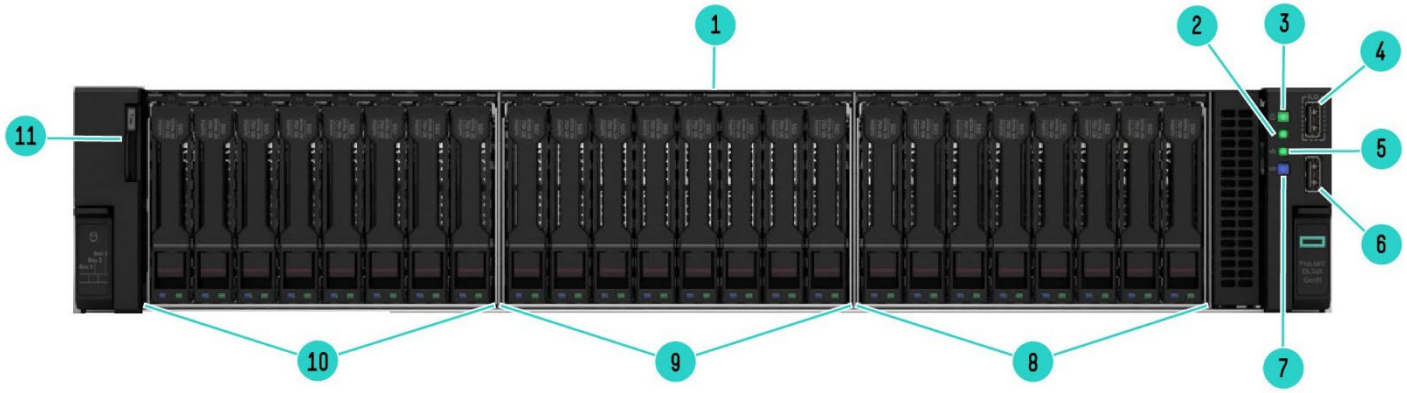
## Overview

Shape the Future of QuickSpecs – Your Input Matters

## HPE ProLiant DL345 Gen11

Are you looking for a single-socket scalable server solution to power your virtualized data-intense, large-capacity storage workloads? The HPE ProLiant DL345 Gen11 server is a scalable 2U 1P solution that delivers exceptional compute performance and large capacity storage options at 1P economics. Powered by 4th and 5th Generation AMD EPYC™ Processors with up to 160 cores, increased memory bandwidth (up to 3 TB), high-speed PCIe Gen5 I/O and EDSFF storage, up to 20LFF/ 34SFF/ 36EDSFF, and up to 4 GPUs at the front, this server is a superb single-socket 2U solution for your data-intensive workloads. Enhanced security features with the HPE silicon root of trust are built into the firmware, creating a digital fingerprint for the AMD Secure Processor to validate safe operation before boot. The HPE DL345 Gen11 server provides impressive storage performance and options for data-intensive workloads like software-defined storage, video transcoding, and virtualized apps.




**Front View - 24 SFF chassis shown**

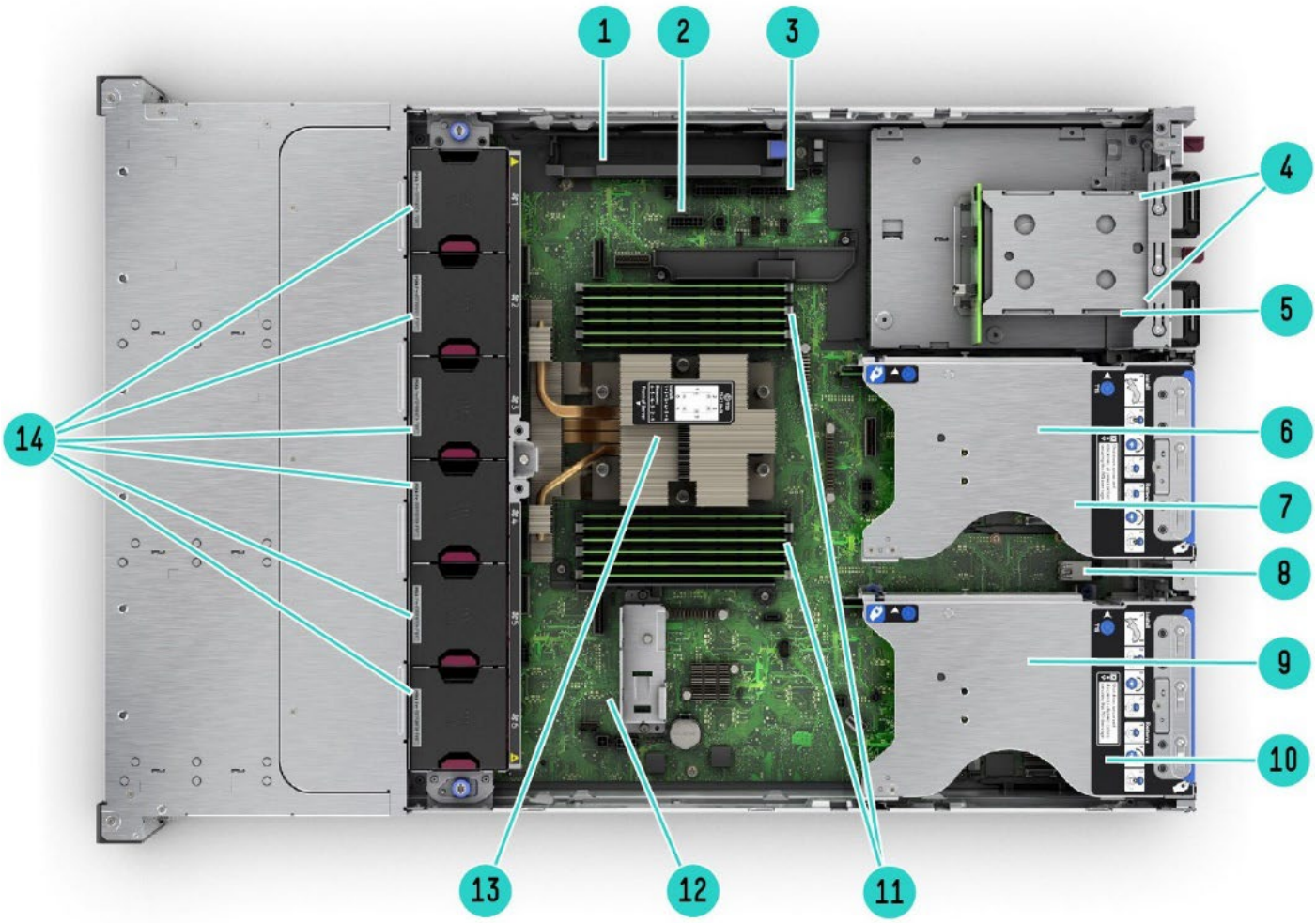
1. Quick removal access panel
2. Health LED
3. Power On/Standby button and system power LED
4. iLO service port
5. NIC status LED [2]
6. USB 3.2 Gen1 Port
7. Unit ID button/ LED
8. Box 3 - 8 SFF Drive Cage Bay
9. Box 2 - 8 SFF Drive Cage Bay
10. Box 1 - 8 SFF Drive Cage Bay
11. Serial number pull tab[1]

**Notes:**

– [1] Optional: Universal Media Bay

– [2] Front NIC LED display doesn't support NIC LED ACT/LINK indication from PCIE NIC's

## Overview




**Internal View – 2SFF rear cage shown**

1. Megacell Battery holder
2. Hard drive backplane power connectors
3. Chassis intrusion detection connector
4. Up to 2 Hot Plug redundant HPE Flexible Slot Power supplies (Under)
5. Rear 2 SFF Cage Bay (Optional)
6. Secondary PCIe 5.0 risers, slot 4,5,6
7. OCP 3.0 Slot 22 (Under)
8. Internal Dual USB 3.2 Gen1 port
9. Primary PCIe 5.0 risers, slot 1,2,3
10. OCP 3.0 Slot 21 (Under)
11. DDR5 DIMM slots[1]

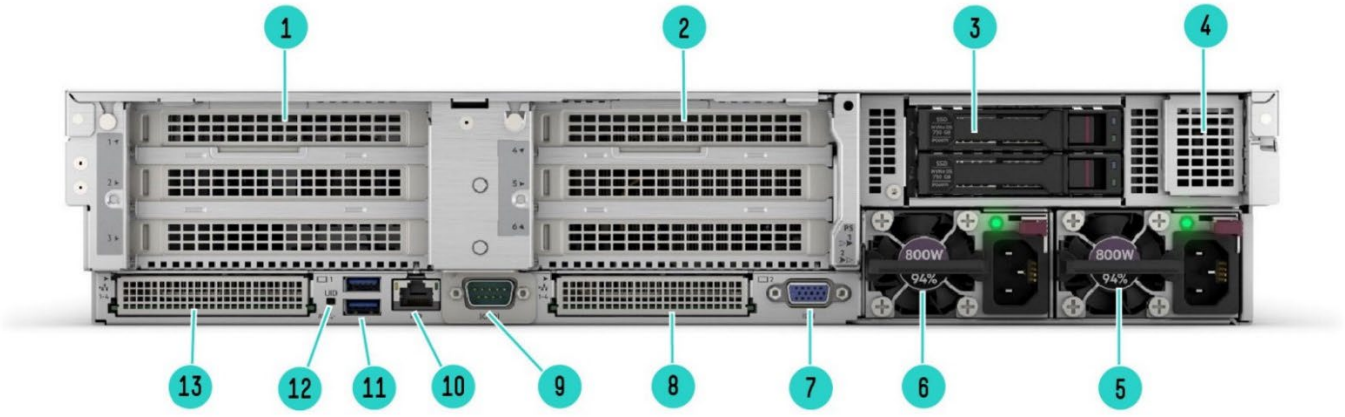
12 FHFL PCIe card holder

13. Up to 1 Processor shown with performance heat sink[2]
14 Hot-plug fans[3,]

**Notes:**

- [1]Fully populated 12 DIMMs shown
- [2]Optional: standard Heat Sink
- [3]6 single-rotor standard fans shown. Optional: Performance Fans

## Overview




**Rear View - 2SFF rear cage shown**

1. Primary PCIe 5.0 Riser[1]
2. Secondary PCIe 5.0 Riser[2]
3. Optional Rear Drive Cage (2SFF SAS/SATA/NVMe)
4. Optional NS204i-u hot-plug NVMe boot device
5 Hot-plug Power Supply 1
6. Hot-plug Power Supply 2 (Optional)
7. Video (VGA) port
8. OCP 3.0 slot 22
9. Optional Serial port
10. Dedicated iLO management port
11. 2 USB 3.2 Gen1 port
12. Unit ID LED
13. OCP 3.0 slot 21

**Notes:**

– [1]PCIe Slots 1,2,3 top to bottom.

– [2]PCIe Slots 4,5,6 top to bottom.

## What's New:

- All new DL345 Gen11
- New 4th and 5th Generation AMD EPYC™ Processors, up to 160 cores, 400W, and 1150MB of L3 Cache.
- New DDR5 Smart Memory – up to 6400MT/s.
- New PCIe Gen5 support.
- New HPE Integrated Lights-Out 6 (iLO 6) server management software.
- New hot-pluggable NS204i-u Boot Device.
- New 4 LFF / 8 SFF Midtray and 4 LFF rear drive bay.
- New 36 EDSFF E3.S 1T drive bay.
- New GPU support, up to four single-width or two double-width GPUs.
- OpenBMC Capable through iLO6 Transfer of Ownership Process

## Platform Information

### Form Factor

- 2U rack

### Chassis Types

- 8 SFF with optional 16 SFF front bay, 8 SFF mid tray, and 2 SFF rear to a total of 34 SFF drives.
- 24 SFF with optional 8 SFF mid tray, and 2 SFF rear to total 34 SFF drives.
- 8 LFF with optional 4 LFF front bay, 4LFF mid tray, and 4LFF rear to a total of 20 LFF drives.
- EDSFF E3.S 1T drive bay.
- 4 single-width or 2 double-width GPUs with 12 EDSFF or 8 SFF drive bay.

