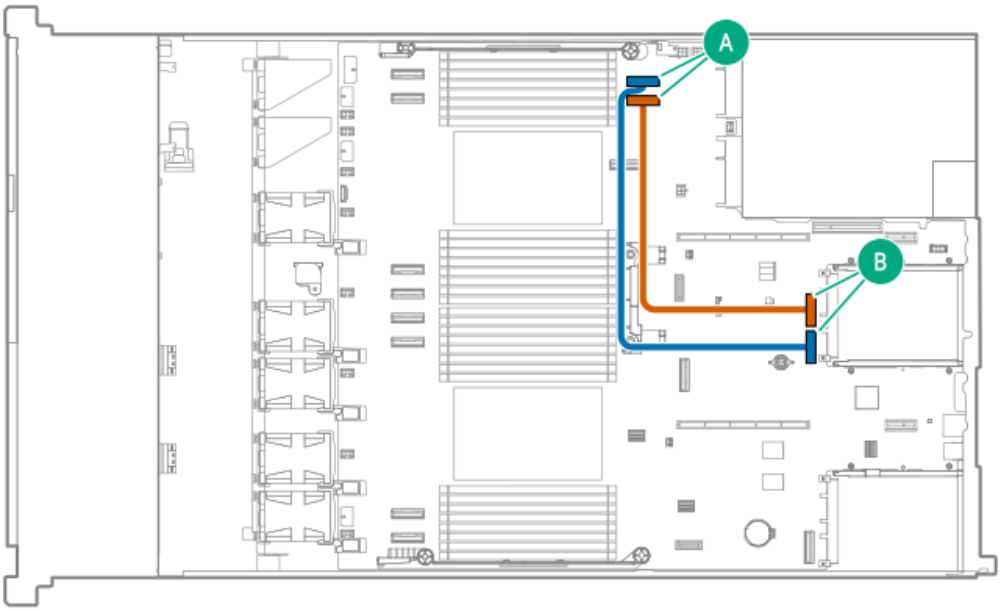
Cable part number	Color	From	To
P74889-001	Orange	OCP B internal port 1	MCIO port 12

CPU2 to Slot 15 OCP B x8 enablement



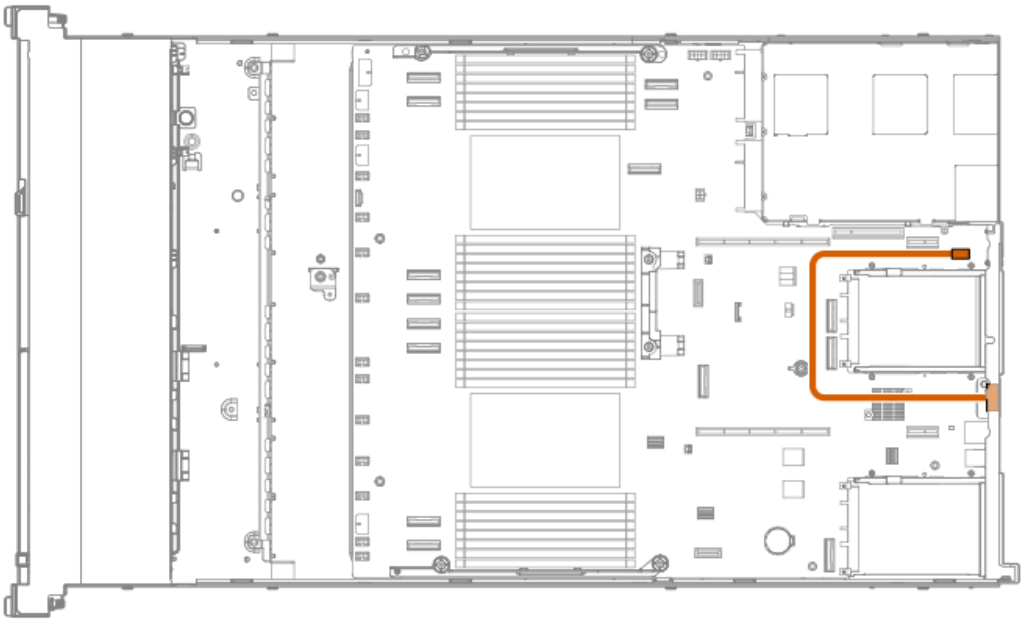
Cable part number	Color	From	To
P74891-001	Orange	OCP B internal port 1	MCIO port 10

