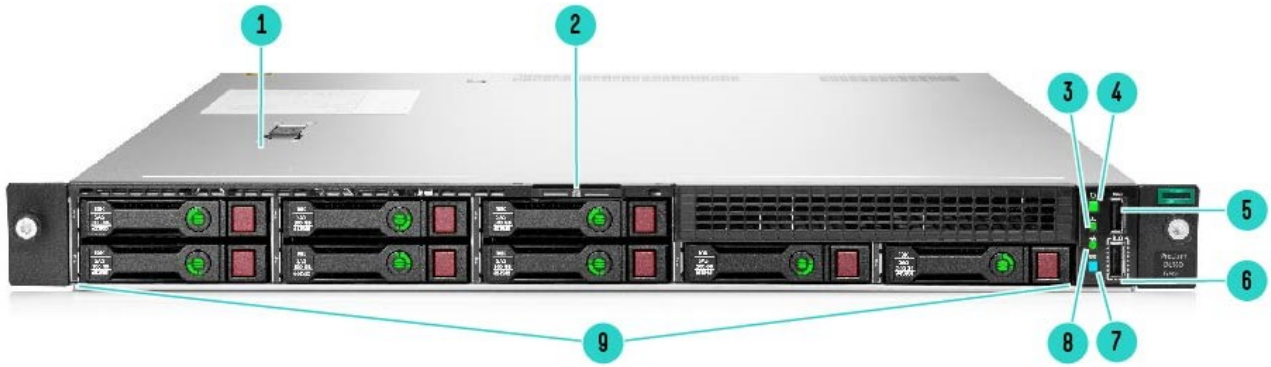
Overview

HPE ProLiant DL160 Gen10 Server

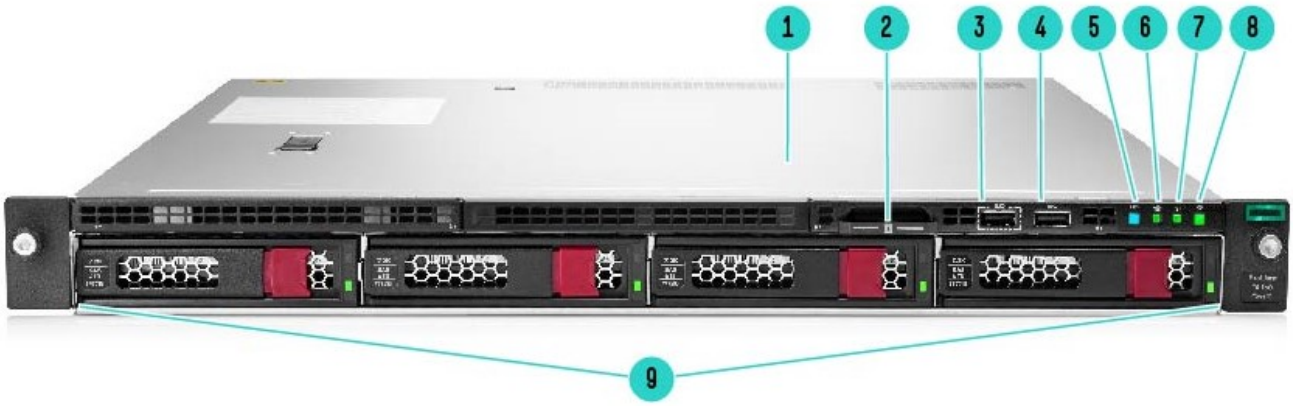
The secure 2P 1U HPE ProLiant DL160 Gen10 server delivers the right balance of performance, storage, reliability, manageability and efficiency in a dense and compact chassis, to meet the needs of growing businesses of a diverse set of customers – from SMB to Service Providers running wide range of workloads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



8 SFF chassis - Front View

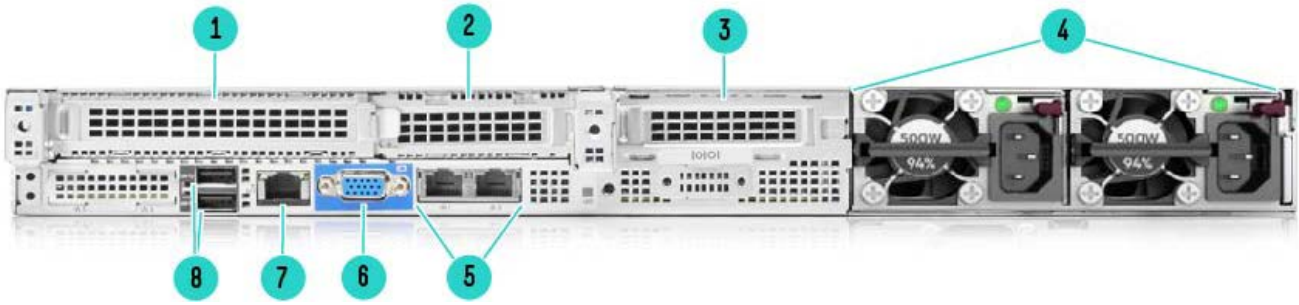
1. Quick removal access panel
2. Serial no. label pull tab
3. Health LED
4. Power On/Standby button and system power LED
5. USB 3.0 port
6. iLO Service Port
7. UID button/LED
8. NIC Status LED
9. Standard 8 SAS/SATA drive bays