# Overview

## System Fans

- Choice of Standard Fan Kit and Performance Fan kit

**Notes:**

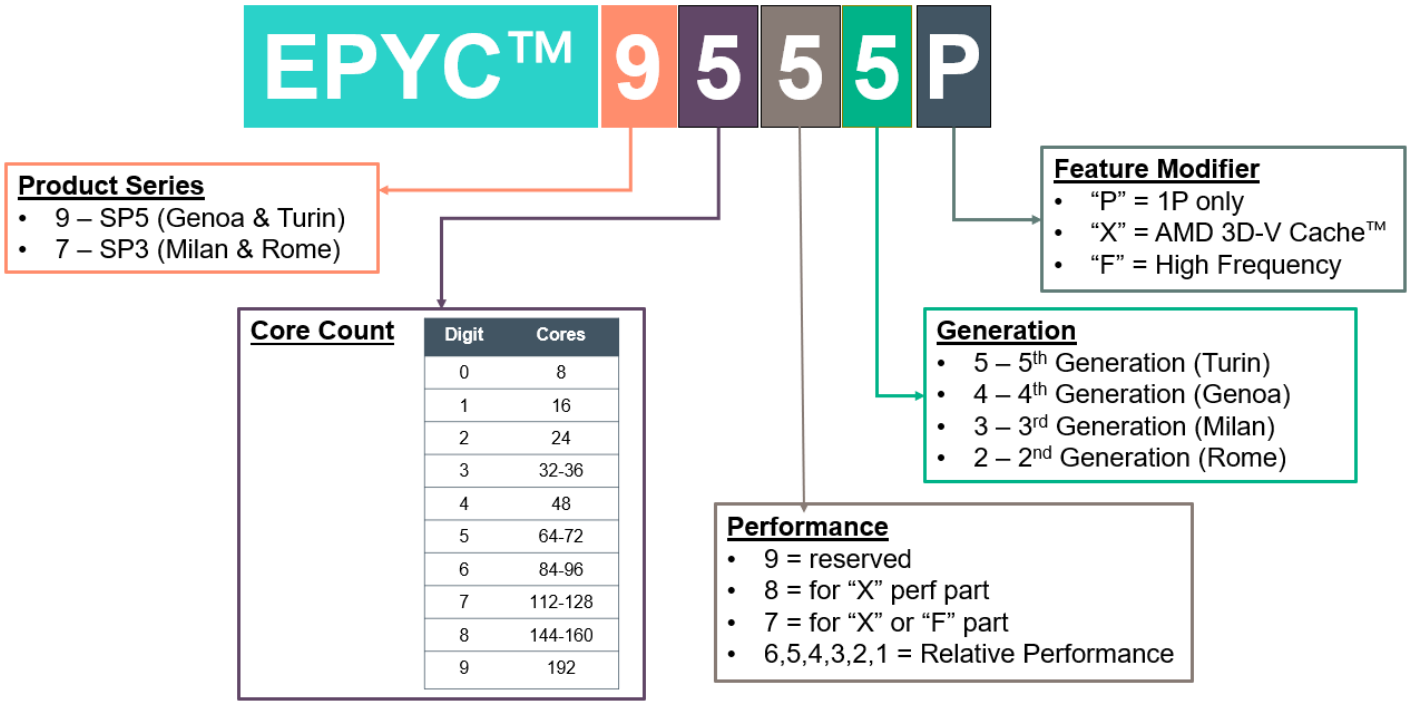
– The HPE DL345 Gen11 supports up to 6 fans with fan redundancy built in. One fan rotor failure will place the server in degraded mode but fully functional. Two fan rotor failures could provide a warning and imminent server shutdown.

– Each Fan kit is designated to operate under different configurations. For more information, please refer to the Cooling option message in the Unique option section.

## Standard Features

**Processors** – One of the following depending on the model.

**Notes:** For more information regarding AMD EPYC processors, please see the following:
**https://www.amd.com/en/processors/epyc-9004-series**




| 5th Gen AMD EPYC Processor | Cores | Base Frequency | Max Frequency | Max Memory | Wattage | L3 Cache (MB) | Memory |
|---|---|---|---|---|---|---|---|
| EPYC 9845 | 160 | 2.1 GHz | 3.7 GHz | 3TB | 390 | 320 | 6400MT/s |
| EPYC 9825 | 144 | 2.2 GHz | 3.7 GHz | 3TB | 390 | 384 | 6400MT/s |
| EPYC 9745 | 128 | 2.4 GHz | 3.7 GHz | 3TB | 400 | 256 | 6400MT/s |
| EPYC 9645 | 96 | 2.3 GHz | 3.7 GHz | 3TB | 320 | 256 | 6400MT/s |
| EPYC 9655P | 96 | 2.6 GHz | 4.5 GHz | 3TB | 400 | 384 | 6400MT/s |
| EPYC 9565 | 72 | 3.15 GHz | 4.3 GHz | 3TB | 400 | 384 | 6400MT/s |
| EPYC 9535 | 64 | 2.4 GHz | 4.3 GHz | 3TB | 300 | 256 | 6400MT/s |
| EPYC 9575F | 64 | 3.3 GHz | 5 GHz | 3TB | 400 | 256 | 6400MT/s |
| EPYC 9555P | 64 | 3.2 GHz | 4.4 GHz | 3TB | 360 | 256 | 6400MT/s |
| EPYC 9475F | 48 | 3.65 GHz | 4.8 GHz | 3TB | 400 | 256 | 6400MT/s |
| EPYC 9455P | 48 | 3.15 GHz | 4.4 GHz | 3TB | 300 | 256 | 6400MT/s |
| EPYC 9365 | 36 | 3.4 GHz | 4.3 GHz | 3TB | 300 | 192 | 6400MT/s |
| EPYC 9335 | 32 | 3 GHz | 4.4 GHz | 3TB | 210 | 128 | 6400MT/s |
| EPYC 9375F | 32 | 3.8 GHz | 4.8 GHz | 3TB | 320 | 256 | 6400MT/s |
| EPYC 9355P | 32 | 3.55 GHz | 4.4 GHz | 3TB | 280 | 256 | 6400MT/s |
| EPYC 9255 | 24 | 3.25 GHz | 4.3 GHz | 3TB | 200 | 128 | 6400MT/s |
| EPYC 9275F | 24 | 4.1 GHz | 4.8 GHz | 3TB | 320 | 256 | 6400MT/s |
| EPYC 9135 | 16 | 3.65 GHz | 4.3 GHz | 3TB | 200 | 64 | 6400MT/s |
| EPYC 9115 | 16 | 2.6 GHz | 4.1 GHz | 3TB | 125 | 64 | 6400MT/s |
| EPYC 9175F | 16 | 4.2 GHz | 5 GHz | 3TB | 320 | 512 | 6400MT/s |
| EPYC 9015 | 8 | 3.6 GHz | 4.1 GHz | 3TB | 125 | 64 | 6400MT/s |

## Standard Features

| 4th Gen AMD EPYC Processor | Cores | Base Frequency | Max Frequency | Max Memory | Wattage | Cache | Memory |
|---|---|---|---|---|---|---|---|
| EPYC 9754 | 128 | 2.25 GHz | 3.1 GHz | 3TB | 360 | 256 | 4800MT/s |
| EPYC 9734 | 112 | 2.2 GHz | 3.0 GHz | 3TB | 340 | 256 | 4800MT/s |
| EPYC 9654P | 96 | 2.4 GHz | 3.7 GHz | 3TB | 360 | 384 | 4800MT/s |
| EPYC 9684X | 96 | 2.55 GHz | 3.7 GHz | 3TB | 400 | 1150 | 4800MT/s |
| EPYC 9634 | 84 | 2.25 GHz | 3.7 GHz | 3TB | 290 | 384 | 4800MT/s |
| EPYC 9554P | 64 | 3.1 GHz | 3.75 GHz | 3TB | 360 | 256 | 4800MT/s |
| EPYC 9534 | 64 | 2.45 GHz | 3.7 GHz | 3TB | 280 | 256 | 4800MT/s |
| EPYC 9454P | 48 | 2.75 GHz | 3.8 GHz | 3TB | 290 | 256 | 4800MT/s |
| EPYC 9474F | 48 | 3.6 GHz | 4.1 GHz | 3TB | 360 | 256 | 4800MT/s |
| EPYC 9354P | 32 | 3.25 GHz | 3.8 GHz | 3TB | 280 | 256 | 4800MT/s |
| EPYC 9334 | 32 | 2.7 GHz | 3.9 GHz | 3TB | 210 | 128 | 4800MT/s |
| EPYC 9374F | 32 | 3.85 GHz | 4.3 GHz | 3TB | 320 | 256 | 4800MT/s |
| EPYC 9384X | 32 | 3.1 GHz | 3.9 GHz | 3TB | 320 | 768 | 4800MT/s |
| EPYC 9254 | 24 | 2.9 GHz | 4.15 GHz | 3TB | 200 | 128 | 4800MT/s |
| EPYC 9224 | 24 | 2.5 GHz | 3.7 GHz | 3TB | 200 | 64 | 4800MT/s |
| EPYC 9274F | 24 | 4.05 GHz | 4.3 GHz | 3TB | 320 | 256 | 4800MT/s |
| EPYC 9124 | 16 | 3 GHz | 3.7 GHz | 3TB | 200 | 64 | 4800MT/s |
| EPYC 9174F | 16 | 4.1 GHz | 4.4 GHz | 3TB | 320 | 256 | 4800MT/s |
| EPYC 9184X | 16 | 3.55 GHz | 4.2 GHz | 3TB | 320 | 768 | 4800MT/s |

**Notes:**
- 6096pin LGA SP5 socket type, 128 PCIe 5.0 Lanes per processor.
- All 4th and 5th generation AMD EPYC processors can support up to 3TB of memory each under 1DPC, 12 channels per processor.
- The wattage information indicates the processor's default cTDP (Configurable TDP).

### Chipset
No chipset – System on Chip (SoC) design.

### On System Management Chipset
HPE iLO 6 ASIC
**Notes:** Read and learn more in the **iLO QuickSpecs**

### Memory

| | |
|---|---|
| **Type** | HPE DDR5 Smart Memory<br>Registered (RDIMM) |
| **DIMM Slots Available** | 12<br>12 DIMM slots per processor, 12 channels per processor, 1 DIMM per channel |
| **Maximum capacity (RDIMM)** | 3.0 TB<br>12 x 256 GB RDIMM @ 4800 MT/s at 1DPC for 4th Gen EPYC Processors<br>12 x 256 GB RDIMM @ 6400 MT/s at 1DPC for 5th Gen EPYC Processors |

**Notes:**
- All processors support up to 3TB of memory per server.
- LRDIMM and Persistent Memory are not supported.
- For additional information, please see the **HPE DDR5 Smart Memory QuickSpecs**.
- For the Memory Population Rules and Guidelines with AMD EPYC 9004/5 series processors, see details here: **https://www.hpe.com/psnow/doc/a50007481enw**

# Standard Features

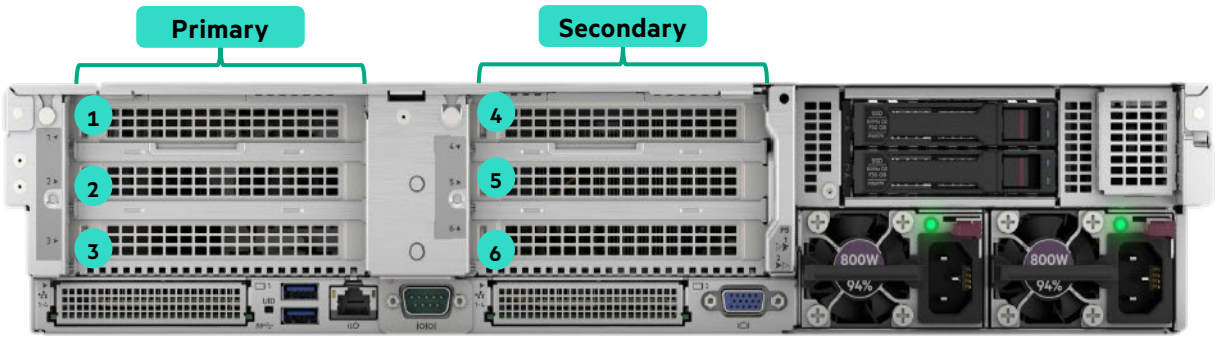
## Memory Protection

### 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**.

## Expansion Slots




### Default Two (2) PCIe Slots

| Primary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 3 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

| Secondary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 6 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

### Optional Four (4) Slots

| Primary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 1 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 2 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 3 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

| Secondary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 6 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

**Notes:**
- Requires 4PCIe enablement kit (P57116-B21) to support four (4) slots.
- When supporting Slot1 & OCP Slot22 scenario, Slot1 & OCP Slot22 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- When supporting Slot2 & Slot3 scenario, Slot2 & Slot3 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.

