HPE PROLIANT DL360 GEN11

Standard Features and Specifications

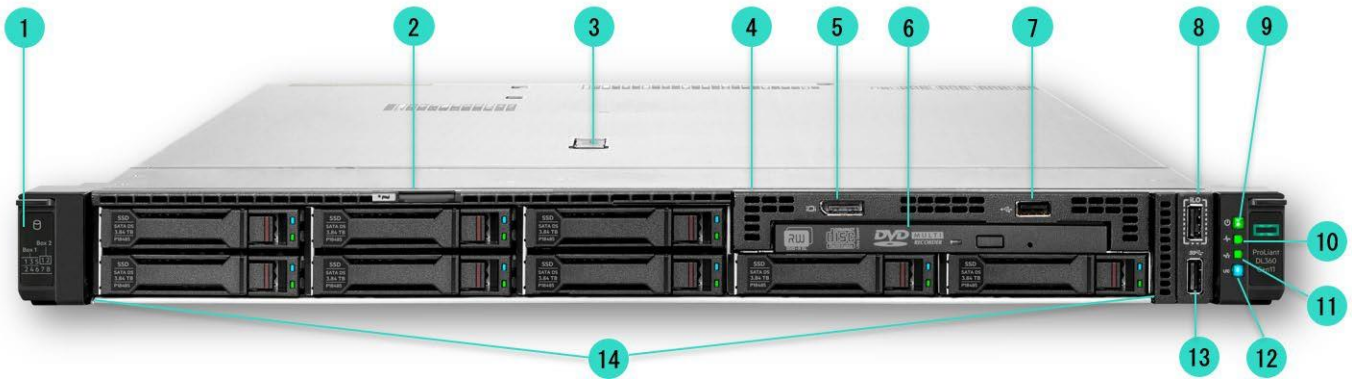
TriTech Computers L.L.C

Overview

HPE ProLiant DL360 Gen11

Do you need to efficiently expand or refresh your IT infrastructure to propel the business? Adaptable for diverse workloads and environments, the compact 1U HPE ProLiant DL360 Gen11 delivers enhanced performance with the right balance of expandability and density. Designed for supreme versatility and resiliency while backed by a comprehensive warranty, the HPE ProLiant DL360 Gen11 is ideal for IT infrastructure, either physical, virtual, or containerized.

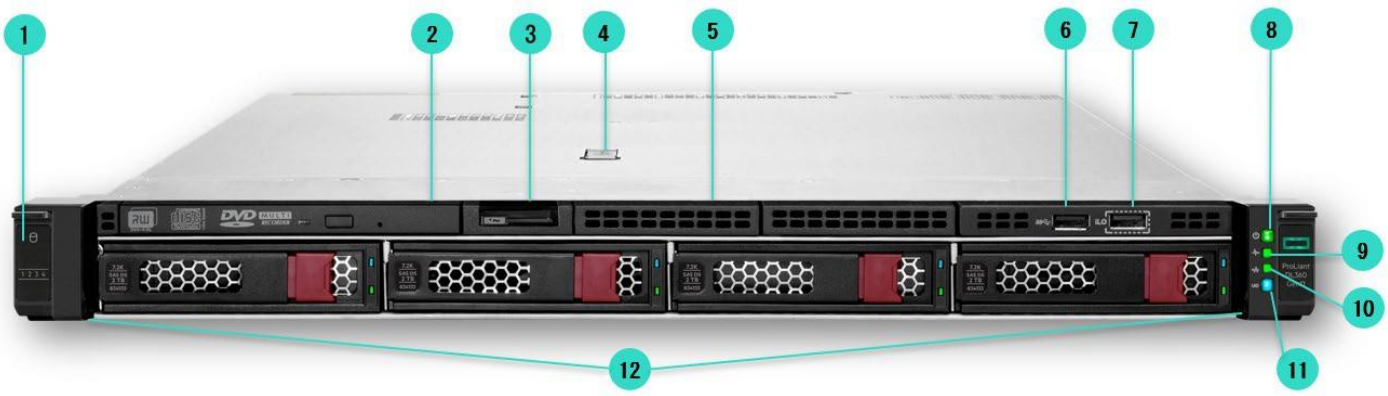
The HPE ProLiant DL360 Gen11 supports the 4th & 5th Generation Intel® Xeon® Scalable Processors with up to 64 cores, plus 5600 MT/s HPE DDR5 Smart Memory up to 4.0 TB per socket. Introducing PCIe Gen5 and Intel® Software Guard Extensions (SGX) support on the dual-socket segment, the HPE ProLiant DL360 Gen11 complements Gen10 Plus reach by delivering premium compute, memory, networking communication, discrete graphic, I/O, and security capabilities for customers focused on performance at any cost. DL360 Gen11 server is an execellent choice of daily business and workloads in General Compute, Database Management, Virtual Desktop Infrastructure, Content Delivery Network, EDA, CAD, Edge Acceleration and Intelligent Video Analytics.



8 SFF Front View – 8 SFF + optional Universal Media Bay, optical drive, Display Port, USB2.0 and SAS drives shown

1. Drive support label
2. Serial number/iLO information pull tab
3. Quick removal access panel
4. Universal Media Bay (optional):
   - Option: Optical drive bay + Display port & USB 2.0 port kit (shown)
   - Option : 2SFF 24G x4 NVMe/SAS (TriMode) U.3 BC Cage
5. Display Port (optional – shown)
6. Optical drive (optional – shown)
7. USB2.0 port (optional)
8. iLO Service port
9. Power On/Standby button and system power LED
10. Health LED
11. NIC status LED
12. Unit ID button/LED
13. USB 3.2 Gen1 port
14. Drive bays; optional backplanes:
    - Option: 8 SFF 24G x1 NVMe/SAS (TriMode) U.3 BC
    - Option: 8 SFF 24G x4 NVMe/SAS (TriMode) U.3 BC

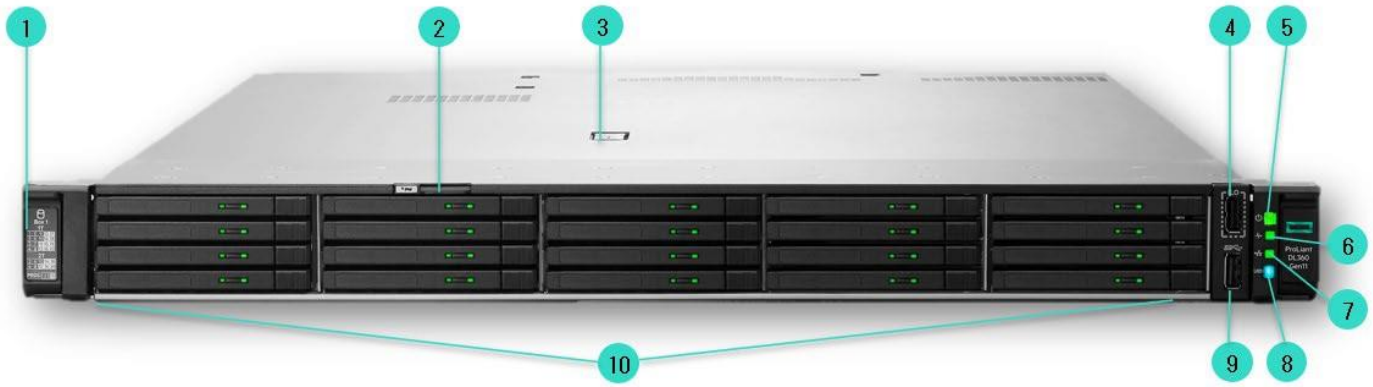
Notes: Optional- Systems Insight Display (SID) module is available for 8SFF CTO Server, and will be installed at the left-hand side of iLO Service port and USB 3.2 Gen1 port.