CPU2 to Slot 15 OCP B x16 enablement



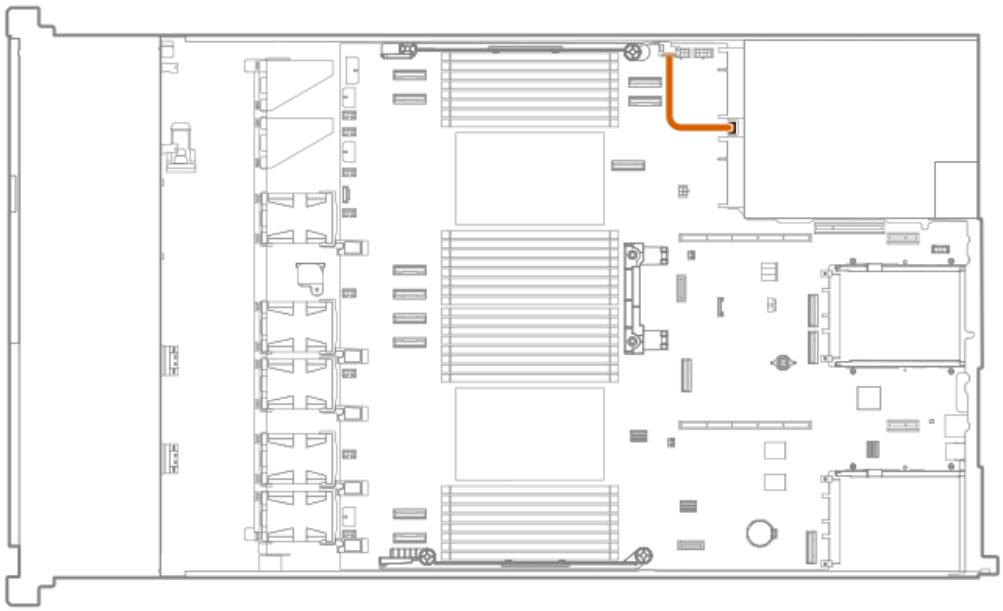
Cable part number	Color	From	To
P74891-001	Orange	OCP B internal port 1	MCIO port 10
P74891-001	Blue	OCP B internal port 2	MCIO port 9

Serial port cabling



Cable part number	Color	From	To
P45623-001	Orange	Serial port	Serial port cable connector

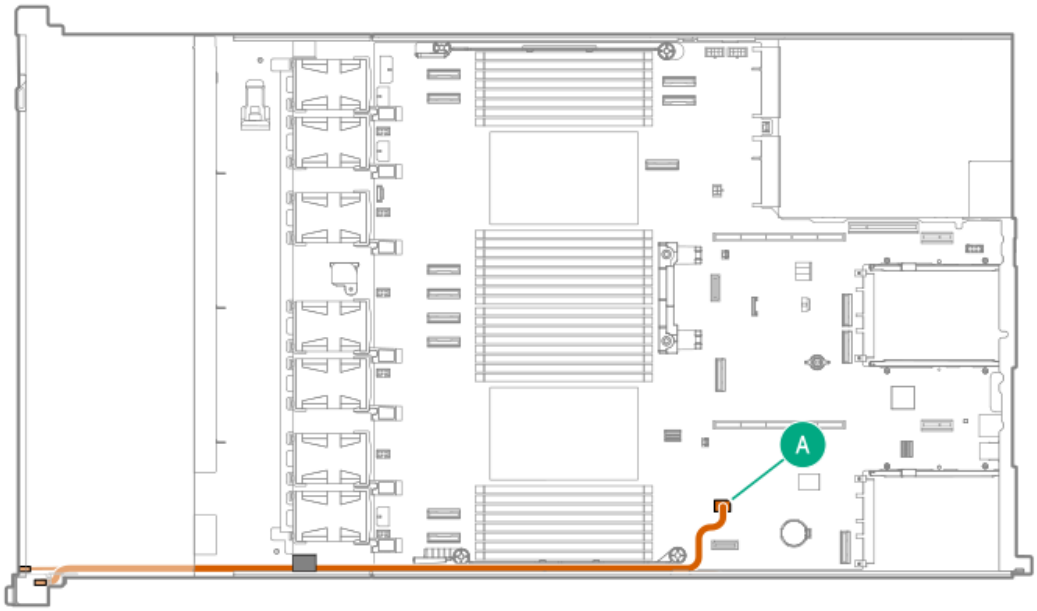
Chassis intrusion detection switch cabling



Cable part number	Color	From	To
P47751-001	Orange	Intrusion detection switch	Chassis intrusion detection switch connector