## Standard Features

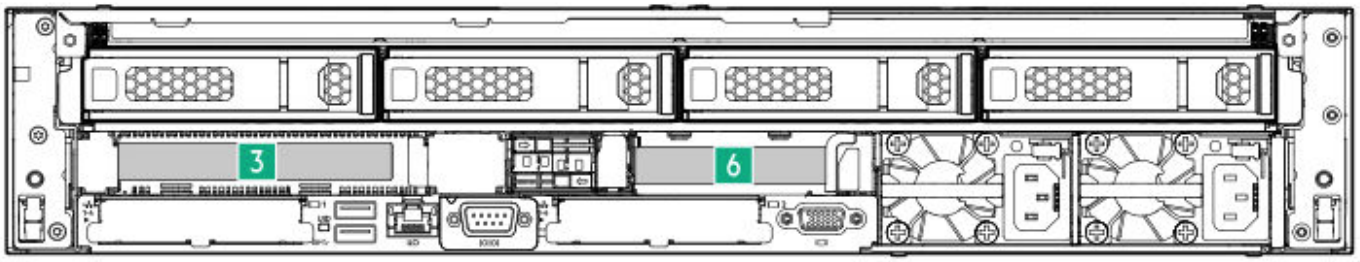
### Optional Six (6) slots

| Primary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 1 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 2 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 3 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

| Secondary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 4 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 5 (via Option Kit) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |
| 6 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

**Notes:**

- Requires 6PCIe enablement kit (P57117-B21) to support six (6) PCIe slots
- When supporting Slot1 & Slot21 scenario, Slot1 & OCP Slot21 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- When supporting Slot2 & Slot3 scenario, Slot2 & Slot3 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- When supporting Slot4 & Slot22 scenario, Slot4 & OCP Slot22 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- When supporting Slot5 & Slot6 scenario, Slot5 & Slot6 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.



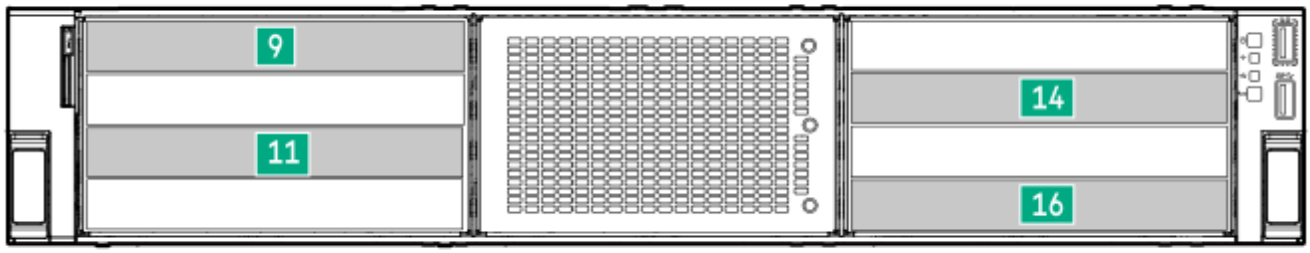

### 2 slots with 4 LFF rear drives

| Primary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 3 (Default) | PCIe 5.0 | X16 | X16 | Full-height, Half-length slot |

| Secondary Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 6 (Option) | PCIe 5.0 | X16 | X16 | Low Profile or Full-height, half-length slot |

**Notes:** If the 4LFF rear drive bay is selected, then two (2) Primary riser kits (P55098-B21) OR a Primary riser kit (P55098-B21), a Low profile riser kit (P59260-B21), and an NS204i-u boot device (P48183-B21) must be selected.

## Standard Features




**Front risers of GPU CTO server**

| Front Riser | | | | |
|---|---|---|---|---|
| **Slots #** | **Technology** | **Bus Width** | **Connector Width** | **Slot Form Factor** |
| 9 | PCIe 5.0 | X16 | X16 | Full-height, Full-length slot |
| 11 | PCIe 5.0 | X16 | X16 | Full-height, Full-length slot |
| 14 | PCIe 5.0 | X16 | X16 | Full-height, Full-length slot |
| 16 | PCIe 5.0 | X16 | X16 | Full-height, Full-length slot |

**Notes:**

- Requires 2GPU front enablement kit (P55068-B21) to support two (2) PCIe slots at the front of GPU CTO server.
- Requires 4GPU front enablement kit (P55067-B21) to support four (4) PCIe slots at the front of GPU CTO server.
- When supporting Slot9 & OCP Slot22 scenario, Slot9 & OCP Slot22 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- When supporting Slot16 & OCP Slot21 scenario, Slot16 & OCP Slot21 combined can support up to 112GB/s bandwidth due to AMD CPU limitation.
- The extension slots at the front of the GPU CTO server do not support external cabling.

## Storage Controllers

### Boot Device

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

**Notes:**

- Includes Hot Plug capable dual 480GB NVMe M.2 automatically configured into a RAID 1 Mirror
- Externally accessible but does not occupy a PCIe slot
- Requires specific cable kit along with specific cooling selections based on configuration

### Essential RAID Controller

- HPE Smart Array E208e-p SR Gen10 Controller

### MR Gen11 Storage Controller

- HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller
- HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller
- HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller
- HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller
- HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller

# Standard Features

### SR Gen11 Storage Controller

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

**Notes:** For additional details, please visit:
**HPE Compute MR Gen11 Controllers QuickSpecs**
**HPE Compute SR Gen11 Controllers QuickSpecs**

## Internal Storage Devices

### Optical Drive

- Available on 8SFF and 8LFF CTO Servers as an option (DVD-ROM or DVD-RW)

### Drives

- None ship standard

| Maximum Internal Storage | | |
|---|---|---|
| | **Capacity** | **Configuration** |
| Hot Plug LFF SAS HDD | 480 TB | 20 x 24 TB |
| Hot Plug LFF SATA HDD | 480 TB | 20 x 24 TB |
| Hot Plug SFF SAS SSD | 261.12 TB | 34 x 7.68 TB |
| Hot Plug SFF SATA SSD | 261.12 TB | 34 x 7.68 TB |
| Hot Plug SFF NVMe PCIe U.3 SSD | 522.24 TB | 34 x 15.36 TB |
| Hot Plug EDSFF E3.S 1T NVMe SSD | 552.96 TB | 36 x 15.36 TB |

## Interfaces

| | |
|---|---|
| **Serial** | 1 optional port - rear |
| **Video Port** | 1 standard VGA Port - rear |
| **Network Ports** | None. Choice of OCP or stand-up card, supporting a wide arrange of NIC adapters<br>BTO models will come pre-selected with a primary networking card. |
| **HPE iLO Remote Mgmt Port** | 1 1Gb Dedicated - rear |
| **Front iLO Service Port** | 1 standard |
| **USB 3.2 Gen1** | 5 standard on all models: 1 front, 2 rear, 2 internal |

## Graphics

### Integrated Video Standard

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

## HPE iLO 6 on system management memory

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

# Standard Features

## 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 Platinum Hot Plug Low Halogen Power Supply Kit
  **Notes:** Available in 94% Power Efficiency.
- HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit
  **Notes:** Available in 94% Power Efficiency. 200-240VAC power input only.
- HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit

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

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**.

## Operating Systems and Virtualization Software Support for HPE Servers

HPE servers are designed for seamless integration with partner Operating Systems and Virtualization Software. By collaborating closely with our partners, we ensure that their products are optimized, certified, and fully supported within your HPE server environment.
Access the certified and supported servers for each of the OS and Virtualization software: **HPE Servers Support & Certification Matrices**
**Notes:** Minimum required version includes all future updates of the indicated release unless a maximum is listed in the Notes

## Industry Standard Compliance

- ACPI 6.1 Compliant
- PCIe 5.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- PXE Support
- VGA/Display Port
- USB 3.2 Gen1 Compliant
- USB 2.0 Compliant
- Energy Star 4.0
- SMBIOS 3.1
- UEFI 2.7
- UEFI Class 3
- Redfish API
- IPMI 2.0
- Secure Digital 2.0
- Advanced Encryption Standard (AES)
- Triple Data Encryption Standard (3DES)
- SNMP v3

## Standard Features

- TLS 1.2
- DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)
- Active Directory v1.0
- ASHRAE A3/A4

  **Notes:** For additional technical thermal details regarding ambient temperatures, humidity, and features support please visit: **Extended Ambient Temperature Guidelines for HPE Gen11 servers**
- UEFI (Unified Extensible Firmware Interface Forum)
- APML 1.0

## Embedded Management

### HPE Integrated Lights-Out (HPE iLO)

Monitor your servers for ongoing management, service alerting, reporting, and remote management with HPE iLO.

Learn more at **http://www.hpe.com/info/iLO**.

### UEFI

Configure and boot your servers securely with industry-standard Unified Extensible Firmware Interface (UEFI).

### Intelligent Provisioning

Hassle-free server and OS provisioning for 1 or more servers with Intelligent Provisioning.
Learn more at **https://support.hpe.com/hpesc/public/docDisplay?docId=c04465280&docLocale=en_US**

### iLO RESTful API

iLO RESTful API is DMTF Redfish API implementation 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**.

### OpenBMC Support

OpenBMC Capable through iLO6 Transfer of Ownership Process.
Learn more at **OpenBMC enablement on HPE ProLiant servers | HPE**

## HPE Server UEFI

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secure configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen11 servers have a UEFI Class 3 implementation.

**UEFI enables numerous new capabilities specific to HPE ProLiant servers such as**

- Secure Boot and Secure Start enable enhanced security
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.1 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
- Embedded TPM Support

**UEFI Boot Mode only**

- NVMe Boot Support
- iSCSI Software Initiator Support.
- HTTP/HTTPs Boot support as a PXE alternative.
- Boot support for option cards that only support a UEFI option ROM

## Standard Features

**Notes:**

- For UEFI Boot Mode, boot environment and OS image installation should be configured properly to support UEFI
- TPM is embedded on DL345 Gen11 mainboard and does not require additional option kit selection to enable this function.

### 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**.

#### Smart Update

Keep your servers up to date with the HPE Smart Update solution by using Smart Update Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLiant (SPP). Learn more at
**https://www.hpe.com/us/en/servers/smart-update.html**

#### iLO Amplifier Pack

Designed for large enterprise and service provider environments with hundreds of HPE servers, the iLO Amplifier Pack is a free, downloadable open virtual application (OVA) that delivers the power to discover, inventory, and update Gen8, Gen9, Gen10, and Gen10 Plus HPE servers. Use 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**

#### HPE Compute Ops Management

Transform compute lifecycle management with a cloud experience that delivers greater simplicity, agility, and speed across your entire server environment, wherever it lives. This software-as-a-service tool provides a dashboard with global visibility and intuitive management of server health, security and compliance status to help you easily identify areas that need immediate attention. Users can update tens to thousands of servers faster through intelligent delta-based firmware downloads and on-demand HPE iLO firmware updates.

HPE Compute Ops Management is cloud-native software that is continually updated with new services, features, patches, and firmware packs. The management application resides in HPE GreenLake cloud (access via **https://common.cloud.hpe.com**) and leverages the HPE GreenLake architecture, security, and unified operations.
For a complete list of software as-a-service subscription SKUs and more information, visit the HPE Compute Ops Management QuickSpecs: **https://www.hpe.com/psnow/doc/a50004263enw**

For information on supported HPE servers, the complete list can be found here:
**https://www.hpe.com/info/com-supported-servers**

# Standard Features

## 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/User data
- TPM (Trusted Platform Module) 2.0 option
  **Notes:** TPM is embedded on DL345 Gen11 mainboard and does not require additional option kit selection to enable this function.
- Bezel Locking Kit option
- Chassis Intrusion detection option

## Server Management

### HPE iLO Advanced

HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE ProLiant servers. The license includes the fully integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality.

