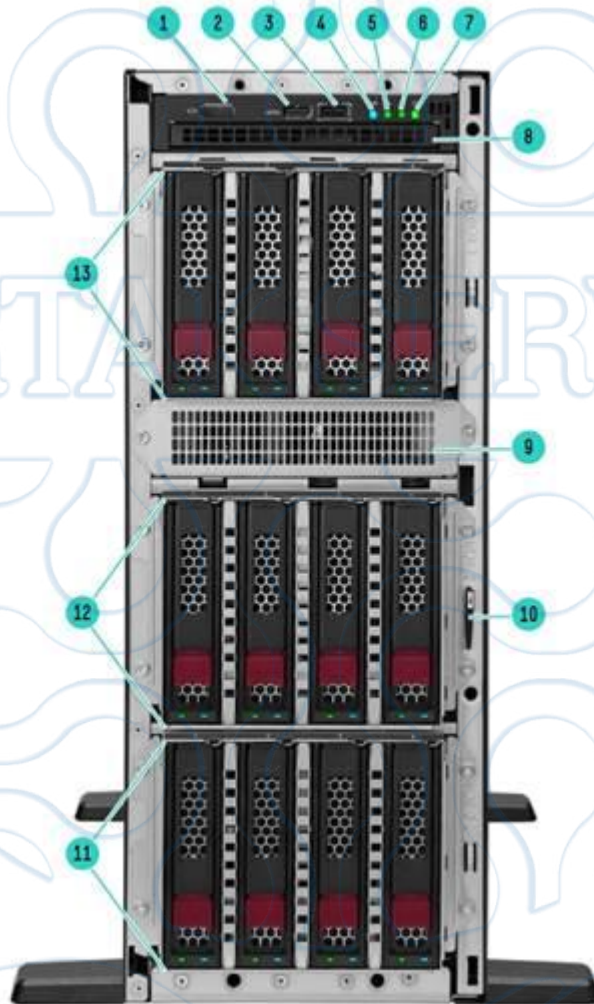


### Overview

#### HPE ProLiant ML350 Gen11

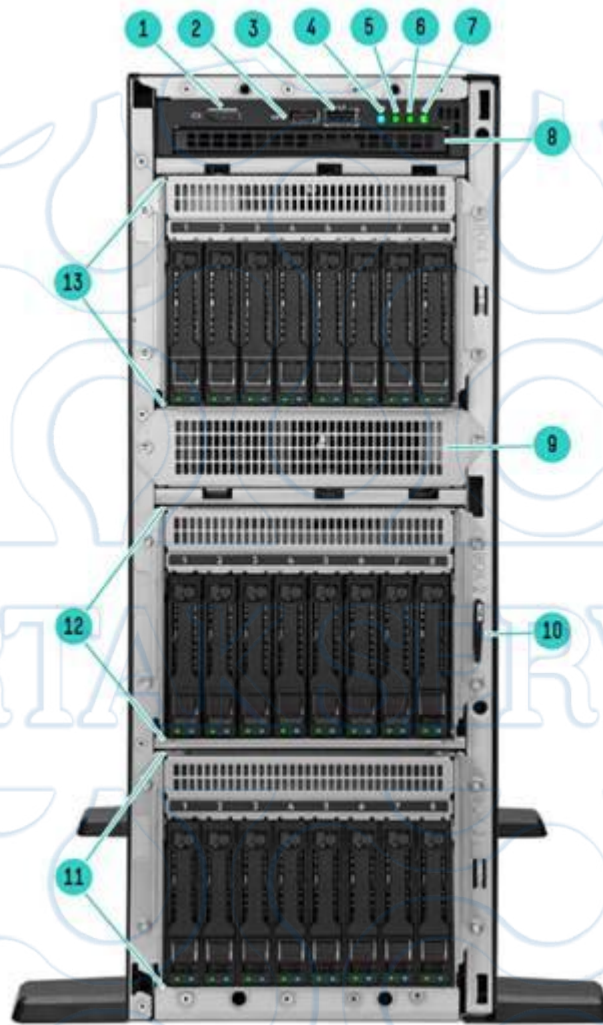
Provide most powerful and storage flexibility 2P tower server with rackable chassis design for various environments, and delivers exceptional compute performance, security, reliability, and expandability. Design to fulfill with wide range workloads for small offices, remote and branch offices of large enterprises, growing SMBs and data centers. HPE ProLiant ML350 Gen11 server is an excellent choice to accelerate your growing business.



**Front View - LFF chassis with optional Gen11 4LFF HDD Cage Kits shown (Tower mode)**

1. DisplayPort 1.1a
2. USB 3.2 Gen1 port
3. iLO service port
4. UID button/LED
5. NIC status LED
6. Health LED
7. Power on/Standby button and system power LED
8. Optical drive bay
9. Media bay filler panel
10. Serial number/iLO information pull tab
11. Box3: Default drive cage for 4LFF
12. Box2: Optional drive cage for 8SFF/4LFF
13. Box1: Optional drive cage for 8SFF/4LFF, or USB RDX docking station.

## Overview

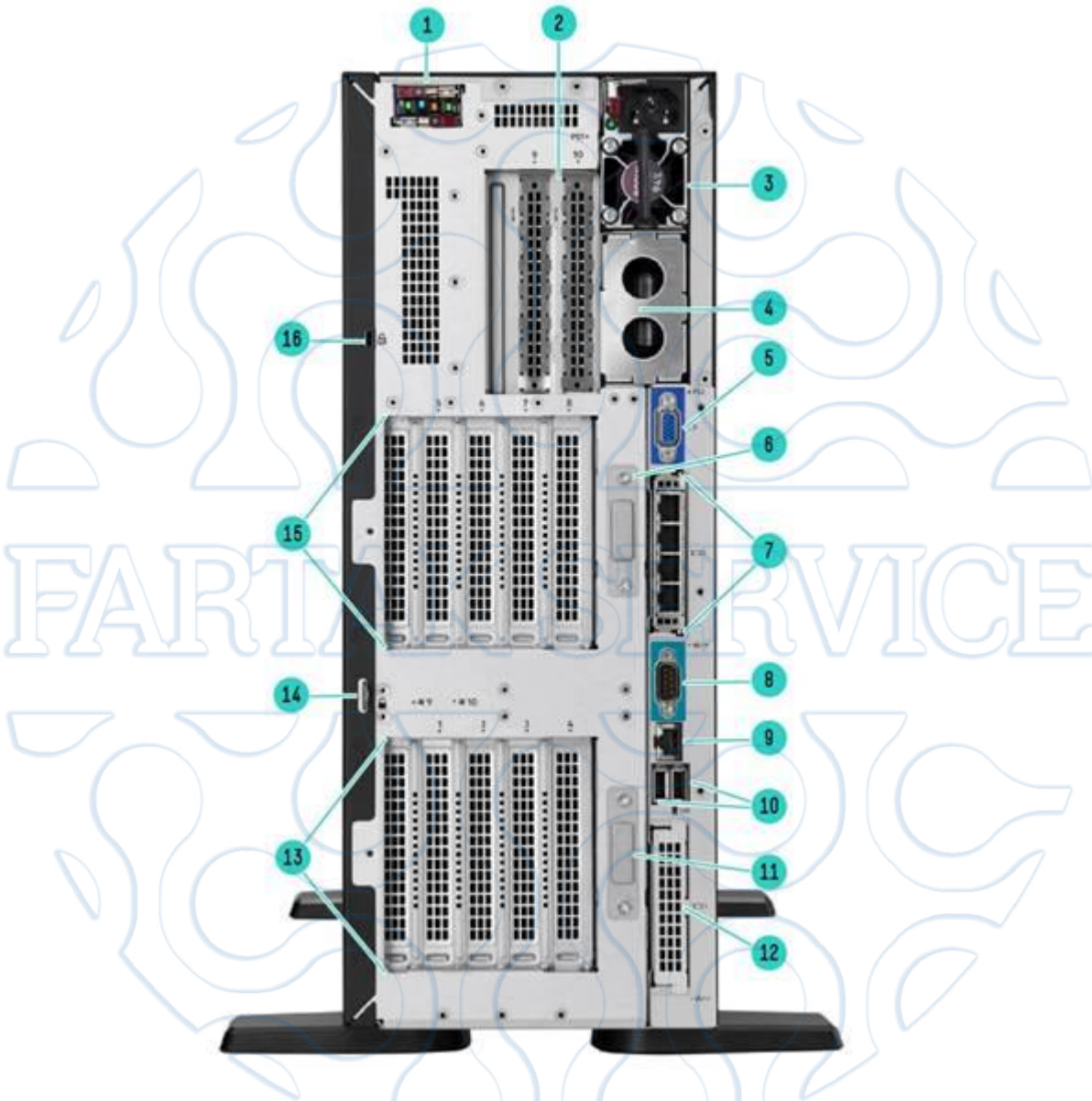


### Front View - SFF chassis with optional Gen11 8SFF HDD Cage Kits shown (Tower mode)

- |   |  |
|---|--|
| 1. DisplayPort 1.1a                             | 8. Optical drive bay                       |
| 2. USB 3.2 Gen1 port                            | 9. Media bay filler panel                  |
| 3. iLO service port                             | 10. Serial number/iLO information pull tab |
| 4. UID button/LED                               | 11. Box3: Default drive cage for 8SFF*     |
| 5. NIC status LED                               | 12. Box2: Optional drive cage for 8SFF     |
| 6. Health LED                                   | 13. Box1: Optional drive cage for 8SFF     |
| 7. Power on/Standby button and system power LED |  |

**Notes:** \*Optional for 8SFF x4 U.3 drive kit or 12 EDSFF drive kit

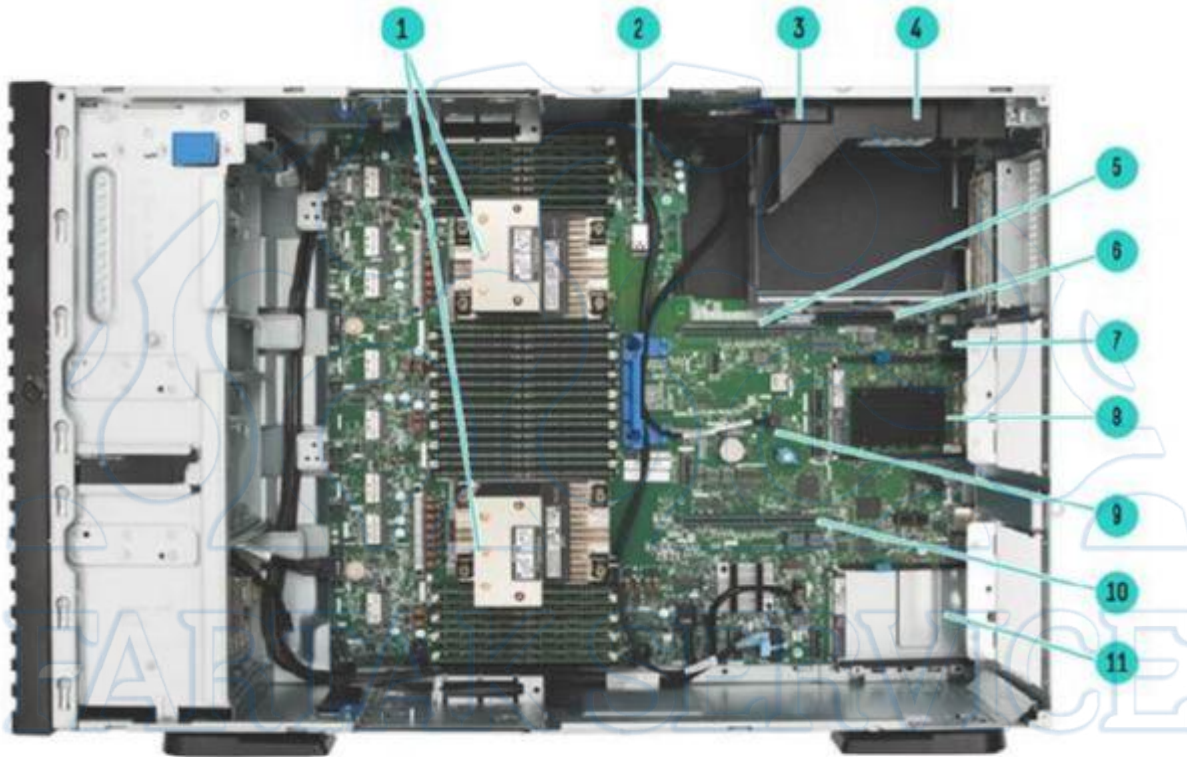
## Overview



### Rear View - With HPE Flex Slot RPS shown.

- |  |   |
|--|---|
| 1. HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device (Optional)                                     | 9. iLO management port                            |
| 2. PCIe Slots 9-10 (Optional tertiary riser, 2 <sup>nd</sup> processor required for expansion card installation) | 10. USB 3.2 Gen 1 ports x2                        |
| 3. Flexible Slot power supply 1  | 11. External Fan connector 10                     |
| 4. Flexible Slot power supply 2 (Optional)   | 12. Slot 14 OCP 1 (Optional for OROC/NIC adapter) |
| 5. VGA Port  | 13. PCIe Slots 1-4 (Primary riser)                |
| 6. External Fan connector 9  | 14. Padlock eye                                   |
| 7. Slot 15 OCP 2 (Optional for NIC adapter)  | 15. PCIe Slots 5-8 (Secondary riser)              |
| 8. Serial port (Optional)  | 16. Kensington slot                               |

## Overview



### Internal View - with optional 2<sup>nd</sup> CPU, OCP NIC adapter and NS204i-u shown

1. CPU Socket 1<sup>1</sup> & 2<sup>2</sup>
2. Dual USB port (Stacked, Top: USB 3.2 Gen1 port, Bottom: USB 2.0 port)
3. Megacell battery holder (Under)
4. HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device (Optional)
5. Secondary riser connector
6. Tertiary riser sideband connector
7. Serial port cable connector
8. Slot 15 OCP 2 (Optional for NIC adapter)
9. HPE NS204i-u power connector
10. Primary riser connector
11. Slot 14 OCP 1 (Optional for OROC/NIC adapter)

#### Notes:

<sup>1</sup> CPU1 (bottom) shown Standard Heatsink with fully memory populated in 16 slots (32 slots in total)

<sup>2</sup> CPU2 (top) shown Standard Heatsink with fully memory populated in 16 slots (32 slots in total)

### Overview

#### What's New

- Powered by 4th Generation Intel® Xeon® Scalable processors that support up to 60 cores at 350W, 112.5 MB of L3 Cache, and 32 DIMMs for DDR5 memory up to 4800 MT/s.
- Increased memory bandwidth, performance and lower power requirements with DDR5 memory that support up to 8 TB memory capacity with 8 channels per processor.
- Advanced data transfer rates from the PCIe Gen5 serial expansion bus.
- Includes HPE Integrated Lights-Out 6 (iLO 6) server management software that enables you to securely configure, monitor, and update your HPE ProLiant Gen11 servers seamlessly from anywhere.
- Supports Tri-mode SFF backplane and hot-pluggable RAID1 protected NS204i-u M.2 NVMe boot option.
- New x4 U.3 NVMe drive cage and EDSFF drive cage to support up to 12 EDSFF PCIe Gen5 NVMe drives.
- Support L40 NVIDIA L40 48GB PCIe Accelerator.
- Support L4 and A16 NVIDIA Accelerator.

#### Platform Information

##### Form Factor

- 4U tower with rack conversion capability

**Notes:** When deployed as a Rack model, this system will take up 5U-height space in a standard data center rack facility.

##### Chassis Types

- 8 SFF chassis with optional Tri-mode SFF cage kit (s), x4 NVMe SFF cage kit, 12 EDSFF cage kit and 1 slim-line DVD bay kit options
- 4 LFF chassis with optional LFF or SFF cage kit (s), USB RDX docking station and 1 slim-line DVD bay kit options

##### Notes:

- Mixed SFF and LFF drive cages is supported with LFF chassis, up to 3 drive cages.
- USB RDX docking station is supported up to 1 with LFF chassis.
- U.3 x4 NVMe 8SFF and 12 EDSFF drive cage kit are supported with SFF CTO server only, up to 1 drive cage.

