# QuickSpecs

## Overview

## HPE Cloudline CL3150 Gen10 Server

The HPE Cloudline CL3150 Gen10 is a new 1U 1P AMD EPYC dense fast storage server for Cloud Service Providers that Features the latest AMD EPYC 7000 series processors, choice 24NVMe or 22NVMe + 2 SATA SSD hard drives. Without any extras, this server is ideal for Big data applications, In-memory databases with fast persistent storage, High-performance database management systems and Predictive analysis and machine learning workloads to meet the storage needs of Service Providers.



| Item | Front View |
|------|-----------|
| 1. | UID LED |
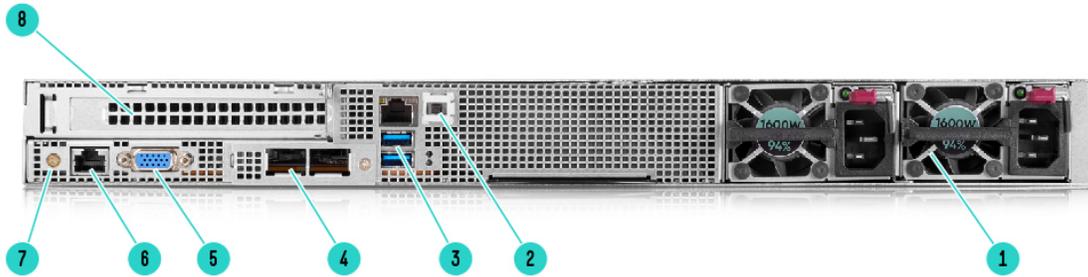


**Rear View**

| Item | Description | | Item | Description |
|------|-------------|---|------|-------------|
| 1. | (2) Redundant PSUs | | 5. | VGA port |
| 2. | UID Button | | 6. | RJ45 for serial console |
| 3. | RJ45 Management port + (2) USB 3.0 Ports | | 7. | Power button |
| 4. | OCP mezzanine card | | 8. | PCIe Card |

**Hewlett Packard Enterprise**

## Overview
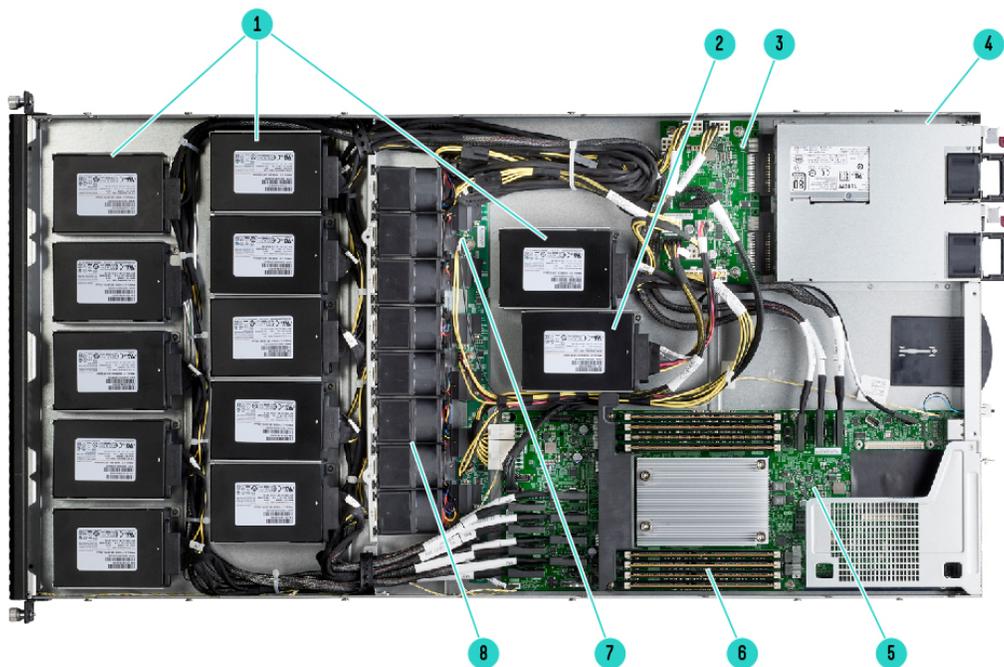
**Rear View**

| Item | Description |
|------|-------------|
| 1. | (22) NVMe |
| 2. | (2) SATA SSD or NVMe |
| 3. | (1) PDB Board |
| 4. | (2) Redundant PSUs |

