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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## Acronyms and abbreviations

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Illustrated parts catalog

This chapter lists the hardware spare parts supported by the server.

Mechanical components

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

http://www.hpe.com/info/partssurfer

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front bezel spare part on page 8</td>
</tr>
<tr>
<td>2</td>
<td>Half-height media bay blank spare part</td>
</tr>
<tr>
<td>3</td>
<td>Optical drive blank spare part</td>
</tr>
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<td>4</td>
<td>Drive cage blank spare part</td>
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<td>5</td>
<td>LFF drive blank spare part</td>
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<td>SFF drive blank spare part</td>
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<td>7</td>
<td>Cable clips spare part</td>
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<td>8</td>
<td>Fan bay 1 blank spare part</td>
</tr>
<tr>
<td>9</td>
<td>Power supply blank spare part</td>
</tr>
<tr>
<td>10</td>
<td>PCI slot blank spare part</td>
</tr>
<tr>
<td>11</td>
<td>Cable management arm spare part on page 9</td>
</tr>
<tr>
<td>12</td>
<td>Rack rails spare part on page 9</td>
</tr>
</tbody>
</table>

### Front bezel spare part

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front bezel</td>
<td>879164-001</td>
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</tbody>
</table>

For more information on the removal and replacement procedures, see *Removing and replacing the front bezel* on page 49.

### Miscellaneous blank and cable clip spare kit

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
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<tbody>
<tr>
<td>LFF drive blank</td>
<td>827363-001</td>
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<tr>
<td>SFF drive blank</td>
<td>670033-001</td>
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<tr>
<td>Miscellaneous blank and cable clip spare kit</td>
<td>879518-001</td>
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<tr>
<td>• Drive cage blank</td>
<td></td>
</tr>
<tr>
<td>• Half-height media bay blank</td>
<td></td>
</tr>
<tr>
<td>• Optical drive blank</td>
<td></td>
</tr>
<tr>
<td>• Fan bay 1 blank</td>
<td></td>
</tr>
<tr>
<td>• PCI slot blank</td>
<td></td>
</tr>
<tr>
<td>• Power supply blank</td>
<td></td>
</tr>
<tr>
<td>• Cable clips</td>
<td></td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures for the LFF and SFF drive blanks, see *Removing and replacing drive blanks* on page 53.

For more information on the removal and replacement procedures for the drive cage blank, see *Removing and replacing the drive cage blank* on page 52.

For more information on the removal and replacement procedures for the half-height media bay blank, see *Removing and replacing the half-height media bay blank* on page 54.

For more information on the removal and replacement procedures for the optical drive bay blank, see *Removing and replacing the optical drive blank* on page 54.
For more information on the removal and replacement procedures for the fan bay 1 blank, see *Removing and replacing a fan blank* on page 68.

For more information on the removal and replacement procedures for the PCI slot blank, see *Removing and replacing a PCI slot blank* on page 66.

For more information on the removal and replacement procedures for the power supply blank, see *Removing and replacing the power supply blank* on page 65.

For more information on the removal and replacement procedures for the cable clips, see *Removing and replacing the cable clips* on page 99.

**Cable management arm spare part**

*Customer self repair* on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
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<tbody>
<tr>
<td>Cable management arm</td>
<td>879160-001</td>
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</table>

For more information on the removal and replacement procedures, see *Removing and replacing the cable management arm* on page 55.

**Rack rails spare part**

*Customer self repair* on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
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<tr>
<td>Server rack rails</td>
<td>879448-001</td>
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</table>

For more information on the removal and replacement procedures, see *Removing and replacing the rack rails* on page 56.

**System components**

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

[http://www.hpe.com/info/partssurfer](http://www.hpe.com/info/partssurfer)
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Power distribution board spare part</strong> on page 11</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td><strong>Flexible Slot power supply spare parts</strong> (hot-plug) on page 11</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td><strong>Fan spare part</strong> on page 11</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td><strong>Air baffle spare part</strong> on page 12</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td><strong>System board assembly spare parts</strong> on page 12</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td><strong>DIMM spare parts</strong> on page 12</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td><strong>Front I/O assembly spare part</strong> on page 13</td>
<td>13</td>
</tr>
<tr>
<td>8</td>
<td><strong>First-generation Intel Xeon Scalable Processor spare parts</strong> on page 13</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td><strong>Second-generation Intel Xeon Scalable Processor spare parts</strong> on page 14</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td><strong>Heatsink spare parts</strong> on page 17</td>
<td>17</td>
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</table>

*Table Continued*
## Power distribution board spare part

*Customer self repair* on page 25: Optional

<table>
<thead>
<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Power distribution board</td>
<td>879447-001</td>
</tr>
</tbody>
</table>

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

For more information on the removal and replacement procedures, see [Removing and replacing the power distribution board](on page 96).

## Flexible Slot power supply spare parts (hot-plug)

*Customer self repair* on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 500 W Flexible Slot Platinum Hot-plug Low Halogen Power Supply</td>
<td>866729-001</td>
</tr>
<tr>
<td>HPE 800 W Flexible Slot Platinum Hot-plug Low Halogen Power Supply</td>
<td>866730-001</td>
</tr>
<tr>
<td>HPE 800 W Flexible Slot Titanium Hot-plug Low Halogen Power Supply</td>
<td>866793-001</td>
</tr>
<tr>
<td>HPE 800 W Flexible Slot Universal Hot-plug Low Halogen Power Supply</td>
<td>866727-001</td>
</tr>
<tr>
<td>HPE 800 W Flexible Slot -48VDC Hot-plug Low Halogen Power Supply</td>
<td>866728-001</td>
</tr>
<tr>
<td>HPE 1600 W Flexible Slot Platinum Plus Hot-plug Low Halogen Power Supply</td>
<td>863373-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see [Removing and replacing a Flexible Slot power supply](on page 59).

## Fan spare part

*Customer self repair* on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan</td>
<td>879151-001</td>
</tr>
</tbody>
</table>
For more information on the removal and replacement procedures, see *Removing and replacing a fan* on page 70.

**Air baffle spare part**

*Customer self repair* on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
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<tbody>
<tr>
<td>Air baffle</td>
<td>P08305-001</td>
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</table>

For more information on the removal and replacement procedures, see *Removing and replacing the air baffle* on page 67.

**System board assembly spare parts**

*Customer self repair* on page 25: **Optional**

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
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<tbody>
<tr>
<td>System board assembly for the first-generation Intel Xeon Scalable Processors</td>
<td>879152-001</td>
</tr>
<tr>
<td>System board assembly for the second-generation Intel Xeon Scalable Processors</td>
<td>P11390-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see *Removing and replacing the system board* on page 100.

**DIMM spare parts**

*Customer self repair* on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>PC4-2666V DIMM spares</strong></td>
<td></td>
</tr>
<tr>
<td>8 GB, single-rank x8 PC4-2666V-R</td>
<td>850879-001</td>
</tr>
<tr>
<td>16 GB, single-rank x8 PC4-2666V-R</td>
<td>868846-001</td>
</tr>
<tr>
<td>16 GB, dual-rank x4 PC4-2666V-R</td>
<td>850880-001</td>
</tr>
<tr>
<td>32 GB, dual-rank x4 PC4-2666V-R</td>
<td>850881-001</td>
</tr>
<tr>
<td>64 GB, dual-rank x4 PC4-2666V-L</td>
<td>850882-001</td>
</tr>
<tr>
<td>128 GB, dual-rank x4 PC4-2666V-L</td>
<td>850883-001</td>
</tr>
<tr>
<td><strong>PC4-2933Y DIMM spares</strong></td>
<td></td>
</tr>
<tr>
<td>8 GB, single-rank x8 PC4-2933Y-R</td>
<td>P06186-001</td>
</tr>
<tr>
<td>16 GB, single-rank x4 PC4-2933Y-R</td>
<td>P06187-001</td>
</tr>
<tr>
<td>16 GB, dual-rank x8 PC4-2933Y-R</td>
<td>P06188-001</td>
</tr>
<tr>
<td>32 GB, dual-rank x4 PC4-2933Y-R</td>
<td>P06189-001</td>
</tr>
<tr>
<td>64 GB, dual-rank x4 PC4-2933Y-R</td>
<td>P06192-001</td>
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</table>

*Table Continued*
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<th>Description</th>
<th>Spare part number</th>
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</thead>
<tbody>
<tr>
<td>64 GB, quad-rank x4 PC4-2933Y-L</td>
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</tr>
<tr>
<td>128 GB, octal-rank x4 PC4-2933Y-L</td>
<td>P06191-001</td>
</tr>
</tbody>
</table>

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

For more information on removal and replacement procedures, see [Removing and replacing a DIMM](#) on page 84.

### Front I/O assembly spare part

**Customer self repair** on page 25: **Optional**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front I/O assembly</td>
<td>879450-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see [Removing and replacing the front I/O assembly](#) on page 76.

### First-generation Intel Xeon Scalable Processor spare parts

**Customer self repair** on page 25: **No**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
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<tbody>
<tr>
<td><strong>Intel Xeon Bronze series processors</strong></td>
<td>—</td>
</tr>
<tr>
<td>1.70 GHz Intel Xeon Bronze 3104, 6C, 85 W</td>
<td>875709-001</td>
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<tr>
<td>1.70 GHz Intel Xeon Bronze 3106, 8C, 85 W</td>
<td>875710-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Silver series processors</strong></td>
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<tr>
<td>1.80 GHz Intel Xeon Silver 4108, 8C, 85 W</td>
<td>875712-001</td>
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<tr>
<td>2.10 GHz Intel Xeon Silver 4110, 8C, 85 W</td>
<td>875711-001</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Silver 4116, 12C, 85 W</td>
<td>875716-001</td>
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<tr>
<td>2.20 GHz Intel Xeon Silver 4114, 10C, 85 W</td>
<td>875713-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Silver 4112, 4C, 85 W</td>
<td>875714-001</td>
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<tr>
<td><strong>Intel Xeon Gold series processors</strong></td>
<td>—</td>
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<tr>
<td>2.00 GHz Intel Xeon Gold 6138, 20C, 125 W</td>
<td>874735-001</td>
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<tr>
<td>2.10 GHz Intel Xeon Gold 6130, 16C, 125 W</td>
<td>874736-001</td>
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<tr>
<td>2.10 GHz Intel Xeon Gold 6152, 22C, 140 W</td>
<td>874730-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Gold 5120, 14C, 105 W</td>
<td>875718-001</td>
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<tr>
<td>2.30 GHz Intel Xeon Gold 5118, 12C, 105 W</td>
<td>875717-001</td>
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<td>2.30 GHz Intel Xeon Gold 6140, 18C, 140 W</td>
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<td>2.30 GHz Intel Xeon Gold 6140M, 18C, 140 W</td>
<td>878084-001</td>
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<tr>
<td>2.40 GHz Intel Xeon Gold 5115, 10C, 85 W</td>
<td>875715-001</td>
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<tr>
<td>2.40 GHz Intel Xeon Gold 6148, 20C, 150 W</td>
<td>874732-001</td>
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<td>2.60 GHz Intel Xeon Gold 6132, 14C, 140 W</td>
<td>875722-001</td>
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<tr>
<td>2.60 GHz Intel Xeon Gold 6126, 12C, 125 W</td>
<td>875720-001</td>
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<td>2.60 GHz Intel Xeon Gold 6142, 16C, 150 W</td>
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<td>2.60 GHz Intel Xeon Gold 6142M, 16C, 150 W</td>
<td>878085-001</td>
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<td>2.70 GHz Intel Xeon Gold 6150, 18C, 165 W</td>
<td>874731-001</td>
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<td>3.00 GHz Intel Xeon Gold 6136, 12C, 150 W</td>
<td>875724-001</td>
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<td>3.00 GHz Intel Xeon Gold 6154, 18C, 200 W</td>
<td>875727-001</td>
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<td>3.20 GHz Intel Xeon Gold 6134, 8C, 130 W</td>
<td>875723-001</td>
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<td>3.40 GHz Intel Xeon Gold 6128, 6C, 115 W</td>
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<td>3.40 GHz Intel Xeon Gold 6146, 12C, 165 W</td>
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<td>875725-001</td>
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<td>3.60 GHz Intel Xeon Gold 5122, 4C, 105 W</td>
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<tr>
<td>Intel Xeon Platinum series processors</td>
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<tr>
<td>2.10 GHz Intel Xeon Platinum 8170M, 26C, 165 W</td>
<td>878087-001</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Platinum 8176, 28C, 165 W</td>
<td>874727-001</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Platinum 8176M, 28C, 165 W</td>
<td>878088-001</td>
</tr>
<tr>
<td>2.50 GHz Intel Xeon Platinum 8180, 28C, 205 W</td>
<td>875731-001</td>
</tr>
<tr>
<td>2.50 GHz Intel Xeon Platinum 8180M, 28C, 205 W</td>
<td>878089-001</td>
</tr>
<tr>
<td>2.70 GHz Intel Xeon Platinum 8168, 24C, 205 W</td>
<td>875730-001</td>
</tr>
<tr>
<td>3.00 GHz Intel Xeon Platinum 8158, 12C, 150 W</td>
<td>875733-001</td>
</tr>
<tr>
<td>3.60 GHz Intel Xeon Platinum 8156, 4C, 105 W</td>
<td>875732-001</td>
</tr>
</tbody>
</table>

