# HP Cluster Platform
# ProLiant G6 and G7 Server Overview


## Abstract

This document provides an overview of the core infrastructure components for all HP Cluster Platform models and associated platforms for experienced hardware administrators of large-scale computer systems and for HP Global Service representatives. This guide refers to the original component documentation, which should be available during installation, configuration, and maintenance operations.





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# Introduction

## Overview

This document provides an overview of the HP ProLiant G6 and G7 servers used in HP Cluster Platform solutions. This document refers to the original component documentation for detailed information, except where information or procedures for the cluster differ from the standalone components. In such cases, this document supersedes information supplied in existing component documentation.

Some server options are not supported in HP Cluster Platform configurations. For more information, contact an HP representative.

| **Processor** | **Supported server** |
|---|---|
| Intel® Xeon® | HP ProLiant DL160 G6 Server<br>HP ProLiant DL170e G6 Server<br>HP ProLiant DL170h G6 Server<br>HP ProLiant DL380 G6 Server<br>HP ProLiant DL380 G7 Server<br>HP ProLiant SL170s G6 Server<br>HP ProLiant SL2x170z G6 Server<br>HP ProLiant SL390s G7 Server<br>HP ProLiant BL280c G6 Server Blade<br>HP ProLiant BL2x220c G6 Server Blade<br>HP ProLiant BL2x220c G7 Server Blade<br>HP ProLiant BL460c G6 Server Blade<br>HP ProLiant BL460c G7 Server Blade |
| AMD Opteron | HP ProLiant DL165 G6 Server<br>HP ProLiant DL165 G7 Server<br>HP ProLiant DL385 G6 Server<br>HP ProLiant DL385 G7 Server<br>HP ProLiant DL585 G6 Server<br>HP ProLiant SL165z G7 Server<br>HP ProLiant BL465c G6 Server Blade<br>HP ProLiant BL465c G7 Server Blade |

This document does not include the procedures or tools required to install and configure the system hardware or software. It includes references for cluster components and pointers to the server documentation on the HP website.

# HP ProLiant servers (rack)

## HP ProLiant Rack Servers (Intel® Xeon®)

Several Intel® Xeon® servers are supported in HP Cluster Platform solutions. This section presents information for the HP ProLiant servers that are used in HP Cluster Platform solutions only. The content in this section includes the following additional information for the ProLiant Intel® Xeon® servers:

- Front and rear views
- InfiniBand HCA PCI slot assignment
- Specific cable management instructions, if necessary
- HP Cluster Platform specific maintenance instructions, if applicable

## HP ProLiant DL160 G6 Server

The HP ProLiant DL160 G6 Server is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations.

### HP ProLiant DL160 G6 Server documentation

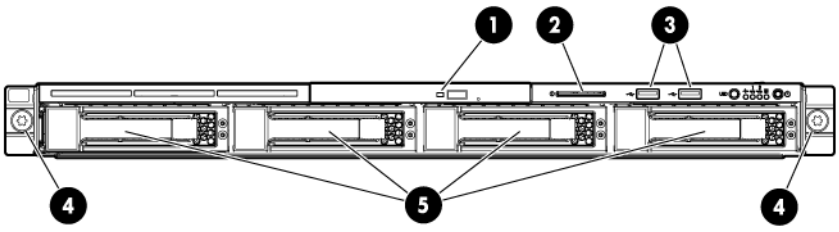
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL160 Generation 6 (G6) QuickSpecs on* the HP website (http://h18004.www1.hp.com/products/quickspecs/13247_na/13247_na.html).
- For installation and service information, see the *HP ProLiant DL100 Series Server User Guide* and the *HP ProLiant DL160 G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL160 G6 Server series**.

### Front panel components (DL160 G6)

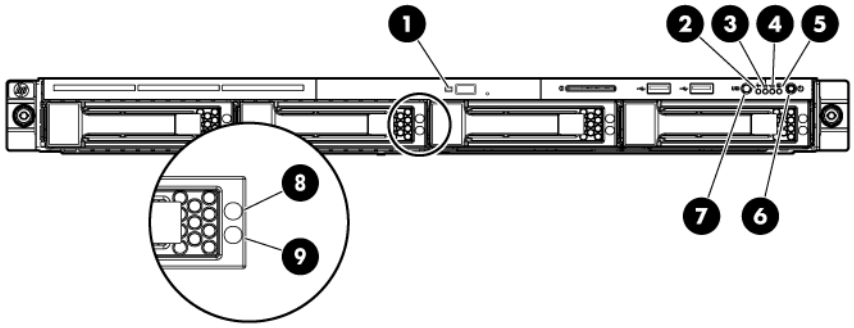
This figure shows the LFF hard drive model. The server is also available in a two-drive LFF model, a four-drive non-hot plug LFF model, and an 8-drive SFF model. Each model contains the same components in the same or similar orientations.



| Item | Description |
|---|---|
| 1 | Optical drive (optional) |
| 2 | Serial label pull tab |
| 3 | USB connectors (2) |
| 4 | Rack mounting thumbscrews (2) |
| 5 | Hard drive bays (4) |

## Front panel LEDs and buttons (DL160 G6)

This figure shows the LFF hard drive model. The server is also available in a two-drive LFF model, a four-drive non-hot-plug LFF model, and an 8-drive SFF model. Each model contains the same components in the same or similar orientations.

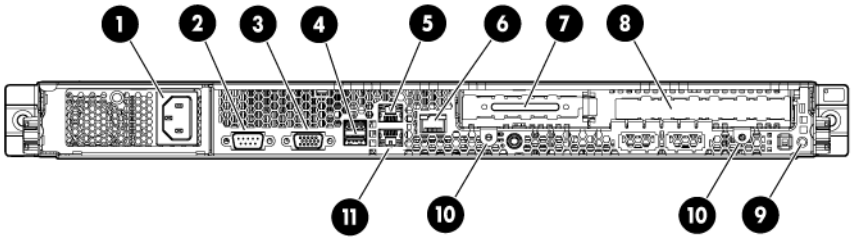



| Item | Description | Status |
|---|---|---|
| 1 | Optical drive LED | Flashing green = Drive is in use.<br>Off = Drive is not active. |
| 2 | Health LED | Green = System health is normal.<br>Amber = System health is degraded (non-critical).<br>Red = System health is critical.<br>Off = System health is normal (when in standby mode). |
| 3 | NIC 1 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |
| 4 | NIC 2 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |
| 5 | Hard drive activity LED | Flashing green = Drive activity exists.<br>Off = No drive activity exists. |
| 6 | Power button/LED | Green = Normal (system on)<br>Amber = System is in standby, but power is still applied.<br>Off = Power cord is not attached, or the power supply has failed. There is no power to the system. |
| 7 | UID button/LED | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |

| Item | Description | Status |
|---|---|---|
| 8 | Drive online/error LED | Blue = Drive identified<br>Amber = Drive failure<br>Off = No fault-process activity |
| 9 | Drive activity LED | Flashing green = Drive activity<br>Off = No drive activity |

## Rear panel components (DL160 G6)

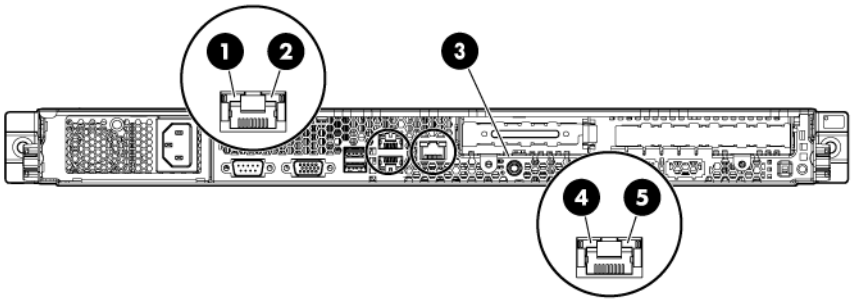
The figure shown in this section is a non-hot-plug power supply model. The HP ProLiant DL160 G6 Server is also available in a hot-plug power supply model.




| Item | Description |
|---|---|
| 1 | Power supply cable connector |
| 2 | Serial connector |
| 3 | Video connector |
| 4 | USB connectors (2) |
| 5 | NIC 2 connector |
| 6 | Dedicated management connector (optional) |
| 7 | Low-profile PCI expansion card slot |
| 8 | Full-height/full-length PCI expansion card slot |
| 9 | T-10/T-15 Torx screwdriver |
| 10 | PCI cage thumbscrews (2) |
| 11 | NIC 1 connector |

## Rear panel LEDs and buttons (DL160 G6)

The figure shown in this section is a non-hot-plug power supply model. The HP ProLiant DL160 G6 Server is also available in a hot-plug power supply model.




| Item | Description | Status |
|---|---|---|
| 1 | NIC link LED | Green = Linking at 100 Mbps speed<br>Off = No connection or linking at 10 Mbps speed |
| 2 | NIC activity LED | Green = LAN is linking.<br>Flashing green = LAN is active.<br>Off = No connection |
| 3 | UID button/LED | Blue = Identification<br>Flashing blue = System is being managed remotely.<br>Off = Off |
| 4 | Dedicated management connector activity LED (optional) | Green = LAN is linking.<br>Flashing green = LAN is active.<br>Off = No connection |
| 5 | Dedicated management connector link LED (optional) | Green = Linking at 100 Mbps speed<br>Off = No connection or linking at 10 Mbps speed |

## PCI expansion slot definitions (DL160 G6)

Always install an InfiniBand PCIe HCA in slot 1 of this server.

| Slot | Type | Length | Connector | Interconnect |
|---|---|---|---|---|
| 1 | PCIe2 | Full | x16 | x16 |
| 1 | Optional PCI-X | Full | 133 MHz/3.3 V | 64 bit |
| 2 | PCIe | Half | x16 | x4 |

# HP ProLiant DL1000 Multi Node Servers

The DL1000 consists of up to four independent DL170h G6 servers in the 2U HP ProLiant h1000 G6 Chassis and is available in 2-node and 4-node models. Only the 4-node model (HP ProLiant DL4x170h G6 Server) of the HP ProLiant DL170h G6 Server is supported in the HP Cluster Platform.

# HP ProLiant DL170h G6 Server

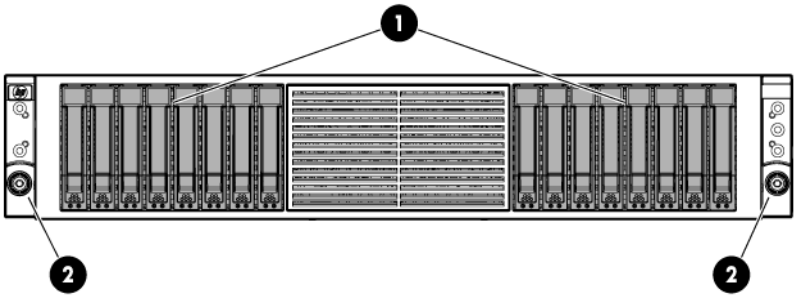
The HP ProLiant DL4x170h G6 Server is used as a compute node in HP Cluster Platform configurations.

## HP ProLiant DL170h G6 Server documentation

For server-specific information, see the server documentation:

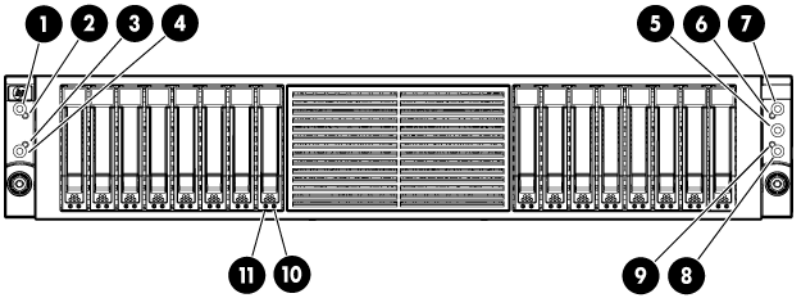
- For a complete list of features and specifications, see the *HP ProLiant DL1000 Multi Node Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13309_na/13309_na.html).
- For service information, see the *HP ProLiant DL170h G6 Server Maintenance and Service Guide* on the HP website (http://h20000.www2.hp.com/bc/docs/support/SupportManual/c01806355/c01806355.pdf).

## Front panel components (DL170h G6)




| Item | Description |
|---|---|
| 1 | Hard drive bay (populated) |
| 2 | Rack-mounting thumbscrews (2) |

## Front panel LEDs and buttons (DL170h G6)

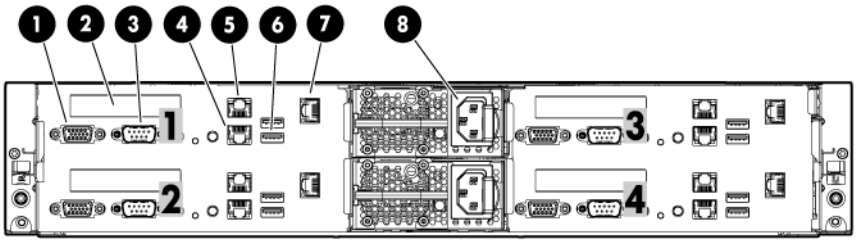



| Item | Description |
|---|---|
| 1 | Power button (node 3) |
| 2 | Health LED (node 3) |
| 3 | Health LED (node 4) |
| 4 | Power button (node 4) |
| 5 | Chassis UID LED button |

| Item | Description |
|---|---|
| 6 | Health LED (node 1) |
| 7 | Power button (node 1) |
| 8 | Power button (node 2) |
| 9 | Health LED (node 2) |
| 10 | Hard drive activity LED |
| 11 | Hard drive fault/UID LED |

## Rear panel components (DL170h G6)

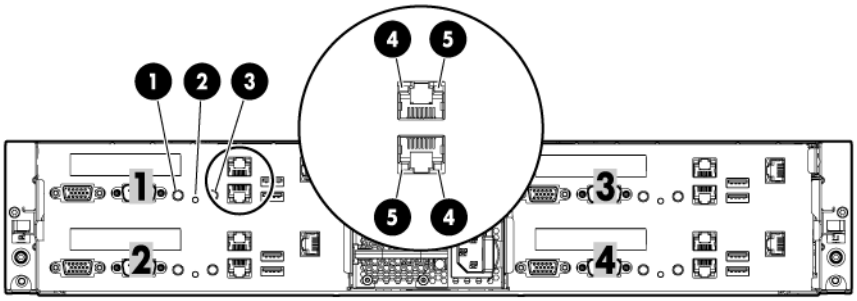
The table below describes components for node 1 only. Each node contains the same components in the same orientation, except for the power supply. The four nodes have only two power supplies.




| Item | Description |
|---|---|
| 1 | Video connector |
| 2 | PCIe2, low-profile expansion slot |
| 3 | Serial connector |
| 4 | 1-Gb NIC 1 connector |
| 5 | 1-Gb NIC 2/management connector (shared) |
| 6 | USB connectors (2) |
| 7 | Dedicated management port (IPMI) (optional) |
| 8 | Power supply cable connector |

### Rear panel LEDs and buttons (DL170h G6)

The table below describes LEDs for node 1 only. Each node contains the same LEDs in the same orientation.




| Item | Description |
|---|---|
| 1 | UID LED/button |
| 2 | Health LED |
| 3 | Power button |
| 4 | NIC activity LED |
| 5 | NIC link LED |

### PCI expansion slot definitions (DL170h G6)

The HP ProLiant DL170h G6 Server has one available low-profile PCIe2 x16 slot per node.

# HP ProLiant DL2000 Multi Node Servers

The HP ProLiant DL2000 Multi Node Servers are supported in the HP Cluster Platform. The DL2000 Multi Node Servers consist of up to four independent DL170e G6 servers in the 2U HP ProLiant e2000 G6 Chassis.

## HP ProLiant DL170e G6 Server

The HP ProLiant DL170e G6 Server is used as a compute node in HP Cluster Platform configurations.

### HP ProLiant DL170e G6 Server documentation

For server-specific information, see the server documentation:

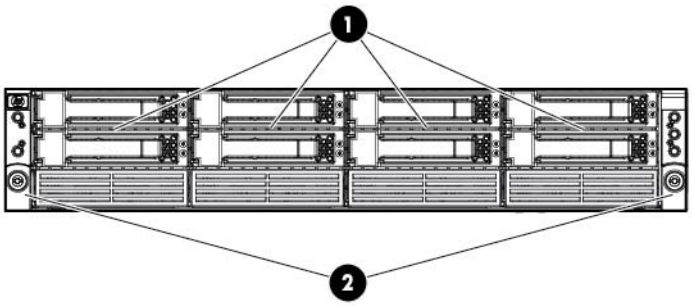
- For a complete list of features and specifications, see the *HP ProLiant DL2000 Multi Node Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13847_na/13847_na.html).
- For installation and service information, see the *HP ProLiant DL170e G6 Server Installation Sheet* and the *HP ProLiant DL170e G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL170e G6 Server series**.

## Front panel components (DL170e G6)

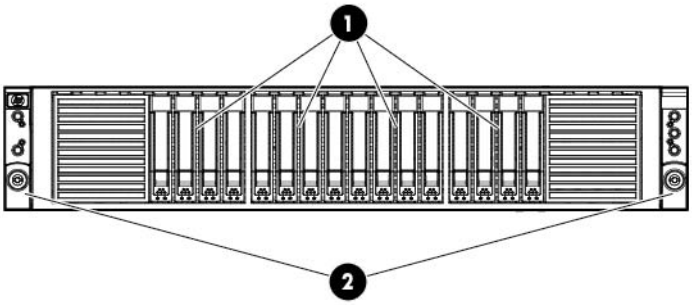
The HP Cluster Platform supports the following three models of the HP ProLiant DL170e G6 Server:

- Four-node server with 8-bay LFF hard drive cage



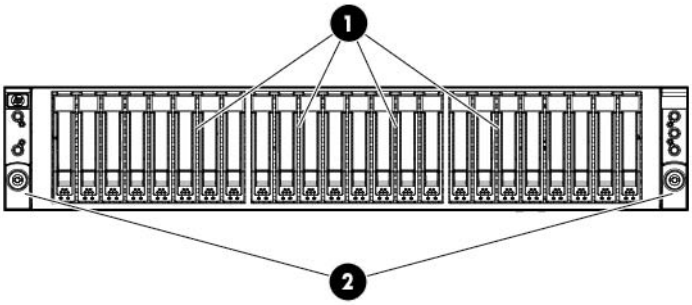

| Item | Description |
|---|---|
| 1 | LFF hard drive bays, populated (8) |
| 2 | Rack-mounting thumbscrews (2) |

- Four-node server with 16-bay SFF hard drive cage




| Item | Description |
|---|---|
| 1 | SFF hard drive bays, populated (16) |
| 2 | Rack-mounting thumbscrews (2) |

- Four-node server with 24-bay SFF hard drive cage

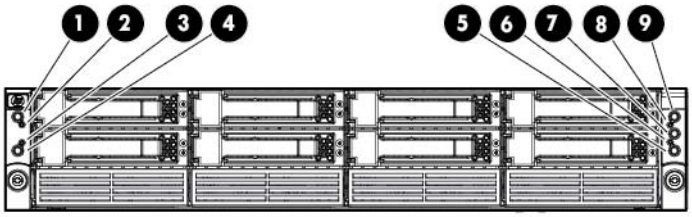


| Item | Description |
|---|---|
| 1 | SFF hard drive bays, populated (24) |
| 2 | Rack-mounting thumbscrews (2) |

## Front panel LEDs and buttons (DL170e G6)

The HP Cluster Platform supports the following three models of the HP ProLiant DL170e G6 Server:

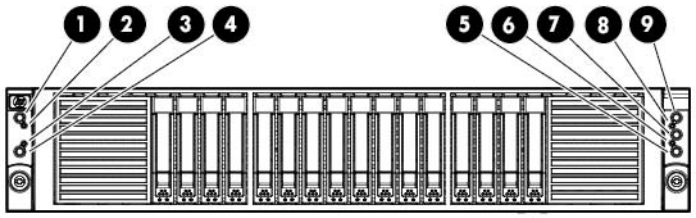
- Four-node server with 8-bay LFF hard drive cage




| Item | Description | Status |
|---|---|---|
| 1 | Power button (node 2) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 2 | Health LED (node 2) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 3 | Health LED (node 1) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 4 | Power button (node 1) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 5 | Power button (node 3) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 6 | Health LED (node 3) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 7 | Chassis UID LED button | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Off |

| Item | Description | Status |
|---|---|---|
| 8 | Health LED (node 4) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 9 | Power button (node 4) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |

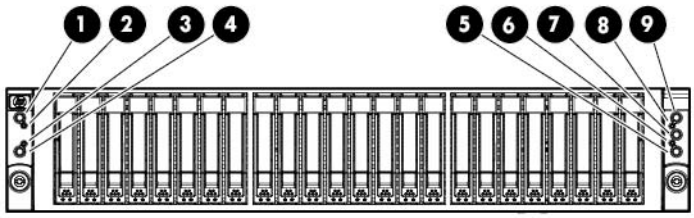
- Four-node server with 16-bay SFF hard drive cage




| Item | Description | Status |
|---|---|---|
| 1 | Power button (node 2) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 2 | Health LED (node 2) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 3 | Health LED (node 1) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 4 | Power button (node 1) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 5 | Power button (node 3) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 6 | Health LED (node 3) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 7 | Chassis UID LED button | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Off |

| Item | Description | Status |
|---|---|---|
| 8 | Health LED (node 4) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 9 | Power button (node 4) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |

- Four-node server with 16-bay SFF hard drive cage

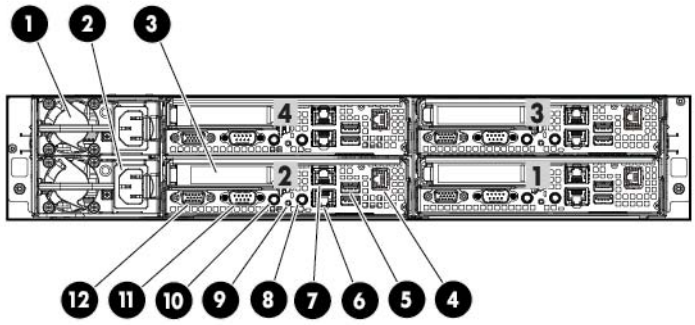



| Item | Description | Status |
|---|---|---|
| 1 | Power button (node 2) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 2 | Health LED (node 2) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 3 | Health LED (node 1) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 4 | Power button (node 1) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 5 | Power button (node 3) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |
| 6 | Health LED (node 3) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 7 | Chassis UID LED button | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Off |

| Item | Description | Status |
|---|---|---|
| 8 | Health LED (node 4) | Green = System health is normal.<br>Flashing amber = System health is degraded (non-critical). For more information, see SEL.<br>Flashing red = System health is critical. For more information, see SEL.<br>Off = System is off and health is normal. |
| 9 | Power button (node 4) | Green—Normal (system on)<br>Amber—The node is off or in hibernation with AC power.<br>Off—Off without AC power |