##### System Fans

- Standard - 3 fans included

##### Notes:

- Base models typically ship with 3 standard fans as default with every ML350 Gen11 server operations.
- Performance models typically ship with 8 standard fans which provides N+1 redundant fan feature in most of the situations. For support detail or restriction, refer to **ML350 Gen11 User Guide**.
- Optional Redundant Fan Kit (P47219-B21), Second CPU Fan Kit (P47902-B21) and External GPU Fan Kit (P47220-B21) provides advanced cooling and redundancy functionality in heavier configurations. Configurations that require fan kit are provided in later sections.

### Standard Features

#### Processors

Up to 2 of the following, depending on model.

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

<https://www.intel.sg/content/www/xa/en/processors/xeon/scalable/xeon-scalable-platform.html>.

Intel Fourth Generation Xeon® Scalable Processors - Naming Decoder		
Processor Suffix	Description	Offering
<b>P</b>	Cloud - IaaS	Optimized for high performance IaaS for orchestration efficiency - IaaS higher freq. for VM environments
<b>V</b>	Cloud - SaaS	Designed for high rack density, maximize VM/core, and lower power VM environment
<b>M</b>	Media Transcode	Designed for Media Processing and Transcoding
<b>H</b>	DB and Analytics	Designed for Data Analytics and Big Data usages. Maximum capability for IAA, DSA, QAT, DLB and AMX. Supported on 2, 4 and 8 socket platforms.
<b>N</b>	Network/5G/Edge( High TPT/Low Latency)	Designed and optimized for a range of broadly-deployed network and 5G workload environments from edge to the data center. Support network solutions with lower latency, higher throughput, deterministic performance and extended supply life. Maximum capability for DLB, DSA and QAT - for Dynamic Load Balancing, Data Movement and Cryptography/Data Compression. 1S SKUs -Optimized for Network (default mode), CSP (Cloud mode) and Enterprise (Server mode)
<b>S</b>	Storage & HCI	Designed to provide maximum inter-socket bandwidth with lower core counts and TDPs. Extended product supply life. Maximum capability for DSA, QAT and DLB - for Data Movement and Data Compression
<b>T</b>	Long-life Use/High Tcase	Support for up to 10-year reliability. Select SKUs offer use for industrial commercial temperature conditions. Long life availability
<b>U</b>	1-Socket Optimized*	Provides cost-effective 1S options at lower core counts, largely for Enterprise
<b>Q</b>	Liquid cooling	Provides higher frequencies
<b>+</b>	Feature +	Feature Plus SKU - Enabled 1 for each accelerators device of QAT, DLB, DSA, IAX

Intel Fourth Generation Xeon® Scalable Processors							
Intel Xeon Models	CPU Frequency	Cores	L3 Cache	Power	UPI (16 GT/s)	DDR5	SGX Enclave size
<b>Platinum Processors</b>							
Platinum 8490H Processor	1.9 GHz	60	112.5 MB	350W	4	4800 MT/s	512 GB
Platinum 8480+ Processor	2.0 GHz	56	105 MB	350W	4	4800 MT/s	512 GB
Platinum 8470N Processor	1.7 GHz	52	97.5 MB	300W	3	4800 MT/s	128 GB
Platinum 8470 Processor	2.0 GHz	52	105 MB	350W	4	4800 MT/s	512 GB
Platinum 8468 Processor	2.1 GHz	48	105 MB	350W	4	4800 MT/s	512 GB

### Standard Features

Platinum 8468V Processor	2.4 GHz	48	97.5 MB	330W	3	4800 MT/s	128 GB
Platinum 8458P Processor	2.7 GHz	44	82.5 MB	350W	3	4800 MT/s	512 GB
Platinum 8460Y+ Processor	2.0 GHz	40	105 MB	300W	4	4800 MT/s	128 GB
Platinum 8452Y Processor	2.0 GHz	36	67.5 MB	300W	4	4800 MT/s	128 GB
Platinum 8444H Processor	2.9 GHz	16	45 MB	270W	4	4800 MT/s	512 GB
<b>Gold Processors</b>							
Gold 6448H Processor	2.4 GHz	32	60 MB	250W	3	4800 MT/s	512 GB
Gold 6454S Processor	2.2 GHz	32	60 MB	270W	4	4800 MT/s	128 GB
Gold 6448Y Processor	2.1 GHz	32	60 MB	225W	3	4800 MT/s	128 GB
Gold 6430 Processor	2.1 GHz	32	60 MB	270W	3	4400 MT/s	128 GB
Gold 6438N Processor	2.0 GHz	32	60 MB	205W	3	4800 MT/s	128 GB
Gold 6438Y+ Processor	2.0 GHz	32	60 MB	205W	3	4800 MT/s	128 GB
Gold 6414U Processor*	2.0 GHz	32	60 MB	250W	N/A	4800 MT/s	128 GB
Gold 6421N Processor*	1.8 GHz	32	60 MB	185W	N/A	4400 MT/s	128 GB
Gold 6442Y Processor	2.6 GHz	24	60 MB	225W	3	4800 MT/s	128 GB
Gold 6418H Processor	2.1 GHz	24	60 MB	185W	3	4800 MT/s	512 GB
Gold 6416H Processor	2.2 GHz	18	45 MB	165W	3	4800 MT/s	512 GB
Gold 6426Y Processor	2.5 GHz	16	37.5 MB	185W	3	4800 MT/s	128 GB
Gold 6434 Processor	3.7 GHz	8	22.5 MB	195W	3	4800 MT/s	128 GB
Gold 5420+ Processor	2.0 GHz	28	52.5 MB	205W	3	4400 MT/s	128 GB
Gold 5418N Processor	1.8 GHz	24	45 MB	165W	3	4000 MT/s	128 GB
Gold 5418Y Processor	2.0 GHz	24	45 MB	185W	3	4400 MT/s	128 GB
Gold 5411N Processor*	1.9 GHz	24	45 MB	165W	N/A	4400 MT/s	128 GB
Gold 5416S Processor	2.0 GHz	16	30 MB	150W	3	4400 MT/s	128 GB
Gold 5415+ Processor	2.9 GHz	8	22.5 MB	150W	3	4400 MT/s	128 GB
<b>Silver Processors</b>							
Silver 4416+ Processor	2.0 GHz	20	37.5 MB	165W	2	4000 MT/s	64 GB
Silver 4410Y Processor	2.0 GHz	12	30 MB	150W	2	4000 MT/s	64 GB
<b>Bronz Processors</b>							
Bronze 3408U Processor*	1.8 GHz	8	22.5 MB	125W	N/A	4000 MT/s	64 GB

### Notes:

- 80 PCIe 5.0 lanes per processor.
- \* "U" processors (i.e. 6414U, 3408U) and 6421N, 5411N are only supported in single socket configuration.
- Processors with TDP equal to or greater than 195W require Performance Heatsink (P47224-B21).
- Processors with TDP equal to or greater than 300W require both Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).

## Standard Features

### Chipset

Intel® C741 Chipset

**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

One of the following depending on model

<b>Type</b>	HPE DDR5 Smart Memory, Registered (RDIMM)
<b>DIMM Slots Available</b>	32 DIMM slots
<b>Maximum capacity (RDIMM)</b>	16 DIMM slots per processor, 8 channels per processor, 2 DIMM per channel 8.0TB 32 x 256 GB RDIMM* @ 4400MT/s at 2 DPC, 16 x 256 GB RDIMM* @ 4800 MT/s at 1 DPC

#### Notes:

- The maximum memory by socket is limited by the processor selection.
- Mixing of RDIMM and LRDIMM memory is not supported.
- For additional information, please see the [HPE DDR5 Smart Memory QuickSpecs](#).
- For General Server Memory and Persistent Memory Population Rules and Guidelines for Gen11 see details [here](#):  
<http://www.hpe.com/docs/memory-population-rules>

### 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.

## Standard Features

### Expansion Slots

#### Primary Riser

##### Notes:

- Bus width indicates the number of physical electrical lanes running to the connector.
- There are two Primary riser configurations:
  - o 4x8 Primary Riser Kit provides 4 slots with PCIe Gen5 x8 on Slot1-4.
  - o 2x16 Primary FIO Riser Kit provides 2 slots with PCIe Gen5 x16 on Slot2 & 4.

Primary Riser 4x8					
Slots #	Processor	Technology	Bus Width	Connector Width	Slot Form Factor
1	CPU 1	PCIe 5.0	X8	X16	Full-height,full-length slot
2	CPU 1	PCIe 5.0	X8	X16	Full-height,full-length slot
3	CPU 1	PCIe 5.0	X8	X16	Full-height,full-length slot
4	CPU 1	PCIe 5.0	X8	X16	Full-height,full-length slot

Primary Riser 2x16					
Slots #	Processor	Technology	Bus Width	Connector Width	Slot Form Factor
2	CPU 1	PCIe 5.0	X16	X16	Full-height,full-length slot
4	CPU 1	PCIe 5.0	X16	X16	Full-height,full-length slot

#### Secondary Riser

##### Notes:

- Bus width indicates the number of physical electrical lanes running to the connector.
- There are two Secondary riser configurations:
  - o 4x8 Secondary Riser Kit provides 4 slots with PCIe Gen5 x8 on Slot5-8.
  - o 2x16 Secondary Riser Kit provides 2 slots with PCIe Gen5 x16 on Slot6 & 8.

Secondary Riser 4x8					
Slots #	Processor	Technology	Bus Width	Connector Width	Slot Form Factor
5	CPU 2	PCIe 5.0	X8	X16	Full-height,full-length slot
6	CPU 2	PCIe 5.0	X8	X16	Full-height,full-length slot
7	CPU 2	PCIe 5.0	X8	X16	Full-height,full-length slot
8	CPU 2	PCIe 5.0	X8	X16	Full-height,full-length slot

Secondary Riser 2x16					
Slots #	Processor	Technology	Bus Width	Connector Width	Slot Form Factor
6	CPU 2	PCIe 5.0	X16	X16	Full-height,full-length slot
8	CPU 2	PCIe 5.0	X16	X16	Full-height,full-length slot

#### Tertiary Riser

##### Notes:

- Bus width indicates the number of physical electrical lanes running to the connector.
- Tertiary Riser Kit provides 2 slots with PCIe Gen5 x8 on Slot9 & 10.

## Standard Features

- Two CPU 2 MCIO connectors will be occupied to support expansion card on the riser.
- 2x8 Tertiary Riser Kit provides 2 slots with PCIe Gen5 x8 on Slot9 & 10.

Tertiary Riser 2x8					
Slots #	Processor	Technology	Bus Width	Connector Width	Slot Form Factor
9	CPU 2	PCIe 5.0	X8	X16	Half-height, Half-length slot
10	CPU 2	PCIe 5.0	X8	X16	Half-height, Half-length slot

## Internal Storage Devices

- Optical Drive

Available as an option (DVD-ROM or DVD-RW)

- HDD/SSD

None ship as standard

## Storage Controllers NVMe Boot Devices

- HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device

## Software RAID

- Intel VROC SATA for HPE ProLiant Gen11

## Notes:

- All models feature an embedded storage controller, with embedded software SATA RAID support for up to 12LFF or 8SFF bays, limited to 8LFF or 8SFF bays while NS204i-u selected.
- 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

## 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.

### Standard Features

- 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 CPU Standard for RAID 0/1/10 (S0E37A/S0E38AAE) or Premium SKU for RAID 0/1/5/10 (R7J57A/R7J59AAE) must be ordered to enable RAID support.
- Windows, Linux, VMware OS support.
- 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.

### Essential RAID Controllers

- HPE Smart Array E208e-p SR Gen10 Controller

### Tri-mode RAID Controllers

- HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller
- HPE MR216i-p 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 SR932i-p Gen11 x32 Lanes 8GB Wide Cache PCI SPDM Plug-in Storage Controller

### Maximum Storage

Drive	Capacity	Configuration
Hot Plug LFF SAS HDD	240 TB	12 x20TB
Hot Plug LFF SATA HDD	240TB	12 x20TB
Hot Plug LFF SAS SSD	92.16 TB	12 x7.68TB
Hot Plug LFF SATA SSD	92.16 TB	12 x7.68TB
Hot Plug SFF SAS HDD	57.6 TB	24 x2.4TB
Hot Plug SFF SATA HDD	48 TB	24 x2TB
Hot Plug SFF SAS SSD	368.64 TB	24 x15.36TB
Hot Plug SFF SATA SSD	184.32 TB	24 x7.68TB
Hot Plug SFF NVMe PCIe SSD	368.64 TB	24 x15.36TB
Hot Plug EDSFF NVMe PCIe SSD	183.6 TB	12 x15.3TB
Hot Plug NVMe M.2 SSD	480 GB	2 x480GB (With NS204i-u boot option with RAID1 protected)

### Graphics

#### Integrated Video Standard

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

## Standard Features

### HPE iLO 6 on system management memory

- 64 MB Flash
- 8 Gbit DDR 4 with ECC protection

## Power Supply

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

**Notes:** Available in 94%. Power Efficiency

- HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

**Notes:** Available in 94%. Power Efficiency

- HPE 1000W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit

**Notes:** Available in 96%. Power 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% Power Efficiency.
- 200-240VAC power input only.

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 use the [HPE Power Advisor Tool](#).

For information on power specifications and technical content visit [HPE Server power supplies](#)

## Interfaces

<b>Serial</b>	Optional, rear
<b>Display Port</b>	1 standard, front
<b>VGA Port</b>	1 VGA Port standard, rear
<b>Network Ports</b>	None. Choice of OCP or stand up card
<b>HPE iLO Remote Management Network Port</b>	1 Gb Dedicated, rear
<b>Front iLO Service Port</b>	1 standard, front
<b>USB 3.2 Gen1</b>	4 standard on all models: 1 front, 2 rear, 1 internal
<b>USB 2.0</b>	1 internal

## Standard Features

### Operating Systems and Virtualization Software Support

- 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](#)
  - [Citrix](#)

**Notes:** For more information on Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server.

<https://www.hpe.com/us/en/servers/server-operating-systems.html>

### 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.

**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 enabled for enhanced security
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.2 Gen1 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

- TPM 2.0 Support
- 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

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

## Industry Standard Compliance

- ACPI 6.1 Compliant

### Standard Features

- PCIe 5.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- Support for Microsoft Secure Code
- PXE Support
- VGA/Display Port
- USB 3.2 Gen1 Compliant
- USB 2.0 Compliant
- OCP 3.0 SFF NIC Support
- OCP 3.0 SFF Storage Support
- Embedded TPM Support
- Energy Star
- SMBIOS 3.1
- UEFI 2.7
- UEFI Class 3 (Unified Extensible Firmware Interface Forum)
- Redfish API
- IPMI 2.0
- Advanced Encryption Standard (AES)
- Triple Data Encryption Standard (3DES)
- SNMP v3
- TLS 1.2
- DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)
- DMTF Redfish support for SecureBoot Key Management
- ACPI DSM Drive LED Management
- Memory Page Retire Support
- Retire old VMware Secure Boot Key
- MCTP over PCIe multi-segment (EDKII for GenoaPI 0.0.9.0, HPE under verifying0)
- Synergy: I3C Engine
- APML
- Active Directory v1.0
- ASHRAE A3/A4

**Notes:** For additional technical, thermal details regarding ambient temperature, humidity, and feature support, please visit <https://www.hpe.com/support/ASHRAEGen11>

---

### 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>.

### Standard Features

---

#### 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>

#### 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>

#### 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>

---

### 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

The Active System Health Viewer (AHSV) was deprecated as of March 2022. Users are now recommended to use the InfoSight (<https://www.hpe.com/us/en/solutions/infosight.html>) for Servers Portal for AHS viewing capabilities. In InfoSight for Servers portal, users will also be able to view hardware configuration details, firmware and driver information, warranty and support status of a server, wellness alerts, and create support cases for servers under a valid warranty or support contract.