Overview



4 LFF chassis - Front View

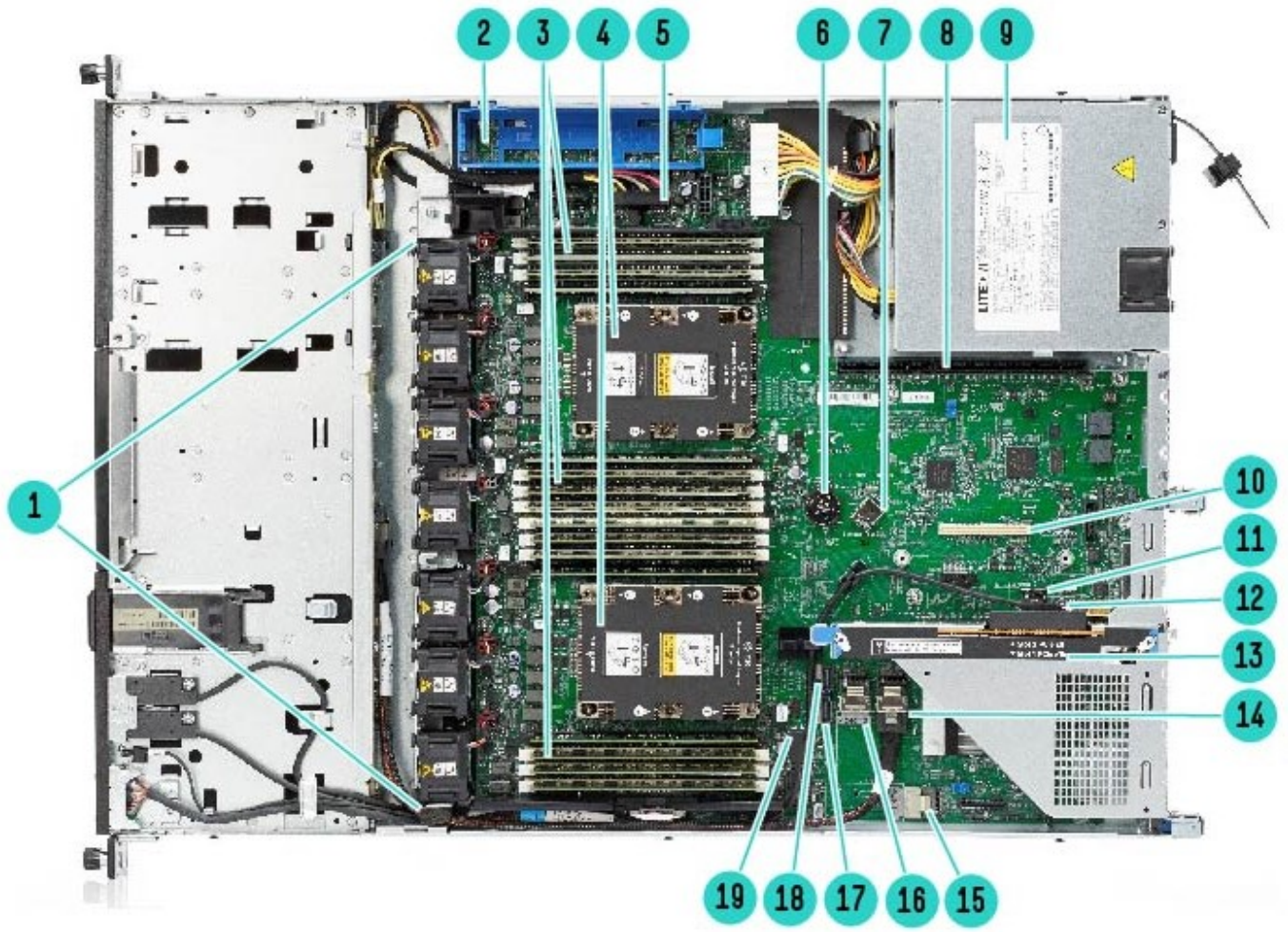
1. Quick removal access panel
2. Serial no. label pull tab
3. iLO Service Port
4. USB 3.0 Port
5. UID button/LED
6. NIC status LED
7. Health LED
8. Power On/Standby button and system power LED
9. 4 SAS/SATA drive bays



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



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

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

Overview

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: **https://www.intel.com/content/www/us/en/products/processors/xeon.html**

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

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: **https://www.intel.com/content/www/us/en/products/chipsets/server-chipsets.html**

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)	256 GB	16 x 16 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**.