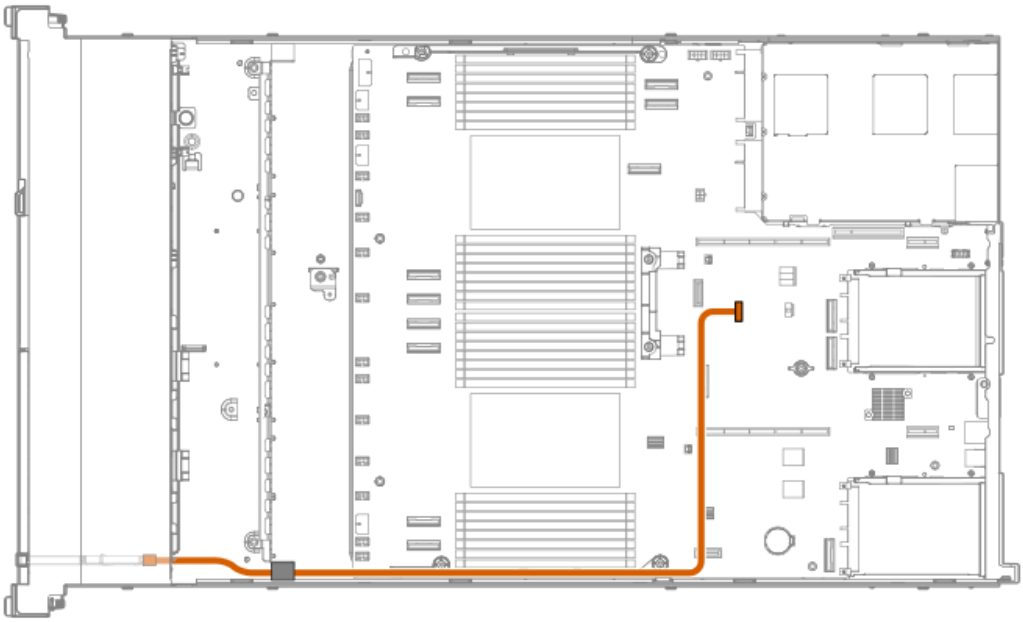
Front I/O cabling

Front I/O cables are preinstalled in the server.



Cable part number	Color	From	To
P71909-002	Orange	Right chassis ear	Front I/O connector

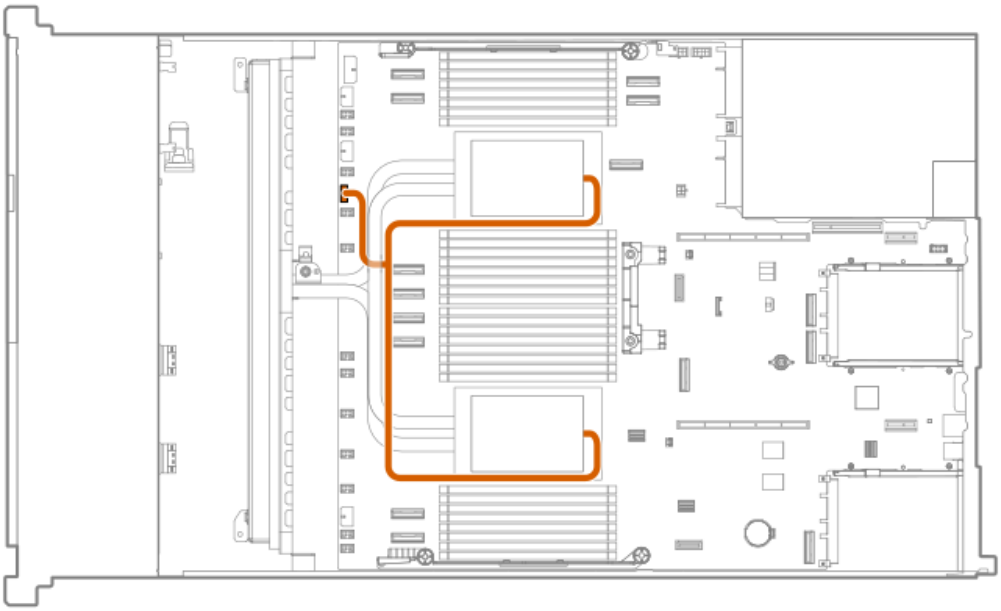
System Insight Display cabling



Cable part number	Color	From	To
P48971-001	Orange	System Insight Display module	SID connector