HPE InfoSight provides the same security assurances as that of AHSV. Furthermore, InfoSight can be used as an AHSV replacement even if customers do not want to share AHSV logs and telemetry data on an ongoing basis.

#### 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>

---

### Standard Features

#### 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 Gen11 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>

#### 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 is an on premises, multi-generational server monitoring and management solution. HPE OneView Standard can be used for inventory, health monitoring, alerting, and reporting without additional fees. Customers can upgrade their management experience with an HPE OneView Advanced license, all provided by the same tool. Learn more at <http://www.hpe.com/info/oneview>.

---

### 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)
- 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
- TPM (Trusted Platform Module) 2.0
- Front bezel key-lock feature - standard, available in both Tower and Rack models
- Padlock slot, standard
- Kensington Lock slot, standard
- Chassis Intrusion detection option

## Standard Features

### Warranty

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

**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. 3) Non CSR parts must be serviced by a trained authorized service engineer. Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/>

FARTAK SERVICE



### 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.

##### HPE OneView Advanced-

HPE OneView brings a new 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 Gen8, Gen9 and Gen10 servers. 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 GPGPU 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

## Optional Features

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 your 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

**HPE Pointnext Services** No matter where you are in your digital transformation journey, you can count on HPE Pointnext Services to provide the expertise you need, when and where you need it.

##### **Advisory and Professional Services**

**Advisory Services** our Digital Next Advisory approach can help you identify, prioritize, and implement the right transformation initiatives to create new edge experiences, get real-time insights from all your data, and modernize your IT to enable new opportunities.

##### **Operational Services**

**Operational Services** take your IT operations to the next level with expertise and tools that can help save your staff time, manage complexity, and identify new ways to drive efficiency and effectiveness in your IT.

##### **Consume IT on your terms**

**HPE GreenLake** 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 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

##### **Managed services to run your IT operations**

**HPE GreenLake Management Services** provide 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.

#### Recommended Services

##### **HPE Pointnext Tech Care**

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care 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 Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care 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 Pointnext Complete Care**

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care 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/completecure>

##### **HPE Lifecycle Services**

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:

### Service and Support

- **Installation 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 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.
  - **HPE Implementation Assistance Service:** 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.
    - For a list of the most frequently purchased services using service credits, see the [Universal Service Credits Menu](#)
- 

### Other related Services

#### HPE Education Services

Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.

#### Defective Media Retention

An option available with HPE Pointnext Complete Care and HPE Pointnext Tech Care 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 support options.

#### AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience.

Sign into the new 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 a new intelligent virtual agent with seamless transition when needed to a live support agent.

Learn more <https://support.hpe.com/hpesc/public/home/signin>

HPE Support 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 HPE Support Services at <https://ssc.hpe.com/portal/site/ssc/>
-

## Service and Support

### 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 QuickSpecs, 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.

---

The logo for FARTAK SERVICE is centered on the page. It features the words "FARTAK SERVICE" in a bold, blue, sans-serif font. The text is set against a background of a repeating, light blue, stylized pattern that resembles a traditional Islamic geometric or floral motif. Below the text, there is a faint, light blue outline of a hand, palm up, as if presenting the logo. The entire graphic is rendered in a light blue color, matching the overall design theme of the document.

FARTAK SERVICE

### Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

- Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
- Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
- If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs

The pre-configured BTO SKUs are right-sized for use with a single CPU, a single 32GB DIMM, and a single network controller. The storage subsystem can support either 8SFF or 4LFF drives attached to a storage controller or SATA direct connected to motherboard. The pre-configured power supply unit is sufficient for these reasonable configurations. In cases where the final configuration will be increased by adding a second processor, more memory, drives, GPUs, or other components please refer to the **HPE Power Advisor Tool** for configuration guidance, as your desired configuration may require a second PSU or building the configuration as Configure To Order (CTO) may be best.

The 4th Generation Intel Xeon® Scalable Processor-based WW BTO SKUs			
	Base LFF Model	Base SFF Model	Performance SFF Model
<b>SMB Offer - BASE</b>	Performance 1	Performance 2	Performance 3
<b>[SKU Number]</b>	P53564-001 (AMS) P53564-291 (Japan) P53564-371 (APAC) P53564-AA1 (China)	P53566-001 (AMS) P60049-001(Argentina) P53566-291 (Japan) P53566-371 (APAC) P53566-AA1 (China)	P53568-001 (AMS) P53568-291 (Japan) P53568-371 (APAC) P53568-AA1 (China)
<b>Model Name</b>	HPE ProLiant ML350 Gen11 4410Y 2.0GHz 12-core 1P 32GB-R VROC 4LFF 800W RPS Server	HPE ProLiant ML350 Gen11 4410Y 2.0GHz 12-core 1P 32GB-R MR408i-o 8SFF 800W RPS Server	HPE ProLiant ML350 Gen11 4416+ 2.0GHz 20-core 1P 32GB-R MR408i-o 8SFF 800W RPS Server
<b>Processor</b>	4410Y (12-Core, 2.0 GHz, 150W)	4410Y (12-Core, 2.0 GHz, 150W)	4416+ (20-Core, 2.0 GHz, 165W)
<b>Number of Processors</b>	One processor		
<b>Memory*</b>	HPE 32GB 2Rx8 PC5-4800B-R Smart Kit		
<b>Network Controller</b>	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE <b>Notes:</b> Slot 15 OCP will be occupied along with CPU 1 MCIO port 1.		
<b>Storage Controller</b>	Embedded Intel VROC SATA controller <b>Notes:</b> Only SATA drive supported with embedded controller, SR/MR controller is required for SAS drive support.	MR408i-o <b>Notes:</b> – Slot 14 OCP will be occupied, PCIe expansion slot is not required. – This controller supports up to 8 SAS/SATA/NVMe Drives with performance RAID. – Smart Storage battery included.	
<b>Hard Drive</b>	None ship as standard		
<b>Internal Storage</b>	Default with 4LFF SAS/SATA Basic Drive Cage Kit (P47216-B21). Upgradeable to 12 LFF (4+4+4). <b>Notes:</b> HPE ProLiant ML350 Gen11 LFF	Default with 8 SFF SAS/SATA/NVMe x1 U.3 Drive Cage Kit (P47217-B21), upgradeable to 24 SFF (8+8+8). <b>Notes:</b> – Additional controller is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage. If Trimode or Smart Array controller is not selected with this drive cage then Embedded controller will be	

### Pre-configured Models

	Embedded SATA Cable Kit (P47225-B21) is required when upgrading 2 <sup>nd</sup> / 3 <sup>rd</sup> LFF Drive Cage Kits with embedded controller.	SATA drives. – Additional cable kit is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage.
--	---	---

	Base LFF Model	Base SFF Model	Performance SFF Model
<b>Optical Drive</b>	None ship as standard <b>Notes:</b> HPE ProLiant ML350 Gen11 Optical Disk Drive Cable Kit (P56608-B21) is required for optical drive.		
<b>PCI-Express Slots</b>	Default with 4 x8 PCIe 5.0 slots with primary riser cage <b>Notes:</b> Dual processor is required support expansion card to be installed with PCIe slots 5-10.		
<b>Power Supply</b>	1x HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit <b>Notes:</b> Optional HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit (P38995-B21) provides 1+1 power redundancy feature.		
<b>Fans</b>	Default with 3 standard fans, none-hot-plug. <b>Notes:</b> Optional Second CPU Fan Kit (P47902-B21) and Redundant Fan Kit (P47219-B21) provides advanced cooling and redundancy functionality in heavier configurations. Configurations that require fan kits are provided in later sections.	Default with 8 fans with redundancy functionality to provide advanced cooling in heavier configurations.	
<b>Management</b>	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)		
<b>Energy Star</b>	Certified		
<b>ErP Lot 9</b>	ErP Lot 9 compliant		
<b>Form Factor</b>	4U Tower <b>Notes:</b> Optional Tower-to-Rack conversion kit (P47394-B21) to convert the unit to a 5U Rack-mount server.		
<b>Warranty</b>	3-year parts, 3-year labor, 3-year onsite support with next business day response.		

### The 4th Generation Intel Xeon® Scalable Processor-based WW BTO SKUs

	Performance 2 SFF Model	Higher Performance SFF Model
<b>SMB Offer - BASE</b>	Performance 4	Performance 5
<b>[SKU Number]</b>	P55953-001 (AMS) P55953-291 (Japan) P55953-371 (APAC)	P53570-001 (AMS) P53570-291 (Japan) P53570-371 (APAC)
<b>Model Name</b>	HPE ProLiant ML350 Gen11 5416S 2.0GHz 16-core 1P 32GB-R MR408i-o 8SFF 800W RPS Server	HPE ProLiant ML350 Gen11 5418Y 2.0GHz 24-core 1P 32GB-R MR408i-o 8SFF 800W RPS Server
<b>Processor</b>	5416S (16-Core, 2.0 GHz, 150W)	5418Y (24-Core, 2.0 GHz, 185W)
<b>Number of Processors</b>	One processor	
<b>Memory*</b>	HPE 32GB 2Rx8 PC5-4800B-R Smart Kit	
<b>Network Controller</b>	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE <b>Notes:</b> Slot 15 OCP will be occupied along with CPU 1 MCIO port 1.	
<b>Storage Controller</b>	MR408i-o <b>Notes:</b> – Slot 14 OCP will be occupied, PCIe expansion slot is not required. – This controller supports up to 8 SAS/SATA/NVMe Drives with performance RAID. – Smart Storage battery included.	

### Pre-configured Models

<b>Hard Drive</b>	None ship as standard	
	<b>Performance 2 SFF Model</b>	<b>Higher Performance SFF Model</b>
<b>Internal Storage</b>	Default with 8 SFF SAS/SATA/NVMe x1 U.3 Drive Cage Kit (P47217-B21), upgradeable to 24 SFF (8+8+8). <b>Notes:</b> – Additional controller is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage. If Trimode or Smart Array controller is not selected with this drive cage then Embedded controller will be default controller which can support only up to 8 SATA drives. – Additional cable kit is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage.	
<b>Optical Drive</b>	None ship as standard <b>Notes:</b> HPE ProLiant ML350 Gen11 Optical Disk Drive Cable Kit (P56608-B21) is required for optical drive.	
<b>PCI-Express Slots</b>	Default with 4 x8 PCIe 5.0 slots with primary riser cage <b>Notes:</b> Dual processor is required support expansion card to be installed with PCIe slots 5-10.	
<b>Power Supply</b>	1x HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit <b>Notes:</b> Optional HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit (P38995-B21) provides 1+1 power redundancy feature.	
<b>Fans</b>	Default with 8 fans with redundancy functionality to provide advanced cooling in heavier configurations.	
<b>Management</b>	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)	
<b>Energy Star</b>	Certified	
<b>ErP Lot 9</b>	ErP Lot 9 compliant	
<b>Form Factor</b>	4U Tower <b>Notes:</b> Optional Tower-to-Rack conversion kit (P47394-B21) to convert the unit to a 5U Rack-mount server.	
<b>Warranty</b>	3-year parts, 3-year labor, 3-year onsite support with next business day response.	

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

The 4th Generation Intel Xeon® Scalable Processor-based EMEA BTO SKUs			
	Base LFF Model	Base SFF Model	Performance SFF Model
<b>SMB Offer - BASE</b>	Performance 1	Performance 2	Performance 3
<b>[SKU Number]</b>	P53565-421 (EMEA)	P53567-421 (EMEA)	P53569-421 (EMEA)
<b>Model Name</b>	HPE ProLiant ML350 Gen11 4410Y 2.0GHz 12-core 1P 32GB-R VROC 4LFF 1000W RPS Server	HPE ProLiant ML350 Gen11 4410Y 2.0GHz 12-core 1P 32GB-R MR408i-o 8SFF 1000W RPS Server	HPE ProLiant ML350 Gen11 4416+ 2.0GHz 20-core 1P 32GB-R MR408i-o 8SFF 1000W RPS Server
<b>Processor</b>	4410Y (12-Core, 2.0 GHz, 150W)	4410Y (12-Core, 2.0 GHz, 150W)	4416+ (20-Core, 2.0 GHz, 165W)
<b>Number of Processors</b>	One processor		
<b>Memory*</b>	HPE 32GB 2Rx8 PC5-4800B-R Smart Kit		
<b>Network Controller</b>	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE <b>Notes:</b> Slot 15 OCP will be occupied along with CPU 1 MCIO port 1.		
<b>Storage Controller</b>	Embedded Intel VROC SATA controller <b>Notes:</b> Only SATA drive	MR408i-o <b>Notes:</b> not required.	

### Pre-configured Models

	supported with embedded controller, SR/MR controller is required for SAS drive support.	not required. – This controller supports up to 8 SAS/SATA/NVMe Drives with performance RAID. – Smart Storage battery included.
--	---	--

	Base LFF Model	Base SFF Model	Performance SFF Model
<b>Hard Drive</b>	None ship as standard		
<b>Internal Storage</b>	Default with 4LFF SAS/SATA Basic Drive Cage Kit (P47216-B21). Upgradeable to 12 LFF (4+4+4). <b>Notes:</b> HPE ProLiant ML350 Gen11 LFF Embedded SATA Cable Kit (P47225-B21) is required when upgrading 2 <sup>nd</sup> / 3 <sup>rd</sup> LFF Drive Cage Kits with embedded controller.	Default with 8 SFF SAS/SATA/NVMe x1 U.3 Drive Cage Kit (P47217-B21), upgradeable to 24 SFF (8+8+8). <b>Notes:</b> – Additional controller is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage. If Trimode or Smart Array controller is not selected with this drive cage then Embedded controller will be default controller which can support only up to 8 SATA drives. – Additional cable kit is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage.	
<b>Optical Drive</b>	None ship as standard <b>Notes:</b> HPE ProLiant ML350 Gen11 Optical Disk Drive Cable Kit (P56608-B21) is required for optical drive.		
<b>PCI-Express Slots</b>	Default with 4 x8 PCIe 5.0 slots with primary riser cage <b>Notes:</b> Dual processor is required support expansion card to be installed with PCIe slots 5-10.		
<b>Power Supply</b>	1x HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit <b>Notes:</b> Optional HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit (P03178-B21) provides 1+1 power redundancy feature.		
<b>Fans</b>	Default with 3 standard fans, none-hot-plug. <b>Notes:</b> Optional Second CPU Fan Kit (P47902-B21) and Redundant Fan Kit (P47219-B21) provides advanced cooling and redundancy functionality in heavier configurations. Configurations that require fan kits are provided in later sections.	Default with 8 fans with redundancy functionality to provide advanced cooling in heavier configurations.	
<b>Management</b>	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)		
<b>Energy Star</b>	Certified		
<b>ErP Lot 9</b>	ErP Lot 9 compliant		
<b>Form Factor</b>	4U Tower <b>Notes:</b> Optional Tower-to-Rack conversion kit (P47394-B21) to convert the unit to a 5U Rack-mount server.		
<b>Warranty</b>	3-year parts, 3-year labor, 3-year onsite support with next business day response.		