4 LFF Front View – 4 LFF + optional Optical drive, Display Port, USB2.0 and SAS drives shown

1. Drive support label
2. Optical drive (optional – shown)
3. Serial number/iLO information pull tab
4. Quick removal access panel
5. Option: Display port & USB 2.0 port bundle Kit (blank shown)
6. USB 3.2 Gen1 port
7. iLO Service Port
8. Power On/Standby button and system power LED
9. Health LED
10. NIC status LED
11. Unit ID button/LED
12. SAS/SATA drive bays (12G x1 SAS LP BP embedded)

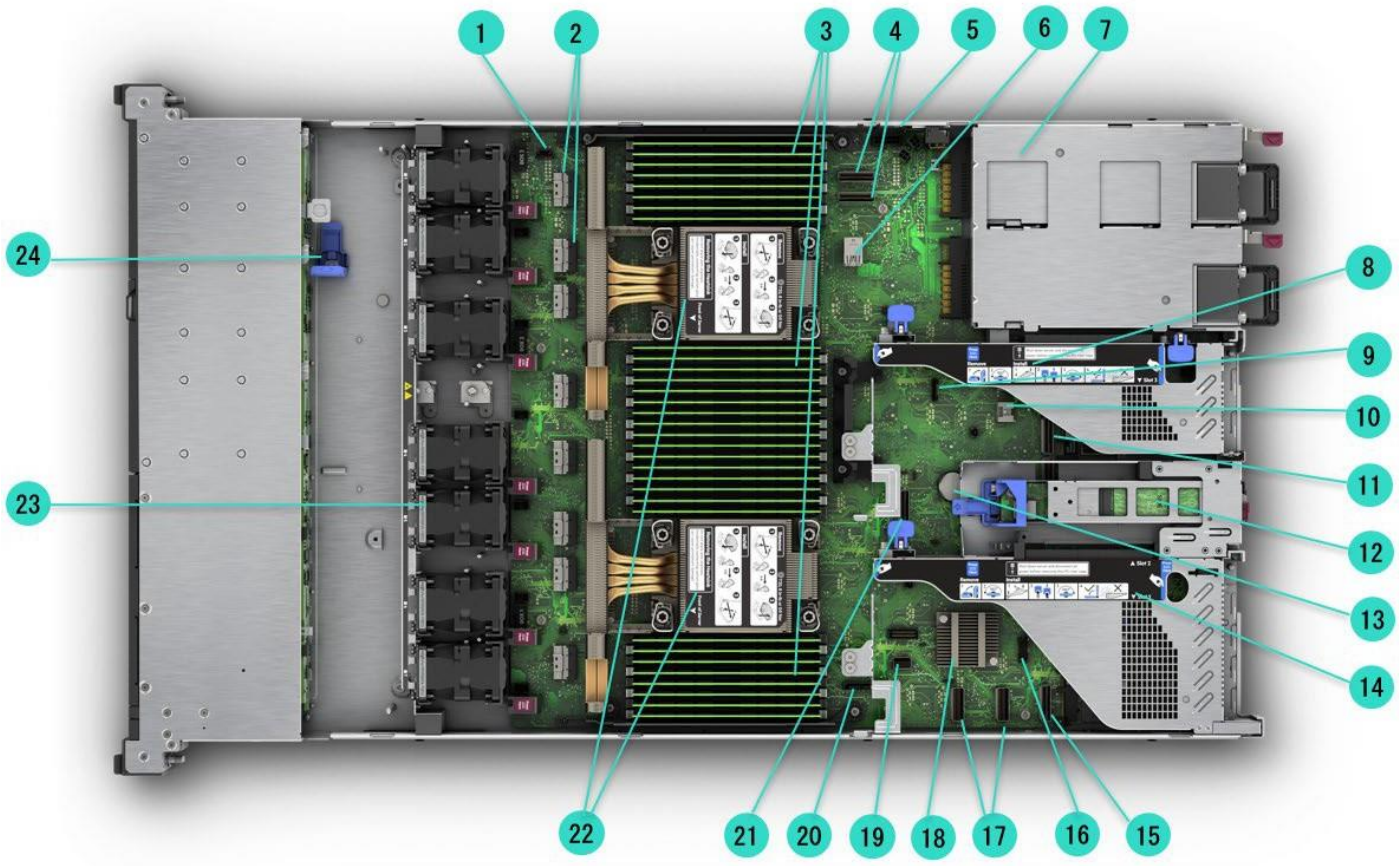
Notes: The optional Systems Insight Display (SID) module is not available in 4LFF CTO Server.



20 EDSFF Front View – 20 E3.s 1T NVMe drives shown

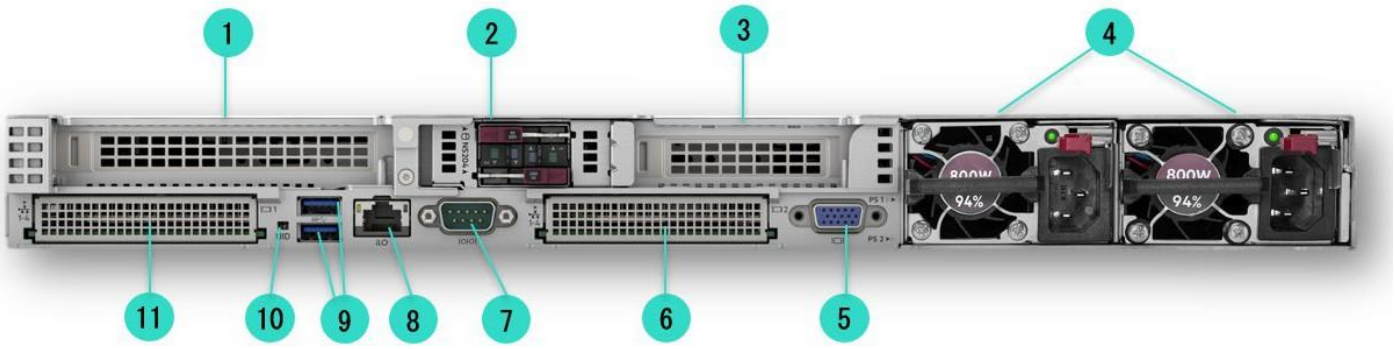
1. Drive support label
2. Serial number/iLO information pull tab
3. Quick removal access panel
4. iLO Service Port
5. Power On/Standby button and system power LED
6. Health LED
7. NIC status LED
8. Unit ID button/LED
9. USB 3.2 Gen1 port
10. EDSFF drive bays (32G x4 NVMe BP embedded)

Notes: The optional Systems Insight Display (SID) module is not available in 20EDSFF CTO Server.