## Rear panel components (DL170e G6)

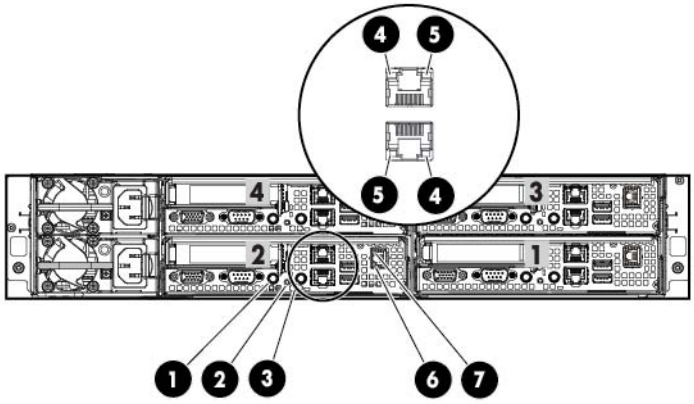
The table below describes components for node 1 only. Each node contains the same components in the same orientation, except for the power supply. The four nodes have only two power supplies.




| Item | Description |
|---|---|
| 1 | Power supply 2 |
| 2 | Power supply 1 |
| 3 | PCIe2, low-profile expansion slot |
| 4 | Dedicated management port (optional) |
| 5 | USB connectors (2) |
| 6 | 1-Gb NIC 1 connector |
| 7 | 1-Gb NIC 2/management connector (shared) |
| 8 | Serial connector |
| 9 | Video connector |

### Rear panel LEDs and buttons (DL170e G6)

The table below describes LEDs for node 1 only. Each node contains the same LEDs in the same orientation.




| Item | Description | Status |
|---|---|---|
| 1 | UID LED/button | — |
| 2 | Health LED | — |
| 3 | Power button | — |
| 4 | LAN network speed LED | **10/100 speed**<br>Green—The LAN connection is using a 100 Mbps link.<br>Off—The LAN connection is using a 10 Mbps link.<br>**GbE speed**<br>Green—The LAN connection is using a 100 Mbps link.<br>Flashing green—The LAN connection is using a 10 Mbps/100 Mbps link for port identification.<br>Amber—The LAN connection is using a 1 Gbps link.<br>Flashing amber—The LAN connection is using a 1 Gbps link for port identification.<br>Off—The LAN connection is using a 10 Mbps link. |
| 5 | LAN activity status LED | Green—Normal LAN connection. No activity.<br>Flashing green—Ongoing network data activity<br>Off—No network data activity or no connection |
| 6 | Management port activity LED (optional) | Green—Linking at 100 Mbps speed<br>Off—No connection or linking at 10 Mbps speed |
| 7 | Management port link LED (optional) | Flashing amber—LAN is active. |

### PCI expansion slot definitions (DL170e G6)

The HP ProLiant DL170e G6 Server has one available low-profile PCIe2 x16 slot per node.

## HP ProLiant DL380 G6 Server

The HP ProLiant DL380 G6 Server is used as a control node in HP Cluster Platform configurations.

## HP ProLiant DL380 G6 Server documentation

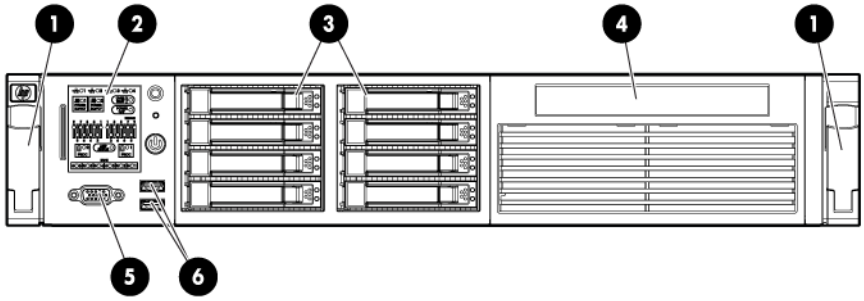
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL380 Generation 6 (G6) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13234_na/13234_na.pdf).
- For installation and service information, see the *HP ProLiant DL380 G6 Server User Guide* and the *HP ProLiant DL380 G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL380 G6 Server series**.

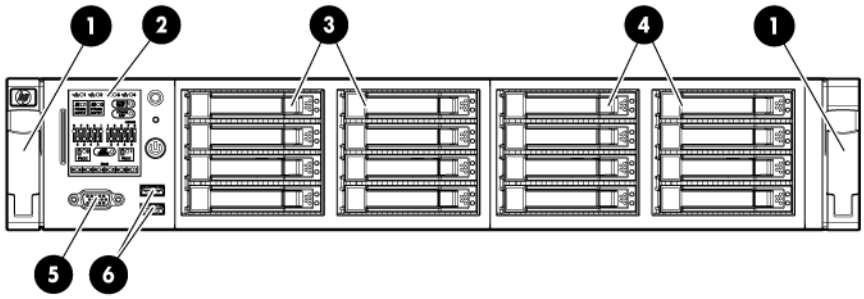
## Front panel components (DL380 G6)

- SFF hard drive model



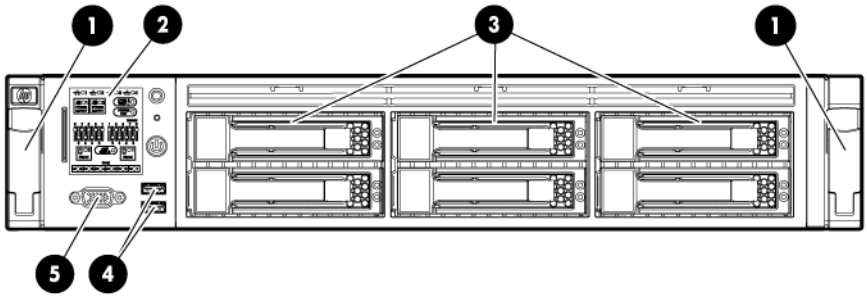

| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |
| 3 | Hard drive bays (8) |
| 4 | SATA optical drive bay |
| 5 | Video connector |
| 6 | USB connectors (2) |

- SFF hard drive model with optional hard drive cage



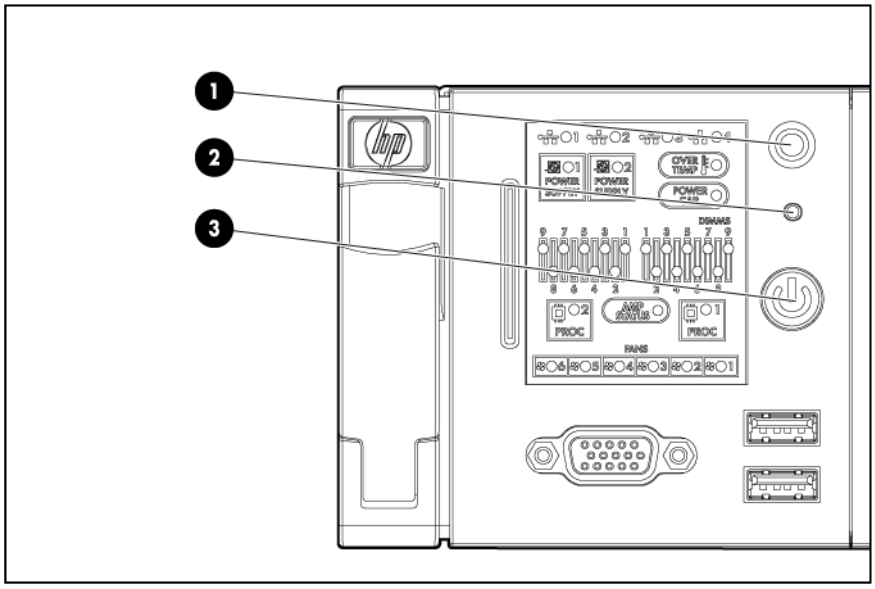
| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |
| 3 | Hard drive bays (8) |
| 4 | Optional hard drive bays (8) |
| 5 | Video connector |
| 6 | USB connectors (2) |

- LFF hard drive model



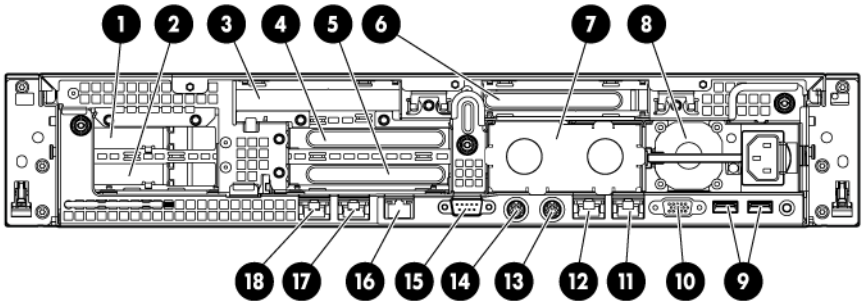

| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |
| 3 | Hard drive bays (6) |
| 4 | USB connectors (2) |
| 5 | Video connector |

## Front panel LEDs and buttons (DL380 G6)



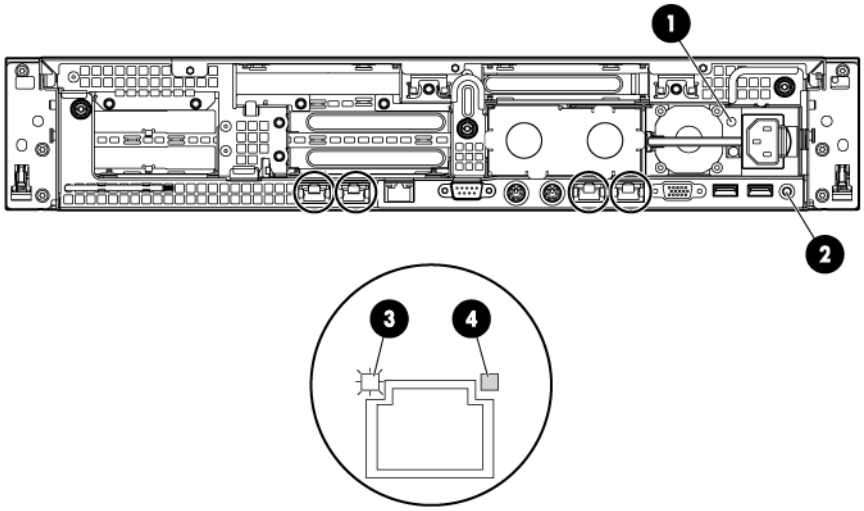
| Item | Description | Status |
|---|---|---|
| 1 | UID LED and button | Blue = Activated<br>Flashing blue = System being remotely managed<br>Off = Deactivated |
| 2 | System health LED | Green = Normal<br>Amber = System degraded<br>Red = System critical<br>To identify components in degraded or critical state, see "Systems Insight Display LEDs" in the server user guide. |
| 3 | Power On/Standby button and system power LED | Green = System on<br>Amber = System is in standby, but power is still applied.<br>Off = Power cord not attached or power supply failure |

## Rear panel components (DL380 G6)




| Item | Description |
|---|---|
| 1 | PCI slot 5 |
| 2 | PCI slot 6 |
| 3 | PCI slot 4 |
| 4 | PCI slot 2 |
| 5 | PCI slot 3 |
| 6 | PCI slot 1 |
| 7 | Power supply bay 2 |
| 8 | Power supply bay 1 (populated) |
| 9 | USB connectors (2) |
| 10 | Video connector |
| 11 | NIC 1 connector |
| 12 | NIC 2 connector |
| 13 | Mouse connector |
| 14 | Keyboard connector |
| 15 | Serial connector |
| 16 | iLO 2 connector |
| 17 | NIC 3 connector |
| 18 | NIC 4 connector |

## Rear panel LEDs and buttons (DL380 G6)




| Item | Description | Status |
|---|---|---|
| 1 | Power supply LED | Green = Normal<br>Off = System is off or power supply has failed |
| 2 | UID LED/button | Blue = Activated<br>Flashing blue = System being managed remotely<br>Off = Deactivated |
| 3 | NIC/iLO 2 activity LED | Green = Network activity<br>Flashing green = Network activity<br>Off = No network activity |
| 4 | NIC/iLO 2 link LED | Green = Network link<br>Off = No network link |

## PCI expansion slot definitions (DL380 G6)

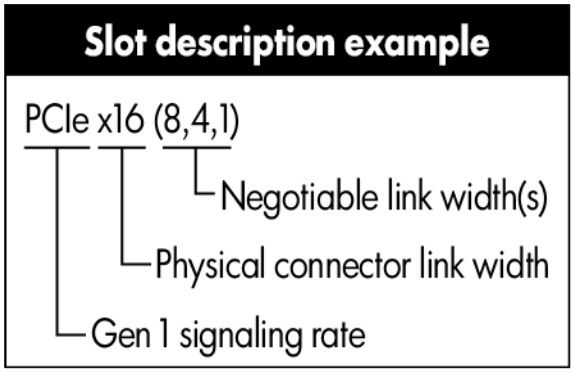
Always install an InfiniBand PCIe HCA in slot 4 of this server.

| Primary (slot - form factor) | Secondary (slot - form factor) | PCIe riser slot description | PCIe x16 riser slot description | PCIe/PCI-X riser slot description |
|---|---|---|---|---|
| 1 - FL/FH | 4 - FL/FH | PCIe x16 (8,4,1) | PCIe x16 (16,8,4,1) | PCI-X 64-bit/133-MHz |
| 2 - HL/FH | 5 - LP | PCIe x8 (4,1) | — | PCIe x16 (8,4,1) |
| 3 - HL/FH | 6 - LP | PCIe x8 (4,1) | — | PCIe x8 (4,1) |

Notes:

- "Primary" denotes the risers are installed in the primary riser connector.
- "Secondary" denotes the risers are installed in the secondary riser connector.
- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height. LP denotes low profile.

- The PCIe x16 riser supports a maximum power of 150W with an HP power cable. The cable supplied with the riser must be used for PCIe card wattages greater than 75W.




# HP ProLiant DL380 G7 Server

The HP ProLiant DL380 G7 Server is used as a control node in HP Cluster Platform configurations.

## HP ProLiant DL380 G7 Server documentation

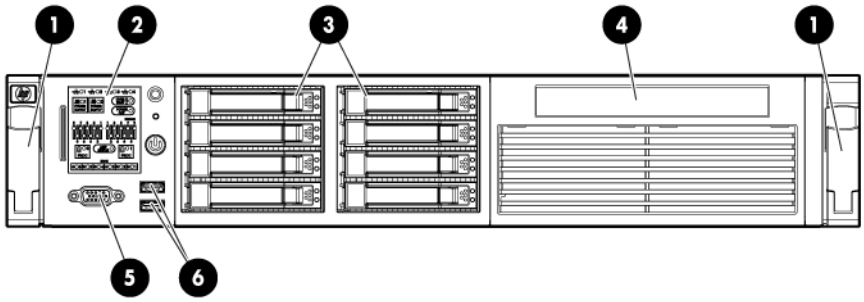
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL380 Generation 7 (G7) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13595_na/13595_na.html).
- For installation and service information, see the *HP ProLiant DL380 G7 Server User Guide* and the *HP ProLiant DL380 G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL380 G7 Server series**.

## Front panel components (DL380 G7)

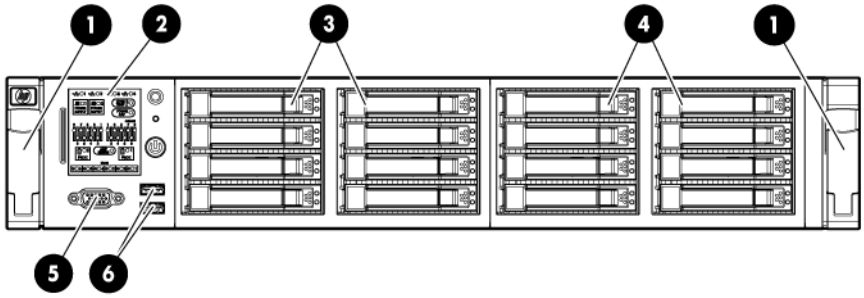
- SFF hard drive model




| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |

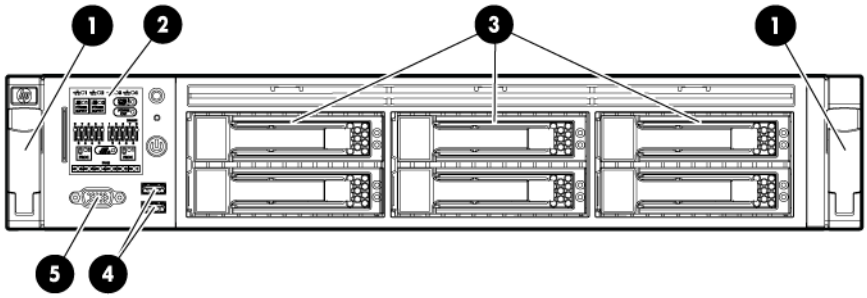
| Item | Description |
|---|---|
| 3 | Hard drive bays |
| 4 | SATA optical drive bay |
| 5 | Video connector |
| 6 | USB connectors (2) |

- SFF hard drive model with optional hard drive cage



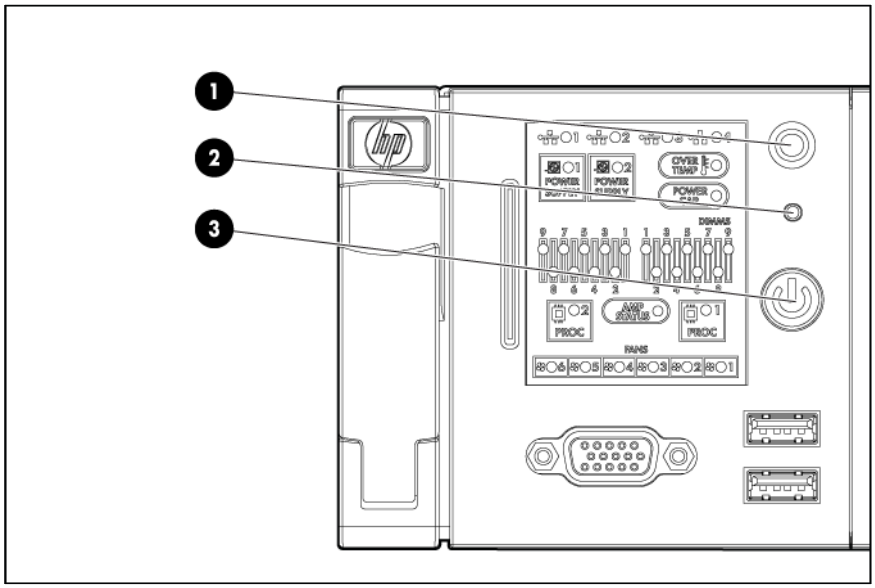

| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |
| 3 | Hard drive bays |
| 4 | Hard drive bays (optional) |
| 5 | Video connector |
| 6 | USB connectors (2) |

- LFF hard drive model




| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Systems Insight Display |
| 3 | Hard drive bays |
| 4 | USB connectors (2) |
| 5 | Video connector |

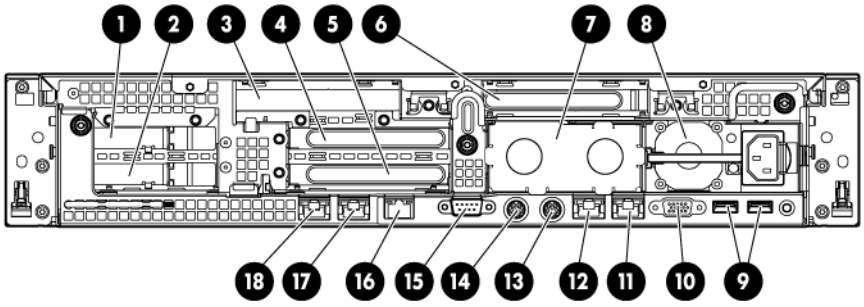
## Front panel LEDs and buttons (DL380 G7)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED and button | Blue = Activated<br>Flashing blue = System being remotely managed<br>Off = Deactivated |
| 2 | System health LED | Green = Normal<br>Amber = System degraded*<br>Red = System critical* |
| 3 | Power On/Standby button and system power LED | Green = System on<br>Amber = System is in standby, but power is still applied.<br>Off = Power cord not attached or power supply failure |

*To identify components in degraded or critical state, see "Systems Insight Display LEDs" in the *HP ProLiant DL380 G7 Server User Guide*. For more information, see "HP ProLiant DL380 G7 Server documentation (on page 23)."

