HPE ProLiant DL160 Gen10 Server

The secure 2P 1U HPE ProLiant DL160 Gen10 server delivers the right balance of performance, storage, reliability, manageability and efficiency in a dense and compact chassis, to meet the needs of growing businesses of a diverse set of customers – from SMB to Service Providers running wide range of workloads - at a compelling price point.

8 SFF chassis - Front View

1. Quick removal access panel
2. Serial no. label pull tab
3. Health LED
4. Power On/Standby button and system power LED
5. USB 3.0 port
6. iLO Service Port
7. UID button/LED
8. NIC Status LED
9. Standard 8 SAS/SATA drive bays
## Overview

### 4 LFF chassis - Front View
1. Quick removal access panel
2. Serial no. label pull tab
3. iLO Service Port
4. USB 3.0 Port
5. UID button/LED
6. NIC status LED
7. Health LED
8. Power On/Standby button and system power LED
9. 4 SAS/SATA drive bays

### Rear View
1. Slot 1 PCIe 3.0
2. Slot 2 PCIe 3.0
3. **Optional:** Slot 3 PCIe 3.0 (Requires 2nd processor)
4. Power Supply (Redundant hot-plug shown)
5. Embedded 2x 1GbE Adapter
6. VGA Port
7. iLO Management Port
8. USB 3.0 Ports
Overview

1. Standard single rotor hot swap fans
   1 CPU – 3 standard fans
   Optional: 2 CPUs – 6 standard fans (redundant fan shown)
2. Optional: Smart Storage Battery (No battery shown)
3. DDR4 DIMM slots (Fully populated 16 DIMMs shown)
4. Up to 2 processors (shown with standard heat sinks)
5. Hard Drive backplane power connector
6. System Battery
7. Internal USB 3.0 connector
8. Secondary (CPU2) PCIe 3.0 riser*
9. Power supply (non-redundant power supply shown)
10. Flexible Smart Array Controller Connector
11. MicroSD card slot
12. iLO Service Port Connector
13. Primary (CPU1) PCIe 3.0 riser
14. Mini-SAS port 1
15. Mini-SAS port 2
16. Mini-SAS port 3
17. SATA port 4
18. SATA port 5
19. Front Power USB 3.0 connector

8SFF chassis – with optional 2nd CPU - Internal View
QuickSpecs

Overview

What's New
Additional options available to add as “ad-hoc” in OCA
- HPE 32GB 2Rx4 PC4-2666V-R Smart Kit
- 2TB/4TB SATA LFF HDDs
- 1TB/2TB SATA SFF HDDs
- 300GB/600GB & 1.8TB/2TB SAS SFF HDDs
- 240GB/960GB SATA SFF SSDs
- 800GB/960GB SFF SAS SSDs
- SATA M.2 options
- 1Gb/10Gb/25Gb PCIe stand-up network adapters

Platform Information
Form Factor
1U rack

Chassis Types
8 SFF
4 LFF

System Fans
Standard – fan types included

Non-Redundant
1P Model 3 fans
2P Model 6 fans

NOTE: The second processor option kit contains 3 additional fans
Standard Features

Processors – Up to 2 of the following depending on model.

NOTE: For more information regarding Intel Xeon processors, please see the following:

<table>
<thead>
<tr>
<th>Intel Xeon Models</th>
<th>CPU Frequency</th>
<th>Cores</th>
<th>L3 Cache</th>
<th>Power</th>
<th>UPI</th>
<th>DDR4</th>
<th>Memory per socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Processors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver 4110 Processor</td>
<td>2.1 GHz</td>
<td>8</td>
<td>11.00 MB</td>
<td>85W</td>
<td>2 @ 9.6 GT/s</td>
<td>2400 MT/s</td>
<td>768 GB</td>
</tr>
<tr>
<td>Bronze Processors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bronze 3106 Processor</td>
<td>1.7 GHz</td>
<td>8</td>
<td>11.00 MB</td>
<td>85W</td>
<td>2 @ 9.6 GT/s</td>
<td>2133 MT/s</td>
<td>768 GB</td>
</tr>
</tbody>
</table>

NOTE: Silver - 4100 Series - 2 Socket supports 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MT/s providing up to 768 GB memory capacity. Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS supported.

NOTE: Bronze – 3100 Series - 2 Socket supports 2UPI @ 9.6 GT/s, supports 6-Channel DDR4 @ 2133 MT/s providing up to 768GB memory capacity. Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS supported.

Chipset
Intel C622 Chipset

NOTE: For more information regarding Intel® chipsets, please see the following URL:

On System Management Chipset
HPE iLO 5 ASIC
NOTE: Read and learn more in the iLO QuickSpecs.

Memory
One of the following depending on model

Type:
HPE DDR4 SmartMemory, Registered (RDIMM)

DIMM Slots Available: 16
8 DIMM slots per processor, 6 channels per processor, 2 channels @ 2 DIMMs per channel, 4 channels @ 1 DIMM per channel

Maximum capacity (RDIMM): 512 GB
16 x 32 GB RDIMM @ 2400 MT/s

NOTE: The maximum memory by socket is limited by the processor selection.