Second-generation Intel Xeon Scalable Processor spare parts

Customer self repair on page 25: No
<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Xeon Bronze series processor</td>
<td>—</td>
</tr>
<tr>
<td>1.90 GHz Intel Xeon Bronze 3204, 6C, 85 W</td>
<td>P11604-001</td>
</tr>
<tr>
<td>Intel Xeon Silver series processors</td>
<td>—</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Silver 4208, 8C, 85 W</td>
<td>P11605-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Silver 4210, 10C, 85 W</td>
<td>P11606-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Silver 4214, 12C, 85 W</td>
<td>P11607-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Silver 4216, 16C, 85 W</td>
<td>P11609-001</td>
</tr>
<tr>
<td>2.50 GHz Intel Xeon Silver 4215, 8C, 85 W</td>
<td>P11608-001</td>
</tr>
<tr>
<td>Intel Xeon Gold series processors</td>
<td>—</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6230, 20C, 125 W</td>
<td>P11614-001</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6238, 22C, 140 W</td>
<td>P12010-001</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6252, 24C, 150 W</td>
<td>P11619-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Gold 5220, 18C, 125 W</td>
<td>P11613-001</td>
</tr>
<tr>
<td>2.30 GHz Intel Xeon Gold 5218, 16C, 125 W</td>
<td>P11612-001</td>
</tr>
<tr>
<td>2.30 GHz Intel Xeon Gold 5218B, 16C, 125 W</td>
<td>P12532-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Gold 5215, 10C, 85 W</td>
<td>P11610-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Gold 6240, 18C, 150 W</td>
<td>P11615-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Gold 6248, 20C, 150 W</td>
<td>P11618-001</td>
</tr>
<tr>
<td>2.80 GHz Intel Xeon Gold 6226, 12C, 125 W</td>
<td>P12008-001</td>
</tr>
<tr>
<td>2.80 GHz Intel Xeon Gold 6242, 16C, 150 W</td>
<td>P11616-001</td>
</tr>
<tr>
<td>3.00 GHz Intel Xeon Gold 5217, 8C, 125 W</td>
<td>P11611-001</td>
</tr>
<tr>
<td>3.20 GHz Intel Xeon Gold 6254, 18C, 200 W</td>
<td>P11620-001</td>
</tr>
<tr>
<td>3.30 GHz Intel Xeon Gold 6246, 12C, 165 W</td>
<td>P12018-001</td>
</tr>
<tr>
<td>3.40 GHz Intel Xeon Gold 6234, 8C, 130 W</td>
<td>P12009-001</td>
</tr>
<tr>
<td>3.70 GHz Intel Xeon Gold 6244, 8C, 165 W</td>
<td>P11617-001</td>
</tr>
<tr>
<td>3.80 GHz Intel Xeon Gold 5222, 4C, 105 W</td>
<td>P11632-001</td>
</tr>
<tr>
<td>Intel Xeon Gold series processors, 2 TB memory capacity support per socket</td>
<td>—</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6238M, 22C, 140 W</td>
<td>P12014-001</td>
</tr>
<tr>
<td>2.50 GHz Intel Xeon Gold 5215M, 10C, 85 W</td>
<td>P11626-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Gold 6240M, 18C, 150 W</td>
<td>P12013-001</td>
</tr>
<tr>
<td>Intel Xeon Gold series processors, 4.5 TB memory capacity support per socket</td>
<td>—</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6238L, 22C, 140 W</td>
<td>P12016-001</td>
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Table Continued
<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50 GHz Intel Xeon Gold 5215L, 10C, 85 W</td>
<td>P11631-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Gold 6240L, 18C, 150 W</td>
<td>P12015-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Gold series processors, VM Density Optimized</strong></td>
<td>—</td>
</tr>
<tr>
<td>1.80 GHz Intel Xeon Gold 6222V, 20C, 115 W</td>
<td>P12019-001</td>
</tr>
<tr>
<td>1.90 GHz Intel Xeon Gold 6262V, 24C, 135 W</td>
<td>P12020-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Gold series processor, NFV Optimized</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.30 GHz Intel Xeon Gold 6252N, 24C, 150 W</td>
<td>P12023-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Gold series processors for 1P configurations</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.10 GHz Intel Xeon Gold 6209U, 20C, 125 W</td>
<td>P11644-001</td>
</tr>
<tr>
<td>2.40 GHz Intel Xeon Gold 6212U, 24C, 165 W</td>
<td>P11643-001</td>
</tr>
<tr>
<td>2.50 GHz Intel Xeon Gold 6210U, 20C, 150 W</td>
<td>P11642-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Platinum series processors, 768 GB memory capacity support per socket</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Platinum 8253, 16C, 125 W</td>
<td>P12011-001</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Platinum 8276, 28C, 165 W</td>
<td>P11624-001</td>
</tr>
<tr>
<td>2.40 GHz Intel Xeon Platinum 8260, 24C, 165 W</td>
<td>P11621-001</td>
</tr>
<tr>
<td>2.60 GHz Intel Xeon Platinum 8270, 26C, 205 W</td>
<td>P11623-001</td>
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<tr>
<td>2.70 GHz Intel Xeon Platinum 8280, 28C, 205 W</td>
<td>P11625-001</td>
</tr>
<tr>
<td>2.90 GHz Intel Xeon Platinum 8268, 24C, 205 W</td>
<td>P11622-001</td>
</tr>
<tr>
<td>3.80 GHz Intel Xeon Platinum 8256, 4C, 105 W</td>
<td>P12012-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Platinum series processors, 2 TB memory capacity support per socket</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Platinum 8276M, 28C, 165 W</td>
<td>P11629-001</td>
</tr>
<tr>
<td>2.40 GHz Intel Xeon Platinum 8260M, 24C, 165 W</td>
<td>P11628-001</td>
</tr>
<tr>
<td>2.70 GHz Intel Xeon Platinum 8280M, 28C, 205 W</td>
<td>P11630-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Platinum series processors, 4.5 TB memory capacity support per socket</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.20 GHz Intel Xeon Platinum 8276L, 28C, 165 W</td>
<td>P11634-001</td>
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<tr>
<td>2.40 GHz Intel Xeon Platinum 8260L, 24C, 165 W</td>
<td>P11633-001</td>
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<tr>
<td>2.70 GHz Intel Xeon Platinum 8280L, 28C, 205 W</td>
<td>P11635-001</td>
</tr>
<tr>
<td><strong>Intel Xeon Platinum series processor for Speed Select SKU</strong></td>
<td>—</td>
</tr>
<tr>
<td>2.40 GHz Intel Xeon Platinum 8260Y, 24/20/16C, 165 W</td>
<td>P11638-001</td>
</tr>
</tbody>
</table>
Heatsink spare parts

Customer self repair on page 25: No

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard heatsink</td>
<td>879468-001</td>
</tr>
<tr>
<td>High-performance heatsink</td>
<td>879150-001</td>
</tr>
</tbody>
</table>

Standard power supply spare part (non-hot-plug)

Customer self repair on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 500 W Low Halogen Non-hot-plug Power Supply</td>
<td>866726-001</td>
</tr>
</tbody>
</table>

This power supply is only supported when the server is in tower mode.
For more information on the removal and replacement procedures, see Removing and replacing the non-hot-plug power supply on page 63.

System battery spare part

Customer self repair on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>System battery</td>
<td>319603-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see Removing and replacing the system battery on page 98.

Server options

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported spare parts information, see the Hewlett Packard Enterprise PartSurfer website:
http://www.hpe.com/info/partssurfer
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HPE 12G SAS Expander Card spare part</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>NVMe riser board spare part</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>HPE Trusted Platform Module 2.0 spare part</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Fan cage spare part</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Energy pack spare parts</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>8 SFF drive backplane spare part</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>8 SFF NVMe drive backplane spare part</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>4 LFF drive backplane spare part</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>4 LFF non-hot-plug drive SATA-power split cable spare kit</td>
<td>21</td>
</tr>
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</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>LFF hot-plug drive storage controller cables</td>
</tr>
<tr>
<td></td>
<td>• 4 LFF hot-plug drive SATA cable spare kit on page 21*</td>
</tr>
<tr>
<td></td>
<td>• LFF hot-plug drive standup controller Mini-SAS X-cable spare part on page 21*</td>
</tr>
<tr>
<td></td>
<td>• LFF hot-plug drive modular controller (AROC) Mini-SAS cable spare kit on page 21*</td>
</tr>
</tbody>
</table>

| 11   | SFF hot-plug drive storage controller cables |
|      | • 8 SFF hot-plug drive Mini-SAS X-cable spare part on page 22* |
|      | • SFF hot-plug drive standup controller Mini-SAS X-cable spare parts on page 22* |
|      | • SFF hot-plug drive modular controller (AROC) Mini-SAS X-cable spare kit on page 22* |

| 12   | Storage controller backup power cable spare parts on page 23* |
| 13   | NVMe SSD cable spare parts on page 23* |
| 14   | LFF/SFF drive power cable spare kit on page 23* |
| 15   | HPE 12G SAS Expander Card cable spare kit on page 23* |
| 16   | Media device cable spare parts on page 24* |
| 17   | GPU auxiliary power cable spare kit on page 24* |

1 This backplane cannot be installed in the 4 LFF non-hot-plug or hot-plug drive configurations.
2 This backplane can only be installed in box 2 of SFF drive configurations.
3 This backplane cannot be installed together with the 8 SFF hot-plug drive cage option.

* Not shown

**HPE 12G SAS Expander Card spare part**

*Customer self repair* on page 25: *Optional*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 12G SAS Expander Card</td>
<td>876907-001</td>
</tr>
</tbody>
</table>

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

For more information on the removal and replacement procedures, see *Removing and replacing the HPE 12G SAS Expander Card* on page 87.

**NVMe riser board spare part**

*Customer self repair* on page 25: *Optional*
CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

For more information on the removal and replacement procedures, see Removing and replacing the NVMe riser board on page 88.

**HPE Trusted Platform Module 2.0 spare part**

*Customer self repair on page 25: No*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE Trusted Platform Module Gen10, TAA</td>
<td>872159-001</td>
</tr>
</tbody>
</table>

**Fan cage spare part**

*Customer self repair on page 25: Mandatory*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan cage</td>
<td>879443-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see Removing and replacing the fan cage on page 71.

**Energy pack spare parts**

*Customer self repair on page 25: Mandatory*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE Smart Storage Battery 96 W, 260 mm cable</td>
<td>878644-001</td>
</tr>
<tr>
<td>HPE Smart Storage Hybrid Capacitor, 260 mm cable</td>
<td>P07474-001</td>
</tr>
</tbody>
</table>

For more information on the removal and replacement procedures, see Removing and replacing an energy pack on page 94.

**Drive backplane spare parts**

*Customer self repair on page 25: Optional*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 LFF hot-plug drive backplane</td>
<td>878930-001</td>
</tr>
<tr>
<td>8 SFF hot-plug drive backplane</td>
<td>P16902-001</td>
</tr>
<tr>
<td>8 SFF NVMe SSD backplane</td>
<td>872971-001</td>
</tr>
</tbody>
</table>
For more information on the removal and replacement procedures for the 4 LFF hot-plug drive backplane, see Removing and replacing the 4 LFF hot-plug drive backplane on page 78.

For more information on the removal and replacement procedures for the 8 SFF hot-plug drive backplane, see Removing and replacing the 8 SFF hot-plug drive backplane on page 80.

For more information on the removal and replacement procedures for the 8 SFF NVMe SSD backplane, see Removing and replacing the 8 SFF NVMe SSD backplane on page 82.

4 LFF non-hot-plug drive SATA-power split cable spare kit

Customer self repair on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 LFF non-hot-plug drive SATA-power split cables for onboard SATA connection</td>
<td>879451-001</td>
</tr>
<tr>
<td>• Box 1 or 2 SATA-power split cable (375 mm)</td>
<td></td>
</tr>
<tr>
<td>• Box 3 SATA-power split cable (180 mm)</td>
<td></td>
</tr>
</tbody>
</table>

LFF hot-plug drive storage controller cables

4 LFF hot-plug drive SATA cable spare kit

Customer self repair on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 LFF hot-plug drive SATA cables for onboard SATA connection</td>
<td>879463-001</td>
</tr>
<tr>
<td>• Box 1 or 2 SATA cable (550 mm)</td>
<td></td>
</tr>
<tr>
<td>• Box 3 SATA cable (250 mm)</td>
<td></td>
</tr>
</tbody>
</table>

LFF hot-plug drive standup controller Mini-SAS X-cable spare part

Customer self repair on page 25: Mandatory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFF hot-plug drive standup controller Mini-SAS X-cable for boxes 1, 2, and 3 (500 mm)</td>
<td>879157-001</td>
</tr>
</tbody>
</table>

LFF hot-plug drive modular controller (AROC) Mini-SAS cable spare kit

Customer self repair on page 25: Mandatory
### LFF hot-plug drive modular controller (AROC) Mini-SAS cables

- Box 1 modular controller Mini-SAS cable (500 mm)
- Box 1 or 2 modular controller Mini-SAS cable (280 mm)
- Box 2 or 3 modular controller Mini-SAS cable (500 mm)

Spare part number: 879456-001

### SFF hot-plug drive storage controller cables

#### 8 SFF hot-plug drive Mini-SAS X-cable spare part

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 SFF hot-plug drive Mini-SAS X-cable for box 3 onboard SATA connection (250 mm)</td>
<td>879161-001</td>
</tr>
</tbody>
</table>

### SFF hot-plug drive standup controller Mini-SAS X-cable spare parts

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFF hot-plug drive multiple standup controller Mini-SAS X-cable for boxes 1, 2, and 3 (790 mm)</td>
<td>879158-001</td>
</tr>
<tr>
<td>SFF hot-plug drive single standup controller Mini-SAS X-cables&lt;sup&gt;1&lt;/sup&gt;</td>
<td>P03215-001</td>
</tr>
<tr>
<td>• Box 1 single standup controller Mini-SAS X-cable (1025 mm)</td>
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</tr>
<tr>
<td>• Box 2 single standup controller Mini-SAS X-cable (880 mm)</td>
<td></td>
</tr>
<tr>
<td>• Box 3 single standup controller Mini-SAS X-cable (720 mm)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> The P00512-001 (510 mm) included in the P03215-001 spare cable kit is not for use in this server.

### SFF hot-plug drive modular controller (AROC) Mini-SAS X-cable spare kit

**Customer self repair** on page 25: **Mandatory**

Spare part number: P03215-001

---

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### SFF hot-plug drive modular controller (AROC) Mini-SAS X-cables

- Box 1 or 2 modular controller Mini-SAS X-cable (700 mm)
- Box 2 or 3 modular controller Mini-SAS X-cable (530 mm)

### NVMe SSD cable spare parts

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVMe SSD data cable</td>
<td>879454-001</td>
</tr>
<tr>
<td>NVMe SSD power cable</td>
<td>879452-001</td>
</tr>
</tbody>
</table>

### Storage controller backup power cable spare parts

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE Smart Array MR controller backup power cable</td>
<td>P03216-001</td>
</tr>
<tr>
<td>HPE Smart Array SR controller backup power cable</td>
<td>878646-001</td>
</tr>
</tbody>
</table>

### LFF/SFF drive power cable spare kit

**Customer self repair** on page 25: **Mandatory**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFF/SFF drive power cables</td>
<td>879163-001</td>
</tr>
</tbody>
</table>
- Box 1 or 2 drive power cable (480 mm)
- Box 3 drive power cable (160 mm)

### HPE 12G SAS Expander Card cable spare kit

**Customer self repair** on page 25: **Mandatory**
<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
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</thead>
<tbody>
<tr>
<td>HPE 12G SAS Expander Card cables</td>
<td>879460-001</td>
</tr>
<tr>
<td>• Expander card ports 1 and 2 Mini-SAS X-cable for a modular controller</td>
<td></td>
</tr>
<tr>
<td>• Expander card ports 1 and 2 Mini-SAS X-cable for a standup controller</td>
<td></td>
</tr>
<tr>
<td>• Expander card ports 3 and 4 Mini-SAS X-cable for the drive bays 1–8</td>
<td></td>
</tr>
<tr>
<td>• Expander card ports 5 and 6 Mini-SAS X-cable for the drive bays 9–16</td>
<td></td>
</tr>
<tr>
<td>• Expander card ports 7 and 8 Mini-SAS X-cable for the drive bays 17–24</td>
<td></td>
</tr>
</tbody>
</table>

**Media device cable spare parts**

*Customer self repair* on page 25: *Mandatory*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTO/RDX drive cables</td>
<td>879453-001</td>
</tr>
<tr>
<td>• LTO tape drive SAS-power Y-cable</td>
<td></td>
</tr>
<tr>
<td>• RDX USB 3.0 cable</td>
<td></td>
</tr>
<tr>
<td>• LTO/RDX power extension Y-cable</td>
<td></td>
</tr>
<tr>
<td>Optical drive SATA-power cable</td>
<td>879159-001</td>
</tr>
</tbody>
</table>

**GPU auxiliary power cable spare kit**

*Customer self repair* on page 25: *Mandatory*

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPU auxiliary power cables</td>
<td>879154-001</td>
</tr>
<tr>
<td>• Processor 1 GPU auxiliary power cable</td>
<td></td>
</tr>
<tr>
<td>(1000 mm)</td>
<td></td>
</tr>
<tr>
<td>• Processor 2 GPU auxiliary power cable</td>
<td></td>
</tr>
<tr>
<td>(180 mm)</td>
<td></td>
</tr>
</tbody>
</table>
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 call the Hewlett Packard Enterprise Support Center and a technician will help you over the telephone. 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. For the North American program, go to the [Hewlett Packard Enterprise CSR website](#).

