Abstract
This document is for the person who installs, administers, and troubleshoots server blades. 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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Component identification

Front panel components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Serial label pull tab</td>
</tr>
<tr>
<td>2</td>
<td>HPE c-Class Blade SUV connector* (behind the serial label pull tab)</td>
</tr>
<tr>
<td>3</td>
<td>Drive bay 2</td>
</tr>
<tr>
<td>4</td>
<td>Drive bay 1</td>
</tr>
<tr>
<td>5</td>
<td>Server blade release lever</td>
</tr>
<tr>
<td>6</td>
<td>Server blade release latch</td>
</tr>
<tr>
<td>7</td>
<td>iLO Debug USB port</td>
</tr>
</tbody>
</table>

1 *The SUV connector and the c-Class Blade SUV Cable are used for some Server Blade configuration and diagnostic procedures.*
Front panel LEDs and buttons

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NIC status LED</td>
<td>Solid green = Link to network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green (1 flash per second) = Network active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off = No network activity</td>
</tr>
<tr>
<td>2</td>
<td>UID LED</td>
<td>Solid blue = Activated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing blue:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 1 flash per second = Remote management or firmware upgrade in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4 flashes per second = iLO manual reboot sequence initiated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 8 flashes per second = iLO manual reboot sequence in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off = Deactivated</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
</table>
| 3    | Health LED  | Solid green = Normal  
Flashing green (1 flash per second) = iLO is rebooting  
Flashing amber = System degraded  
Flashing red (1 flash per second) = System critical  
If the health LED indicates a degraded or critical state, review the system **IML** or use **iLO** to review the system health status. |
| 4    | Power On/Standby button and system power LED | Solid green = System on  
Flashing green (1 flash per second) = Performing power on sequence  
Solid amber = System in standby  
Off = No power present  
Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the blade is not plugged in. |

**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 Server Blades.

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Front panel 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 Flexible Smart Array controller/Smart SAS HBA controller</td>
<td>6 flashes</td>
</tr>
<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>

**Serial label pull tab information**

The serial label pull tab is located on the front panel of the Server Blade. To locate the serial label pull tab, see **Front panel components**. The serial label pull tab provides the following information:
### Drive numbering

![Drive numbering diagram]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drive bay 1</td>
</tr>
<tr>
<td>2</td>
<td>Drive bay 2</td>
</tr>
</tbody>
</table>

### Hot-plug drive LED definitions

![Hot-plug drive LED definitions diagram]

<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></td>
<td>Flashing blue</td>
<td>The drive carrier firmware is being updated or requires an update.</td>
</tr>
<tr>
<td>2</td>
<td>Activity ring</td>
<td>Rotating green</td>
<td>Drive activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No drive activity</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></td>
<td>Off</td>
<td>Removing the drive does not cause a logical drive to fail.</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>
<tr>
<td></td>
<td></td>
<td>Flashing green</td>
<td>The drive is rebuilding or performing a RAID migration, strip size migration, capacity expansion, or logical drive extension, or is erasing.</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Item</th>
<th>LED</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flashing amber/green</td>
<td>The drive is a member of one or more logical drives and predicts the drive will fail.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing amber</td>
<td>The drive is not configured and predicts the drive will fail.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid amber</td>
<td>The drive has failed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>The drive is not configured by a RAID controller.</td>
<td></td>
</tr>
</tbody>
</table>

### NVMe SSD components

![NVMe SSD components diagram]

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Release lever</td>
<td>—</td>
<td>Ejects the NVMe drive carrier from the cage.</td>
</tr>
<tr>
<td>2</td>
<td>Activity ring LED</td>
<td>Rotating green</td>
<td>Drive activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No drive activity</td>
</tr>
<tr>
<td>3</td>
<td>Do Not Remove LED</td>
<td>Solid white</td>
<td>Drive is powered on and configured in system. Do not remove the drive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing white</td>
<td>Ejection request pending. Do not remove the drive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Drive removed from the PCIe bus and can be ejected.</td>
</tr>
<tr>
<td>4</td>
<td>Power LED</td>
<td>Solid green</td>
<td>Drive is powered on and configured in system. Do not remove the drive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green</td>
<td>Ejection request pending. Do not remove the drive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Drive removed from the PCIe bus and can be ejected.</td>
</tr>
</tbody>
</table>
### System board components

Upon NVMe SSD insertion, an LED initiation sequence will be visible - lighting each LED in the carrier in sequence from left to right. The sequence will cycle until the drive is recognized by the system. When the SSD is recognized by the system - the Do Not Remove LED will be solid white and the Power LED will be solid green.

#### System board components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>System battery</td>
</tr>
<tr>
<td>2</td>
<td>Solid state device connector (M.2)</td>
</tr>
<tr>
<td>3</td>
<td>Processor 2 DIMM slots (8)</td>
</tr>
<tr>
<td>4</td>
<td>Processor 1 DIMM slots (8)</td>
</tr>
<tr>
<td>5</td>
<td>Mezzanine connector 2 (Type A or Type B mezzanine)</td>
</tr>
<tr>
<td>6</td>
<td>Mezzanine connector 1 (Type A mezzanine only)</td>
</tr>
<tr>
<td>7</td>
<td>Enclosure connector</td>
</tr>
<tr>
<td>8</td>
<td>FlexibleLOM connectors (2)</td>
</tr>
<tr>
<td>9</td>
<td>Smart Storage Battery</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>SAS/SATA controller or NVMe pass-through board connector</td>
</tr>
<tr>
<td>11</td>
<td>Delete from CAD</td>
</tr>
<tr>
<td>12</td>
<td>SAS/SATA or NVMe backplane</td>
</tr>
<tr>
<td>13</td>
<td>Internal USB 3.0 connector</td>
</tr>
<tr>
<td>14</td>
<td>Direct-connect SATA connector</td>
</tr>
<tr>
<td>15</td>
<td>TPM connector</td>
</tr>
<tr>
<td>16</td>
<td>MicroSD card slot</td>
</tr>
<tr>
<td>17</td>
<td>Smart Storage Battery connector</td>
</tr>
<tr>
<td>18</td>
<td>System maintenance switch</td>
</tr>
</tbody>
</table>

### System maintenance switch

<table>
<thead>
<tr>
<th>Position</th>
<th>Default</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Off</td>
<td>Off = iLO security is enabled. On = iLO security is disabled.</td>
</tr>
<tr>
<td>S2</td>
<td>Off</td>
<td>Off = System configuration can be changed. On = System configuration is locked.</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</td>
<td>Off</td>
<td>Off = Power-on password is enabled. On = Power-on password is disabled.</td>
</tr>
<tr>
<td>S6</td>
<td>Off</td>
<td>Off = No function. On = ROM reads system configuration as invalid.</td>
</tr>
<tr>
<td>S7</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>S8</td>
<td>—</td>
<td>Reserved</td>
</tr>
<tr>
<td>S9</td>
<td>Off</td>
<td>Off = BL460 On = WS460</td>
</tr>
<tr>
<td>S10</td>
<td>—</td>
<td>Reserved</td>
</tr>
<tr>
<td>S11</td>
<td>—</td>
<td>Reserved</td>
</tr>
<tr>
<td>S12</td>
<td>—</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
CAUTION:
Clearing CMOS, NVRAM, or both deletes configuration information. Be sure to configure the Server Blade properly to prevent data loss.

Mezzanine connector definitions

<table>
<thead>
<tr>
<th>Item</th>
<th>PCIe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mezzanine connector 1</td>
<td>x16, Type A mezzanine card only</td>
</tr>
<tr>
<td>Mezzanine connector 2</td>
<td>x16, Type A or B mezzanine card</td>
</tr>
</tbody>
</table>

NOTE:
When installing a mezzanine option on mezzanine connector 2, processor 2 must be installed.

DIMM slot locations

DIMM slots are numbered sequentially (1 through 8) for each processor. The supported AMP modes use the alpha assignments for population order, and the slot numbers designate the DIMM slot ID for spare replacement.

The arrow points to the front of the Server Blade.