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

### Pre-configured Models

The 4th Generation Intel Xeon® Scalable Processor-based EMEA BTO SKUs		
	Performance 2 SFF Model	Higher Performance SFF Model
<b>SMB Offer - BASE</b>	Performance 4	Performance 5
<b>[SKU Number]</b>	P55954-421 (EMEA)	P53571-421 (EMEA)
<b>Model Name</b>	HPE ProLiant ML350 Gen11 5416S 2.0GHz 16-core 1P 32GB-R MR408i-o 8SFF 1000W RPS Server	HPE ProLiant ML350 Gen11 5418Y 2.0GHz 24-core 1P 32GB-R MR408i-o 8SFF 1000W RPS Server
<b>Processor</b>	5416S (16-Core, 2.0 GHz, 150W)	5418Y (24-Core, 2.0 GHz, 185W)
<b>Number of Processors</b>	One processor	
<b>Memory*</b>	HPE 32GB 2Rx8 PC5-4800B-R Smart Kit	
<b>Network Controller</b>	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE <b>Notes:</b> Slot 15 OCP will be occupied along with CPU 1 MCIO port 1.	
<b>Storage Controller</b>	MR408i-o <b>Notes:</b> – Slot 14 OCP will be occupied, PCIe expansion slot is not required. – This controller supports up to 8 SAS/SATA/NVMe Drives with performance RAID. – Smart Storage battery included.	
<b>Hard Drive</b>	None ship as standard	
<b>Internal Storage</b>	Default with 8 SFF SAS/SATA/NVMe x1 U.3 Drive Cage Kit (P47217-B21), upgradeable to 24 SFF (8+8+8). <b>Notes:</b> – Additional controller is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage. If Trimode or Smart Array controller is not selected with this drive cage then Embedded controller will be default controller which can support only up to 8 SATA drives. – Additional cable kit is required for 2 <sup>nd</sup> /3 <sup>rd</sup> drive cage.	
<b>Optical Drive</b>	None ship as standard <b>Notes:</b> HPE ProLiant ML350 Gen11 Optical Disk Drive Cable Kit (P56608-B21) is required for optical drive.	
<b>PCI-Express Slots</b>	Default with 4 x8 PCIe 5.0 slots with primary riser cage <b>Notes:</b> Dual processor is required support expansion card to be installed with PCIe slots 5-10.	
<b>Power Supply</b>	1x HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit <b>Notes:</b> Optional HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit (P03178-B21) provides 1+1 power redundancy feature.	
<b>Fans</b>	Default with 8 fans with redundancy functionality to provide advanced cooling in heavier configurations.	
<b>Management</b>	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)	
<b>Energy Star</b>	Certified	
<b>ErP Lot 9</b>	ErP Lot 9 compliant	
<b>Form Factor</b>	4U Tower <b>Notes:</b> Optional Tower-to-Rack conversion kit (P47394-B21) to convert the unit to a 5U Rack-mount server.	
<b>Warranty</b>	3-year parts, 3-year labor, 3-year onsite support with next business day response.	

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

## Configuration Information

### Smart Templates from HPE

HPE is releasing new Smart Template technology in the One Config Advanced (OCA) configurator. These Templates represent the CTO equivalents of the top-selling BTO configurations. They are intended to provide simple starting points to assist you in easily creating and customizing your desired Server solutions. HPE Servers that have Platform Templates, developed by HPE Product Managers, will have a separate tab in the HPE OCA configurator.

### Workload Solutions Templates from HPE

The Workload Solutions Templates build on the Smart Templates technology to easily develop working configurations of the most compelling Workload Solutions. The templates complement the Reference Builds developed by HPE. Workload Solutions templates preconfigure some of the key architecture decisions and make it easier for Sellers to get started and complete a differentiated server solution for your customer's specific workload.

### Mainstream SKUs

HPE launched the Mainstream SKU initiative as a market-driven approach to Demand Steering. It is a simplified portfolio of our top selling options that meet the current and future market trends. HPE has committed to provide a more predictable and faster experience for these options. Mainstream SKUs enjoy higher safety stock levels and have higher fulfillment service levels than non-Mainstream SKUs. Mainstream orders are fulfilled +30% faster than non-Mainstream orders, have fewer shortages and better recovery dates. This platform has Mainstream SKUs in the options portfolio, and is eligible for the improved Mainstream experience. Mainstream SKUs are designated with a Mainstream symbol in our configurators.

### Mainstream Configurations

HPE is using the new Smart Templates technology to present Mainstream configurations. All the options in a Mainstream configuration are pre-selected Mainstream SKUs to optimize the performance, predictability and fulfillment experience. Check the Template section in our configurators for eligible Mainstream configurations.

---

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 an HPE approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

- Factory Integrated Models must start with a CTO Server.
- FIO indicates that this option is only available as a factory integratable option.
- All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
- 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)

### Configuration Information

CTO Server	HPE ML350 Gen11 LFF CTO Server	HPE ML350 Gen11 SFF CTO Server
SKU Number	P48404-B21	P48405-B21
Processor Sockets	2 Sockets available	
Processor	Intel Fourth Generation Xeon® Scalable Processors	
DIMM Slots	32 DIMM slots available*	
Storage Controller	Embedded controller with 2 SlimSAS ports, Choice of HPE OCP-type RAID (OROC) and/or PCIe Standup controller card (s)	
PCIe	4 PCIe Gen5 slots (x8, x8, x8, x8) in primary riser as standard <b>Notes:</b> PCIe slots 5 - 10 require the second processor to enable.	
Drive Cage - included	4 LFF SAS/SATA Drive Cage	8 SFF SAS/SATA/x1 NVMe Drive Cage
Additional drive cages	Optional 4 LFF SAS/SATAHDD Cage kit, Up to 3 in total <b>Notes:</b> Select LFF CTO Server as base configuration to mix SFF and LFF drive cages.	Optional 8 SFF SAS/SATA/x1 NVMe HDD Cage kit, Up to 3 in total

CTO Server	HPE ML350 Gen11 LFF CTO Server	HPE ML350 Gen11 SFF CTO Server
SKU Number	P48404-B21	P48405-B21
8SFF U.3 x4 NVMe drive cage	Not available	Optional, Up to 1 <b>Notes:</b> Default 8 SFF drive cage will be removed.
12EDSFF x4 NVMe drive cage	Not available	Optional, Up to 1 <b>Notes:</b> Default 8 SFF drive cage will be removed.
Boot option	Optional, HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device (P48183-B21)	
ODD	Optional, Up to 1	
Half-Height RDX	Optional, Up to 1	Not available
Megacell Battery	Optional	
Network Controller	Choice of HPE OCP-type networking adapter and/or PCIe Standup controllers. Default selected with Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE (P51181-B21)	
Redundant Fan Kit	Optional, 3 fans as standard	
Power Supply	HPE Flex Slot Hot Plug Power Supply Kit, up to 2	
Management	HPE iLO with Intelligent Provisioning (standard), iLO Advances and OneView (optional), HPE GreenLake for Compute Ops Management (subscription included)	
USB	5x 3.2 Gen1/2.0 USB ports, Plus front iLO Service Port	
Tower-to-Rack conversion kit	Optional <b>Notes:</b> Tower to Rack kit is not factory integratable option and only can be shipped with standalone package.	

### Configuration Information

#### Notes:

- \* 32 DIMM slots require selection of 2 processors.
- Internal RDX can only be selected with LFF chassis and will occupied Box1 drive cage space.
- 8 SFF x4 NVMe and 12 EDSFF drive cage can only be selected with SFF chassis and default 8SFF drive cage will be removed.
- To get advanced cooling in richer configurations and/or under certain ambient environmental conditions, the additional Fan kits: Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21) may require.
- Second CPU Fan Kit (P47902-B21) is required when following options is selected: Second processor, HPE NS204i-u Gen11 Ht Plg Boot Opt Dev(P48183-B21), Tertiary riser kit (P49693-B21).
- Both Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21) are required with following conditions:
  - Redundant Fan feature is required, 300W~350W TDP processor is selected.
  - Mixed LFF and SFF Drive cages can be supported in one system. Please select the LFF CTO Server (P48404-B21) as the base configuration to start with.
- Refer to **HPE Power Advisor Tool** to review the power requirement for your selected configuration and determine what power supply module(s) to select.

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

Please select one or two matching processors.

For example: for a single Xeon-Platinum 8452Y processor configuration select 1x P49616-B21. If dual Xeon-Platinum 8452Y processor configuration, select 2x P49616-B21

#### Notes:

- Mixing of 2 different processor models is not supported.
- Processor kits don't include heat sink and fans.
- CTO server includes 3 standard fans. 2 processors configuration requires Second CPU Fan Kit (P47902-B21) as 4 fans, either standard or performance heatsink (dependent on processor model).
- Processors with TDP equal to or greater than 195W require Performance Heatsink (P47224-B21).
- Processors with TDP equal to or greater than 300W require both Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- DDR5 memory speed is the maximum memory speed supported by the processor. Actual maximum memory speed is a function of the memory type, memory configuration, and processor model.

#### Step 2a: Choose Processors

##### Processor Option Kits - Intel Fourth Generation Xeon® Scalable Processors

#### Notes

- All SKUs below ship with processor only. Adequate fan and heatsink kits (standard or performance) must be selected.
- 4800 MT/S maximum memory speed unless otherwise noted.
- 128GB SGX Enclave unless otherwise noted.

##### Intel Xeon-Platinum Processors

Intel Xeon-Platinum 8490H 1.9GHz 60-core 350W Processor for HPE

P49630-B21

#### Notes:

- Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- 512GB SGX Enclave.

### Configuration Information

Intel Xeon-Platinum 8480+ 2.0GHz 56-core 350W Processor for HPE P49607-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- 512GB SGX Enclave.

Intel Xeon-Platinum 8470N 1.7GHz 52-core 300W Processor for HPE P49649-B21

**Notes:** Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).

Intel Xeon-Platinum 8470 2.0GHz 52-core 350W Processor for HPE P49606-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- 512GB SGX Enclave.

Intel Xeon-Platinum 8468 2.1GHz 48-core 350W Processor for HPE P49605-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- 512GB SGX Enclave.

Intel Xeon-Platinum 8468V 2.4GHz 48-core 330W Processor for HPE P49631-B21

**Notes:** Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).

Intel Xeon-Platinum 8458P 2.7GHz 44-core 350W Processor for HPE P49632-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).
- 512GB SGX Enclave.

Intel Xeon-Platinum 8460Y+ 2.0GHz 40-core 300W Processor for HPE P49604-B21

**Notes:** Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).

Intel Xeon-Platinum 8452Y 2.0GHz 36-core 300W Processor for HPE P49616-B21

**Notes:** Requires Performance Heatsink (P47224-B21), Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21).

Intel Xeon-Platinum 8444H 2.9GHz 16-core 270W Processor for HPE P49625-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21).
- 512GB SGX Enclave.

**Intel Xeon-Gold Processors**

Intel Xeon-Gold 6448H 2.4GHz 32-core 250W Processor for HPE P49622-B21

**Notes:**

- Requires Performance Heatsink (P47224-B21).
- 512GB SGX Enclave.

Intel Xeon-Gold 6454S 2.2GHz 32-core 270W Processor for HPE P49654-B21

**Notes:** Requires Performance Heatsink (P47224-B21).

### Configuration Information

Intel Xeon-Gold 6448Y 2.1GHz 32-core 225W Processor for HPE	P49600-B21
<b>Notes:</b> Requires Performance Heatsink (P47224-B21).	
Intel Xeon-Gold 6430 2.1GHz 32-core 270W Processor for HPE	P49614-B21
<b>Notes:</b>	
– Requires Performance Heatsink (P47224-B21).	
– 4400 MT/s maximum memory speed.	
Intel Xeon-Gold 6438N 2.0GHz 32-core 205W Processor for HPE	P49638-B21
<b>Notes:</b> Requires Performance Heatsink (P47224-B21).	
Intel Xeon-Gold 6438Y+ 2.0GHz 32-core 205W Processor for HPE	P49615-B21
<b>Notes:</b> Requires Performance Heatsink (P47224-B21).	
Intel Xeon-Gold 6414U 2.0GHz 32-core 250W Processor for HPE	P49619-B21
<b>Notes:</b>	
– Requires Performance Heatsink (P47224-B21).	
– Only supported in single socket configuration.	
Intel Xeon-Gold 6421N 1.8GHz 32-core 185W Processor for HPE	P49641-B21
<b>Notes:</b>	
– Requires Standard Heatsink (P47223-B21).	
– 4400 MT/s maximum memory speed.	
– Only supported in single socket configuration.	
Intel Xeon-Gold 6418H 2.1GHz 24-core 185W Processor for HPE	P49621-B21
<b>Notes:</b>	
– Requires Standard Heatsink (P47223-B21).	
– 512GB SGX Enclave.	
Intel Xeon-Gold 6416H 2.2GHz 18-core 165W Processor for HPE	P49620-B21
<b>Notes:</b>	
– Requires Standard Heatsink (P47223-B21).	
– 512GB SGX Enclave.	
Intel Xeon-Gold 6426Y 2.5GHz 16-core 185W Processor for HPE	P49598-B21
– <b>Notes:</b> Requires Standard Heatsink (P47223-B21).	
Intel Xeon-Gold 6434 3.7GHz 8-core 195W Processor for HPE	P49601-B21
<b>Notes:</b> Requires Performance Heatsink (P47224-B21).	
Intel Xeon-Gold 5420+ 2.0GHz 28-core 205W Processor for HPE	P49613-B21
<b>Notes:</b>	
– Requires Standard Heatsink (P47223-B21).	
– 4000 MT/s maximum memory speed.	
Intel Xeon-Gold 5418N 1.8GHz 24-core 165W Processor for HPE	P49640-B21
<b>Notes:</b>	
– Requires Standard Heatsink (P47223-B21).	
– 4000 MT/s maximum memory speed.	
Intel Xeon-Gold 5418Y 2.0GHz 24-core 185W Processor for HPE	P49612-B21

### Configuration Information

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4400 MT/s maximum memory speed.

Intel Xeon-Gold 5411N 1.9GHz 24-core 165W Processor for HPE

P49639-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4400 MT/s maximum memory speed.
- Only supported in single socket configuration.

Intel Xeon-Gold 5416S 2.0GHz 16-core 150W Processor for HPE

P49653-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4400 MT/s maximum memory speed.

Intel Xeon-Gold 5415+ 2.9GHz 8-core 150W Processor for HPE

P49597-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4400 MT/s maximum memory speed.

#### Intel Xeon-Silver Processors

Intel Xeon-Silver 4416+ 2.0GHz 20-core 165W Processor for HPE

P49611-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4000 MT/s maximum memory speed.
- 64GB SGX Enclave.

Intel Xeon-Silver 4410Y 2.0GHz 12-core 150W Processor for HPE

P49610-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4000 MT/s maximum memory speed.
- 64GB SGX Enclave.

#### Intel Xeon-Bronze Processors

Intel Xeon-Bronze 3408U 1.8GHz 8-core 125W Processor for HPE

P49617-B21

#### Notes:

- Requires Standard Heatsink (P47223-B21).
- 4000 MT/s maximum memory speed.
- 64GB SGX Enclave.
- Only supported in single socket configuration.

#### Step 2b: Choose Memory Options

Please select one or more memory from below.

For new Gen11 memory population rule whitepaper and optimal memory performance guidelines, please go to:

<https://www.hpe.com/docs/memory-population-rules>

For Gen11 memory speed table, please go to: <https://www.hpe.com/docs/memory-speed-table>

For memory Reliability, Accessibility, Serviceability (RAS) features whitepaper like Gen10 Fast Fault Tolerance and legacy mirrored memory feature etc. please go to: <https://www.hpe.com/psnow/doc/a50007802enw>

#### Notes:

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

### Configuration Information

- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 6, 8, 12 or 16.
- For additional information, please see the [HPE DDR5 Smart Memory QuickSpecs](#).
- For General Server Memory and Persistent Memory Population Rules and Guidelines, see details here: <http://www.hpe.com/docs/memory-population-rules>
- HPE Server Memory compatibility for a specific server platform may vary or be limited within a server platform depending upon the specific configuration being requested. Because each server environment and requirements can vary, memory compatibility is based not only upon the server family, but may also be affected by the amount and type of additional hardware options installed within a specific server configuration. For this reason, some HPE memory DIMMs may be qualified for an HPE server model or family and yet occasionally not be supported with some configurations within that server family.