Memory Protection
For details on the HPE Server Memory Options RAS feature, visit: http://www.hpe.com/docs/memory-ras-feature.
## Expansion Slots

### FlexibleLOM Riser

<table>
<thead>
<tr>
<th>Slots #</th>
<th>Technology</th>
<th>Bus Width</th>
<th>Connector Width</th>
<th>Slot Form Factor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PCIe 3.0</td>
<td>X8</td>
<td>X8</td>
<td>Flexible LOM</td>
<td>Proc 1</td>
</tr>
<tr>
<td>2</td>
<td>PCIe 3.0</td>
<td>X8</td>
<td>X8</td>
<td>Half-height, half-length slot</td>
<td>Proc 1</td>
</tr>
</tbody>
</table>

**NOTE:** Bus Width Indicates the number of physical electrical lanes running to the connector.
**NOTE:** This riser is mandatory for installing FlexibleLOMs.
**NOTE:** FlexibleLOM riser will replace standard CPU1 X16/X8 riser.

### CPU2 Riser

<table>
<thead>
<tr>
<th>Slots #</th>
<th>Technology</th>
<th>Bus Width</th>
<th>Connector Width</th>
<th>Slot Form Factor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PCIe 3.0</td>
<td>X16</td>
<td>X16</td>
<td>Half-height, half-length slot</td>
<td>Proc 2</td>
</tr>
</tbody>
</table>

**NOTE:** Bus Width Indicates the number of physical electrical lanes running to the connector.
**NOTE:** When populating the second optional riser slot, the second processor must be installed.
**NOTE:** Cannot be installed if type-a modular smart array controller is installed.
**NOTE:** Max 3-PCIe slots are available on the DL160-Gen10.

## Storage Controllers

The Gen10 controller naming framework has been updated to simplify identification as depicted below. For a more detailed breakout of the available Gen10 Smart Array controllers visit the [HPE Smart Array Gen10 Controllers Data Sheet](#). One of the following depending on model

### Software RAID

HPE Smart Array S100i SR Gen10 SW RAID  
**NOTE:** HPE Smart Array S100i SR Gen10 SW RAID will operate in UEFI mode only. For legacy support an additional controller will be needed.  
**NOTE:** HPE Smart Array S100i SR Gen10 SW RAID is off by default and must be enabled.  
**NOTE:** HPE Smart Array S100i SR Gen10 SW RAID only supports Windows and does not support Linux. For Linux users, HPE offers a solution that uses in-distro open-source software to create a two-disk RAID 1 boot volume. For more information visit: [https://downloads.linux.hpe.com/SDR/project/lsrrb/](https://downloads.linux.hpe.com/SDR/project/lsrrb/)

### Essential RAID Controller

HPE Smart Array E208i-a SR G10 LH Controller  
HPE Smart Array E208i-p SR Gen10 Controller  
HPE Smart Array E208e-p SR Gen10 Controller

### Performance RAID Controller

HPE Smart Array P408i-a SR G10 LH Controller  
**NOTE:** Performance RAID Controllers require the HPE Smart Storage Battery (P01366-B21) which is sold separately.

## Internal Storage Devices

### Hard Drives

None ship standard
QuickSpecs

HPE ProLiant DL160 Gen10 Server

Standard Features

Maximum Internal Storage

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Plug SFF SAS HDD</td>
<td>16 TB</td>
<td>8 X 2 TB</td>
</tr>
<tr>
<td>Hot Plug LFF SAS HDD</td>
<td>8 TB</td>
<td>4 X 2 TB</td>
</tr>
<tr>
<td>Hot Plug SFF SATA HDD</td>
<td>16 TB</td>
<td>8 X 2 TB</td>
</tr>
<tr>
<td>Hot Plug LFF SATA HDD</td>
<td>16 TB</td>
<td>4 X 4 TB</td>
</tr>
<tr>
<td>Hot Plug SFF SAS SSD</td>
<td>7.6 TB</td>
<td>8 X 960GB</td>
</tr>
<tr>
<td>Hot Plug SFF SATA SSD</td>
<td>7.6 TB</td>
<td>8 X 960GB</td>
</tr>
</tbody>
</table>

Power Supply

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

**NOTE:** Available in 94% efficiency.

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE ProLiant Gen10 Performance Servers. Flex Slot power supplies are certified for high-efficiency operation and offer multiple power output options, allowing users to “right-size” a power supply for specific server configurations. This flexibility helps to reduce power waste, lower overall energy costs, and avoid “trapped” power capacity in the data center.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page. For information on power specifications and technical content visit HPE Server power supplies.