Internal View - Standard for all DL360 Gen11

1. Liquid Cooling Module connector
2. x8 SlimSAS ports (1A to 4A, 1B to 4B)
3. DDR5 DIMM Slots (fully populated 32 DIMMs shown)
4. Socket 2 MCIO ports (1 & 2)
5. Backplane Power connector
6. Internal USB port (top USB 3.2 Gen1 and bottom USB 2.0)
7. Redudant Power Supply (1 & 2 as shown)
8. Secondary (CPU 2) Riser PCIe 5.0
   - Option: Low Profile x16
   - Option: Full height x16 (lose Slot 2 on Primary Riser)
9. SID connector (optional feature, 8SFF only)
10. Energy Pack connector
11. OCP Slot port
12. HPE NS204i-u NVMe Hot Plug Boot Optimized Storage Device (optional – shown)
13. System Battry
14. Primary (CPU1) Riser PCIe 5.0
    - 1x 16 FH and 1x16 LP slots
15. OCP Slot port
16. Front Display Port and USB 2.0 connector (optional feature)
17. LP SlimSAS ports (1 & 2)
18. Chipset
19. Front I/O and USB 3.2 Gen1 connector
20. SATA Optical port
21. Socket 1 MCIO connector
22. CPU 1 (bottom) and CPU 2 (top) (shown with High Performance Heatsink)
23. Hot plug (dual rotor) High Performance Fan Kit (7 fans)
    - Option: Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit
24. HPE Hybrid Capacitor or HPE Storage Battery holder



Rear View - Standard for all DL360 Gen11

1. Slot 1 x16 PCIe 5.0 – Full Height
2. Slot 2 x16 PCIe 5.0 – Low Profile*
   **Notes: ***Shown with optional hot-plug NS204i-u Boot Device (cabled, PCIe connection is not required)
3. Option: Slot 3 x16 PCIe 5.0 (Requires 2nd processor)
   - Low Profile and Full Height options
4. Redundant Power Supply (1 & 2 as shown)
5. Video (VGA) port
6. OCP 3.0 Slot 2: x16* PCIe 5.0[1,2] (Requires 2nd Processor)
   **Notes: ***x8 for 20EDSFF CTO Server (requires 2nd Processor)
7. Serial port (optional - shown)
8. iLO Management Port
9. USB 3.2 Gen1 Ports
10. Uint ID Indicator LED
11. OCP 3.0 Slot 1: x16* PCIe 5.0[2]
    **Notes: ***x8 for 20EDSFF CTO Server

Notes:

– [1] Supports various NICs, up to 200GbE

– [2] Or supports each slot with x8 PCIe 5.0 under one processor, with the selection of "P51911-B21, CPU1 to the "OCP2 x8 Enablement Kit".

What's New

- All new DL360 Gen11 server
- New 4th Generation Intel® Xeon® Scalable Processors (Extreme Core Count die/ XCC die; Medium Core Count/ MCC; High Bandwidth Memory/ HBM)
- New PCIe 5.0 support
- New HPE DDR5 SmartMemeory – Registered (RDIMM), 4800MT/s
- New HPE Gen11 Storage Controllers
- New HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device
- New HPE Storage SSD and HDD support
- New HPE iLO6 support
- Nvidia A2 and L4 GPU support
- New Intel® Virtual RAID on CPU (Intel® VROC) Premium & Standard FIO Software for HPE
- New 4th Generation Intel® Xeon® Scalable Processors (Medium Core Count die/ MCC die)
- New DL360 Gen11 Standard Heatsink & Standard Fan Kit
- New DL360 Gen11 20EDSFF NC CTO Server
- New DL360 Gen11 Pre-Configured Models
- New HPE NVMe EDSFF E3.s 1T SSD
- New HPE Self-encrypting Drives
- HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

- HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit
- HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit
- HPE ProLiant DL360 Gen11 Direct Liquid Cooling solution
- HPE ProLiant for vSAN
- HPE Azure Stack HCI
- OpenBMC Capable through iLO6 Transfer of Ownership Process
- HPE 96GB Dual Rank x4 DDR5-4800 Registered Smart Memory Kit
- HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit
- HPE ProLiant DL3xx Gen11 Cache Mode for HBM Memory Mode setting from factory installation
- New 5th Generation Intel® Xeon® Scalable Processors (Extreme Core Count die/ XCC die; Medium Core Count/ MCC; Edge Enhanced Low Core Count die /EE LCC)
- New HPE DDR5 SmartMemeory – Registered (RDIMM), 5600MT/s
- Energy Star 4.0 Compliance
- European Union Erp Lot 9 Regulation
- Intel Virtual RAID on CPU RAID 1 FIO Software for HPE
- HPE 256GB (1x256GB) Octal Rank x4 DDR5-5600 CAS-52-45-45 EC8 Registered 3DS Smart Memory Kit
- Xilinx X2522-25G-PLUS Ethernet 10/25Gb 2-port SFP28 Adapter for HPE
- HPE 128GB (1x128GB) Dual Rank x4 DDR5-5600 CAS-46-45-45 EC8 Registered Smart Memory Kit
- HPE 128GB (1x128GB) Dual Rank x4 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit
- HPE NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD
- HPE InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter
- HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter

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Platform Information

Form Factor

- 1U rack

Chassis Types

- 20 EDSFF Carrier 1T (EC1) drive bays: 32G x4 NVMe (PCIe5.0 E3.s 1T)
- 8 SFF Basic Carrier (BC) drive bays:
  - 24G x1 NVMe/SAS (TriMode) U.3 (PCIe4.0) or
  - 24G x4 NVMe/SAS (TriMode) U.3 (PCIe4.0)
- With options for additional 2 SFF BC drive bays: 24G x4 NVMe/SAS (TriMode) U.3 (PCIe4.0)
- With options for additional optical drive, 1x USB3.2 Gen1 and 1x Display Port
- 4 LFF Low Profile (LP) drive bays: 12G x1 SAS/SATA
- With additional options for optical drive, 1x USB3.2 Gen1, and 1x Display Port

System Fans

- **For 4 LFF and 8+2 SFF chassis**
  - Choice of 1P (one processor) Standard Fan Kit, 2P (two processors) Standard Fan Kit, Performnace Fan Kits and Closed-loop Liquid Cooling Heatsink Fan FIO Bundle Kit
- **For 20 EDSFF chassis**
  - Choice of Performance Fan Kits and Closed-loop Liquid Cooling Heatsink Fan FIO Bundle Kit

Notes:

- Standard Fan Kit: Dual rotor hot plug Standard Fan kit (includes 5 fans) for processors below 185W TDP.
- Optional 2P standard Fan Kit: Dual rotor hot plug 2P Standard Fan Kit (includes 2 fans) for second processor.
- Performance Fan Kit: Dual rotor hot plug High Performance Fan Kit available (includes 7 fans), for one or two processors from 186W to 270W TDP. Or one processor with 300W TDP.

Optional Features

- The DL360 Gen11 will support up to 7 fans with fan redundancy built in. One fan rotor failure will place server in degraded mode but fully functional. Two fan rotor failures could provide warning and imminent server shutdown.
- Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit supports one or two processors that go beyond 271W TDP, as factory installation kit only. Customer self-repair or self-field upgrade is not allowed.
- Direct Liquid Cooling Heatsink Fan FIO Bundle Kit supports two processors go beyond 271W TDP, with enhanced thermal condition

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

- The 2nd digit of the processor model number "x4xx" is used to denote the processor generation (i.e. 4 = New 4th Generation Intel® Xeon® Scalable Processors
- The requied firmware for the 5th Generation Intel Xeon Processors is not competible with the DL360 Gen11 system board shipped with the 4th Generation Intel Xeon Processors. A new server order (latest firmware system board) is required for the activation of the 5th Generation Intel Xeon Processors. Field upgrade from the 4th Generation Intel Xeon Processors to the 5th Generation is not supported.

Notes:

- All information provided here is subject to change without notice. Intel may make changes to specifications and product descriptions at any time, without notice. Please contact your Intel representative to obtain the latest Intel product specifications and roadmaps.
- For more information regarding Intel® Xeon® Scalable Processors, please see the following **http://www.intel.com/xeon**.