### Memory - for the Fourth Generation Intel Xeon® Scalable Processors

#### Description

HPE 16GB (1x16GB) Single Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit	P43322-B21
HPE 32GB (1x32GB) Dual Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit	P43328-B21
HPE 64GB (1x64GB) Dual Rank x4 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit	P43331-B21
HPE 128GB (1x128GB) Quad Rank x4 DDR5-4800 CAS-46-39-39 EC8 Registered 3DS Smart Memory Kit	P43334-B21
HPE 256GB (1x256GB) Octal Rank x4 DDR5-4800 CAS-46-39-39 EC8 Registered 3DS Smart Memory Kit	P43337-B21

**Notes:** Support limited to 25°C maximum inlet temperature for 256GB memory with non-Redundant Fan configuration. 30°C maximum inlet temperature can be supported for 256GB memory with Redundant Fan configuration.

### Step 2c: Choose Power Supplies

#### Notes:

- Mixing of 2 different power supplies is NOT supported.
- Selection of two HPE Flex Slot power supplies provide 1+1 power redundancy.
- To review the power requirements for your selected configuration, please use the [HPE Power Advisor Tool](#).

#### Power Supplies

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	865408-B21
<b>Notes:</b> Support limited to single 125W Processor.	
HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	P38995-B21
HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit	P03178-B21
HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit	P17023-B21
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	P38997-B21

**Notes:** Only supports high line voltage (200 VAC to 240 VAC).

### Step 3: Choose Additional Factory Integratable Options

One of the following from each list may be selected if desired at time of factory integration.

#### HPE Unique Options

HPE ProLiant ML350 Gen11 8SFF x1 U.3 Tri-Mode Drive Cage Kit	P47217-B21
<b>Notes:</b> Add additional 8 SFF hot-plug drive cage, allowing for up to 24 SFF drives support (8+8+8).	
HPE ProLiant ML350 Gen11 4LFF SAS/SATA Basic Drive Cage Kit	P47216-B21

**Notes:** Add additional 4 LFF hot-plug drive cage, allowing for up to 12 LFF drives support (4+4+4).

### Configuration Information

HPE ProLiant ML350 Gen11 8SFF x4 U.3 Tri-Mode FIO Drive Cage Kit

P47218-B21

**Notes:**

- When this drive cage selected, default 8SFF Tri-Mode Drive Cage will be removed and no other drive cage can be selected.
- This drive cage kit supports two connections types, Direct Attach and Tri-Mode controller.
- Direct Attach mode requires x4 NVMe Direct Attach FIO Cable Kit (P48399-B21)
- Controller mode requires HPE SR932i-p Gen11 Controller (P47184-B21) and x4 Tri-Mode FIO Cable Kit (P47234-B21).
- This drive cage doesn't allow field upgrade.

HPE ProLiant ML350 Gen11 12EDSFF FIO Drive Cage Kit

P48401-B21

**Notes:**

- When this drive cage selected, default 8SFF Tri-Mode Drive Cage will be removed and no other drive cage can be selected.
- This drive cage kit only supports Direct Attach, HPE ProLiant ML350 Gen11 12EDSFF x4 Direct Attach FIO Cable Kit (P48400-B21) is required.
- This drive cage kit requires dual processor configuration.
- Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21) are required.
- External Fan kit is included in this drive cage kit and installed in rear of Primary riser cage with External fan connector 10. This fan kit will cover rear of riser cage and results no external connectivity allowed.
- Support limited to 25°C maximum inlet temperature and system fans may operate at higher speed to maintain optimum system cooling condition while EDSFF is installed.
- This drive cage kit doesn't allow field upgrade.

---

### Step 4: Choose additional options for Factory Integration from Core and Additional Options sections below

---



## Additional Options

**Choose additional options for Factory Integration from Core and Additional Options sections below**

Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for additional information.

**Notes:** The [User Guide \(UG\)](#) can help to explain the cable routing for each option.

### Software as a Service Management

#### HPE GreenLake for Compute Ops Management

##### Base SKU

HPE GreenLake for Compute Ops Management Enhanced 3-year Upfront ProLiant SaaS	R7A11AAE
--	----------

##### Upgrade SKU

HPE GreenLake for Compute Ops Management Enhanced 1-year Upfront ProLiant SaaS	R7A10AAE
HPE GreenLake for Compute Ops Management Enhanced 5-year Upfront ProLiant SaaS	R7A12AAE
HPE GreenLake for Compute Ops Management Enhanced 1-year Monthly ProLiant SaaS	R7A13AAE
HPE GreenLake for Compute Ops Management Enhanced 3-year Monthly ProLiant SaaS	R7A14AAE
HPE GreenLake for Compute Ops Management Enhanced 5-year Monthly ProLiant SaaS	R7A15AAE
HPE GreenLake for Compute Ops Management Enhanced 1-year Quarterly ProLiant SaaS	R7A16AAE
HPE GreenLake for Compute Ops Management Enhanced 3-year Quarterly ProLiant SaaS	R7A17AAE
HPE GreenLake for Compute Ops Management Enhanced 5-year Quarterly ProLiant SaaS	R7A18AAE
HPE GreenLake for Compute Ops Management Enhanced 3-year Annual ProLiant SaaS	R7A19AAE
HPE GreenLake for Compute Ops Management Enhanced 5-year Annual ProLiant SaaS	R7A20AAE

#### HPE OneView

HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	E5Y35AAE
HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU	P8B26AAE

**Notes:** For customers purchasing HPE GreenLake for Compute Ops Management, without a hardware purchase or a BTO purchase, use this base SKU within ASQ order:

For more information, visit the HPE GreenLake for Compute Ops Management QuickSpecs:

<https://www.hpe.com/psnow/doc/a50004263enw>

Supported Servers - CTO only. No OEM. - Complete list can be found here: Latest Supported Server List:

<https://www.hpe.com/info/com-supported-servers>



### Additional Options

---

#### HPE Unique Options

##### Risers

HPE ProLiant ML350 Gen11 2x16 Primary FIO Riser Kit P48406-B21

**Notes:** When this Riser Kit is selected, default 4x8 Primary Riser will be removed.

HPE ProLiant ML350 Gen11 4x8 Secondary Riser Kit P48407-B21

**Notes:** When this Riser Kit is selected, Second processor is required.

HPE ProLiant ML350 Gen11 2x16 Secondary Riser Kit P47238-B21

**Notes:** When this Riser Kit is selected, Second processor is required.

HPE ProLiant ML350 Gen11 2x8 Tertiary Riser Kit P49693-B21

**Notes:** When this Riser Kit is selected, Second processor is required to support NIC adapter installation with two CPU 2 MCIO connectors. Without Second processor, the PCIe slots won't have function, tertiary riser can only be used to support RDX power connector.

---

#### Cooling Options

HPE ProLiant ML350 Gen11 Standard Heat Sink Kit P47223-B21

**Notes:** Processors with TDP less than 195W require Standard Heat Sink.

HPE ProLiant ML350 Gen11 Performance Heat Sink Kit P47224-B21

**Notes:** Processors with TDP equal to or greater than 195W require Performance Heat Sink.

HPE ProLiant ML350 Gen11 Second CPU Fan Kit P47902-B21

**Notes:** When either second processor, NS204i-u or Tertiary Riser is selected, this Fan Kit is required.

HPE ProLiant ML350 Gen11 Redundant Fan Kit P47219-B21

**Notes:**

- Processors with TDP equal to or greater than 300W require this Fan Kit.
- When EDSFF drive cage selected, this fan kit is required.
- When this Fan Kit is selected, Second CPU Fan Kit (P47902-B21) need be selected together.

HPE ProLiant ML350 Gen11 External GPU Fan Kit P47220-B21

**Notes:**

- With External GPU fan kit installed, rear side of riser cage will be covered and no connectivity allowed with expansion card in Primary/Second riser cage.
  - External GPU fan kit provides advanced cooling in heavier configurations and allow system to run with higher inlet temperature.
  - When EDSFF drive cage selected, this fan kit is included in 12EDSFF FIO Drive Cage Kit already.
- 

#### HPE Computation and Graphics Accelerators

**Notes:**

- System memory is recommended to be 2 times larger than the memory with accelerator card.
- Redundant Fan Kit (P47219-B21) and Second CPU Fan Kit (P47902-B21) are required for accelerators.
- System fans may operate at higher speed to maintain optimum system cooling condition with accelerator card.

NVIDIA L40 48GB PCIe Accelerator for HPE S0K90C

---

### Additional Options

**Notes:**

- This GPU requires x16 bandwidth with 2x16 Primary FIO Riser Kit (P48406-B21) or 2x16 Secondary Riser Kit (P47238-B21) and each riser cage can support up to 2 GPUs.
- Power Cable Kit (P47221-B21) is required and able to support up to 1 L40 GPU with each cable kit.
- External GPU Fan Kit (P47220-B21) is recommended to provides advanced cooling with this GPU and results Display Ports can't be connected and covered by fan kit.
- Without External GPU Fan Kit selected, support configuration is limited to 23°C maximum inlet temperature with configuration: Up to 2 GPUs, up to 64GB memory , up to TDP 195W processor(s) and one Drive Cage (8SFF/4LFF).
- Refer to following GPU information table for limited support inlet temperature with External GPU Fan Kit and Redundant Fan Kit on various configurations.

HPE ProLiant ML350 Gen11 Double Wide Power Cable Kit for NVIDIA L40 GPU

P47221-B21

**Notes:**

- This Power Cable Kit (P47221-B21) is required for L40 Accerlerator.
- Each Power Cable Kit supports up to one GPU.

NVIDIA A16 64GB PCIe Non-CEC Accelerator for HPE

R8T26C

**Notes:**

- This GPU requires x16 bandwidth with 2x16 Primary FIO Riser Kit (P48406-B21) or 2x16 Secondary Riser Kit (P47238-B21) and each riser cage can support up to 2 GPUs.
- Power Cable Kit (P39102-B21) is required and able to support up to 3 A16 GPUs with each cable kit.
- External GPU Fan Kit (P47220-B21) is required to provides advanced cooling with this GPU.
- Refer to following GPU information table for limited support inlet temperature with External GPU Fan Kit and Redundant Fan Kit on various configurations.

HPE ProLiant DL300 Gen10 Plus GPU 8-pin Keyed Cable Kit

P39102-B21

**Notes:**

- This Power Cable Kit (P47221-B21) is required for A16 Accerlerator.
- Each Power Cable Kit supports up to three GPUs.

NVIDIA L4 24GB PCIe Accelerator for HPE

S0K89C

- This GPU requires x16 bandwidth on 2x16 Primary FIO Riser Kit (P48406-B21) or 2x16 Secondary Riser Kit (P47238-B21) and each riser cage can support up to 2 GPUs.
- External GPU Fan Kit (P47220-B21) is required to provides advanced cooling with this GPU.
- Refer to following GPU information table for limited support inlet temperature with External GPU Fan Kit and Redundant Fan Kit on various configurations.

### GPU Information

### Additional Options

Part Number	Card	TDP	PCIe Speed	Qty Support	ML350 Gen11 Configuration				
					1x 8SFF or 4LFF	2x 8SFF or 4LFF	3x 8SFF or 4LFF	X4 U.3 NVMe	12 EDSFF
S0K90C	NVIDIA L40 48GB PCIe Accelerator for HPE	300W	Gen4 x16	4	27°C/30°C*	25°C/30°C*	23°C/30°C*	25°C/30°C*	25°C/30°C*
R8T26C	NVIDIA A16 64GB PCIe Non-CEC Accelerator for HPE	250W	Gen4 x16	4	28°C/30°C*	25°C/30°C*	24°C/30°C*	25°C/30°C*	25°C/30°C*
S0K89C	NVIDIA L4 24GB PCIe Accelerator for HPE	72W	Gen4 x16	4	30°C	30°C	30°C	30°C	30°C

**Notes:** GPU information table indicated the limited support inlet temperature with External GPU Fan Kit and Redundant Fan Kit are selected on various configurations.

\* Supported with limited configuration: 2 Processors, up to 2 GPUs installed on Secondary Riser Kit with External GPU Fan Kit on slot 9.

### HPE Boot Controllers

HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device

P48183-B21

**Notes:**

- When NS204i-u is selected, Second CPU Fan Kit (P47902-B21) and ML350 Gen11 NS204i-u Enablement Kit (P48403-B21) is required.
- When NS204i-u is selected, up to 8 SATA drives within LFF CTO Server can be supported by embedded controller.
- Support limited to 25°C maximum inlet temperature with 3 SFF/LFF Drive Cage selected without Redundant Fan Kit (P47219-B21).
- System fans may operate at higher speed to maintain optimum system cooling condition while NS204i-u is installed.

HPE ProLiant ML350 Gen11 NS204i-u Enablement Kit

P48403-B21

**Notes:** When NS204i-u is selected, this Enablement Kit is required.

### HPE Optical Drives

HPE 9.5mm SATA DVD-ROM Optical Drive

726536-B21

**Notes:** When this ODD selected, ODD cable Kit (P56608-B21) is required.

HPE 9.5mm SATA DVD-RW Optical Drive

726537-B21

**Notes:** When this ODD selected, ODD cable Kit (P56608-B21) is required.

HPE Mobile USB DVD-RW Optical Drive

701498-B21

HPE ProLiant ML350 Gen11 Optical Disk Drive Cable Kit

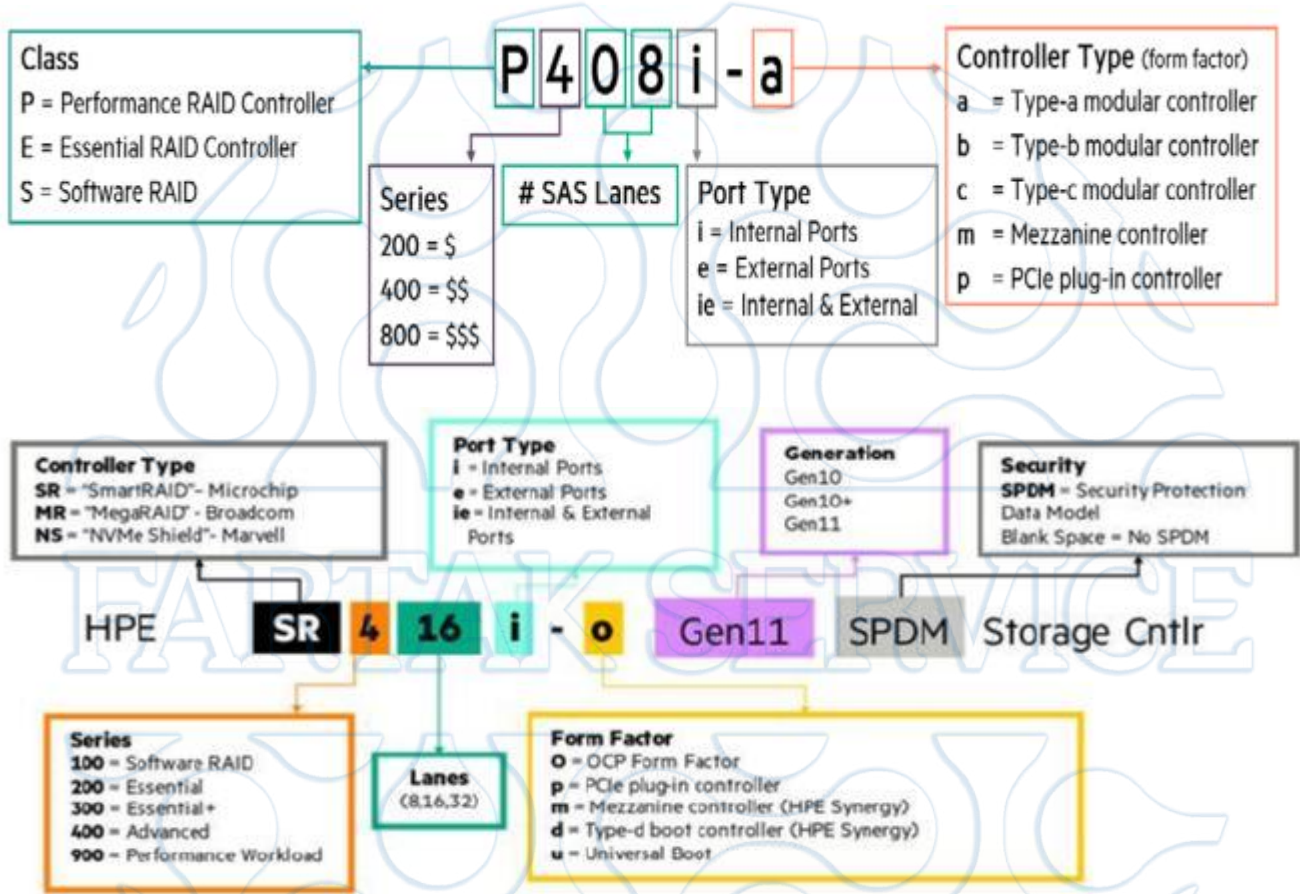
P56608-B21

**Notes:** This ODD cable Kit is required to support internal ODD.

### HPE Storage Controllers

## Additional Options

### Storage Controllers



#### Notes:

- When selecting SR RAID controllers for external storage (E208e-p, 804398-B21) and MR RAID controllers for internal storage (MR216i/MR416i/MR408i) in the order, please be aware these two products use different RAID configuration tools.
- Not supporting mixing of MR (MegaRAID) series internal controllers and SR (SmartRAID) series internal Controllers.
- OCP-type RAID (OROC) controller is only supported on Slot 14 OCP 1.
- OCP 1 enablement kit is not required for listed ORCO controllers below.
- For more information on the HPE Gen11 Storage Controller, please refer to:

[HPE Compute MR Gen11 Controllers Quick Spec](#)

[HPE Compute SR Gen11 Controllers Quick Spec](#)

## Essential RAID Controllers

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

804398-B21

**Notes:** This controller supports up to 8 SAS/SATA Drives (external)

For more information on the HPE Smart Array E208i-p SR Gen10 Controller, please refer to the [QuickSpecs](#)

### Additional Options

#### Tri-mode RAID Controllers

HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller P47789-B21

**Notes:**

- Does not occupy a PCIe expansion slot.
- This controller supports up to 16 SAS/SATA/NVMe Drives with RAID 0/1/10.

HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller P47785-B21

**Notes:** This controller supports up to 16 SAS/SATA/NVMe Drives with RAID 0/1/10.

HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller P58335-B21

**Notes:**

- Does not occupy a PCIe expansion slot.
- This controller supports up to 8 SAS/SATA/NVMe Drives
- HPE 96W Smart Storage Battery 260mm Cbl (P01367-B21) OR HPE Smart Hybrid Capacitor w/ 260mm Cbl (P02381-B21) must be selected with this controller.

HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller P47781-B21

**Notes:**

- Does not occupy a PCIe expansion slot.
- This controller supports up to 16 SAS/SATA/NVMe Drives
- HPE 96W Smart Storage Battery 260mm Cbl (P01367-B21) OR HPE Smart Hybrid Capacitor w/ 260mm Cbl (P02381-B21) must be selected with this controller.

HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller P47777-B21

**Notes:**

- This controller supports up to 16 SAS/SATA/NVMe Drives
- HPE 96W Smart Storage Battery 260mm Cbl (P01367-B21) OR HPE Smart Hybrid Capacitor w/ 260mm Cbl (P02381-B21) must be selected with this controller.

HPE SR932i-p Gen11 x32 Lanes 8GB Wide Cache PCI SPDM Plug-in Storage Controller P47184-B21

**Notes:**

- This controller supports up to 32 SAS/SATA/NVMe Drives
- HPE 96W Smart Storage Battery 260mm Cbl (P01367-B21) OR HPE Smart Hybrid Capacitor w/ 260mm Cbl (P02381-B21) must be selected with this controller.

#### Controller Battery Cable Kits

HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit P01367-B21

HPE Smart Storage Hybrid Capacitor with 260mm Cable Kit P02381-B21

**Notes:** The two 260mm cable kit can't be selected together.

HPE ProLiant ML350 Gen11 Smart Storage Battery Cable Kit P58199-B21

**Notes:** This cable kit is required when one the two 260mm cable kits (P02377-B21, P01366-B21) is selected.

#### Software RAID

Intel Virtual RAID on CPU Standard FIO Software for HPE S0E37A

**Notes:**

- Requires UEFI, not supported on Legacy Mode.

- For NVMe SSDs only, no PCIe card support.

- Supports RAID 0/1/10

Intel Virtual RAID on CPU Standard E-RTU for HPE S0E38AAE

**Notes:**

## Additional Options

- Requires UEFI, not supported on Legacy Mode.
- For NVMe SSDs only, no PCIe card support.
- Supports RAID 0/1/10
- Similar to Intel Virtual RAID on CPU Standard FIO Software for HPE (S0E37A), but intended for field deployments (BTO).

Intel Virtual RAID on CPU Premium FIO Software for HPE

R7J57A

### Notes:

- Requires UEFI, not supported on Legacy Mode.
- For NVMe SSDs only, no PCIe card support.
- Supports RAID 0/1/5/10

Intel Virtual RAID on CPU Premium E-RTU for HPE

R7J59AAE

### Notes:

- Requires UEFI, not supported on Legacy Mode.
- For NVMe SSDs only, no PCIe card support.
- Supports RAID 0/1/5/10
- Similar to Intel Virtual RAID on CPU Premium FIO Software for HPE (R7J57A), but intended for field deployments (BTO).

## HPE Drives

### HPE Hard Disk Drives

#### Enterprise - 12G SAS - SFF Drives

HPE 300GB SAS 12G Mission Critical 15K SFF BC 3-year Warranty Multi Vendor HDD	P28028-B21
HPE 300GB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P40430-B21
HPE 600GB SAS 12G Mission Critical 15K SFF BC 3-year Warranty Multi Vendor HDD	P53560-B21
HPE 600GB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P53561-B21
HPE 900GB SAS 12G Mission Critical 15K SFF BC 3-year Warranty Multi Vendor HDD	P40432-B21
HPE 1.2TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P28586-B21
HPE 1.8TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty 512e Multi Vendor HDD	P53562-B21
HPE 2.4TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty 512e Multi Vendor HDD	P28352-B21

#### Midline - 12G SAS - SFF Drives

### Additional Options

HPE 1TB SAS 12G Business Critical 7.2K SFF BC 1-year Warranty HDD	P53563-B21
HPE 2TB SAS 12G Business Critical 7.2K SFF BC 1-year Warranty 512e HDD	P28505-B21
<b>Midline - 12G SAS - LFF Drives</b>	
HPE 2TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	833926-B21
HPE 4TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	833928-B21
HPE 6TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	861746-B21
HPE 8TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	834031-B21
HPE 10TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty 512e ISE Multi Vendor HDD	P53556-B21
HPE 12TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	881781-B21
HPE 14TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	P09155-B21
HPE 16TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P23608-B21
HPE 18TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P37669-B21
HPE 20TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P53553-B21
<b>Midline - 6G SATA - SFF Drives</b>	
HPE 1TB SATA 6G Business Critical 7.2K SFF BC 1-year Warranty HDD	P28610-B21
HPE 2TB SATA 6G Business Critical 7.2K SFF BC 1-year Warranty 512e HDD	P28500-B21
<b>Midline - 6G SATA - LFF Drives</b>	
HPE 1TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861686-B21
HPE 20TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P53554-B21
HPE 2TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861681-B21
HPE 4TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861683-B21
HPE 6TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	861742-B21
HPE 8TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	834028-B21
HPE 10TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e ISE Multi Vendor HDD	P53557-B21
HPE 12TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	881787-B21
HPE 14TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	P09165-B21
HPE 16TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P23449-B21
HPE 18TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P37678-B21

### Additional Options

SED (Self-Encryption Drive)

HPE 1.2TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Self-encrypting FIPS HDD P28622-B21

HPE 2.4TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty 512e Self-encrypting FIPS HDD P28618-B21

#### Notes:

– Requirements for MR Tri-mode controller SED support

- o TPM is not required for Local Key Management as key is stored in controller

- o iLO Advanced is required for Remote Key Management. Key is stored in remote key manager. (Ex. ESKM)

### SSD Selection

For SSD selection guidance, please visit <https://ssd.hpe.com/>

**Notes:** LFF backplane only supports up to 12G SAS.

#### Read Intensive - 12G/24G SAS - SFF - Solid State Drives

HPE 960GB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD P40506-B21

HPE 1.92TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD P40507-B21

HPE 3.84TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD P40508-B21

HPE 7.68TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD P40509-B21

HPE 960GB SAS 24G Read Intensive SFF BC Multi Vendor SSD P49029-B21

HPE 1.92TB SAS 24G Read Intensive SFF BC Multi Vendor SSD P49031-B21

HPE 3.84TB SAS 24G Read Intensive SFF BC Multi Vendor SSD P49035-B21

HPE 7.68TB SAS 24G Read Intensive SFF BC Multi Vendor SSD P49041-B21

HPE 15.36TB SAS 24G Read Intensive SFF BC Multi Vendor SSD P49045-B21

HPE 3.84TB SAS 24G Read Intensive SFF BC Self-encrypting FIPS PM6 SSD P41398-B21

HPE 7.68TB SAS 24G Read Intensive SFF BC Self-encrypting FIPS PM6 SSD P41399-B21

#### Mixed Use - 12G/24G SAS - SFF - Solid State Drives

HPE 960GB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD P40510-B21

HPE 1.92TB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD P40511-B21

HPE 3.84TB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD P40512-B21

HPE 800GB SAS 24G Mixed Use SFF BC Multi Vendor SSD P49047-B21

HPE 1.6TB SAS 24G Mixed Use SFF BC Multi Vendor SSD P49049-B21

HPE 3.2TB SAS 24G Mixed Use SFF BC Multi Vendor SSD P49053-B21

HPE 6.4TB SAS 24G Mixed Use SFF BC Multi Vendor SSD P49057-B21

HPE 800GB SAS 24G Mixed Use SFF BC Self-encrypting FIPS PM6 SSD P41400-B21

HPE 1.6TB SAS 24G Mixed Use SFF BC Self-encrypting FIPS PM6 SSD P41401-B21

#### Mixed Use - LFF- Solid State Drives

HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD P37009-B21

#### Read Intensive - LFF- Solid State Drives

HPE 7.68TB SAS 24G Read Intensive LFF LPC Multi Vendor SSD P49040-B21

#### Mixed Use - 6G SATA - SFF - Solid State Drives

HPE 960GB SATA 6G Mixed Use SFF BC Self-encrypting 5400M SSD P58244-B21

HPE 1.92TB SATA 6G Mixed Use SFF BC Self-encrypting 5400M SSD P58248-B21

HPE 480GB SATA 6G Mixed Use SFF BC S4620 SSD P47324-B21

HPE 480GB SATA 6G Mixed Use SFF BC Multi Vendor SSD P40502-B21

### Additional Options

HPE 960GB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40503-B21
HPE 1.92TB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40504-B21
HPE 3.84TB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40505-B21
HPE 480GB SATA 6G Mixed Use SFF BC PM897 SSD	P44011-B21
HPE 960GB SATA 6G Mixed Use SFF BC PM897 SSD	P44012-B21
HPE 1.92TB SATA 6G Mixed Use SFF BC PM897 SSD	P44013-B21
<b>Read Intensive - 6G SATA - SFF - Solid State Drives</b>	
HPE 480GB SATA 6G Read Intensive SFF BC Self-encrypting 5400P SSD	P58236-B21
HPE 1.92TB SATA 6G Read Intensive SFF BC Self-encrypting 5400P SSD	P58240-B21
HPE 240GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40496-B21
HPE 480GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40497-B21
HPE 960GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40498-B21
HPE 1.92TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40499-B21
HPE 3.84TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40500-B21
HPE 7.68TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40501-B21
HPE 480GB SATA 6G Read Intensive SFF BC PM893 SSD	P44007-B21
HPE 960GB SATA 6G Read Intensive SFF BC PM893 SSD	P44008-B21
HPE 1.92TB SATA 6G Read Intensive SFF BC PM893 SSD	P44009-B21
HPE 3.84TB SATA 6G Read Intensive SFF BC PM893 SSD	P44010-B21
<b>Very Read Optimized - 6G SATA - SFF - Solid State Drives</b>	
HPE 7.68TB SATA 6G Very Read Optimized SFF BC 5400 SSD	P58228-B21
<b>Read Intensive - 6G SATA - LFF - Solid State Drives</b>	
HPE 960GB SATA 6G Read Intensive LFF LPC Multi Vendor SSD	P47808-B21
<b>Very Read Optimized - 6G SATA - LFF - Solid State Drives</b>	
HPE 7.68TB SATA 6G Very Read Optimized LFF LPC 5400 SSD	P58232-B21
<b>Mixed Use - NVMe - SFF - Solid State Drives</b>	
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	P50227-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	P50230-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	P50233-B21
HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static Multi Vendor SSD	P47837-B21
HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static Multi Vendor SSD	P47838-B21
HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static Multi Vendor SSD	P47839-B21
HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static Multi Vendor SSD	P47840-B21
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC Self-encrypting FIPS U.3 CM6 SSD	P41404-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC Self-encrypting FIPS U.3 CM6 SSD	P41405-B21
<b>Read Intensive - NVMe - SFF - Solid State Drives</b>	
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50216-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50219-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50222-B21

### Additional Options

HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50224-B21
HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static Multi Vendor SSD	P47844-B21
HPE 1.9TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static Multi Vendor SSD	P47845-B21
HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static Multi Vendor SSD	P47846-B21
HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static Multi Vendor SSD	P47847-B21
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC Self-encrypting FIPS U.3 CM6 SSD	P41402-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC Self-encrypting FIPS U.3 CM6 SSD	P41403-B21
<b>Read Intensive - NVMe - EDSFF - Solid State Drives</b>	
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF PM1743 SSD	P57799-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF PM1743 SSD	P57803-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF PM1743 SSD	P57807-B21

### Notes:

- Selection of EDSFF PM1743 drives will require NS204i-u boot option to run VMware.
- NVMe EDSFF drive can only be selected with 12EDSFF FIO Drive Cage Kit (P48401-B21).
- When used to run high-performance workloads, NVMe SSDs can cause the fans to operate at high speeds to maintain optimum system cooling.
- HPE has qualified the NVMe drive portfolio using the Operating System inbox drivers, full detail on the [HPE Solid State Drive QuickSpecs](#).

### HPE Networking

#### Notes:

- Maximum 2 OCP adapters are supported, Networking OCP3 adapter uses Slot 15 OCP 2 slot in default.
- WOL and shared NIC function are only supported in Slot 15 OCP 2 slot.
- OCP2 Enablement Kit is required when install in Slot 15 OCP 2 slot.
- Slot 14 OCP1 slot provides x8 PCIe 5.0 lanes from system board, OCP1 Enablement Kit for x16 lanes enablement on Slot 14 OCP1 (additional 8x lanes) is not required for following adapters unless otherwise notice.
- High performance networking cards equal or greater than 100Gb that may cause the fans to operate at higher speeds to maintain optimum system cooling when system at idle status.
- Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. Please see the related NIC QuickSpecs for Technical Specifications and additional information:  
<https://h20195.www2.hpe.com/v2/getpdf.aspx/A00002507ENW>.