Interfaces

Video

1 rear – VGA Port (standard)

Network Ports

2 x 1 GbE ports embedded on board with optional FlexibleLOM

HPE iLO Remote Management Network Port

1 Gb Dedicated

Front iLO Service Port

1 standard

Micro SD Slot

1 Micro SD

**NOTE:** The Micro SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.

USB 3.0

Up to 4 total: 1 front, 2 rear, 1 internal

Operating Systems and Virtualization Software Support for ProLiant Servers

- Windows Server 2012 R2**
- Windows Server 2016**
- Windows Server 2019**
- VMware ESXi 6.0 U3**
- VMware ESXi 6.0 U3, 6.5 U1/U2/U3**
- VMware ESXi 6.7 U1
- Red Hat Enterprise Linux (RHEL) 7.6 (with Kbase)**
- Red Hat Enterprise Linux (RHEL) 8.0
- SUSE Linux Enterprise Server (SLES) 12 SP4**
- SUSE Linux Enterprise Server (SLES) 15

**NOTE:** Certified
Standard Features

Industry Standard Compliance

- ACPI 6.1 Compliant
- PCIe 3.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- PXE Support
- USB 3.0 Compliant (internal)
- SMBIOS 3.1
- UEFI 2.6
- Redfish API
- IPMI 2.0
- Secure Digital 2.0
- Advanced Encryption Standard (AES)
- Triple Data Encryption Standard (3DES)
- SNMP v3
- TLS 1.2
- DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)
- Active Directory v1.0
- ASHRAE A3/A4

**NOTE:** For additional technical thermal details regarding ambient temperatures, humidity and features support please visit: [http://www.hpe.com/servers/ashrae](http://www.hpe.com/servers/ashrae)

- UEFI (Unified Extensible Firmware Interface Forum)
  **NOTE:** UEFI is the default for the HPE ProLiant DL160 Gen10. Legacy mode can be selected in the field.

Graphics

- **Integrated Video Standard**
  - Video modes up to 1920 x 1200@60Hz (32 bpp)
  - 16MB Video Memory

- **HPE iLO 5 on system management memory**
  - 32 MB Flash
  - 4 Gbit DDR 3 with ECC protection
Standard Features

HPE Server UEFI/Legacy ROM
Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen10 servers have a UEFI Class 2 implementation and support both UEFI Mode (default) and Legacy BIOS Mode.

**NOTE:** The UEFI System Utilities tool is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit [http://www.hpe.com/servers/uefi](http://www.hpe.com/servers/uefi).

- UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:
- Secure Boot and Secure Start enable for enhanced security
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using iLO RESTful API that is Redfish API Conformant
- PXE boot support for IPv6 networks
- Workload Profiles for simple performance optimization
- UEFI Boot Mode only:
- NVMe Boot Support
- iSCSI Software Initiator Support.
- HTTP/HTTPS Boot support as a PXE alternative.
- Boot support for option cards that only support a UEFI option ROM

**NOTE:** For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.

Embedded Management

**HPE Integrated Lights-Out (HPE iLO)**
Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at [http://www.hpe.com/info/ilo](http://www.hpe.com/info/ilo).

UEFI

Intelligent Provisioning
Hassle free server and OS provisioning for 1 or more servers with Intelligent Provisioning. Learn more at [http://www.hpe.com/servers/intelligentprovisioning](http://www.hpe.com/servers/intelligentprovisioning).

iLO RESTful API
iLO RESTful API is Redfish API conformance and offers simplified server management automation such as configuration and maintenance tasks based on modern industry standards. Learn more at [http://www.hpe.com/info/restfulapi](http://www.hpe.com/info/restfulapi).

Server Utilities

**Active Health System**
The HPE Active Health System (AHS) is an essential component of the iLO management portfolio that provides continuous, proactive health monitoring of HPE servers. Learn more at [http://www.hpe.com/servers/ahs](http://www.hpe.com/servers/ahs).

**Active Health System Viewer**
Use the Active Health System Viewer, a web-based portal, to easily read AHS logs and speed problem resolution with HPE self-repair recommendations, to learn more visit: [http://www.hpe.com/servers/ahsv](http://www.hpe.com/servers/ahsv).
Standard Features

Service Pack for ProLiant (SPP)
The Service Pack for ProLiant (SPP) is a comprehensive collection of server firmware, drivers, and system software tested as a single solution stack, which is delivered as a single ISO image. Learn more at [http://www.hpe.com/servers/spp](http://www.hpe.com/servers/spp)

iLO Amplifier Pack
Designed for large enterprise and service provider environments with hundreds of HPE servers, the iLO Amplifier Pack is a free, downloadable open virtual application (OVA) that delivers the power to discover, inventory and update Gen8, Gen9 and Gen10 HPE servers at unmatched speed and scale. Use with an iLO Advanced License to unlock full capabilities. Learn more at [http://www.hpe.com/servers/iLOamplifierpack](http://www.hpe.com/servers/iLOamplifierpack).

HPE iLO Mobile Application
Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: [http://www.hpe.com/info/ilo/mobileapp](http://www.hpe.com/info/ilo/mobileapp).

RESTful Interface Tool
RESTful Interface tool (iLOREST) is a single scripting tool to provision using iLO RESTful API to discover and deploy servers at scale. Learn more at [http://www.hpe.com/info/resttool](http://www.hpe.com/info/resttool).