**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 la 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 Agréé local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site [Web Hewlett Packard Enterprise](#).

**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 componenti. 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. Per il programma in Nord America fare riferimento al sito Web.

**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.


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.


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. Si está interesado en el programa para Norteamérica, visite la página web de Hewlett Packard Enterprise CSR.
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 reparatietijd 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 garantiservice 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".


Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van Hewlett Packard Enterprise. Informatie over Service Partners vindt u op de Hewlett Packard Enterprise website.

Garantieservice "Parts Only"

Het is mogelijk dat de Hewlett Packard Enterprise garantie alleen de garantiservice "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. Para o programa norte-americano, visite o site da Hewlett Packard Enterprise.

**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.
カスタマーセールフリペア

修理時間の短縮と、故障箇所の交換における高い柔軟性を確保するために、Hewlett Packard Enterprise製品には多様なカスタマーセールフリペア（CSR）部門があります。診断の際に、CSR部門を使用すれば修理が可能であると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部門には以下の2種類があります。

- 必要 - カスタマーセールフリペアが必要な部品。当該製品においてももしお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、当該サービスに関する交換費および人件費がお客様にて請求されます。
- 意外 - カスタマーセールフリペアの任意である部品。この部品はカスタマーセールフリペアで、当該製品についてもお客様がHewlett Packard Enterpriseに関連作業を依頼される場合には、お客様のご要求に従ってサービスの内容を範囲内においては、修理費用を負担していただくことなく提供サービスを発行することができる。

注: Hewlett Packard Enterprise製品の一部の部品は、カスタマーセールフリペアの対象外です。製品の保存を継続するためには、Hewlett Packard Enterprise製品またはHewlett Packard Enterprise正規保守代理店による交換作業が必要となります。品カタログには、当該製品がカスタマーセールフリペア対象外品である旨が記載されています。

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、交換修理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部門をいただきにより交換作業をしていただくことにお客様が必要となります。当該製品においてももしお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、修理サービスに関する交換費および人件費がお客様のご負担となります。

客戶自行修理

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多的灵活性。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）确定可以使用使用 CSR 部件完成维修，Hewlett Packard Enterprise 将直接将该部件发送给用户进行更换。有两类 CSR 部件：

- 强制性的 — 要求客户必须自行维修的部件。如果您需要 Hewlett Packard Enterprise 更换这些部件，必须为该项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。这些部件是为客户自行维修设计的，如果客户需要 Hewlett Packard Enterprise 为您更换这些部件，则根据产品的具体服务类型，Hewlett Packard Enterprise 可能会收取或不收取任何附加费用。

注: 某些 Hewlett Packard Enterprise 部件的设计并未考虑客户自行维修。为了满足客户维修的需要，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，可在当天或次日到货。但需收取差旅费用。如果需要帮助，您可以致电 Hewlett Packard Enterprise 技术支持中心，我们将安排技术人员通过电话为您提供帮助。Hewlett Packard Enterprise 会在更换的 CSR 部件发送的材料中指明是否需要带有缺陷的部件退还给 Hewlett Packard Enterprise。如果您想将拆下的部件还给 Hewlett Packard Enterprise，那么您必须在规定的期限内提交《5个工作日》将拆下的部件发给 Hewlett Packard Enterprise，有缺陷的部件必须提供提供的复原材料中相关文件一起退还，如果未能退还或有缺陷的部件，Hewlett Packard Enterprise 可能会被要求支付更换费用。客户自行维修时，Hewlett Packard Enterprise 将承担所有相关运输和部件退款费用，并将快速返回/C 退货。

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。有关北美地区的计划，请访问 Hewlett Packard Enterprise 网站（http://www.hp.com/support/selfrepair）。

仅部件保修服务

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仅部件保修服务要求进行 CSR 部件更换。如果您需要 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。
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使得更換換零件時能有更大的彈性。如果在診斷期間，Hewlett Packard Enterprise (或 Hewlett Packard Enterprise 服務供應商或經銷夥伴) 認可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：

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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」。
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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
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CSR 零件一起遞送的材料中註明。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起遞送。若無法退還損壞的零件，Hewlett Packard Enterprise 可
能要您收取替換費用，針對客戶自行維修情形，Hewlett Packard Enterprise 將負擔所有運費及零件退還
費用，並指定使用何家快递/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。至於北美方案，
請參閱 Hewlett Packard Enterprise 的 CSR 常見問題 (http://www.hpe.com/support/selfrepair)。

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Removal and replacement procedures

This chapter provides detailed instructions on how to remove and replace component spare parts.

Required tools

You need the following items for some procedures:

- T-10 Torx screwdriver
- T-15 Torx screwdriver
- T-25 Torx screwdriver
- T-30 Torx screwdriver
- Phillips No. 1 screwdriver
- Phillips No. 2 screwdriver
- Small flat-bladed, nonconductive tool

Safety considerations

Before performing service procedures, review all the safety information.

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 might be found on the equipment to indicate the presence of potentially hazardous conditions.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Symbol]</td>
<td>This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> To reduce the risk of injury from electric shock hazards, do not open this enclosure.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>This symbol on an RJ-45 receptacle indicates a network interface connection.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> To reduce the risk of injury from a hot component, allow the surface to cool before touching.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> 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.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td><strong>WARNING:</strong> To reduce the risk of injury from electric shock, remove all power cords to disconnect power from the system completely.</td>
</tr>
</tbody>
</table>

**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.

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 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.

Rack warnings and cautions

WARNING: When all components are removed, the server weighs 21 kg (46.30 lb). When all components are installed, the server can weigh up to 41 kg (90.39 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 21 kg (46.30 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, observe the following precautions:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- 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.

**IMPORTANT:** The HPE ProLiant ML350 Gen10 Server cable management arm is not supported on Compaq-branded 7000 series racks.
Preparation procedures

Powering down the server

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

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

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

- Press and release the Power On/Standby button.
  
  This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.

- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.
  
  This method forces the server to enter standby mode without properly exiting applications and the OS.
  
  If an application stops responding, you can use this method to force a shutdown.

- Use a virtual power button selection through iLO 5.
  
  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.

Unlock the front bezel

While pressing the key against the lock, rotate the key to the unlock position.
Open the front bezel

Procedure

1. Unlock the front bezel on page 38.
2. Open the front bezel.

Remove the front bezel

Procedure

1. Unlock the front bezel on page 38.
2. Open the front bezel on page 39.
3. Release the bezel hinges from the chassis.
Position the tower server for hardware configuration

Procedure
1. Rotate the chassis feet inward.

2. Place the server on a flat, level surface with the access panel facing up.
Extend the server from the rack

Procedure

1. If the rear panel cables are not secured by a cable management arm, do the following:
   a. **Powering down the server** on page 38.
      
      If you are physically powering down the server, **open the front bezel to access the power button**. Close the bezel after the server is powered down.

   b. Disconnect all peripheral cables from the server.

   c. Disconnect each power cord from the server.

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

2. Slide the server tray out of the rack:
   a. Loosen the server tray thumbscrews.
   b. Grasp the tray notch to slide the server out of the rack.
WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

3. After performing the installation or maintenance procedure, slide the server tray into the rack:

   a. Press and hold the blue release latches on both rails, and then slide the server tray back into the rack.

   b. Tighten the server tray thumbscrews.
4. If the rear panel cables were disconnected because a cable management arm is not in use, do the following:

   a. Connect each power cord to the server.
   b. Connect all peripheral cables to the server.
   c. **Power up the server** on page 48.

### Remove the server from the rack

**WARNING:** This server is heavy. 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.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. Hewlett Packard Enterprise recommends that a minimum of two people are required for all rack server installations. A third 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; it is unstable when not fastened to the rails.

**Prerequisites**

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

**Procedure**

1. **Powering down the server** on page 38.
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 installed, unlock and remove the security padlock and/or the Kensington security lock. For more information, see the lock documentation.

5. Slide the server tray out of the rack:
   a. Loosen the server tray thumbscrews.
   b. Grasp the tray notch to slide the server out of the rack.

6. Remove the chassis rear bracket screws.

7. Remove the server from the tray.
8. Place the server on a flat, level surface with access panel facing up.

Remove the access panel

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

⚠️ **CAUTION:** To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

⚠️ **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.

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

Procedure
1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
3. If you are removing the access panel as part of a non-hot-plug installation or maintenance procedure, remove all power from the server:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
   c. Disconnect all peripheral cables from the server.
4. If installed, unlock and remove the security padlock and/or the Kensington security lock.
   For more information, see the lock documentation.
5. If the front bezel key is hanging from the padlock eye, remove the key.

6. Do one of the following:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

7. Remove the access panel:
   a. If necessary, unlock the access panel latch.
   b. Press the release button and pull up the latch to disengage the access panel from the chassis.
   c. Lift up the rear side of the access panel to remove the panel from the chassis.

---

Remove the air baffle

⚠️ **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.

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
- Server in tower mode: **Position the tower server for hardware configuration** on page 40.
- Server in rack mode: **Extend the server from the rack** on page 41.

6. **Remove the access panel** on page 45.

7. While pressing the blue air baffle latches, lift up the baffle from the chassis.

---

**Remove the fan cage**

**Procedure**

1. **Remove the front bezel** on page 39.

2. **Powering down the server** on page 38.

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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

6. **Remove the access panel** on page 45.

7. Remove the fan cage:
   a. Open the blue latches to a 90° angle.
   b. Use the latches to pull up the fan cage out of the chassis.
Remove the PCI blank retainer

Procedure

1. Perform the pre-removal steps required by the standup plug-in board removal or replacement procedure.

2. Remove the PCI blank retainer:
   a. Loosen the retainer thumbscrew.
   b. Slide the retainer up, then remove it from the chassis.

Power up the server

To power up the server, use one of the following methods:
• Press the Power On/Standby button.
• Use the virtual power button through iLO.

Removing and replacing the front bezel

Procedure

1. **Unlock the front bezel** on page 38.
2. **Open the front bezel** on page 39.
3. Release the bezel hinges from the chassis.

To replace the component, reverse the removal procedure.

Removing and replacing drives

Removing and replacing an LFF non-hot-plug drive

**Prerequisites**

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

**Procedure**

1. Back up all server data on the drive.
2. **Remove the front bezel** on page 39.
3. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

7. **Remove the access panel** on page 45.

8. **Remove the air baffle** on page 46.

9. If installed, **remove the fan cage**.

10. Remove the non-hot-plug drive cage:
    
    a. Disconnect the SATA-power split cables from the drives.
    
    b. Remove the drive cage.

11. Remove the drive.
To replace the component, reverse the removal procedure.

Removing and replacing an LFF hot-plug drive

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

Procedure

1. Back up all server data on the drive.
2. Open the front bezel on page 39.
3. Determine the status of the drive from the drive LED definitions.
4. Remove the drive.

Removing and replacing an SFF hot-plug drive

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

Procedure

1. Back up all server data on the drive.
2. Open the front bezel on page 39.
3. Determine the status of the drive from the drive LED definitions.
4. Remove the drive.
Removing and replacing an NVMe SSD

An NVMe SSD is a PCIe BUS device. Devices attached to a PCIe bus cannot be removed without allowing the device and the bus to complete and cease signal/traffic flow.

**Procedure**

1. Back up all server data on the drive.
2. **Open the front bezel** on page 39.
3. **Observe the LED status of the drive** and determine if it can be removed.
4. Remove the drive:
   a. Press the Power button.
      The Do Not Remove LED flashes white.
      Wait until the flashing stops and the Do Not Remove button is no longer illuminated.
   b. Press the Do Not Remove button.
   c. Remove the drive.

To replace the component, reverse the removal procedure.

Removing and replacing the drive cage blank

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

**Prerequisites**

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

**Procedure**

1. **Open the front bezel** on page 39.
2. Remove the drive cage blank from box 2 or 3.
To replace the component, reverse the removal procedure.

Removing and replacing drive blanks

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

**Procedure**

1. **Open the front bezel** on page 39.
2. Remove the drive blank:
   - LFF drive blank

To replace the LFF drive blank, slide the blank into the bay until it clicks into place.

- SFF drive blank
To replace the SFF drive blank, while pressing the release latch, slide the component into the bay until it is fully seated.

Removing and replacing the half-height media bay blank

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

Procedure

1. **Open the front bezel** on page 39.
2. While pressing the latch on the optical drive blank, pull out the blank from the bay.

To replace the component, insert the tab on the blank into the slot on the media bay.

Removing and replacing the optical drive blank

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

Procedure

1. **Open the front bezel** on page 39.
2. While pressing the latch on the optical drive blank, pull out the blank from the bay.
To replace the component, insert the tab on the blank into the slot on the optical drive bay.

Removing and replacing the cable management arm

⚠️ **CAUTION:** Support the CMA during the removal/replacement procedure. Do not allow the CMA to hang by its own weight during the procedure.

Procedure

1. Slide the server tray out of the rack:
   a. Loosen the server tray thumbscrews.
   b. Grasp the tray notch to slide the server out of the rack.

2. Open the cable clamps and remove the cables routed through the CMA.
3. Remove the CMA from the rack:
   
   a. Press the latch on the outer rail of the right CMA and slide out the CMA arm.
   
   b. Press the blue latch on the left inner and outer rails of the CMA, and then slide out the CMA.

To replace the component, reverse the removal procedure.

Removing and replacing the rack rails

Prerequisites
If you are replacing a rack mounting rail and the rear shipping screws are installed, make sure that you have a Phillips No. 2 screwdriver available.

Procedure
1. Remove the server from the rack.
2. Slide out the server tray from the rack.
3. If you are replacing a rack mounting rail, do the following:

a. If installed, remove the shipping screw from the rear rack column.

b. Retract and hold the rear retention bracket.

c. Slide out the rear end of the rail to disengage it from the rear rack column.
d. Retract and hold the front retention bracket.

e. Slide out the front end of the rail to disengage it from the front rack column.

4. If you are replacing a rack sliding rail, do the following:

   a. Slightly pull the rail latch to unlock the rail.

   b. Slide the rail towards the front to disengage it from the alignment pins on the server tray, and then remove the rail from the server tray.
To replace the component, reverse the removal procedure.

Removing and replacing a Flexible Slot power supply

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

⚠️ 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: Mixing different types of power input modules 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 input modules in the same server should have the same output and efficiency ratings. Verify that all power input modules have the same part number and label color.

Procedure

1. If the server is using a single power supply, remove all power from the server:
   - a. Back up all server data.
   - b. Powering down the server on page 38.
   - c. Disconnect all peripheral cables from the server.

2. Release the power cords, wires, and cables from the strain relief strap.
   - AC power supply
3. For an AC power supply, do the following:
   a. Disconnect the power cord from the power supply.
b. Remove the power supply.

4. For a DC power supply, do the following:
   a. Slide the power supply out of the bay just enough to access the ground cable screw.
   b. Detach the ground (earthed) cable from the power supply.
c. Remove the terminal block connector from the power supply.

d. Remove the power supply.
To replace the component, reverse the removal procedure.

**Removing and replacing the non-hot-plug power supply**

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

⚠️ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the power supply and the power supply blank to cool before touching them.