### HPE OneView Advanced

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

## 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 are available for three years from the date of purchase. Support for software and initial setup is available for 90 days from the date of purchase. Enhancements to warranty services are available through HPE Services operational services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

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

## 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 the enhanced airflow and thermal management, flexible cable management, and a 10-year Warranty to support higher-density computing.

## Standard Features

HPE G2 PDUs offer reliable power in flexible form factors that operate at temperatures up to 60°C, include color-coded outlets and load segments, and a low-profile design for optimal access to the rack and support for dense rack environments.

HPE Uninterruptible Power Systems are cost-effective power protection for any type of 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 (OCS/SCE)

OCS/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 it in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. **https://h22174.www2.hpe.com/SimplifiedConfig/Welcome**

## Service and Support

### HPE Services

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

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

### Consulting Services

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

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

### HPE Managed Services

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

**HPE Managed Services | HPE**

### Operational services

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

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

### HPE Complete Care Service

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

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

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

### HPE Tech Care Service

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

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

# Service and Support

## HPE Lifecycle Services

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

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

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

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

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## Other Related Services from HPE Services:

### HPE Education Services

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

### Defective Media Retention

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

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

### Parts and Materials

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

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

### How to Purchase Services

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

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

## Service and Support

### AI Powered and Digitally Enabled Support Experience

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

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

### Consume IT On Your Terms

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

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

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

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

# Pre-configured Models

## HPE Smart Choice purchase program

The HPE Smart Choice purchase program features popular fully configured products that can be quoted in minutes and shipped quickly through HPE Authorized Partners. Products are configured and tested in an HPE factory and stocked at HPE Authorized Distributors and Partners. The products arrive in a single box, making onsite integration easier and more efficient for partners and customers. Additionally, there are aggressively priced HPE Tech Care Services available only through the HPE Smart Choice program when you purchase an HPE Smart Choice product.

For HPE Smart Choice configuration and product details, please visit the Smart Choice Supplemental QuickSpecs:
**https://www.hpe.com/psnow/doc/a50009219enw**

## Pre-Configured models ship with the configurations below.

- 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 not be shipped inside the server.
- Network Choice models do not include embedded LOM.

| **Base Models** | | |
|---|---|---|
| **SKU Number** | P66777-B21<br>P66777-291 | P66778-B21<br>P66778-291 |
| **Model Name** | HPE ProLiant DL345 Gen11 9124 3.0GHz 16-core 1P 32GB-DR MR408i-o 8SFF 800W PS Server | HPE ProLiant DL345 Gen11 9124 3.0GHz 16-core 1P 32GB-DR MR408i-o 8LFF 800W PS Server |
| **Chassis** | HPE ProLiant DL345 Gen11 8SFF Configure-to-order Server | HPE ProLiant DL345 Gen11 8LFF Configure-to-order Server |
| **Processor** | 9124 (16 core, 3.0 GHz, 200W) | |
| **Number of Processors** | One with standard heatsink | |
| **Memory** | 32 GB (1x32 GB, 4800 MT/s) | |
| **Network Controller** | Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE | |
| **Storage Controller** | HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller | |
| **Included Hard Drives** | None ship standard, 8 SFF supported | None ship standard, 8 LFF supported |
| **Internal Storage** | 8 SFF Chassis (upgradeable to 16 SFF front) | 8 LFF Chassis (upgradeable to 12 LFF front) |
| **Optical Drive** | Optional, None ship standard | |
| **Expansion Slots** | 2 PCIe x16 Riser (Primary slot 3 and Secondary slot 6) | |
| **Power Supply** | 1x HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit | |
| **Fans** | 6x Standard Fans | |
| **Management** | Default: HPE iLO Standard with Intelligent Provisioning, HPE OneView Standard (requires download) | |
| **Rail Kit** | HPE ProLiant DL3XX Gen11 Easy Install Rail 2 Kit | |
| **Security** | TPM (Trusted Platform Module) | |

## Pre-configured Models

| | |
|---|---|
| **Energy Star** | 4.0 certified |
| **Form Factor** | 2U Rack |
| **Warranty** | Server warranty includes 3-year parts, 3-year labor, 3-year onsite support with next business day response. |

## Pre-configured Models

| Base Models | | |
|---|---|---|
| **SKU Number** | P58792-421 | P58793-421 |
| **Model Name** | HPE ProLiant DL345 Gen11 9124 3.0GHz 16-core 1P 32GB-R MR408i-o 8SFF 1000W PS EU Server | HPE ProLiant DL345 Gen11 9124 3.0GHz 16-core 1P 32GB-R MR408i-o 8LFF 1000W PS EU Server |
| **Chassis** | HPE ProLiant DL345 Gen11 8SFF Configure-to-order Server | HPE ProLiant DL345 Gen11 8LFF Configure-to-order Server |
| **Processor** | 9124 (16 core, 3.0 GHz, 200W) | |
| **Number of Processors** | One with standard heatsink | |
| **Memory** | 32 GB (1x32 GB, 4800 MT/s) | |
| **Network Controller** | Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE | |
| **Storage Controller** | HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller | |
| **Included Hard Drives** | None ship standard, 8 SFF supported | None ship standard, 8 LFF supported |
| **Internal Storage** | 8 SFF Chassis (upgradeable to 16 SFF front) | 8 LFF Chassis (upgradeable to 12 LFF front) |
| **Optical Drive** | Optional, None ship standard | |
| **Expansion Slots** | 2 PCIe x16 Riser (Primary slot 3 and Secondary slot 6) | |
| **Power Supply** | 1x HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit | |
| **Fans** | 6x Standard Fans | |
| **Management** | Default: HPE iLO Standard with Intelligent Provisioning, HPE OneView Standard (requires download) | |
| **Rail Kit** | HPE ProLiant DL3XX Gen11 Easy Install Rail 2 Kit | |
| **Security** | TPM (Trusted Platform Module) | |
| **Energy Star** | 4.0 certified | |
| **Form Factor** | 2U Rack | |
| **Warranty** | Server warranty includes 3-year parts, 3-year labor, 3-year onsite support with next business day response. | |

## Pre-configured Models

### Country Code Key

- -B21 = Worldwide
- -291 = Japan
- -421 = Europe, the Middle East and Africa

## 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 providing a more predictable and faster experience for these options. Mainstream SKUs enjoy higher safety stock levels and have high 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 an 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.

### European Union Erp Lot 9 Regulation

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

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

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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 installable 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.

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## Configuration Information

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

| CTO Server | HPE ProLiant DL345 Gen11 8LFF Configure-to-order Server | HPE ProLiant DL345 Gen11 8SFF Configure-to-order Server | HPE ProLiant DL345 Gen11 24SFF Configure-to-order Server | HPE ProLiant DL345 Gen11 EDFF Configure-to-order Server | HPE ProLiant DL345 Gen11 GPU Configure-to-order Server |
|---|---|---|---|---|---|
| **SKU Number** | P54204-B21 | P54205-B21 | P54206-B21 | P54207-B21 | P54208-B21 |
| **TAA SKU** | P54204-B21#GTA | P54205-B21#GTA | P54206-B21#GTA | P54207-B21#GTA | P54208-B21#GTA |
| **HPE Trusted Supply Chain** | P36394-B21 – Optional | | | | |
| **Processor** | Not included as standard | | | | |
| **DIMM Slots** | 12-DIMM slots | | | | |
| **Storage Controller** | Choice of HPE Smart Array controllers | | | | |
| **PCIe** | 2 PCIe x16 Riser (Primary slot 3 and Secondary slot 6) | | | | |
| **OCP3.0 slot** | 2 PCIe 5.0 x8 | | | | |
| **Drive Cage – included** | 8 LFF | Not included | 3 8SFF x1 | Not included | Not included |
| **Network Controller** | Choice of either OCP 3.0 or select stand-up network adapters for primary networking selection<br>plus additional/optional stand-up network adapters<br>**Notes:** No embedded networking | | | | |
| **Cooling** | Choice of Standard or Performance Heat Sink<br>Choice of Standard or Performance Fan Kit | | | | |
| **Management** | Default: HPE iLO Standard with Intelligent Provisioning, HPE OneView Standard (requires download), HPE Compute Ops Management (subscription included) | | | | |
| **Video** | 1 VGA rear | | | | |
| **USB** | Front: 1 USB 3.2 Gen1 + iLO service port<br>Rear: 2 USB 3.2 Gen1<br>Internal: 2 USB 3.2 Gen1 | | | | |
| **Security** | TPM2.0 (Trusted Platform Module) embedded | | | | |
| **Rail Kit** | Optional Easy Install rails and CMA | | | | |
| **Form Factor** | 2U Rack | | | | |
| **Warranty** | 3-year parts, 3-year labor, 3-year onsite support with next business day response. | | | | |

**Notes:**

- HPE offers multiple Trade Agreement Act (TAA) compliant configurations to meet the needs of US Federal Government customers. These products are either manufactured or substantially transformed in a designated country. TAA compliance is only provided when HPE options are included as part of factory integrated orders (CTO).
- TAA compliant configuration requires TAA versions of the CTO Server SKUs.
- HPE Trusted Supply Chain (P36394-B21) is an optional security upgrade intended for agencies and regulated industries needing enhanced security and compliance needs. Applying this option to a DL345 Gen11 CTO server ensures it is built in the USA in a secured facility by vetted HPE personnel assigned to the manufacturing processes. A multitude of checkpoints/inspections for malicious microcode and counterfeit parts are performed throughout the server build, and additional safeguards are put in place against cyber-exploits throughout the server lifecycle. See “HPE Security” section within this document for more detail and learn more at **http://www.hpe.com/security**
- All CTO servers are Energy Star 4.0 compliant.

## Configuration Information

| CTO Server | 8 LFF CTO server | 8 SFF CTO server | 24 SFF CTO server | EDSFF CTO server | GPU CTO server |
|---|---|---|---|---|---|
| **Included Drive Cage** | 8 LFF (2x 4LFF Drive cages) | Not included | 3x 8 SFF U.3 x1 Drive Cage | Not included | Not included |
| **Universal Media Bay** | 1 Optional | 1 Optional | Not available | Not available | Not available |
| **ODD** | 1 Optional | 1 Optional | Not available | Not available | Not available |
| **8 SFF SAS/SATA/NVMe (Front)** | Not available | 3 Optional | Not available | Not available | 1 Optional |
| **8 SFF SAS/SATA/NVMe (Mid Tray)** | Not available | 1 Optional | 1 Optional | Not available | Not available |
| **2 SFF SAS/SATA/NVMe (Front)** | 1 Optional | 1 Optional | Not available | Not available | Not available |
| **2 SFF SAS/SATA/NVMe (Rear)** | 1 Optional | 1 Optional | 1 Optional | Not available | Not available |
| **4 LFF SAS/SATA** | 1 Optional | Not available | Not available | Not available | Not available |
| **4 LFF Mid Tray** | 1 Optional | Not available | Not available | Not available | Not available |
| **4 LFF Rear** | 1 Optional | Not available | Not available | Not available | Not available |
| **12 EDSFF NVMe (Front)** | Not available | Not available | Not available | 3 Optional | 1 Optional |

### Step 2: Choose Core Options

- Choice of 1 Processor model and Heat Sink Kit
  - Requires necessary Heat Sink for different processor wattage.
- Choice of DDR5 memory options.
  - Requires necessary Fan Kits for different memory configurations and subjects to the recommended system ambient temperature.
- Choice of Drive cage, Storage Controllers, and Storage Controller Cables
- Choice of SSD, HDD, and Optical Drives
- Choice of OS Boot Devices
- Choice of Riser Cards
- Choice of Networking options
  - PCIe standup or OCP 3.0. Requires necessary Fan Kits and subjects to the recommended system ambient temperature.
- Choice of Accelerator options
- Choice of Power and Cooling options
- Choice of Security options
- Choice of Software as a Service Management - HPE Compute Ops Management and HPE OneView

### Step 3: Choose Additional Options

- Choice of Embedded Management
- Choice of Rail Kits
- Choice of Rack options
- Choice of Support Services