Scripting Tools

HPE Systems Insight Manager (HPE SIM)
Ideal for environments already using HPE SIM, it allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers. Also provides you with basic support for non-HPE servers. HPE SIM also integrates with Smart Update Manager to provide quick and seamless firmware updates. Learn more at [http://www.hpe.com/info/hpesim](http://www.hpe.com/info/hpesim).

Security
- UEFI Secure Boot and Secure Start support
- Immutable Silicon Root of Trust
- FIPS 140-2 validation
- Common Criteria certification
- Configurable for PCI DSS compliance
- Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser
- Support for Commercial National Security Algorithms (CNSA)
- Tamper-free updates – components digitally signed and verified
- Secure Recovery – recover critical firmware to known good state on detection of compromised firmware
- Ability to rollback firmware
- Secure erase of NAND/User data
Warranty
This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
Optional Features

Server Management
HPE iLO Advanced
HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HPE iLO Advanced at http://www.hpe.com/servers/iloadvanced.

HPE Insight Cluster Management Utility (CMU)
HPE Insight Cluster Management Utility is a HyperScale management framework that includes software for the centralized provisioning, management and monitoring of nodes and infrastructure. Learn more at http://www.hpe.com/info/cmu.

Rack and Power Infrastructure
The story may end with servers, but it starts with the foundation that makes compute go – and business grow. We’ve reinvented our entire portfolio of rack and power products to make IT infrastructure more secure, more practical, and more efficient. In other words, we’ve created a stronger, smarter, and simpler infrastructure to help you get the most out of your IT equipment. As an industry leader, Hewlett Packard Enterprise is uniquely positioned to address the key concerns of power, cooling, cable management and system access.
HPE G2 Advanced and Enterprise Racks are perfect for the server room or today's modern data center with enhanced airflow and thermal management, flexible cable management, and a 10 year Warranty to support higher density computing.
HPE G2 PDUs offer reliable power in flexible form factors that operate at temperatures up to 60°, include color-coded outlets and load segments and a low-profile design for optimal access to the rack and support for dense rack environments.
HPE Uninterruptible Power Systems are cost-effective power protection for any type workload. Some UPSs include options for remote management and extended runtime modules so you’re critical dense data center is covered in power outages.
HPE KVM Solutions include a console and switches designed to work with your server and IT equipment reliably. We’ve got a cost-effective KVM switch for your first rack and multiple connection IP switches with remote management and security capabilities to keep your data center rack up and running.
Learn more about HPE Racks, KVM, PDUs and UPSs at HPE Rack and Power Infrastructure.

One Config Simple (SCE)
SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. https://h22174.www2.hpe.com/SimplifiedConfig>Welcome#
Service and Support

HPE Pointnext - Service and Support
Protect your business beyond warranty with HPE Support Services
HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation. From the onset of your transformation journey, Advisory and Transformational Services focus on designing the transformation and creating a solution roadmap. Professional Services specializes in creative configurations with flawless and on-time implementation, and on-budget execution. Finally, operational services provides innovative new approaches like Flexible Capacity and Datacenter Care, to keep your business at peak performance. Hewlett Packard Enterprise is ready to bring together all the pieces of the puzzle for you, with an eye on the future, and make the complex simple.

Connect your devices:
Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time and improve diagnostic accuracy with a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support. Learn more about getting connected at http://www.hpe.com/services/getconnected

Other related Services
HPE Server Hardware Installation
Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf

HPE Education Services
Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment. http://www.hpe.com/ww/learn

HPE Support Center
The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more http://www.hpe.com/support/hpesc
The HPE Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.
HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.
NOTE:*HPE Support Center Mobile App is subject to local availability.
For more information: http://www.hpe.com/services

Parts and Materials
Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.
Pre-configured Models