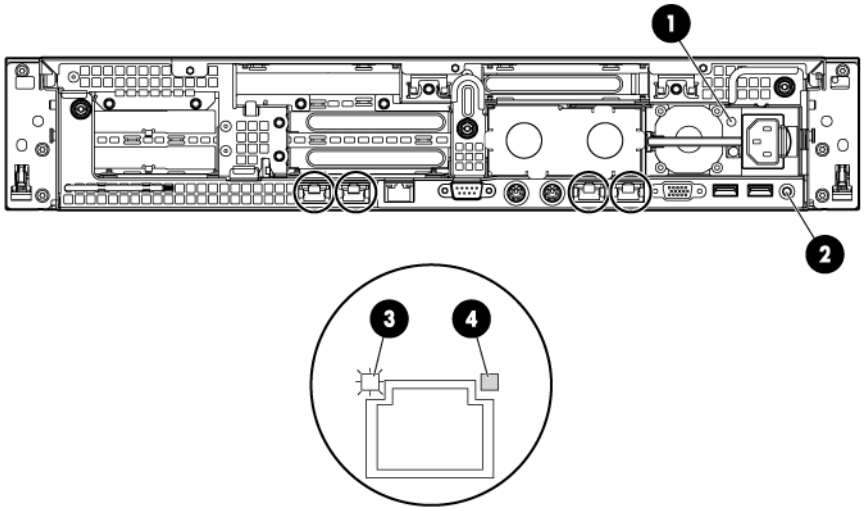
## Rear panel components (DL380 G7)




| Item | Description |
|---|---|
| 1 | PCI slot 5 |
| 2 | PCI slot 6 |
| 3 | PCI slot 4 |

| | |
|---|---|
| 4 | PCI slot 2 |
| 5 | PCI slot 3 |
| 6 | PCI slot 1 |
| 7 | Power supply bay 2 |
| 8 | Power supply bay 1 (populated) |
| 9 | USB connectors (2) |
| 10 | Video connector |
| 11 | NIC 1 connector |
| 12 | NIC 2 connector |
| 13 | Mouse connector |
| 14 | Keyboard connector |
| 15 | Serial connector |
| 16 | iLO connector |
| 17 | NIC 3 connector |
| 18 | NIC 4 connector |

## Rear panel LEDs and buttons (DL380 G7)




| Item | Description | Status |
|---|---|---|
| 1 | Power supply LED | Green = Normal<br>Off = System is off or power supply has failed. |
| 2 | UID LED/button | Blue = Activated<br>Flashing blue = System being managed remotely<br>Off = Deactivated |
| 3 | NIC/iLO activity LED | Green = Network activity<br>Flashing green = Network activity<br>Off = No network activity |
| 4 | NIC/iLO link LED | Green = Network link<br>Off = No network link |

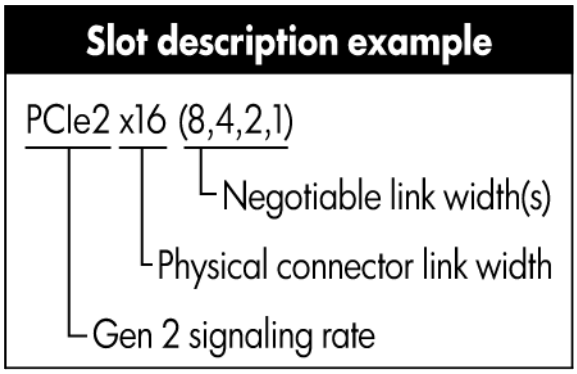
## PCI expansion slot definitions (DL380 G7)

Always install an InfiniBand PCIe HCA in slot 4 of this server.

| Secondary (slot - form factor) | Primary (slot - form factor) | PCIe2 riser slot description | PCIe2 x16 riser slot description | PCIe2/PCI-X riser slot description |
|---|---|---|---|---|
| 4 - FL/FH | 1 - FL/FH | PCIe2 x16 (8,4,1) | PCIe2 x16 (16,8,4,1) | PCI-X 64 bit/133 MHz |
| 5 - LP | 2 - HL/FH | PCIe2 x8 (4,1) | — | PCIe2 x16 (8,4,1) |
| 6 - LP | 3 - HL/FH | PCIe2 x8 (4,1) | — | PCIe2 x8 (4,1) |

Notes:

- "Primary" denotes the risers are installed in the primary riser connector.
- "Secondary" denotes the risers are installed in the secondary riser connector.
- Installing the risers listed in the table above in either the primary or secondary riser connectors determines the form factor of the PCI cards supported by those risers.
- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height. LP denotes low profile.
- The PCIe2 x16 riser supports a maximum power of 150 W with an HP power cable. This cable must be used for PCIe card wattages greater than 75 W.




# HP ProLiant Rack Servers (AMD Opteron)

Several HP ProLiant AMD Opteron servers are supported in HP Cluster Platform solutions. This section presents information for the HP ProLiant servers that are used in HP Cluster Platform solutions only. The content in this section includes the following additional information for the HP ProLiant AMD Opteron servers:

- Front and rear views
- InfiniBand HCA PCI slot assignment
- Specific cable management instructions, if necessary
- HP Cluster Platform specific maintenance instructions, if applicable

## HP ProLiant DL165 G6 Server

The HP ProLiant DL165 G6 Server is used as a control node and a compute node in HP Cluster Platform configurations.

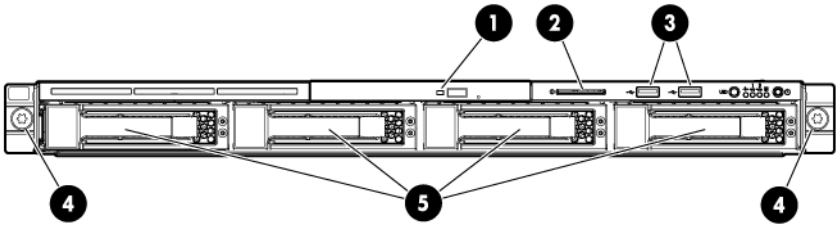
## HP ProLiant DL165 G6 Server documentation

For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL165 Generation 6 (G6) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13367_na/13367_na.pdf).
- For installation and service information, see the *HP ProLiant DL100 Series Server User Guide* and the *HP ProLiant DL165 G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

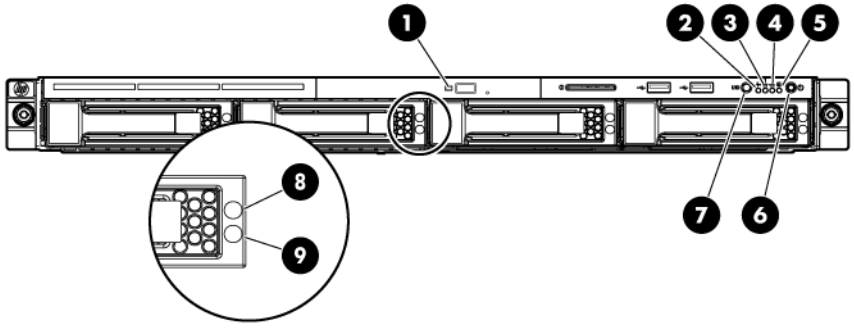
  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL165 G6 Server series**.

## Front panel components (DL165 G6)




| Item | Description |
|---|---|
| 1 | Optical drive |
| 2 | Serial label pull tab |
| 3 | Front USB connector (2) |
| 4 | Rack mounting thumbscrews (2) |
| 5 | Hard drive bays (4) |

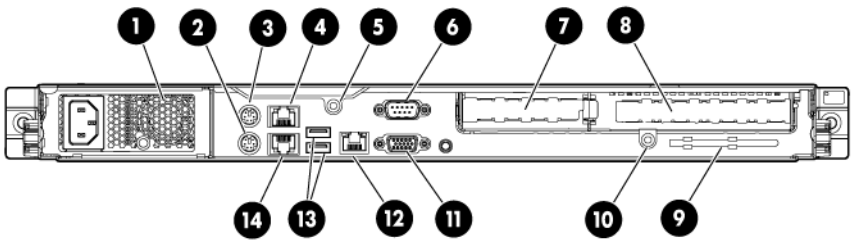
## Front panel LEDs and buttons (DL165 G6)




| Item | Description | Status |
|---|---|---|
| 1 | Optical drive activity LED | Flashing green = Ongoing drive activity |

| Item | Description | Status |
|---|---|---|
| | | Off = No drive activity exists. |
| 2 | Health LED | Green = System health is normal.<br>Amber = System health is degraded.<br>Red = System health is critical.<br>Off = System health is normal (when in standby mode). |
| 3 | NIC 1 link/activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists.<br>If power is off, view the LEDs on the RJ-45 connector on the rear of the server. |
| 4 | NIC 2 link/activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists.<br>If power is off, view the LEDs on the RJ-45 connector on the rear of the server. |
| 5 | Drive activity LED | Green = Drive activity is normal.<br>Off = No drive activity exists. |
| 6 | Power button/LED | Green = Normal (system on)<br>Amber = System is in standby, but power is still applied.<br>Off = Power cord is not attached, or the power supply has failed. |
| 7 | UID LED/button | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |
| 8 | Drive fault/identification LED | Blue = Drive identified<br>Amber = Drive failure<br>Flashing amber = Fault-process activity<br>Off = No fault-process activity |
| 9 | Drive activity LED | Flashing green = Drive activity<br>Off = No drive activity |

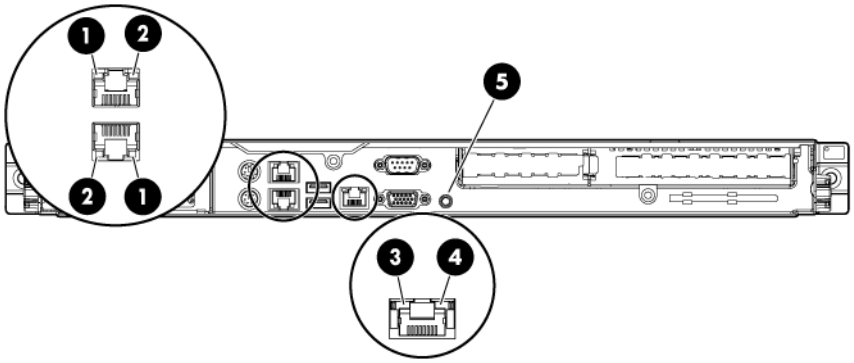
## Rear panel components (DL165 G6)




| Item | Description |
|---|---|
| 1 | Power supply cable connector |
| 2 | Keyboard connector (purple) |

| Item | Description |
|---|---|
| 3 | Mouse connector (green) |
| 4 | NIC 2 connector |
| 5 | Access panel thumbscrew (captive) |
| 6 | Serial connector (teal) |
| 7 | Low-profile/half-length expansion slot |
| 8 | Full-height/full-length expansion slot |
| 9 | T-10/T-15 Torx screwdriver |
| 10 | PCI cage thumbscrew |
| 11 | Video connector |
| 12 | HP Lights-Out 100i Management LAN connector |
| 13 | USB connectors (2) |
| 14 | NIC 1 connector |

## Rear panel LEDs and buttons (DL165 G6)




| Item | Description | Status |
|---|---|---|
| 1 | NIC activity LED | Green = Activity exists.<br>Flashing green = Activity exists.<br>Off = No activity exists. |
| 2 | NIC link LED | Green = 100 Mbps speed link exists.<br>Off = No connection or 10 Mbps speed link exists. |
| 3 | LAN activity LED | Flashing green = Activity exists.<br>Off = No activity exists, or no connection exists. |
| 4 | LAN speed LED | Green = The LAN connection exists and is using a GbE link.<br>Amber = The LAN connection exists and is using a 10 Mbps/100 Mbps link.<br>Off = No connection exists. |
| 5 | UID button/LED | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |

## PCI expansion slot definitions (DL165 G6)

The HP ProLiant DL165 G6 Server has two PCIe slots and one HTX slot on the system board that support one of the following riser assemblies:

- A standard PCIe assembly
- An optional PCI-X assembly
- An optional HTX assembly

| Slot | Type | Form factor | Connector Width | Bus Width |
|---|---|---|---|---|
| 1 | PCIe | Full height/ Full length | x16 | x16 |
| 1 | HTX | Full height/ Full length | — | — |
| 2 | PCIe | Low-profile | x8 | x4 |
| 2 | PCI-X | Low-profile | — | 64-bit, 133 MHz |

Always install an InfiniBand PCIe HCA in slot 1 of this server.

# HP ProLiant DL165 G7 Server

The ProLiant DL165 G7 Server is used as a control node and a compute node in HP Cluster Platform configurations.

## HP ProLiant DL165 G7 Server documentation

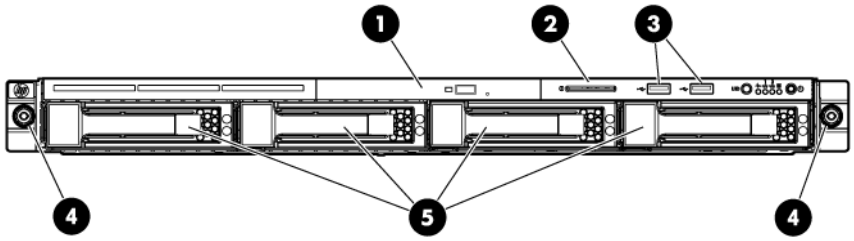
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL165 Generation 7 (G7) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13602_na/13602_na.html).
- For service information, see the *HP ProLiant DL165 G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL165 G7 Server series**.

## Front panel components (DL165 G7)

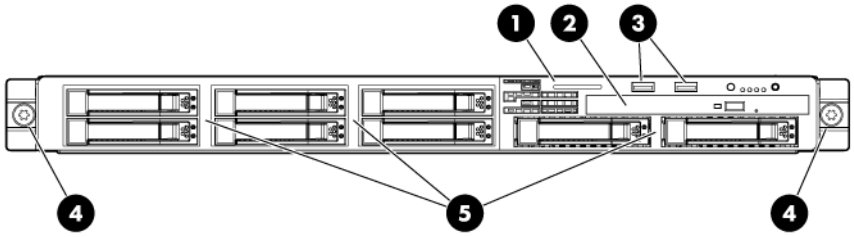
- LFF hard drive model




| Item | Description |
|---|---|
| 1 | Optical drive |

| Item | Description |
|---|---|
| 2 | Serial label pull tab |
| 3 | Front USB connector (2) |
| 4 | Rack-mounting thumbscrews (2) |
| 5 | Hard drive bays (4) |

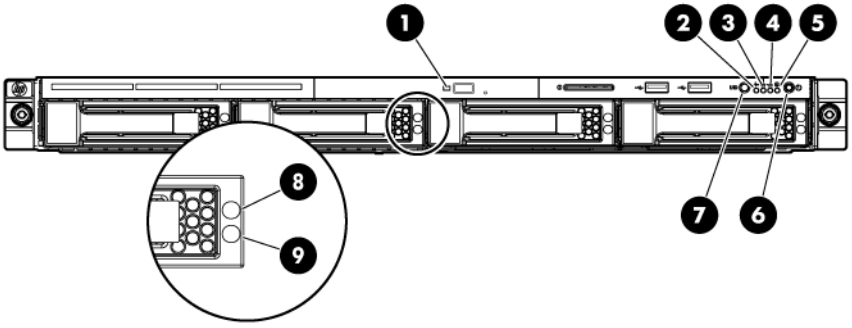
- SFF hard drive model




| Item | Description |
|---|---|
| 1 | Serial label pull tab |
| 2 | Optical drive |
| 3 | Front USB connectors (2) |
| 4 | Rack-mounting thumbscrews (2) |
| 5 | Hard drive bays (8) |

## Front panel LEDs and buttons (DL165 G7)

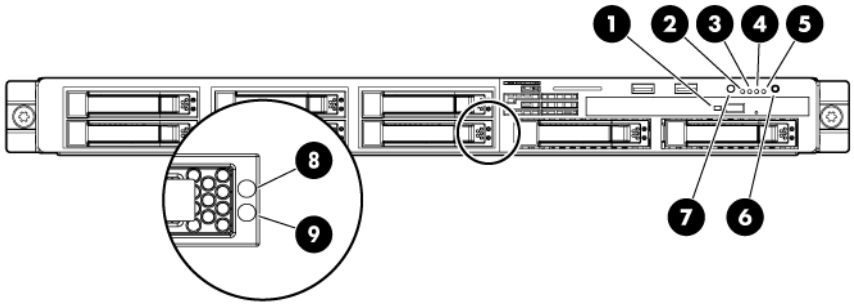
- LFF hard drive model




| Item | Description | Status |
|---|---|---|
| 1 | Optical drive LED | Flashing green = Drive is in use.<br>Off = Drive is not active. |
| 2 | System health LED | Green = System is powering on, and health is normal.<br>Flashing amber = System is powering on or off, and health is degraded.<br>Flashing red = System is powering on or off, and health is critical.<br>Off = System is powering off, and health is normal. |

| Item | Description | Status |
|---|---|---|
| 3 | NIC 1 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |
| 4 | NIC 2 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |
| 5 | Hard drive activity LED | Flashing green = Drive activity is normal.<br>Off = No drive activity exists. |
| 6 | Power button/LED | Green = The system has AC power and is powered on.<br>Flashing green = The system is requesting power-on.<br>Amber = System is in standby, but power is still applied.<br>Off = No AC power is supplied to the system. |
| 7 | UID button/LED | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |
| 8 | Drive online/error LED | Blue = The drive is identified.<br>Amber = The drive is in a failed state.<br>Off = The drive is not in a failed state. |
| 9 | Drive activity LED | Flashing green = Drive activity exists.<br>Off = No drive activity exists. |

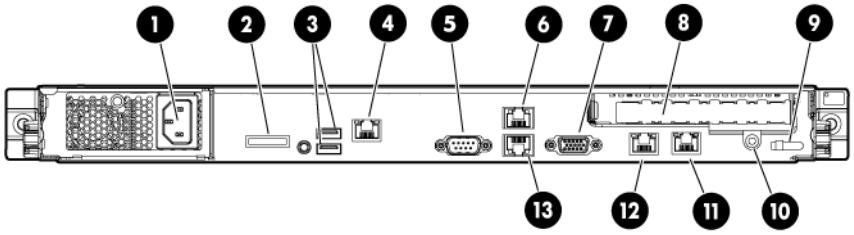
- SFF hard drive model




| Item | Description | Status |
|---|---|---|
| 1 | Optical drive LED | Flashing green = Drive is in use.<br>Off = Drive is not active. |
| 2 | System health LED | Green = System is powering on, and health is normal.<br>Flashing amber = System is powering on or off, and health is degraded.<br>Flashing red = System is powering on or off, and health is critical.<br>Off = System is powering off, and health is normal. |
| 3 | NIC 1 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |

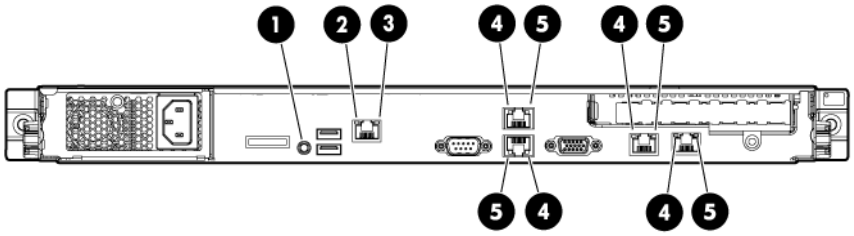
| Item | Description | Status |
|---|---|---|
| 4 | NIC 2 activity LED | Green = Network link exists.<br>Flashing green = Network link and activity exist.<br>Off = No network link exists. |
| 5 | Hard drive activity LED | Flashing green = Drive activity is normal.<br>Off = No drive activity exists. |
| 6 | Power button/LED | Green = The system has AC power and is powered on.<br>Flashing green = The system is requesting power-on.<br>Amber = System is in standby, but power is still applied.<br>Off = No AC power is supplied to the system. |
| 7 | UID LED/button | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |
| 8 | Drive online/error LED | Blue = The drive is identified.<br>Amber = The drive is in a failed state.<br>Off = The drive is not in a failed state. |
| 9 | Drive activity LED | Flashing green = Drive activity exists.<br>Off = No drive activity exists. |

## Rear panel components (DL165 G7)




| Item | Description |
|---|---|
| 1 | Power supply cable connector |
| 2 | SD card slot (optional) |
| 3 | USB connectors (2) |
| 4 | Management connector (optional) |
| 5 | Serial connector |
| 6 | NIC 4 connector |
| 7 | Video connector |
| 8 | Full-height/full-length PCI expansion card slot |
| 9 | T-10/T-15 Torx screwdriver |
| 10 | PCI cage screw |
| 11 | NIC 1 connector |
| 12 | NIC 2 connector |
| 13 | NIC 3 connector |

## Rear panel LEDs and buttons (DL165 G7)




| Item | Description | Status |
|---|---|---|
| 1 | UID button/LED | Blue = Identification is activated.<br>Flashing blue = System is being managed remotely.<br>Off = Identification is deactivated. |
| 2 | Pilot 2 NIC activity LED | Flashing amber = Activity exists.<br>Off = No activity exists. |
| 3 | Pilot 2 NIC link LED | Green = Link exists at 100 Mbps speed.<br>Off = No link exists, or link exists at 10 Mbps speed. |
| 4 | NIC speed LED | Green = Link exists at 10 Mbps/100 Mbps/1G/10G.<br>Off = No link exists, or link exists at 10 Mbps speed. |
| 5 | NIC activity LED | Green = Link exists.<br>Flashing green = Activity and link exists.<br>Off = No network activity exists. |

## PCI expansion slot definitions (DL165 G7)

The HP ProLiant DL165 G7 Server has two PCIe2 slots on the system board.

| Slot | Type | Form factor | Connector Width | Bus Width |
|---|---|---|---|---|
| 1 | PCIe2 | Full-height/full-length | x16 | x16 |
| 1 | PCIe2 | Half-length/full-length | x8 | x4 |
| 2* | PCIe2 | Half-height/low-profile | x8 | x4 |

*To access slot 2 (the low-profile internal only slot), slot 1 may only be populated with a half-length, full-height form factor expansion board.

Always install an InfiniBand PCIe HCA in slot 1 of this server.

# HP ProLiant DL385 G6 Server

The HP ProLiant DL385 G6 Server is used as a control node and utility node in HP Cluster Platform configurations.

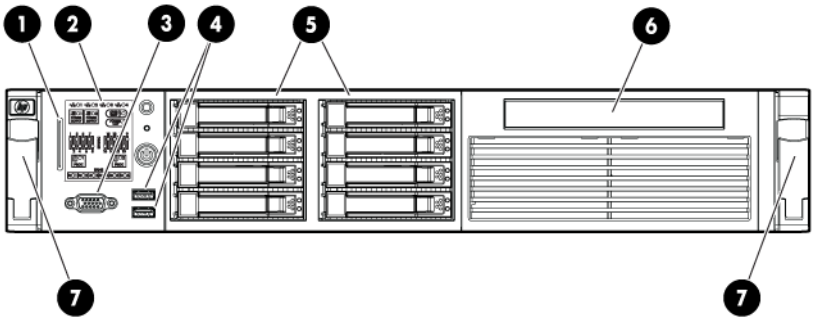
## HP ProLiant DL385 G6 Server documentation

For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL385 Generation 6 (G6) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13012_na/13012_na.html).
- For installation and service information, see the *HP ProLiant DL385 G6 Server User Guide* and *HP ProLiant DL385 G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL385 G6 Server series**.