SUV cable connectors

CAUTION:
Before disconnecting the SUV cable from the connector, always squeeze the release buttons on the sides of the connector. Failure to do so can result in damage to the equipment.
<table>
<thead>
<tr>
<th>Item</th>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Serial</td>
<td>For trained personnel to connect a null modem serial cable and perform advanced diagnostic procedures</td>
</tr>
<tr>
<td>2</td>
<td>USB</td>
<td>For connecting up to two USB 2.0 devices</td>
</tr>
<tr>
<td>3</td>
<td>Video</td>
<td>For connecting a video monitor</td>
</tr>
</tbody>
</table>

1 The USB connectors on the SUV cable do not support devices that require greater than a 500mA power source.
Setup

**IMPORTANT:**

**Overview**

Installation of a Server Blade requires the following steps:

1. Install and configure a BladeSystem c-Class enclosure.
2. Install any Server Blade options.
3. Install interconnect modules in the enclosure.
4. Connect the interconnect modules to the network.
5. Install a Server Blade.
6. Complete the Server Blade configuration.

**Installing an HPE BladeSystem c-Class enclosure**

Before performing any Server Blade-specific procedures, install an HPE BladeSystem c-Class enclosure.

The most current documentation for Server Blades and other BladeSystem components is available on the [Hewlett Packard Enterprise website](http://www.hpe.com).

**Preparing the enclosure**

**CAUTION:**
Failure to install the divider in a quadrant when installing half-height blades can result in damage to the connectors on the server blades.

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

**IMPORTANT:**
For optimal cooling and system performance, configure the c7000 enclosure with ten fans and configure the c3000 enclosure with six fans.

BladeSystem s ship with device bay dividers to support half-height devices. If the dividers have been removed, always reinstall the dividers before installing half-height devices and device bay blanks. For more information on installing the device bay dividers, see the enclosure user guide.

**Preparing the Server Blade for installation**

**Procedure**

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

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

2. Update the system ROM.
   Locate and download the latest ROM version from the Hewlett Packard Enterprise Support Center website. Follow the instructions on the website to update the system ROM.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the Server Blade.
5. Do one of the following:
   • Extend the Server Blade from the rack.
   • Remove the Server Blade from the rack.
6. Place the Server Blade on a flat, level work surface.
7. Remove the access panel.
8. Remove any components or cables that may prevent access to the TPM connector.
9. Proceed to installing the TPM module and cover.

Installing server blade options

Before installing and initializing the Server Blade, install any Server Blade options, such as an additional processor, hard drive, or mezzanine card. For Server Blade options installation information, see “Hardware options installation.”

Installing interconnect modules

For specific steps to install interconnect modules, see the documentation that ships with the interconnect module.

Interconnect bay numbering and device mapping

• HPE BladeSystem c7000 Enclosure
To support network connections for specific signals, install an interconnect module in the bay corresponding to the FlexibleLOM or mezzanine signals.

<table>
<thead>
<tr>
<th>Server blade signal</th>
<th>Interconnect bay</th>
<th>Interconnect bay labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlexibleLOM</td>
<td>1 and 2</td>
<td></td>
</tr>
<tr>
<td>Mezzanine 1</td>
<td>3 and 4</td>
<td></td>
</tr>
<tr>
<td>Mezzanine 2</td>
<td>5 and 6</td>
<td></td>
</tr>
<tr>
<td>Mezzanine 2</td>
<td>7 and 8</td>
<td></td>
</tr>
</tbody>
</table>

For detailed port mapping information, see the BladeSystem enclosure installation poster or the BladeSystem enclosure setup and installation guide on the [Hewlett Packard Enterprise website](http://www.hp.com).  
- HPE BladeSystem c3000 Enclosure
Connecting to the network

To connect the BladeSystem to a network, each enclosure must be configured with network interconnect devices to manage signals between the Server Blades and the external network.

Two types of interconnect modules are available for BladeSystem c-Class enclosures: Pass-Thru modules and switch modules. For more information about interconnect module options, see the Hewlett Packard Enterprise website.

### Important:
To connect to a network with a Pass-Thru module, always connect the Pass-Thru module to a network device that supports Gigabit or 10 Gb speed, depending on the corresponding Pass-Thru model.

### Install the server blade

**Caution:**
To prevent improper cooling and thermal damage, do not operate the server blade enclosure unless all bays are populated with either a component or a blank.
CAUTION:
Failure to install the divider in a quadrant when installing half-height blades can result in damage to the connectors on the server blades.

For the best possible BladeSystem and Virtual Connect experience, and to prevent a future reboot, Hewlett Packard Enterprise requires updating the Onboard Administrator and Virtual Connect to the correct version before installing a ProLiant Gen10 Server Blade. The version information is located on the tag on the front of the Server Blade.

For more information on this and other specific firmware and driver requirements, as well as the latest firmware and driver versions, download the SPP on the Hewlett Packard Enterprise website.

Procedure

1. Remove the device bay blank. Retain the blank for future use.

2. Remove the enclosure connector cover. Retain the blank for future use.

3. Install the Server Blade.
Completing the configuration

To complete the Server Blade and BladeSystem configuration, see the overview card that ships with the enclosure.
Operations

Power up the Server Blade

The initiates an automatic power-up sequence when the Server Blade is installed. If the default setting is changed, use one of the following methods to power up the Server Blade:

• Use a virtual power button selection through iLO 5.
• Press and release the Power On/Standby button.

When the Server Blade goes from the standby mode to the full power mode, the system power LED changes from amber to solid green. The health status LED bar flashes green when the Power On/Standby Button service is being initialized.

For more information about the , see the setup and installation guide on the Hewlett Packard Enterprise website.

For more information about iLO 5, see "HPE iLO."

Power down the Server Blade

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

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

Depending on the configuration, use one of the following methods to power down the Server Blade:

• Press and release the Power On/Standby button.
  This method initiates a controlled shutdown of applications and the OS before the Server Blade enters standby mode.
• Press and hold the Power On/Standby button for more than 4 seconds to force the Server Blade to enter standby mode.
  This method forces the Server Blade 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 Blade enters standby mode.
• Use the CLI to execute one of the following commands:
  ◦ `poweroff server [bay number]`
    This command initiates a controlled shutdown of applications and the OS before the Server Blade enters standby mode.
  ◦ `poweroff server [bay number] force`
    This form of the command forces the Server Blade to enter standby mode without properly exiting applications and the OS. If an application stops responding, this method forces a shutdown.
• Use the GUI to initiate a shutdown:
  1. Select the Enclosure Information tab.
  2. In the Device Bays item, select the server.
  3. From the Virtual Power menu, initiate a shutdown of applications and the OS:
For a controlled shutdown, select **Momentary Press**.
For an emergency shutdown, select **Press and Hold**.

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

**Remove the Server Blade**

1. Identify the proper Server Blade.
2. **Power down the Server Blade**.
3. Remove the Server Blade.

4. Place the Server Blade on a flat, level work surface.

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

⚠️ **CAUTION:**
To prevent damage to electrical components, properly ground the Server Blade before beginning any installation procedure. Improper grounding can cause ESD.

**Install the server blade**

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

⚠️ **CAUTION:**
Failure to install the divider in a quadrant when installing half-height blades can result in damage to the connectors on the server blades.

For the best possible BladeSystem and Virtual Connect experience, and to prevent a future reboot, Hewlett Packard Enterprise requires updating the Onboard Administrator and Virtual Connect to the correct version before installing a ProLiant Gen10 Server Blade. The version information is located on the tag on the front of the Server Blade.
For more information on this and other specific firmware and driver requirements, as well as the latest firmware and driver versions, download the SPP on the Hewlett Packard Enterprise website.

Procedure

1. Remove the device bay blank. Retain the blank for future use.

2. Remove the enclosure connector cover. Retain the blank for future use.

3. Install the Server Blade.
Remove the access panel

To remove the component:

Procedure

1. Power down the Server Blade.
2. Remove the Server Blade.
3. Place the Server Blade on a flat, level work surface.
4. Press the access panel release button.
5. Slide the access panel towards the rear of the Server Blade, and then lift to remove the panel.

Install the access panel

The server cover can be removed to access the internal components.

Procedure

1. Place the access panel on top of the Server Blade.
2. Slide the access panel forward until it clicks into place.
Remove the DIMM baffles

The server contains two DIMM baffles.

Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. If installed, remove the direct connect SATA cable.
6. If installed, remove the internal USB drive. To locate the internal USB connector, see "System board components."

**IMPORTANT:**
When removing the right DIMM baffle, leave the Smart Storage Battery installed on the baffle. Use the blue pull tab to disconnect the Smart Storage Battery cable from the system board.