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

<table>
<thead>
<tr>
<th></th>
<th>Entry Model</th>
<th>Base Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU Number</td>
<td><strong>878968-B21</strong></td>
<td><strong>878970-B21</strong></td>
</tr>
<tr>
<td>Model Name</td>
<td>HPE ProLiant DL160 Gen10 3106 1.7GHz 8-core 1P 16GB-R S100i 4LFF 1x500W PS Server</td>
<td>HPE ProLiant DL160 Gen10 4110 2.1GHz 8-core 1P 16GB-R S100i 8SFF 1x500W PS Server</td>
</tr>
<tr>
<td>Chassis</td>
<td>4LFF</td>
<td>8SFF</td>
</tr>
<tr>
<td>Processor</td>
<td>3106 (1.7GHz/8-core/85W)</td>
<td>4110 (2.1GHz/8-core/85W)</td>
</tr>
<tr>
<td>Number of Processors</td>
<td>One processor With standard heatsink</td>
<td>One processor With standard heatsink</td>
</tr>
<tr>
<td>Memory</td>
<td>16 GB RDIMM 1R 2666 MT/s (1x 16 GB) <strong>NOTE: Runs at 2133 MT/s due to processor limitation</strong></td>
<td>16 GB RDIMM 1R 2666 MT/s (1x 16 GB) <strong>NOTE: Runs at 2400 MT/s due to processor limitation</strong></td>
</tr>
<tr>
<td>Network Controller</td>
<td>Embedded 2-port 1GbE</td>
<td>Embedded 2-port 1GbE</td>
</tr>
<tr>
<td>Storage Controller</td>
<td>Embedded 14-port S100i <strong>NOTE: SATA only</strong></td>
<td>Embedded 14-port S100i <strong>NOTE: SATA only</strong></td>
</tr>
<tr>
<td>Hard Drive</td>
<td>None included</td>
<td>None included</td>
</tr>
<tr>
<td>Optical Drive</td>
<td>None included</td>
<td>None included</td>
</tr>
<tr>
<td>PCIe Slots</td>
<td>2 PCIe: 1 x16 FH / 1 x8 LP</td>
<td>2 PCIe: 1 x16 FH / 1 x8 LP</td>
</tr>
<tr>
<td>Power Supply</td>
<td>1x 500W Hot Plug; RPS ready</td>
<td>1x 500W Hot Plug; RPS ready</td>
</tr>
<tr>
<td>Fans</td>
<td>3 - Standard</td>
<td>3 - Standard</td>
</tr>
<tr>
<td>Management</td>
<td>HPE iLO 5</td>
<td>HPE iLO 5</td>
</tr>
<tr>
<td>Rail Kit</td>
<td>1U Easy Install</td>
<td>1U Easy Install</td>
</tr>
<tr>
<td>Energy Star</td>
<td>Energy Star 2.1</td>
<td></td>
</tr>
<tr>
<td>Form Factor</td>
<td>1U Rack</td>
<td></td>
</tr>
<tr>
<td>Warranty</td>
<td>3-year parts, 3-year labor, 3-year onsite support with next business day response.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** UEFI is the standard default for all Pre-configured models.
Core Options

HPE Processors
Processor Option Kits
HPE DL160 Gen10 Intel Xeon-Silver 4110 (2.1GHz/8-core/85W) Processor Kit 878947-B21
HPE DL160 Gen10 Intel Xeon-Bronze 3106 (1.7GHz/8-core/85W) Processor Kit 878945-B21

NOTE: Up to two processors supported.
NOTE: Turbo2: Intel® Turbo Boost Technology 2.0 provides more computing power when you need it with performance that adapts to spikes in your workload and delivers more performance upside than then previous generation turbo technology.
NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.
NOTE: The xxxxxx-B21 is the 2nd processor and ships with 3 additional fans
NOTE: Maximum memory per socket depends on the processor.

Memory Selection
To streamline the configuration process for HPE ProLiant Gen10 servers and to provide the best product availability, Hewlett Packard Enterprise recommends memory from the list located here: http://www.hpe.com/products/recommend.

HPE Memory
HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit 815098-B21

NOTE: Memory DIMM availability with a server platform is dependent upon completion of certification testing.
NOTE: The maximum memory speed is a function of the memory type, memory configuration, and processor model.

HPE Drives
Enterprise - 12G SAS - SFF Drives
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD 872475-B21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD 872477-B21
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD 872479-B21

Midline - 12G SAS - LFF Drives
HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD 833926-B21

Midline - 6G SATA - LFF Drives
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD 861686-B21

SSD Selection
To streamline the configuration process for HPE ProLiant Gen10 servers and to provide the best product availability, Hewlett Packard Enterprise recommends SSDs from the list located here: http://www.hpe.com/products/recommend.

To further assist with configuration, HPE also offers an SSD Selector Tool located here: http://ssd.hpe.com.

SAS - Mixed Use - SFF - Solid State Drives
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD P04525-B21

SATA - Mixed Use - SFF - Solid State Drives
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD P07922-B21

HPE Networking
FlexibleLOM adapters
HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter 817749-B21

NOTE: The HPE ProLiant DL160 Gen10 chassis ships with 2x 1 Gb embedded.
NOTE: Only one FlexibleLOM can be added to the server. These options are upgradeable and can be changed from the original configuration after the server is shipped.
NOTE: FlexibleLOM Riser Kit (875748-B21) is required to install these adapters
### Core Options

#### HPE I/O Expansion Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE DL160 Gen10 FlexibleLOM/NVMe Riser Kit</td>
<td>875748-B21</td>
</tr>
<tr>
<td><strong>NOTE:</strong> Supported on CPU1</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE:</strong> This riser is required to use FlexibleLOM adapters</td>
<td></td>
</tr>
<tr>
<td>HPE DL160 Gen10 CPU2 x16 PCIe Riser Kit</td>
<td>866436-B21</td>
</tr>
<tr>
<td><strong>NOTE:</strong> Requires second processor to be installed</td>
<td></td>
</tr>
</tbody>
</table>

#### HPE Power Supplies

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit</td>
<td>865408-B21</td>
</tr>
<tr>
<td><strong>NOTE:</strong> Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.</td>
<td></td>
</tr>
</tbody>
</table>
Additional Options