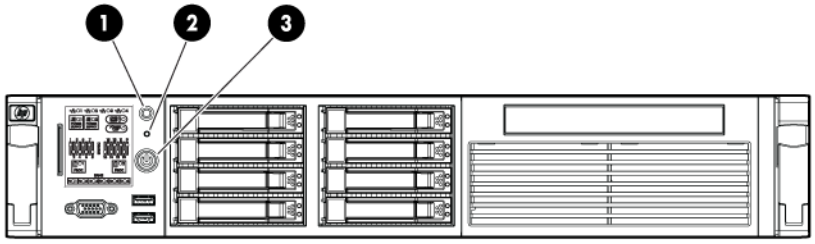
## Front panel components (DL385 G6)




| Item | Description |
|---|---|
| 1 | Serial number label |
| 2 | Systems Insight Display |
| 3 | Video connector |
| 4 | USB connectors (2) |
| 5 | Hard drive bays |
| 6 | SATA optical drive bay |
| 7 | Quick release levers (2) |

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

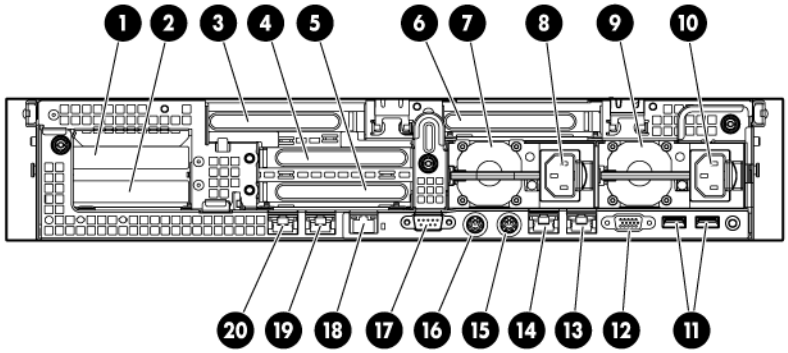
## Front panel LEDs and buttons (DL385 G6)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED button | Blue = Activated<br>Flashing blue = System being remotely managed |

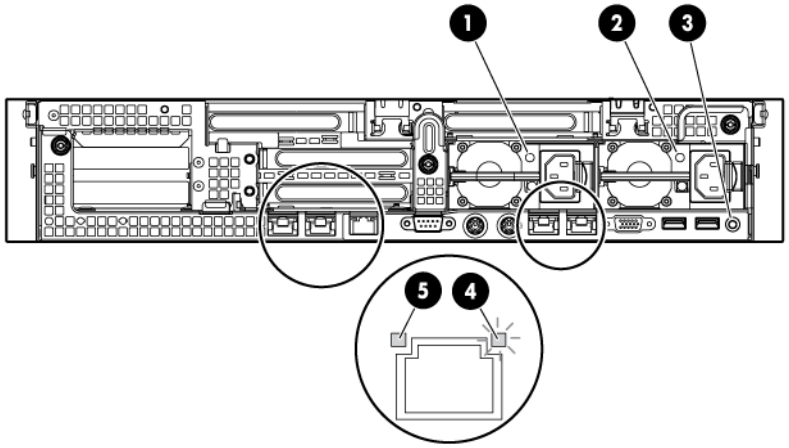
| Item | Description | Status |
|---|---|---|
| | | Off = Deactivated |
| 2 | Health LED | Green = Normal<br>Flashing amber = System degraded. To identify a component in a degraded state, see "Systems Insight Display LEDs" in the server user guide.<br>Flashing red = System critical. To identify a component in a critical state, see "Systems Insight Display LEDs" in the server user guide. |
| 3 | Power On/Standby button and system power LED | Green = System on<br>Amber = System shut down, but power still applied<br>Off = Power cord not attached or power supply failure |

## Rear panel components (DL385 G6)




| Item | Description | Color |
|---|---|---|
| 1 | PCI slot 5 | — |
| 2 | PCI slot 6 | — |
| 3 | PCI slot 4 | — |
| 4 | PCI slot 2 | — |
| 5 | PCI slot 3 | — |
| 6 | PCI slot 1 | — |
| 7 | Power supply 2 | — |
| 8 | Power supply 2 connector | — |
| 9 | Power supply 1 | — |
| 10 | Power supply 1 connector | — |
| 11 | USB connectors (2) | Black |
| 12 | Video connector | Blue |
| 13 | NIC 1 connector | — |
| 14 | NIC 2 connector | — |
| 15 | Mouse connector | Green |
| 16 | Keyboard connector | Purple |
| 17 | Serial connector | — |
| 18 | iLO 2 connector | — |
| 19 | NIC 3 connector | — |
| 20 | NIC 4 connector | — |

## Rear panel LEDs and buttons (DL385 G6)




| Item | Description | Status |
|---|---|---|
| 1 | Power supply 2 power LED | Green = Normal<br>Off = System is off or power supply has failed. |
| 2 | Power supply 1 power LED | Green = Normal<br>Off = System is off or power supply has failed. |
| 3 | UID LED button | Blue = Activated<br>Flashing blue = System being remotely managed<br>Off = Deactivated |
| 4 | NIC activity LED | Green = Network activity<br>Flashing green = Network activity<br>Off = No network activity |
| | iLO 2 link LED* | Green = Network link<br>Off = No network link |
| 5 | NIC link LED | Green = Network link<br>Off = No network link |
| | iLO 2 activity LED* | Green = Network activity<br>Flashing green = Network activity<br>Off = No network activity |

* iLO 2 LED positions are reversed from the embedded NIC LEDs

## PCI expansion slot definitions (DL385 G6)

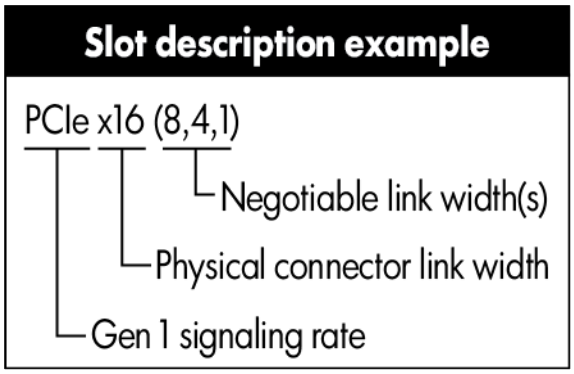
Always install an InfiniBand PCIe HCA in slot 4 of this server.

| Primary (slot - form factor) | Secondary (slot - form factor) | PCIe riser slot description | PCIe x16 riser slot description | PCIe/PCI-X riser slot description |
|---|---|---|---|---|
| 1 - FL/FH | 4 - FL/FH | PCIe x16 (8,4,1) | PCIe x16 (16,8,4,1) | PCI-X 64 bit/133 MHz |
| 2 - HL/FH | 5 - LP | PCIe x8 (4,1) | — | PCIe x16 (8,4,1) |
| 3 - HL/FH | 6 - LP | PCIe x8 (4,1) | — | PCIe x8 (4,1) |

Notes:

- "Primary" denotes the risers are installed in the primary riser connector.
- "Secondary" denotes the risers are installed in the secondary riser connector.

- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height. LP denotes low profile.
- The PCIe x16 riser supports a maximum power of 225W with an HP power cable. This cable must be used for PCIe card wattages greater than 75W.




# HP ProLiant DL385 G7 Server

The HP ProLiant DL385 G7 Server is used as a control node and utility node in HP Cluster Platform configurations.

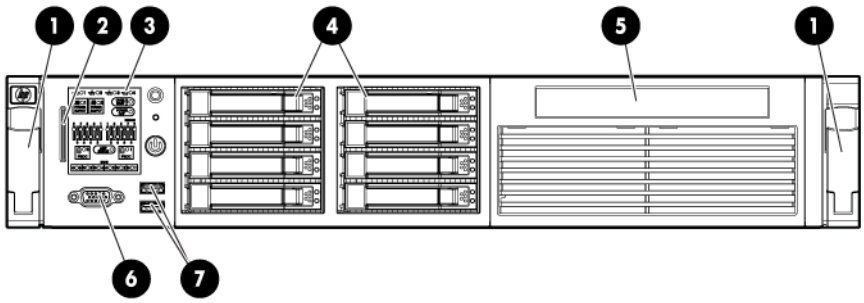
## HP ProLiant DL385 G7 Server documentation

For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL385 Generation 7 (G7) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13594_na/13594_na.pdf).
- For installation and service information, see the *HP ProLiant DL385 G7 Server User Guide* and *HP ProLiant DL385 G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL385 G7 Server series**.

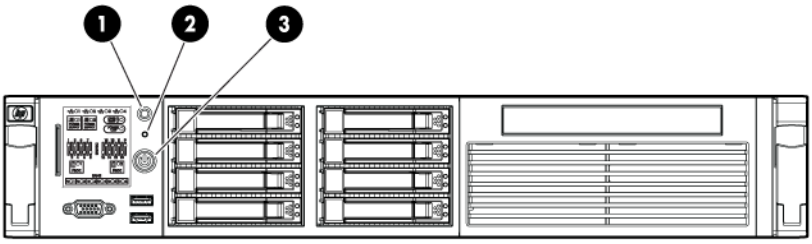
## Front panel components (DL385 G7)




| Item | Description |
|---|---|
| 1 | Quick release levers (2) |
| 2 | Serial number label |

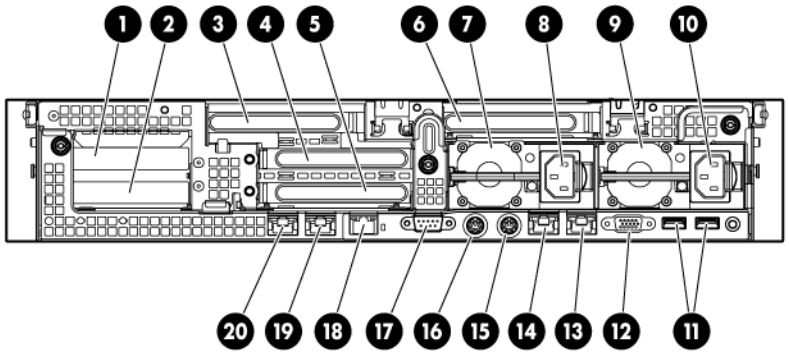
| Item | Description |
|---|---|
| 3 | Systems Insight Display |
| 4 | Hard drive bays |
| 5 | SATA optical drive bay |
| 6 | Video connector |
| 7 | USB connectors (2) |

## Front panel LEDs and buttons (DL385 G7)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED button | Blue = Activated<br>Flashing blue = System being remotely managed<br>Off = Deactivated |
| 2 | Health LED | Green = Normal<br>Flashing amber = System degraded<br>Flashing red = System critical |
| 3 | Power On/Standby button and system power LED | Green = System on<br>Flashing green = Waiting for power due to group power capping<br>Amber = System shut down but power still applied<br>Off = Power cord not attached or power supply failure |

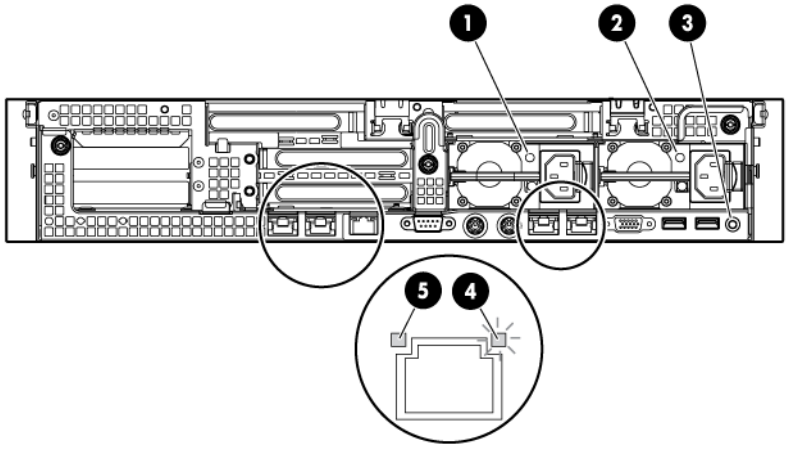
## Rear panel components (DL385 G7)




| Item | Description | Color |
|---|---|---|
| 1 | PCI slot 5 | — |
| 2 | PCI slot 6 | — |
| 3 | PCI slot 4 | — |
| 4 | PCI slot 2 | — |

| | | |
|---|---|---|
| 5 | PCI slot 3 | — |
| 6 | PCI slot 1 | — |
| 7 | Power supply 2 | — |
| 8 | Power supply 2 connector | — |
| 9 | Power supply 1 | — |
| 10 | Power supply 1 connector | — |
| 11 | USB connectors (2) | Black |
| 12 | Video connector | Blue |
| 13 | NIC 1 connector | — |
| 14 | NIC 2 connector | — |
| 15 | Mouse connector | Green |
| 16 | Keyboard connector | Purple |
| 17 | Serial connector | — |
| 18 | iLO connector | — |
| 19 | NIC 3 connector | — |
| 20 | NIC 4 connector | — |

## Rear panel LEDs and buttons (DL385 G7)




| Item | Description | Status |
|---|---|---|
| 1 | Power supply 2 power LED | Green = Normal<br>Off = System is off, or power supply has failed. |
| 2 | Power supply 1 power LED | Green = Normal<br>Off = System is off, or power supply has failed. |
| 3 | UID LED button | Blue = Activated<br>Flashing blue = System being remotely managed<br>Off = Deactivated |
| 4 | NIC and iLO 3 activity LED | Green = Network activity<br>Flashing green = Network activity<br>Off = No network activity |
| 5 | NIC and iLO 3 link LED | Green = Network link<br>Off = No network link |

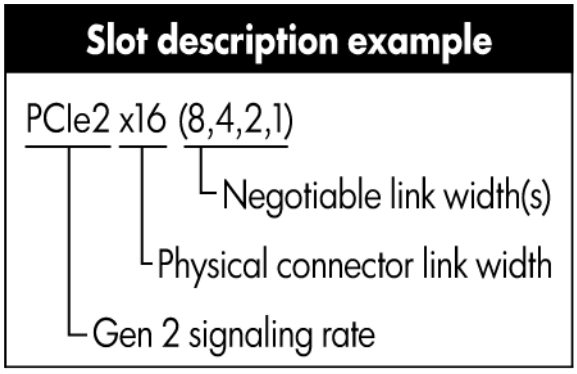
## PCI expansion slot definitions (DL385 G7)

Always install an InfiniBand PCIe HCA in slot 1 of this server.

| Secondary (slot - form factor) | Primary (slot - form factor) | PCIe2 riser slot description | PCIe2 riser slot description | PCIe2 x16 riser slot description | PCIe2/PCI-X riser slot description |
|---|---|---|---|---|---|
| 4 - FL/FH | 1 - FL/FH | PCIe2 x16 (8,4,2,1) | PCIe2 x16 (8,4,2,1) | PCIe2 x16 (16,8,4,2,1) | PCI-X 64 bit/100 MHz |
| 5 - LP | 2 - HL/FH | PCIe2 x8 (4,2,1) | PCIe2x16 (8,4,2,1) | — | PCI-X 64 bit/100 MHz) |
| 6 - LP | 3 - HL/FH | PCIe2 x8 (4,2,1) | — | — | PCIe2 x8 (8,4,2,1) |

Notes:

- "Primary" denotes the risers are installed in the primary riser connector.
- "Secondary" denotes the risers are installed in the secondary riser connector.
- Installing the risers listed in the table above in either the primary or secondary riser connectors determines the form factor of the PCI cards supported by those risers.
- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height. LP denotes low profile.
- The PCIe2 x16 riser supports a maximum power of 225W with an HP power cable. This cable must be used for PCIe card wattages greater than 75W.




# HP ProLiant DL585 G6 Server

The HP ProLiant DL585 G6 Server is used as a control node, utility node, or compute node in HP Cluster Platform configurations.

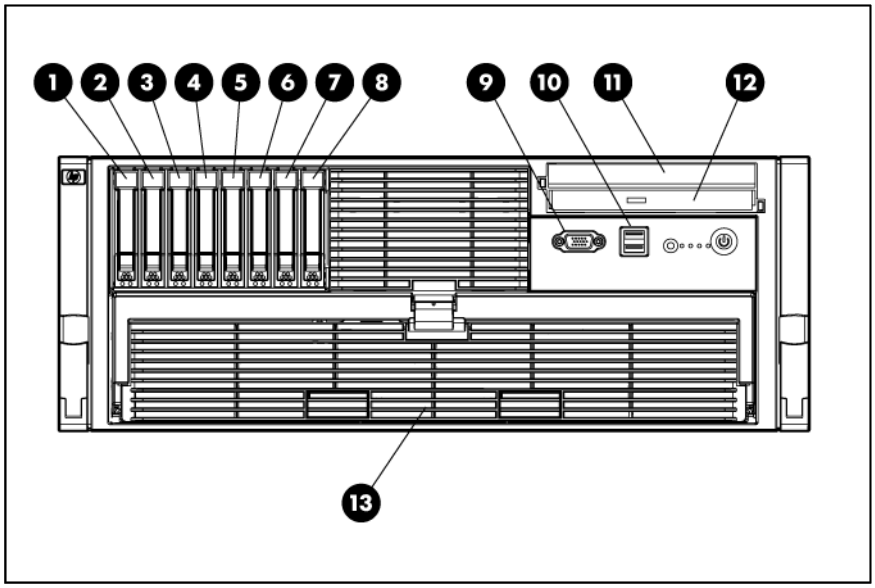
## HP ProLiant DL585 G6 Server documentation

For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant DL585 Generation 6 (G6) QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13373_na/13373_na.html).
- For installation and service information, see the *HP ProLiant DL585 G6 Server User Guide* and *HP ProLiant DL585 G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

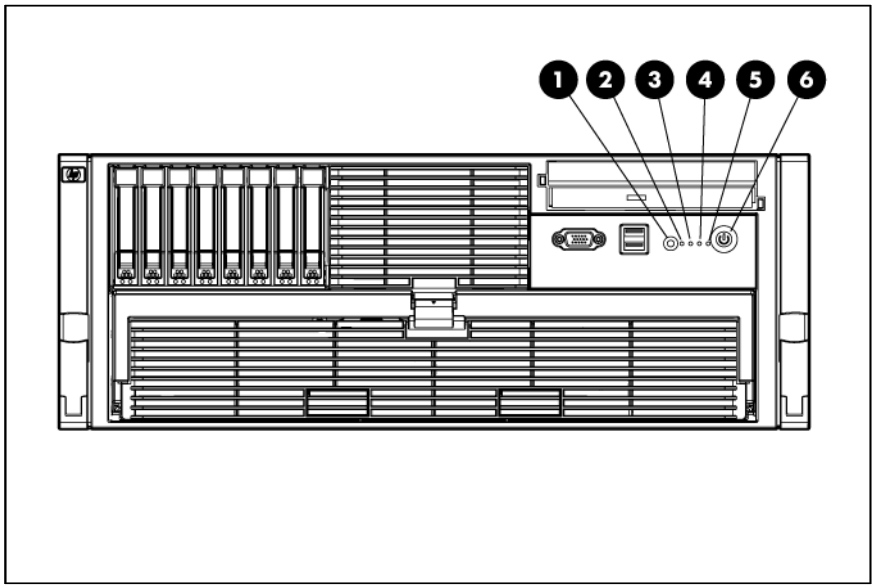
Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant DL585 G6 Server series**.