### PCIe Adapters

#### 1 Gigabit Ethernet adapters

Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T Adapter for HPE	P51178-B21
Intel I350-T4 Ethernet 1Gb 4-port BASE-T Adapter for HPE	P21106-B21

### Additional Options

#### 10 Gigabit Ethernet adapters

Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T Adapter for HPE	P26253-B21
Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ Adapter for HPE	P26259-B21

#### 10/25 Gigabit Ethernet adapters

Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P26262-B21
Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P26264-B21
Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P08443-B21
Mellanox MCX631102AS-ADAT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P42044-B21
Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P08458-B21

#### 100 Gigabit Ethernet adapters

Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE	P21112-B21
HPE NV60100M 100Gb 2-port Storage Offload Adapter	R8M41A

#### OCP Adapter

#### 1 Gigabit Ethernet OCP adapters

Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE	P51181-B21
Intel I350-T4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE	P08449-B21

#### 10 Gigabit Ethernet OCP Adapters

Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ OCP3 Adapter for HPE	P26256-B21
Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T OCP3 Adapter for HPE	P10097-B21

#### 10/25 Gigabit Ethernet OCP adapters

Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10106-B21
Mellanox MCX631432AS-ADAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P42041-B21
Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10115-B21
Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE	P26269-B21

**Notes:** OCP1 Enablement Kit is required for this adapter when install in OCP1 slot.

#### 100 Gigabit Ethernet adapters

Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE	P22767-B21
--	------------

**Notes:** OCP1 Enablement Kit is required for this adapter when install in OCP1 slot.

#### HPE InfiniBand

##### Notes:

- When AOC (Active Optical Cables) and processors TDP greater than 270W are selected, limited to 25°C maximum inlet temperature is supported with all drive cage combinations.
- When AOC (Active Optical Cables) and processors TDP equal or less than 270W are selected, limited to 25°C maximum inlet temperature is supported with 8SFF x4 U.3 Tri-Mode FIO Drive Cage Kit (P47218-B21), 12EDSFF FIO Drive Cage Kit (P48401-B21) or 3 SFF/LFF drive cages configuration.

HPE InfiniBand HDR100/Ethernet 100Gb 1-port QSFP56 PCIe4 x16 MCX653105A-ECAT Adapter	P23665-B21
HPE InfiniBand HDR100/Ethernet 100Gb 2-port QSFP56 PCIe4 x16 MCX653106A-ECAT Adapter	P23666-B21

### HPE Power Supplies

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for

### Additional Options

hot plug, tool-less installation into HPE ProLiant 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.

#### Notes:

- Prior to making a power supply selection it is highly recommended that the [HPE Power Advisor Tool](#) is run to determine the right size power supply for your server configuration.
- Visit [HPE Power Cords and Cables](#) for a full list of optional power cords.
- Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.
- Flex Slot Titanium power supplies support power efficiency of up to 96% and include a standard C-14 power inlet connector.

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

**Notes:** Support limited to single 125W TDP Processor.

HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit P38995-B21

HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit P03178-B21

HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit P17023-B21

#### Notes:

- Flex Slot universal power supplies support power efficiency of up to 94% and support both 277VAC/380VDC power inputs.
- HPE 1600W DC PSU Power Lug Option Kit (P36877-B21) must be selected along with this power supplies.

HPE 1600W -48VDC Power Cable Lug Kit P36877-B21

**Notes:** Must be selected along with HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit (P17023-B21)

HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit P38997-B21

### Embedded Management

#### HPE iLO Advanced

HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features E6U59ABE

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

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 Common Password Setting

HPE iLO Common Password FIO Setting P08040-B21

### Additional Options

#### Notes:

- Replaces iLO default randomized password by an HPE defined common password. HPE highly recommends changing this password immediately after the initial onboarding process.
- Customers who want to choose their own custom iLO default password should use the HPE Factory Express Integration Services.

### HPE Security

HPE ProLiant ML350/ML110 Gen11 Intrusion Cable Kit	P47226-B21
--	------------

### HPE Cable Options

**Notes:** For details on cabling options and cable routing instructions, refer to [HPE ML350 Gen11 User Guide](#)

HPE ProLiant ML350 Gen11 LFF Embedded SATA Cable Kit	P47225-B21
--	------------

**Notes:** This cable kit supports up to 3x 4LFF drive cages with embedded SATA controller.

HPE ProLiant ML350 Gen11 SFF Embedded SATA Cable Kit	P47232-B21
--	------------

**Notes:** This cable kit supports up to 1x 8SFF drive cage with embedded SATA controller.

HPE ProLiant ML350 Gen11 LFF OROC Cable Kit	P47229-B21
---	------------

**Notes:** This cable kit supports up to 3x 4LFF drive cages with HPE OCP-type RAID controller (OROC).

HPE ProLiant ML350 Gen11 SFF OROC Cable Kit	P47235-B21
---	------------

**Notes:** This cable kit supports up to 2x 8SFF drive cages with HPE OCP-type RAID controller (OROC).

HPE ProLiant ML350 Gen11 LFF SAS/SATA PCIe Controller Cable Kit	P47227-B21
---	------------

**Notes:** This cable kit supports up to 3x 4LFF drive cages with HPE stand-up PCIe storage controller.

HPE ProLiant ML350 Gen11 SFF Tri-Mode PCIe Controller Cable Kit	P47233-B21
---	------------

**Notes:** This cable kit supports up to 3x 8SFF drive cages with HPE stand-up PCIe storage controller.

HPE ProLiant ML350 Gen11 8NVMe x4 Direct Attach FIO Cable Kit	P48399-B21
---	------------

**Notes:** This cable kit must be selected with 8SFF x4 U.3 Tri-Mode FIO Drive Cage Kit (P47218-B21) for direct attached mode.

HPE ProLiant ML350 Gen11 8SFF x4 U.3 Tri-Mode FIO Cable Kit	P47234-B21
---	------------

**Notes:** This cable kit must be selected with 8SFF x4 U.3 Tri-Mode FIO Drive Cage Kit (P47218-B21) and SR932i-p (P47184-B21) for controller attached mode.

HPE ProLiant ML350 Gen11 12EDSFF x4 Direct Attach FIO Cable Kit	P48400-B21
---	------------

**Notes:** This cable kit must be selected with HPE ProLiant ML350 Gen11 12EDSFF FIO Drive Cage Kit (P48401-B21).

HPE ProLiant ML350 Gen11 OCP1 Enablement Kit	P47230-B21
--	------------

### Additional Options

**Notes:** This cable kit must be selected when x16 OCP NIC adapter ordered for OCP 1 slot. CPU 1 MCIO connector will be occupied.

HPE ProLiant ML350 Gen11 OCP2 Enablement Kit	P47231-B21
--	------------

**Notes:** This cable kit must be selected when 2 OCP adapters are ordered. Depends on OCP adapter requirement (x8 or x16) and 1P or 2P configuration, one or two MCIO connectors will be occupied.

HPE ProLiant ML350 Gen11 Serial Port Cable Kit	P55062-B21
--	------------

### HPE Tape Backup

For the complete range of tape drives, autoloaders, libraries and media see:

#### **LTO Ultrium tape QuickSpecs**

For hardware and software compatibility of Hewlett Packard Enterprise tape backup products

[https://h20272.www2.hpe.com/SPOCK/Pages/spock2Html.aspx?htmlFile=hw\\_storeever.html](https://h20272.www2.hpe.com/SPOCK/Pages/spock2Html.aspx?htmlFile=hw_storeever.html)

#### **Notes:**

- When RDX ordered, Tertiary Riser Kit (P49693-B21) is required.
- Support one internal RDX installation in Box 1 location.
- Change the Thermal Configuration to Increased Cooling mode in BIOS/Platform Configuration (RBSU) menu when internal RDX is installed.

### HPE Tape Drives

HPE StoreEver LTO-8 Ultrium 30750 External Tape Drive	BC023A
HPE StoreEver LTO-9 Ultrium 45000 External Tape Drive	BC042A
HPE StoreEver LTO-7 Ultrium 15000 External Tape Drive	BB874A

### HPE Tape Drives Cartridge

HPE LTO-6 Ultrium 6.25TB RW Data Cartridge	C7976A
HPE LTO-7 Ultrium 15TB RW Data Cartridge	C7977A
HPE LTO-8 Ultrium 30TB RW Data Cartridge	Q2078A
HPE LTO-9 Ultrium 45TB RW Data Cartridge	Q2079A

### HPE Tape Backup Products

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 2m Cable	K2R09A
HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 4m Cable	K2R10A

### HPE RDX Products

HPE RDX External Docking Station	C8S07B
HPE RDX Internal Docking Station	C8S06A
HPE RDX 4TB Removable Disk Cartridge	Q2048A
HPE RDX 2TB Removable Disk Cartridge	Q2046A
HPE RDX 500GB Removable Disk Cartridge	Q2042A
HPE RDX 1TB Removable Disk Cartridge	Q2044A

### Internal RDX Support Kit

HPE ProLiant ML350/ML110 Gen11 Internal LTO/RDX Support Kit	P49694-B21
---	------------

**Notes:** Supporting cables to add additional internal RDX device for data backup or archiving.

### Additional Options

#### HPE Storage Options

##### Emulex Fibre Channel HBAs

HPE SN1610E 32Gb 1-port Fibre Channel Host Bus Adapter	R2J62A
HPE SN1610E 32Gb 2-port Fibre Channel Host Bus Adapter	R2J63A
HPE SN1700E 64Gb 1-port Fibre Channel Host Bus Adapter	R7N77A
HPE SN1700E 64Gb 2-port Fibre Channel Host Bus Adapter	R7N78A

##### QLogic Fibre Channel HBAs

HPE SN1610Q 32Gb 1-port Fibre Channel Host Bus Adapter	R2E08A
HPE SN1610Q 32Gb 2-port Fibre Channel Host Bus Adapter	R2E09A

**Notes:** For the complete listing of Fibre Channel Converged Network Adapters please see:

<https://www.hpe.com/us/en/product-catalog/servers/adapters>

#### HPE Racks

- Please see the [HPE Advanced Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.
- Please see the [HPE Enterprise Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.
- Please see the [HPE Standard Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.

#### HPE Power Distribution Units (PDUs)

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

#### HPE Uninterruptible Power Systems (UPS)

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

HPE T750 Gen5 NA/JP UPS with Management Card Slot	Q1F47A
HPE T750 Gen5 INTL UPS with Management Card Slot	Q1F48A
HPE T1000 Gen5 NA/JP UPS with Management Card Slot	Q1F49A
HPE T1000 Gen5 INTL UPS with Management Card Slot	Q1F50A
HPE T1500 Gen5 NA/JP UPS with Management Card Slot	Q1F51A
HPE T1500 Gen5 INTL UPS with Management Card Slot	Q1F52A

## Additional Options

---

### HPE Rack Options

Please see the [HPE KVM Switches web page](#) for information on these products and their specifications.

---

### Rail Kits

HPE ProLiant ML350/ML110 Gen11 T/R Conversion Kit

P47394-B21

#### Notes:

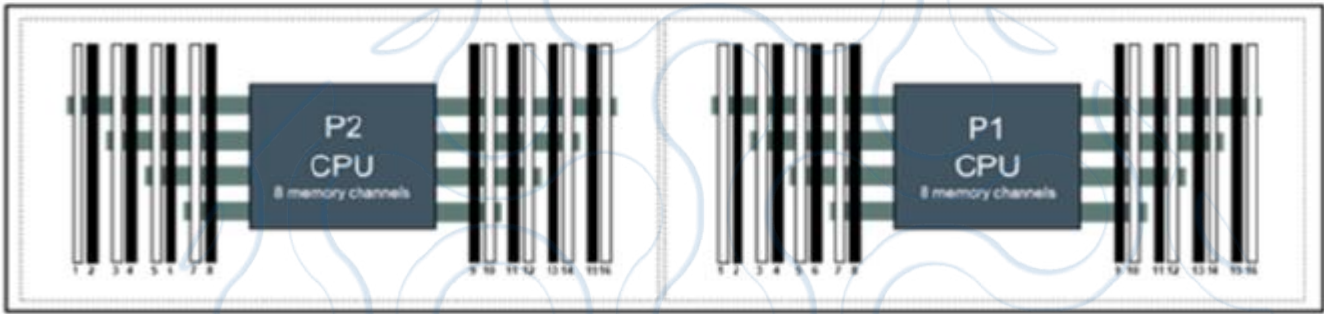
- Easy install rack rail tray which takes up 1U height in a standard rack facility.
  - This kit is supported in both ML350 and ML110 Gen11 for tower to rack conversion.
  - This kit includes CMA and is shipped as standard.
  - This kit is not factory integratable option and only can be shipped with standalone package.
- 

FARTAK SERVICE



## Memory

### Memory Population guidelines



HPE ML350 Gen11 Server (Front of server)

Notes: 2 Slots per channel

### HPE ProLiant ML350 Gen11 Servers 16 slots per CPU DIMM population order

1 DIMM										10						
2 DIMMs <sup>2</sup>			3							10						
4 DIMMs <sup>2</sup>			3			7				10			14			
6 DIMMs			3		5	7				10			14			16
8 DIMMs <sup>1,2</sup>	1		3		5	7				10		12		14		16
12 DIMMs	1	2	3		5	6	7			10	11	12		14	15	16
16 DIMMs <sup>1,2</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Notes:

- 1. Support SGX (Software Guard Extensions)
- 2 Support Hemi (hemisphere mode)

### General Memory Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed. If only one processor is installed in a 2-processor system, only half of the DIMM slots are available to populate.
- If a memory channel consists of more than one DIMM slot, the white DIMM slot is located furthest from the CPU. White DIMM slots denote the first slot to be populated in a channel. For one DIMM per channel (DPC), populate white DIMM slots only
- Rank mixing is not allowed on a channel except for 1 rank + 2 rank combination when all 16 DIMMs for a Processor socket is populated. (2 rank in white slot, 1 rank in block slot),
- No x4 mixing with x8 across a socket.
- If multiple CPUs are populated, split the HPE Smart Memory DIMMs evenly across the CPUs and follow the corresponding CPU rules when populating DIMMs.
- To maximize performance, it is recommended to balance the total memory capacity across all installed processors and load the channels similarly whenever possible.
- If the number of DIMMs does not spread evenly across the CPUs, populate as close to evenly as possible.
- Avoid creating an unbalanced configuration for any CPU.

### Memory

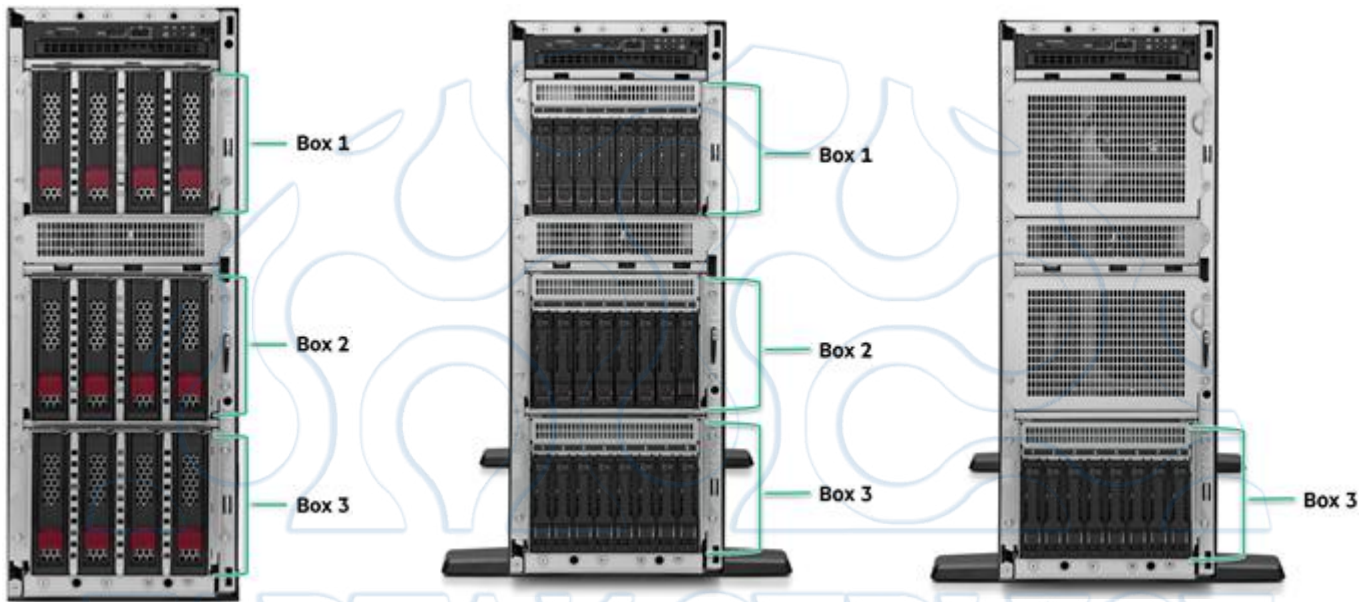
- The maximum memory capacity is a function of the number of DIMM slots on the platform-the largest DIMM capacity qualified on the platform and the number and model of qualified processors installed on the platform.
- Do not mix HPE Smart Memory RDIMMs and HPE Smart Memory LRDIMMs in the same system.
- The 256 GB 8R 3DS RDIMM can be mixed with 128 GB 4R 3DS RDIMM ONLY in 16 DIMMs populated. 256 GB 8R 3DS RDIMM needs to be in white slot while 128 GB 4R 3DS RDIMM needs to be in black slot.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- DIMMs of different speeds may be mixed in any order; however, the server will select the lowest common speed among all of the DIMMs on all of the CPUs.
- HPE Smart Memory DIMMs and HPE NVDIMM-Ns from previous generation servers are not compatible with the current generation. Certain HPE Smart Memory features such as memory authentication and enhanced performance may not be supported.
- There are no performance implications for mixing sets of different capacity DIMMs at the same operating speed. For example, latency and throughput will not be negatively impacted by installing an equal number of 32 GB 1rank x4 DDR5-4800 DIMMs (in block slot) and 64 GB 2rank x4 DDR5-4800 DIMMs (in white slot).
- Take each DIMM type and create a configuration as if it were a homogeneous configuration.
- For details on the HPE Server Memory Options Population Rules, visit: <http://www.hpe.com/docs/memory-population-rules>.
- For additional information, please see the [HPE DDR5 Smart Memory QuickSpecs](#).