7. Remove one or more DIMM baffles:
   - DIMM baffle (right side)
   - DIMM baffle (left side)
Install the DIMM baffles

The server contains two DIMM baffles.

Procedure

1. Place the Server Blade on a flat, level work surface.
2. Remove the access panel.
3. Install the DIMM baffles.
   - DIMM baffle (right side)
   - DIMM baffle (left side)
4. Install the access panel.
5. Install the server blade.
6. Power up the Server Blade.

Remove the direct connect SATA cable

The server uses SATA drives that can be removed if necessary.

Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. Remove the direct connect SATA cable.
   a. Press in the latch on the connector.
   b. Disconnect the connector from the system board.
   c. Loosen the captive screw.
   d. Disconnect the other end of the cable from the drive backplane.
   e. Release the cable from the DIMM baffle.
Install the direct connect SATA cable

The server uses removable direct connect SATA cables.

Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. Install the direct connect SATA cable.
   a. Connect the direct connect SATA cable to the drive cage backplane.
   b. Secure the captive screw.
   c. Connect the other end of the cable to the system board.
   d. Route and secure the cable onto the right DIMM baffle.
Remove the mezzanine assembly

The server uses a removable mezzanine assembly.

Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. Remove the mezzanine assembly.

Remove the FlexibleLOM

The server has a removable FlexibleLOM.

Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. **Remove the mezzanine assembly**.
6. Use the FlexibleLOM handle to remove the FlexibleLOM from the system board.
Install the FlexibleLOM

The server has a removable FlexibleLOM.

Procedure

1. Power down the Server Blade.
2. Remove the Server Blade.
3. Place the Server Blade on a flat, level work surface.
4. Remove the access panel.
5. Remove the mezzanine assembly.
6. Install the FlexibleLOM.
7. Install the mezzanine assembly.
8. Install the access panel.
9. Install the server blade.
10. Power up the Server Blade.
1. Back up all Server Blade data.
2. **Power down the Server Blade**.
3. **Remove the Server Blade**.
4. Place the Server Blade on a flat, level work surface.
5. **Remove the access panel**.
6. Prepare the storage controller/NVMe pass-through board for removal.

7. Remove the storage controller/NVMe pass-through board.

**Storage controller/NVMe pass-through board options**

To install the component:

**Procedure**

1. Back up all Server Blade data.
2. **Power down the Server Blade**.
3. **Remove the Server Blade**.
4. Place the Server Blade on a flat, level work surface.
5. **Remove the access panel**.
6. Prepare the storage controller/NVMe pass-through board for installation.

7. Align the storage controller/NVMe pass-through board with the alignment pins and lower it into Server Blade.
8. Push the handle down into the closed position to fully seat the storage controller/NVMe pass-through board.

9. **Install the access panel**.
10. **Install the Server Blade**.
11. **Power up the Server Blade**.

**Remove a drive**

1. **Determine status of drives from LED Definitions**.
2. Back up all Server Blade data on the drive.
3. Remove the drive.
Installing a hot-plug drive

⚠️ WARNING:  
To reduce the risk of injury from electric shock, do not install more than one drive carrier at a time.

Procedure

1. Prepare the drive.

2. Install the drive.

3. Determine the status of the drive from the drive LED definitions.

To configure arrays, see the HPE Smart Storage Administrator User Guide on the Hewlett Packard Enterprise website.

Remove the front panel/drive cage assembly

The server has one drive cage assembly.
Procedure

1. **Power down the Server Blade**.
2. **Remove the Server Blade**.
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel**.
5. Do one of the following:
   - **Remove the storage controller/NVMe pass-through board**.
   - Remove the direct connect SATA cable.
6. If installed, remove the internal USB drive. To locate the internal USB connector, see "System board components."
7. **Remove all DIMM baffles**.

⚠️ **CAUTION:**
Always remove the storage controller/NVMe pass-through board before removing the front panel/drive cage assembly.

8. Remove the front panel/drive cage assembly:
   a. Extend the serial label pull tab from the front of the Server Blade.
   b. Remove the two T-15 screws from the front panel/drive cage assembly.
   c. Remove the component.

---

**Install the front panel/drive cage assembly**

The server has one drive cage assembly.

Procedure

1. Install the front panel/drive cage assembly.
   a. Align the pins on the chassis and slide the front panel/drive cage assembly into the server.
   b. Secure the component with two T-15 screws.
   c. Close the serial label pull tab.
2. **Install all DIMM baffles.**

3. Do one of the following:
   - Install the storage controller/NVMe pass-through board.
   - **Install the direct connect SATA cable.**

4. **Install the access panel.**

5. **Install the server blade.**

6. **Power up the Server Blade.**
Hardware options installation

Introduction
If more than one option is being installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

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

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

Storage options
The Server Blade supports up to two 2.5 inch SFF SAS, SATA, or NVMe drives. Ensure that the appropriate backplane is installed when installing drives.

SAS/SATA drive option
The server uses SAS/SATA drives that are hot-pluggable.

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

Procedure
1. Remove the drive blank.
2. Prepare the drive.
3. Install the drive.
4. Determine the status of the drive from the drive LED definitions.

NVMe SSD option

The server can use NVMe SSD's that are hot-pluggable.

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

Procedure

1. Remove the drive blank.

2. Press the Do Not Remove button to release the Release lever.

3. Install the drive.
4. Determine the status of the drive from the LEDs.

Storage controller/NVMe pass-through board options

To install the component:

Procedure
1. Back up all Server Blade data.
2. **Power down the Server Blade**.
3. **Remove the Server Blade**.
4. Place the Server Blade on a flat, level work surface.
5. **Remove the access panel**.
6. Prepare the storage controller/NVMe pass-through board for installation.

7. Align the storage controller/NVMe pass-through board with the alignment pins and lower it into Server Blade.
8. Push the handle down into the closed position to fully seat the storage controller/NVMe pass-through board.
9. Install the access panel.
10. Install the Server Blade.
11. Power up the Server Blade.

Smart Storage Battery option

To install the component:

Procedure

1. Power down the Server Blade.
2. Remove the Server Blade.
3. Place the Server Blade on a flat, level work surface.
4. Remove the access panel.
5. If installed, remove the direct connect SATA cable.
6. If installed, remove the internal USB drive. To locate the internal USB connector, see "System board components."
7. Remove the right DIMM baffle.
8. Install the Smart Storage Battery on the DIMM baffle.
9. Route the cable on the DIMM baffle.

10. Align and install the DIMM baffle.
11. Press down on the cable connector to fully seat the Smart Storage Battery cable connector to the system board.
12. If removed, install the direct connect SATA cable.
13. If removed, install the internal USB drive. To locate the internal USB connector, see "System board components."
14. Install the access panel.
15. Install the Server Blade.
16. Power up the Server Blade.

Mezzanine card option

Optional mezzanine cards are classified as Type A mezzanine cards and Type B mezzanine cards. The type of the mezzanine card determines where it can be installed in the Server Blade.

• Install Type A mezzanine cards on Mezzanine 1 connector or Mezzanine 2 connector.
• Install Type B mezzanine cards on Mezzanine 2 connector.

Optional mezzanine cards enable network connectivity or provide Fiber Channel support. For mezzanine card locations, see "System board components."

When installing a mezzanine option on mezzanine connector 2, processor 2 must be installed.

For mezzanine card mapping, see "Interconnect bay numbering and device mapping."

To install the component:

Procedure
1. Power down the Server Blade.
2. Remove the Server Blade.
3. Place the Server Blade on a flat, level work surface.
4. Remove the access panel.
5. Remove the mezzanine assembly.
6. Align the mezzanine card with the guide pins on the mezzanine assembly.

7. Install the mezzanine card in the mezzanine assembly, and then tighten the mezzanine card screws to secure the card to the mezzanine assembly.
8. Align the mezzanine assembly with the guide pins on the system board, and then install the mezzanine assembly on the system board.

9. Press down firmly on the mezzanine assembly handles, and then close the mezzanine assembly latch.

10. Install the access panel.

11. Install the Server Blade.

12. Power up the Server Blade.

**M.2 enablement option**

To install the component:

**Procedure**

1. Power down the Server Blade.
2. Remove the Server Blade.
3. Place the Server Blade on a flat, level work surface.
4. Remove the access panel.
5. Remove the left DIMM baffle.
6. Install the M.2 SSD into the M.2 riser:
   a. Insert the M.2 SSD enablement board into the system board connector.
   b. Secure the M.2 SSD enablement board by tightening the screw.