# Core Options

## Choice of Core Options

## Processor

**Please select ONE 4th or 5th Generation AMD EPYC Processor**

**5th Generation AMD EPYC Processor**

| | |
|---|---|
| AMD EPYC 9845 2.1GHz 160-core 390W Processor for HPE | P72646-B21 |
| AMD EPYC 9825 2.2GHz 144-core 390W Processor for HPE | P72647-B21 |
| AMD EPYC 9745 2.4GHz 128-core 400W Processor for HPE | P72648-B21 |
| AMD EPYC 9645 2.3GHz 96-core 320W Processor for HPE | P72649-B21 |
| AMD EPYC 9655P 2.6GHz 96-core 400W Processor for HPE | P72662-B21 |
| AMD EPYC 9565 3.15GHz 72-core 400W Processor for HPE | P72651-B21 |
| AMD EPYC 9535 2.4GHz 64-core 300W Processor for HPE | P72652-B21 |
| AMD EPYC 9575F 3.3GHz 64-core 400W Processor for HPE | P72758-B21 |
| AMD EPYC 9555P 3.2GHz 64-core 360W Processor for HPE | P72663-B21 |
| AMD EPYC 9475F 3.65GHz 48-core 400W Processor for HPE | P72666-B21 |
| AMD EPYC 9455P 3.15GHz 48-core 300W Processor for HPE | P72664-B21 |
| AMD EPYC 9365 3.4GHz 36-core 300W Processor for HPE | P72655-B21 |
| AMD EPYC 9335 3.0GHz 32-core 210W Processor for HPE | P72656-B21 |
| AMD EPYC 9375F 3.80GHz 32-core 320W Processor for HPE | P72667-B21 |
| AMD EPYC 9355P 3.55GHz 32-core 280W Processor for HPE | P72665-B21 |
| AMD EPYC 9255 3.20GHz 24-core 200W Processor for HPE | P72658-B21 |
| AMD EPYC 9275F 4.1GHz 24-core 320W Processor for HPE | P72668-B21 |
| AMD EPYC 9135 3.65GHz 16-core 200W Processor for HPE | P72660-B21 |
| AMD EPYC 9115 2.6GHz 16-core 125W Processor for HPE | P72659-B21 |
| AMD EPYC 9175F 4.2GHz 16-core 320W Processor for HPE | P72669-B21 |
| AMD EPYC 9015 3.6GHz 8-core 125W Processor for HPE | P72661-B21 |

**4th Generation AMD EPYC Processor**

| | |
|---|---|
| AMD EPYC 9754 2.25GHz 128-core 360W Processor for HPE | P60463-B21 |
| AMD EPYC 9734 2.2GHz 112-core 340W Processor for HPE | P60465-B21 |
| AMD EPYC 9654P 2.4GHz 96-core 360W Processor for HPE | P53697-B21 |
| AMD EPYC 9684X 2.55GHz 96-core 400W Processor for HPE | P63493-B21 |
| AMD EPYC 9634 2.25GHz 84-core 290W Processor for HPE | P53705-B21 |
| AMD EPYC 9534 2.45GHz 64-core 280W Processor for HPE | P53699-B21 |
| AMD EPYC 9554P 3.1GHz 64-core 360W Processor for HPE | P53703-B21 |
| AMD EPYC 9454P 2.75GHz 48-core 290W Processor for HPE | P53709-B21 |
| AMD EPYC 9474F 3.6GHz 48-core 360W Processor for HPE | P53706-B21 |
| AMD EPYC 9334 2.7GHz 32-core 210W Processor for HPE | P53712-B21 |
| AMD EPYC 9354P 3.25GHz 32-core 280W Processor for HPE | P53704-B21 |
| AMD EPYC 9374F 3.85GHz 32-core 320W Processor for HPE | P53710-B21 |
| AMD EPYC 9384X 3.1GHz 32-core 320W Processor for HPE | P63492-B21 |
| AMD EPYC 9254 2.9GHz 24-core 200W Processor for HPE | P53707-B21 |
| AMD EPYC 9224 2.5GHz 24-core 200W Processor for HPE | P58540-B21 |
| AMD EPYC 9274F 4.05GHz 24-core 320W Processor for HPE | P53711-B21 |
| AMD EPYC 9124 3.0GHz 16-core 200W Processor for HPE | P53702-B21 |
| AMD EPYC 9174F 4.1GHz 16-core 320W Processor for HPE | P53698-B21 |
| AMD EPYC 9184X 3.55GHz 16-core 320W Processor for HPE | P63491-B21 |

**Notes:**

– Processors up to 240W require Standard Heat Sink (P58458-B21) and Standard Fan Kit (P58464-B21).

## Core Options

- Processors more than or equal to 260W require Performance Heat Sink (P58459-B21) and Performance Fan Kit (P58465-B21).
- If processor less than or equal to 300W is selected along 4LFF or 8SFF mid tray drive cage, then 1U Performance Heat Sink (P58457-B21) and Performance Fan Kits (P58465-B21) must be selected.

## Memory

Please select one or more memory from below.

For new DDR5 memory, please go to **HPE DDR5 Smart Memory QuickSpecs**

For details on the Memory Population Rules and Guidelines with AMD EPYC 9004 series processors, please go to: **https://www.hpe.com/psnow/doc/a50007481enw**

**Notes:**

- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 6, 8, 10, or 12.
- The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model
- The maximum speed capability of the memory system is governed by the combination of the CPU and any other DIMMs installed in the server. If higher speed DIMMs are installed with a CPU that only supports a lower memory speed, the DIMMs will only run at the (lower) memory speed supported by the processor. Likewise, if memory DIMMs are mixed with slower DIMMs within a server, all DIMMs will run at the slower memory speed. For further information please refer to the Memory Population Rules for your specific server.

**Registered DIMMs (RDIMMs)**

**DDR5-6400 (applies to the 5th Generation AMD® EPYC® Processors)**

| | |
|---|---|
| HPE 16GB (1x16GB) Single Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit | P64984-B21 |
| HPE 32GB (1x32GB) Dual Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit | P64985-B21 |
| HPE 64GB (1x64GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit | P64986-B21 |
| HPE 96GB (1x96GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit | P64987-B21 |
| HPE 128GB (1x128GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit | P64988-B21 |
| HPE 256GB (1x256GB) Quad Rank x4 DDR5-6400 CAS-60-52-52 EC8 Registered 3DS Smart Memory Kit | P73446-B21 |

**DDR5-4800 (applies to the 4th Generation AMD® EPYC® Processors)**

| | |
|---|---|
| HPE 16GB (1x16GB) Single Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit | P50309-B21 |
| HPE 32GB (1x32GB) Dual Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit | P50311-B21 |
| HPE 64GB (1x64GB) Dual Rank x4 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit | P50312-B21 |
| HPE 96GB (1x96GB) Dual Rank x4 DDR5-4800 CAS-46-45-45 EC8 Registered Smart Memory Kit | P66676-B21 |
| HPE 128GB (1x128GB) Quad Rank x4 DDR5-4800 CAS-46-39-39 EC8 Registered 3DS Smart Memory Kit | P50313-B21 |
| HPE 128GB (1x128GB) Dual Rank x4 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit | P69982-B21 |
| HPE 256GB (1x256GB) Octal Rank x4 DDR5-4800 CAS-46-39-39 EC8 Registered 3DS Smart Memory Kit | P50314-B21 |

**Notes:**

- Mixing of x4 memory and x8 memory is not supported.
- Mixing of 3DS memory and non-3DS memory is not supported.
- If 256GB memory is selected then "4LFF Midtray" OR "8SFF x1 Midtray" OR "8SFF x4 Midtray" cannot be selected.
- Supported cooling configuration of 256GB memory:

| Front Drive Bay | Mid Tray | Fan Kits |
|---|---|---|
| 12 LFF SAS/SATA | None | Perf Fan |
| 16 SFF SAS/SATA/NVMe + media bay | None | Perf Fan |
| 24 SFF SAS/SATA/NVMe | None | Perf Fan |
| 20/24 EDSFF NVMe | None | Perf Fan |
| 36 EDSFF NVMe | None | Perf Fan |
| 24 SFF SAS/SATA/NVMe | 8SFF | Not Support |
| 12 LFF SAS/SATA | 4LFF | Not Support |

# Core Options

## Storage

### Drive cages

**Notes:**

- Mixing of 8SFF x4 backplane kit and 8SFF x1 backplane kit is not supported.
- Maximum one (1) 2SFF x4 U.3 BC Front/Tertiary Stackable Drive Cage Kit (P57110-B21) OR 2SFF x4 U.3 BC Side-by-Side Drive Cage Kit (P57111-B21) can be selected in the order.
- The type of drives that each drive cage supports is listed in the below table.

| PN | Description | SATA | SAS | NVMe U.3 Static SSD | NVMe U.3 SSD | NVMe U.2 SSD |
|---|---|---|---|---|---|---|
| P55082-B21 | HPE DL3x5 Gen11 8SFF TM U.3 x1 BC BP Kit | X | X | X | X | Not Support |
| P55083-B21 | HPE DL3x5 Gen11 8SFF TM U.3 x4 BC BP Kit | X | X | X | X | Not Support |
| P57108-B21 | HPE DL345 Gen11 8SFF x1 TM BC Mid Kit | X | X | X | X | Not Support |
| P57109-B21 | HPE DL345 Gen11 8SFF x4 TM BC Mid Kit | X | X | X | X | Not Support |
| P57110-B21 | HPE DL345 Gen11 2SFF x4 TM BC Kit | X | X | X | X | Not Support |
| P57111-B21 | HPE DL345 Gen11 2SFF x4 TM BC Box1 Kit | X | X | X | X | Not Support |
| P57112-B21 | HPE DL345 Gen11 4LFF x1 SAS/SATA Mid Kit | X | X | Not Support | Not Support | Not Support |
| P57113-B21 | HPE DL345 Gen11 4LFF x1 SAS/SATA FIO Kit | X | X | Not Support | Not Support | Not Support |
| P57114-B21 | HPE DL345 Gen11 4LFF x1 SAS/SATA BP Kit | X | X | Not Support | Not Support | Not Support |
| P57867-B21 | HPE DL3x5 Gen11 GPU 8SFF U.3 Kit | X | X | X | X | Not Support |

HPE ProLiant DL385 Gen11 8SFF Tri-Mode U.3 x1 BC Backplane Kit P55082-B21

**Notes:**

- Supports 8 SFF SAS/SATA/ NVMe (U.3) Basic Carrier (BC) Drives at the front.
- This drive cage can only be selected with the 8SFF CTO server (P54205-B21).
- Max = 2.
- Please select the 24SFF CTO server (P54206-B21) for three (3) 8SFF x1 U.3 drive cage configuration.
- If this Backplane kit is selected then one of the following cable options is supported:
  - With PCIe controllers: 8SFF x1 Tri-Mode Box2/3 Primary Cable Kit (P57123-B21).
  - Onboard SATA: 8SFF x1 NVMe/SATA Direct Attach Box2/3 Cable Kit (P57121-B21).

HPE ProLiant DL385 Gen11 8SFF Tri-Mode U.3 x4 BC Backplane Kit P55083-B21

**Notes:**

- Supports 8 SFF SAS/SATA/ NVMe (U.3) Basic Carrier (BC) Drives at the front.
- This drive cage can only be selected with the 8SFF CTO server (P54205-B21).
- Max = 3.
- If one(1) of this backplane is selected then one of the following cable options is supported:
  - With PCIe controllers: 8SFF x4 Tri-Mode Box3 Primary Cable Kit (P57127-B21).
  - NVMe Direct attach (x4 bandwidth): 8SFF x4 NVMe Box3 Direct Attach Cable Kit (P57124-B21) and cannot select 4PCIE Enablement Kit (P57116-B21).
- if three (3) of this backplane is selected then one of the following cable options is supported:
  - NVMe Direct Attach (x2 bandwidth): 24SFF x2 NVMe Box1-3 Direct Attach Cable Kit (P57126-B21).
  - NVMe Direct Attach (x4 bandwidth): Requires two (2) OCP retimers and Direct Attach cable kit (P57125-B21)
  - With PCIe controllers (x2 bandwidth): 24SFF x2 Tri-Mode Box1-3 Cable Kit (P57129-B21).
  - With PCIe controllers (x4 bandwidth): 24SFF x4 Tri-Mode Box1-3 Primary/Secondary Cable Kit (P57128-B21).