Liquid cooling module cabling

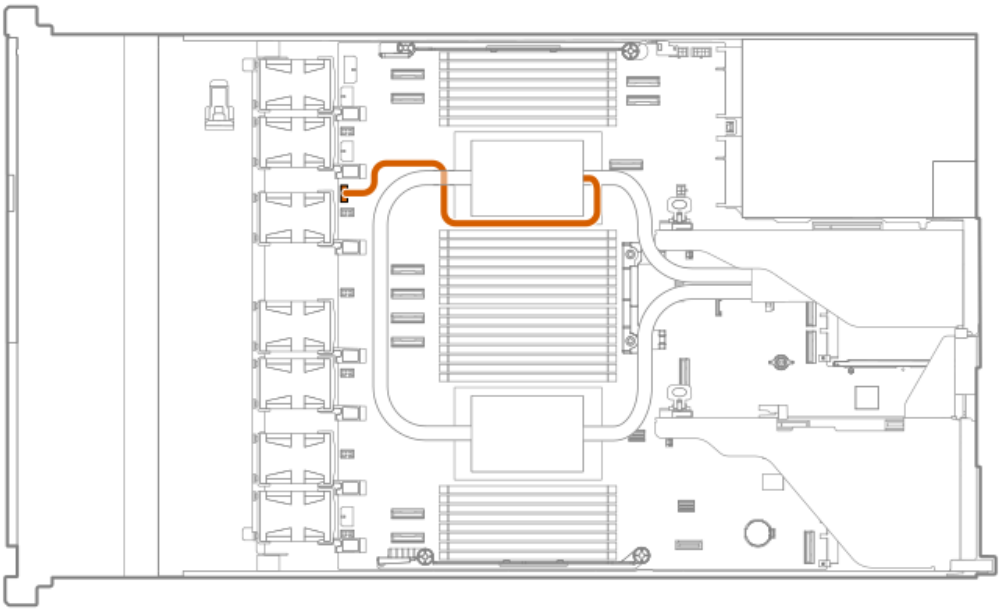
Closed-loop liquid cooling module cabling



Option kit	Color	From	To
Closed-loop liquid cooling module	Orange	Liquid cooling heatsink	Liquid cooling module connector

Direct liquid cooling module cabling

The cable routing is identical for both available direct liquid cooling solutions (P74208-B21, P79273-B21).



Option kit	Color	From	To
DLC cold plate module *	Orange	Cold plate module	Liquid cooling module connector

* The DLC cold plate modules are factory-installed options.

Configuration resources

Use the following resources to find documentation for configuring and managing your server.

- Some utilities might not apply to your server. For information about server compatibility with the products listed in this chapter, see the product QuickSpecs (**https://www.hpe.com/info/quickspecs**).
- Products ordered from HPE Factory Express might have already been configured with some or all the configurations in this chapter. To determine if any additional setup is required, see your HPE Factory Express order.
- For one-stop access to version-specific software and firmware documentation, including the latest product release notes, see this quick links page:
  https://www.hpe.com/support/hpeproductdocs-quicklinks

Subtopics

Updating firmware or system ROM
Configuring the server
Configuring storage controllers
Deploying an OS
Configuring security
Server management
Managing Linux-based high performance compute clusters

Updating firmware or system ROM

To	Use
Download service packs	• Service Pack for HPE ProLiant **https://www.hpe.com/servers/spp/download** • Get an overview of SPP and its ecosystem **https://www.hpe.com/support/SPP-overview-videos-en**
Deploy service packs to a single server	Smart Update Manager **https://www.hpe.com/support/hpesmartupdatemanager-quicklinks**
Deploy service packs to multiple servers	HPE OneView **https://www.hpe.com/support/hpeoneview-quicklinks**
Updating iLO or system firmware in a single server	iLO user guide **https://www.hpe.com/support/hpeilodocs-quicklinks**
• Enable policy-based management of server or server group firmware for distributed server infrastructure • Monitor server compliance with a configured firmware baseline • Receive automatic iLO firmware updates • Receive baseline update alerts	HPE Compute Ops Management **https://www.hpe.com/support/hpe-gl-com-quicklinks**

Configuring the server

To configure	Use
Single server (GUI)	• Intelligent Provisioning https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks • iLO remote console or web interface https://www.hpe.com/support/hpeilodocs-quicklinks • UEFI System Utilities https://www.hpe.com/support/hpeuefisystemutilities-quicklinks • HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-com-quicklinks
Single server (scripting)	• RESTful Interface Tool https://www.hpe.com/support/restfulinterface/docs • Python iLO Redfish Library (python-ilorest-library) https://github.com/HewlettPackard/python-ilorest-library • Scripting Tools for Windows Powershell https://www.hpe.com/info/powershell/docs • iLO RESTful API https://servermanagementportal.ext.hpe.com/ • HPE Compute Ops Management API https://developer.greenlake.hpe.com/
Multiple servers (either UI or scripting)	• HPE OneView [1] https://www.hpe.com/support/hpeoneview-quicklinks • HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-com-quicklinks ○ **Server settings:** Define server-specific parameters such as firmware baselines, and then apply them to server groups. ○ **Server groups:** Organize servers into custom-defined sets with associated server settings, and then apply group-specific policies to create a consistent configuration across the servers in the group.