New 4th Generation Intel® Xeon® Scalable Processors numbering convention

Workload

New 4th Generation Intel® Xeon® Scalable Processors		
Processor Suffix	**Description**	**Offering**
H	DB and Analytics	Highest core counts. Database and Analytics usages benefit from DSA and IAA accelerators.
M	Media Transcode	Optimized around AVX frequencies to deliver better performance/watt around Media, AI, and HPC workloads.
N	Network/5G/Edge (Hight TPT/Low latency)	Designed for NFV and networking workloads, such as: L3 forwarding, 5G UPF, OVS DPDK, VPP FIB router, VPP IPsec, web server/NGINX, vEPC, vBNG, and vCMTS.
S	Storage and HCI	Optimized for Storage UMA use cases with increased UPI Bandwidth for vs Mainline SKUs.
P	Cloud - IaaS	Designed for cloud IaaS environments to deliver higher frequencies at constrained TDPs.
Q	Liquid Cooling	Liquid cooled processors with higher frequency and performance at same TDP.
U	One Socket Optimized	Optimized for targeted platforms adequately served by the cores, memory bandwidth and IO capacity. Available from a single processor configuration.
V	Cloud- SaaS	Optimized for orchestration efficiency that delivers higher core counts and VMs per rack.
Y	Speed Select[1]	Intel® SST-Performance Profile (PP) increases base frequency when fewer cores are enabled. Allows greater flexibility, deployment options and platform longevity.

Notes:

- Covers the Intel public offering only.
- New Built-in Accelerators.
  - 1 to 8 socket support
  - Intel® Data Streaming Accelerator (DSA)
  - Intel® Dynamic Load Balancer (DLB)
  - Intel® Quick Assist Technology (QAT)

- Intel® In-Memory Analytics Accelerator (IAA)

- Increased memory bandwidth with 8 channels DDR5, up to 4800 MT/s, 4.0TB maximum RAM per socket.
- Increased I/O bandwidth up to 80 PCIe 5.0 lanes per socket, and new Compute Express Link (CXL).
- Built-in AI Acceleration: Intel® Advanced Matrix Extension (AMX)
- Hardware-enhanced Security: Enhanced Intel® Software Guard Extensions (SGX) – with new cryptographic memory integrity
- Increaed Multi-Socket Bandwidth with new UPI2.0 (up to 16GT/s) with maximum 4 UPI Links
- New FlexBus I/O Interface PCIe5.0 + CXL
- [1] The 4th Generation Intel® Xeon® Scalable Processors are featured with Intel Speed Select Technology (SST) for Infrastructure as as Service, Networking and Virtualized environments worklaods. The SST includes,
  - SST- Performace Profile
  - SST- Base Frequency
  - SST- Core Power
  - SST- Turo Frequency
- Default setting in ROM-Based Setp Utility (RBSU) as shown.

Intel® SST Features	RBSU Options	Granular Control over CPU Performance	Default Setting
SST- Performance Profile	Dynamic Intel® Speed Select Technology – Performance Profile	Alllows the CPU to run in one of three performance profiles	CPU hardware-based. Enabled by default
SST-Base Frequency	Intel® Speed Select Technology – Base Frequency	Enables some CPU cores to run at a higher base frequency in return for other cores running at a lower base frequency	Disabled by default
SST-Core Power	Intel® Speed Select Technology – Core Power	Allows software to prioritize with cores will receive excess power after satisfying minimum requirements	Disabled by default
Intel SST Turbo Frequency	Intel® Turbo Boost Technology	Allows software-selected cores to achieve a higher max turbo frequency by reducing other cores' max turbo frequency	Enabled by default

5th Generation Intel® Xeon® Scalable Processor Family (Platinum)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Platinum 8593Q Processor	2.2 GHz	64	320 MB	385W	4	5600 MT/s	512 GB	XCC
Platinum 8592+ Processor	1.9 GHz	64	320 MB	350W	4	5600 MT/s	512 GB	XCC
Platinum 8592V Processor	2.0 GHz	64	320 MB	330W	3	4800 MT/s	512 MB	XCC
Platinum 8581V[1] Processor	2.0 GHz	60	300 MB	270W	0	4800 MT/s	512 GB	XCC
Platinum 8580 Processor	2.0 GHz	60	300 MB	350W	4	5600 MT/s	512 GB	XCC
Platinum 8570 Processor	2.1 GHz	56	300 MB	350W	4	5600 MT/s	512 GB	XCC
Platinum 8568Y Processor	2.3 GHz	48	300 MB	350W	4	5600 MT/s	512 GB	XCC
Platinum 8562Y+ Processor	2.8 GHz	32	300 MB	300W	3	5600 MT/s	512 GB	MCC
Platinum 8558P Processor	2.7 GHz	48	260 MB	350W	3	5600 MT/s	512 GB	XCC
Platinum 8558 Processor	2.1 GHz	48	260 MB	330W	4	5200 MT/s	512 GB	XCC
Platinum 8558U[1] Processor	2.0 GHz	48	260 MB	300W	0	4800 MT/s	512 GB	XCC

Notes:

- One or two processor(s) with TDP equal to or greater than 186W through 270W require High Performance Heatsink Kit (P48905-B21) and High-Performance Fan Kit (P48908-B21)
- Two processors with TDP equal or greater than 271W require Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit (P48906-B21) or Direct Liquid Cooling solution.
- In 300Watt processor one socket configuration, the air cooling with Performance Heatsinks & Performance Fan Kits can be supported. Field upgrade to two socket is not supported with air cooling solution

- [1] Single socket only, no dual socket support
- Intel® Speed Select enabled processors: Platinum 8593Q, 8592V, 8581V, 8568Y+, 8562Y+, 8558P, 8558 and 8558U.

5th Generation Intel® Xeon® Scalable Processor Family (Gold 6)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Gold 6558Q Processor	3.2 GHz	32	60.0 MB	350W	3	5200 MT/s	128 GB	MCC
Gold 6554S Processor	2.2 GHz	36	180 MB	270W	4	5200 MT/s	128 GB	XCC
Gold 6548N Processor	2.8 GHz	32	60.0 MB	250W	3	5200 MT/s	128 GB	MCC
Gold 6548Y+ Processor	2.5 GHz	32	60.0 MB	250W	3	5200 MT/s	128 GB	MCC
Gold 6544Y Processor	3.6 GHz	16	45.0 MB	270W	3	5200 MT/s	128 GB	MCC
Gold 6542Y Processor	2.9 GHz	24	60.0 MB	250W	3	5200 MT/s	128 GB	MCC
Gold 6538N Processor	2.1 GHz	32	60.0 MB	205W	3	5200 MT/s	128 GB	MCC
Gold 6538Y+ Processor	2.2 GHz	32	60.0 MB	225W	3	5200 MT/s	128 GB	MCC
Gold 6534 Processor	3.9 GHz	8	22.5 MB	195W	3	4800 MT/s	128 GB	MCC
Gold 6530 Processor	2.1 GHz	32	160 MB	270W	3	4800 MT/s	128 GB	XCC
Gold 6526Y Processor	2.8 GHz	16	37.5 MB	195W	3	5200 MT/s	128 GB	MCC

Notes:
- One or two processor(s)
- One or two processor(s) with TDP equal to or greater than 186W through 270W or one processor with TDP equals 300W, require High Performance Heatsink Kit (P48905-B21) and High-Performance Fan Kit (P48908-B21) together.
- Two processors with TDP equal or greater than 271W require Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit (P48906-B21) or Direct Liquid Cooling solution.
- In 300W processor one socket configuration, the air cooling with Performance Heatsinks & Performance Fan Kits can be supported together. Field upgrade to two socket is not supported with air cooling solution.
- Intel® Speed Select enabled processors: Gold 6558Q, 6554S, 6548N, 6548Y+, 6544Y, 6542Y, 6538N, 6538Y+ and 6526Y.

5th Generation Intel® Xeon® Scalable Processor Family (Gold 5)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Gold 5520+ Processor	2.2 GHz	28	52. 5MB	205W	3	4800 MT/s	128 GB	MCC
Gold 5515+Processor	3.2 GHz	8	22.5 MB	165W	3	4800 MT/s	128 GB	MCC

Notes:
- One or two processor(s)
- Intel® Speed Select enabled processors: N.A.