HPE ProLiant DL345 Gen11 24SFF x4 NVMe FIO Bundle Kit P59256-B21

**Notes:**

- Supports 24SFF NVMe x4 direct attach, including 3 PCs 8SFF x4 U.3 backplane (P55083-B21), a Direct Attach Cable Kit (P57124-B21), and 2 PCs OCP retimer (P65876-B21)

## Core Options

- This bundle kit can only be selected with the 8SFF CTO server (P54205-B21).
- Max = 1.
- This is a factory integrated only option.

HPE ProLiant DL345 Gen11 2SFF x4 Tri-Mode U.3 BC Front/Tertiary Stackable Drive Cage Kit P57110-B21

**Notes:**

- Supports 2 SFF of SAS/ SATA/ NVMe (U.3) Basic Carrier (BC) Drives at the front or rear.
- Max = 1.
- If this drive cage is selected then 2SFF x4 U.3 BC Side-by-Side Drive Cage Kit (P57111-B21) and 4LFF x1 Rear Bay Backplane kit (P57113-B21) must not be selected.
- If the SFF media bay (P57857-B21) is selected then this 2SFF drive cage will be installed at the rear.
- Requires Performance Fan Kit (P58465-B21) if this 2SFF drive cage is at the rear.

HPE ProLiant DL345 Gen11 2SFF x4 Tri-Mode U.3 BC Side-by-Side Box 1 Drive Cage Kit P57111-B21

**Notes:**

- Supports 2 SFF SAS/SATA/ NVMe (U.3) Basic Carrier (BC) Drives at the front.
- This drive cage can only be selected with the 8LFF CTO server (P54204-B21).
- Max = 1.
- If this drive cage is selected then 2SFF x4 U.3 BC Front/Tertiary Stackable Drive Cage Kit (P57110-B21) and 4LFF x1 Backplane kit (P57114-B21) must not be selected.

HPE ProLiant DL345 Gen11 4LFF x1 SAS/SATA 12G Front Backplane Kit P57114-B21

**Notes:**

- Supports 4 LFF SAS/SATA Basic Carrier (BC) Drives at the front.
- This drive cage can only be selected with the 8LFF CTO server (P54204-B21).
- Max = 1.
- If this drive cage is selected then 2SFF x4 U.3 BC Side-by-Side Drive Cage Kit (P57111-B21) must not be selected.

HPE ProLiant DL345 Gen11 4LFF x1 SAS/SATA Mid Tray Drive Cage Kit P57112-B21

**Notes:**

- Supports 4 LFF SAS/SATA Basic Carrier (BC) Drives at the Mid Tray.
- This drive cage can only be selected with the 8LFF CTO server (P54204-B21).
- Max = 1.
- Requires processor less than or equal to 300W.
- Requires Performance Fan Kit (P58465-B21) and 1U Performance Heat Sink (P58457-B21).

HPE ProLiant DL345 Gen11 4LFF x1 SAS/SATA Rear FIO Drive Cage Kit P57113-B21

**Notes:**

- Supports 4 LFF SAS/SATA Basic Carrier (BC) Drives at the rear.
- This drive cage can only be selected with the 8LFF CTO server (P54204-B21).
- Max = 1.
- Requires Performance Fan Kit (P58465-B21).
- Requires 12LFF drive bay (P57114-B21).
- Maximum one (1) of 2SFF x4 U.3 BC Front/Tertiary Stackable Drive Cage Kit (P57110-B21) or 4LFF x1 Rear Bay Backplane kit (P57113-B21) is allowed.
- This is a factory integrated only option.

HPE ProLiant DL345 Gen11 36EDSFF x2 NVMe Box 1-3 Direct Attach Drive Cage Kit P55090-B21

**Notes:**

- Supports 36 EDSFF NVMe Drives in Box 1-3 at x2 speed
- This drive cage can only be selected with the EDSFF CTO server (P54207-B21).
- Max = 1.
- This is a factory integrated only option.
- No additional cable selection required.

## Core Options

HPE ProLiant DL345 Gen11 20EDSFF x4 Box 2-3 FIO Drive Cage Kit P64383-B21

**Notes:**

- Supports 20 EDSFF NVMe Drives in Box 2-3 at x4 speed
- This drive cage can only be selected with the EDSFF CTO server (P54207-B21).
- Max = 1.
- This is a factory integrated only option.
- Bay #9-12 of box 2 is blocked from drive installation due to PCIe lane limitation.
- No additional cable selection required.

HPE ProLiant DL345 Gen11 24EDSFF x4 Box 2-3 Tri-Mode Drive Cage Kit P70438-B21

**Notes:**

- Supports 24 EDSFF NVMe Drives in Box 2-3
- This drive cage can only be selected with the EDSFF CTO server (P54207-B21).
- Max = 1.
- Requires 3pcs 32 lanes controllers to support 24 drives at x4 speed.

HPE ProLiant DL3X5 Gen11 GPU 8SFF U.3 FIO Backplane Kit P57867-B21

**Notes:**

- Supports 8 SFF NVMe Basic Carrier (BC).
- This drive cage can only be selected with the GPU CTO server (P54208-B21).
- Max = 1.
- If this backplane is selected then one of the following cable options is supported:
  - With PCIe controllers: 8SFF x4 GPU Tri-Mode PCIe Cable Kit (P70406-B21).
  - With OCP controllers: 8SFF x2 GPU Tri-Mode OCP Cable Kit (P69868-B21)
  - NVMe Direct attach (x4 bandwidth): No additional cable selection required.

HPE ProLiant DL3X5 Gen11 GPU EDSFF FIO Backplane Kit P62355-B21

**Notes:**

- Supports 12 EDSFF NVMe Drives Direct Attach.
- This drive cage can only be selected with the GPU CTO server (P54208-B21).
- Max = 1.
- Requires signal cable kit (P64381-B21) in the order

HPE ProLiant DL345 Gen11 OCP3 PCIe Gen5 FIO Retimer Card Kit P65876-B21

**Notes:**

- Supports 24 SFF NVMe Drives Direct Attach at x4 bandwidth.
- This option can only be selected with the 8SFF CTO server (P54205-B21).
- Max = 2.
- This is a factory integrated only option.

HPE ProLiant DL3X5 Gen11 SFF Universal Media Bay Kit P57857-B21

**Notes:**

- This Universal Media Bay kit includes a cage, 2 USBs, and 1 DP port, and supports 1 Optical Drive.
- This media bay can only be selected with the 8SFF CTO server (P54205-B21).
- Max = 1.
- If the 8SFF CTO server (P54205-B21) and Optical Drives (701498-B21, 726536-B21, and 726537-B21) are selected then this Universal Media Bay Kit and ODD cable kit (P59602-B21) must be selected.
- This Media Bay kit cannot be selected with the preconfigured models (P58792-B21, P58793-B21).

# Core Options

## Storage Controller

The Gen11 storage controller portfolio has been updated to include new technology like OCP3.0 as well as PCIe adapters. For a more detailed breakout of the available Gen11 controllers visit the storage controllers QuickSpecs site:

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

**Notes:**
- When selecting SR RAID controllers for external storage (E208e-p, 804398-B21) and MR RAID controllers for internal storage, please be aware these two products use different RAID configuration tools.
- Mixing of MR (MegaRAID) series controllers and SR (SmartRAID) series controllers is not allowed.

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).
- Controller Based Encryption (CBE) with a remote key management server is not supported. Local key management(LKM) is supported.
- One Button Secure Erase (OBSE) used to sanitize drives and factory reset the controller is not supported.

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

**Notes:** This controller supports up to 16 SAS/SATA/NVMe Drives.

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

**Notes:**
- This controller supports up to 8 SAS/SATA/NVMe Drives.
- Requires 96W Smart Stg Li-ion Batt 145mm Kit (P01366-B21) or Smart Hybrid Capacitor w/ 145mm cable (P02377-B21).

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

**Notes:**
- This controller supports up to 16 SAS/SATA/NVMe Drives.
- Requires 96W Smart Stg Li-ion Batt 145mm Kit (P01366-B21) or Smart Hybrid Capacitor w/ 145mm cable (P02377-B21).

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.

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.
- Requires 96W Smart Stg Li-ion Batt 145mm Kit (P01366-B21) or Smart Hybrid Capacitor w/ 145mm cable (P02377-B21).

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.
- Requires 96W Smart Stg Li-ion Batt 145mm Kit (P01366-B21) or Smart Hybrid Capacitor w/ 145mm cable (P02377-B21).

# Core Options

## Battery and Hybrid Capacitor

HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit P02377-B21
HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit P01366-B21
HPE ProLiant DL325 Gen11 Megacell Extension Cable Kit P56659-B21

**Notes:**

- If HPE 96W Smart Stg Li-ion Batt 145mm Kit is selected then HPE Smart Hybrid Capacitor 145mm kit cannot be selected and vice versa.
- If M.2 enablement Kit and "96W Smart Stg Li-ion Batt 145mm Kit OR Smart Hybrid Capacitor w/ 145mm Kit" are selected then Megacell Ext cable Kit must be selected.

## Storage Cables

HPE ProLiant DL345 Gen11 8SFF x1 Box 2/3 Direct Attach Cable Kit P57121-B21
**Notes:** supports 8 SFF U.3 NVMe/SATA in box 2/3 Direct Attach with x1 bandwidth.

HPE ProLiant DL345 Gen11 8SFF x4 NVMe Box 3 Direct Attach Cable Kit P57124-B21
**Notes:** supports 8 SFF U.3 NVMe in box3 Direct Attach with up to x4 bandwidth.

HPE ProLiant DL345 Gen11 24SFF x2 NVMe Box 1-3 Direct Attach Cable Kit P57126-B21
**Notes:** supports 24 SFF U.3 NVMe in box 1-3 Direct Attach with x2 bandwidth.

HPE ProLiant DL345 Gen11 24SFF x4 NVMe Box 1-3 Direct Attach Cable Kit P57125-B21
**Notes:** supports 24 SFF U.3 NVMe in box 1-3 Direct Attach with x4 bandwidth.

HPE ProLiant DL345 Gen11 8SFF x1 SR932i-p Primary Box 1 Tri-Mode Cable Kit P57122-B21
**Notes:** supports 8 SFF U.3 SAS/SATA/NVMe in box1 connecting to SR932i-p controller with x1 bandwidth.

HPE ProLiant DL345 Gen11 8SFF x1 Primary Box 2/3 Tri-Mode Cable Kit P57123-B21
**Notes:** supports 8 SFF U.3 SAS/SATA/NVMe in box 2/3 connecting to PCIe storage controllers with x1 bandwidth.

HPE ProLiant DL345 Gen11 8SFF x4 Primary Box 3 Tri-Mode Cable Kit P57127-B21
**Notes:** supports 8 SFF U.3 SAS/SATA/NVMe in box 3 connecting to PCIe storage controllers with up to x4 bandwidth.

HPE ProLiant DL345 Gen11 24SFF x4 Box 1-3 Tri-Mode PCIe Cable Kit P57128-B21
**Notes:** supports 24 SFF U.3 SAS/SATA/NVMe in box 1-3 connecting to PCIe storage controllers with up to x4 bandwidth.

HPE ProLiant DL345 Gen11 24SFF x2 Box 1-3 Tri-Mode Cable Kit P57129-B21
**Notes:** Supports 24 SFF U.3 SAS/SATA/NVMe in box 1-3 connecting with PCIe storage controllers with x2 bandwidth.

HPE ProLiant DL345 Gen11 8LFF x1 SAS/SATA Primary Cable Kit P59254-B21
**Notes:** Supports 8 LFF SAS/SATA in box 1-2 connecting to PCIe storage controllers.

HPE ProLiant DL345 Gen11 12EDSFF x4 Direct Attach GPU Front Enablement Kit P64381-B21

**Notes:**

- Supports 12 EDSFF NVMe in GPU CTO server.
- Must select together with 12EDSFF drive cage P62355-B21

HPE ProLiant DL3X5 Gen11 GPU 8SFF x2 OCP Tri-Mode Cable Kit P69868-B21
**Notes:** supports 8 SFF U.3 SAS/SATA/NVMe connecting to OCP storage controllers at x2 bandwidth in GPU CTO server.

HPE ProLiant DL3X5 Gen11 1P GPU 8SFF/EDSFF x4 Tri-Mode PCIe Cable Kit P70406-B21
**Notes:** supports 8 SFF U.3 SAS/SATA/NVMe connecting to PCIe storage controllers at x4 bandwidth in GPU CTO server.