7. Install the left DIMM baffle.
8. Install the access panel.
10. Power up the Server Blade.

Memory options

**IMPORTANT:**
This Server Blade does not support mixing LRDIMMs and RDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS initialization. All memory installed in the Server Blade must be of the same type.

DIMM population information

For specific DIMM population information, see the DIMM population guidelines on the Hewlett Packard Enterprise website (http://www.hpe.com/docs/memory-population-rules).

HPE Smart Memory speed information

For more information about memory speed information, see the Hewlett Packard Enterprise website (https://www.hpe.com/docs/memory-speed-table).

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.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Capacity</td>
<td>8 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>128 GB</td>
</tr>
<tr>
<td>2</td>
<td>Rank</td>
<td>1R = Single rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2R = Dual rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4R = Quad rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8R = Octal rank</td>
</tr>
<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>6</td>
<td>CAS latency</td>
<td>( P = \text{CAS 15-15-15} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( T = \text{CAS 17-17-17} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( U = \text{CAS 20-18-18} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( V = \text{CAS 19-19-19 (for RDIMM, LRDIMM)} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( V = \text{CAS 22-19-19 (for 3DS TSVLRDIMM)} )</td>
</tr>
<tr>
<td>7</td>
<td>DIMM type</td>
<td>( R = \text{RDIMM (registered)} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( L = \text{LRDIMM (load reduced)} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( E = \text{Unbuffered ECC (UDIMM)} )</td>
</tr>
</tbody>
</table>
Installing a DIMM

The server supports up to 24 DIMMs.

Prerequisites

Before installing this option, be sure you have the following:

The components included with the hardware option kit

For more information on specific options, see the Server Blade QuickSpecs on the Hewlett Packard Enterprise website.

Procedure

1. Power down the Server Blade (Power down the Server Blade on page 22).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the Server Blade.
3. Remove the Server Blade from the rack (Remove the Server Blade on page 23).
4. Remove the access panel.
5. Open the slot latches.
6. Install the .
7. Install the access panel.
8. Install the Server Blade in the rack.
9. Connect each power cord to the Server Blade.
10. Connect each power cord to the power source.
11. Power up the Server Blade (Power down the Server Blade on page 22).

Use the BIOS/Platform Configuration (RBSU) in the UEFI System Utilities to configure the memory mode.

For more information about LEDs and troubleshooting failed s, see #unique_60.
Installing the processor heatsink

Procedure

1. Observe the following cautions and warnings:

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

   **CAUTION:**
   To prevent possible Server Blade malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

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

   **CAUTION:**
   To prevent possible Server Blade overheating, always populate processor socket 2 with a processor and a heatsink or a processor socket cover and a heatsink blank.

   **CAUTION:**
   To prevent damage to electrical components, properly ground the Server Blade before beginning any installation procedure. Improper grounding can cause ESD.

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

2. Update the system ROM.
   Locate and download the latest ROM version from the Hewlett Packard Enterprise website at http://www.hpe.com/support. Follow the instructions on the website to update the system ROM.

3. **Power down the Server Blade.**
4. **Remove the Server Blade.**
5. **Remove the access panel.**
6. **Remove all DIMM baffles.**
7. Remove the heatsink blank. Retain the heatsink blank for future use.
8. Align the processor heatsink assembly with the alignment pins and gently lower it down until it sits evenly on the socket.
   The heatsink alignment pins are keyed. The processor will only install one way.
   A standard heatsink is shown. Your heatsink might look different.


10. Install all DIMM baffles.
11. Install the access panel.
12. Install the compute module.
HPE Trusted Platform Module 2.0 Gen10 option

Overview

Use these instructions to install and enable an HPE TPM 2.0 Gen10 Kit in a supported Server Blade. This option is not supported on Gen9 and earlier Server Blades.

This procedure includes three sections:

1. Installing the Trusted Platform Module board.
2. Enabling the Trusted Platform Module.
3. Retaining the recovery key/password.

HPE TPM 2.0 installation is supported with specific operating system support such as Microsoft® Windows Server® 2012 R2 and later. For more information about operating system support, see the product QuickSpecs on the Hewlett Packard Enterprise website (http://www.hpe.com/info/qs). For more information about Microsoft® Windows® BitLocker Drive Encryption feature, see the Microsoft website (http://www.microsoft.com).

⚠️ CAUTION:
Chipset-TPM is not available after the HPE TPM 2.0 Gen10 Kit is installed and configured in System Utilities. Do not install the HPE TPM 2.0 Gen10 Kit if Chipset-TPM is enabled and the operating system is using Chipset-TPM features. Otherwise, the OS may go into recovery mode, data loss can occur, or both. If an OS is installed and using Chipset-TPM, follow the OS vendor instructions to disable the OS TPM features before changing any TPM functionality.

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

⚠️ IMPORTANT:
In UEFI Boot Mode, the HPE TPM 2.0 Gen10 Kit can be configured to operate as TPM 2.0 (default) or TPM 1.2 on a supported Server Blade. In Legacy Boot Mode, the configuration can be changed between TPM 1.2 and TPM 2.0, but only TPM 1.2 operation is supported.

TPM 2.0 location

The TPM 2.0 is located on the system board near the front of the Server Blade.
HPE Trusted Platform Module 2.0 Guidelines

⚠️ **CAUTION:**
Always observe the guidelines in this document. Failure to follow these guidelines can cause hardware damage or halt data access.

When installing or replacing a TPM, observe the following guidelines:

- Do not remove an installed TPM. Once installed, the TPM is bound to the system board. If an OS is configured to use the TPM and it is removed, the OS may go into recovery mode, data loss can occur, or both.
- When installing or replacing hardware, Hewlett Packard Enterprise service providers cannot enable the TPM or the encryption technology. For security reasons, only the customer can enable these features.
- When returning a system board for service replacement, do not remove the TPM from the system board. When requested, Hewlett Packard Enterprise Service provides a TPM with the spare system board.
- Any attempt to remove the cover of an installed TPM from the system board can damage the TPM cover, the TPM, and the system board.
- If the TPM is removed from the original Server Blade and powered up on a different Server Blade, data stored in the TPM including keys will be erased.
- When using BitLocker, always retain the recovery key/password. The recovery key/password is required to complete Recovery Mode after BitLocker detects a possible compromise of system integrity or system configuration.
- Hewlett Packard Enterprise is not liable for blocked data access caused by improper TPM use. For operating instructions, see the TPM documentation or the encryption technology feature documentation provided by the operating system.

Disabling Chipset-TPM

⚠️ **CAUTION:**
Chipset-TPM is not available after the HPE TPM 2.0 Gen10 Kit is installed and configured in System Utilities. Do not install the HPE TPM 2.0 Gen10 Kit if Chipset-TPM is enabled and the operating system is using Chipset-TPM features. Otherwise, the OS may go into recovery mode, data loss can occur, or both. If an OS is installed and using Chipset-TPM, follow the OS vendor instructions to disable the OS TPM features before changing any TPM functionality.
Before installing and enabling the HPE TPM 2.0 Gen10 Kit, verify that Chipset-TPM is disabled. For more information on disabling Chipset-TPM, see the UEFI System Utilities User Guide for HPE ProLiant Gen10 Servers and HPE Synergy on the Hewlett Packard Enterprise website.

Installing and enabling the HPE TPM 2.0 Gen10 Kit

Installing the Trusted Platform Module board

Preparing the Server Blade for installation

Procedure

1. Observe the following warnings:

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

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

2. Update the system ROM.
   Locate and download the latest ROM version from the Hewlett Packard Enterprise Support Center website. Follow the instructions on the website to update the system ROM.


4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the Server Blade.

5. Do one of the following:
   • Extend the Server Blade from the rack.
   • Remove the Server Blade from the rack.

6. Place the Server Blade on a flat, level work surface.

7. Remove the access panel.

8. Remove any components or cables that may prevent access to the TPM connector.

9. Proceed to Installing the TPM board and cover on page 52.

Installing the TPM board and cover

Procedure

1. Observe the following alerts:

⚠️ **CAUTION:**
If the TPM is removed from the original Server Blade and powered up on a different Server Blade, data stored in the TPM including keys will be erased.
CAUTION: The TPM is keyed to install only in the orientation shown. Any attempt to install the TPM in a different orientation might result in damage to the TPM or system board.