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
3. Release the power cord from the strain relief clip.
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:
   • Server in tower mode: Position the tower server for hardware configuration on page 40.
   • Server in rack mode: Extend the server from the rack on page 41.

7. Remove the access panel on page 45.

8. Remove the air baffle on page 46.

9. Observe the guidelines for managing cables.

⚠️ CAUTION: The snap-in latch of the energy pack holder is flexible. However, to avoid damaging this latch, do not apply too much pressure on this latch when removing or installing the energy pack from the chassis.

10. Remove the energy pack holder:
   
a. If an energy pack is installed, disconnect the energy pack cable.

   b. While carefully holding the snap-in latch in the open position, slide the energy pack holder up to disengage it from the chassis.

11. Disconnect the non-hot-plug power supply cable.
12. Remove the non-hot-plug power supply.

To replace the component, reverse the removal procedure.

Removing and replacing the power supply blank

⚠️ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank 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**

Remove the power supply blank.
To replace the component, reverse the removal procedure.

Removing and replacing a PCI slot blank

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

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the PCI blank retainer** on page 48.
8. Remove the PCI slot blank.
To replace the component, reverse the removal procedure.

Removing and replacing the air baffle

⚠️ 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.

Procedure

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. While pressing the blue air baffle latches, lift up the baffle from the chassis.
To replace the component, reverse the removal procedure.

Removing and replacing a fan blank

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

Procedure

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: [Position the tower server for hardware configuration](#) on page 40.
   - Server in rack mode: [Extend the server from the rack](#) on page 41.
6. **Remove the access panel** on page 45.
7. Remove the fan blank.
To replace the component, reverse the removal procedure.

**Fan replacement**

**Fan population and hot-plug support**

The number of fans installed in the server determines fan redundancy. When redundant fan mode is enabled, hot-plug fan operation is supported.

In this server, fan operation can either be one of the following:

- Hot-plug – A failed fan can be replaced without powering down the server
- Non-hot-plug – To replace a failed fan, the user must either:
  - Keep the server powered on and complete the fan replacement within 30 seconds of opening the access panel, or
  - Power down and disconnect all power from the server before removing the access panel for fan replacement.
## Removing and replacing a fan

⚠️ **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 front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. While pressing the fan release latch, pull up the fan from the bay.
To replace the component, reverse the removal procedure.
When installing the fan replacement, make sure that the fan clicks into place.

Removing and replacing the fan cage

Procedure
1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. If the blank is installed in fan bay 1, **remove the blank**.
8. **Remove the fans from the cage**.
9. Remove the fan cage:
a. Open the blue latches to a 90° angle.
b. Use the latches to pull up the fan cage out of the chassis.

⚠️ **CAUTION:** To prevent system damage due to cables being inadvertently caught under the fan cage, make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs before installing the fan cage replacement.

When replacing the component, reverse the removal procedure.

## Removing and replacing media devices

### Removing and replacing a SAS LTO tape drive

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

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
- Server in tower mode: **Position the tower server for hardware configuration** on page 40.
- Server in rack mode: **Extend the server from the rack** on page 41.

6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. **Remove the fan cage** on page 47.
9. Disconnect the SAS-power Y-cable from the LTO tape drive.
10. Pull up and hold the blue release latch, and then remove the LTO tape drive.

To replace the component, reverse the removal procedure.

Before installing the replacement LTO tape drive in the media bay, install the mounting screws included in the spare kit on the tape drive.

**Removing and replacing a USB RDX drive**

**Prerequisites**

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

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
• Server in tower mode: **Position the tower server for hardware configuration** on page 40.
• Server in rack mode: **Extend the server from the rack** on page 41.

6. Remove the access panel on page 45.
7. Remove the air baffle on page 46.
8. If installed, remove the fan cage.
9. Disconnect the power and USB cables from the RDX drive.
10. Pull up and hold the blue release latch, and then remove the RDX drive.

To replace the component, reverse the removal procedure.

Before installing the replacement RDX drive in the media bay, install the mounting screws included in the spare kit on the RDX drive.

**Removing and replacing a SATA optical drive**

**Prerequisites**

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

- T-15 Torx screwdriver
- Phillips No. 1 screwdriver

**Procedure**

1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
   • Server in tower mode: Position the tower server for hardware configuration on page 40.
   • Server in rack mode: Extend the server from the rack on page 41.

6. Remove the access panel on page 45.

7. Remove the air baffle on page 46.

8. If installed, remove the fan cage.

9. Disconnect the SATA-power cable from the optical drive.

10. Pull up and hold the blue release latch, and then remove the optical drive cage.

11. Remove the optical drive from the drive cage.

12. Remove the optical drive bracket.
To replace the component, reverse the removal procedure.

Removing and replacing the front I/O assembly

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

Procedure
1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. If installed, **remove the fan cage**.
9. Remove the blue media device retainer:
   a. Release the drive latches.
   b. Slide the retainer as shown, and then remove the retainer from the chassis.
10. Remove the front I/O cage screws.

11. Disconnect the front I/O and front USB cables from the system board.

12. Release the front I/O cable assembly from the cable channel on top of the drive boxes.
13. Remove the front I/O assembly from the chassis.

To replace the component, reverse the removal procedure.

Removing and replacing the 4 LFF hot-plug drive backplane

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

**Procedure**
1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
3. Remove all power:
a. Disconnect each power cord from the power source.
b. Disconnect each power cord from the server.

4. **Remove all drives connected to the drive backplane that is being replaced.**

5. Disconnect all peripheral cables from the server.

6. Do one of the following:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

7. **Remove the access panel** on page 45.

8. **Remove the air baffle** on page 46.

9. If installed, **remove the fan cage.**

10. Disconnect the drive power and controller cables from the backplane.

11. Remove the drive cage.

12. Remove the drive backplane.
To replace the component, reverse the removal procedure.

**Removing and replacing the 8 SFF hot-plug drive backplane**

**Prerequisites**

- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.
- If you ordered the 8 SFF hot-plug drive cage assembly spare part 792352-001, remove the backplane from this new spare part. The drive cage used in the 792352-001 spare does not fit the HPE ProLiant ML350 Gen10 server chassis.
Procedure

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. **Remove all drives connected to the drive backplane that is being replaced.**
5. Disconnect all peripheral cables from the server.
6. Do one of the following:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
7. **Remove the access panel** on page 45.
8. **Remove the air baffle** on page 46.
9. If installed, remove the fan cage.
10. Disconnect the drive power and controller cables from the backplane.
11. Remove the drive cage.
12. Remove the drive backplane.
To replace the component, reverse the removal procedure.

Removing and replacing the 8 SFF NVMe SSD backplane

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

Procedure
1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Remove all drives connected to the drive backplane that is being replaced.
5. Disconnect all peripheral cables from the server.
6. Do one of the following:
   • Server in tower mode: Position the tower server for hardware configuration on page 40.
   • Server in rack mode: Extend the server from the rack on page 41.
7. Remove the access panel on page 45.
8. Remove the air baffle on page 46.
9. Remove the fan cage on page 47.
10. Disconnect the drive power and controller cables from the backplane.
11. Remove the drive cage.
12. Remove the drive backplane.

To replace the component, reverse the removal procedure.

**DIMM-processor compatibility**

The installed processor determines the type of DIMM that is supported in the server:

- First-generation Intel Xeon Scalable processors support DDR4-2666 DIMMs.
- Second-generation Intel Xeon Scalable processors support DDR4-2933 DIMMs.

Mixing DIMM types is not supported. Install only the supported DDR4-2666 or DDR4-2933 DIMMs in the server.
Removing and replacing a DIMM

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. If you are removing a DIMM for processor 2, and the fan cage is present, **remove the fan cage**.
9. Remove the DIMM.

To replace the component, reverse the removal procedure.

For DIMM configuration information, see the [Hewlett Packard Enterprise website](https://www.hp.com).
Removing and replacing a standup storage controller

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

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

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

**Procedure**
1. [Remove the front bezel](#) on page 39.
2. [Powering down the server](#) on page 38.
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:
   - Server in tower mode: [Position the tower server for hardware configuration](#) on page 40.
   - Server in rack mode: [Extend the server from the rack](#) on page 41.
6. [Remove the access panel](#) on page 45.
7. [Remove the air baffle](#) on page 46.
8. [Remove the PCI blank retainer](#) on page 48.
9. Disconnect all cables from the storage controller.
10. Remove the standup storage controller.
To replace the component, reverse the removal procedure.

Removing and replacing a modular storage controller (AROC)

⚠️ CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

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

Procedure
1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
   • Server in tower mode: Position the tower server for hardware configuration on page 40.
   • Server in rack mode: Extend the server from the rack on page 41.
6. Remove the access panel on page 45.
7. Remove the air baffle on page 46.
8. Disconnect all cables from the storage controller.

9. Remove the modular storage controller:
   a. Loosen the controller board thumbscrews.
   b. Release the snap-in latch.
   c. Use the pull-up tab to remove the controller from the system board.

To replace the component, reverse the removal procedure.

Removing and replacing the HPE 12G SAS Expander Card

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

⚠️ CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

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

Procedure
1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
   - Server in tower mode: Position the tower server for hardware configuration on page 40.
   - Server in rack mode: Extend the server from the rack on page 41.

6. Remove the access panel on page 45.

7. Remove the air baffle on page 46.

8. Remove the PCI blank retainer on page 48.

9. Disconnect all cables from the SAS expander card.

10. Remove the SAS expander card.

To replace the component, reverse the removal procedure.

**Removing and replacing the NVMe riser board**

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

⚠ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

**Prerequisites**

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

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. **Remove the PCI blank retainer** on page 48.
9. Release the NVMe SSD data cables from the clip on the riser board.
10. Disconnect the NVMe SSD data cables from the riser board.
11. Remove the NVMe riser board.
To replace the component, reverse the removal procedure.

Removing and replacing the M.2 SSD enablement board

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

⚠️ CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

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

Procedure
1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the PCI blank retainer** on page 48.
8. **Remove the air baffle** on page 46.

9. Disconnect the M.2 SATA cables from the enablement board.

10. Remove the M.2 SSD enablement board.

11. **Remove the M.2 SSDs**.

   To replace the component, reverse the removal procedure.

## Removing and replacing an M.2 SSD

**Prerequisites**
Before you perform this procedure, make sure that the following items are available:

- T-15 Torx screwdriver
- Phillips No.1 screwdriver

**Procedure**

1. **Remove the front bezel** on page 39.

2. **Powering down the server** on page 38.

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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

6. **Remove the access panel** on page 45.
7. Remove the PCI blank retainer on page 48.
8. Remove the air baffle on page 46.
9. Remove the M.2 SSD enablement board.
10. Remove the M.2 SSD.

To replace the component, reverse the removal procedure.

Removing and replacing an expansion board

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

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

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

Procedure
1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
• Server in tower mode: Position the tower server for hardware configuration on page 40.
• Server in rack mode: Extend the server from the rack on page 41.

6. Remove the access panel on page 45.
7. Remove the air baffle on page 46.
8. Remove the PCI blank retainer on page 48.
9. Disconnect any internal cables that are connected to the expansion board.
10. Remove the expansion board:

    • Single-width expansion board

    • Double-width expansion board

To replace the component, reverse the removal procedure.
Removing and replacing an internal USB device

Procedure

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. Remove the USB device from the internal USB port.

   To replace the component, reverse the removal procedure.

Removing and replacing an energy pack

Procedure

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.

6. **Remove the access panel** on page 45.

7. **Remove the air baffle** on page 46.

   △ **CAUTION:** The snap-in latch of the energy pack holder is flexible. However, to avoid damaging this latch, do not apply too much pressure on this latch when removing or installing the energy pack from the chassis.

8. Remove the energy pack assembly:
   a. Disconnect the energy pack cable.
   b. While carefully holding the snap-in latch in the open position, slide the energy pack holder up to disengage it from the chassis.

9. Release the energy pack cable from the holder cable clips.

10. Remove the energy pack from the holder.
To replace the component, reverse the removal procedure.

Removing and replacing the power distribution board

⚠️ **CAUTION:** Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   • Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   • Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.

⚠️ **CAUTION:** The snap-in latch of the energy pack holder is flexible. However, to avoid damaging this latch, do not apply too much pressure on this latch when removing or installing the energy pack from the chassis.

8. Remove the energy pack holder:
a. If an energy pack is installed, disconnect the energy pack cable.

b. While carefully holding the snap-in latch in the open position, slide the energy pack holder up to disengage it from the chassis.

9. **Remove all power supplies.**

10. If present, disconnect all the GPU auxiliary power cables from the power distribution board.

11. Remove the power distribution board.

To replace the component, reverse the removal procedure.

**System battery replacement**
**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. If this battery is not properly handled, a risk of the fire and burns 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 disassemble, crush, puncture, short external contacts, or dispose the battery in fire or water.
- 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 to 10 years.

**Removing and replacing the system battery**

**Prerequisites**

Before you perform this procedure make sure you have a small flat-bladed, nonconductive tool available.

**Procedure**

1. **Remove the front bezel** on page 39.
2. **Powering down the server** on page 38.
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:
   - Server in tower mode: **Position the tower server for hardware configuration** on page 40.
   - Server in rack mode: **Extend the server from the rack** on page 41.
6. **Remove the access panel** on page 45.
7. **Remove the air baffle** on page 46.
8. **Locate the battery on the system board**.
9. Use a small flat-bladed, nonconductive tool to carefully lift the front of the battery from the socket.
10. Remove the battery.
11. To replace the component, reverse the removal procedure.

12. Properly dispose of the old battery.
   For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Removing and replacing the cable clips

Procedure

1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
   • Server in tower mode: Position the tower server for hardware configuration on page 40.
   • Server in rack mode: Extend the server from the rack on page 41.
6. Remove the access panel on page 45.
7. Remove the air baffle on page 46.
8. Open the cable clip.
9. Release all cables from the clip.
10. Press and hold the latch, and then slide the clip up to remove it from the chassis.
To replace the component, reverse the removal procedure.

Removing and replacing the system board

Removing the system board

**Prerequisites**
Before you perform this procedure make sure you have the following items available:

- T-15 Torx screwdriver
- T-30 Torx screwdriver

**Procedure**

1. Remove the front bezel on page 39.
2. Powering down the server on page 38.
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:
   - Server in tower mode: Position the tower server for hardware configuration on page 40.
   - Server in rack mode: Extend the server from the rack on page 41.
6. Remove the access panel on page 45.
7. Remove the air baffle on page 46.
8. If installed, remove the fan cage.
9. Remove the fan cage brackets:
   a. Retract and hold the blue spring plunger.
   b. Slide the bracket towards the front of the chassis to release it.
   c. Repeat steps a–b to remove the other bracket.

10. Remove all DIMMs.

11. Remove the cable clips.

12. If installed, remove these server options from the system board:
   - Modular storage controller
   - Standup expansion boards
   - Power distribution board
   - Energy pack

13. Disconnect all cables from the system board.

14. Observe the following cautions.

  CAUTION: Be sure to loosen each heatsink nut in the order indicated. Otherwise, damage might occur to the heatsink or processor.

  CAUTION: Install the processor heatsink assembly as soon as possible after removing it. Do not leave the processor socket unpopulated for extended periods of time.

15. Remove the processor heatsink assembly:
   a. Allow the heatsink to cool.
   b. Using a T-30 Torx screwdriver, loosen the heatsink nuts.
c. Lift the processor heatsink assembly up and away from the system board.