HPE ProLiant DL3X5 Gen11 GPU 8SFF/EDSFF x4 PCIe Tri-Mode Cable Kit P69866-B21
**Notes:** supports 8 EDSFF NVMe connecting to PCIe storage controllers at x4 bandwidth in GPU CTO server.

## Core Options

### Supported Storage Configurations

## 8SFF CTO server

| Drives | | | | Drive Cage | | | | | Controller + Cables |
|---|---|---|---|---|---|---|---|---|---|
| Max Qty | SAS | SATA | NVMe | Front Box3 | Front Box2 | Front Box1 | Mid Box7 | Rear Box8 | |
| 8 | 0 | 8 | 0 | P55082-B21 | - | - | - | - | 8SFF DA(SATA) + P57121-B21 |
| 8 | 8 | 8 | 8 | P55082-B21 | - | - | - | - | PCIe Ctrlr + P57123-B21 |
| 10 | 2 | 10 | 2 | P55082-B21 | - | P57110-B21 | - | - | 8SFF DA(SATA) + P57121-B21; Box1 2SFF OCP Ctrlr |
| 10 | 10 | 10 | 10 | P55082-B21 | - | P57110-B21 | - | - | 8SFF PCIe Ctrlr + P57123-B21; Box1 2SFF OCP Ctrlr |
| 16 | 0 | 16 | 0 | P55082-B21 | P55082-B21 | - | - | - | 16SFF DA(SATA) + P57121-B21 |
| 16 | 16 | 16 | 16 | P55082-B21 | P55082-B21 | - | - | - | 16SFF PCIe Ctrlr + P57123-B21 |
| 18 | 2 | 18 | 2 | P55082-B21 | P55082-B21 | P57110-B21 | - | - | 16SFF DA(SATA) + P57121-B21; Box1 2SFF OCP Ctrlr |
| 18 | 18 | 18 | 18 | P55082-B21 | P55082-B21 | P57110-B21 | - | - | 16SFF PCIe Ctrlr + P57123-B21; Box1 2SFF OCP Ctrlr |
| 18 | 2 | 18 | 2 | P55082-B21 | P55082-B21 | - | - | P57110-B21 | 16SFF DA(SATA) + P57121-B21; Rear: 2SFF OCP Ctrlr |
| 8 | 0 | 0 | 8 | P55083-B21 | - | - | - | - | 8SFF DA(NVMe x4) + P57124-B21 |
| 8 | 8 | 8 | 8 | P55083-B21 | - | - | - | - | 8SFF SR932i-p + P57127-B21 |
| 10 | 2 | 2 | 10 | P55083-B21 | - | P57110-B21 | - | - | 8SFF DA(NVMe x4) + P57124-B21; Box1 2SFF OCP Ctrlr |
| 10 | 10 | 10 | 10 | P55083-B21 | - | P57110-B21 | - | - | 8SFF SR932i-p + P57127-B21; Box1 2SFF OCP Ctrlr |
| 10 | 2 | 2 | 10 | P55083-B21 | - | - | - | P57110-B21 | 8SFF DA(NVMe x4) + P57124-B21; Rear: 2SFF OCP Ctrlr |
| 10 | 10 | 10 | 10 | P55083-B21 | - | - | - | P57110-B21 | 8SFF SR932i-p + P57127-B21; Rear: 2SFF OCP Ctrlr |
| 24 | 0 | 0 | 24 | P55083-B21 | P55083-B21 | P55083-B21 | - | - | 24SFF DA(NVMe x2) + P57126-B21 |
| 24 | 24 | 24 | 24 | P55083-B21 | P55083-B21 | P55083-B21 | - | - | 24SFF x4 3*SR932i-p + P57128-B21 |
| 24 | 24 | 24 | 24 | P55083-B21 | P55083-B21 | P55083-B21 | - | - | 16SFF x2 2*SR932i-p + P57129-B21; Box1 8SFF OCP Ctrlr |
| 24 | 0 | 0 | 24 | P55083-B21 | P55083-B21 | P55083-B21 | - | - | 24SFF DA(NVMe x4) + P57125-B21 + 2*P65876-B21 |
| 32 | 0 | 0 | 32 | P55083-B21 | P55083-B21 | P55083-B21 | P57109-B21 | - | Front & Mid: 32SFF DA(NVMe x2) + P57126-B21 |
| 32 | 32 | 32 | 32 | P55083-B21 | P55083-B21 | P55083-B21 | P57109-B21 | - | Front & Mid: 32SFF x2 2*SR932i-p + P57129-B21 |

**Notes:**

- DA = Direct Attach; Ctrlr = controller
- If no controller or cable kit information in the table then cable kit selection is not required.

# Core Options

## 24SFF CTO server

| Drives | | | | Drive Cage | | | Controller + Cables |
|---|---|---|---|---|---|---|---|
| Max Qty | SAS | SATA | NVMe | Front | Mid | Rear | |
| 24 | 24 | 24 | 24 | Included | - | - | SR932i-p |
| 24 | 24 | 24 | 24 | Included | - | - | 2* MR416/216i-p |
| 32 | 32 | 32 | 32 | Included | P57108-B21 | - | Front & Mid: SR932i-p |
| 32 | 32 | 32 | 32 | Included | P57108-B21 | - | Front & Mid: 2* MR416/216i-p |
| 34 | 34 | 34 | 34 | Included | P57108-B21 | P57110-B21 | Front & Mid: 2* MR416/216i-p; Rear: OCP Ctrlr |

## 8LFF CTO server

| Drives | | | | | | Drive Cage | | | Controller + Cable Kit |
|---|---|---|---|---|---|---|---|---|---|
| Max Qty | LFF SAS | LFF SATA | SFF SAS | SFF SATA | SFF NVMe | Front | Mid | Rear | |
| 8 | 0 | 8 | 0 | 0 | 0 | Included | - | - | 8LFF DA (SATA) |
| 8 | 8 | 8 | 0 | 0 | 0 | Included | - | - | PCIe ctrlr + P59254-B21 |
| 12 | 0 | 12 | 0 | 0 | 0 | P57114-B21 | - | - | 12LFF DA (SATA) |
| 12 | 12 | 12 | 0 | 0 | 0 | P57114-B21 | - | - | PCIe ctrlr + P59254-B21 |
| 16 | 0 | 16 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | - | 16LFF DA (SATA) |
| 16 | 16 | 16 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | - | PCIe ctrlr + P59254-B21 |
| 20 | 0 | 20 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | P57113-B21 | 20LFF DA (SATA) |
| 20 | 20 | 20 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | P57113-B21 | SR932i-p + P59254-B21 |
| 20 | 4 | 20 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | P57113-B21 | Front & Mid: 16LFF DA (SATA); Rear: OCP Ctrlr |
| 20 | 20 | 20 | 0 | 0 | 0 | P57114-B21 | P57112-B21 | P57113-B21 | Front & Mid: PCIe ctrlr + P59254-B21; Rear: OCP Ctrlr |
| 10 | 0 | 8 | 2 | 2 | 2 | Included | - | P57110-B21 | Front: 8LFF DA (SATA); Rear: OCP Ctrlr |
| 10 | 8 | 8 | 2 | 2 | 2 | Included | - | P57110-B21 | Front: PCIe ctrlr + P59254-B21; Rear: OCP Ctrlr |
| 14 | 0 | 12 | 2 | 2 | 2 | P57114-B21 | - | P57110-B21 | Front: 12LFF DA (SATA); Rear: OCP Ctrlr |
| 14 | 12 | 12 | 2 | 2 | 2 | P57114-B21 | - | P57110-B21 | Front: PCIe ctrlr + P59254-B21; Rear: OCP Ctrlr |
| 18 | 0 | 16 | 2 | 2 | 2 | P57114-B21 | P57112-B21 | P57110-B21 | Front & Mid: 16LFF DA (SATA); Rear: OCP Ctrlr |
| 18 | 16 | 16 | 2 | 2 | 2 | P57114-B21 | P57112-B21 | P57110-B21 | Front & Mid: PCIe ctrlr + P59254-B21; Rear: OCP Ctrlr |
| 10 | 0 | 8 | 2 | 2 | 2 | P57111-B21 | - | - | Front: 8LFF DA (SATA) + 2SFF to OCP Ctrlr |
| 10 | 8 | 8 | 2 | 2 | 2 | P57111-B21 | - | - | Front: 8LFF PCIe ctrlr + P59254-B21 & 2SFF to OCP Ctrlr |

## Core Options

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | 0 | 16 | 0 | 0 | 0 | P57114-B21 | - | P57113-B21 | Front & Rear: 16LFF DA (SATA); Rear: OCP Ctrlr |
| 16 | 4 | 16 | 0 | 0 | 0 | P57114-B21 | - | P57113-B21 | Front: 12LFF DA (SATA); Rear: OCP Ctrlr |
| 16 | 16 | 16 | 0 | 0 | 0 | P57114-B21 | - | P57113-B21 | Front: PCIe ctrlr + P59254-B21; Rear: OCP Ctrlr |
| 16 | 16 | 16 | 0 | 0 | 0 | P57114-B21 | - | P57113-B21 | Front & Rear: PCIe ctrlr + P59254-B21 |

**Notes:**

- DA = Direct Attach; Ctrlr = controller
- If no controller or cable kit information in the table then cable kit selection is not required.

## EDSFF CTO server

| Drives | | | | Drive Cage | | | |
|---|---|---|---|---|---|---|---|
| Max Qty | SAS | SATA | NVMe | Box3 | Box2 | Box1 | Controller + Cables |
| 20 | - | - | 20 | P55090-B21 | | - | 20EDSFF NVMe x4 DA |
| 24 | - | - | 24 | P57115-B21 | | - | 24EDSFF NVMe x4 DA |
| 36 | - | - | 36 | P64383-B21 | | | 36EDSFF NVMe x2 DA |
| 24 | - | - | 24 | P70438-B21 | | - | 3* SR932i-p |

## GPU CTO server

| Drives | | | | Drive Cage | | |
|---|---|---|---|---|---|---|
| Max Qty | SAS | SATA | NVMe | Box1 | Box8 | Controller + Cables |
| 12 | - | - | 12 | P62355-B21 | - | P64381-B21 (12EDSFF NVMe x4 DA) |
| 8 | - | - | 8 | P57867-B21 | - | 8SFF NVMe x4 DA |
| 8 | - | - | 8 | P62355-B21 | - | SP932i-p + P69866-B21 (8EDSFF NVMex4 to Ctrlr) |
| 8 | 8 | 8 | 8 | P57867-B21 | - | SR932i-p + P70406-B21 (8SFF NVMe x4 to Ctrlr) |
| 8 | 8 | 8 | 8 | P57867-B21 | - | MR416/216i-o + P69868-B21 |

**Notes:**

- DA = Direct Attach; Ctrlr = controller
- If no controller or cable kit information in the table then cable kit selection is not required.