5th Generation Intel® Xeon® Scalable Processor Family (Silver)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Silver 4516Y+ Processor	2.2 GHz	24	45.0 MB	185W	2	4400 MT/s	64 GB	MCC
Silver 4514Y Processor	2.0 GHz	16	30.0 MB	150W	2	4400 MT/s	64 GB	MCC
Silver 4510 Processor	2.4 GHz	12	30.0 MB	150W	2	4000 MT/s	64 GB	EE LCC
Silver 4509Y Processor	2.6 GHz	8	22.5 MB	125W	2	4400 MT/s	64 GB	EE LCC

Notes:
- One or two processor(s)
- Intel® Speed Select enabled processors: 4516Y+, 4514Y and 4509Y.
- If 4510 or 4509Y is selected, then 96GB 5600 MT/s Memory cannot be selected.

5th Generation Intel® Xeon® Scalable Processor Family (Bronze)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**

Bronze 3508U Processor[1]	2.1 GHz	8	22.5 MB	125W	N/A	4400 MT/s	64 GB	EE LCC

Notes:
- [1]Single socket capable, no dual socket support
- Intel® Speed Select enabled processors: N.A.
- If 3508U is selected, hen 96GB 5600MT/s Memory cannot be selected
- PCIe4.0 only

4th Generation Intel® Xeon® Scalable Processor Family (Platinum)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Platinum 9462 Processor	2.7 GHz	32	75.0 MB	350W	3	4800 MT/s	128 GB	HBM
Platinum 8490H Processor	1.9 GHz	60	112.5 MB	350W	4	4800 MT/s	512 GB	XCC
Platinum 8480+ Processor	2.0 GHz	56	105 MB	350W	4	4800 MT/s	512 GB	XCC
Platinum 8470 Processor	2.0 GHz	52	105 MB	350W	4	4800 MT/s	512 GB	XCC
Platinum 8470Q Processor	2.1 GHz	52	105 MB	350W	4	4800 MT/s	512 GB	XCC
Platinum 8470N Processor	1.7 GHz	52	105 MB	300W	3	4800 MT/s	128 GB	XCC
Platinum 8468 Processor	2.1 GHz	48	105 MB	350W	4	4800 MT/s	512 GB	XCC
Platinum 8468V Processor	2.4 GHz	48	97.5 MB	330W	3	4800 MT/s	128 GB	XCC
Platinum 8462Y+ Processor	2.8 GHz	32	60.0 MB	300W	3	4800 MT/s	128 GB	MCC
Platinum 8460Y[1]+[2] Processor	2.0 GHz	40	105 MB	300W	4	4800 MT/s	128 GB	XCC
Platinum 8458P Processor	2.7 GHz	44	82.5 MB	350W	3	4800 MT/s	512 GB	XCC
Platinum 8452Y[1] Processor	2.0 GHz	36	67.5 MB	300W	4	4800 MT/s	128 GB	XCC
Platinum 8444H Processor	2.9 GHz	16	45.0 MB	270W	4	4800 MT/s	512 GB	XCC

Notes:
- One or two processor(s) with TDP equal to or greater than 186W through 270W require High Performance Heatsink Kit (P48905-B21) and High-Performance Fan Kit (P48908-B21)
- Two processors with TDP equal or greater than 271W require Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit (P48906-B21)
- In 300Watt processor one socket configuration, the air cooling with Performance Heatsinks & Performance Fan Kits can be supported. Field upgrade to two socket is not supported with air cooling solution.
- [1]Supports Intel® Speed Select Performance Profile (SST-PP), even though not being a "Y" processor.
- [2] +: Feature Plus: Support AMX, DLB, DSA, IAA and QAT additionally
- Intel® Speed Select enabled processors: Platinum 8468V, 8460Y+, 8458P and 8452Y.

4th Generation Intel® Xeon® Scalable Processor Family (Gold 6)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Gold 6458Q Processor	3.1 GHz	32	60.0 MB	350W	3	4800 MT/s	128 GB	MCC
Gold 6454S Processor	2.2 GHz	32	60.0 MB	270W	4	4800 MT/s	128 GB	XCC
Gold 6448Y Processor	2.1 GHz	32	60.0 MB	225W	3	4800 MT/s	128 GB	MCC
Gold 6448H Processor	2.4 GHz	32	60.0 MB	250W	3	4800 MT/s	512 GB	MCC
Gold 6444Y Processor	3.6 GHz	16	45.0 MB	270W	3	4800 MT/s	128 GB	MCC
Gold 6442Y Processor	2.6 GHz	24	60.0 MB	225W	3	4800 MT/s	128 GB	MCC
Gold 6438Y+ Processor	2.0 GHz	32	60.0 MB	205W	3	4800 MT/s	128 GB	MCC
Gold 6438N Processor	2.0 GHz	32	60.0 MB	205W	3	4800 MT/s	128 GB	MCC
Gold 6434 Processor	3.7 GHz	8	22.5 MB	195W	3	4800 MT/s	128 GB	MCC
Gold 6430 Processor	2.1 GHz	32	60.0 MB	270W	3	4400 MT/s	128 GB	XCC
Gold 6426Y Processor	2.5 GHz	16	37.5 MB	185W	3	4800 MT/s	128 GB	MCC
Gold 6421N Processor[1]	1.8 GHz	32	60.0 MB	185W	N/A	4400 MT/s	128 GB	MCC
Gold 6418H Processor	2.1 GHz	24	60.0 MB	185W	3	4800 MT/s	512 GB	MCC

Gold 6416H Processor	2.2 GHz	18	45.0 MB	165W	3	4800 MT/s	512 GB	MCC
Gold 6414U Processor[1]	2.0 GHz	32	60.0 MB	250W	N/A	4800 MT/s	128 GB	XCC

Notes:
- One or two processor(s)
- [1]Single socket capable, no dual socket support
- One or two processor(s) with TDP equal to or greater than 186W through 270W or one processor with TDP equals 300W, require High Performance Heatsink Kit (P48905-B21) and High-Performance Fan Kit (P48908-B21) together.
- In 300W processor one socket configuration, the air cooling with Performance Heatsinks & Performance Fan Kits can be supported together. Field upgrade to two socket is not supported with air cooling solution.
- One or two processors with TDP equal or greater than 271W require Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit (P48906-B21)
- 96GB 4800 MT/s Memory cannot be selected if HBM die

4th Generation Intel® Xeon® Scalable Processor Family (Gold 5)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Gold 5420+ Processor	2.0 GHz	28	52. 5MB	205W	3	4400 MT/s	128 GB	MCC
Gold 5418Y Processor	2.0 GHz	24	45.0 MB	185W	3	4400 MT/s	128 GB	MCC
Gold 5418N Processor	1.8 GHz	24	45.0 MB	165W	3	4000 MT/s	128 GB	MCC
Gold 5416S Processor	2.0 GHz	16	30.0 MB	150W	3	4400 MT/s	128 GB	MCC
Gold 5415+Processor	2.9 GHz	8	22.5 MB	150W	3	4400 MT/s	128 GB	MCC
Gold 5411N[1] Processor	1.9 GHz	24	45.0 MB	165W	N/A	4400 MT/s	128 GB	MCC

Notes:
- One or two processor(s)
- [1]Single socket capable, no dual socket support
- 96GB 4800 MT/s Memory cannot be selected if HBM die

4th Generation Intel® Xeon® Scalable Processor Family (Silver)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Silver 4416+ Processor	2.0 GHz	20	37.5MB	165W	2	4000 MT/s	64 GB	MCC
Silver 4410Y Processor	2.0 GHz	12	30.0 MB	150W	2	4000 MT/s	64 GB	MCC

Notes:
- One or two processor(s)
- 96GB 4800 MT/s Memory cannot be selected if HBM die.