16. Remove the system board:
   a. Loosen the captive screw located in the middle of the system board.
   b. Remove the system board, using the handles to lift the board out of the chassis.

Replacing the system board

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

- T-15 Torx screwdriver
- T-30 Torx screwdriver
Procedure

1. Position the system board over the alignment tabs on the chassis.

2. Install the spare system board.

3. Install the processor heatsink assembly:
   
a. Locate and align the Pin 1 indicator on the processor frame and the socket.

   b. Align the processor heatsink assembly with the heatsink alignment posts and gently lower it down until it sits evenly on the socket.
The heatsink alignment posts are keyed. The processor will only install one way.

A standard heatsink is shown, your heatsink might look different.

⚠️ **CAUTION:** Be sure to tighten each heatsink nut fully in the order indicated. Otherwise, boot failure or intermittent shutdowns might occur.

c. Using a T-30 Torx screwdriver, tighten the nuts until they stop.

4. Install all components removed from the failed system board.
5. Install the cable clips.
6. If removed, install the fan cage brackets and the fan cage.
7. Install the air baffle.
8. Install the access panel.
9. Install the front bezel.
10. Do one of the following:
   • Server in tower mode: Position the tower server for operation.
   • Server in rack mode: Slide the server into the rack.
11. Connect all peripherals cables to the server.
12. Connect each power cord to the server.
13. Connect each power cord to the power source.
14. Power up the server.
15. Ensure all firmware, including option cards and embedded devices, is updated to the same versions to ensure that the latest drivers are being used.
16. Re-enter any Secure Boot Keys that were previously added in the Secure Boot configuration.
17. Re-enter the server serial number and the product ID (*Re-entering the server serial number and product ID* on page 105).

**Re-entering the server serial number and product ID**

After you replace the system board, the server serial number and the product ID must be configured:

**Procedure**

2. On the System Utilities home screen, select *System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced Service Options*.
3. Select the Serial Number field and press Enter.
   The following alert 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 press Enter.
6. Select the Product ID field and press Enter.
   The following alert appears:
   
   Product ID is modified only by qualified personnel. This value must match the product ID located on the chassis.
7. Type the product ID and press Enter.
8. Press F10 to save the configuration.

The procedure is complete.
HPE Trusted Platform Module 2.0 Gen10 Option

The HPE Trusted Platform Module 2.0 Gen10 Option is not a customer-removable part.

⚠️ CAUTION: If the TPM is removed from the original server and powered up on a different server, data stored in the TPM including keys will be erased.

If you suspect a TPM board failure, leave the TPM installed and remove the system board. Contact a Hewlett Packard Enterprise authorized service provider for a replacement system board and TPM board.
Troubleshooting

Troubleshooting resources

Troubleshooting resources are available for HPE Gen10 server products in the following documents:

- *Troubleshooting Guide for HPE ProLiant Gen10 servers* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance.

- *Error Message Guide for HPE ProLiant Gen10 servers and HPE Synergy* provides a list of error messages and information to assist with interpreting and resolving error messages.

- *Integrated Management Log Messages and Troubleshooting Guide for HPE ProLiant Gen10 and HPE Synergy* provides IML messages and associated troubleshooting information to resolve critical and cautionary IML events.

To access the troubleshooting resources, see the Hewlett Packard Enterprise Information Library ([http://www.hpe.com/info/gen10-troubleshooting](http://www.hpe.com/info/gen10-troubleshooting)).
Diagnostic tools

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (http://www.hpe.com/info/qs).

UEFI System Utilities

The UEFI System Utilities is embedded in the system ROM. Its features enable you to perform a wide range of configuration activities, including:

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller or partition.
- Configuring memory options.
- Launching other preboot environments.

HPE servers with UEFI can provide:

- Support for boot partitions larger than 2.2 TB. Such configurations could previously only be used for boot drives when using RAID solutions.
- Secure Boot that enables the system firmware, option card firmware, operating systems, and software collaborate to enhance platform security.
- UEFI Graphical User Interface (GUI)
- An Embedded UEFI Shell that provides a preboot environment for running scripts and tools.
- Boot support for option cards that only support a UEFI option ROM.

Selecting the boot mode

This server provides two Boot Mode configurations: UEFI Mode and Legacy BIOS Mode. Certain boot options require that you select a specific boot mode. By default, the boot mode is set to UEFI Mode. The system must boot in UEFI Mode to use certain options, including:

- Secure Boot, UEFI Optimized Boot, Generic USB Boot, IPv6 PXE Boot, iSCSI Boot, and Boot from URL
- Fibre Channel/FCoE Scan Policy

NOTE: The boot mode you use must match the operating system installation. If not, changing the boot mode can impact the ability of the server to boot to the installed operating system.

Prerequisite

When booting to UEFI Mode, leave UEFI Optimized Boot enabled.
Procedure

1. From the **System Utilities** screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Boot Options > Boot Mode**.

2. Select a setting.
   - **UEFI Mode** (default)—Configures the system to boot to a UEFI compatible operating system.
   - **Legacy BIOS Mode**—Configures the system to boot to a traditional operating system in Legacy BIOS compatibility mode.

3. Save your setting.

4. Reboot the server.

Secure Boot

Secure Boot is a server security feature that is implemented in the BIOS and does not require special hardware. Secure Boot ensures that each component launched during the boot process is digitally signed and that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices
- Preboot UEFI Shell applications
- OS UEFI boot loaders

When Secure Boot is enabled:

- Firmware components and operating systems with boot loaders must have an appropriate digital signature to execute during the boot process.
- Operating systems must support Secure Boot and have an EFI boot loader signed with one of the authorized keys to boot. For more information about supported operating systems, see [http://www.hpe.com/servers/ossupport](http://www.hpe.com/servers/ossupport).

You can customize the certificates embedded in the UEFI BIOS by adding or removing your own certificates, either from a management console directly attached to the server, or by remotely connecting to the server using the iLO Remote Console.

You can configure Secure Boot:

- Using the **System Utilities** options described in the following sections.
- Using the iLO RESTful API to clear and restore certificates. For more information, see the Hewlett Packard Enterprise website ([http://www.hpe.com/info/redfish](http://www.hpe.com/info/redfish)).
- Using the `secboot` command in the Embedded UEFI Shell to display Secure Boot databases, keys, and security reports.

Launching the Embedded UEFI Shell

Use the **Embedded UEFI Shell** option to launch the Embedded UEFI Shell. The Embedded UEFI Shell is a preboot command-line environment for scripting and running UEFI applications, including UEFI boot
loaders. The Shell also provides CLI-based commands you can use to obtain system information, and to configure and update the system BIOS.

Prerequisites

Embedded UEFI Shell is set to Enabled.

Procedure

1. From the System Utilities screen, select Embedded Applications > Embedded UEFI Shell. The Embedded UEFI Shell screen appears.

2. Press any key to acknowledge that you are physically present. This step ensures that certain features, such as disabling Secure Boot or managing the Secure Boot certificates using third-party UEFI tools, are not restricted.

3. If an administrator password is set, enter it at the prompt and press Enter. The Shell> prompt appears.

4. Enter the commands required to complete your task.

5. Enter the exit command to exit the Shell.

Intelligent Provisioning

Intelligent Provisioning is a single-server deployment tool embedded in ProLiant servers and HPE Synergy compute modules. Intelligent Provisioning simplifies server setup, providing a reliable and consistent way to deploy servers.

Intelligent Provisioning 3.30 and later includes HPE SMB Setup. When you launch F10 mode from the POST screen, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE SMB Setup mode.

NOTE: After you have selected a mode, you must reprovision the server to change the mode that launches when you boot to F10.

Intelligent Provisioning prepares the system for installing original, licensed vendor media and Hewlett Packard Enterprise-branded versions of OS software. Intelligent Provisioning also prepares the system to integrate optimized server support software from the Service Pack for ProLiant (SPP). SPP is a comprehensive systems software and firmware solution for ProLiant servers, server blades, their enclosures, and HPE Synergy compute modules. These components are preloaded with a basic set of firmware and OS components that are installed along with Intelligent Provisioning.

IMPORTANT: HPE ProLiant XL servers do not support operating system installation with Intelligent Provisioning, but they do support the maintenance features. For more information, see “Performing Maintenance” in the Intelligent Provisioning user guide and online help.

After the server is running, you can update the firmware to install additional components. You can also update any components that have been outdated since the server was manufactured.

To access Intelligent Provisioning:

- Press F10 from the POST screen and enter either Intelligent Provisioning or HPE SMB Setup.
- From the iLO web interface using Always On. Always On allows you to access Intelligent Provisioning without rebooting your server.
Intelligent Provisioning operation

Intelligent Provisioning includes the following components:

- Critical boot drivers
- Active Health System (AHS)
- Erase Utility
- Deployment Settings

**IMPORTANT:**

- Although your server is preloaded with firmware and drivers, Hewlett Packard Enterprise recommends updating the firmware upon initial setup. Also, downloading and updating the latest version of Intelligent Provisioning ensures the latest supported features are available.
- For ProLiant servers, firmware is updated using the Intelligent Provisioning Firmware Update utility.
- Do not update firmware if the version you are currently running is required for compatibility.

**NOTE:** Intelligent Provisioning does not function within multihomed configurations. A multihomed host is one that is connected to two or more networks or has two or more IP addresses.

Intelligent Provisioning provides installation help for the following operating systems:

- Microsoft Windows Server
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi/vSphere Custom Image
- ClearOS

Not all versions of an OS are supported. For information about specific versions of a supported operating system, see the OS Support Matrix on the Hewlett Packard Enterprise website (http://www.hpe.com/info/ossupport).

HPE Insight Remote Support

Hewlett Packard Enterprise strongly recommends that you register your device for remote support to enable enhanced delivery of your Hewlett Packard Enterprise warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement. Insight Remote Support supplements your monitoring continuously to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution, based on your product’s service level. Notifications can be sent to your authorized Hewlett Packard Enterprise Channel Partner for onsite service, if configured and available in your country.

For more information, see Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures on the **Hewlett Packard Enterprise website**. Insight Remote Support is available as part of Hewlett Packard Enterprise Warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement.
USB support

Hewlett Packard Enterprise Gen10 servers support all USB operating speeds depending on the device that is connected to the server.

External USB functionality

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

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

HPE Smart Storage Administrator

HPE SSA is the main tool for configuring arrays on HPE Smart Array SR controllers. It exists in three interface formats: the HPE SSA GUI, the HPE SSA CLI, and HPE SSA Scripting. All formats provide support for configuration tasks. Some of the advanced tasks are available in only one format.

The diagnostic features in HPE SSA are also available in the standalone software HPE Smart Storage Administrator Diagnostics Utility CLI.

During the initial provisioning of the server or compute module, an array is required to be configured before the operating system can be installed. You can configure the array using SSA.

HPE SSA is accessible both offline (either through HPE Intelligent Provisioning or as a standalone bootable ISO image) and online:

- Accessing HPE SSA in the offline environment

  IMPORTANT: If you are updating an existing server in an offline environment, obtain the latest version of HPE SSA through Service Pack for ProLiant before performing configuration procedures.

  Using one of multiple methods, you can run HPE SSA before launching the host operating system. In offline mode, users can configure or maintain detected and supported devices, such as optional Smart Array controllers and integrated Smart Array controllers. Some HPE SSA features are only available in the offline environment, such as setting the boot controller and boot volume.

- Accessing HPE SSA in the online environment

  This method requires an administrator to download the HPE SSA executables and install them. You can run HPE SSA online after launching the host operating system.

For more information, see HPE Smart Array SR Gen10 Configuration Guide at the Hewlett Packard Enterprise website.

HPE MR Storage Administrator

HPE MR Storage Administrator is a web-based application that enables you to monitor, maintain, troubleshoot, and configure the HPE Smart Array MR controller. MR Storage Administrator helps you to view, create, and manage storage configurations.

- Monitoring and Configuring: MR Storage Administrator enables you to monitor the controllers and configure the drives on the controller. It displays the status of the controller cards, logical drives, and drives on the controller. The device status icons notify you if there are drive failures and other events that require your immediate attention. Email notifications about the status of the server are sent based
on your alert settings. The system errors and events are recorded and displayed in an event log file. You can also import or clear foreign configurations.

- **Maintaining**: Using MR Storage Administrator, you can perform system maintenance tasks, such as updating the controller firmware.

- **Troubleshooting**: MR Storage Administrator displays information related to drive failures, device failures, and other issues. It also provides recommendations and displays contextual links, helping you to locate the drives/devices that have issues and troubleshoot them. You can also download a report of the devices and their configurations, properties, and settings and send it to Hewlett Packard Enterprise Support for further troubleshooting.

Obtain MR Storage Administrator installation files through the Service Pack for ProLiant, or SPP, which you can download from [http://www.hpe.com/servers/spp/download](http://www.hpe.com/servers/spp/download). Be sure to use the latest SPP version for the server.


### HPE InfoSight for servers

The HPE InfoSight portal is a secure web interface hosted by HPE that allows you to monitor supported devices through a graphical interface.

HPE InfoSight for servers:

- Combines the machine learning and predictive analytics of HPE InfoSight with the health and performance monitoring of Active Health System (AHS) and HPE iLO to optimize performance and predict and prevent problems

- Provides automatic collection and analysis of the sensor and telemetry data from AHS to derive insights from the behaviors of the install base to provide recommendations to resolve problems and improve performance

For more information on getting started and using HPE InfoSight for servers, go to: [http://www.hpe.com/info/infosight-servers-docs](http://www.hpe.com/info/infosight-servers-docs).

### StorCLI

The Storage Command Line Interface (StorCLI) tool is the command line management software designed for the HPE Smart Array MR controller. StorCLI is a command line interface that is designed to be easy to use, consistent, and easy to script.

Obtain StorCLI through the Service Pack for ProLiant, or SPP, which you can download from [http://www.hpe.com/servers/spp/download](http://www.hpe.com/servers/spp/download). Be sure to use the latest SPP version for the server.

For more information about StorCLI, see *StorCLI User Guide* on the Hewlett Packard Enterprise website [http://www.hpe.com/info/P824i-pdocs](http://www.hpe.com/info/P824i-pdocs).
Component identification

This chapter describes the external and internal server features and components.

Front panel components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>iLO Service Port</td>
</tr>
<tr>
<td>2</td>
<td>USB 3.0 ports (2)</td>
</tr>
<tr>
<td>3</td>
<td>Box 1&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>4</td>
<td>Half-height media bay 1 (for SAS LTO tape drive option or USB RDX drive option)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>5</td>
<td>Half-height media bay 2 (for USB RDX drive option)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>6</td>
<td>Optical drive bay (for slim-type SATA optical drive option)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>7</td>
<td><strong>Serial number/iLO information pull tab</strong> on page 115</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Box 2&lt;sup&gt;1, 3&lt;/sup&gt;</td>
</tr>
<tr>
<td>9</td>
<td>Box 3&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>10</td>
<td>Front bezel lock</td>
</tr>
</tbody>
</table>

<sup>1</sup> All three boxes support LFF and SFF drive cage options. This server supports mixed LFF + SFF hot-plug drive configurations.

<sup>2</sup> The media drive options are only supported in box 1.

<sup>3</sup> In SFF models, box 2 supports the 8 NVMe SSD Express Bay enablement option.

**Serial number/iLO information pull tab**

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 and QR code label.