## Front panel components (DL585 G6)



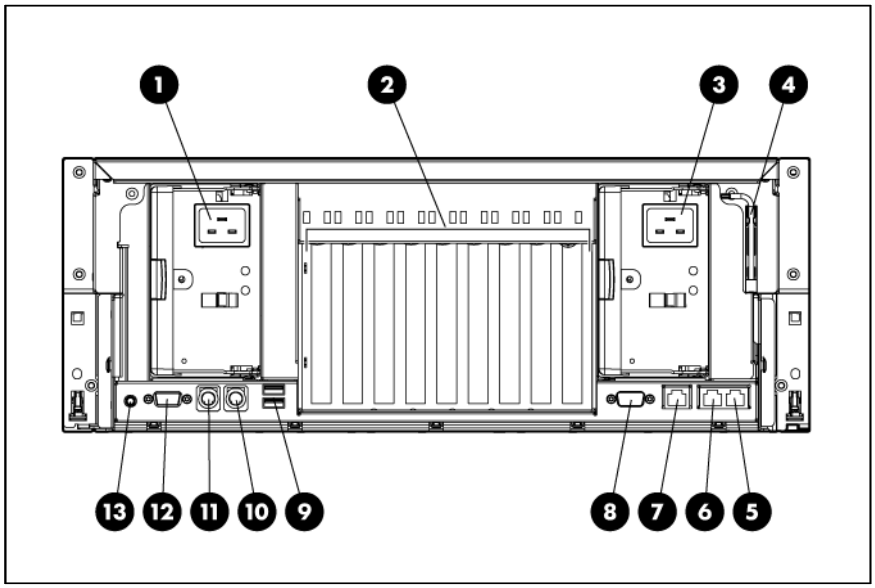

| Item | Description |
|---|---|
| 1 | Hard drive bay 1 |
| 2 | Hard drive bay 2 |
| 3 | Hard drive bay 3 |
| 4 | Hard drive bay 4 |
| 5 | Hard drive bay 5 |
| 6 | Hard drive bay 6 |
| 7 | Hard drive bay 7 |
| 8 | Hard drive bay 8 |
| 9 | Video connector |
| 10 | USB connectors (2) |
| 11 | Media drive blank or optional media drive |
| 12 | DVD drive |
| 13 | Processor memory module |

## Front panel LEDs and buttons (DL585 G6)



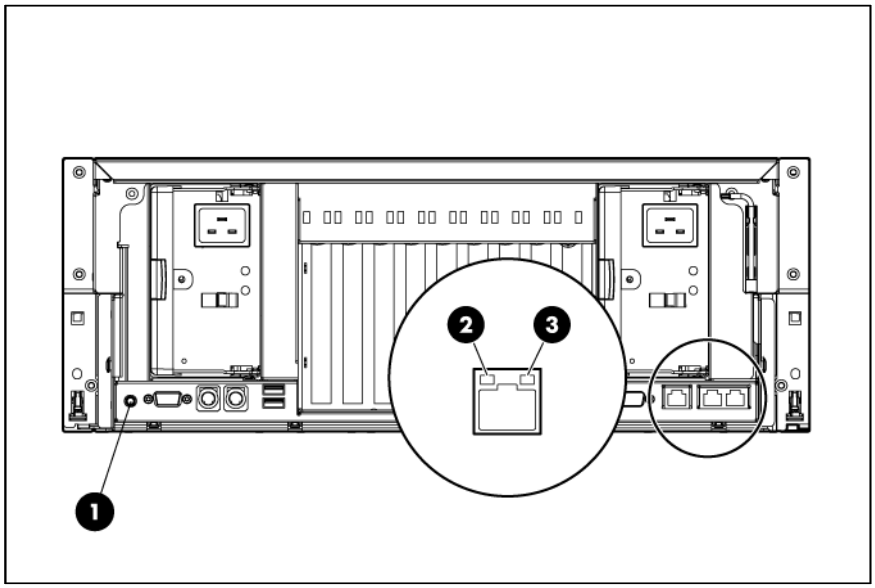

| Item | Description | Status |
|---|---|---|
| 1 | UID switch and LED | Blue = Activated<br>Flashing blue = Server managed remotely<br>Off = Deactivated |
| 2 | Internal system health LED | Green = Normal (system on)<br>Flashing amber = System health degraded<br>Flashing red = System health critical<br>Off = Normal (system off) |
| 3 | External system health LED | Green = Normal (system on)<br>Flashing amber = System health degraded<br>Flashing red = System health critical<br>Off = Normal (system off) |
| 4 | NIC 1 link/activity LED | Green = Linked to network<br>Flashing green = Linked with activity on the network<br>Off = No network connection |
| 5 | NIC 2 link/activity LED | Green = Linked to network<br>Flashing green = Linked with activity on the network<br>Off = No network connection |
| 6 | Power on/Standby button and LED | Amber = System has AC power and is in standby mode<br>Green = System has AC power and is turned on<br>Off = System has no AC power |

## Rear panel components (DL585 G6)




| Item | Description |
|---|---|
| 1 | Redundant hot-plug power supply (optional) |
| 2 | PCI Express and PCI-X non-hot-plug expansion slots |
| 3 | Hot-plug power supply (primary) |
| 4 | T-15 Torx screwdriver |
| 5 | NIC connector 1 |
| 6 | NIC connector 2 |
| 7 | iLO connector |
| 8 | Serial connector |
| 9 | USB connectors (2) |
| 10 | Keyboard connector |
| 11 | Mouse connector |
| 12 | Video connector |
| 13 | Rear UID button and LED |

## Rear panel LEDs and buttons (DL585 G6)




| Item | Description | LED color | Status |
|---|---|---|---|
| 1 | UID LED | Blue | On = Activated<br>Flashing = Server remotely managed<br>Off = Deactivated |
| 2 | Activity LED | Green | On or flashing = Network activity<br>Off = No network activity |
| 3 | Link LED | Green | On = Linked to network<br>Off = Not linked to network |

## PCI expansion slot definitions (DL585 G6)

Always install an InfiniBand PCIe HCA in slot 7 of this server.

| Slot | Description |
|---|---|
| 1 | PCI-X non-hot-plug expansion slot, 64-bit/100-MHz (half-length) |
| 2 | PCI-X non-hot-plug expansion slot, 64-bit/100-MHz (full-length) |
| 3 | PCIe x4 non-hot-plug expansion slot (full-length) |
| 4 | PCIe x4 non-hot-plug expansion slot (full-length) |
| 5 | PCIe x8 non-hot-plug expansion slot (full-length) |
| 6 | PCIe x4 non-hot-plug expansion slot (full-length) |
| 7 | PCIe x8 non-hot-plug expansion slot (full-length) |
| 8 | PCIe x8 non-hot-plug expansion slot (full-length) |
| 9 | PCIe x4 non-hot-plug expansion slot (half-length) |

# HP ProLiant servers (scalable)

## HP ProLiant SL6000 G6 Servers

The following HP ProLiant SL6000 Scalable System servers are supported in the HP Cluster Platform using the HP ProLiant z6000 G6 Chassis:

- HP ProLiant SL2x170z G6 Server (on page 52)
- HP ProLiant SL165z G7 Server (on page 60)

## HP ProLiant SL6500 G6 Servers

The following HP ProLiant SL6500 Scalable System servers are supported in the HP Cluster Platform using the HP ProLiant s6500 G6 Chassis:

- HP ProLiant SL170s G6 Server (on page 47)
- HP ProLiant SL390s G7 Server (on page 54)

## HP ProLiant Scalable Servers (Intel® Xeon®)

Several Intel® Xeon® servers are supported in HP Cluster Platform solutions. This section presents information for the HP ProLiant servers that are used in HP Cluster Platform solutions only. The content in this section includes the following additional information for the ProLiant Intel® Xeon® servers:

- Front and rear views
- InfiniBand HCA PCI slot assignment
- Specific cable management instructions, if necessary
- HP Cluster Platform specific maintenance instructions, if applicable

HP SL series-based Cluster Platforms require the use of the HP 10000 Series 1200mm Deep Rack. For more information, see the HP website (http://h18004.www1.hp.com/products/servers/proliantstorage/racks/1200series/index.html).

## HP ProLiant SL170s G6 Server

The HP ProLiant SL170s G6 Server is used as a compute node in HP Cluster Platform configurations.

### HP ProLiant SL170s G6 Server documentation

For server-specific information, see the server documentation:

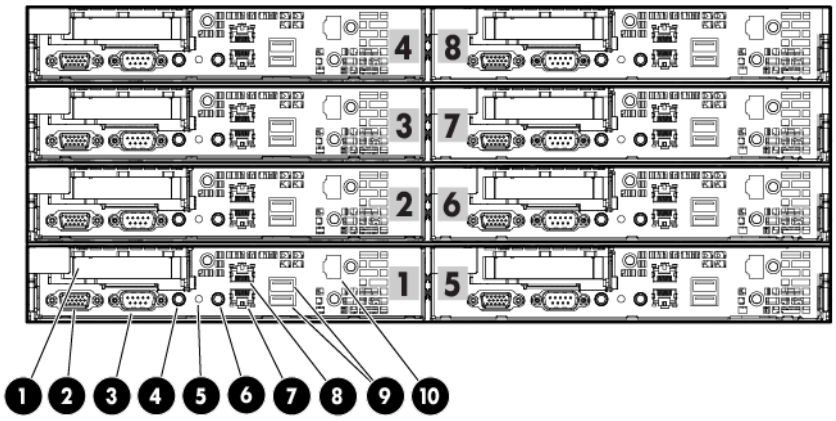
- For a complete list of features and specifications, see the *HP ProLiant SL170s G6 Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13789_na/13789_na.html).

- For installation and service information, see the *HP ProLiant SL1000/6000 Scalable System User Guide* and the *HP ProLiant SL170s Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant SL170s Server series**.

## Front panel components (SL170s G6)

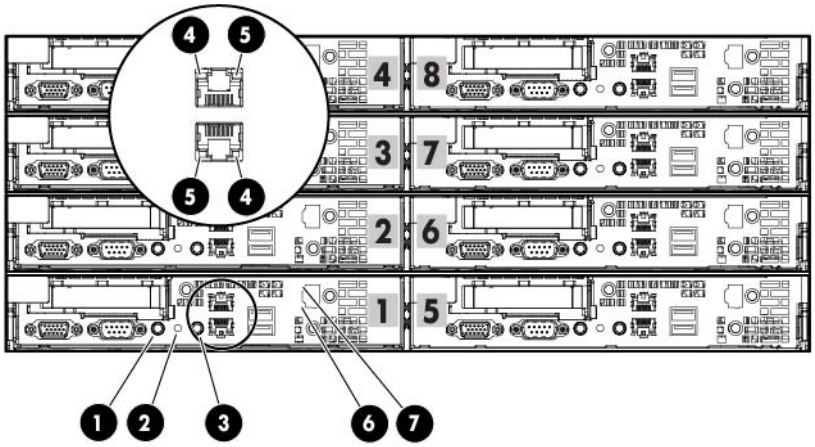
The table below describes components for one server only. Each server contains the same components in the same orientation. The figure describes the front panel components for one of eight SL170s servers in the s6500 chassis.




| Item | Description |
|---|---|
| 1 | Front PCIe bracket (LP slot) |
| 2 | Video connector |
| 3 | Serial connector |
| 4 | UID LED |
| 5 | Health LED |
| 6 | Power LED |
| 7 | 1 GbE NIC 1 LAN Port |
| 8 | 1 GbE NIC 2 LAN Port/Shared Management port |
| 9 | USB 2.0 port (2) |
| 10 | Dedicated Management Port (IPMI) (optional) |

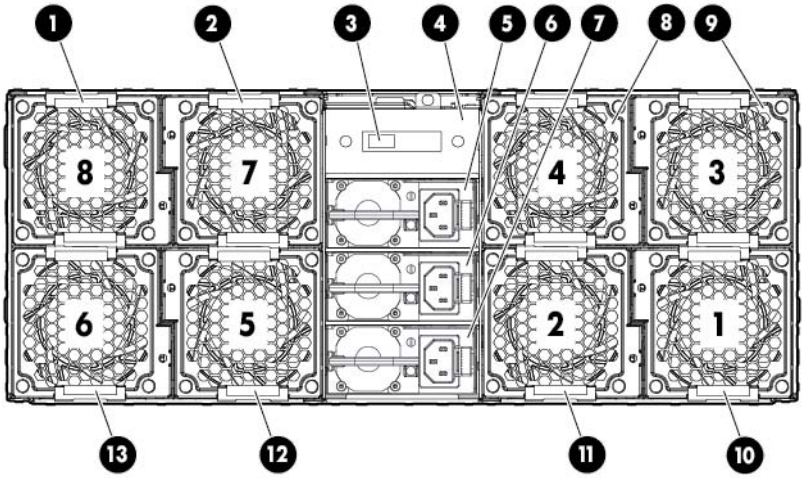
## Front panel LEDs and buttons (SL170s G6)

The table below describes LEDs and buttons for one server only. Each server contains the same LEDs and buttons in the same orientation.



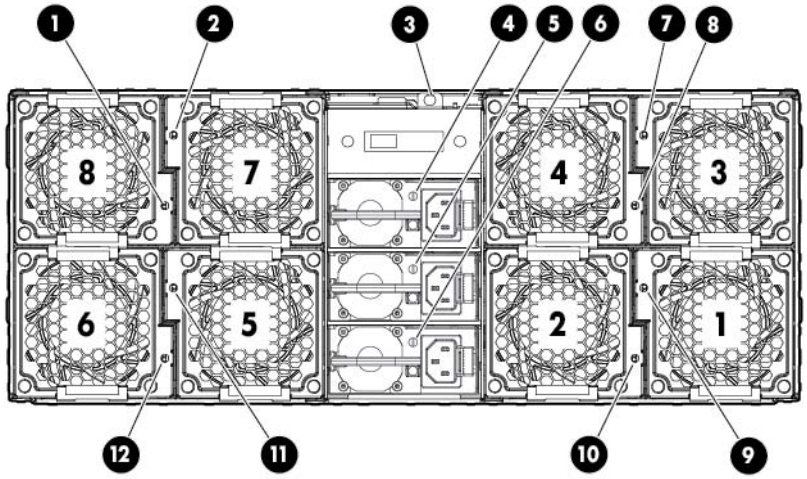

| Item | Description | Status |
|---|---|---|
| 1 | UID LED/button | Blue = Identification<br>Flashing blue = The system is being remotely managed.<br>Off = Deactivated |
| 2 | Health LED | Red = Critical system failure detected<br>Amber = The system is degraded.<br>Green = The system is powered on, and no failure is detected.<br>Off = The system is off, and no failure was detected prior to system power down. |
| 3 | Power button/LED | Green = Normal<br>Amber = The server is powered off or in a hibernation state with AC power.<br>Red = Critical error. For more information, see SEL. |
| 4 | NIC activity LED | Flashing green = Network data activity exists.<br>Off = No network data activity exists, or no network connection exists. |
| 5 | NIC speed LED | Green = The LAN connection is using a GbE link.<br>Amber = The LAN connection is using a 10 Mbps/100 Mbps link.<br>Off = No LAN connection exists. |
| 6 | Management connector activity LED (iLO) | Flashing amber = LAN is active. |
| 7 | Management connector link LED (iLO) | Green = Linking at 100 Mbps speed<br>Off = No connection exists or linking at 10 Mbps speed. |

## Rear panel components (SL170s G6)




| Item | Description |
|---|---|
| 1 | Fan 8 |
| 2 | Fan 7 |
| 3 | RJ4–5 connector |
| 4 | Optional power supply bay/SL–APM interface |
| 5 | Power supply 3 |
| 6 | Power supply 2 |
| 7 | Power supply 1 |
| 8 | Fan 4 |
| 9 | Fan 3 |
| 10 | Fan 1 |
| 11 | Fan 2 |
| 12 | Fan 5 |
| 13 | Fan 6 |

# Rear panel LEDs & buttons (SL170s G6)




| Item | Description | Status |
|---|---|---|
| 1 | Fan 8 power LED | Off—Normal<br>Amber—Fan has failed. |
| 2 | Fan 7 power LED | Off—Normal<br>Amber—Fan has failed. |
| 3 | UID LED button | Blue—Activated<br>Flashing blue—System is being remotely managed.<br>Off—Deactivated |
| 4 | Power supply 3 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 5 | Power supply 2 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 6 | Power supply 1 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 7 | Fan 3 power LED | Off—Normal<br>Amber—Fan has failed. |
| 8 | Fan 4 power LED | Off—Normal<br>Amber—Fan has failed. |
| 9 | Fan 1 power LED | Off—Normal<br>Amber—Fan has failed. |
| 10 | Fan 2 power LED | Off—Normal<br>Amber—Fan has failed. |
| 11 | Fan 5 power LED | Off—Normal<br>Amber—Fan has failed. |
| 12 | Fan 6 power LED | Off—Normal<br>Amber—Fan has failed. |

## PCI expansion slot definitions (SL170s G6)

The HP ProLiant SL170s G6 Server has one low profile x16 PCIe2 expansion slot on the system board.

# HP ProLiant SL2x170z G6 Server

The HP ProLiant SL2x170z (four nodes per 2U chassis) is used as a compute node in HP Cluster Platform configurations and consists of four independent HP ProLiant SL2x170z G6 Servers, two per 1U tray, installed in the 2U HP ProLiant z6000 G6 Chassis.

## HP ProLiant SL2x170z G6 Server documentation

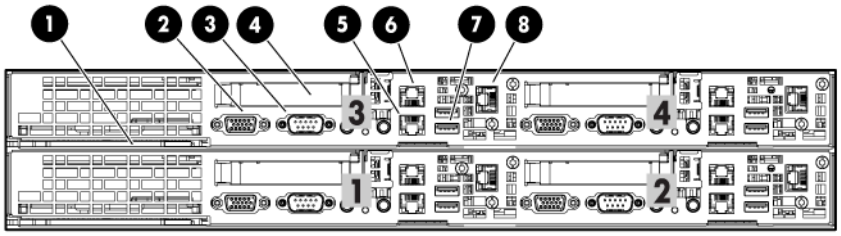
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant SL2x170z Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13383_na/13383_na.html).
- For installation and service information, see the *HP ProLiant SL1000/6000 Scalable System User Guide* and the *HP ProLiant SL2x170z Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant SL2x170z G6 Server series**.

## Front panel components (SL2x170z G6)

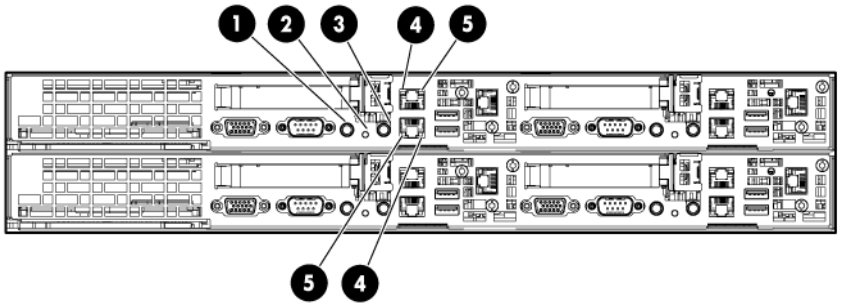
The table below describes components for one server only. Each server contains the same components in the same orientation.




| Item | Description |
|---|---|
| 1 | Tray handle and latch |
| 2 | Video connector |
| 3 | Serial connector |
| 4 | PCI slot |
| 5 | NIC 1 connector |
| 6 | NIC 2 connector |
| 7 | USB connectors (2) |
| 8 | Management (IPMI) connector |

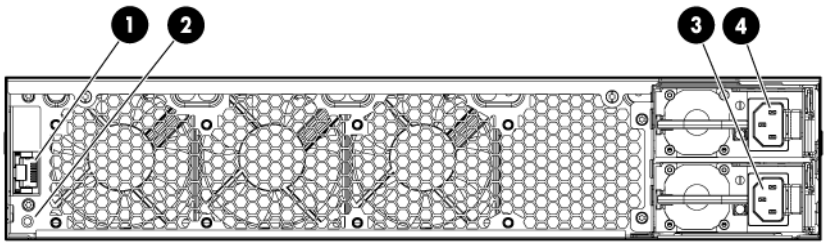
## Front panel LEDs and buttons (SL2x170z G6)

The table below describes LEDs and buttons for one server only. Each server contains the same LEDs and buttons in the same orientation.




| Item | Description | Status |
|---|---|---|
| 1 | UID LED/button | Blue = Identification<br>Flashing blue = The system is being remotely managed.<br>Off = Deactivated |
| 2 | Health LED | Red = Critical system failure detected.<br>Amber = The system is degraded.<br>Green = The system is powered on, and no failure is detected.<br>Off = The system is off, and no failure was detected prior to system power down. |
| 3 | Power button/LED | Green = Normal<br>Amber = The server is powered off or is in a hibernation state with AC power.<br>Red = Critical error |
| 4 | NIC activity LED | Flashing green = Network data activity exists.<br>Off = No network data activity exists, or no network connection exists. |
| 5 | NIC speed LED | Green = The LAN connection is using a GbE link.<br>Amber = The LAN connection is using a 10 Mbps/100 Mbps link.<br>Off = No LAN connection exists. |

## Rear panel components, LEDs, and buttons (2xSL170z G6)




| Item | Description |
|---|---|
| 1 | RJ-45 connector |
| 2 | UID LED/button |
| 3 | Power supply cable connector 1 |

| Item | Description |
|---|---|
| 4 | Power supply cable connector 2 |

## PCI expansion slot definitions (SL2x170z G6)

The HP ProLiant SL2x170z G6 Server has one low profile x16 PCIe2 expansion slot for each node.

# HP ProLiant SL390s G7 Server

The HP ProLiant SL390s G7 Server is used as a compute node in HP Cluster Platform configurations.

## HP ProLiant SL390s G7 Server documentation

For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant SL390s G7 Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13713_na/13713_na.html).
- For installation and service information, see the *HP ProLiant SL6000/6500 Scalable System User Guide* and the *HP ProLiant SL390s G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

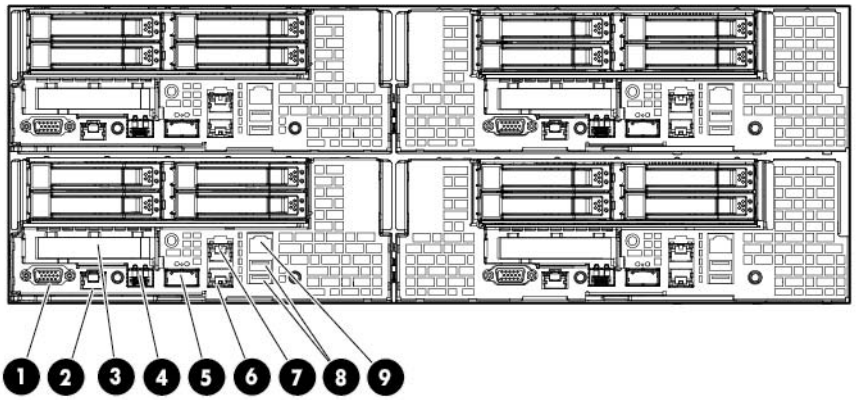
  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant SL390s Server series**.

## Front panel components (SL390s G7)

The tables in this section describe components for one server only. Each server contains the same components in the same orientation. The figures describe the front panel components for one of four or eight SL390s servers in the s6500 chassis.

The HP Cluster Platform supports the following two models of the HP ProLiant SL390s G7 Server:

- Four-node (2U) server

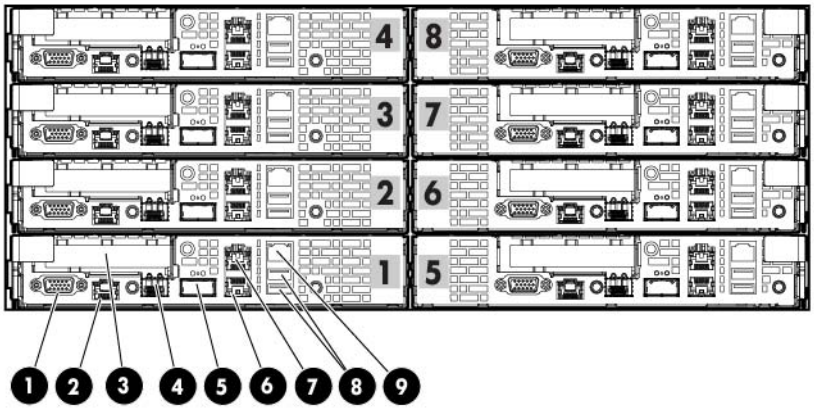



| Item | Description |
|---|---|
| 1 | Video connector |
| 2 | Serial connector (RJ–45) |

| Item | Description |
|---|---|
| 3 | Front PCIe bracket (LP slot) |
| 4 | SFP PLUS connector |
| 5 | QSFP port* |
| 6 | NIC 2 connector |
| 7 | NIC 1/iLO connector |
| 8 | USB connectors (2) |
| 9 | iLO network port |

*By default, the HP NC543i 2-port 4x QDR IB/10Gb Adapter is configured as a dual-port 10 GigE device. If the InfiniBand Enablement kit is installed, then the onboard QSFP port functions as an InfiniBand port, and the device operates as a 1-port 10 GigE (SFP+) device and a 1-port QDR InfiniBand (QSFP) device.