2. Align the TPM board with the key on the connector, and then install the TPM board. To seat the board, press the TPM board firmly into the connector. To locate the TPM connector on the system board, see the Server Blade label on the access panel.

3. Install the TPM cover:
   a. Line up the tabs on the cover with the openings on either side of the TPM connector.
   b. To snap the cover into place, firmly press straight down on the middle of the cover.

4. Proceed to Preparing the Server Blade for installation on page 16.

Preparing the Server Blade for operation

Procedure
1. Install any options or cables previously removed to access the TPM connector.
2. Install the access panel.
3. Do one of the following:
a. Install the Server Blade in the rack, if necessary.
b. Install the Server Blade in the enclosure.

4. Power up the Server Blade.
   a. Connect the power cords (rack and tower servers).
   b. Press the Power On/Standby button.

Enabling the Trusted Platform Module

When enabling the Trusted Platform module, observe the following guidelines:

• By default, the Trusted Platform Module is enabled as TPM 2.0 when the Server Blade is powered on after installing it.
• In UEFI Boot Mode, the Trusted Platform Module can be configured to operate as TPM 2.0 or TPM 1.2.
• In Legacy Boot Mode, the Trusted Platform Module configuration can be changed between TPM 1.2 and TPM 2.0, but only TPM 1.2 operation is supported.

Enabling the Trusted Platform Module as TPM 2.0

Procedure

1. During the Server Blade startup sequence, press the F9 key to access System Utilities.
2. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options.
3. Verify the following:
   • "Current TPM Type" is set to TPM 2.0.
   • "Current TPM State" is set to Present and Enabled.
   • "TPM Visibility" is set to Visible.
4. If changes were made in the previous step, press the F10 key to save your selection.
5. If F10 was pressed in the previous step, do one of the following:
   • If in graphical mode, click Yes.
   • If in text mode, press the Y key.
6. Press the ESC key to exit System Utilities.
7. If changes were made and saved, the Server Blade prompts for reboot request. Press the Enter key to confirm reboot.
   If the following actions were performed, the Server Blade reboots a second time without user input. During this reboot, the TPM setting becomes effective.
   • Changing from TPM 1.2 and TPM 2.0
   • Changing TPM bus from FIFO to CRB
   • Enabling or disabling TPM
   • Clearing the TPM
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.
   For more information, see the Microsoft website.

Enabling the Trusted Platform Module as TPM 1.2

Procedure

1. During the Server Blade startup sequence, press the F9 key to access System Utilities.
3. Change the "TPM Mode Switch Operation" to TP M 1.2.
4. Verify "TPM Visibility" is Visible.
5. Press the **F10** key to save your selection.
6. When prompted to save the change in System Utilities, do one of the following:
   - If in graphical mode, click **Yes**.
   - If in text mode, press the **Y** key.
7. Press the **ESC** key to exit System Utilities.
   The Server Blade reboots a second time without user input. During this reboot, the TPM setting becomes effective.
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.
   For more information, see the [Microsoft website](#).

### Retaining the recovery key/password

The recovery key/password is generated during BitLocker setup, and can be saved and printed after BitLocker is enabled. When using Bit Locker, always retain the recovery key/password. The recovery key/password is required to enter Recovery Mode after Bit Locker detects a possible compromise of system integrity.

To help ensure maximum security, observe the following guidelines when retaining the recovery key/password:

- Always store the recovery key/password in multiple locations.
- Always store copies of the recovery key/password away from the Server Blade.
- Do not save the recovery key/password on the encrypted hard drive.
Cabling

Cabling resources

Cabling configurations and requirements vary depending on the product and installed options. For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the website.

HPE Smart Storage Battery cabling

Direct connect SATA cabling
Using the HPE c-Class Blade SUV Cable

The c-Class Blade SUV Cable enables the user to perform Server Blade administration, configuration, and diagnostic procedures by connecting video and USB devices directly to the Server Blade. For SUV cable connectors, see "SUV cable connectors."

Connecting locally to a server blade with video and USB devices

Use the SUV cable to connect a monitor and any of the following USB devices:

- USB hub
- USB keyboard
- USB mouse
- USB CD/DVD-ROM drive

Numerous configurations are possible. This section offers two possible configurations. For more information, see "USB support."

Accessing a server blade with local KVM

For this configuration, a USB hub is not necessary. To connect additional devices, use a USB hub.

⚠️ CAUTION:
Before disconnecting the SUV cable from the connector, always squeeze the release buttons on the sides of the connector. Failure to do so can result in damage to the equipment.

1. Open the serial label pull tab and connect the c-Class Blade SUV Cable to the Server Blade.
2. Connect the video connector to a monitor.
3. Connect a USB mouse to one USB connector.
4. Connect a USB keyboard to the second USB connector.
### Accessing local media devices

Use the following configuration when configuring a Server Blade or loading software updates and patches from a USB CD/DVD-ROM.

Use a USB hub when connecting a USB CD-ROM drive to the Server Blade. The USB connectors on the SUV cable do not support devices that require greater than a 500mA power source. The USB hub provides additional connections and the power required to support USB keys or external drives that require more than 500mA at 5V.

1. Open the serial label pull tab and connect the c-Class Blade SUV cable to the Server Blade.
2. Connect the video connector to a monitor.
3. Connect a USB hub to one USB connector.
4. Connect the following to the USB hub:
   - USB CD/DVD-ROM drive
   - USB keyboard
   - USB mouse

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monitor</td>
</tr>
<tr>
<td>2</td>
<td>USB mouse</td>
</tr>
<tr>
<td>3</td>
<td>USB keyboard</td>
</tr>
<tr>
<td>4</td>
<td>c-Class Blade SUV Cable</td>
</tr>
</tbody>
</table>

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<td>USB keyboard</td>
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<tr>
<td>4</td>
<td>USB hub</td>
</tr>
<tr>
<td>5</td>
<td>USB mouse</td>
</tr>
<tr>
<td>6</td>
<td>c-Class Blade SUV Cable</td>
</tr>
</tbody>
</table>
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 Gen 10 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).
Software and configuration utilities

Server mode

The software and configuration utilities presented in this section operate in online mode, offline mode, or in both modes.

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<thead>
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<th>Software or configuration utility</th>
<th>Server mode</th>
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</thead>
<tbody>
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<tr>
<td>Active Health System</td>
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<td>RESTful API support for iLO</td>
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<td>Integrated Management Log</td>
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<tr>
<td>HPE Insight Remote Support</td>
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<tr>
<td>HPE Insight Online</td>
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<tr>
<td>FWUPDATE utility</td>
<td>Offline</td>
</tr>
</tbody>
</table>

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/qsp).

HPE iLO

iLO is a remote server management processor embedded on the system boards of HPE ProLiant and Synergy servers. iLO enables the monitoring and controlling of servers from remote locations. HPE iLO management is a powerful tool that provides multiple ways to configure, update, monitor, and repair servers remotely. iLO (Standard) comes preconfigured on HPE servers without an additional cost or license.

Features that enhance server administrator productivity are licensed. For more information, see the iLO 5 documentation on the Hewlett Packard Enterprise website.

Active Health System

The HPE Active Health System provides the following features:

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

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

The Active Health System collects the following types of data:
• Server model
• Serial number
• Processor model and speed
• Storage capacity and speed
• Memory capacity and speed
• Firmware/BIOS

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

The data that is collected is managed according to the Hewlett Packard Enterprise Data Privacy policy. For more information, see the Hewlett Packard Enterprise website.

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

The Agentless Management Service is available in the SPP, which can be downloaded from the Hewlett Packard Enterprise website. The Active Health System log can be downloaded manually from iLO 4 or HPE Intelligent Provisioning and sent to Hewlett Packard Enterprise.

For more information, see the following documents:
• iLO User Guide on the Hewlett Packard Enterprise website
• Intelligent Provisioning User Guide on the Hewlett Packard Enterprise website

iLO RESTful API support

HPE iLO 4 firmware version 2.00 and later includes the iLO RESTful API. The iLO RESTful API is a management interface that server management tools can use to perform configuration, inventory, and monitoring of the ProLiant server via iLO. The iLO RESTful API uses basic HTTPS operations (GET, PUT, POST, DELETE, and PATCH) to submit or return JSON-formatted data with iLO web server.