Embedded Management

**HPE iLO Advanced**

- HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features: E6U59ABE
- HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features: 512485-B21
- HPE iLO Advanced Flexible Quantity License with 1yr Support on iLO Licensed Features: 512486-B21
- HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features: 512487-B21
- HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features: E6U64ABE
- HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features: BD505A
- HPE iLO Advanced Flexible Quantity License with 3yr Support on iLO Licensed Features: BD506A
- HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features: BD507A

**NOTE:** There is no Oneview support on the HPE ProLiant DL160 Gen10

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**HPE Smart Array Controllers**

The Gen10 controller naming framework has been updated to simplify identification as depicted below. For a more detailed breakout of the available Gen10 Smart Array controllers visit the [HPE Smart Array Gen10 Controllers Data Sheet](#).

![Smart Array Controller Diagram]

- **Performance RAID Controllers**
  - **NOTE:** All performance RAID controllers are supported by the HPE Smart Storage Battery (P01366-B21), which supports multiple devices and is sold separately.
  - HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS Modular LH Controller: 869081-B21
  - **NOTE:** Must also select either 4LFF or 8SFF Smart Array SAS Cable Kit (866452-B21; 866448-B21), depending on chassis
  - **NOTE:** Does not occupy a PCIe expansion slot.

- **Essential RAID Controllers**
  - HPE Smart Array E208i-a SR Gen10 (8 Internal Lanes/No Cache) 12G SAS Modular LH Controller: 869079-B21
  - **NOTE:** Must also select either 4LFF or 8SFF Smart Array SAS Cable Kit (866452-B21; 866448-B21), depending on chassis
  - **NOTE:** Does not occupy a PCIe expansion slot.

- **HPE Cable Options**
  - HPE 1U Gen10 4LFF Smart Array SAS Cable Kit: 866452-B21
  - HPE 1U Gen10 8SFF Smart Array SAS Cable Kit: 866448-B21
  - **NOTE:** Required when any Performance RAID Controller or Flexible Smart Array –a (i.e. P408i-a) controller is selected
Additional Options

Optional Software
HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU Q2F26AAE
HPE Smart Array SR SmartCache (Single Key/Single Server) LTU D7S26A
HPE Smart Array SR SmartCache (Single Key/Multiple Servers) LTU D7S27A
HPE Smart Array SR SmartCache (Single Key/Multiple Servers) E-LTU D7S27AAE

NOTE: SmartCache is offered on HPE Smart Array performance RAID controllers

Optional Upgrades
HPE 96W Smart Storage Battery (up to 20 Devices) with 145mm Cable Kit P01366-B21

NOTE: Provides backup power for multiple HPE Smart Array controllers or other devices. Is required with performance RAID controllers.

HPE Tape Backup

HPE Racks
Please see the HPE Advanced Series Racks QuickSpecs for information on additional racks options and rack specifications.
Please see the HPE Enterprise Series Racks QuickSpecs for information on additional racks options and rack specifications.

HPE Power Distribution Units (PDUs)
Please see the HPE Basic Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications.
Please see the HPE Metered Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications.
Please see the HPE Intelligent Power Distribution Unit (PDU) QuickSpecs for information on these products and their specifications.
Please see the HPE Metered and Switched Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications.

HPE Uninterruptible Power Systems (UPS)
To learn more, please visit the HPE Uninterruptible Power Systems (UPS) web page.
Please see the HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs for information on these products and their specifications.
Please see the HPE Line Interactive Single Phase UPS QuickSpecs for information on these products and their specifications.

HPE Rack Options
Please see the HPE IT Access and Control for information on these products and their specifications.
Additional Options

Additional options available to add as “ad-hoc” in OCA

NOTE: These options will not be visible in OCA and must be added manually via the ad-hoc section

HPE Memory
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit
NOTE: The maximum memory speed is a function of the memory type, memory configuration, and processor model.

HPE Drives
Enterprise - 12G SAS - SFF Drives
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD

Midline - 12G SAS - SFF Drives
HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD

Midline 6G SATA - SFF Drives
HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD

Midline - 6G SATA - LFF Drives
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD

SSD Selection
Mixed Use - 12G SAS - SFF - Solid State Drives
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD

Read Intensive - 12G SAS - SFF - Solid State Drives
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD

Read Intensive - SATA - SFF - Solid State Drives
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD

Mixed Use - SATA - SFF - Solid State Drives
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD

Internal Dual M.2 Kit
HPE Universal SATA HHHL 3yr Wty M.2 Kit

NOTE: The Universal SATA M.2 Kit above will require a PCIe slot and support up to two of the same M.2 cards below.

Read Intensive - M.2 - Solid State Drives (2280 type)
HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD

NOTE: Must also select “HPE Universal SATA HHHL 3yr Wty M.2 Kit- 878783-B21” and “HPE DL160/120 Gen10 M.2 SATA Cable Kit-866456-B21” with M.2.