- Eight-node (1U) server




| Item | Description |
|---|---|
| 1 | VGA port |
| 2 | Serial port (RJ–45) |
| 3 | Front PCIe bracket (LP slot) |
| 4 | SFP+/10 GigE port* |
| 5 | QSFP/InfiniBand port* |
| 6 | NIC 2 network port |
| 7 | NIC 1 network port /iLO sideband port |
| 8 | USB connectors |
| 9 | iLO network port |

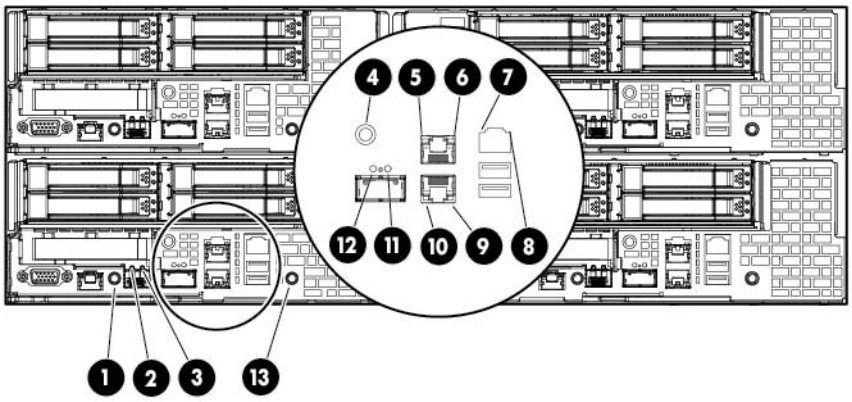
*By default, the HP NC543i 2-port 4x QDR IB/10Gb Adapter is configured as a dual-port 10 GigE device. If the InfiniBand Enablement kit is installed, then the onboard QSFP port functions as an InfiniBand port, and the device operates as a 1-port 10 GigE (SFP+) device and a 1-port QDR InfiniBand (QSFP) device.

## Front panel LEDs and buttons (SL390s G7)

The tables in this section describe components for one server only. Each server contains the same components in the same orientation. The figures describe the front panel components for one of four or eight SL390s servers in the s6500 chassis.

The HP Cluster Platform supports the following two models of the HP ProLiant SL390s G7 Server:

- Four-node (2U) server

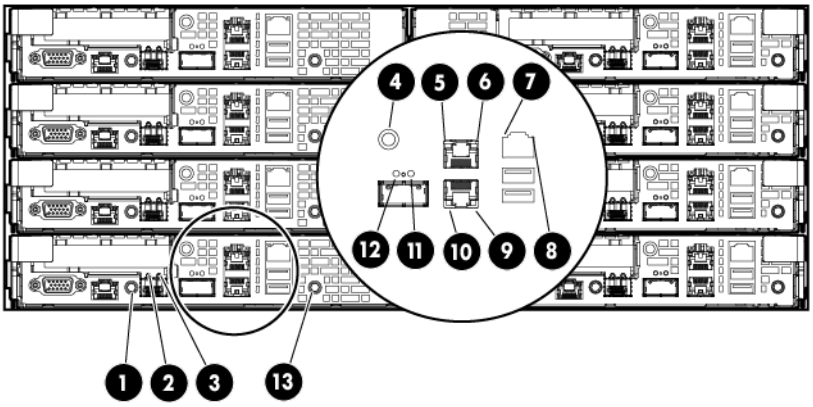



| Item | Description | Status |
|---|---|---|
| 1 | Power On/Standby button and system power LED | Green—System on<br>Amber—System is shut down, but power is still applied.<br>Red—System critical<br>Off—Power cord is not attached, or power supply has failed. |
| 2 | SFP+/10 GigE activity LED | Flashing green—Activity exists.<br>Off—No activity exists, or no connection exists. |
| 3 | SFP+/10 GigE link LED | Green—Linking<br>Off—No connection exists. |
| 4 | Health LED | Green—Normal<br>Flashing amber—System degraded<br>Flashing red—System critical |
| 5 | NIC 1/iLO activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |
| 6 | NIC 1/iLO speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 7 | iLO network activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |
| 8 | iLO network speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 9 | NIC 2 activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |
| 10 | NIC 2 speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 11 | QSFP/InfiniBand port link LED | Green—Physical link negotiated<br>Off—No connection exists. |

| Item | Description | Status |
|---|---|---|
| 12 | QSFP/InfiniBand activity LED* | Amber—Logical link established<br>Flashing amber—Activity exists.<br>Off—No activity exists, or no connection exists. |
| 13 | UID LED button | Blue—Activated<br>Flashing blue—System is being remotely managed.<br>Off—Deactivated |

* A subnet manager is required to manage and control an InfiniBand fabric. The amber LED indicates if the InfiniBand port has been configured by an Active Subnet manager.

- Eight-node (1U) server

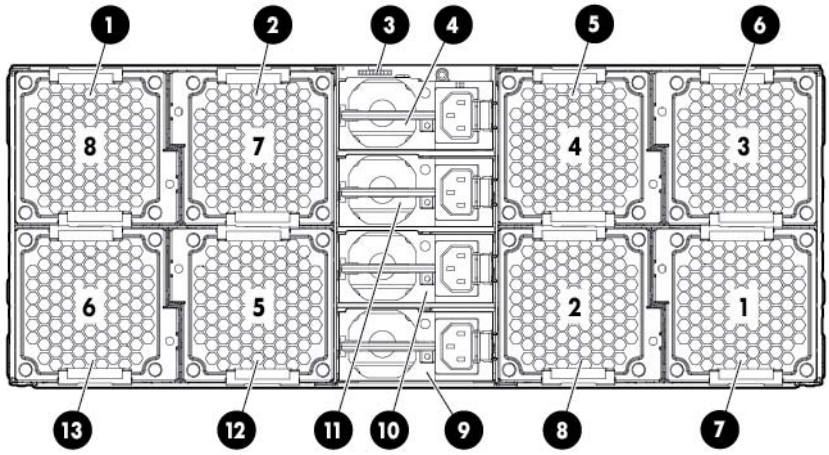



| Item | Description | Status |
|---|---|---|
| 1 | Power/system health LED | Green—System on and normal<br>Amber—System is shut down, but AC power still applied.<br>Red—System critical<br>Off—The server is off and without AC power. |
| 2 | SFP+/10 GigE activity LED | Flashing green—Activity exists.<br>Off—No activity exists, or no connection exists. |
| 3 | SFP+/10 GigE link LED | Green—Linking<br>Off—No connection exists. |
| 4 | Health LED | Green—Normal<br>Flashing amber—System degraded<br>Flashing red—System critical<br>Off—System is off, and no failure occurs prior to system power off. |
| 5 | NIC 1/iLO activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |
| 6 | NIC 1/iLO speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 7 | iLO network activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |

| Item | Description | Status |
|---|---|---|
| 8 | iLO network speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 9 | NIC 2 activity LED | Flashing green—Network data activity exists.<br>Off—No network data activity exists, or no network connection exists. |
| 10 | NIC 2 speed LED | Green—LAN connection using a GbE link<br>Amber—LAN connection using a 10 Mbps/100 Mbps link<br>Off—No LAN connection exists. |
| 11 | QSFP/InfiniBand port link LED | Green—Physical link negotiated<br>Off—No connection exists. |
| 12 | QSFP/InfiniBand activity LED* | Amber—Logical link established<br>Flashing amber—Activity exists.<br>Off—No activity exists, or no connection exists. |
| 13 | UID LED button | Blue—Activated<br>Flashing blue—System is being remotely managed.<br>Off—Deactivated |

* A subnet manager is required to manage and control an InfiniBand fabric. The amber LED indicates if the InfiniBand port has been configured by an Active Subnet manager.

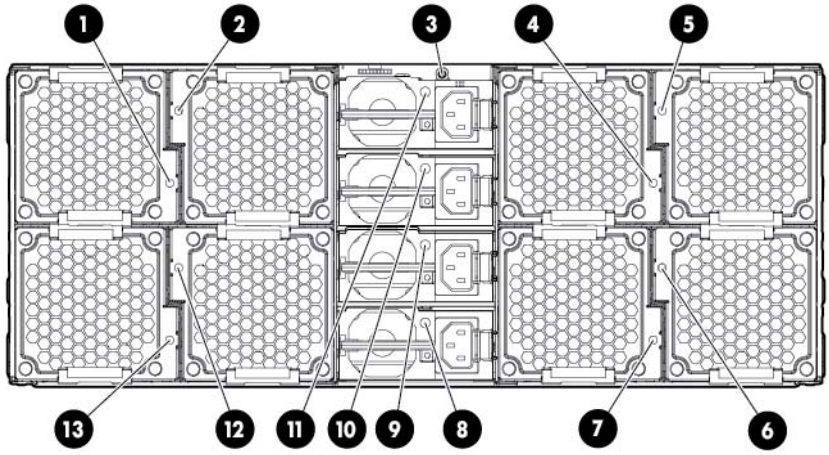
## Rear panel components (SL390s G7)




| Item | Description |
|---|---|
| 1 | Fan 8 |
| 2 | Fan 7 |
| 3 | SLAPM interface |
| 4 | Power supply 4 |
| 5 | Fan 4 |
| 6 | Fan 3 |
| 7 | Fan 1 |
| 8 | Fan 2 |
| 9 | Power supply 1 |
| 10 | Power supply 2 |

| | |
|---|---|
| 11 | Power supply 3 |
| 12 | Fan 5 |
| 13 | Fan 6 |

## Rear panel LEDs and buttons (SL390s G7)




| Item | Description | Status |
|---|---|---|
| 1 | Fan 8 power LED | Off—Normal<br>Amber—Fan has failed. |
| 2 | Fan 7 power LED | Off—Normal<br>Amber—Fan has failed. |
| 3 | UID LED button | Blue—Activated<br>Flashing blue—System is being remotely managed.<br>Off—Deactivated |
| 4 | Fan 4 power LED | Off—Normal<br>Amber—Fan has failed. |
| 5 | Fan 3 power LED | Off—Normal<br>Amber—Fan has failed. |
| 6 | Fan 1 power LED | Off—Normal<br>Amber—Fan has failed. |
| 7 | Fan 2 power LED | Off—Normal<br>Amber—Fan has failed. |
| 8 | Power supply 1 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 9 | Power supply 2 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 10 | Power supply 3 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |
| 11 | Power supply 4 power LED | Green—Normal<br>Off—No AC power<br>Amber—Power supply has failed. |

| Item | Description | Status |
|---|---|---|
| 12 | Fan 5 power LED | Off—Normal<br>Amber—Fan has failed. |
| 13 | Fan 6 power LED | Off—Normal<br>Amber—Fan has failed. |

## PCI expansion slot definitions (SL390s G7)

The HP ProLiant SL390s 1U Server (half width) has one available low-profile x16 PCIe2 slot.

The HP ProLiant SL390s 2U Server (half width) has one low-profile x8 PCIe2 slot and three x16 PCIe2 slots for internal GPU support (up to 22.5W).

# HP ProLiant Scalable Servers (AMD Opteron)

Several AMD Opteron servers are supported in HP Cluster Platform solutions. This section presents information for the HP ProLiant servers that are used in HP Cluster Platform solutions only. The content in this section includes the following additional information for the ProLiant AMD Opteron servers:

- Front and rear views
- InfiniBand HCA PCI slot assignment
- Specific cable management instructions, if necessary
- HP Cluster Platform specific maintenance instructions, if applicable

HP SL series-based Cluster Platforms require the use of the HP 10000 Series 1200mm Deep Rack. For more information, see the HP website (http://h18004.www1.hp.com/products/servers/proliantstorage/racks/1200series/index.html).

# HP ProLiant SL165z G7 Server

The HP ProLiant SL165z G7 Server is used as a control node and a compute node in HP Cluster Platform configurations.

## HP ProLiant SL165z G7 Server documentation

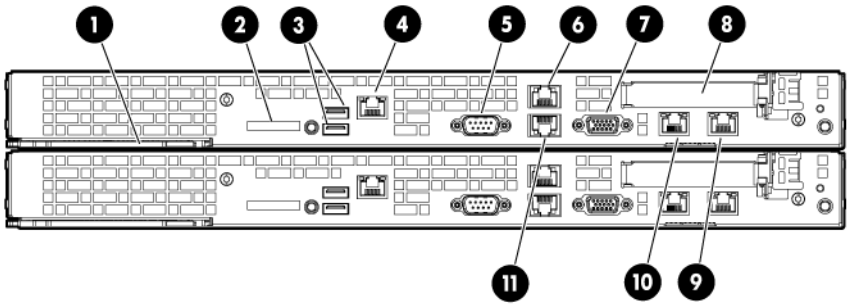
For server-specific information, see the server documentation:

- For a complete list of features and specifications, see the *HP ProLiant SL165z G7 Server QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13542_na/13542_na.html).
- For installation and service information, see the *HP ProLiant SL1000/6000 Scalable System User Guide* and the *HP ProLiant SL165z G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under servers, select **ProLiant ML/DL and TC series servers**, and then select **HP ProLiant SL165z G7 Server series**.

## Front panel components (SL165z G7)

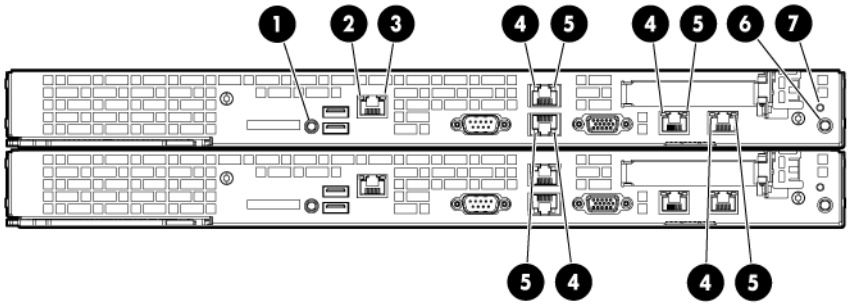
The table below describes components for one server only. Each server contains the same components in the same orientation.




| Item | Description |
|---|---|
| 1 | Tray handle and latch |
| 2 | SD card slot (optional) |
| 3 | USB connectors (2) |
| 4 | Management connector |
| 5 | Serial connector |
| 6 | NIC 4 connector |
| 7 | Video connector |
| 8 | Low profile PCIe expansion card slot |
| 9 | NIC 1 connector |
| 10 | NIC 2 connector |
| 11 | NIC 3 connector |

## Front panel LEDs and buttons (SL165z G7)

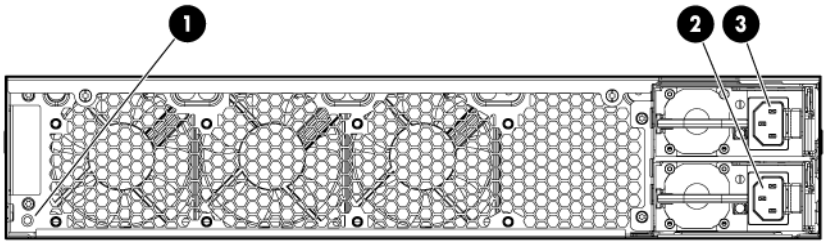
The table below describes LEDs and buttons for one server only. Each server contains the same components in the same orientation.




| Item | Description | Status |
|---|---|---|
| 1 | UID LED/button | Blue = Identification<br>Flashing blue = The system is being remotely managed.<br>Off = Deactivated |

| Item | Description | Status |
|---|---|---|
| 2 | Management connector activity LED (iLO) | Flashing amber = LAN is active. |
| 3 | Management connector link LED (iLO) | Green = Linking at 100 Mbps speed<br>Off = No connection exists, or linking at 10 Mbps speed. |
| 4 | NIC activity LED | Flashing green = Network data activity exists.<br>Off = No network data activity exists, or no network connection exists. |
| 5 | NIC speed LED | Green = The LAN connection is using a GbE link.<br>Amber = The LAN connection is using a 10 Mbps/100 Mbps link.<br>Off = No LAN connection exists. |
| 6 | Power button/LED | Green = Normal.<br>Amber = The server is powered off, or in a hibernation state with AC power.<br>Red = Critical error |
| 7 | Health LED | Red = Critical system failure detected.<br>Amber = The system is degraded.<br>Green = The system is powered on, and no failure is detected.<br>Off = The system is off, and no failure was detected prior to system power down. |

## Rear panel components, LEDs, and buttons (SL165z G7)




| Item | Description |
|---|---|
| 1 | UID LED/button |
| 2 | Power supply cable connector 1 |
| 3 | Power supply cable connector 2 |

## PCI expansion slot definitions (SL165z G7)

The HP ProLiant SL165z G6 Server has one x16 PCIe slot on the system board that supports an optional PCIe assembly. The PCIe assembly has two low-profile PCIe2 expansion slots.

| Slot | Type | Length | Connector | Interconnect |
|---|---|---|---|---|
| 1 | PCIe2 | Half (low profile) | x16 | x16 |
| 2 | PCIe2 | Half (low profile) | x8 | x4 |

Always install an InfiniBand PCIe HCA in the low-profile x16 PCIe2 expansion slot on this server.

# HP ProLiant BL c-Class Server Blades

An HP Cluster Platform solution can be configured with HP BladeSystem c-Class enclosures and HP ProLiant BL c-Class server blades. All server blades include the following features:

- High-performance memory
- iLO/iLO 2 advanced functionality
- Multiple general purpose Gigabit Ethernet network controllers
- Optional FC SAN connectivity

This section describes the HP BladeSystem c-Class enclosure, HP ProLiant BL c-Class server blades, and other c-Class devices supported with HP Cluster Platform solutions.

# HP BladeSystem c7000 Enclosure

The HP BladeSystem c7000 Enclosure is 10U high and holds up to 16 server blades. The enclosure includes a shared, multi-terabit high-speed midplane for wire-once connectivity of server blades to network and shared storage. Power is delivered through a pooled power backplane that ensures the full capacity of the power supplies is available to all of the server blades.

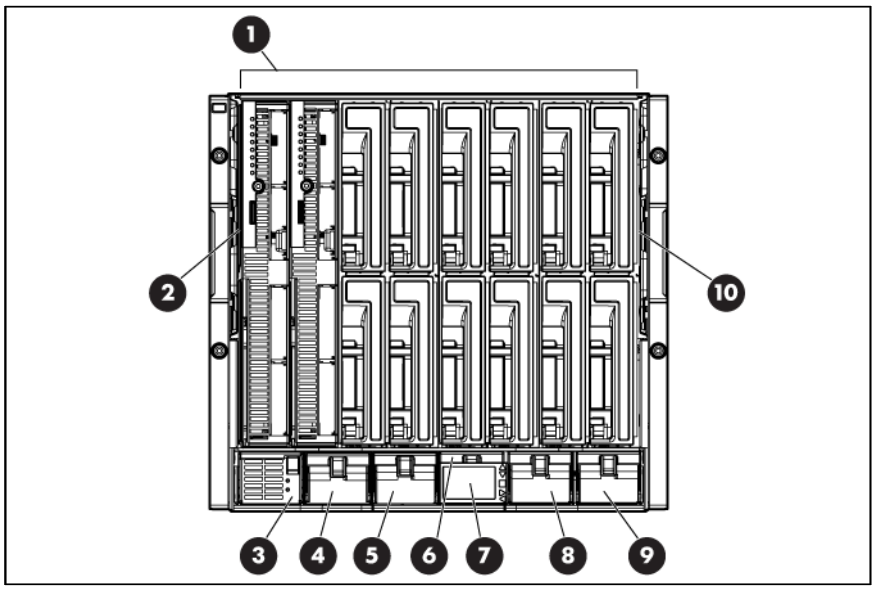
## HP BladeSystem c7000 Enclosure documentation

For enclosure-specific information, see the enclosure documentation:

- For a complete list of features and specifications for the enclosure, see the *HP BladeSystem c7000 Enclosure QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/12810_na/12810_na.pdf).
- For setup and installation information, see the *HP BladeSystem c7000 Enclosure Setup and Installation Guide* on the HP website (http://www.hp.com/support/manuals).

  Under BladeSystem, select **BladeSystem Enclosures**, and then select **HP BladeSystem c7000 Enclosures**.

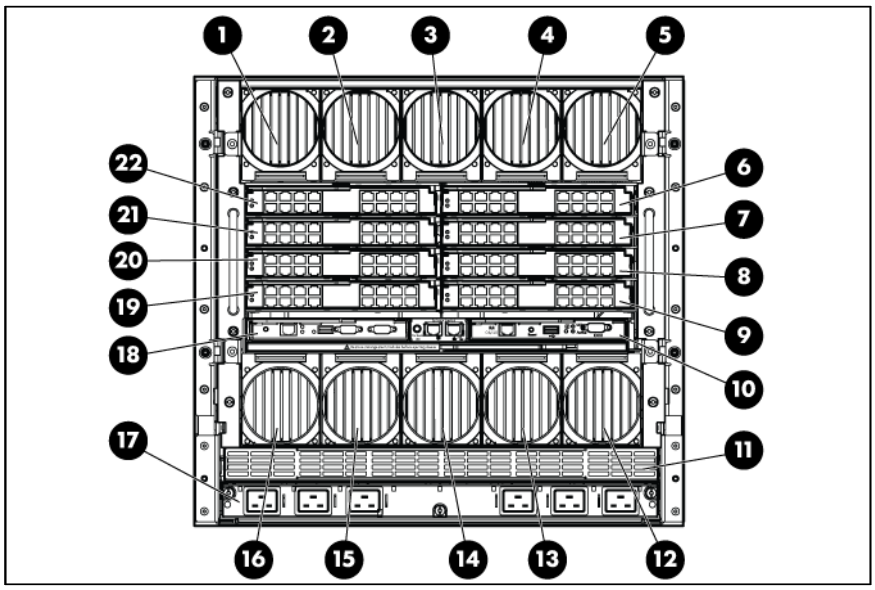
# Enclosure front components




| Item | Description |
|---|---|
| 1 | Device bays* |
| 2 | Air intake slot (Do not block.) |
| 3 | Power supply bay 1 |
| 4 | Power supply bay 2 |
| 5 | Power supply bay 3 |
| 6 | Power supply bay 4 |
| 7 | Insight Display |
| 8 | Power supply bay 5 |
| 9 | Power supply bay 6 |
| 10 | Air intake slot (Do not block.) |

*For more information, see "Device bay numbering (on page 65)."