[1] For servers running HPE OneView, do not use another tool, such as iLO, to delete or change certain settings. For more information about using HPE OneView and iLO to manage the same server, see the iLO user guide at https://www.hpe.com/support/hpeilodocs-quicklinks.

Configuring storage controllers

Controller type	Documentation
HPE MR Gen11 controllers	• HPE MR Gen11 Controller User Guide **https://hpe.com/support/MR-Gen11-UG** • MR Gen11 controller configuration: **https://www.hpe.com/support/MR-Gen11-configuration** • MR Gen11 controller RAID creation: **https://www.hpe.com/support/MR-Gen11-RAID-creation** Configuration guides: • HPE MR Storage Administrator User Guide **https://www.hpe.com/support/MRSA** • HPE StorCLI User Guide **https://www.hpe.com/support/StorCLI**
Intel VROC for HPE Gen12	• Intel Virtual RAID on CPU for HPE User Guide **https://www.hpe.com/support/VROC-UG** • Intel VROC NVMe RAID quick installation: **https://www.hpe.com/support/VROC-NVMe-RAID-installation** OS-specific configuration guides: • Intel Virtual RAID on CPU (Intel VROC) for Windows User Guide **https://docs.graidtech.com/vroc/User_Guides/000094004_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_Windows/** • Intel Virtual RAID on CPU (Intel VROC) for Linux User Guide **https://docs.graidtech.com/vroc/User_Guides/000094694_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_Linux/** • Intel Volume Management Device Driver for VMware ESXi User Guide **https://docs.graidtech.com/vroc/User_Guides/000094787_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_VMware_ESXi/**

Deploying an OS

For a list of supported operating systems, see the HPE Servers Support & Certification Matrices:

https://www.hpe.com/support/Servers-Certification-Matrices

To	See
Deploy an OS using HPE Compute Ops Management	HPE Compute Ops Management User Guide https://www.hpe.com/support/hpe-gl-com-quicklinks
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks
Deploy an OS using iLO virtual media	iLO user guide https://www.hpe.com/support/hpeilodocs-quicklinks
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE Compute servers https://www.hpe.com/support/UEFIGen12-UG-en
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide https://www.hpe.com/info/boot-from-san-config-guide

Configuring security

To	See
Implement server security best practices.	• HPE Compute Security Reference Guide https://www.hpe.com/info/server-security-reference-en • HPE iLO 7 Security Technology Brief https://www.hpe.com/support/ilo7-security-en
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy https://www.hpe.com/info/server-config-lock-UG-en

Server management

To monitor	See
Single server	HPE iLO https://www.hpe.com/support/hpeilodocs-quicklinks
Multiple servers	HPE OneView https://www.hpe.com/support/hpeoneview-quicklinks
Single or multiple servers	HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-com-quicklinks

Managing Linux-based high performance compute clusters

To	Use
Provision, manage, and monitor clusters.	HPE Performance Cluster Manager https://www.hpe.com/support/hpcm_manuals
Optimize your applications.	HPE Performance Analysis Tools https://www.hpe.com/info/perftools
Optimize software library for low latency and high bandwidth, both on-node and off-node, for point-to-point and collective communications.	HPE Cray Programming Environment User Guide https://www.hpe.com/info/cray-pe-user-guides

Safety, warranty, and regulatory information

Subtopics

Regulatory information
Warranty information

Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

https://www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

https://www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

https://www.hpe.com/info/environment

Subtopics

Notices for Eurasian Economic Union
Turkey RoHS material content declaration
Ukraine RoHS material content declaration

Notices for Eurasian Economic Union

EAC

Manufacturer and Local Representative Information

Manufacturer information:

Hewlett Packard Enterprise Company, 1701 E Mossy Oaks Road, Spring, TX 77389 U.S.

Local representative information Russian:

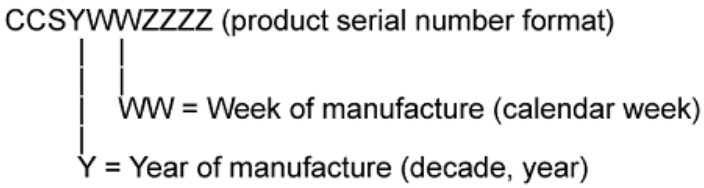
- **Russia**
  ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

Local representative information Kazakh:

- **Russia**
  ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандык ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.



If you need help identifying the manufacturing date, contact **tre@hpe.com**.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

To view the warranty information for your product, see the **warranty check tool**.