4th Generation Intel® Xeon® Scalable Processor Family (Bronze)								
Intel® Xeon® Models	**Frequency**	**Cores**	**L3 Cache**	**Power**	**UPI**	**DDR5**	**SGX Enclave size**	**Die**
Bronze 3408U Processor[1]	1.8 GHz	8	22.5 MB	125W	N/A	4000 MT/s	64 GB	MCC

Notes:
- [1]Single socket capable, no dual socket support
- PCIe4.0 only
- 96GB 4800 MT/s Memory cannot be selected if HBM die

Chipset

Intel® C741 Chipset (Code Name: Product formerly Emmitsburg)

Notes: For more information regarding Intel® chipsets, please see the following URL:
https://www.intel.com/content/www/us/en/products/chipsets/server-chipsets.html

System Management Chipset

HPE iLO 6 ASIC

Notes: Read and learn more in the **iLO QuickSpecs**.

Memory

Type	HPE DDR5 Smart Memory	Registered (RDIMM)
DIMM Slots Available	32	16 DIMM slots per processor, 8 channels per processor, 2 DIMMs per channel
Maximum capacity (RDIMM)	8.0 TB	32 x 256 GB RDIMM @ 5600 MT/s or 4800 MT/s

Notes:
- All processors support up to 4TB memory per socket.
- The maximum memory speed is limited by the processor selection.
- To realize the performance memory capabilities listed in this document, HPE DDR5 Smart Memory is required.
- For additional information, please visit the **HPE Memory QuickSpecs and Technical White Papers or HPE DDR5 Smart Memory QuickSpecs.**

Memory Protection

Advanced ECC
Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.

Online Spare
Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.
Notes: For more information see our **Memory RAS feature technical whitepaper**.

PCIe Expansion Slots

Primary Riser (default in chassis)					
Expansion Slots #	**Technology**	**Bus Width**	**Connector Width**	**Processor**	**Slot Form Factor**
1	PCIe 5.0	x16	x16	CPU 1	Full-height, up to 9.5” length (or half-length card)
2	PCIe 5.0	x16	x16	CPU 1	Half-height (Low-profile), up to 9.5” length (or half length card)

Notes: The specifications above correspond with the default primary butterfly riser, which comes with CTO chassis.

Secondary Riser*					
Expansion Slots #	**Technology**	**Bus Width**	**Connector Width**	**Processor**	**Slot Form Factor (two options)**
3	PCIe 5.0	x16	x16	CPU 2	Full-height, up to 9.5” length (or half-length card). Slot 2 will be not available.
					Half-height (Low-profile), up to 9.5” length (or up half length card). Slot 2 is available.

Notes:
- All PCIe Slots support Wake-on-Lane (WoL) feature.
- If Secondary riser is selected, then 2 Processor must be selected.
- If secondary riser is not selected and "NS204i-u Rear Cbl Kit" is not selected, then maximum 2 quantity of PCIe cards can be selected at Slot1 & Slot2. If secondary riser is not selected and "NS204i-u Rear Cbl Kit" is selected, then maximum 1 quantity of PCIe cards can be selected at Slot1.
- If secondary FH riser is installed, then primary PCIe Slot2 cannot be used, maximum 2 quantity of PCIe cards can be selected at Slot 1 & Slot3. If secondary FH riser is not selected, then maximum 1 quantity of FH PCIe cards can be selected at Slot1 & Slot3.
- If Secondary LP riser and "NS204i-u Rear Cbl Kit" are selected, then maximum 2 quantity of PCIe cards can be selected at Slot 1 & Slot3. If Secondary LP riser is selected and "NS204i-u Rear Cbl Kit" is not selected, then maximum 3 quantity of PCIe cards can be selected.
- Field upgrade riser cards setting after factory installation and shipment is currently not available

OCP Expansion Slots

OCP3.0 Slot Priority Support Matrix						
Rear wall		Selected OCP cards (Qty & type)				
		2	1	1	1	2
OCP Slots #	Share NIC Feature	1xOROC[1] + 1x NIC[2]	1xNIC	2xNICs	1xOROC	2x OROCs
1	N/A	OROC	(Secondary)	NIC	OROC (Primary)	OROC[4] (Primary)
2	Available (Incl. Wake-on-Lane)	NIC	NIC (Primary)	NIC (Primary)	No support[3]	OROC[4]

Notes:

- [1] OCP form factor internal controller.
- [2] OCP Networking card.
- [3] If only 1 OROC card is selected, by default connected from 8SFF backplane to OCP Slot1. And there is no controller cable that can connect from 8SFF Backplane to OCP Slot 2.
- [4] If 2 OROC cards are selected, by default the 8SFF controller cable is connected to OCP Slot1 (the comparably higher-end OROC card to be selected by default) and the 2SFF backplane is connected to OCP Slot2 with another OROC card selected (comparably less high-end one) with 2FF controller cable.
- In 4LFF & 8SFF CTO Server, each OCP slot is in design with up to x16 electrical PCIe5.0 lanes through OCP enablement kits.
- In 20EDSFF CTO Server. Each OCP slots are in design with up to x8 electrical PCIe5.0 lanes (OCP Slot2 through OCP enablement kit)

Internal Storage Devices

- **Optical Drive**
  Available on 8 SFF and 4 LFF CTO Servers as an option (DVD-ROM or DVD-RW)
- **Hard Drives**
  None ship standard

Storage Controllers

NVMe Boot Devices

- HPE NS204i-u NVMe Hot Plug Boot Optimized Storage Device (P48183-B21) [1]
- HPE ProLiant DL360 Gen11 NS204i-u Rear Cable Kit (P54702-B21)
- HPE ProLiant DL360 Gen11 NS204i-u Internal Cable Kit (P48920-B21)

DL360 Gen11 NS204i-u Enablement Kit Support Matrix				
Enablement Kit	Description	Field Inst.	NS204i-u Location	Hot-plug Capability
P54702-B21	HPE ProLiant DL360 Gen11 NS204i-u Rear Cable Kit	Yes	PCIe Slot 2[2]	Yes
P48920-B21	HPE ProLiant DL360 Gen11 NS204i-u Internal Cable Kit	Yes	Internal	No support

Notes:

- [1] x4 PCIe Gen3.0 OS Boot device includes 2x 480GB M.2 NVMe SSDs, with preconfigured hardware RAID1.
- [2] Removing the original PCIe Slot 2 cage and re-install the dedicated DL360 Gen11 NS204i-u cage, latch and cables in the P54702-B21. The NS204i-u will take up PCIe Slot 2 space only. The PCIe Slot 1 (FHHL) and PCIe Slot 3 (to be Low Profile) are available in the system with the selection of optional “HPE ProLiant DL360 Gen11 x16 LP Riser Kit (P48903-B21)”.
- For additional information, please see the **HPE OS Boot Device QuickSpecs**

Software RAID Controllers

The available Gen11 controllers are depicted below.

Software RAID Controller

- **Intel® VROC SATA for HPE ProLiant Gen11**

  Notes:

  - Embedded Intel® VROC SATA for HPE ProLiant Gen11, with 14 SATA ports (10-ports accessible),
  - Intel® VROC for HPE ProLiant Gen11 is an enterprise, hybrid Software RAID solution specifically designed for SSDs.
  - Intel® VROC is a software-based solution utilizing Intel® CPU to RAID or HBA direct connected drives.
  - RAID Support- 0/1/5/10.
  - Windows and Linux OS support.
  - Host Tools- Windows GUI/CLI, Linux CLI.
  - UEFI Support- HII Utility, OBSE.
  - iLO Support- IML, Alert, SNMP, AHS.
  - iLO Redfish- Redfish Read.
  - Intel® VROC SATA for HPE ProLiant Gen11 will operate in UEFI mode only. For legacy support an additional storage controller will be needed.
  - Intel® VROC SATA is off by default and must be enabled.