# Enclosure rear components



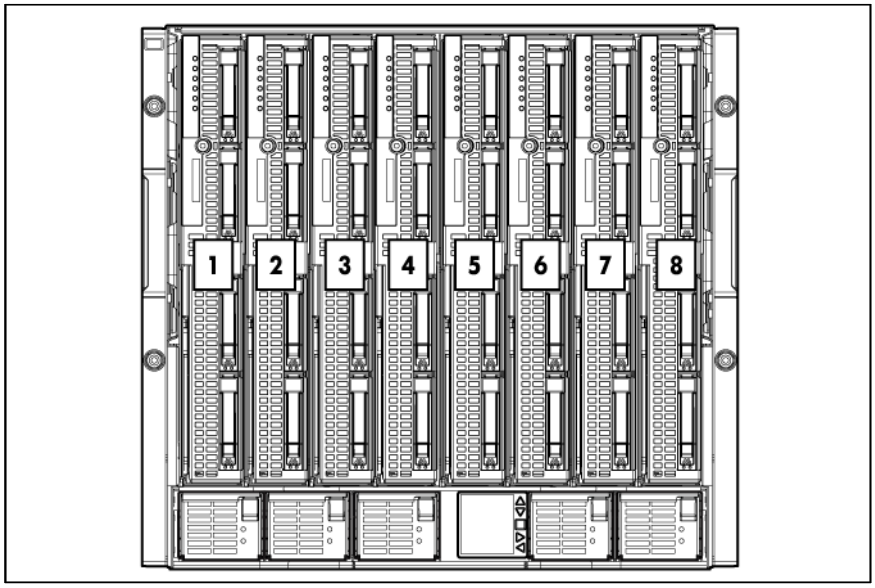

| Item | Description |
|---|---|
| 1 | Fan bay 1 |
| 2 | Fan bay 2 |
| 3 | Fan bay 3 |
| 4 | Fan bay 4 |
| 5 | Fan bay 5 |
| 6 | Interconnect bay 2 |
| 7 | Interconnect bay 4 |
| 8 | Interconnect bay 6 |
| 9 | Interconnect bay 8 |
| 10 | Onboard Administrator bay 2 |
| 11 | Power supply exhaust vent (do not block) |
| 12 | Fan bay 10 |
| 13 | Fan bay 9 |
| 14 | Fan bay 8 |
| 15 | Fan bay 7 |
| 16 | Fan bay 6 |
| 17 | AC power connectors |
| 18 | Onboard Administrator bay 1 |
| 19 | Interconnect bay 7 |
| 20 | Interconnect bay 5 |
| 21 | Interconnect bay 3 |
| 22 | Interconnect bay 1 |

# Device bay numbering

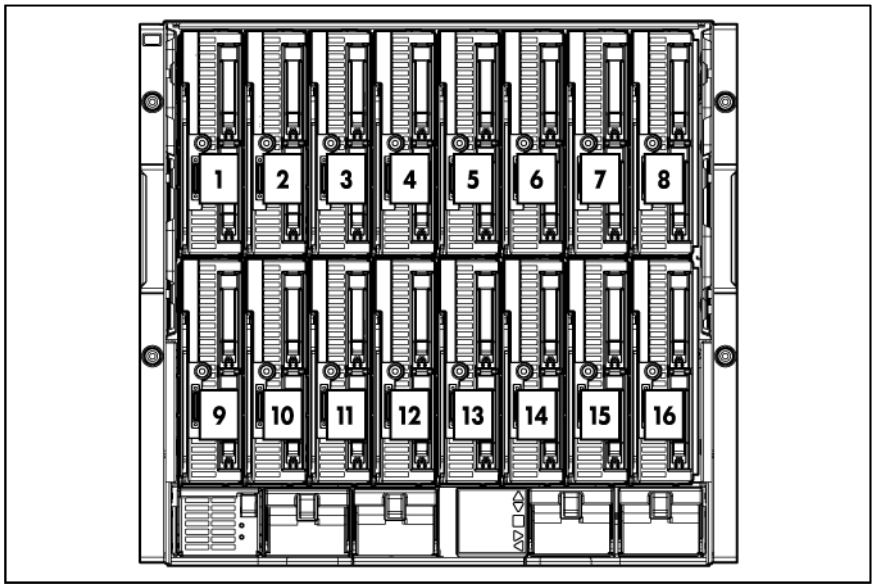
The enclosure can be populated with as many as 8 full-height devices or 16 half-height devices.

**IMPORTANT:** When looking at the rear of the enclosure, front device bay numbering is reversed.

## Full-height device bay numbering

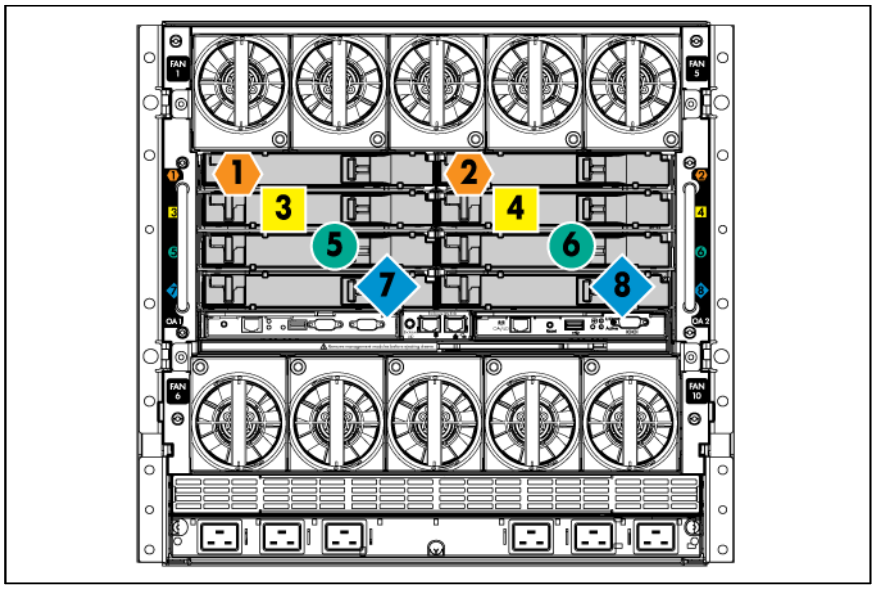



## Half-height device bay numbering



# Interconnect module bay numbering

Always install interconnect modules in the appropriate interconnect bays to support network connections for specific signals.




| Server blade signal | Interconnect bay number | Interconnect bay label |
|---|---|---|
| NICs 1, 2, 3, and 4 (embedded) | 1, 2 | ⬢ |
| Mezzanine 1 | 3, 4 | ■ |
| Mezzanine 2 | 5, 6 and then 7, 8 | ● ◆ |
| Mezzanine 3 | 7, 8 and then 5, 6 | ◆ ● |

For interconnect-specific information, see the documentation that ships with the interconnect module.

# Port mapping: HP BladeSystem c7000 Enclosure interconnect module bay to server blade

The following table maps the server blade embedded NICs and mezzanine port slot assignments for the different server blade types to the enclosure interconnect module bays.

| Interconnect bay | Single-density half-height server blade | Double-density half-height server blade (Server A) | Double-density half-height server blade (Server B) | Single-density full-height server blade |
|---|---|---|---|---|
| 1 | NIC 1 (embedded) | NIC 1 (embedded) | — | NIC 3 (embedded)<br>NIC 1 (embedded) |
| 2 | NIC 2 (embedded) | — | NIC 1 (embedded) | NIC 4 (embedded)<br>NIC 2 (embedded) |
| 3 | Mezzanine slot 1, port 1 | NIC 2 (embedded) | — | Mezzanine slot 1, port 1 |
| 4 | Mezzanine slot 1, port 1 | — | NIC 2 (embedded) | Mezzanine slot 1, port 1 |
| 5 | Mezzanine slot 2, | Mezzanine port 1 | — | Mezzanine slot 2, |

| Interconnect bay | Single-density half-height server blade | Double-density half-height server blade (Server A) | Double-density half-height server blade (Server B) | Single-density full-height server blade |
|---|---|---|---|---|
| | port 1 | | | port 1<br>Mezzanine slot 3, port 2 |
| 6 | Mezzanine slot 2, port 1 | Mezzanine port 1 | — | Mezzanine slot 2, port 1<br>Mezzanine slot 3, port 2 |
| 7 | Mezzanine slot 2, port 2 | — | Mezzanine port 1 | Mezzanine slot 2, port 2<br>Mezzanine slot 3, port 1 |
| 8 | Mezzanine slot 2, port 2 | — | Mezzanine port 1 | Mezzanine slot 2, port 2<br>Mezzanine slot 3, port 1 |

For more information on mapping to interconnect ports, see the *HP BladeSystem c7000 Enclosure Setup and Installation Guide* on the HP website (http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00698286/c00698286.pdf).

# Server blade type to gigabit Ethernet blade switch bandwidth ratios

The following table provides the server blade type to gigabit Ethernet blade switch bandwidth (BW) ratios. For more information about the gigabit Ethernet switch modules listed in the table below, see the *HP Cluster Platform Gigabit Ethernet Hardware Guide*.

The part numbers listed in this table are subject to change without notice.

| Server blade type | One 16-port pass-thru module per enclosure 406740-B21 | Two 16-port pass-thru modules per enclosure 406740-B21 | One 8-port Cisco switch module per enclosure 410916-B21 | Two 8-port Cisco switch modules per enclosure 410916-B21 | One 4-port HP GbE2c switch module per enclosure 410917-B21 | Two 4-port HP GbE2c switch modules per enclosure 410917-B2 |
|---|---|---|---|---|---|---|
| Single density full-height | 1:1 BW | — | 1:1 BW | — | 2:1 BW | — |
| Single density half-height | 1:1 BW | — | 2:1 BW | — | 4:1 BW | — |
| Double density half-height | — | 1:1 BW | — | 2:1 BW | — | 4:1 BW |

# HP BladeSystem c-Class Switch Modules

The HP BladeSystem c-Class InfiniBand Switch Module is designed to fit into the double-wide switch module bays in the rear of the c-Class enclosure. Depending on the mezzanine connectors used in the server blade,

the InfiniBand switch module must be installed in the corresponding interconnect module bays (bays 3 and 4, bays 5 and 6, or bays 7 and 8). For more information about interconnect bay numbering, see "Interconnect module bay numbering (on page 67)."

A full-height server blade can support an additional InfiniBand mezzanine option in mezzanine 3 connector, along with a second double-wide InfiniBand switch module installed in interconnect bays 7 and 8 in the rear of the enclosure. In this configuration, a full-height server blade configuration can be viewed as having a 1:1 I/O ratio. The table below lists the bandwidth (BW) ratios of different server blade types for various c-Class InfiniBand switch modules used in HP Cluster Platform BladeSystem configurations.

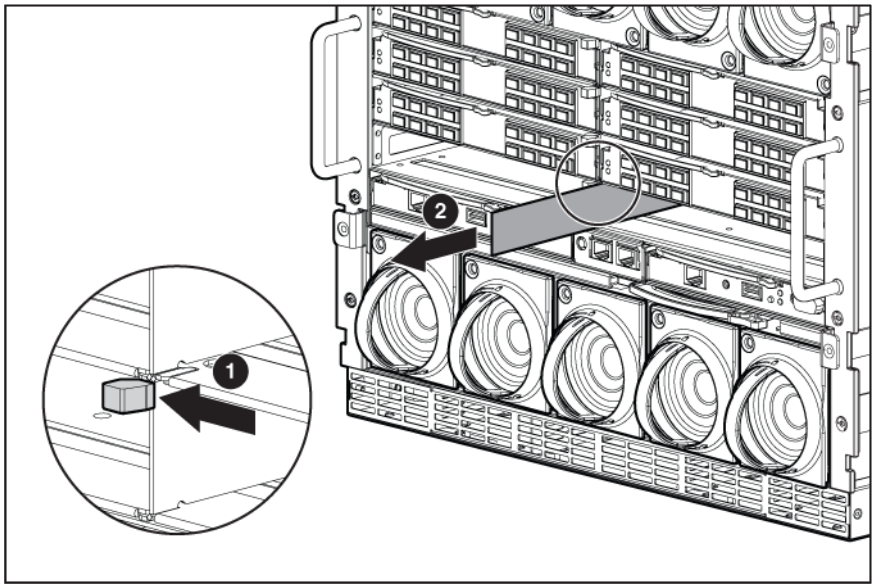
| Server blade type | One 24-port IB module per enclosure | Two 24-port IB modules per enclosure | One 32-port IB module per enclosure | Two 32-port IB modules per enclosure |
|---|---|---|---|---|
| Single density, full-height | 1:1 BW | — | 1:1 BW | — |
| Single density, half-height | 2:1 BW | 1:1 BW | 2:1 BW | — |
| Double density, half height | — | 2:1 BW | — | 1:1 BW |

## Installing an HP BladeSystem c-Class InfiniBand Switch Module

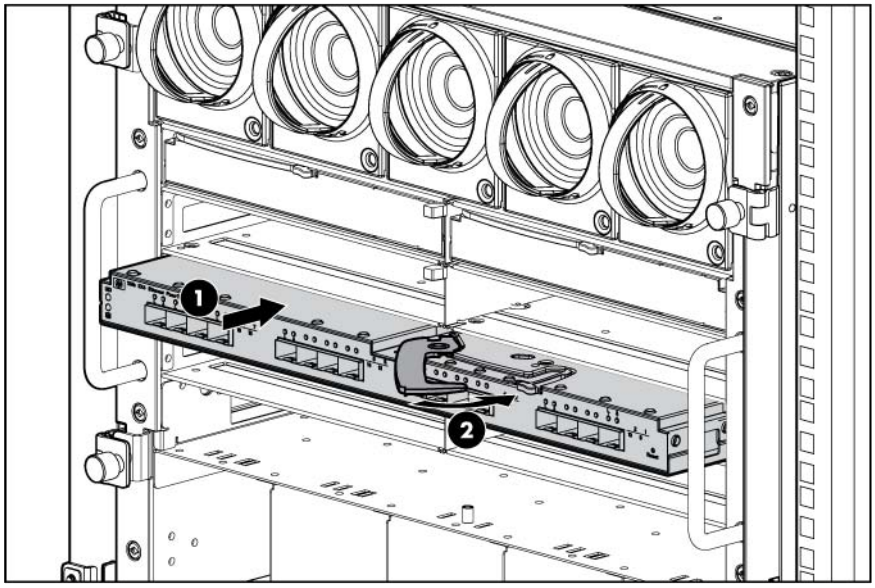
Before installing an InfiniBand switch module in an enclosure, it may be necessary to remove the cable bracket, if installed. If the cable bracket must be removed, reverse the installation procedure described in the *HP BladeSystem c-Class Enclosure Cable Management Bracket Installation Guide*. In most instances, it is not necessary to remove the cables from the bracket. However, it might be necessary to remove the cables from the switch module.

To install the switch module:

1. Remove any devices or blanks installed in the bay.
2. Remove the device bay divider, if installed.



3. Install the InfiniBand switch module and close the release lever. Depending on the InfiniBand switch module being installed, your switch module may look different than the switch module shown.




For more information about HP InfiniBand switch modules, see the HP website (http://h18004.www1.hp.com/products/blades/components/infiniband/index.html).

For HP BladeSystem c-Class InfiniBand switch module documentation for your switch, see the HP website (http://www.hp.com). Enter the HP part number in the search field to locate the documentation.

## Mezzanine HCA cards

In HP Cluster Platform configurations, the HP ProLiant BL c-Class Server Blades are pre-configured with an InfiniBand Mezzanine HCA for HP c-Class BladeSystem. The HCA interconnects with the HP BladeSystem c-Class InfiniBand switch module installed in the rear of the enclosure. For more information on the mezzanine HCA card, locate the option documentation by entering the HP part number in the search field and searching the HP website (http://www.hp.com).

# HP ProLiant BL c-Class Server Blades (Intel® Xeon®)

## HP ProLiant BL280c G6 Server Blade

The HP ProLiant BL280c G6 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations.

### HP ProLiant BL280c G6 Server Blade documentation

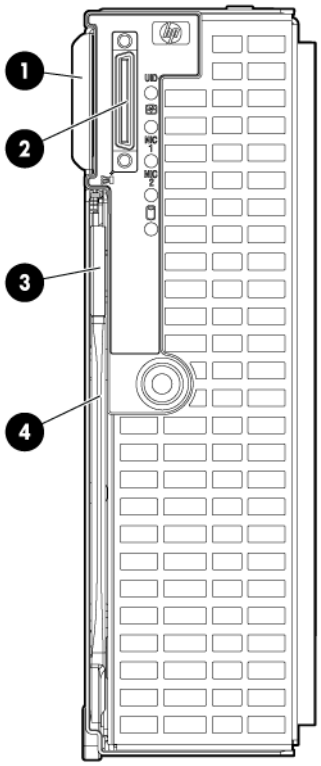
For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL280c G6 Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13294_na/13294_na.html).

- For installation and service information, see the *HP ProLiant BL280c Server Blade User Guide* and the *HP ProLiant BL280c G6 Server Blade Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

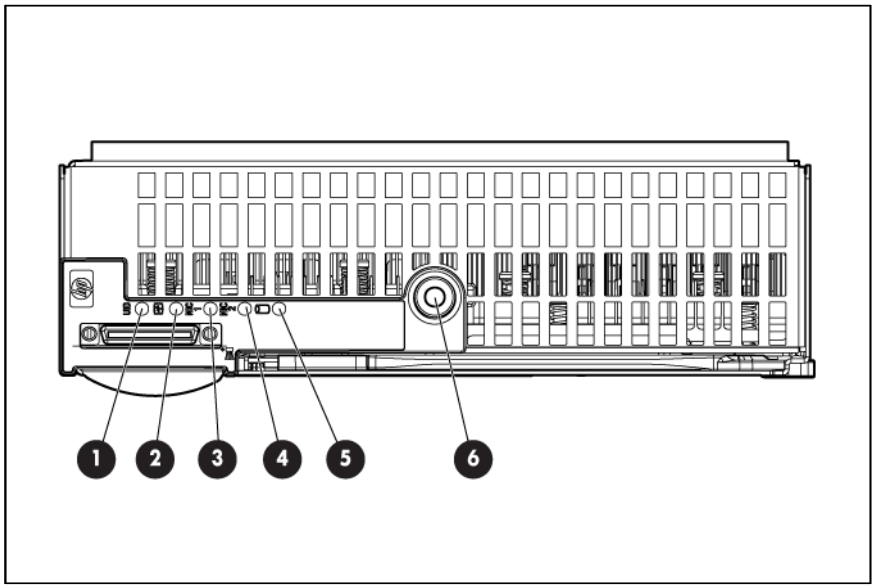
  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL280c G6 Server series**.

## Front panel components (BL280c G6)




| Item | Description |
|---|---|
| 1 | Serial label pull tab |
| 2 | HP c-Class Blade SUV Cable connector |
| 3 | Release button |
| 4 | Server blade release lever |

## Front panel LEDs and buttons (BL280c G6)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 2 | Health LED | Green = Normal<br>Amber flashing = Degraded condition<br>Red flashing = Critical condition |
| 3 | NIC 1 LED | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 4 | NIC 2 LED | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | Hard drive activity LED | Green = Activity<br>Off = No activity |
| 6 | Power On/Standby button and system power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = Off |

## Mezzanine connector definitions (BL280c G6)

A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

| Item | PCIe |
|---|---|
| Mezzanine connector 1 | x8, Type I mezzanine card only |
| Mezzanine connector 2 | x8, Type 1 or II mezzanine card |

# HP ProLiant BL2x220c G6 Server Blade

The HP ProLiant BL2x220c G6 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations.

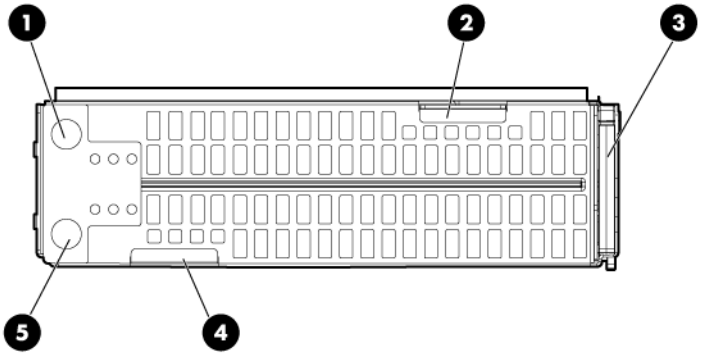
## HP ProLiant BL2x220c G6 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL2x220c Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13294_na/13294_na.html).
- For installation and service information, see the *HP ProLiant BL2x220c G6 User Guide* and the *HP ProLiant BL2x220c G6 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

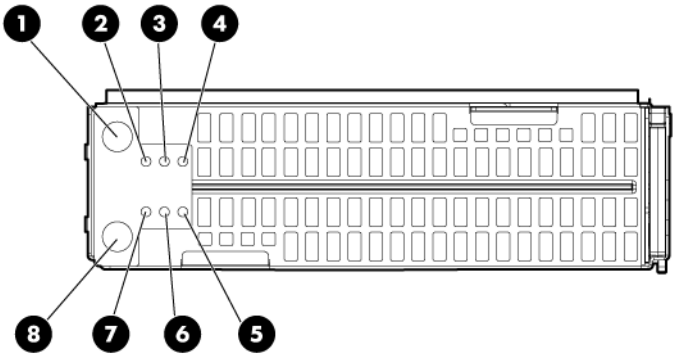
  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL2x220c G6 Server series**.

## Front panel components (BL2x220c G6)




| Item | Description |
|---|---|
| 1 | Server B Power On/Standby button |
| 2 | Server B serial label pull tab |
| 3 | Server blade release lever |
| 4 | Server A serial label pull tab |
| 5 | Server A Power On/Standby button |

## Front panel LEDs (BL2x220c G6)




| Item | Description | Status |
|---|---|---|
| 1 | Server B system power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = No power available to server |
| 2 | Server B UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 3 | Server B health LED | Green = Normal<br>Flashing = Booting<br>Amber = Degraded condition<br>Red = Critical condition |
| 4 | Server B NIC link and activity LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | Server A NIC link and activity LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 6 | Server A health LED | Green = Normal<br>Flashing = Booting<br>Amber = Degraded condition<br>Red = Critical condition |
| 7 | Server A UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 8 | Server A system power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = No power available to server |

* Actual NIC numbers depend on several factors, including the operating system installed on the server.