Mixed Use - M.2 - Solid State Drives (2280 type)
HPE 240GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD

NOTE: Must also select “HPE Universal SATA HHHL 3yr Wty M.2 Kit- 878783-B21” and “HPE DL160/120 Gen10 M.2 SATA Cable Kit-866456-B21” with M.2.

M.2 Cable Kit
HPE DL160/120 Gen10 M.2 SATA Cable Kit

NOTE: Must be selected along with “HPE Universal SATA HHHL 3yr Wty M.2 Kit- 878783-B21”
HPE Networking

**10 Gigabit Ethernet adapters**
- HPE Ethernet 10Gb 2-port 530SFP Adapter
- HPE Ethernet 10Gb 2-port 521T Adapter

**NOTE:** Max 1 per system

- HPE Ethernet 10Gb 2-port 530T Adapter

**25 Gigabit Ethernet adapters**
- HPE Ethernet 10/25Gb 2-port 631SFP28 Adapter

**1 Gigabit Ethernet adapters**
- HPE Ethernet 1Gb 4-port 366T Adapter

**NOTE:** Max 1 per system. Can only be installed in Slot 1
Memory Population guidelines

**HPE DL160/DL180 Gen 10 Servers Front Server**
(2+1+1 slots per channel)

---

<table>
<thead>
<tr>
<th>DIMMs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>
| 1 DIMM | | | | | | | | | 3
| 2 DIMMs | | | | | 2 | 3 | | |
| 3 DIMMs | | 1 | 2 | 3 | | | | |
| 4 DIMMs | | 2 | 3 | | | 6 | 7 | |
| 5 DIMMs* | | 1 | 2 | 3 | | 6 | 7 | |
| 6 DIMMs | | 1 | 2 | 3 | | 6 | 7 | 8 |
| 7 DIMMs* | | 1 | 2 | 3 | 4 | | 6 | 7 | 8 |
| 8 DIMMs* | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

**HPE ProLiant Gen10 8 slot per CPU DIMM population order**

*Unbalanced, not recommended*
General Memory Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two-processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.
- To realize the performance memory capabilities listed in this document, HPE DDR4 SmartMemory is required. For additional information, please see the HPE DDR4 SmartMemory QuickSpecs.

HPE DDR4 SmartMemory

<table>
<thead>
<tr>
<th>DIMM Type</th>
<th>Register DIMM (RDIMM)</th>
<th>SKU Description</th>
<th>CAS Latency</th>
<th>DIMM Native Speed (MT/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>815098-B21</td>
<td>815100-B21</td>
<td>HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit</td>
<td>19-19-19</td>
<td>2666 MT/s</td>
</tr>
<tr>
<td>815100-B21</td>
<td></td>
<td>HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit</td>
<td>19-19-19</td>
<td>2666 MT/s</td>
</tr>
</tbody>
</table>

HPE Server Memory Speed (MT/s): Intel Xeon®Platinum 41xx Processors *

1 DIMM Per Channel
- 2400 MT/s
2 DIMM Per Channel
- 2400 MT/s

HPE Server Memory Speed (MT/s): Intel Xeon®Platinum 31xx Processors *

1 DIMM Per Channel
- 2133 MT/s
2 DIMM Per Channel
- 2133 MT/s

NOTE: The maximum memory speed is a function of the memory type, memory configuration, and processor model.

Standard and Maximum Memory Capacity (Pre-configured Models)

<table>
<thead>
<tr>
<th>Pre Configured Models</th>
<th>Standard Memory</th>
<th>Maximum Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>3106 Entry LFF</td>
<td>16GB (1x16 GB RDIMM)</td>
<td>512 GB (16x 32 GB)</td>
</tr>
<tr>
<td>4110 Base SFF</td>
<td>16GB (1x16 GB RDIMM)</td>
<td>512 GB (16x 32 GB)</td>
</tr>
</tbody>
</table>

DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GB) values.
- 16GB = 16,384 MB

For more information on memory, please see the Memory Quickspecs: HPE DDR4 SmartMemory
### Technical Specifications

#### System Unit

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>4.29 x 43.46 x 61.49 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.69 x 17.11 x 24.21 in</td>
</tr>
</tbody>
</table>

#### Weight (approximate)

<table>
<thead>
<tr>
<th></th>
<th>SFF Minimum: 8 SFF chassis with 1x SFF HDD, 1x Memory DIMM, 3 Fans, 1 Processor with heatsink, 1 power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SFF Maximum: 8SFF chassis with 8 SFF HDD, 1 X Memory DIMM, 6 Fans, 2 Processors with heatsink, 2 power supplies</td>
</tr>
<tr>
<td></td>
<td>LFF Minimum: 4 LFF chassis with 1X LFF Hard Drive, 1X Memory DIMM, 3 Fans, 1 Processor with heatsink, 1 power supply</td>
</tr>
<tr>
<td></td>
<td>LFF Maximum: 4 LFF chassis with 4X LFF Hard Drive, 1X Memory DIMM, 6 Fans, 2 Processors with heatsink, 2 power supplies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>24.19lb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.97kg</td>
</tr>
<tr>
<td></td>
<td>30.69 lb</td>
</tr>
<tr>
<td></td>
<td>13.92 kg</td>
</tr>
<tr>
<td></td>
<td>25.69 lb</td>
</tr>
<tr>
<td></td>
<td>11.65 kg</td>
</tr>
<tr>
<td></td>
<td>34.69 lb</td>
</tr>
<tr>
<td></td>
<td>15.74kg</td>
</tr>
</tbody>
</table>