Use a mobile device to scan the QR code label to display the server mobile product page ([http://www.hpe.com/qref/ml350gen10](http://www.hpe.com/qref/ml350gen10)). This page contains links to server setup information, spare part numbers, QuickSpecs, troubleshooting resources, and other useful product links.

**Front panel LEDs and buttons**
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UID button/LED$^1$</td>
<td>Solid blue</td>
<td><strong>Activated</strong>&lt;br&gt;&lt;br&gt;Flashing blue&lt;br&gt;&lt;br&gt;• 1 flash per sec = Remote management or firmware upgrade in progress&lt;br&gt;• 4 flashes per sec = iLO manual reboot sequence initiated&lt;br&gt;• 8 flashes per sec = iLO manual reboot sequence in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Deactivated</td>
</tr>
<tr>
<td>2</td>
<td>NIC status LED$^1$</td>
<td>Solid green</td>
<td>Linked to network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green</td>
<td>Network active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No network activity</td>
</tr>
<tr>
<td>3</td>
<td>Health LED$^1$</td>
<td>Solid green</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green</td>
<td>iLO is rebooting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing amber</td>
<td>System degraded$^2$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red</td>
<td>System critical$^2$</td>
</tr>
<tr>
<td>4</td>
<td>Power On/Standby button and system power LED$^1$</td>
<td>Solid green</td>
<td>System on&lt;br&gt;&lt;br&gt;Flashing green&lt;br&gt;Performing power-on sequence&lt;br&gt;&lt;br&gt;Solid amber&lt;br&gt;System in standby&lt;br&gt;&lt;br&gt;Off&lt;br&gt;No power present$^3$</td>
</tr>
</tbody>
</table>

$^1$ When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see [Front panel LED power fault codes](#) on page 117.

$^2$ If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

$^3$ Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.

**Server UID LED**

The UID LED is used to locate a particular server when it is deployed in a dense rack with other equipment. Activating the UID LED helps an onsite technician to quickly identify a server for maintenance tasks.
Toggling the UID LED on and off locally

Procedure

1. Remove the front bezel on page 39.
2. Do one of the following:

   • To turn on the UID LED, press the UID button. This action illuminates both the front and rear UID LEDs blue.
   • To turn off the UID LED, press the UID button again.

The procedure is complete.

Toggling the UID LED on and off remotely

Procedure

1. Log in to the iLO web interface.
2. Do one of the following:

   • To turn on the UID LED, click the UID icon. This action illuminates both the front and rear UID LEDs blue.
   • To turn off the UID LED, click the UID icon again.

The iLO control icons are available from any iLO page. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (http://www.hpe.com/support/ilo-docs).

The procedure is complete.

UID button functionality

The UID button can be used to display the Server Health Summary when the server will not power on. For more information, see the latest HPE iLO 5 User Guide on the Hewlett Packard Enterprise website.

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.

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>LED behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>System board</td>
<td>1 flash</td>
</tr>
<tr>
<td>Processor</td>
<td>2 flashes</td>
</tr>
<tr>
<td>Memory</td>
<td>3 flashes</td>
</tr>
<tr>
<td>Riser board PCIe slots</td>
<td>4 flashes</td>
</tr>
<tr>
<td>FlexibleLOM</td>
<td>5 flashes</td>
</tr>
<tr>
<td>Removable HPE Smart Array SR Gen10 controller</td>
<td>6 flashes</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Subsystem</th>
<th>LED behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>System board PCIe slots</td>
<td>7 flashes</td>
</tr>
<tr>
<td>Power backplane or storage backplane</td>
<td>8 flashes</td>
</tr>
<tr>
<td>Power supply</td>
<td>9 flashes</td>
</tr>
</tbody>
</table>

Rear panel components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Standard power supply (non-hot-plug)¹</td>
</tr>
<tr>
<td>2</td>
<td>Flexible Slot power supply 2 (hot-plug)</td>
</tr>
<tr>
<td>3</td>
<td>Flexible Slot power supply 1 (hot-plug)</td>
</tr>
<tr>
<td>4</td>
<td>PCIe slots 5-8 (bottom to top)</td>
</tr>
<tr>
<td>5</td>
<td>Display port</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>VGA port</td>
</tr>
<tr>
<td>7</td>
<td>Serial port</td>
</tr>
<tr>
<td>8</td>
<td>iLO Management Port</td>
</tr>
<tr>
<td>9</td>
<td>NIC port 2 (1Gb)²</td>
</tr>
<tr>
<td>10</td>
<td>NIC port 1 (1Gb)²</td>
</tr>
<tr>
<td>11</td>
<td>NIC port 4 (1Gb)²</td>
</tr>
<tr>
<td>12</td>
<td>NIC port 3 (1Gb)²</td>
</tr>
<tr>
<td>13</td>
<td>USB 3.0 ports (2)</td>
</tr>
<tr>
<td>14</td>
<td>PCIe slots 1-4 (bottom to top)</td>
</tr>
<tr>
<td>15</td>
<td>Padlock eye</td>
</tr>
<tr>
<td>16</td>
<td>Kensington security slot</td>
</tr>
</tbody>
</table>

¹ The non-hot-plug power supply is only supported in LFF non-hot-plug drive configurations.
² These NIC ports do not support the 100 Mb/s and 10 Mb/s speeds.
## Rear panel LEDs

<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply</td>
<td>Solid green</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>System is off or power supply has failed.</td>
</tr>
<tr>
<td>2</td>
<td>iLO status</td>
<td>Solid green</td>
<td>Linked to network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green</td>
<td>Network active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No network activity</td>
</tr>
<tr>
<td>3</td>
<td>iLO link</td>
<td>Solid green</td>
<td>Network link</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No network link</td>
</tr>
<tr>
<td>4</td>
<td>NIC status</td>
<td>Solid green</td>
<td>Linked to network</td>
</tr>
<tr>
<td>Item</td>
<td>LED Status</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Flashing green</td>
<td>Network active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No network activity</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>NIC link</td>
<td>Solid green</td>
<td>Network link</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No network link</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>UID</td>
<td>Solid blue</td>
<td>Activated</td>
</tr>
<tr>
<td></td>
<td>Flashing blue</td>
<td>System is being managed remotely.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Deactivated</td>
<td></td>
</tr>
</tbody>
</table>

**System board components**

![System board components diagram]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Smart Array modular controller connector (AROC)</td>
</tr>
<tr>
<td>2</td>
<td>Standard power supply connector</td>
</tr>
<tr>
<td>3</td>
<td>Power distribution board connector</td>
</tr>
<tr>
<td>4</td>
<td>Energy pack connector</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>microSD card slot</td>
</tr>
<tr>
<td>6</td>
<td>System battery</td>
</tr>
<tr>
<td>7</td>
<td>Storage controller backup power connectors (2)</td>
</tr>
<tr>
<td>8</td>
<td>Slot 8 PCIe3 x8 (8, 4, 1)¹</td>
</tr>
<tr>
<td>9</td>
<td>Slot 7 PCIe3 x16 (16, 8, 4, 1)¹</td>
</tr>
<tr>
<td>10</td>
<td>Slot 6 PCIe3 x8 (8, 4, 1)¹</td>
</tr>
<tr>
<td>11</td>
<td>Slot 5 PCIe3 x16 (16, 8, 4, 1)¹</td>
</tr>
<tr>
<td>12</td>
<td>Fan connector 5</td>
</tr>
<tr>
<td>13</td>
<td>Fan connector 6</td>
</tr>
<tr>
<td>14</td>
<td>Slot 4 PCIe3 x8 (4, 1)²</td>
</tr>
<tr>
<td>15</td>
<td>Slot 3 PCIe3 x16 (16, 8, 4, 1)²</td>
</tr>
<tr>
<td>16</td>
<td>NVMe riser sideband connector for PCIe slot 3</td>
</tr>
<tr>
<td>17</td>
<td>Slot 2 PCIe3 x8 (4, 1)²</td>
</tr>
<tr>
<td>18</td>
<td>NVMe riser sideband connector for PCIe slot 1</td>
</tr>
<tr>
<td>19</td>
<td>Slot 1 PCIe3 x16 (16, 8, 4, 1)²</td>
</tr>
<tr>
<td>20</td>
<td>TPM connector</td>
</tr>
<tr>
<td>21</td>
<td>Storage controller backup power connectors (2)</td>
</tr>
<tr>
<td>22</td>
<td><strong>System maintenance switch</strong></td>
</tr>
<tr>
<td>23</td>
<td>Power and x1 SATA port 5</td>
</tr>
<tr>
<td>24</td>
<td>x1 SATA port 4</td>
</tr>
<tr>
<td>25</td>
<td>Front USB cable connector</td>
</tr>
<tr>
<td>26</td>
<td>Front I/O cable connector</td>
</tr>
<tr>
<td>27</td>
<td>Internal USB 2.0 port</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Internal USB 3.0 port</td>
</tr>
<tr>
<td>29</td>
<td>x4 SATA port 2</td>
</tr>
<tr>
<td>30</td>
<td>x4 SATA port 1</td>
</tr>
<tr>
<td>31</td>
<td>x4 SATA port 3</td>
</tr>
<tr>
<td>32</td>
<td>Fan connector 4</td>
</tr>
<tr>
<td>33</td>
<td>Box 3 drive power connector</td>
</tr>
<tr>
<td>34</td>
<td>Box 2 drive power connector</td>
</tr>
<tr>
<td>35</td>
<td>Box 1 drive power connector</td>
</tr>
<tr>
<td>36</td>
<td>Fan connector 3</td>
</tr>
<tr>
<td>37</td>
<td>Fan connector 2</td>
</tr>
<tr>
<td>38</td>
<td>Fan connector 1</td>
</tr>
</tbody>
</table>

1. The PCIe3 expansion slots 5–8 are associated with processor 2.
2. The PCIe3 expansion slots 1–4 are associated with processor 1.

### System maintenance switch descriptions

<table>
<thead>
<tr>
<th>Position</th>
<th>Default</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Off</td>
<td>Off = iLO 5 security is enabled. Off = iLO 5 security is disabled.</td>
</tr>
<tr>
<td>S2</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>S3</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>S4</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>S5&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Off</td>
<td>Off = Power-on password is enabled. Off = Power-on password is disabled.</td>
</tr>
<tr>
<td>S6&lt;sup&gt;1, 2, 3&lt;/sup&gt;</td>
<td>Off</td>
<td>Off = No function On = Restore default manufacturing settings</td>
</tr>
<tr>
<td>S7</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>S8</td>
<td>—</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

Table Continued
Position | Default | Function
---|---|---
S9 | — | Reserved
S10 | — | Reserved
S11 | — | Reserved
S12 | — | Reserved

1 To access the redundant ROM, set S1, S5, and S6 to On.
2 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.
3 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 Secure Boot on page 109.

## 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.

![DIMM Label](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
</table>
| 1 | Capacity | 8 GB  
   | | 16 GB  
   | | 32 GB  
   | | 64 GB  
   | | 128 GB  |
| 2 | Rank | 1R = Single rank  
   | | 2R = Dual rank  
   | | 4R = Quad rank  
   | | 8R = Octal rank  |

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Data width on DRAM</td>
<td>x4 = 4-bit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>x8 = 8-bit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>x16 = 16-bit</td>
</tr>
<tr>
<td>4</td>
<td>Memory generation</td>
<td>PC4 = DDR4</td>
</tr>
<tr>
<td>5</td>
<td>Maximum memory speed</td>
<td>2133 MT/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2400 MT/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2666 MT/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2933 MT/s</td>
</tr>
<tr>
<td>6</td>
<td>CAS latency</td>
<td>P = CAS 15-15-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T = CAS 17-17-17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U = CAS 20-18-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V = CAS 19-19-19 (for RDIMM, LRDIMM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V = CAS 22-19-19 (for 3DS TSV LRDIMM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y = CAS 21-21-21 (for RDIMM, LRDIMM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y = CAS 24-21-21 (for 3DS TSV LRDIMM)</td>
</tr>
<tr>
<td>7</td>
<td>DIMM type</td>
<td>R = RDIMM (registered)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L = LRDIMM (load reduced)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E = Unbuffered ECC (UDIMM)</td>
</tr>
</tbody>
</table>

For more information about product features, specifications, options, configurations, and compatibility, see the HPE DDR4 SmartMemory QuickSpecs on the Hewlett Packard Enterprise website (http://www.hpe.com/support/DDR4SmartMemoryQS).

**PCle slot description**

![PCle slot description diagram]
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PCI Express version</td>
<td>Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PCIe 1.x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PCIe 2.x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PCIe 3.x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The PCIe technology is under constant development. For the latest information, see the <a href="https://www.pcisig.com">PCI-SIG website</a>.</td>
</tr>
<tr>
<td>2</td>
<td>Physical connector link width</td>
<td>PCIe devices communicate through a logical connection called an interconnect or link. At the physical level, a link is composed of one or more lanes. The number of lanes is written with an “×” prefix with ×16 being the largest size in common use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ×1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ×2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ×4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ×8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ×16</td>
</tr>
<tr>
<td>3</td>
<td>Negotiable link width</td>
<td>These numbers correspond to the maximum link bandwidth supported by the slot.</td>
</tr>
</tbody>
</table>

**Processor, heatsink, and socket components**

![Diagram of processor, heatsink, and socket components](image)
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heatsink nuts</td>
</tr>
<tr>
<td>2</td>
<td>Processor carrier</td>
</tr>
<tr>
<td>3</td>
<td>Pin 1 indicator(^1)</td>
</tr>
<tr>
<td>4</td>
<td>Heatsink latch</td>
</tr>
<tr>
<td>5</td>
<td>Alignment post</td>
</tr>
</tbody>
</table>

\(^1\) Symbol also on the processor and frame.

**Drive LEDs and buttons**

**Low profile LFF drive LED definitions**

<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fault \ LOC</td>
<td>Solid amber</td>
<td>The drive has failed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solid blue</td>
<td>The drive is operating normally and being identified by a management application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing amber/blue (1 flash per second)</td>
<td>The drive has failed, or a predictive failure alert has been received for this drive; it also has been identified by a management application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing amber  (1 flash per second)</td>
<td>A predictive failure alert has been received for this drive. Replace the drive as soon as possible.</td>
</tr>
<tr>
<td>2</td>
<td>Online \ ACT</td>
<td>Solid green</td>
<td>The drive is online and has no activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green  (4 flashes per second)</td>
<td>The drive is operating normally and has activity.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Spending green (1 flash per second) | The drive is doing one of the following:  
  - Rebuilding  
  - Performing a RAID migration  
  - Performing a strip size migration  
  - Performing a capacity expansion  
  - Performing a logical drive extension  
  - Erasing  
  - Spare part activation |
| Off | The drive is not configured by a RAID controller or a spare drive. |

**Hot-plug drive LED definitions**

<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Locate</td>
<td>Solid blue</td>
<td>The drive is being identified by a host application.</td>
</tr>
<tr>
<td></td>
<td>Flashing blue</td>
<td>The drive carrier firmware is being updated or requires an update.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Activity ring</td>
<td>Rotating green</td>
<td>Drive activity</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No drive activity</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Do not remove</td>
<td>Solid white</td>
<td>Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Removing the drive does not cause a logical drive to fail.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Drive status</td>
<td>Solid green</td>
<td>The drive is a member of one or more logical drives.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
</table>
| 1    |     | Flashing green | The drive is doing one of the following:  
• Rebuilding  
• Performing a RAID migration  
• Performing a strip size migration  
• Performing a capacity expansion  
• Performing a logical drive extension  
• Erasing  
• Spare part activation |
| 2    |     | Flashing amber/green | The drive is a member of one or more logical drives and predicts the drive will fail. |
| 3    |     | Flashing amber  | The drive is not configured and predicts the drive will fail. |
| 4    |     | Solid amber  | The drive has failed. |
| 5    |     | Off  | The drive is not configured by a RAID controller or a spare drive. |

**NVMe SSD LED definitions**

The NVMe SSD is a PCIe bus device. A device attached to a PCIe bus cannot be removed without allowing the device and bus to complete and cease the signal/traffic flow.