| Item | Description |
|------|-------------|
| 5. | (1) System Board |
| 6. | (8) DIMM slots |
| 7. | (1) Fan Control Board |
| 8. | (8) Non Hot-plug fans |

# Standard Features

## Processor

**NOTE:** For more information regarding AMD EPYC processors, please see the following http://www.amd.com/en/products/epyc-7000-series.

**NOTE:** Up to 1 processor supported. Mixing different processor models is not supported.

### AMD® EPYC® processor 7000 product family

| Model | CPU frequency | Cores | L3 Cache | TDP | PCIe | DDR4 Maximum Speed |
|-------|---------------|-------|----------|-----|------|--------------------|
| 7601 | 2.2GHz | 32 | 64MB | 180W | 128 | 2667 MHz |
| 7551P | 2.0GHz | 32 | 64MB | 180W | 128 | 2667 MHz |
| 7401P | 2.0GHz | 24 | 64MB | 155W | 128 | 2667 MHz |
| 7351P | 2.4GHz | 16 | 64MB | 155W | 128 | 2667 MHz |
| 7251 | 2.1GHz | 8 | 32MB | 120W | 128 | 2400MHz |

### Upgradeability

Up to 8 DIMM slots available for higher Memory capacity
OCP Mezzanine connector for 10/25/50 Gigabit networking options
PCIe connector for 100 Gigabit networking options
24NVMe SSD or 22NVMe + 2 SATA SSD Drive Cage Bay

### On System Processor

iBMC ASPEED AST2500 with KVM Support

## Memory

Industry Standard DDR4 Registered (RDIMM/LRDIMM)
DIMM Slots Available 8
(8 DIMM slots per processor, 8 channels per processor, 1 DIMMs per channel)
Maximum Capacity 512GB
(8 x 64GB LRDIMM) 16GB/32GB/64GB DDR4 up to 2666MT/s

### Memory Protection

ECC with Chipkill capability
Corrected Error Counters
Software-Managed Bad Symbol ID
Patrol Scrubber
Redirect Scrubber
Address/Command Parity with Replay
Write Data CRC with Replay
Thermal Throttling
DDR4 Post Package Repair
Row Hammer Protection
MCA Address Translation

## Expansion Slots One of the following depending on model

| Expansion Slots # | Technology | Bus Width | Connector Width | Form Factor | Notes |
|-------------------|------------|-----------|-----------------|-------------|-------|
| Slot 1 | PCIe 3.0 | X16 | X16 | Low profile | RAID/HBA |
| OCP Mezz | PCIe 3.0 | X16 | X16 | OCP Mezz 2.0 | Networking, TYPE 1 (backward compatible to OCP 1.0) |

**NOTE:** Bus Width data indicates the number of physical electrical lanes running to the connector.

## Standard Features

### Internal Storage Devices  One of the following depending on model

Optical Drive          None
Hard Drives           None ship standard

**Maximum Internal Storage**

| NVMe SSD | 76.8TB | 24 x 3.2TB |
|---|---|---|
| SFF SATA SSD | 7.68TB | 2 x 3.84TB |

### Power Supply
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

### System Fans
(8) 4056 Non Hot Plug Redundant fans

### Interfaces
RJ45 for serial console 1
Video 1
OCP NIC ports
2x SFP+ ports (for OCP NIC Mezzanine card) - depending on model
IPMI management port     dedicated 10/100/1000M LAN port
USB 3.0 Ports Up to 2

### Operating Systems
Windows Server 2012 R2
Windows Server 2016 Datacenter
Windows Server 2016 Essentials
Windows Server 2016 Standard
SLES 12 SP2 (64 bit)
SLES 12 SP3 (64 bit)
Ubuntu 16.04 (Test only)
RHEL 7.4 (64 bit)
VMware ESXi 6.5 U1
**NOTE:** Tested for successful installation only, No Operating Systems certification done unless indicated.