Standard Features

Expansion Slots

FlexibleLOM Riser

Slots #	Technology	Bus Width	Connector Width	Slot Form Factor	Notes
1	PCIe 3.0	X8	X8	Flexible LOM	Proc 1
2	PCIe 3.0	X8	X8	Half-height, half-length slot	Proc 1

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

Slots #	Technology	Bus Width	Connector Width	Slot Form Factor	Notes
1	PCIe 3.0	X16	X16	Half-height, half-length slot	Proc 2

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/**

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.

Standard Features

Internal Storage Devices

Hard Drives	None ship standard

Maximum Internal Storage

	Capacity	Configuration
Hot Plug SFF SAS HDD	9.6 TB	8 X 1.2 TB
Hot Plug LFF SAS HDD	8 TB	4 X 2 TB
Hot Plug LFF SATA HDD	4 TB	4 X 1 TB
Hot Plug SFF SAS SSD	3.2 TB	8 X 400GB
Hot Plug SFF SATA SSD	3.84 TB	8 X 480 GB

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

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

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

**Certified

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 Encrytion 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**.

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**.

- 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**.

UEFI
Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at **http://www.hpe.com/servers/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**.

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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**.

Standard Features

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**.

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**.

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**

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**.

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**.

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**.

Scripting Tools
Provision one to many servers using your own scripts to discover and deploy with Scripting Tool (STK) for Windows and Linux or Scripting Tools for Windows PowerShell.
Learn more at **http://www.hpe.com/servers/stk** or **http://www.hpe.com/servers/powershell**.

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**.

Standard Features

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:
http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/.

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 24x7monitoring, 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.

*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.

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

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Core Options

HPE I/O Expansion Options

HPE DL160 Gen10 FlexibleLOM/NVMe Riser Kit 875748-B21

NOTE: Supported on CPU1

NOTE: This riser is required to use FlexibleLOM adapters

HPE DL160 Gen10 CPU2 x16 PCIe Riser Kit 866436-B21

NOTE: Requires second processor to be installed

HPE Power Supplies

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit 865408-B21

NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.

Additional Options

Embedded Management

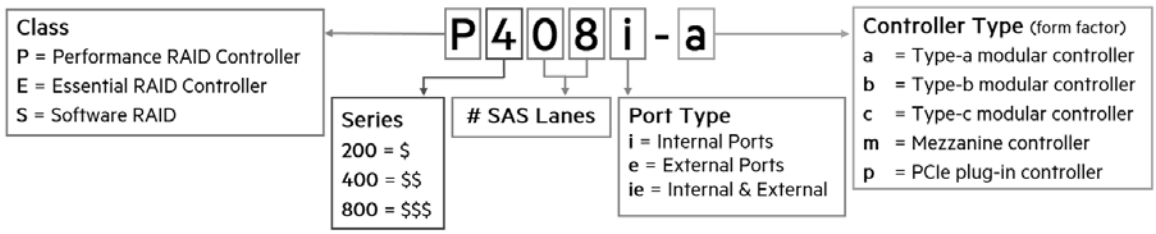
HPE iLO Advanced

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

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**.



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 Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804394-B21
HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804398-B21

Additional Options

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 Perforamance RAID Controller or Flexible Smart Array –a (i.e. P408i-a) controller is selected

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

NOTE: For the complete range of tape drives, autoloaders, libraries and media see:
https://www.hpe.com/us/en/storage/storeever-tape-storage.html.
For hardware and software compatibility of Hewlett Packard Enterprise tape backup products
http://www.hpe.com/storage/BURAcompatibility.

HPE Racks

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

HPE Power Distribution Units (PDUs)

NOTE: Please see the **HPE Basic Power Distribution Units (PDU) QuickSpecs** for information on these products and their specifications.

NOTE: Please see the **HPE Metered Power Distribution Units (PDU) QuickSpecs** for information on these products and their specifications.

NOTE: Please see the **HPE Intelligent Power Distribution Unit (PDU) QuickSpecs** for information on these products and their specifications.