⚠️ **CAUTION:** Do not remove an NVMe SSD from the drive bay while the Do not remove LED is flashing. The Do not remove LED flashes to indicate that the device is still in use. Removing the NVMe SSD before the device has completed and ceased signal/traffic flow can cause loss of data.

![Diagram of NVMe SSD with labeled LEDs](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
</table>
| 1    |     | Locate | Solid blue  
The drive is being identified by a host application. |
|      |     |         | Flashing blue  
The drive carrier firmware is being updated or requires an update. |
| 2    |     | Activity ring | Rotating green  
Drive activity |
|      |     |         | Off  
No drive activity |
| 3    |     | Drive status | Solid green  
The drive is a member of one or more logical drives. |

Table Continued
<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
</table>
|      |     | Flashing green | The drive is doing one of the following:  
|      |     | • Rebuilding  
|      |     | • Performing a RAID migration  
|      |     | • Performing a stripe size migration  
|      |     | • Performing a capacity expansion  
|      |     | • Performing a logical drive extension  
|      |     | • Erasing  |
|      |     | Flashing amber/ green | The drive is a member of one or more logical drives and predicts the drive will fail.  
|      |     | Flashing amber | The drive is not configured and predicts the drive will fail.  
|      |     | Solid amber | The drive has failed.  
|      |     | Off | The drive is not configured by a RAID controller.  
| 4   | Do not remove | Solid white | Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.  
|     |     | Flashing white | The drive ejection request is pending.  
|     |     | Off | The drive has been ejected.  
| 5   | Power | Solid green | Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.  
|     |     | Flashing green | The drive ejection request is pending.  
|     |     | Off | The drive has been ejected.  

**NVMe SSD button actions**

![NVMe SSD button actions diagram]
<table>
<thead>
<tr>
<th>Item</th>
<th>Button</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do Not Remove</td>
<td>Press to open the release lever.</td>
</tr>
<tr>
<td>2</td>
<td>Power</td>
<td>Press to request PCIe ejection. Removal request can be denied by the:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RAID controller (one or more of the logical drives could fail)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Operating system</td>
</tr>
</tbody>
</table>

**Drive bay numbering**

Drive bay numbering depends on how the drive backplane is connected. In this server, the backplane can be connected to the:

- Embedded Smart Array controller through the onboard SATA ports
- Smart Array type-a modular (AROC) and type-p standup plug-in storage controllers
- SAS expander card

When the backplane is connected to a storage controller, the drive bay numbering for each drive box starts at 1.

When the backplane is connected to a SAS expander, all drive boxes are treated as a single box 1. This means the drive bay numbering is continuous.
SFF drive bay numbering: Smart Array controller

Tower orientation

Rack orientation
SFF drive bay numbering: SAS expander

Tower orientation

Rack orientation
NVMe drive bay numbering

Tower orientation

Rack orientation
LFF drive bay numbering: Smart Array controller

Tower orientation

Rack orientation

Fan bay numbering

Fans 5 and 6 are preinstalled in the chassis while fans 1–4 are preinstalled in the fan cage option.
Media device screws

There are 12 T-15 Torx screws on the server chassis. These screws are provided as spare screws for installing media devices.

Expansion board screws

There are T-15 Torx screws located on the underside of the PCI blank retainer. These are screws for installing PCIe standup plug-in expansion board options.
Cabling

Cabling guidelines

The cable colors in the cabling diagrams used in this chapter are for illustration purposes only. Most of the server cables are black.

Observe the following guidelines when working with server cables.

**Before connecting cables**

- Note the port labels on the PCA components. Not all of these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion board ports (controllers, 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 pre-bent. 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 are properly secured to avoid excess bends, interference issues, and airflow restriction.
- To prevent component damage and potential signal interference, make sure that all cables are in their appropriate routing position before installing a new component and before closing up the server after hardware installation/maintenance.

**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.

**Internal cabling management**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front I/O cable assembly channel</td>
</tr>
<tr>
<td>2</td>
<td>Front cable channel with metal tabs</td>
</tr>
<tr>
<td>3</td>
<td>Cable clips</td>
</tr>
<tr>
<td>4</td>
<td>Alignment posts</td>
</tr>
</tbody>
</table>
Storage cabling

Storage controller cables

LFF non-hot-plug drive embedded controller cables
For controller cabling diagrams, see the [LFF non-hot-plug drive onboard SATA port cabling](#) on page 141.

<table>
<thead>
<tr>
<th>Cable location</th>
<th>Cable part number</th>
<th>From box #</th>
<th>To port #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default in the server chassis</td>
<td>876493-002</td>
<td>Box 3</td>
<td>Onboard SATA port 1</td>
</tr>
<tr>
<td>Included in the non-hot-plug drive cage option</td>
<td>876492-002</td>
<td>Box 1 or 2</td>
<td>Onboard SATA port 2 or 3</td>
</tr>
</tbody>
</table>

LFF hot-plug drive controller cables

<table>
<thead>
<tr>
<th>Controller type</th>
<th>Cable kit part number</th>
<th>Cable part number</th>
<th>From box #</th>
<th>To port #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedded controller</td>
<td>877578-B21</td>
<td>876487-001</td>
<td>Box 1 or 2</td>
<td>Onboard SATA ports 2 and 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>876488-001</td>
<td>Box 3</td>
<td>Onboard SATA port 1</td>
</tr>
<tr>
<td>Type-p standup plug-in controller</td>
<td>874574-B21</td>
<td>876500-001</td>
<td>Box 1, 2, or 3</td>
<td>Controller port 1 or 2</td>
</tr>
<tr>
<td>Type-a modular controller (AROC)</td>
<td>874573-B21</td>
<td>876499-001</td>
<td>Box 1</td>
<td>Controller port 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>876501-001</td>
<td>Box 1 or 2</td>
<td>Controller port 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>876498-001</td>
<td>Box 2 or 3</td>
<td>Controller port 1</td>
</tr>
</tbody>
</table>

SFF hot-plug drive controller cables

<table>
<thead>
<tr>
<th>Controller type</th>
<th>Cable kit part number</th>
<th>Cable part number</th>
<th>From box #</th>
<th>To port #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedded controller</td>
<td>877579-B21</td>
<td>876486-001</td>
<td>Box 3</td>
<td>Onboard SATA ports 1 and 2</td>
</tr>
<tr>
<td>Type-p standup plug-in controller</td>
<td>874575-B21</td>
<td>876485-001</td>
<td>Box 1, 2, or 3</td>
<td>Controller ports 1 and 2</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Controller type</th>
<th>Cable kit part number</th>
<th>Cable part number</th>
<th>From box #</th>
<th>To port #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P00511-001</td>
<td>• P1 slot installation: Box 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P2 slot installation: Box 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P1 slot installation: Controller ports 1 and 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P2 slot installation: Controller ports 5 and 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P00509-001</td>
<td>Box 2</td>
<td>Controller ports 3 and 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P00510-001</td>
<td></td>
<td>• P1 slot installation: Box 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P2 slot installation: Box 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P1 slot installation: Controller ports 5 and 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• P2 slot installation: Controller ports 1 and 2</td>
<td></td>
</tr>
<tr>
<td><strong>Type-a modular controller (AROC)</strong></td>
<td>877575-B21</td>
<td>876497-001</td>
<td>Box 1 or 2</td>
<td>Controller ports 3 and 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>876496-001</td>
<td>Box 2 or 3</td>
<td>Controller ports 1 and 2</td>
</tr>
</tbody>
</table>

1 The P00512-001 cable (510 mm) included in the P00614-B21 cable kit is not for use in this server.

**LFF non-hot-plug drive onboard SATA port cabling**
### Cable color

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 SATA-power split cable to the onboard SATA port 3</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 SATA-power split cable to the onboard SATA port 2</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 SATA-power split cable to the onboard SATA port 1</td>
</tr>
</tbody>
</table>

### LFF hot-plug drive controller cabling

**LFF hot-plug drive onboard SATA port cabling**

![Diagram of LFF hot-plug drive onboard SATA port cabling]

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS cable to the onboard SATA port 3</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS cable to the onboard SATA port 2</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS cable to the onboard SATA port 1</td>
</tr>
</tbody>
</table>
LFF hot-plug drive standup controller cabling (SAS/SATA)

Slot 1 standup controller + onboard SATA port 1 cabling

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS X-cable to the standup controller port 2</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to the standup controller port 1</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS cable to the onboard SATA port 1</td>
</tr>
</tbody>
</table>

Slots 1 and 3 standup controller cabling

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS cable to the slot 3 controller port 1</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to the slot 1 controller port 2</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS X-cable to the slot 1 controller port 1</td>
</tr>
</tbody>
</table>
## LFF hot-plug drive modular controller cabling (SAS/SATA)

### Modular controller + onboard SATA port 1 cabling

#### Cable color | Description
---|---
Gold | Box 1 Mini-SAS cable to the modular controller port 2
Blue | Box 2 Mini-SAS cable to the modular controller port 1
Orange | Box 3 Mini-SAS cable to the onboard SATA port 1

### Modular controller cabling

#### Cable color | Description
---|---
Gold | Box 1 Mini-SAS cable to the modular controller port 3
Blue | Box 2 Mini-SAS cable to the modular controller port 2
Orange | Box 3 Mini-SAS cable to the modular controller port 1
SFF hot-plug drive controller cabling

SFF hot-plug drive single standup controller cabling (SAS/SATA)

### SFF hot-plug drive single standup controller cabling for P1 installation (SAS/SATA)

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS X-cable to standup controller ports 1 and 2</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to standup controller ports 3 and 4</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS X-cable to standup controller ports 5 and 6</td>
</tr>
</tbody>
</table>

SFF hot-plug drive single standup controller cabling for P2 installation (SAS/SATA)
### SFF hot-plug drive multiple standup controller cabling (SAS/SATA)

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS X-cable to standup controller ports 1 and 2</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to standup controller ports 3 and 4</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS X-cable to standup controller ports 5 and 6</td>
</tr>
</tbody>
</table>

### SFF hot-plug drive modular controller cabling (SAS/SATA)

**Modular controller + onboard SATA ports 1 and 2 cabling**
<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Box 1 Mini-SAS X-cable to the modular controller ports 3 and 4</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to the modular controller ports 1 and 2</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS X-cable to the onboard SATA ports 1 and 2</td>
</tr>
</tbody>
</table>

**Modular controller cabling**

---

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>Box 1 is empty or occupied by media devices.</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 Mini-SAS X-cable to the modular controller ports 3 and 4</td>
</tr>
<tr>
<td>Orange</td>
<td>Box 3 Mini-SAS X-cable to the modular controller ports 1 and 2</td>
</tr>
</tbody>
</table>

**SFF hot-plug drive SAS expander cabling (SAS/SATA)**

**SAS expander card with standup controller cabling**
### Cable color | Description
---|---
Gold | Box 1 Mini-SAS X-cable to the expander ports 7 and 8
Blue | Box 2 Mini-SAS X-cable to the expander ports 5 and 6
Orange | Box 3 Mini-SAS X-cable to the expander ports 3 and 4
Pink | Slot 3 standup controller Mini-SAS X-cable to the slot 2 expander ports 1 and 2

**SAS expander card with modular controller cabling**

![Diagram of SAS expander card with modular controller cabling]

### Cable color | Description
---|---
Pink | Modular controller Mini-SAS X-cable to expander ports 1 and 2
Gold | Box 1 Mini-SAS X-cable to the expander ports 7 and 8
Blue | Box 2 Mini-SAS X-cable to the expander ports 5 and 6
Orange | Box 3 Mini-SAS X-cable to the expander ports 3 and 4
## NVMe SSD data cabling

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>NVMe SSD backplane to the slot 3 NVMe riser board ports 1 and 2</td>
</tr>
<tr>
<td>Orange</td>
<td>NVMe SSD backplane to the slot 1 NVMe riser board ports 1 and 2</td>
</tr>
</tbody>
</table>

## M.2 SATA SSD cabling

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>M.2 SSD port 1 SATA cable to onboard SATA port 4</td>
</tr>
<tr>
<td>Blue</td>
<td>M.2 SSD port 2 SATA cable to onboard SATA port 5</td>
</tr>
</tbody>
</table>
### Drive power cabling

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Box 1 drive power connector cable</td>
</tr>
<tr>
<td>Blue</td>
<td>Box 2 drive power connector cable</td>
</tr>
<tr>
<td>Gold</td>
<td>Box 3 drive power connector cable</td>
</tr>
</tbody>
</table>

### Energy pack cabling
Storage controller backup power cabling

Smart Array P-class storage controllers in slots 1 and 3

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Slot 3 storage controller backup power cable</td>
</tr>
<tr>
<td>Orange</td>
<td>Slot 1 storage controller backup power cable</td>
</tr>
</tbody>
</table>

Smart Array P-class storage controllers in slots 5 and 7

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Slot 7 storage controller backup power cable</td>
</tr>
<tr>
<td>Orange</td>
<td>Slot 5 storage controller backup power cable</td>
</tr>
</tbody>
</table>

Media device cabling
## SAS LTO tape drive cabling

**LTO tape drive cabling with the standup controller in slot 3**

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Power connector of the LTO tape drive power-SAS Y-cable to the LTO/RDX power Y-cable</td>
</tr>
<tr>
<td>Blue</td>
<td>LTO/RDX power Y-cable to the drive box 1 power connector</td>
</tr>
<tr>
<td>Orange</td>
<td>SAS connector of the LTO tape drive power-SAS Y-cable to the slot 3 standup controller</td>
</tr>
</tbody>
</table>

**LTO tape drive cabling with the standup controller in slot 5**
### Cable color

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>SAS connector of the LTO tape drive power-SAS Y-cable to the slot 5 standup controller</td>
</tr>
<tr>
<td>Gold</td>
<td>Power connector of the LTO tape drive power-SAS Y-cable to the LTO/RDX power Y-cable</td>
</tr>
<tr>
<td>Blue</td>
<td>LTO/RDX power Y-cable to the drive box 1 power connector</td>
</tr>
</tbody>
</table>

#### USB RDX drive cabling

![USB RDX drive cabling diagram]

### Cable color

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>LTO/RDX power Y-cable to the drive box 1 power connector</td>
</tr>
<tr>
<td>Orange</td>
<td>RDX USB cable to the internal USB port 3.0</td>
</tr>
</tbody>
</table>
SATA optical drive cabling

Optical drive SATA cable to onboard SATA port 5

GPU auxiliary power cabling

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Processor 1 GPU auxiliary power cable to PDB</td>
</tr>
<tr>
<td>Blue</td>
<td>Processor 2 GPU auxiliary power cable to PDB</td>
</tr>
</tbody>
</table>
**Standard power supply cabling (non-hot-plug)**

![Diagram of Standard power supply cabling](image)

**Front I/O module cabling**

The front I/O module cable is routed underneath the cable channel on top of the drive boxes.