### Industry Standard Compliance
ACPI 2.0b Complaint
PCIe 3.0 Complaint
PXE Support
WOL Support
USB 3.0 Support

### Graphics
Integrated PCIe VGA/2D Controller via ASPEED 2500 BMC, 1920 x 1200 @ 60Hz (32 bpp)

### Form Factor
17.26" x 34.48" x 1.71" (438.5mm x 875.99mm x 43.5mm)
1U Rack form factor

# Standard Features

### Security
Power-on password
Administrator's password
UEFI

### Warranty
Hardware support is available for 3 years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Hard drives have either a one year or three year warranty; refer to the HPE Cloudline Servers and Options Global Limited Warranty and Technical Support for details.

**NOTE:** Server Warranty includes 3 Years Parts with five (5) days response time, 0 Years Labor, and 0 Years Onsite Support. Additional information regarding worldwide limited warranty and technical support is available at

**https://support.hpe.com/hpsc/doc/public/display?sp4ts.oid=null&docLocale=en_US&docId=emr_na-c04722184.**

**Response time:** Response times are based on local standard business days and working hours. Unless otherwise stated, all responses are measured from the time the customer calls until Hewlett Packard Enterprise has either established a mutually acceptable time for support to be performed, or Hewlett Packard Enterprise has begun to provide support or remote diagnostics. Response time is based on commercially reasonable effort. In some countries and under certain supplier constraints, response time may vary. If your location is outside the customary service zone, response time may be longer or there may be an additional charge. Contact your local Hewlett Packard Enterprise service organization for response time availability in your area.

## Service and Support

**Protect Your Business Beyond Warranty with HPE Pointnext Operational Services**

HPE Cloudline Support Services provide remote diagnosis and support, scheduled onsite hardware repair/troubleshooting, and coverage for replacement components, including defective media retention (DMR). With HPE Cloudline Support Services, you can purchase the services that meet your specific needs.
- HPE 3150 Parts + Remote Technical Support + Defective Media Retention
- HPE 3150 Parts + Remote Technical Support + Onsite Labor
- HPE 3150 Parts + Remote Technical Support + Onsite Labor + Defective Media Retention

Additional information regarding HPE packaged support services for Cloudline servers is available at
**https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA5-9207ENN.pdf**.

**Standard Support Recommendation**

Connect to Hewlett Packard Enterprise for faster problem resolution. Cloudline Carepack Services provides hardware onsite response. Simplify your support experience and make Hewlett Packard Enterprise your first call for hardware or software questions.

**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.

**Datacenter Care for Hyperscale**

DC for Hyperscale is available for Service Providers and HPC customers who use a scale out approach to computing with a high volume homogenous infrastructure and resilient architecture. Customers can take advantage of this environment support tailored to their operating model. More information at **https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA6-3460ENW.pdf**.

**Spares Management Service**

Provides customers with spare parts inventory for onsite stocking, and access to the HPE Spares Management Tool – an automated inventory management tool that helps enable real-time inventory management. More information at
**https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA1-3116ENW.pdf**.

**Advisory & Transformational Services**

Design, strategy, road map, and other services to help enable the digital transformation journey, tuned to IT and business needs. Advisory Services helps customers on their journey to Hybrid IT, Big Data, and the Intelligent Edge. More information at
**https://www.hpe.com/us/en/services/consulting.html**.