HPE iLO 4 2.30 and later is Redfish 1.0-conformant while remaining backward compatible with the existing iLO RESTful API.

HPE iLO 4 supports the iLO RESTful API with ProLiant Gen8 and later servers. For more information about the iLO RESTful API, see the Hewlett Packard Enterprise website.

Integrated Management Log

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

You can view recorded events in the IML in several ways, including the following:
• From within HPE SIM
• From within UEFI System Utilities
• From within the Embedded UEFI shell
• From within operating system-specific IML viewers:
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.

HPE Insight Remote Support central connect

When you use the embedded Remote Support functionality with ProLiant Gen8 and later server models and BladeSystem c-Class enclosures, you can register a Server Blade or to communicate to Hewlett Packard Enterprise through an Insight Remote Support centralized Hosting Device in your local environment. All configuration and service event information is routed through the Hosting Device. This information can be viewed by using the local Insight Remote Support user interface or the web-based view in Insight Online.

For more information, see Insight Remote Support Release Notes on the Hewlett Packard Enterprise website.

HPE Insight Online direct connect

When you use the embedded Remote Support functionality with ProLiant Gen8 and later server models and BladeSystem c-Class enclosures, you can register a Server Blade or to communicate directly to Insight Online without the need to set up an Insight Remote Support centralized Hosting Device in your local environment. Insight Online will be your primary interface for remote support information.

For more information, see the product documentation on the Hewlett Packard Enterprise website.

Insight Online

HPE Insight Online is a capability of the Support Center portal. Combined with Insight Remote Support central connect or Insight Online direct connect, it automatically aggregates device health, asset, and support information with contract and warranty information, and then secures it in a single, personalized dashboard that is viewable from anywhere at any time. The dashboard organizes your IT and service data to help you understand and respond to that information more quickly. With specific authorization from you, an authorized Channel Partner can also view your IT environment remotely using Insight Online.

For more information about using Insight Online, see Insight Online User’s Guide on the Hewlett Packard Enterprise website.

HPE iLO

iLO is a remote server management processor embedded on the system boards of HPE ProLiant and Synergy servers. iLO enables the monitoring and controlling of servers from remote locations. HPE iLO management is a powerful tool that provides multiple ways to configure, update, monitor, and repair servers remotely. iLO (Standard) comes preconfigured on HPE servers without an additional cost or license.
Features that enhance server administrator productivity are licensed. For more information, see the iLO 5 documentation on the Hewlett Packard Enterprise website.

**Intelligent Provisioning**

Intelligent Provisioning is a single-server deployment tool embedded in ProLiant Gen8 and later servers that simplifies ProLiant server setup, providing a reliable and consistent way to deploy ProLiant server configurations:

- Intelligent Provisioning assists with the OS installation process by preparing the system for installing "off-the-shelf" and Hewlett Packard Enterprise branded versions of operating system software and integrating optimized ProLiant server support software.
- Intelligent Provisioning provides maintenance-related tasks using the Perform Maintenance window.
- Intelligent Provisioning provides installation help for Microsoft Windows, Red Hat and SUSE Linux, and VMware operating systems. For specific OS support, see the Intelligent Provisioning Release Notes on the Hewlett Packard Enterprise website.

For more information about Intelligent Provisioning software, see the Hewlett Packard Enterprise website. For Intelligent Provisioning recovery media downloads, see the Resources tab on the Hewlett Packard Enterprise website. For consolidated drive and firmware update packages, see the Smart Update: Server Firmware and Driver Updates page on the Hewlett Packard Enterprise website.

**Insight Diagnostics**

The Insight Diagnostics is a proactive Server Blade management tool, available in both offline, and online versions. The Insight Diagnostics provide diagnostics and troubleshooting capabilities to assist IT administrators who verify Server Blade installations, troubleshoot problems, and perform repair validation.

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

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

For more information or to download the utility, see the Hewlett Packard Enterprise website. The Insight Diagnostics Online Edition is also available in the SPP.

**HPE Insight Diagnostics survey functionality**

HPE Insight Diagnostics provides survey functionality that gathers critical hardware and software information on ProLiant Server Blades.

This functionality supports operating systems that are supported by the Server Blade. For operating systems supported by the Server Blade, see the Hewlett Packard Enterprise website.

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

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

**Erase Utility**

⚠️ **CAUTION:**

Perform a backup before running the Erase Utility. The utility sets the system to its original factory state, deletes the current hardware configuration information, including array setup and disk partitioning, and erases all connected hard drives completely. Before using this utility, see the instructions in the Intelligent Provisioning User Guide.
Use the Erase Utility to erase drives and Active Health System logs, and to reset UEFI System Utilities settings. Run the Erase Utility if you must erase the system for the following reasons:

- You want to install a new operating system on a Server Blade with an existing operating system.
- You encounter an error when completing the steps of a factory-installed operating system installation.

To access the Erase Utility, click the Perform Maintenance icon from the Intelligent Provisioning home screen, and then select **Erase**.

For more information about the Erase Utility, see the *Intelligent Provisioning User Guide* on the [Hewlett Packard Enterprise website](https://www.hpe.com).

### Scripting Toolkit for Windows and Linux

The Scripting Toolkit for Windows and Linux is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The Scripting Toolkit is designed to support ProLiant BL, ML, DL, and SL servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these tools to build an automated server deployment process.

The Scripting Toolkit provides a flexible way to create standard server configuration scripts. These scripts are used to automate many of the manual steps in the server configuration process. This automated server configuration process cuts time from each deployment, making it possible to scale rapid, high-volume server deployments.

For more information, and to download the Scripting Toolkit, see the [Hewlett Packard Enterprise website](https://www.hpe.com).

### Service Pack for ProLiant

The SPP is a comprehensive systems software (drivers and firmware) solution delivered as a single package with major server releases. This solution uses HP SUM as the deployment tool and is tested on all supported ProLiant servers including ProLiant Gen8 and later servers.

SPP can be used in an online mode on a Windows or Linux hosted operating system, or in an offline mode where the server is booted to an operating system included on the ISO file so that the server can be updated automatically with no user interaction or updated in interactive mode.

For more information or to download SPP, see one of the following pages on the Hewlett Packard Enterprise website:

- [Service Pack for ProLiant download page](https://www.hpe.com)
- [Smart Update: Server Firmware and Driver Updates page](https://www.hpe.com)

### HP Smart Update Manager

HP SUM is a product used to install and update firmware, drivers, and systems software on ProLiant servers. The HP SUM provides a GUI and a command-line scriptable interface for deployment of systems software for single or one-to-many ProLiant servers and network-based targets, such as iLOs, OAs, and VC Ethernet and Fibre Channel modules.

For more information about HP SUM, see the product page on the [Hewlett Packard Enterprise website](https://www.hpe.com).

To download HP SUM, see the [Hewlett Packard Enterprise website](https://www.hpe.com).

To access the *HP Smart Update Manager User Guide*, see the [HP SUM Information Library](https://www.hpe.com).

### UEFI System Utilities

The UEFI System Utilities is embedded in the system ROM. The UEFI System Utilities enable you to perform a wide range of configuration activities, including:
• Configuring system devices and installed options
• Enabling and disabling system features
• Displaying system information
• Selecting the primary boot controller
• Configuring memory options
• Selecting a language
• Launching other pre-boot environments such as the Embedded UEFI Shell and Intelligent Provisioning

For more information on the UEFI System Utilities, see the UEFI System Utilities User Guide for HPE ProLiant Gen10 Servers on the Hewlett Packard Enterprise website.

Scan the QR code located at the bottom of the screen to access mobile-ready online help for the UEFI System Utilities and UEFI Shell. For on-screen help, press F1.

Using UEFI System Utilities

To use the UEFI System Utilities, use the following keys.

<table>
<thead>
<tr>
<th>Action</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access System Utilities</td>
<td>F9 during server POST</td>
</tr>
<tr>
<td>Navigate menus</td>
<td>Up and Down arrows</td>
</tr>
<tr>
<td>Select items</td>
<td>Enter</td>
</tr>
<tr>
<td>Save selections</td>
<td>F10</td>
</tr>
<tr>
<td>Access Help for a highlighted configuration option¹</td>
<td>F1</td>
</tr>
</tbody>
</table>

¹ Scan the QR code on the screen to access online help for the UEFI System Utilities and UEFI Shell.