NOTE: 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)

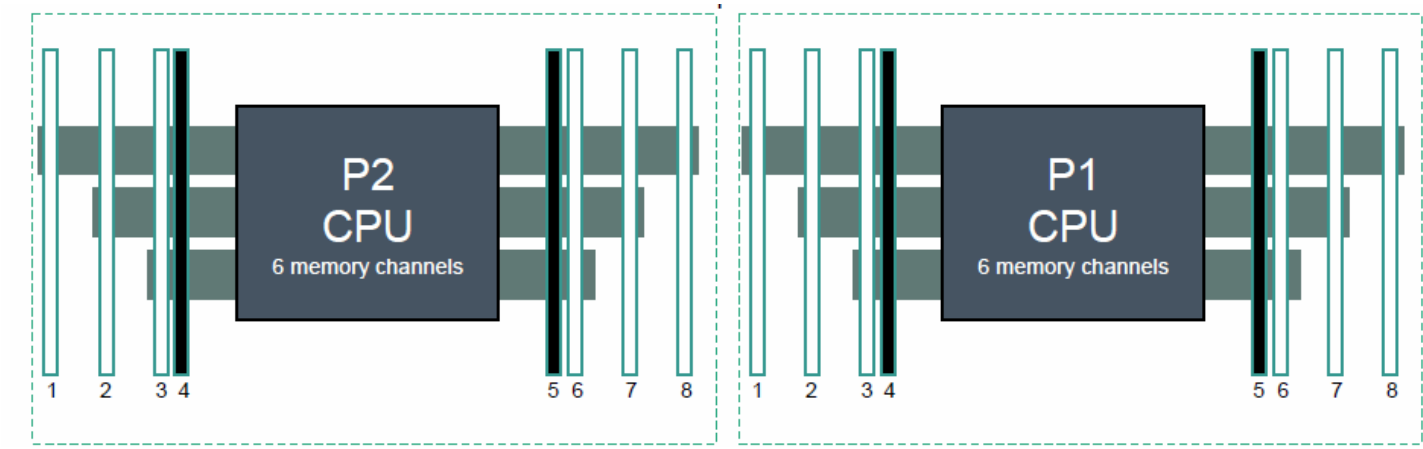
NOTE: To learn more, please visit the **HPE Uninterruptible Power Systems (UPS) web page**.
NOTE: Please see the **HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs** for information on these products and their specifications.
NOTE: Please see the **HPE Line Interactive Single Phase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

HPE Rack Options

NOTE: Please see the **HPE IT Access and Control** for information on these products and their specifications.

Memory

Memory Population guidelines



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

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**

Memory

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

DIMM Type	Register DIMM (RDIMM)
HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815098-B21
SKU Description	HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit
DIMM Rank ->	Single Rank (1R)
DIMM Capacity ->	16GB
Voltage	1.2V
DRAM depth [bit]	2G
DRAM Width [bit]	x4
DRAM Density	8Gb
CAS Latency	19-19-19
DIMM Native Speed (MT/s)	2666 MT/s
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)

Pre Configured Models	Standard Memory	Maximum Memory
3106 Entry LFF	16GB (1x16 GB RDIMM DR)	256 GB (16x 16 GB)
4110 Base SFF	16GB (1x16 GB RDIMM DR)	256 GB (16x 16 GB)

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		
Dimensions	4.29 x 43.46 x 61.49 cm 1.69 x 17.11 x 24.21 in	
Weight (approximate)	24.19lb 10.97kg 30.69 lb 13.92 kg 25.69 lb 11.65 kg 34.69 lb 15.74kg	SFF Minimum: 8 SFF chassis with 1x SFF HDD, 1 X Memory DIMM, 3 Fans, 1 Processor with heatsink, 1 power supply , SFF Maximum: 8SFF chassis with 8 SFF HDD, 1 X Memory DIMM, 6 Fans, 2 Processors with heatsink, 2 power supplies LFF Minimum: 4 LFF chassis with 1X LFF Hard Drive, 1X Memory DIMM, 3 Fans, 1 Processor with heatsink, 1 power supply LFF Maximum: 4 LFF chassis with 4X LFF Hard Drive, 1X Memory DIMM, 6 Fans, 2 Processors with heatsink, 2 power supplies
Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
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)	Rated Steady-State Power	For 500W Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VAC) input for China only
	Maximum Peak Power	For 500W Power Supply: 500W (at 100 to 127 VAC), 500W (at 200 to 240 VAC), 500W (at 240 VAC) input for China only
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. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).
	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** 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** System performance may be reduced if operating in the extended ambient operating range or with a fan fault.

Technical Specifications

	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity	Operating	8% to 90% - Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.
(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.

Configuration SKU	**LFF Config**	**SFF Config**
Idle		
LWAd	4.5 B	4.5 B
LpAm	28.1 dBA	27.8 dBA
Operating		
LWAd	5.1 B	5.1 B
LpAm	34.0 dBA	33.0 dBA

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.

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

Technical Specifications

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)

https://h20195.www2.hpe.com/v2/getdocument.aspx?docname=a00047736enw

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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

Date	Version History	Action	Description of Change
03-Jun-2019	Version 3	Changed	Overview, Additional Options and Pre-configured Models sections were updated.
15-Apr-2019	Version 2	Changed	Overview, Standard Features, Optional Features and Pre-configured Models sections were updated.
04-Feb-2019	Version 1	New	New QuickSpecs

Sign up for updates

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