**Lifecycle Event Services**

Operational offerings to improve performance and securely handle retirement of customers' IT environments. More information at **https://h20195.www2.hpe.com/v2/GetPDF.aspx/5981-8521ENE.pdf**.
- Operate & Improve performance, minimize risk of downtime, and reduce security risks.
- Retire & Sanitize to safely and securely dispose of retired IT, and ensuring customer data cannot be compromised.

**Professional Services**

Integrate the new solution with project management, installation and startup, relocation services, and more. We help mitigate risk to the business so there is no interruption when new technology is being integrated in the existing IT environment. More information at
**https://www.hpe.com/us/en/services/professional.html**.

## Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

### Step 1: Base Configuration (choose one of the following configurable models)

| SKU Number | 879727-B21 |
|---|---|
| Processor | 1 |
| DIMMSlots | 8 DIMM slots for RDIMM/LRDIMM DDR4 Memory |
| PCIe | 1 Full height half-length PCIe 3.0 slot, 1 OCP Mezz Slot |
| Drive Cage | 24 NVMe or 22 NVMe + 2 SATA SSD |
| Fans | 8 non hot plug fans, redundant |
| Management | ASPEED AST2500 with a dedicated 10/100M management LAN port, on board "KVM over IP" support, Redfish API, IPMI |
| USB | 2 USB 3.0 Ports rear |

### Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

**HPE Processors**

**AMD EPYC 7000 series Processor**

| | |
|---|---|
| HPE CL Gen10 AMD EPYC 7251 (2.10GHz/8-core/32MB/120W) FIO Processor Kit | 881373-L21 |
| HPE CL G4 AMD EPYC 7351P (2.4GHz/16-core/64MB/155W) FIO Processor Kit | 881377-L21 |
| HPE CL Gen10 AMD EPYC 7401P (2.00GHz/24-core/64MB/155W) FIO Processor Kit | 881381-L21 |
| HPE CL Gen10 AMD EPYC 7551P (2.00GHz/32-core/64MB/180W) FIO Processor Kit | 881471-L21 |
| HPE CL G4 AMD EPYC 7601 (2.2GHz/32-core/64MB/180W) FIO Processor Kit | 880213-L21 |

**HPE Memory**

| | |
|---|---|
| HPE CL 16GB (1x16GB) Single Rank x8 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit | 881067-B21 |
| HPE CL 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit | 880841-B21 |
| HPE CL 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Memory FIO Kit | 880842-B21 |

**NOTE:** Select one or more memory. A minimum of two memory kits are required if server is configured with two processors.

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2667MHz, 2400MHz.

## Configuration Information - Factory Integrated Models

### HPE HDD

**NVMe SSD HDD – PCIe**

| | |
|---|---|
| HPE CL 1.92TB NVMe Read Intensive SFF (2.5in) x 7mm Samsung PM963 3yr Wty Solid State Drive Kit | 880846-B21 |
| HPE CL 1TB NVMe Read Intensive SFF (2.5in) x 15mm Intel P4500 Solid State Drive Kit | 880844-B21 |
| HPE CL 2TB NVMe Read Intensive SFF (2.5in) x 15mm Intel P4500 FIO Solid State Drive Kit | 880845-B21 |
| HPE CL 3.2TB NVMe Mixed Use SFF (2.5in) x 15mm Samsung PM1725a Solid State Drive Kit | P00252-B21 |

**Hot Plug SFF (2.5-inch) SATA SSD – 6Gb/s**

| | |
|---|---|
| HPE CL 1.92TB 6G SATA Mixed Use SFF (2.5in) Samsung SM863a 3yr Wty Solid State Drive Kit | 880848-B21 |
| HPE CL 3.84TB 6G SATA Read Intensive SFF (2.5in) Intel S4500SE Solid State Drive Kit | 880860-B21 |

### HPE Networking

**10 Gigabit Ethernet OCP mezzanine Adapters**

| | |
|---|---|
| HPE CL Ethernet 10Gb 2-port SFP+ Intel X520 OCP Mezzanine Adapter | 851279-B21 |