Flexible boot control

This feature enables you to do the following:

• Add Boot Options
  ◦ Browse all FAT16 and FAT32 file systems.
  ◦ Select an X64 UEFI application with an .EFI extension to add as a new UEFI boot option, such as an OS boot loader or other UEFI application.

  The new boot option is appended to the boot order list. When you select a file, you are prompted to enter the boot option description (which is then displayed in the Boot menu), as well as any optional data to be passed to an .EFI application.

• Boot to System Utilities

  After pre-POST, the boot options screen appears. During this time, you can access the UEFI System Utilities by pressing the F9 key.

• Choose between supported modes: Legacy BIOS Boot Mode or UEFI Boot Mode

  IMPORTANT:
  If the default boot mode settings are different than the user defined settings, the system may not boot the OS installation if the defaults are restored. To avoid this issue, use the User Defined Defaults feature in UEFI System Utilities to override the factory default settings.

Restoring and customizing configuration settings

You can reset all configuration settings to the factory default settings, or you can restore system default configuration settings, which are used instead of the factory default settings.
You can also configure default settings as necessary, and then save the configuration as the custom default configuration. When the system loads the default settings, it uses the custom default settings instead of the factory defaults.

Secure Boot configuration

Secure Boot is integrated in the UEFI specification on which the Hewlett Packard Enterprise implementation of UEFI is based. Secure Boot is completely implemented in the BIOS and does not require special hardware. It 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
- Pre-boot UEFI shell applications
- OS UEFI boot loaders

Once enabled, only firmware components and operating systems with boot loaders that have an appropriate digital signature can execute during the boot process. Only operating systems that support Secure Boot and have an EFI boot loader signed with one of the authorized keys can boot when Secure Boot is enabled. For more information about supported operating systems, see the HPE UEFI System Utilities and Shell Release Notes for HPE ProLiant Gen10 Servers on the Hewlett Packard Enterprise website.

A physically present user can customize the certificates embedded in the UEFI BIOS by adding/removing their own certificates.

When Secure Boot is enabled, the System Maintenance Switch does not restore all manufacturing defaults when set to the ON position. For security reasons, the following are not restored to defaults when the System Maintenance Switch is in the ON position:

- Secure Boot is not disabled and remains enabled.
- The Boot Mode remains in UEFI Boot Mode even if the default boot mode is Legacy Boot Mode.
- The Secure Boot Database is not restored to its default state.
- iSCSI Software Initiator configuration settings are not restored to defaults.

Embedded UEFI shell

The system BIOS in all ProLiant Gen10 servers includes an Embedded UEFI Shell in the ROM. The UEFI Shell environment provides an API, a command line prompt, and a set of CLIs that allow scripting, file manipulation, and system information. These features enhance the capabilities of the UEFI System Utilities.

For more information, see the following documents:

- HPE UEFI Shell User Guide for HPE ProLiant Gen10 Servers on the Hewlett Packard Enterprise website
- UEFI Shell Specification on the UEFI website

Embedded Diagnostics option

The system BIOS in all ProLiant Gen10 servers includes an Embedded Diagnostics option in the ROM. The Embedded Diagnostics option can run comprehensive diagnostics of the server hardware, including processors, memory, drives, and other server components.

For more information on the Embedded Diagnostics option, see the HPE UEFI System Utilities User Guide for HPE ProLiant Gen10 Servers on the Hewlett Packard Enterprise website.

iLO RESTful API support for UEFI

The ProLiant Gen10 servers include support for a UEFI compliant System BIOS, along with UEFI System Utilities and Embedded UEFI Shell pre-boot environments. ProLiant Gen10 servers also support configuring
the UEFI BIOS settings using the iLO RESTful API, a management interface that server management tools can use to perform configuration, inventory, and monitoring of a ProLiant server. The iLO RESTful API uses basic HTTPS operations (GET, PUT, POST, DELETE, and PATCH) to submit or return JSON-formatted data with iLO web server.

For more information about the iLO RESTful API and the RESTful Interface Tool, see the Hewlett Packard Enterprise website.

Re-entering the server serial number and product ID

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

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

Utilities and features

HPE Smart Storage Administrator

The HPE SSA is a configuration and management tool for HPE Smart Array controllers. Starting with HPE ProLiant Gen8 servers, HPE SSA replaces ACU with an enhanced GUI and additional configuration features.

The HPE SSA exists in three interface formats: the HPE SSA GUI, the HPE SSA CLI, and HPE SSA Scripting. Although all formats provide support for configuration tasks, some of the advanced tasks are available in only one format.

Some HPE SSA features include the following:

• Supports online array capacity expansion, logical drive extension, assignment of online spares, and RAID or stripe size migration
• Provides diagnostic and SmartSSD Wear Gauge functionality on the Diagnostics tab
• For supported controllers, provides access to additional features.

For more information about HPE SSA, see the Hewlett Packard Enterprise website.

ROMPaq utility

The ROMPaq utility enables you to upgrade the system firmware (BIOS). To upgrade the firmware, insert a ROMPaq USB Key into an available USB port and boot the system. In addition to ROMPaq, Online Flash Components for Windows and Linux operating systems are available for updating the system firmware.

The ROMPaq utility checks the system and provides a choice (if more than one exists) of available firmware revisions.

To locate the drivers for a particular server, go to the Hewlett Packard Enterprise website. Under Select your HPE product, enter the product name or number and click Go.
Automatic Server Recovery

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

ASR increases server availability by restarting the server within a specified time after a system hang. You can disable ASR from the System Management Homepage or through UEFI System Utilities.

USB support

Hewlett Packard Enterprise Server Blades support both USB 2.0 ports and USB 3.0 ports. Both types of ports support installing all types of USB devices (USB 1.0, USB 2.0, and USB 3.0), but may run at lower speeds in specific situations:

- USB 3.0 capable devices operate at USB 2.0 speeds when installed in a USB 2.0 port.
- When the Server Blade is configured for UEFI Boot Mode, Hewlett Packard Enterprise provides legacy USB support in the pre-boot environment prior to the operating system loading for USB 1.0, USB 2.0, and USB 3.0 speeds.
- When the Server Blade is configured for Legacy BIOS Boot Mode, Hewlett Packard Enterprise provides legacy USB support in the pre-boot environment prior to the operating system loading for USB 1.0 and USB 2.0 speeds. While USB 3.0 ports can be used with all devices in Legacy BIOS Boot Mode, they are not available at USB 3.0 speeds in the pre-boot environment. Standard USB support (USB support from within the operating system) is provided by the OS through the appropriate USB device drivers. Support for USB 3.0 varies by operating system.

For maximum compatibility of USB 3.0 devices with all operating systems, Hewlett Packard Enterprise provides a configuration setting for USB 3.0 Mode. Auto is the default setting. This setting impacts USB 3.0 devices when connected to USB 3.0 ports in the following manner:

- **Auto (default)**—If configured in Auto Mode, USB 3.0 capable devices operate at USB 2.0 speeds in the pre-boot environment and during boot. When a USB 3.0 capable OS USB driver loads, USB 3.0 devices transition to USB 3.0 speeds. This mode provides compatibility with operating systems that do not support USB 3.0 while still allowing USB 3.0 devices to operate at USB 3.0 speeds with state-of-the-art operating systems.
- **Enabled**—If Enabled, USB 3.0 capable devices operate at USB 3.0 speeds at all times (including the pre-boot environment) when in UEFI Boot Mode. This mode should not be used with operating systems that do not support USB 3.0. If operating in Legacy Boot BIOS Mode, the USB 3.0 ports cannot function in the pre-boot environment and are not bootable.
- **Disabled**—If configured for Disabled, USB 3.0 capable devices function at USB 2.0 speeds at all times.

The pre-OS behavior of the USB ports is configurable in the UEFI System Utilities, so that the user can change the default operation of the USB ports. For more information, see the HPE UEFI System Utilities User Guide for HPE ProLiant Gen9 Servers on the Hewlett Packard Enterprise website.