Specifications

Subtopics

Environmental specifications
Server and rackmounting specifications
Power supply specifications

Environmental specifications

Specifications	Value
Temperature range	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	Air-cooled systems: -30°C to 60°C (-22°F to 140°F) Liquid-cooled systems (DLC, CLLC): -10 °C to 60°C (14°F to 140°F) **CAUTION:** To prevent freezing the coolant and damaging the liquid cooling module, do not keep the liquid-cooled systems below -10°C (14°F).
Relative humidity (noncondensing)	—
Operating	8% to 90% 28°C (82.4°F) maximum wet bulb temperature, noncondensing
Nonoperating	5% to 95% 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
Altitude	—
Operating	3050 m (10,000 ft) This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
Nonoperating	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

Standard operating support

10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change might be limited by the type and number of options installed.

System performance under standard operating support might be reduced if operating above 30°C (86°F) or with a faulty fan installed.

Extended ambient operating support

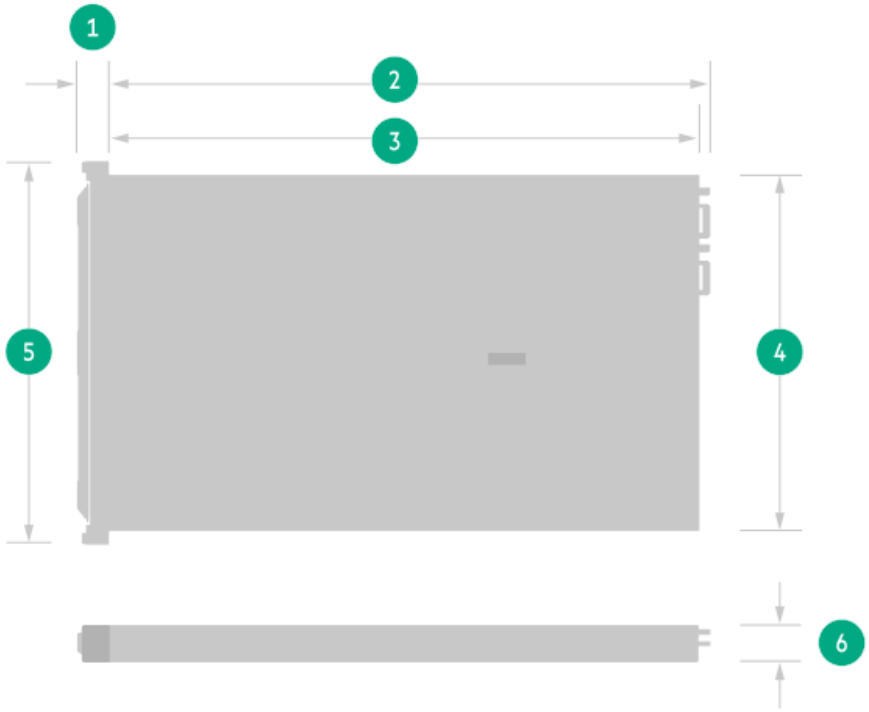
For approved hardware configurations, the supported system inlet range is extended to be:

- 5° to 10°C (41° to 50°F) and 35° to 40°C (95° 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 (2,953 ft) to a maximum of 3050 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 3,050 m (10,000 ft).

The approved hardware configurations for this system are listed in the Extended Ambient Temperature Guidelines for Gen12 Servers: https://www.hpe.com/support/ASHRAEGen12

Server and rackmounting specifications

Server dimensions



Item	Description	Dimension
1	Front bezel to rearmost edge of chassis ear	3.93 cm (1.55 in)
2	Rearmost edge of chassis ear to PSU	8 + 2 SFF: 78.28 cm (30.82 in)
		4 LFF: 80.27 cm (31.61 in)
		10 SFF / 20 EDSFF: 80.27 cm (31.61 in)
3	Rearmost edge of chassis ear to server rear I/O	8 + 2 SFF: 75.31 cm (29.65 in)
		4 LFF: 77.30 cm (30.43 in)
		10 SFF / 20 EDSFF: 77.30 cm (30.43 in)
4	Width	Chassis 43.46 cm (17.11 in)
5	Width	Ear-to-ear 48.26 cm (18.99 in)
6	Height	4.29 cm (1.69 in)

Rackmounting dimensions



Item	Description	Dimension
1	Front EIA mounting post to frontmost server feature	4.98 cm (1.96 in)
2	Front EIA mounting post to server rear I/O	8 SFF: 73.74 cm (29.03 in) 4 LFF or 10 SFF / 20 EDSFF: 75.73 cm (29.83 in)
3	Server rear I/O to rearmost CMA feature	16.85 cm (6.63 in)
4	Rail mount range (min to max) [1]	60.96 cm – 91.81 cm (24.00 in – 36.15 in) [2]
5	Depth of front rail mount	1.57 cm (0.62 in)

[1] The range between the front and rear posts of the rack

[2] The minimum overall length of the rail kit is:

- 8 SFF: 78.76 cm (31.00 in)
- 4 LFF or 10 SFF / 20 EDSFF: 80.87 cm (31.84 in)

Server weight

Weight, approximate values	Value
Weight, 8 + 2 SFF minimum (One drive, one processor, one heatsink, one power supply, one Smart Array controller, and five fans installed)	14.87 kg (32.71 lb)
Weight, 8 + 2 SFF maximum (Ten drives, two processors, two heatsinks, two power supplies, one Smart Array controller, and seven fans installed)	19.94 kg (43.96 lb)
Weight, 4 LFF minimum (One drive, one processor, one heatsink, one power supply, one Smart Array controller, and five fans installed)	15.25 kg (33.55 lb)
Weight, 4 LFF maximum (Four drives, two processors, two heatsinks, two power supplies, one Smart Array controller, and seven fans installed)	20.92 kg (46.02 lb)
Weight, 10 SFF / 20 EDSFF minimum (One drive, two processors, two heatsinks, one power supply, one Smart Array controller, and seven fans installed)	14.92 kg (32.82 lb)
Weight, 10 SFF / 20 EDSFF maximum (Twenty drives, two processors, two heatsinks, two power supplies, one Smart Array controller, and seven fans installed)	21.38 kg (47.04 lb)

Power supply specifications

Depending on the installed options and the regional location where the server was purchased, the server can be configured with one of the following power supplies. For detailed power supply specifications, see the QuickSpecs on the **Hewlett Packard Enterprise website**.

Subtopics

- HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply
- HPE 1000 W Flex Slot Titanium Hot-plug Power Supply
- HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply
- HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply
- HPE 1800-2200 W Flex Slot Titanium Power Supply

HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	9.4 A at 100 VAC 4.5 A at 200 VAC 3.8 A at 240 VDC for China only
Maximum rated input power	940 W at 100 VAC 900 W at 200 VAC 897 W at 240 VDC for China only
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC 2949 at 240 VAC for China only
Power supply output	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only

HPE 1000 W Flex Slot Titanium Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	11.3 A at 100 VAC 6.1 A at 200 VAC
Maximum rated input power	1130 W at 100 VAC 1090 W at 200 VAC
BTUs per hour	3764 at 100 VAC 3629 at 200 VAC
Power supply output	—
Rated steady-state power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC input
Maximum peak power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC

HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.7 A at 200 VAC 7.5 A at 230 VAC 7.2 A at 240 VDC
Maximum rated input power	1734 W at 200 VAC 1720 W at 240 VAC
BTUs per hour	5918 at 200 VAC 5891 at 230 VAC
Power supply output	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input 1600 W at 240 VDC input
Maximum peak power	1600 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	-40 VDC to -72 VDC
Rated input frequency	DC
Nominal input current	45 A DC at -40 VDC input 36.6 A DC at -48 VDC input 24.4 A DC at -72 VDC input
Maximum Rated Input Wattage Rating	1798 W at -40 VDC input 1758 W at -48 VDC input 1755 W at -72 VDC input
BTUs per hour	6026 at -40 VDC input 6000 at -48 VDC input 5989 at -72 VDC input
Power supply output	—
Rated steady-state power	1600 W at -40 VDC to -72 VDC
Maximum peak power	1600 W at -40 VDC to -72 VDC

HPE 1800-2200 W Flex Slot Titanium Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	10 A at 200 VAC 10 A at 240 VAC 10 A at 240 VDC for China only
Maximum rated input power	1946 W at 200 VAC 2375 W at 240 VAC 2375 W at 240 VDC for China only
BTUs per hour	6497 at 200 VAC 7962 at 240 VAC
Power supply output	—
Rated steady-state power	1800 W at 200 VAC 2200 W at 240 VAC
Maximum peak power	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

Support and other resources

- Accessing Hewlett Packard Enterprise Support
- Accessing updates
- Remote support
- Warranty information
- Regulatory information
- Documentation feedback

Subtopics

Accessing Hewlett Packard Enterprise Support
HPE product registration
Accessing updates
Remote support
Documentation feedback

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  https://www.hpe.com/info/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  https://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

HPE product registration

To gain the full benefits of the Hewlett Packard Enterprise Support Center and your purchased support services, add your contracts and products to your account on the HPESC.

- When you add your contracts and products, you receive enhanced personalization, workspace alerts, insights through the dashboards, and easier management of your environment.
- You will also receive recommendations and tailored product knowledge to self-solve any issues, as well as streamlined case creation for faster time to resolution when you must create a case.

To learn how to add your contracts and products, see https://www.hpe.com/info/add-products-contracts.