**25 Gigabit Ethernet OCP mezzanine Adapters**

| | |
|---|---|
| HPE CL Ethernet 25Gb 1-port SFP28 Intel XXV710-D1 OCP FIO Mezzanine Adapter | 880148-B21 |
| HPE CL Ethernet 25Gb 2-port SFP28 Mellanox ConnectX-4 Lx OCP Mezzanine Adapter | 847936-B21 |

**50 Gigabit Ethernet OCP mezzanine Kit**

| | |
|---|---|
| HPE CL Ethernet 50Gb 1-port SFP28 Mellanox ConnectX-4 Lx OCP FIO Mezzanine Adapter | 880843-B21 |

**100 Gigabit Ethernet PCIe Card**

| | |
|---|---|
| HPE CL Ethernet 100Gb 1-port QSFP28 Mellanox ConnectX-5 EN PCIe3 FIO Card | 880150-B21 |

**Security Hardware**

| | |
|---|---|
| HPE Trusted Platform Module 2.0 Kit | 745823-B21 |

# Additional Options

**HPE Cloudline Support Services**

| | |
|---|---|
| HPE Cloudline Parts + Remote Technical Support with DMR | H2NA8A3#WGE |
| HPE Cloudline Parts + Onsite Labor + Remote Technical Support | H0HF0A3#WGE |
| HPE Cloudline Parts + Onsite Labor + Remote Technical Support with DMR | H2NA9A3#WGE |

# Memory

### Memory Subsystem Architecture
Each AMD EPYC family processor socket contains eight memory channels per installed processor with one DIMM per channel for a total of eight (8) DIMMs for the server.

### Memory Population guidelines
Listed below are general Memory Module Population Rules supported by the processor for reference. There is no longer a need to install DIMMs in pairs in non-RAS modes.

The same information is displayed alternatively by rank, by speed, or by qty. That is, when viewing by rank, selecting a particular rank will then show the DIMM qty vs DIMM speed tradeoff/combinations.

- All DIMMs must be DDR4 DIMMs.
- x4 and x8 DIMMs can be mixed in the same channel.
- DIMM install requirement Slot 8, 1, 6, 3, 7, 2, 5, 4
- Mixing of LRDIMMs and RDIMMs is not allowed in the same channel.
- Mixing of non-3DS and 3DS LRDIMMs is not allowed in the same channel.
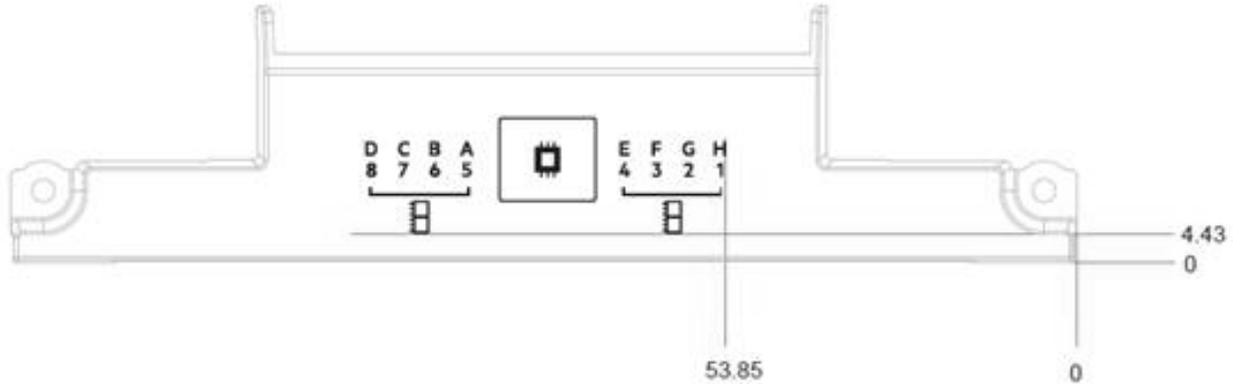


### General Memory Population Rules and Guidelines
Install DIMMs only if the corresponding processor is installed.
To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
Quad rank RDIMMs are not supported in CL3150 Gen10 Servers
DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed. 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 memory type and number of installed processors.