External USB functionality

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

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

Redundant ROM support

The Server Blade enables you to upgrade or configure the ROM safely with redundant ROM support. The Server Blade has a single ROM that acts as two separate ROM images. In the standard implementation, one
side of the ROM contains the current ROM program version, while the other side of the ROM contains a backup version.

**NOTE:** The Server Blade ships with the same version programmed on each side of the ROM.

### Safety and security benefits

When you flash the system ROM, ROMPaq writes over the backup ROM and saves the current ROM as a backup, enabling you to switch easily to the alternate ROM version if the new ROM becomes corrupted for any reason. This feature protects the existing ROM version, even if you experience a power failure while flashing the ROM.

### Keeping the system current

#### Drivers

**IMPORTANT:** Always perform a backup before installing or updating device drivers.

The Server Blade includes new hardware that may not have driver support on all OS installation media.

If you are installing an Intelligent Provisioning-supported OS, use **Intelligent Provisioning** on page 63 and its Configure and Install feature to install the OS and latest supported drivers.

If you do not use Intelligent Provisioning to install an OS, drivers for some of the new hardware are required. These drivers, as well as other option drivers, ROM images, and value-add software can be downloaded as part of an SPP.

If you are installing drivers from SPP, be sure that you are using the latest SPP version that your Server Blade supports. To verify that your Server Blade is using the latest supported version and for more information about SPP, see the **Hewlett Packard Enterprise website**.

To locate the drivers for a particular server, go to the **Hewlett Packard Enterprise Support Center website**. Under **Select your HPE product**, enter the product name or number and click **Go**.

#### Software and firmware

Software and firmware should be updated before using the server for the first time, unless any installed software or components require an older version.

For system software and firmware updates, use one of the following sources:

- Download the **SPP** from the **Hewlett Packard Enterprise website**.
- Download individual drivers, firmware, or other systems software components from the Server Blade product page in the **Hewlett Packard Enterprise Support Center website**.

#### Version control

The VCRM and VCA are web-enabled Insight Management Agents tools that SIM uses to schedule software update tasks to the entire enterprise.

- VCRM manages the repository for SPP. Administrators can view the SPP contents or configure VCRM to automatically update the repository with internet downloads of the latest software and firmware from Hewlett Packard Enterprise.
- VCA compares installed software versions on the node with updates available in the VCRM managed repository. Administrators configure VCA to point to a repository managed by VCRM.

1. Select HP Insight Management from the available options in Products and Solutions.
2. Select HP Version Control from the available options in Insight Management.
3. Download the latest document.

Operating systems and virtualization software support for ProLiant servers

For information about specific versions of a supported operating system, see the Hewlett Packard Enterprise website.

HPE Technology Service Portfolio

Connect to Hewlett Packard Enterprise for assistance on the journey to the new style of IT. The Hewlett Packard Enterprise Technology Services delivers confidence and reduces risk to help you realize agility and stability in your IT infrastructure.

Utilize our consulting expertise in the areas of private or hybrid cloud computing, big data and mobility requirements, improving data center infrastructure and better use of today’s server, storage and networking technology. For more information, see the Hewlett Packard Enterprise website.

Our support portfolio covers services for server, storage and networking hardware and software plus the leading industry standard operating systems. Let us work proactively with you to prevent problems. Our flexible choices of hardware and software support coverage windows and response times help resolve problems faster, reduce unplanned outages and free your staff for more important tasks. For more information, see the Hewlett Packard Enterprise website.

Tap into our knowledge, expertise, innovation and world-class services to achieve better results. Access and apply technology in new ways to optimize your operations and you’ll be positioned for success.

Change control and proactive notification

Hewlett Packard Enterprise offers Change Control and Proactive Notification to notify customers 30 to 60 days in advance of upcoming hardware and software changes on Hewlett Packard Enterprise commercial products.

For more information, see the Hewlett Packard Enterprise website.
If the Server Blade 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.

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

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

To remove the component:

**Procedure**

1. **Power down the Server Blade.**
2. **Remove the Server Blade.**
3. Place the Server Blade on a flat, level work surface.
4. **Remove the access panel.**
5. **Identify the battery location.**
6. Remove the left DIMM baffle.
7. Remove the battery.

![Diagram](image)

**IMPORTANT:**
Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through UEFI System Utilities.

To replace the component, reverse the removal procedure.

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

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you must follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

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

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. 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 the Hewlett Packard Enterprise Support Center.
Specifications

Environmental specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range*</td>
<td>—</td>
</tr>
<tr>
<td>Operating</td>
<td>10°C to 35°C (50°F to 95°F)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>-30°C to 60°C (-22°F to 140°F)</td>
</tr>
<tr>
<td>Relative humidity (noncondensing)**</td>
<td>—</td>
</tr>
<tr>
<td>Operating</td>
<td>10% to 90% @ 28°C (82.4°F)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>5% to 95% @ 38.7°C (101.7°F)</td>
</tr>
<tr>
<td>Altitude†</td>
<td>—</td>
</tr>
<tr>
<td>Operating</td>
<td>3050 m (10,000 ft)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>9144 m (30,000 ft)</td>
</tr>
</tbody>
</table>

* The following temperature conditions and limitations apply:
  • All temperature ratings shown are for sea level.
  • An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) up to 3048 m (10,000 ft) applies.
  • No direct sunlight is allowed.
  • The maximum permissible rate of change is 10°C/hr (18°F/hr).
  • The type and number of options installed might reduce the upper temperature and humidity limits.
  • Operating with a fan fault or above 30°C (86°F) might reduce system performance.

** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F).
† Maximum storage altitude corresponds to a minimum pressure of 70 kPa (10.1 psia).

Server blade specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>180.70 mm (7.11 in)</td>
</tr>
<tr>
<td>Depth</td>
<td>517.51 mm (20.37 in)</td>
</tr>
<tr>
<td>Width</td>
<td>55.37 mm (2.18 in)</td>
</tr>
<tr>
<td>Weight (maximum)</td>
<td>6.33 kg (13.96 lb)</td>
</tr>
<tr>
<td>Weight (minimum)</td>
<td>4.50 kg (9.90 lb)</td>
</tr>
</tbody>
</table>
Safety, warranty, and regulatory information

Safety and regulatory compliance


Warranty information

HPE ProLiant and x86 Servers and Options
HPE Enterprise Servers
HPE Storage Products
HPE Networking Products

Regulatory information

Belarus Kazakhstan Russia marking

EAC

Manufacturer and Local Representative Information

Manufacturer information:

• Hewlett Packard Enterprise Company, 3000 Hanover Street, Palo Alto, CA 94304 U.S.

Local representative information Russian:

• Russia:

  ООО «Хьюллетт Паккард Энтерпрайз», Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон/факс: +7 495 797 35 00

• Belarus:

  ИООО «Хьюллетт-Паккард Бел», Республика Беларусь, 220030, г. Минск, ул. Интернациональная, 36-1, Телефон/факс: +375 17 392 28 20

• Kazakhstan:

  ТОО «Хьюллетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: +7 727 355 35 52

Local representative information Kazakh:

• Russia:
Belarus:

«HEWLETT-PACKARD Beļ» ЖШС, Беларусь Республикасы, 220030, Мінск к., Интернациональная кешесi, 36/1, Телефон/факс: +375 17 392 28 20

Kazakhstan:

ЖШС «Хьюлэтт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандық ауданы, Әл-Фараби данғылы, 77/7, Телефон/факс: +7 727 355 35 52

Manufacturing date:
The manufacturing date is defined by the serial number.

CCSYWWZZZZ (serial number format for this product)

Valid date formats include:

- YWW, where Y indicates the year counting from within each new decade, with 2000 as the starting point; for example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- YYWW, where YY indicates the year, using a base year of 2000; for example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057
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/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
  http://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

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
  Hewlett Packard Enterprise Support Center: Software downloads
  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.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience.
Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

http://www.hpe.com/support/selfrepair

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

Warranty information

To view the warranty for your product or to view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products reference document, go to the Enterprise Safety and Compliance website:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional warranty information

- HPE ProLiant and x86 Servers and Options
  www.hpe.com/support/ProLiantServers-Warranties
- HPE Enterprise Servers
  www.hpe.com/support/EnterpriseServers-Warranties
- HPE Storage Products
  www.hpe.com/support/Storage-Warranties
- HPE Networking Products
  www.hpe.com/support/Networking-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

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.