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

For details on the HPE Server Memory speed, visit: <https://www.hpe.com/docs/memory-speed-table>.

---

### Storage



**12 LFF hot-plug drive model:**  
Tower - shown without the tower feet.

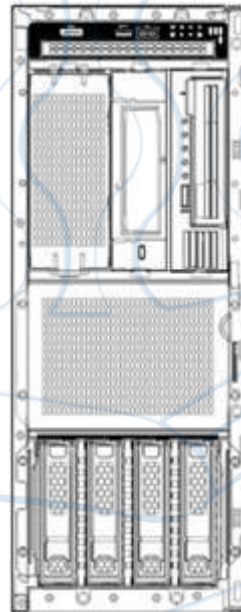
- 3 x 4LFF SAS/SATA hot-pluggable HDD/SSD Cage Kit in Box 1/2/3.

**24 SFF hot-plug drive model:**  
Tower - shown with the tower feet.

- 3 x 8SFF SAS/SATA/NVME hot-pluggable HDD/SSD Cage Kit in Box 1/2/3.

**8 SFF hot-plug drive model:**  
Tower - shown with the tower feet.

- 1 x 8SFF SAS/SATA/NVME or x4 NVME U.3 hot-pluggable Cage Kit in Box 3.

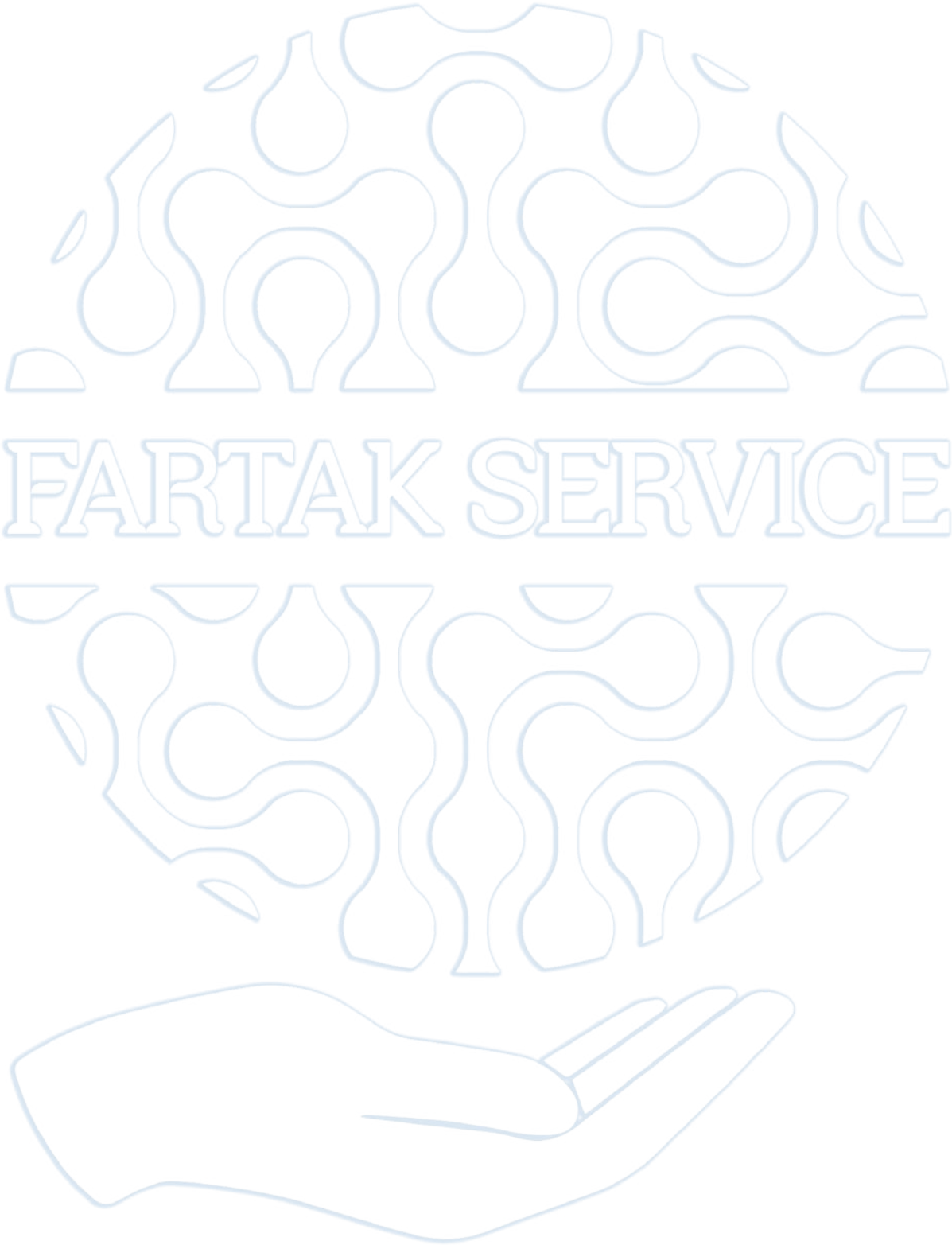


**4LFF hot-plug drive and RDX model:**  
Tower - shown without the tower feet.

- 1x 4LFF SAS/SATA hot-pluggable HDD/SSD Cage Kit in Box 3.
- RDX in Box 1

Storage

---



## Technical Specifications

### System Unit

#### Dimensions

- **Tower**

46.2 (H) x 71.2 (D) x 17.4 (W) cm

18.2 (H) x 28 (D) x 6.85 (W) in

- **Rack - System only**

17.4 (H/4U) x 64.8 (D) x 44.5 (W) cm

6.85 (H) x 25.51 (D) x 17.52 (W) in

- **Tower-to-Rack Conversion Kit (1U)**

4.445 (H/1U) x 69.2 (D/without CMA. Depth with CMA: 83.5) x 45.2 (W) cm

1.75 (H/1U) x 27.23 (D/without CMA. Depth with CMA: 32.89) x 17.795 (W) in

**Weight** (approximate)

- **24.73 kg (54.52 lb)**

#### SFF Minimum:

8SFF chassis with 1x SFF HDD and 7x SFF HDD blanks, 1x HDD Drive Cage blank, 2x Media Bay blanks, 1x DVD bay blank, 1x processor including standard heatsink, 1x DIMM, 1x power supply (plus blank), 1x Primary Riser, 1x Riser Cage blank, 2x OCP blanks, Cables for the above.

- **37.18 kg (81.97 lb)**

#### SFF Maximum:

8SFF chassis with 24x SFF HDDs with 3x HDD Drive Cage, 1x DVD device, 2x processor including standard heatsink, 24x DIMMs, 2x power supply, 2x Primary Riser, 1x Tertiary Riser, 1x Megacell, 2x OCP, 8x Single Width GPU card, 2x x8 HHHL card (Max. 166g), Cables for the above.

- **27.42 kg (60.45 lb)**

#### LFF Minimum:

4LFF chassis with 1x LFF HDD and 3x HDD blanks, 1x HDD Drive Cage blank, 2x Media Bay blanks, 1x DVD bay blank, 1x processor including standard heatsink, 1x DIMM, 1x power supply (plus blank), 2x Primary Riser, 1x Tertiary Riser, 1x Megacell, 2x OCP blanks, 2x SR932i-p card, Cables for the above.

- **43.05 kg (94.91 lb)**

#### LFF Maximum:

4LFF chassis with 12x LFF HDDs with 3x HDD Drive Cage, 1x DVD device, 2x processor including performance heatsink, 24x DIMMs, 2x power supply, 2x Primary Riser, 1x Tertiary Riser, 1x Megacell, 2x OCP, 4x Double Width x16 GPU card, 2x FHHL card, 1x NS204i-u, Cables for the above.

### Technical Specifications

---

#### Input Requirements (per power supply)

##### Rated Line Voltage

- 100 to 120 VAC
  - 200 to 240 VAC
  - 40 to 72 VDC
- 

#### BTU Rating

##### Maximum

- For 500W Power Supply: 1902 BTU/hr (at 100 VAC), 1840 BTU/hr (at 200 VAC), 1832 BTU/hr (at 240 VAC)
  - For 800W Power Supply: 3067 BTU/hr (at 100 VAC), 2958 BTU/hr (at 200 VAC), 2949 BTU/hr (at 240 VAC)
  - For 1000W Power Supply: 3741 BTU/hr (at 100 VAC), 3596 BTU/hr (at 200 VAC), 3582 BTU/hr (at 240 VAC)
  - For 1600W Power Supply: 5918 BTU/hr (at 200 VAC), 5884 BTU/hr (at 240 VAC)
  - For 1600W -48VDC Power Supply: 6026 BTU/hr (at 40 VDC), 6000 BTU/hr (at 48 VDC), 5989 BTU/hr (at 72 VDC)
- 

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

##### Rated Steady-State Power

- For 1600W (Platinum) Power Supply: 1600W (at 240 VAC), 1600W (at 240 VDC) for China only
- For 1600W -48VDC Power Supply: 1600W (at 40 VDC), 1600W (at 48 VDC), 1600W (at 72 VDC)
- For 1000W (Titanium) Power Supply: 1000W (at 100 VAC), 1000W (at 240 VAC)
- For 800W (Platinum) Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VDC) input for China only
- For 500W (Platinum) Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VDC) input for China only

##### Maximum Peak Power

- For 1600W (Platinum) Power Supply: 1600W (at 240 VAC), 1600W (at 240 VDC) for China only
  - For 1600W -48VDC Power Supply: 1600W (at 40 VDC), 1600W (at 48 VDC), 1600W (at 72 VDC)
  - For 1000W (Titanium) Power Supply: 1000W (at 100 VAC), 1000W (at 240 VAC)
  - For 800W (Platinum) Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VDC) input for China only
  - For 500W (Platinum) Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VDC) 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

### Technical Specifications

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:

[https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002260en\\_us&docLocale=en\\_US](https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002260en_us&docLocale=en_US)

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: [https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002260en\\_us&docLocale=en\\_US](https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002260en_us&docLocale=en_US)

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

- **Non-operating**

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

---

### Relative Humidity (non-condensing)

- **Operating**

8% to 90% - Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.

- **Non-operating**

5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

---

### Altitude

- **Operating**

3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

- **Non-operating**

9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

---

### Emission 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:

[https://support.hpe.com/hpesc/public/docDisplay?docLocale=en\\_US&docId=c03471072](https://support.hpe.com/hpesc/public/docDisplay?docLocale=en_US&docId=c03471072)

---

## Technical Specifications

### 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.

### Acoustic Noise

Listed are the declared mean A-Weighted sound power levels (LwAm), declared average bystander position A-Weighted sound pressure levels (LpAm) and the statistical adder for verification, Kv, is a quantity to be added to the declared mean A-weighted sound power level, LwA,m 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.

Test Case	Performance 1	Performance 2	Performance 3	Performance 4	Performance 5
<b>Idle</b>					
LwA,m	4.0 B	3.9 B	4.0 B	4.0 B	4.1 B
LpAm	26 dBA	25 dBA	25 dBA	25 dBA	25 dBA
Kv	0.4 B	0.4 B	0.4 B	0.4 B	0.4 B
<b>Operating</b>					
LwA,m	4.1 B	4.1 B	4.1 B	4.2 B	4.2 B
LpAm	26 dBA	26 dBA	26 dBA	26 dBA	26 dBA
Kv	0.4 B	0.4 B	0.4 B	0.4 B	0.4 B

#### Notes:

- The declared mean A-weighted sound power level, LWA,m, is computed as the arithmetic average of the measured.
- A-weighted sound power levels for a randomly selected sample, rounded to the nearest 0,1 B.
- The declared mean A-weighted emission sound pressure level, LpA,m, is computed as the arithmetic average of the measured A-weighted emission sound pressure levels at the bystander positions for a randomly selected sample, rounded to the nearest 1 dB.
- The statistical adder for verification, Kv, is a quantity to be added to the declared mean A-weighted sound power level, LWA,m, such that there will be a 95 % probability of acceptance, when using the verification procedures of ISO 9296, if no more than 6,5 % of the batch of new equipment, has A-weighted sound power levels greater than (LWA,m + Kv).
- The quantity, LWA,c (formerly called LwA,m), can be computed from the sum of LWA,m and Kv.
- All measurements made to conform to ISO 7779 / ECMA-74 and declared to conform to ISO 9296 / ECMA-109.
- B, dB, abbreviations for bels and decibels, respectively, where 1 B = 10 dB.
- The results in this declaration apply only to the model numbers listed above when operating and tested according to the indicated modes and standards. A system with additional configuration components or increased operating functionality may increase the noise emission values.

## Summary of Changes

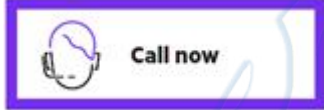
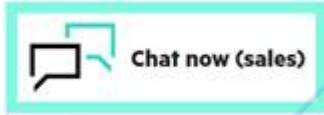
Date	Version History	Action	Description of Change
07-Aug-2023	Version 8	Changed	Overview and additional Options sections were updated.
10-Jul-2023	Version 7	Changed	Standard Features and Additional Options sections were updated.
05-Jun-2023	Version 6	Changed	Overview, Standard Features, Core Options, and Technical Specification sections were updated.
01-May-2023	Version 5	Changed	Standard Features and Core Options sections were updated.
03-Apr-2023	Version 4	Changed	Overview, Standard Features, Core Options, and Technical Specification sections were updated.
06-Mar-2023	Version 3	Changed	Overview, Standard Features, Core Options, and Technical Specification sections were updated.
06-Feb-2023	Version 2	Changed	Standard Features, Core Options, Additional Options and Technical Specification sections were updated.
10-Jan-2023	Version 1	New	New QuickSpecs.

FARTAK SERVICE



## Copyright

Make the right purchase decision. Contact our presales specialists.



© Copyright 2023 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Intel® and Xeon® are registered trademarks of Intel Corporation in the U.S. and other countries.

Microsoft®, Windows®, and Windows Server® are U.S. registered trademarks of the Microsoft group of companies.

For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less

a50004308enw - 16912 - Worldwide - V8 - 07-August-2023