#### Input Requirements (per power supply)

<table>
<thead>
<tr>
<th>Rated Line Voltage</th>
<th>100 to 120 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200 to 240 VAC</td>
</tr>
</tbody>
</table>

#### BTU Rating

**Maximum**

For 500W Power Supply: 1979 BTU/hr (at 100 VAC), 1911 BTU/hr (at 200 VAC), 1965 BTU/hr (at 240 VAC) for China Only

#### Power Supply Output (per power supply)

<table>
<thead>
<tr>
<th>Rated Steady-State Power</th>
<th>For 500W Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VAC) input for China only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Peak Power</td>
<td>For 500W Power Supply: 500W (at 100 to 127 VAC), 500W (at 200 to 240 VAC), 500W (at 240 VAC) input for China only</td>
</tr>
</tbody>
</table>

#### System Inlet Temperature

**Standard Operating Temperature**

10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.

**Extended Ambient Operating Temperature**

For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: [http://www.hpe.com/servers/ashrae](http://www.hpe.com/servers/ashrae)

For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: [http://www.hpe.com/servers/ashrae](http://www.hpe.com/servers/ashrae)

System performance may be reduced if operating in the extended ambient operating range or with a fan fault.

**Non-operating**

-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
**Technical Specifications**

### Relative Humidity
- **Operating**
  - 8% to 90% - Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.
- **Non-operating**
  - 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

### Altitude
- **Operating**
  - 3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
- **Non-operating**
  - 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

### Acoustic Noise
Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels. Please have your HPE representative provide information from the HPE EMESC website for further technical details regarding the configurations listed below.

<table>
<thead>
<tr>
<th>Configuration SKU</th>
<th>LFF Config</th>
<th>SFF Config</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Idle</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LWAd</td>
<td>4.5 B</td>
<td>4.5 B</td>
</tr>
<tr>
<td>LpAm</td>
<td>28.1 dBA</td>
<td>27.8 dBA</td>
</tr>
<tr>
<td><strong>Operating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LWAd</td>
<td>5.1 B</td>
<td>5.1 B</td>
</tr>
<tr>
<td>LpAm</td>
<td>34.0 dBA</td>
<td>33.0 dBA</td>
</tr>
</tbody>
</table>

**NOTE:** Acoustics levels will vary depending on system configuration. Values are based on below configurations and are for reference only.

**NOTE:** Additional options may result in increased sound levels.

**NOTE:** Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

**NOTE:** LFF configuration included one Intel SKL-SP Xeon-B 3104 processor, two HP 4TB SATA 7.2K LFF HDD, two 8GB PC4-2666V-R, three system fans and one 500W 12V no AUX Pwr Sply.

**NOTE:** SFF configuration included one Intel SKL-SP Xeon-S 4108 processor, two HP 500GB 6G SATA 7.2K SFF HDD, two 16GB PC4-2666V-R, three system fans, one 1U 500W 12V HTPLG RED HE-P-A, one Smart Array E208i-a SR Gen10 Ctrlr.

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**Emissions Classification (EMC) – Regulatory Information**
To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:
http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts
HPE Smart Array
For latest information on HPE Smart Array Gen10 Controllers for HPE ProLiant DL, ML and Apollo Servers please refer to their QuickSpecs. (E208i-a,E208i-p,E208e-p,P408i-a,P408i-p,P408e-p,P816i-a)

Environment-friendly Products and Approach - End-of-life Management and Recycling
Hewlett Packard Enterprise offers end-of-life product return, trade-in, and recycling programs, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.
### Summary of Changes

<table>
<thead>
<tr>
<th>Date</th>
<th>Version History</th>
<th>Action</th>
<th>Description of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Aug-2019</td>
<td>Version 5</td>
<td>Changed</td>
<td>Overview, Standard Features, Additional Options and Memory sections were updated.</td>
</tr>
<tr>
<td>05-Aug-2019</td>
<td>Version 4</td>
<td>Changed</td>
<td>Overview, Standard Features, Optional Features, Additional Options and Memory sections were updated.</td>
</tr>
<tr>
<td>03-Jun-2019</td>
<td>Version 3</td>
<td>Changed</td>
<td>Overview, Additional Options and Pre-configured Models sections were updated.</td>
</tr>
<tr>
<td>15-Apr-2019</td>
<td>Version 2</td>
<td>Changed</td>
<td>Overview, Standard Features, Optional Features and Pre-configured Models sections were updated.</td>
</tr>
<tr>
<td>04-Feb-2019</td>
<td>Version 1</td>
<td>New</td>
<td>New QuickSpecs</td>
</tr>
</tbody>
</table>