![Diagram of Front I/O module cabling](image)

<table>
<thead>
<tr>
<th>Cable color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Front I/O cable</td>
</tr>
<tr>
<td>Orange</td>
<td>Front USB cable</td>
</tr>
</tbody>
</table>
# Specifications

## Environmental specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature range</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td>Operating</td>
<td>10°C to 35°C (50°F to 95°F)</td>
</tr>
<tr>
<td>Nonoperating</td>
<td>-30°C to 60°C (-22°F to 140°F)</td>
</tr>
<tr>
<td><strong>Relative humidity (noncondensing)</strong></td>
<td>—</td>
</tr>
<tr>
<td>Operating</td>
<td>8% to 90%</td>
</tr>
<tr>
<td></td>
<td>28°C (82.4°F), maximum wet bulb temperature</td>
</tr>
<tr>
<td>Nonoperating</td>
<td>5% to 95%</td>
</tr>
<tr>
<td></td>
<td>38.7°C (101.7°F), maximum wet bulb temperature</td>
</tr>
</tbody>
</table>

<sup>1</sup> All temperature ratings shown are for sea level. An altitude derating of 1.0°C per 305 m (1.8°F per 1000 ft) to 3050 m (10,000 ft) is applicable. No direct sunlight allowed. Maximum rate of change is 20°C per hour (36°F per hour). The upper limit and rate of change might be limited by the type and number of options installed.

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

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 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 3050 m (10,000 ft).

The approved hardware configurations for this system are listed on the [Hewlett Packard Enterprise website](https://www.hpe.com).

## Mechanical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower model</td>
<td>—</td>
</tr>
<tr>
<td>Height</td>
<td>46.25 cm (18.21 in)</td>
</tr>
<tr>
<td>Depth</td>
<td>64.8 cm (25.51 in)</td>
</tr>
<tr>
<td>Width</td>
<td>17.4 cm (6.85 in)</td>
</tr>
<tr>
<td>Weight, minimum</td>
<td>21 kg (46.30 lb)</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, maximum</td>
<td>41 kg (90.39 lb)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rack model</strong></td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>17.4 cm (6.85 in)</td>
</tr>
<tr>
<td>Depth</td>
<td>64.8 cm (25.51 in)</td>
</tr>
<tr>
<td>Width</td>
<td>44.5 cm (17.52 in)</td>
</tr>
<tr>
<td>Weight, minimum</td>
<td>21 kg (46.30 lb)</td>
</tr>
<tr>
<td>Weight, maximum</td>
<td>41 kg (90.39 lb)</td>
</tr>
</tbody>
</table>

**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:

- **HPE 500W Low Halogen Non-hot-plug Power Supply** on page 157
  
  This power supply is only supported when the server is in tower mode.

- **HPE 500W Flex Slot Platinum Hot-plug Low Halogen Power Supply** on page 158

- **HPE 800W Flex Slot Platinum Hot-plug Low Halogen Power Supply** on page 159

- **HPE 800W Flex Slot Titanium Hot-plug Low Halogen Power Supply** on page 160

- **HPE 800W Flex Slot Universal Hot-plug Low Halogen Power Supply** on page 161

- **HPE 800W Flex Slot -48VDC Hot-plug Low Halogen Power Supply** on page 161

- **HPE 1600W Flex Slot Platinum Hot-plug Low Halogen Power Supply** on page 163

For detailed power supply specifications, see the QuickSpecs on the Hewlett Packard Enterprise website.

**HPE 500W Low Halogen Non-hot-plug Power Supply**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input requirements</td>
<td>—</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>100 VAC to 240 VAC</td>
</tr>
<tr>
<td></td>
<td>240 VDC for China only</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input current</td>
<td>5.8 A at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>2.3 A at 240 VAC</td>
</tr>
<tr>
<td></td>
<td>2.7 A at 240 VDC for China only</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>578 W at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>557 W at 240 VAC</td>
</tr>
<tr>
<td>BTUs per hour</td>
<td>1953 at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>1882 at 240 VAC</td>
</tr>
<tr>
<td>Power supply output</td>
<td>—</td>
</tr>
<tr>
<td>Rated steady-state power</td>
<td>500 W at 100 VAC to 240 VAC input</td>
</tr>
<tr>
<td></td>
<td>500 W at 240 VDC input for China only</td>
</tr>
<tr>
<td>Maximum peak power</td>
<td>500 W at 100 VAC to 240 VAC input</td>
</tr>
<tr>
<td></td>
<td>500 W at 240 VDC input for China only</td>
</tr>
</tbody>
</table>

**HPE 500W Flex Slot Platinum Hot-plug Low Halogen Power Supply**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input requirements</td>
<td>—</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>100 VAC to 240 VAC</td>
</tr>
<tr>
<td></td>
<td>240 VDC for China only</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Not applicable to 240 VDC</td>
</tr>
<tr>
<td>Rated input current</td>
<td>5.8 A at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>2.8 A at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>2.4 A at 240 VDC for China only</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>557 W at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>539 W at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>537 W at 240 VDC for China only</td>
</tr>
</tbody>
</table>

*Table Continued*
### HPE 800W Flex Slot Platinum Hot-plug Low Halogen Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input requirements</strong></td>
<td>—</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>100 VAC to 127 VAC</td>
</tr>
<tr>
<td></td>
<td>200 VAC to 240 VAC</td>
</tr>
<tr>
<td></td>
<td>240 VDC for China only</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Not applicable to 240 VDC</td>
</tr>
<tr>
<td>Rated input current</td>
<td>9.1 A at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>4.4 A at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>3.6 A at 240 VDC for China only</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>899 W at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>867 W at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>864 W at 240 VDC for China only</td>
</tr>
<tr>
<td>BTUs per hour</td>
<td>3067 at 100 VAC</td>
</tr>
<tr>
<td></td>
<td>2958 at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>2949 at 240 VAC for China only</td>
</tr>
</tbody>
</table>

**Table Continued**
### HPE 800W Flex Slot Titanium Hot-plug Low Halogen Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>200 VAC to 240 VAC</td>
</tr>
<tr>
<td></td>
<td>240 VDC for China only</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Not applicable to 240 VDC</td>
</tr>
<tr>
<td>Rated input current</td>
<td>4.35 A at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>3.62 A at 240 VAC</td>
</tr>
<tr>
<td></td>
<td>3.62 A at 240 VDC for China only</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>851 W at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>848 W at 240 VAC</td>
</tr>
<tr>
<td></td>
<td>848 W at 240 VDC for China only</td>
</tr>
<tr>
<td>BTUs per hour</td>
<td>2905 at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>2893 at 240 VAC</td>
</tr>
<tr>
<td></td>
<td>2893 at 240 VDC for China only</td>
</tr>
<tr>
<td><strong>Power supply output</strong></td>
<td></td>
</tr>
<tr>
<td>Rated steady-state power</td>
<td>800 W at 200 VAC to 240 VAC input</td>
</tr>
<tr>
<td></td>
<td>800 W at 240 VDC input for China only</td>
</tr>
<tr>
<td>Maximum peak power</td>
<td>800 W at 200 VAC to 240 VAC input</td>
</tr>
<tr>
<td></td>
<td>800 W at 240 VDC input for China only</td>
</tr>
</tbody>
</table>
### HPE 800W Flex Slot Universal Hot-plug Low Halogen Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input requirements</strong></td>
<td>—</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>200 VAC to 277 VAC</td>
</tr>
<tr>
<td></td>
<td>380 VDC</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td>Rated input current</td>
<td>4.4 A at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>3.1 A at 277 VAC</td>
</tr>
<tr>
<td></td>
<td>2.3 A at 380 VDC</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>869 W at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>865 W at 230 VAC</td>
</tr>
<tr>
<td></td>
<td>861 W at 277 VAC</td>
</tr>
<tr>
<td></td>
<td>863 W at 380 VDC</td>
</tr>
<tr>
<td>BTUs per hour</td>
<td>2964 at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>2951 at 230 VAC</td>
</tr>
<tr>
<td></td>
<td>2936 at 277 VAC</td>
</tr>
<tr>
<td></td>
<td>2943 at 380 VDC</td>
</tr>
<tr>
<td><strong>Power supply output</strong></td>
<td>—</td>
</tr>
<tr>
<td>Rated steady-state power</td>
<td>800 W at 200 VAC to 277 VAC input</td>
</tr>
<tr>
<td>Maximum peak power</td>
<td>800 W at 200 VAC to 277 VAC input</td>
</tr>
</tbody>
</table>

### HPE 800W Flex Slot -48VDC Hot-plug Low Halogen Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input requirements</strong></td>
<td>—</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>-40 VDC to -72 VDC</td>
</tr>
<tr>
<td></td>
<td>-48 VDC nominal input</td>
</tr>
<tr>
<td>Rated input current</td>
<td>22.1 A at -40 VDC input</td>
</tr>
<tr>
<td></td>
<td>18.2 A at -48 VDC input, nominal input</td>
</tr>
<tr>
<td></td>
<td>12.0 A at -72 VDC input</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input power (W)</td>
<td>874 W at -40 VDC input</td>
</tr>
<tr>
<td></td>
<td>865 W at -48 VDC input, nominal input</td>
</tr>
<tr>
<td></td>
<td>854 W at -72 VDC input</td>
</tr>
<tr>
<td>Rated input power (BTUs per hour)</td>
<td>2983 at -40 VDC input</td>
</tr>
<tr>
<td></td>
<td>2951 at -48 VDC input, nominal input</td>
</tr>
<tr>
<td></td>
<td>2912 at -72 VDC input</td>
</tr>
<tr>
<td>Power supply output</td>
<td>—</td>
</tr>
<tr>
<td>Rated steady-state power (W)</td>
<td>800 W at -40 VDC to -72 VDC</td>
</tr>
<tr>
<td>Maximum peak power (W)</td>
<td>800 W at -40 VDC to -72 VDC</td>
</tr>
<tr>
<td>Maximum peak power</td>
<td>800 W at -40 VDC to -72 VDC input</td>
</tr>
</tbody>
</table>

**WARNING:** To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel.
- Connect the equipment to a reliably grounded secondary circuit source. A secondary circuit has no direct connection to a primary circuit and derives its power from a transformer, converter, or equivalent isolation device.
- The branch circuit overcurrent protection must be rated 27 A.

**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 of 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.
## HPE 1600W Flex Slot Platinum Hot-plug Low Halogen Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>200 VAC to 240 VAC</td>
</tr>
<tr>
<td></td>
<td>240 VDC for China only</td>
</tr>
<tr>
<td>Rated input frequency</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td>Rated input current</td>
<td>8.7 A at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>7.2 A at 240 VAC</td>
</tr>
<tr>
<td>Maximum rated input power</td>
<td>1734 W at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>1725 W at 240 VAC</td>
</tr>
<tr>
<td>BTUs per hour</td>
<td>5918 at 200 VAC</td>
</tr>
<tr>
<td></td>
<td>5884 at 240 VAC</td>
</tr>
<tr>
<td><strong>Power supply output</strong></td>
<td></td>
</tr>
<tr>
<td>Rated steady-state power</td>
<td>1600 W at 200 VAC to 240 VAC input</td>
</tr>
<tr>
<td></td>
<td>1600 W at 240 VDC input</td>
</tr>
<tr>
<td>Maximum peak power</td>
<td>2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input</td>
</tr>
</tbody>
</table>
Websites

General websites
Hewlett Packard Enterprise Information Library
www.hpe.com/info/EIL

Subscription Service/Support Alerts
www.hpe.com/support/e-updates

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix
www.hpe.com/storage/spock

Storage white papers and analyst reports
www.hpe.com/storage/whitepapers

For additional general support websites, see Support and other resources.

Product websites
HPE ProLiant ML350 Gen10 Server QuickSpecs
http://www.hpe.com/servers/ml350-gen10

HPE ProLiant ML350 Gen10 Server support page
http://www.hpe.com/support/ml350gen10

HPE ProLiant ML350 Gen10 Server user documents
http://www.hpe.com/info/ml350gen10-docs
Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
  [http://www.hpe.com/info/assistance](http://www.hpe.com/info/assistance)
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

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

ClearCARE technical support

Support for ClearOS and ClearVM is not provided by Hewlett Packard Enterprise. Support for ClearOS and ClearVM is purchased and delivered by ClearCenter. You can purchase single support incidents by submitting a support ticket to ClearCenter, or you can purchase a Bronze, Silver, Gold, or Platinum ClearCARE subscription. For more information, go to the ClearOS website:

[https://www.clearos.com/](https://www.clearos.com/)

Several levels of professional technical support are available to licensed users. For more information, go to the ClearCARE support website:

[https://www.clearos.com/products/support/clearcare-overview](https://www.clearos.com/products/support/clearcare-overview)

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
    [www.hpe.com/support/hpesc](http://www.hpe.com/support/hpesc)
  - Hewlett Packard Enterprise Support Center: Software downloads
    [www.hpe.com/support/downloads](http://www.hpe.com/support/downloads)
Software Depot
www.hpe.com/support/softwaredepot

- To subscribe to eNewsletters and alerts:
  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:
  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 Passport set up with relevant entitlements.

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**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 will initiate a fast and accurate resolution based on your product's service level. 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.

Remote support and Proactive Care information
HPE Get Connected
  www.hpe.com/services/getconnected
HPE Proactive Care services
  www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
  www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
  www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information
Proactive Care central
  www.hpe.com/services/proactivecarecentral
Proactive Care service activation
  www.hpe.com/services/proactivecarecentralgetstarted

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**Warranty information**

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options
  www.hpe.com/support/ProLiantServers-Warranties
HPE Enterprise and Cloudline Servers
  www.hpe.com/support/EnterpriseServers-Warranties
HPE Storage Products
  www.hpe.com/support/Storage-Warranties
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:

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:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

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Acronyms and abbreviations

3DS TSV
three-dimensional stacked through-silicon via (integrated circuit packaging technology)

AHCI
advanced host controller interface

AHS
Active Health System

API
application program interface

CAS
column address strobe

CMA
cable management arm

CSR
customer self repair

DDR4
double data rate-4

FCoE
Fibre Channel over Ethernet

GPU
graphics processing unit

HPE SSA
HPE Smart Storage Administrator

IEC
International Electrotechnical Commission

iLO
Integrated Lights-Out

IML
Integrated Management Log

ISO
International Organization for Standardization

LFF
large form factor

LRDIMM
load reduced dual in-line memory module
LTO
  linear tape-open

NFV
  network functions virtualization

NVMe
  nonvolatile memory express

PCA
  printed circuit assembly

PCIe
  Peripheral Component Interconnect Express

PDB
  power distribution board

POST
  Power-On Self-Test

PXE
  Preboot eXecution Environment

QR code
  quick response code

RBSU
  ROM-Based Setup Utility

RDIMM
  registered dual in-line memory module

REACH
  Registration, Evaluation, Authorization, Restriction of Chemicals (European Union chemical regulatory framework)

REST
  Representational State Transfer

RoHS
  Restriction of Hazardous Substances

SAS
  serial attached SCSI

SATA
  serial ATA

SD
  secure digital

SFF
  small form factor
SMB
small and medium business

SPP
Service Pack for ProLiant

SSD
solid state device

StorCLI
Storage Command Line Interface

TPM
Trusted Platform Module

UDIMM
unregistered dual in-line memory module

UEFI
Unified Extensible Firmware Interface

UID
unit identification

UPS
uninterruptible power supply

VM
virtual machine