### Memory Bandwidth and Capacity

| [DIMM Type] | Registered Dimms (RDIMMs) | | Load Reduced Dimms (LRDIMMs) |
|---|---|---|---|
| DIMM Rank | Single Rank | Dual Rank | Quad Rank |
| DIMM Capacity | 16GB | 32GB | 64GB |
| Voltage | Standard Voltage 1.2V | | |
| 8 slot servers | 8 | | |
| MAXIMUM CAPACITY (GB) | 128 | 256 | 512 |

## Memory

**Memory Speed by Processor Model EPYC 7000**

| Processor Models | Supported Memory Speeds |
|---|---|
| 7601,7351P | 2667MHz |

**NOTE:** Capacity references are rounded to the common gigabyte (GB) values.

- 16GB  = 16,384MB
- 32GB  = 32,768MB
- 64GB  = 65,536MB

## Technical Specifications

| | | |
|---|---|---|
| **System Unit** | | |
| **Dimensions (H x W x D)** | 17.26" x 34.48" x 1.71" (438.5mm x 875.99mm x 43.5mm) | |
| **Weight (approximate)** | Maximum: (all hard drives, power supplies, and processors installed | 24NVMe 37.04 lb (16.8 kg) |
| **Input Requirements** | Rated Line Voltage | AC input: 220V |
| | Rated Input Current | For 1600W Power Supply: 7.9 A (at 220 VAC) |
| | Rated Input Frequency | 47/63Hz |
| | Rated Input Power | For1600W Power Supply: 1726 W (at 220 VAC) 1729 VA (at VA 220v) |
| **BTU Rating** | Maximum | For 1600 W Power Supply: 5918 BTU/hr (at 220 VAC) 5884 BTU/hr (at 240 VAC) |
| **Power Supply Output** | Rated Steady-State Power | For 1600 Power Supply: 1600 W (at 240 VAC) |
| | Maximum Peak Power | For 1600 W Power Supply: 1600 W (at 200 to 240 VAC) |
| **System Inlet Temperature** | Standard Operating Support | 5° to 35°C (45° 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 35°C (95°F). |
| | Non-operating | -40° to 70°C (-40° to 158°F). Maximum rate of change is 25°C/hr (36°F/hr). |
| **Relative Humidity** | Operating | Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity. |
| | Non-operating (non-condensing) | 5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. |
| **Altitude** | Operating | 3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 304.8 m/min (1000 ft/min). |
| | Non-operating | 10668 m (35,000 ft). Maximum allowable altitude change rate is 304.8 m/min (1000 ft/min). |
| **Emissions Classification (EMC)** | FCC Rating | Class A |
| | Normative Standards | CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; EN 61000-3-2; EN 61000-3-3; |

**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:** The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

## Summary of Changes

| Date | Version History | Action | Description of Change |
|------|-----------------|--------|------------------------|
| 01-Oct-2018 | Version 7 | Changed | Configuration Information were updated. |
| 04-Sep-2018 | Version 6 | Changed | Standard Fearures and Service sections and Support were updated, |
| 06-Aug-2018 | Version 5 | Changed | Standard Fearures and Service and Support sections were updated, |
| 05-Mar-2018 | Version 4 | Changed | Update throughout all sections in QuickSpecs |
| 04-Dec-2017 | Version 3 | Updated | Update from G4 to Gen 10 and make overall changes to the QuickSpecs |
| 14-Aug-2017 | Version 2 | Updated | Update Networking section in QuickSpecs |
| 07-Aug-2017 | Version 1 | New | New QuickSpecs |

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**Hewlett Packard Enterprise**