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  https://www.hpe.com/support/hpesc

  My HPE Software Center

  https://www.hpe.com/software/hpesoftwarecenter
- To subscribe to eNewsletters and alerts:

  https://www.hpe.com/support/e-updates
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:

  https://www.hpe.com/support/AccessToSupportMaterials

> **IMPORTANT**
> Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Account set up with relevant entitlements.

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which initiates a fast and accurate resolution based on the service level of your product. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

HPE Get Connected

https://www.hpe.com/services/getconnected

HPE Tech Care Service

https://www.hpe.com/services/techcare

HPE Complete Care Service

https://www.hpe.com/services/completecare

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, click the Feedback button on the page of an opened document on the Hewlett Packard Enterprise Support Center portal (https://www.hpe.com/support/hpesc). Use this feature to send any errors, suggestions, or comments. This process captures all document

information.

Appendix I: Server coolant spill response

Subtopics

Eye and skin protection
Server coolant leak

Eye and skin protection

The coolant used in the liquid cooling module is a mixture of purified water and ethylene glycol with additional additives for corrosion resistance. Observe the following when cleaning up a coolant leak:

- The coolant might cause slight temporary eye irritation.
  - To prevent any accidental eye contact with the coolant, use safety glasses with side shields.
  - If eye contact occurs, immediately flush eye with plenty of water. If any discomfort persists, seek medical attention.
- The coolant might cause slight temporary skin irritation.
  - Use hand protection in the form of chemically resistant gloves when cleaning up coolant leak.
  - If gloves are not worn, wash hands with plenty of water after cleanup.

Server coolant leak

Symptom

A spill or leak of the electrically conductive server coolant is detected by iLO and the server has shut down automatically.

Cause

The supply hose of the liquid cooling module is damaged.

Action

Preparing for coolant leak cleanup

1. Have the following items ready for the coolant leak cleanup:
   - Dry paper towels or any absorbent material intended for cleaning up a chemical spill
   - Container to collect the leaked coolant
   - Dry cleanroom wipes
   - Deionized water
2. Read the following safety information:
   - Rack warnings and cautions
   - Server warnings and cautions

Assessing the spill

3. Inspect the server room first and determine if the spill has spread to other servers in the same rack.

Removing the server

4. If the server uses a DLC cold plate module, disconnect the DLC hoses from the rack manifolds.
5. If installed, open the cable management arm.
6. **WARNING**

   To reduce the risk of electric shock, make sure that you use the necessary safety equipment compliant with local occupational health and safety code when disconnecting the power cords.

   Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.
7. Disconnect all peripheral cables from the server.
8. Remove the server from the rack.
9. Place the server on a flat, level work surface.

Locating the spill point

10. Observe proper eye and skin protection.
11. Remove the access panel.
12. Look for any potential contact between the coolant and any of the internal cables and components, especially power connectors.
13. Locate the spill point.
14. Cover the spill point with a dry absorbent material.

Cleaning up the coolant leak

15. Remove the leaky liquid cooling module. Avoid pushing out more coolant during removal.
16. Remove the system board.
17. If the leak has made it to the system board or the chassis, do the following:

    a. Use a dry absorbent material to clean the coolant leak.

    b. Wring the absorbed coolant into a container.

    c. Lightly dampen a cleanroom wipe with deionized water. Wring out any excess water, and gently wipe over areas with coolant residue.

    d. Ensure that there is no more visible colored coolant or liquid residue.

    e. Dry the system board in a 70 °C environment for at least 8 hours.

    f. Confirm that the system board is completely dry before reinstallation.
18. Follow the procedure in the server maintenance and service guide to reinstall the system board.
19. Repeat steps 11–18 on other servers affected by the spill.

Handling waste

20. Fill the container with tap water and dispose of the residue in accordance with local safety requirements.
21. Use plenty of fresh water to clean the container used to collect the leaked coolant.
22. Dispose of used absorbent material and paper towels in accordance with local safety requirements.

Replacing damaged components

23. **WARNING**

    Water and electricity combined pose a significant safety hazard. Hardware electrical components that have been in contact with the spilled coolant might be damaged.

    To ensure a functional and safe server operation, identify and replace all damaged components.

Restoring system operation

24. **IMPORTANT**

    After the spill is properly cleaned up, do not rush to power on the system immediately. Instead, leave the system in Standby Mode first and observe the front panel LEDs after connecting the power cables.

    Verify if the system power LED is illuminated. If not, replace the system board.

25. In the iLO web interface or RESTful API, clear the coolant leakage status.

    For the detailed procedure, see the iLO 7 user guide (**https://www.hpe.com/support/hpeilodocs-quicklinks**).

26. If the server uses a DLC cold plate module, reconnect the DLC hoses to the rack manifolds.

27. Power on the server.

    If the system fails to boot, replace the system board.