- **Intel® VROC NVMe for HPE ProLiant Gen11**

  - Intel® Virtual RAID on CPU (Intel® VROC) Premium FIO Software for HPE
  - Intel VROC RAID 1 FIO Software for HPE

  Notes:

  - All models feature 4 x8 PCIe 5.0 connectors per socket for NVMe connectivity, provides support for up to 8 direct attach x4 NVMe bays.
  - Only supported on SFF models.
  - Intel® VROC for HPE ProLiant Gen11 is an enterprise, hybrid Software RAID solution specifically designed for NVMe SSDs connected directly to the CPU. Intel® VROC is a software-based solution utilizing Intel® CPU to RAID or HBA direct connected drives.
  - Intel® Virtual RAID on CPUPremium SKU for RAID 0/1/5/10 (R7J57A/R7J59AAE) must be ordered to enable RAID support Windows, Linux, VMware OS support.
  - Intel VROC RAID 1 FIO Software for HPE (S3Q19A) and Intel Virtual RAID on CPU RAID 1 E-RTU for HPE(S3Q39AAE).
  - Host Tools- Windows GUI/CLI, Linux CLI.
  - UEFI Support- HII Utility, OBSE.
  - Active health monitoring of NVMe M.2 drives requires use of SMART tools.
  - Intel® VROC NVMe for HPE ProLiant Gen11 will operate in UEFI mode only. For legacy support an additional Tri-Mode controller will be needed.
  - For NVMe SSDs only, no PCIe card support.

In HPE ProLiant Gen11 servers, when secure boot is enabled, Intel® Virtual RAID on CPU (Intel® VROC) 8.0 Out-of-Band (OOB) management does not function with Linux kernel version 5.4 (or later). Intel® VROC OOB will not respond to any PLDM (over-MCTP-over-PCIe) requests from iLO (BMC). Intel® VROC Redfish resources will not function (e.g., Redfish actions); therefore, Intel® VROC over Redfish management is not available. This is due to a new security feature in Linux kernel version 5.4 (or later). For more information, pls visit **Customer Advisory Document ID: a00128934en_us**, at HPE Support Center.

More product information is available at **Intel VROC for HPE ProLiant QuickSpecs**

Essential RAID Controllers

- HPE Smart Array E208e-p SR Gen10 Controller

Performance RAID Controllers

- HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller
- HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller
- HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller
- HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller
- HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller
- HPE SR932i-p Gen11 x32 Lanes 8GB Wide Cache PCI SPDM Plug-in Storage Controller[1,2]

Notes:

- PE80xx NVMe drives are not supported.
- [1]Requires x16 physical and electrical riser slot.
- [2]If a second controller is required, must select a secondary FH riser. For additional details, please see:

For more information, pls visit

HPE Compute MR Gen11 Controllers QuickSpecs
HPE Compute SR Gen11 Controllers QuickSpecs

Maximum Storage

Storage	Capacity	Configuration
Hot Plug SFF SAS HDD	24.0 TB	8+2 x 2.4 TB (with optional 2 SFF cage on UMB)
Hot Plug SFF SATA HDD	20.0 TB	8+2 x 2.0 TB (with optional 2 SFF cage on UMB)
Hot Plug SFF SAS SSD	153.6 TB	8+2 x 15.36 TB (with optional 2 SFF cage on UMB)
Hot Plug SFF SATA SSD	76.8 TB	8+2 x 7.68 TB (with optional 2 SFF cage on UMB)
Hot Plug SFF U.3 NVMe PCIe SSD	153.6 TB	8+2 x 15.36 TB (with optional 2 SFF cage on UMB)
Hot Plug LFF SAS HDD	80.0 TB	4 x 20 TB
Hot Plug LFF SATA HDD	80.0 TB	4 x 20 TB
Hot Plug LFF SAS SSD	30.72 TB	4 x 7.68 TB
Hot Plug LFF SATA SSD	3.84 TB	4 x 960 GB
M.2 NVMe SSD	960 GB	2 x 480 GB (shipped with optional HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device): Available with external or internal version
EDSFF MVMe SSD	307.2TB	20 x 15.36 TB

Graphics

Integrated video standard

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

HPE iLO 6 on system management memory

- 32 MB Flash
- 8 Gbit DDR4 with ECC protection

Power Supply

- HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes: Available in 94% efficiency.
- HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes: Available in 94%efficiency.
- HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit
  Notes: Available in 96% efficiency.
- HPE 1000W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit

Notes: Available in 96% efficiency.

- HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit
- HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

  Notes:
  - Available in 94% efficiency.
  - 1600W Platinum Power supplies only support high line voltage (200 VAC to 240 VAC).
- HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit

  Notes:
  - Available in 96% efficiency.
  - 1800-2200W Titanium Power supply only supports high line voltage (200 VAC to 240 VAC).

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 Gen11 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.

To review the power requirements for your selected system, please visit the HPE Power Advisor located at: **HPE Power Advisor**

For information on power specifications and technical content visit **HPE Flexible Slot Power Supplies.**
For information regarding European Union Erp Lot 9 Regulation visit **Industry Standard Compliance** section.

Interfaces

Serial	1 port - Optional
Video	1 Front - Display port (optional) 1 Rear - VGA port (standard on all models) **Notes:** Both ports are not active simultaneously.
Network Ports	None. Choice of OCP or stand up card, supporting a wide arrange of NIC adapters. BTO models will come pre-selected with a primary networking card.
HPE iLO Remote Mgmt Port at rear	1 GbE Dedicated
Front iLO Service Port	1 standard
MicroSD Slot	Optional via HPE 32GB microSD RAID1 USB Boot Device **Notes:** – MicroSD cards are not hot-pluggable, server must be powered down before removal. – There is limited supply on MicroSD cards and may not be available in Gen11
USB	5 standard on all models: 1 front, 2 rear, 2 internal +1 optional at the front • Front: 1 USB 3.2 Gen1 + iLO service port • Rear: 2 USB 3.2 Gen1 • Internal: 1 USB 3.2 Gen1 + 1 USB 2.0 • Optional: 1 Front USB 2.0
Systems Insight Display (SID)	Optional for 8SFF CTO Server model

Operating Systems and Virtualization Software

See HPE Servers Support & Certification Matrices

- **Microsoft Windows Server**
- **VMware ESXi**
- **Red Hat Enterprise Linux (RHEL)**
- **SUSE Linux Enterprise Server (SLES)**
- **Canonical Ubuntu**
- **Oracle Linux and Oracle VM**
- **SAP Linux**

Notes:

- For Windows Server and Microsoft Hyper-V Server, will be certified when shipment is available.
- RHEL and Citrix will be certified at a later timeframe.