## Mezzanine connector definitions (BL2x220c G6)

| Item | PCIe support | Server support |
|---|---|---|
| Mezzanine connector 1 | x8, Type I mezzanine card only | Server A only |
| Mezzanine connector 2 | x8, Type 1 mezzanine card only | Server B only |

A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

# HP ProLiant BL2x220c G7 Server Blade

The HP ProLiant BL2x220c G7 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations.

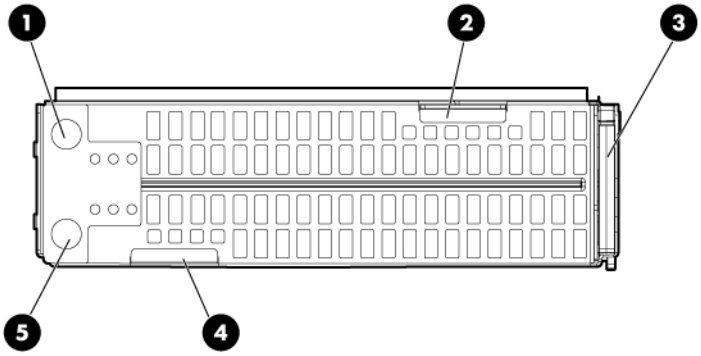
## HP ProLiant BL2x220c G7 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL2x220c Server Blade QuickSpecs* on the HP website (http://h18000.www1.hp.com/products/quickspecs/13748_div/13748_div.pdf).
- For installation and service information, see the *HP ProLiant BL2x220c G7 User Guide* and the *HP ProLiant BL2x220c G7 Server Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

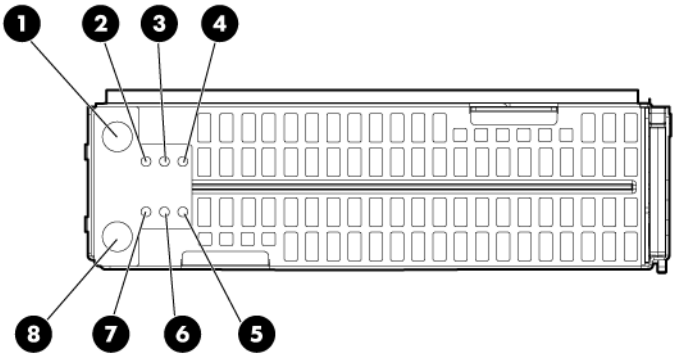
  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL2x220c G7 Server series**.

## Front panel components (BL2x220c G7)




| Item | Description |
|---|---|
| 1 | Server B Power On/Standby button |
| 2 | Server B serial label pull tab |
| 3 | Server blade release lever |
| 4 | Server A serial label pull tab |
| 5 | Server A Power On/Standby button |

## Front panel LEDs (BL2x220c G7)




| Item | Description | Status |
|---|---|---|
| 1 | Server B system power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = No power available to server |
| 2 | Server B UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 3 | Server B health LED | Green = Normal<br>Flashing = Booting<br>Amber = Degraded condition<br>Red = Critical condition |
| 4 | Server B NIC/IB link and activity LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | Server A NIC/IB link and activity LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 6 | Server A health LED | Green = Normal<br>Flashing = Booting<br>Amber = Degraded condition<br>Red = Critical condition |
| 7 | Server A UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 8 | Server A system power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = No power available to server |

* Actual NIC numbers depend on several factors, including the operating system installed on the server.

# HP ProLiant BL460c G6 Server Blade

The HP ProLiant BL460c G6 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations. The HP ProLiant BL460c G6 Server Blade is a half-height blade, and up to 16 half-height blades are supported in a c7000 enclosure.

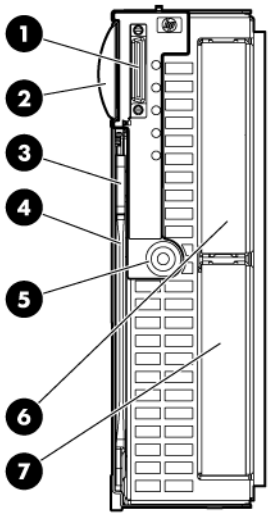
## HP ProLiant BL460c G6 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL460c G6 Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13238_na/13238_na.html).
- For installation and service information, see the *HP ProLiant BL460c Server Blade User Guide* and the *HP ProLiant BL460c G6 Server Blade Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL460c G6 Server series**.

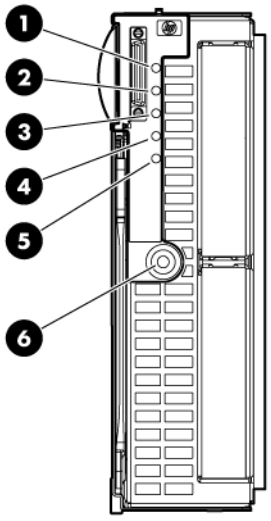
## Front panel components (BL460c G6)




| Item | Description |
|---|---|
| 1 | SUV connector* |
| 2 | Serial label pull tab |
| 3 | Release button |
| 4 | Server blade release lever |
| 5 | Power On/Standby button |
| 6 | Hard drive bay 1 |
| 7 | Hard drive bay 2 |

*The SUV connector and the HP c-Class Blade SUV Cable are for some server configuration and diagnostic procedures.

## Front panel LEDs (BL460c G6)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 2 | Health LED | Green = Normal<br>Amber flashing = Degraded condition<br>Red flashing = Critical condition |
| 3 | Flex-10 NIC 1 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 4 | Flex-10 NIC 2 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | Reserved | — |
| 6 | System power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = Off |

*Actual NIC numbers depend on several factors, including the operating system installed on the server.

## Mezzanine connector definitions

A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

| Item | PCIe |
|---|---|
| Mezzanine connector 1 | x8, Type I mezzanine card only |
| Mezzanine connector 2 | x8, Type I or II mezzanine card |

# HP ProLiant BL460c G7 Server Blade

The HP ProLiant BL460c G7 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations. The HP ProLiant BL460c G7 Server Blade is a half-height blade, and up to 16 half-height blades are supported in a c7000 enclosure.

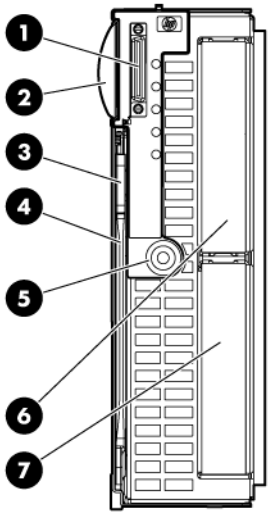
## HP ProLiant BL460c G7 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL460c Generation 7 (G7) Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13706_na/13706_na.html).
- For installation and service information, see the *HP ProLiant BL460c G7 Server Blade User Guide* and the *HP ProLiant BL460c G7 Server Blade Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL460c G7 Server series**.

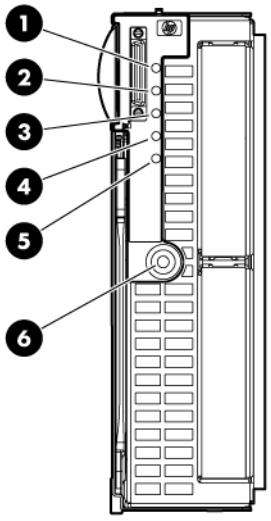
## Front panel components (BL460c G7)




| Item | Description |
|---|---|
| 1 | SUV connector* |
| 2 | Serial label pull tab |
| 3 | Release button |
| 4 | Server blade release lever |
| 5 | Power On/Standby button |
| 6 | Hard drive bay 1 |
| 7 | Hard drive bay 2 |

*The SUV connector and the HP c-Class Blade SUV Cable are for some server configuration and diagnostic procedures.

## Front panel LEDs (BL460c G7)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 2 | Health LED | Green = Normal<br>Amber flashing = Degraded condition<br>Red flashing = Critical condition |
| 3 | Flex 1 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 4 | Flex 2 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | Reserved | — |
| 6 | System power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = Off |

*Actual NIC numbers depend on several factors, including the operating system installed on the server.

## Mezzanine connector definitions

A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

| Item | PCIe |
|---|---|
| Mezzanine connector 1 | x8, Type I mezzanine card only |
| Mezzanine connector 2 | x8, Type I or II mezzanine card |

# HP ProLiant BL c-Class Server Blades (AMD Opteron)

## HP ProLiant BL465c G6 Server Blade

The HP ProLiant BL465c G6 Server Blade is used as a control node, a utility node and a compute node in HP Cluster Platform configurations.

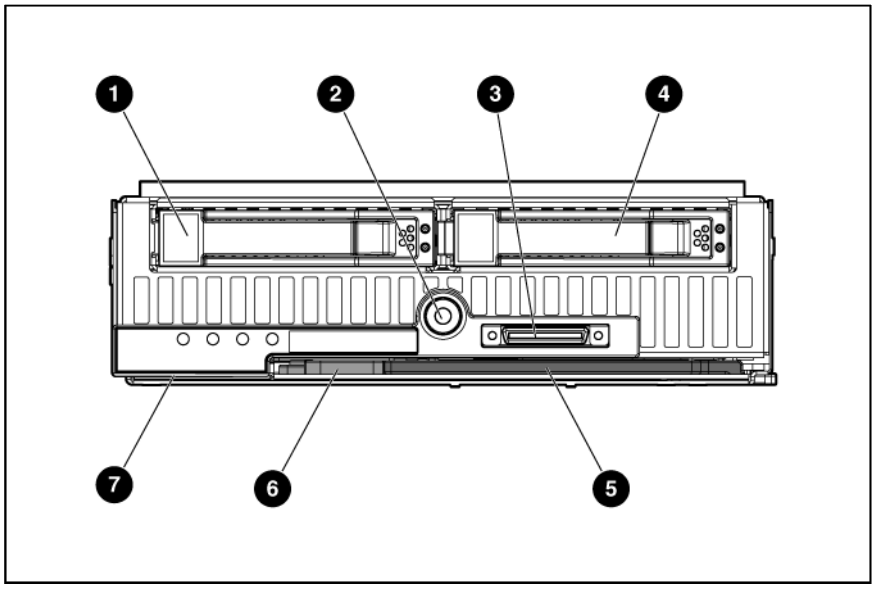
### HP ProLiant BL465c G6 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL465c G6 Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13026_na/13026_na.pdf).
- For installation and service information, see the *HP ProLiant BL465c Server Blade User Guide* and the *HP ProLiant BL465c G6 Server Blade Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL465c G6 Server series**.

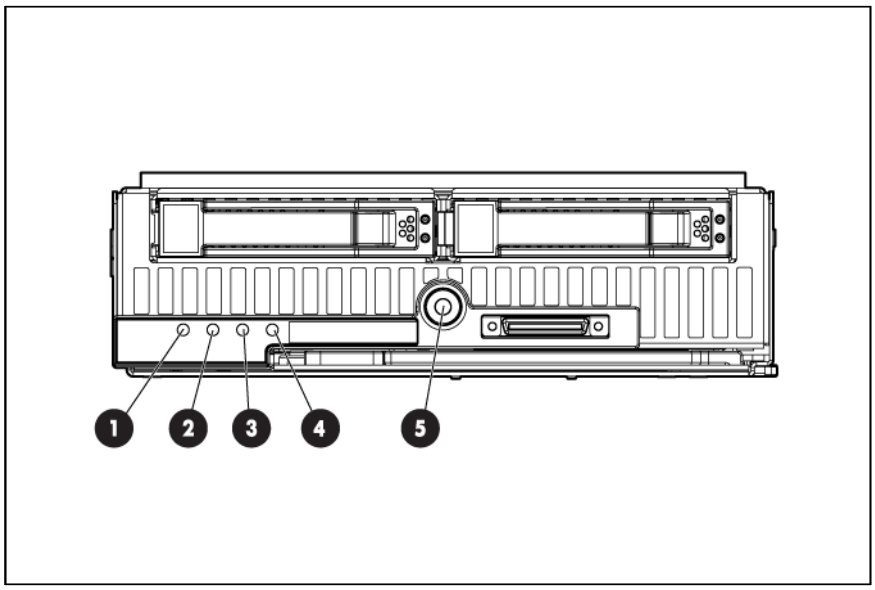
### Front panel components (BL465c G6)




| Item | Description |
|---|---|
| 1 | Hard drive bay 1 |
| 2 | Power On/Standby button |
| 3 | SUV connector* |
| 4 | Hard drive bay 2 |
| 5 | Server blade release lever |
| 6 | Release button |
| 7 | Serial label pull tab |

* The SUV connector and the HP c-Class Blade SUV cable are for some server configuration and diagnostic procedures.

## Front panel LEDs (BL465c G6)




| Item | Description | Status |
|---|---|---|
| 1 | UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 2 | Health LED | Green = Normal<br>Flashing amber = Degraded condition<br>Flashing red = Critical condition |
| 3 | NIC 1 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 4 | NIC 2 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | System power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = Off |

* Actual NIC numbers depend on several factors, including the operating system installed on the server.

## Mezzanine connector definitions (BL465c G6)

| Item | PCIe |
|---|---|
| Mezzanine connector 1 | x4, Type I mezzanine card only |
| Mezzanine connector 2 | x8, Type I or II mezzanine card |

A PCIe x4 mezzanine connector supports x8 cards at up to x4 speeds. A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

# HP ProLiant BL465c G7 Server Blade

The HP ProLiant BL465c G7 Server Blade is used as a control node, a utility node, and a compute node in HP Cluster Platform configurations.

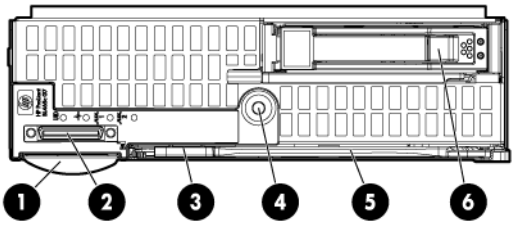
## HP ProLiant BL465c G7 Server Blade documentation

For server blade-specific information, see the server blade documentation:

- For a complete list of features and specifications, see the *HP ProLiant BL465c Generation 7 (G7) Server Blade QuickSpecs* on the HP website (http://h18004.www1.hp.com/products/quickspecs/13654_na/13654_na.html).
- For installation and service information, see the *HP ProLiant BL465c G7 Server Blade User Guide* and the *HP ProLiant BL465c G7 Server Blade Maintenance and Service Guide* on the HP website (http://www.hp.com/support/manuals).

  Under BladeSystem, select **BladeSystem Server Blades**, and then select **HP ProLiant BL465c G7 Server series**.

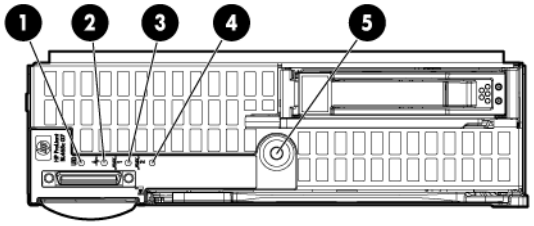
## Front panel components (BL465c G7)




| Item | Description |
|---|---|
| 1 | Serial label pull tab |
| 2 | SUV connector* |
| 3 | Server blade release button |
| 4 | Power On/Standby button |
| 5 | Server blade release lever |
| 6 | Hard drive bays |

* The SUV connector and the HP c-Class Blade SUV cable are for some server configuration and diagnostic procedures.

## Front panel LEDs (BL465c G7)



| Item | Description | Status |
|---|---|---|
| 1 | UID LED | Blue = Identified<br>Blue flashing = Active remote management<br>Off = No active remote management |
| 2 | Health LED | Green = Normal<br>Amber flashing = Degraded condition<br>Red flashing = Critical condition |
| 3 | Flex 1 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 4 | Flex 2 LED* | Green = Network linked<br>Green flashing = Network activity<br>Off = No link or activity |
| 5 | System power LED | Green = On<br>Amber = Standby (auxiliary power available)<br>Off = Off |

* Actual NIC numbers depend on several factors, including the operating system installed on the server.

## Mezzanine connector definitions (BL465c G7)

| Item | PCIe |
|---|---|
| Mezzanine connector 1 | x8, Type I mezzanine card only |
| Mezzanine connector 2 | x8, Type I or II mezzanine card |

# Support and other resources

# Technical support

## Contacting HP

### Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

### HP contact information

For the name of the nearest HP authorized reseller:

- See the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

For HP technical support:

- In the United States, for contact options see the Contact HP United States webpage (http://welcome.hp.com/country/us/en/contact_us.html). To contact HP by phone:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website (http://www.hp.com/hps).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

# Documentation feedback

HP welcomes your feedback. To make comments and suggestions about product documentation, send all feedback in an email to HP (mailto:docsfeedback@hp.com).

Include the document title and manufacturing part number in your message. All submissions become the property of HP.

# Related documentation

The documents identified in the following sections provide detailed information for the HP Cluster Platform.

## Cluster component documentation

A cluster is assembled mostly from existing HP components, and each component has its own documentation set. Two full sets of documentation for each type of component are included with the cluster when it is delivered. The following components might be included, depending on the configuration of the cluster and the operating system that is installed:

- HP ProLiant (DL-series, BL-series, SL-series) server documentation
- HP E2610 network switches
- HP E2910al switches
- HP 10000 Series racks, including the following rack components:
  - TFT7600 rack-mount keyboard and monitor
  - Console switch and expansion module
  - High-Voltage PDUs
- Optional storage, in the form of disk shelves, JBOD, a SAN unit, or a separate modular storage cluster

For more information about the features of particular cluster components, see the additional component documentation on the HP website (http://www.hp.com/go/hpc-docs).

## HP Cluster Platform documentation

The latest documentation for HP Cluster Platform components are available on the HP website (http://www.hp.com/go/hpc-docs).

The typical HP Cluster Platform documentation set contains both cross-platform and platform-specific documents, as well as supplementary documents available at the time of release.

### Cross-platform documents

The following cross-platform documents are available:

- *HP Cluster Platform Customer Letter*
- *HP Cluster Platform Overview*
- *HP Cluster Platform Site Preparation Guide*
- *HP Cluster Platform Core Components*
- *HP Cluster Platform Server and Workstation Overview*

### Platform-specific documents

The following platform-specific documents are available:

- Platform roadmap
- One or more system interconnect guides
- A set of cabling tables
- One or more bracket installation guides

## Bracket installation guides

Some HP Cluster Platform solutions use custom brackets for cable management. Select the appropriate document based on the configuration.

| Title | Associated component |
|---|---|
| *HP Cluster Platform 435761-B21 Cable Management Bracket Installation Guide* | Universal bracket |
| *HP Cluster Platform Tab Mount Cable Management Bracket Installation Guide* | HP ProLiant D145 G6 Server |
| *HP BladeSystem c-Class Enclosure Cable Management Bracket Installation Guide* | HP BladeSystem c-Class Enclosure |
| *HP Cluster Platform HP ProLiant DL16x Server Cable Management Bracket Installation Guide* | HP ProLiant DL160 G6 Server and HP ProLiant DL165 G6 Server |

# Important safety information

This document provides only an overview of the procedures for removing servers from a cluster rack and for installing PCI cards. Before removing servers from a cluster rack or installing PCI cards, read the safety information provided in the following documents:

- *HP Cluster Platform Site Preparation Guide*—The servers are installed in HP 10000 series racks. Read and follow the rack safety information before performing any server maintenance operation, such as removing a server from a rack or opening a server chassis. Be sure to review and make note of the rack power distribution information.
- Server Documentation—The HP Cluster Platform ships with a full documentation set for each component, including all server models used in the cluster. Read and follow the server safety information before performing any server maintenance operation, such as removing a server from a rack or opening a server chassis. Be sure to pay attention to all warning labels and icons.
- Cable Management Documentation—Servers used as nodes in HP Cluster Platform do not always use the rack-mount kits and cable management systems that are standard for the server. HP Cluster Platform solutions use special rack-mount and cable management systems that are designed to manage the many heavy cables used by some system interconnect models. See the appropriate cable management guide for each server model.

# Typographic conventions

This document uses the following typographical conventions:

| Example | Uses |
|---|---|
| Book title | The title of a book. On the web, this can be a hyperlink to the book itself. |

| Example | Uses |
|---|---|
| `Command` | A command name or command phrase, for example ls -a. |
| `Computer output` | Information displayed by the computer. |
| **Ctrl+x** or **Ctrl-x** | A key sequence that indicates you must hold down the keyboard key labeled Ctrl while you press the letter x. |
| `ENVIRONMENT VARIABLE` | The name of an environment variable, for example, PATH. |
| **Key** | The name of a keyboard key. Return and Enter both refer to the same key. |
| **Term** | A term or phrase that is defined in the body text of the document, not in a glossary. |
| `User input` | Indicates commands and text that you type exactly as shown. |
| `Replaceable` | The name of a placeholder that you replace with an actual value. |
| %, $, or # | A percent sign represents the C shell system prompt. A dollar sign represents the system prompt for the Bourne, Korn, and POSIX shells and for the OpenVMS operating system. A number sign represents the superuser prompt. |
| [ ] | Optional content in syntax. |
| { } | Required content in syntax. |
| \| | Character that separates items in a list of choices. |
| ... | Indication that the preceding element can be repeated one or more times. |
| .<br>.<br>. | Indication that the example continues. |
| WARNING | An alert that calls attention to important information that if not understood or followed can result in personal injury. |
| CAUTION | An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software. |
| IMPORTANT | An alert that calls attention to essential information. |
| NOTE | An alert that contains additional or supplementary information. |
| TIP | An alert that provides helpful information. |

# Acronyms and abbreviations

### IB

InfiniBand

### iLO

Integrated Lights-Out

### IPMI

Intelligent Platform Management Interface

### JBOD

just a bunch of disks

### LFF

large form-factor

### PCIe

peripheral component interconnect express

### PDU

power distribution unit

### QSFP

quad small form-factor pluggable

### SAN

storage area network

### SEL

system event log

### SFF

small form-factor

### SFP

small form-factor pluggable

## SL-APM

HP ProLiant SL Advanced Power Manager

## SUV

serial, USB, video

## UID

unit identification

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