Industry Standard Compliance

- ACPI 6.4 Compliant
- PCIe 5.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- PXE Support
- VGA
- Display Port
  Notes: This support is on the optional Universal Media Bay.
- USB 3.2 Gen1 Compliant
- USB 2.0 Compliant (only on optional Universal Media Bay and embedded internal USB)
- USB NIC Driver in UEFI for Factory
- UEFI (Unified Extensible Firmware Interface Forum) Class 3 Support
- UEFI (Unified Extensible Firmware Interface Forum) 2.7 support
  Notes: UEFI is the default for the DL360 Gen11.
- OCP 3.0 SFF NIC Support
- OCP 3.0 SFF Storage Support
- Embedded TPM Support
- Energy Star 4.0
- SMBIOS 3.4
- Redfish API
- IPMI 2.0
- Secure Digital 4.0
- Advanced Encryption Standard (AES)
- Triple Data Encryption Standard (3DES)
- SNMP v3
- TLS 1.2
- DMTF Systems Management Architecture for Server Hardware Command Line (SMASH CLP)
- Active Directory v1.0

- ASHRAE A3/A4
  Notes:
  For additional technical, thermal details regarding ambient temperature, humidity, and feature support, please visit **http://www.hpe.com/servers/ashrae**
  Under Standard Operating Support conditions, there is no time limitation for operating the servers in ASHRAE Class A2 conditions, unless otherwise specified in the applicable product information.
  Intel Xeon Platinum 8470Q and 8593Q are not in scope.
- European Union Erp Lot 9 Regulation
  European Union (EU) eco-design regulations for server and storage products, known as Lot 9, establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations. HPE ProLiant Gen11 servers are compliant with Lot9 requirements.
  Please visit: **https://www.hpe.com/us/en/about/environment/msds-specs-more.html** for more information regarding HPE Lot 9 conformance.

  Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, or Switzerland must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers 865438-B21, P03178-B21, and P44712-B21 are 96% efficient, thus meeting requirements.

  HPE is on target to fulfil compliant systems ahead of time and will begin enforcing these requirements in advance to satisfy requests with the current power supplies by the set deadline.

HPE Server UEFI

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 Gen11 servers have a UEFI Class 2 implementation to support UEFI Mode.

Notes: 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 enhanced security.
- Embedded UEFI Shell
- Operating system specific functionality
- Mass Configuration Deployment Tool using iLO RESTful API that is Redfish API Conformant
- Support for > 2.2 TB (using GPT) boot drives.
- PXE boot support for IPv6 networks
- USB 3.2 Gen1 Stack
- Workload Profiles for simple performance optimization

UEFI Boot Mode only

- TPM 2.0 Support
- iSCSI Software Initiator Support.
- NVMe Boot Support
- HTTP/HTTPs Boot support as a PXE alternative.
- Platform Trust Technology (PTT) can be enabled.
- Boot support for option cards that only support a UEFI option ROM.

Notes: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI. Enabling TPM 2.0 no longer requires TPM module option kit for Gen11. It is an embedded feature yet disabled for shipments to China.

HPE GreenLake for Compute Ops Management

HPE is intelligently transforming compute management with an intuitive cloud operating experience through HPE GreenLake cloud platform to streamline and secure operations from edge-to-cloud. Automated key lifecycle tasks, for onboarding, updating, managing, and monitoring HPE servers, brings agility and greater efficiencies to wherever compute devices reside via a unified single browser-based interface. Manage single locations or multiple, distributed sites. Keep tens to thousands of servers secure with batch policy controls and automated updates.

Compute Ops Management is cloud-native software that is continually updated with new services, features, patches, and fixes. The management application resides in the HPE GreenLake cloud platform (access via **https://console.greenlake.hpe.com**) and leverages the HPE GreenLake architecture, security, and unified operations.

A 3-year subscription to HPE GreenLake for Compute Ops Management is added by default when ordering an HPE ProLiant Gen11 rack, tower, or micro server.

For more information, visit the HPE GreenLake for Compute Ops Management QuickSpecs:
https://www.hpe.com/psnow/doc/a50004263enw

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**.

OpenBMC Support

OpenBMC Capable through iLO6 Transfer of Ownership Process.

Learn more at **OpenBMC Support**

Intelligent Provisioning

Hassle free server and OS provisioning for one or more servers with Intelligent Provisioning.

Learn more at **http://www.hpe.com/servers/intelligentprovisioning**.

iLO RESTful API

iLO RESTful API is DMTF Redfish API information 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**.

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**.

Smart Update
Keep your servers up to date with the HPE Smart Update solution by using Smart Update Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLiant (SPP).

Learn more at **https://www.hpe.com/us/en/servers/smart-update.html**.

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, Gen10 and Gen10 Plus 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/powershell**.

HPE OneView Standard
HPE OneView Standard can be used for inventory, health monitoring, alerting, and reporting without additional fees. It can monitor multiple HPE server generations. The user interface is similar to the HPE OneView Advanced version, but the software-defined functionality is not available. Learn more at **http://www.hpe.com/info/oneview**.

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**.

Security
- UEFI Secure Boot and Secure Start support
- Immutable Silicon Root of Trust
- FIPS 140-3 validation (iLO 6 certification in progress)
- Common Criteria certification (iLO 6 certification in progress)
- Configurable for PCI DSS compliance
- Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser
- Support for Commercial National Security Algorithms (CNSA)
- iLO Security Modes
- Granular control over iLO interfaces
- Smart card (PIV/CAC) and Kerberos based 2-factor Authentication
- 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
- TPM 2.0 (Trusted Platform Module 2.0)

Notes: Enabling TPM 2.0 no longer requires TPM module option kit for Gen11. It is an embedded feature yet disabled for shipments to China.

- Bezel Locking Kit option
- Chassis Intrusion detection option

HPE Trusted Platform Module

Enabling HPE Trusted Platform Module (TPM) 2.0 no longer requires TPM module option kit for Gen11. It is an embedded feature yet disabled for shipments to China. TPM2.0 can also be disabled from the BIOS setting.

Notes: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates, and encryption keys.

Warranty

This product is covered by a global limited warranty and supported by HPE 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 Services 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.

Notes: 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:
https://www.hpe.com/support/ProLiantServers-Warranties

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.

HPE OneView Advanced

HPE OneView Advanced offers a sophisticated level of automation to infrastructure management by taking a template driven approach to provisioning, updating, and integrating compute, storage, and networking infrastructure. It provides full-featured licenses which can be purchased for managing multiple HPE server generations.
To learn more visit **http://www.hpe.com/info/oneview**.

HPE InfoSight for Servers

HPE InfoSight for Servers combines the cloud-based machine learning of InfoSight with the health and performance monitoring of Active Health System (AHS) and iLO to optimize performance and predict and prevent problems. The end result is an intelligent environment that modernizes IT operations and enhances the support experience by predicting and preventing the infrastructure issues that lead to application disruptions, wasted IT staff time and missed business opportunities.
Learn more at **https://www.hpe.com/servers/infosight**

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**.

Accelerator and GPU Information

Hewlett Packard Enterprise supports various accelerators on select HPE Proliant servers to support different workloads. The accelerators enable seamless integration of GPU computing with HPE ProLiant servers for high-performance computing, large data center graphics, deep learning and virtual desktop deployments. These accelerators deliver all of the standard benefits of GPU computing while enabling maximum reliability and tight integration with system monitoring and management tools such as HPE Insight Cluster Management Utility.

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 Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

https://www.hpe.com/services

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

https://www.hpe.com/services/consulting

HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

HPE Managed Services | HPE

Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.

https://www.hpe.com/services/operational

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

https://www.hpe.com/services/techcare

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:
https://www.hpe.com/services/lifecycle

For a list of the most frequently purchased services using service credits, see the **HPE Service Credits Menu**

Other Related Services from HPE Services:

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.
https://www.hpe.com/services/training

Defective Media Retention

An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials

HPE 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 QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

How to Purchase Services

Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at **https://ssc.hpe.com/portal/site/ssc/**

AI Powered and Digitally Enabled Support Experience
Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience.

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.
https://support.hpe.com/hpesc/public/home/signin

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market.
- Save on TCO, align costs to business.
- Scale quickly, meet unpredictable demand.
- Simplify IT operations across your data centers and clouds.

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

For more information
http://www.hpe.com/services