## HPE Drives

### Solid State Drives

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

**Read Intensive - 12G SAS – SFF**

| | |
|---|---|
| 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 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 |

## Core Options

| | |
|---|---|
| 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 |
| **Mixed Use - 12G SAS - SFF** | |
| 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 1.6TB SAS 24G Mixed Use SFF BC Multi Vendor SSD | P49049-B21 |
| HPE 800GB SAS 24G Mixed Use SFF BC Multi Vendor SSD | P49047-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 960GB SAS 24G Read Intensive SFF BC Multi Vendor SSD | P49029-B21 |
| **Mixed Use – 12G SAS– LFF** | |
| HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD | P37009-B21 |
| **Read Intensive - 6G SATA – SFF** | |
| 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 PM893a SSD | P63886-B21 |
| HPE 3.84TB SATA 6G Read Intensive SFF BC PM893a SSD | P63910-B21 |
| **Mixed Use - 6G SATA - SFF** | |
| HPE 480GB SATA 6G Mixed Use SFF BC Multi Vendor SSD | P40502-B21 |
| 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 |
| **Read Intensive – 6G SATA – LFF** | |
| HPE 960GB SATA 6G Read Intensive LFF LPC Multi Vendor SSD | P47808-B21 |
| **Read Intensive - NVMe – SFF** | |
| 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 |
| HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD | P50224-B21 |
| HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD | P63829-B21 |
| HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD | P63833-B21 |
| HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD | P63837-B21 |
| HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD | P63841-B21 |
| HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD | P64842-B21 |
| HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD | P64844-B21 |
| HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD | P64846-B21 |
| HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD | P64848-B21 |
| HPE 15.36TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static SPDM Multi Vendor SSD | P69255-B21 |
| HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PS1010 SSD | P70434-B21 |
| HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PS1010 SSD | P70436-B21 |
| **Mixed Use - NVMe – SFF** | |
| 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 |

## Core Options

| | |
|---|---|
| HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD | P63845-B21 |
| HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD | P63849-B21 |
| HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD | P63853-B21 |
| HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static V2 Multi Vendor SSD | P64999-B21 |
| HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static V2 Multi Vendor SSD | P65007-B21 |
| HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static V2 Multi Vendor SSD | P65015-B21 |
| HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static V2 Multi Vendor SSD | P65023-B21 |
| HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PS1030 SSD | P70426-B21 |
| HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PS1030 SSD | P70428-B21 |
| **Read Intensive – NVMe - EDSFF E3.S 1T** | |
| HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM PM1743 SSD | P57799-B21 |
| HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM PM1743 SSD | P57803-B21 |
| HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM PM1743 SSD | P57807-B21 |
| HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD | P61179-B21 |
| HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD | P61183-B21 |
| HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD | P61187-B21 |
| HPE 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD | P69234-B21 |
| HPE 3.84TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD | P69237-B21 |
| HPE 7.68TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD | P69239-B21 |
| HPE 15.36TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD | P69546-B21 |
| HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD | P70392-B21 |
| HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD | P70395-B21 |
| HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD | P70397-B21 |
| HPE 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD | P77269-B21 |
| HPE 3.84TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD | P77271-B21 |
| HPE 7.68TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD | P77273-B21 |
| HPE 15.36TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD | P77275-B21 |
| HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD | P79122-B21 |
| **Mixed Use - NVMe – EDSFF E3.S 1T** | |
| HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM CM7 SSD | P61191-B21 |
| HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM CM7 SSD | P61195-B21 |
| HPE 1.6TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD | P69241-B21 |
| HPE 3.2TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD | P69243-B21 |
| HPE 6.4TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD | P69245-B21 |
| HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD | P70399-B21 |
| HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD | P70401-B21 |
| HPE 12.8TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD | P70403-B21 |
| HPE 1.6TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD | P77262-B21 |
| HPE 3.2TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD | P77265-B21 |
| HPE 6.4TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD | P77267-B21 |
| **Very Read Optimized – NVMe – EDSFF E3.S 1T** | |
| HPE 3.84TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD | P63930-B21 |
| HPE 7.68TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD | P63934-B21 |
| HPE 15.36TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD | P63938-B21 |
| HPE 30.72TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD | P79065-B21 |
| **SED (Self-Encryption Drive) – SATA SFF** | |
| HPE 960GB SATA 6G Mixed Use SFF BC Self-encrypting 5400M SSD | P58244-B21 |
| HPE 480GB SATA 6G Read Intensive SFF BC Self-encrypting 5400P SSD | P58236-B21 |
| **SED (Self-Encryption Drive) – SAS SFF** | |
| HPE 1.6TB SAS Mixed Use SFF BC Self-encrypting FIPS 140-2 PM7 SSD | P63871-B21 |

## Core Options

| | |
|---|---|
| HPE 3.84TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-2 PM7 SSD | P63875-B21 |
| **SED (Self-Encryption Drive) – NVMe SFF** | |
| HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61043-B21 |
| HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61051-B21 |
| HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61059-B21 |
| HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61019-B21 |
| HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61027-B21 |
| HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD | P61035-B21 |
| **SED (Self-Encryption Drive) – NVMe – EDSFF E3.S 1T** | |
| HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD | P70669-B21 |
| HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD | P70672-B21 |
| HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD | P70674-B21 |
| HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD | P79122-B21 |

### Hard Disk Drive

**Enterprise - 12G SAS - SFF Drives**

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

**Notes:** Suggest ambient temperature is 25C If the 15K drives are installed in the Midtray or the Rear drive bay.

**Midline - 12G SAS - LFF Drives**

| | |
|---|---|
| HPE 12TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD | 881781-B21 |
| HPE 8TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD | 834031-B21 |
| 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 16TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD | P23608-B21 |
| HPE 20TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD | P53553-B21 |

**Midline - 6G SATA - LFF Drives**

| | |
|---|---|
| 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 1TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD | 861686-B21 |
| HPE 12TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD | 881787-B21 |
| HPE 8TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD | 834028-B21 |
| HPE 6TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD | 861742-B21 |
| HPE 16TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD | P23449-B21 |
| HPE 20TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD | P53554-B21 |
| **SED (Self-Encryption Drive)** | |
| HPE 2.4TB SAS 12G Mission Critical 10K SFF BC 3yr Wty 512e FIPS 140-2 TAA-compliant HDD | P28618-B21 |
| HPE 1.2TB SAS 12G Mission Critical 10K SFF BC 3yr Wty FIPS 140-2 TAA-compliant HDD | P28622-B21 |

# Core Options

## Optical Drives

| | |
|---|---|
| HPE 9.5mm SATA DVD-ROM Optical Drive | 726536-B21 |
| HPE 9.5mm SATA DVD-RW Optical Drive | 726537-B21 |
| HPE Mobile USB DVD-RW Optical Drive | 701498-B21 |
| HPE ProLiant DL3XX Gen11 LFF ODD/Display Port Enablement Kit | P52150-B21 |
| HPE ProLiant DL345 Gen11 ODD Cable Kit | P59602-B21 |

**Notes:**

- If the optical drive is selected along with 8 LFF CTO server (P54204-B21) then LFF ODD/DP Enablement Kit (P52150-B21) and ODD Cable Kit (P59602-B21) must be selected.
- If the optical drive is selected along with 8 LFF CTO server (P54204-B21) then 4LFF x1 SAS/SATA 12G Front Backplane Kit (P57114-B21) cannot be selected.
- If the optical drive is selected along with the 8SFF CTO server (P54205-B21) then the Universal Media Bay Kit (P57857-B21) and ODD cable kit (P59602-B21) must be selected.
- If the optical drive is selected along with the 8SFF CTO server (P54205-B21), then the 8SFF x4 drive cage (P57109-B21) and 8SFF x4 direct attach cable kit (P57124-B21) cannot be selected.

## Boot Controllers

| | |
|---|---|
| HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device | P48183-B21 |
| HPE NS204i-u v2 480GB NVMe Hot Plug Boot Optimized Storage Device | P78279-B21 |
| HPE NS204i-u v2 960GB NVMe Hot Plug Boot Optimized Storage Device | P81160-B21 |
| HPE NS204i-u v2 960GB NVMe SED Hot Plug Boot Optimized Storage Device | P81162-B21 |

**Notes:**

- RAID 1 is preconfigured on the NS204i-u boot device and NO additional RAID can be applied.
- There are two locations to support NS204i-u hot plug boot device on DL345 Gen11 server
  - Above the power supplies unit slot2 location
  - Secondary Riser slot6 with 4LFF rear drive cage and low profile riser kit.
- If this NS204i-u boot device is selected then the NS204i-u Cable Kit (P57013-B21) must be selected.
- If this NS204i-u boot device is selected along with the 4LFF rear drive cage (P57113-B21), then the Low Profile Riser kit (P59260-B21) must be selected.
- For additional information, please visit **HPE OS Boot Device QuickSpecs**

| | |
|---|---|
| HPE ProLiant DL3X5 Gen11 NS204i-u NVMe Hot Plug Boot Device Cable Kit | P57013-B21 |
| HPE ProLiant DL325 Gen11 NVMe/SATA M.2 Enablement Kit | P57014-B21 |

**Notes:**

- Requires two (2) M.2 SSD Drives In the same interface (SATA or NVMe).
- No RAID is supported on this M.2 enablement kit.
- If this M.2 enablement kit is selected along with GPU CTO server then Battery and Hybrid Capacitor (P02377-B21 and P01366-B21) are not allowed.

**Read Intensive - M.2 - Solid State Drives**

| | |
|---|---|
| HPE 480GB SATA 6G Read Intensive M.2 Multi Vendor SSD | P47818-B21 |
| HPE 480GB NVMe Gen3 Mainstream Performance Read Intensive M.2 Multi Vendor SSD | P40513-B21 |
| HPE 960GB NVMe Gen3 Mainstream Performance Read Intensive M.2 Multi Vendor SSD | P40514-B21 |
| HPE 1.92TB NVMe Gen3 Mainstream Performance Read Intensive M.2 Multi Vendor SSD | P40515-B21 |
| HPE 480GB NVMe Gen4 Mainstream Performance Read Intensive M.2 PM9A3 SSD | P69543-B21 |
| HPE 480GB NVMe Gen4 Mainstream Performance Read Intensive M.2 2280 PE9010 SSD | P80318-B21 |
| HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive M.2 2280 PE9010 SSD | P80321-B21 |
| HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive M.2 2280 PE9010 SSD | P80324-B21 |
| HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive M.2 2280 Self-encrypting PE9010 SSD | P80327-B21 |

## Core Options

### Risers

**Notes:**

- The riser shipping default in all CTO server are two (2) PCIe Gen5 x16 FH HL. One at the primary riser slot 3 and another at the secondary riser slot 6.
- Maximum one (1) 4PCIe enablement kit (P57116-B21) or 6PCIe enablement kit (P5117-B21) is allowed.

HPE ProLiant DL345 Gen11 4 PCIe x16 Enablement Kit P57116-B21

**Notes:**

- Supports four (4) PCIe Gen5 x16 risers. Three (3) at the primary riser slot 1/2/3 and one (1) at the secondary riser slot 6.
- if 4LFF rear drive cage (P57113-B21) is selected then 4 PCIe x16 enablement kit cannot be selected.

HPE ProLiant DL345 Gen11 6 PCIe x16 Enablement Kit P57117-B21

**Notes:**

- Supports Six (6) PCIe Gen5 x16 risers. Three (3) at the primary riser slot 1/2/3 and three (3) at the secondary riser slot 4/5/6.
- if 4LFF rear drive cage (P57113-B21) is selected then 6 PCIe x16 enablement kit cannot be selected.

HPE ProLiant DL385 Gen11 x16 Primary FIO Riser Kit for LFF Rear Cage P55098-B21

**Notes:**

- Supports one (1) PCIe Gen5 x16 risers at the primary riser slot 3 or Secondary riser slot 6.
- Max = 2
- Requires 4LFF rear drive cage (P57113-B21).

HPE ProLiant DL385 Gen11 x16 Low Profile Secondary Riser Kit P59260-B21

**Notes:**

- Supports one (1) PCIe Gen5 x16 risers at the Secondary riser slot 6.
- Max = 1
- Requires 4LFF rear drive cage (P57113-B21) and NS204i-u boot device (P48183-B21).

HPE ProLiant DL345 Gen11 2 GPU Front FIO Enablement Kit P55068-B21

**Notes:**

- Supports two (2) PCIe Gen5 x16 risers at the front cage of GPU CTO server.
- Must be selected with GPU CTO server (P54208-B21)
- Max = 1
- This is a factory integrated only option.

HPE ProLiant DL345 Gen11 4 GPU Front FIO Enablement Kit P55067-B21

**Notes:**

- Supports four (4) PCIe Gen5 x16 risers at the front cage of GPU CTO server.
- Must be selected with GPU CTO server (P54208-B21)
- Max = 1
- This is a factory integrated only option.

## Core Options

| Description | Riser position - Primary | | | Riser position - Secondary | | | Total Slots | Bus width |
|---|---|---|---|---|---|---|---|---|
| | Slot 1 | Slot 2 | Slot 3 | Slot 4 | Slot 5 | Slot 6 | | |
| Default Riser | N/A | N/A | D | N/A | N/A | D | 2 FHHL | X16 |
| HPE ProLiant DL345 Gen11 4 PCIe x16 Enablement Kit | O | O | D | N/A | N/A | D | 4 FHHL | X16 |
| HPE ProLiant DL345 Gen11 6 PCIe x16 Enablement Kit | O | O | D | O | O | D | 6 FHHL | X16 |
| HPE ProLiant DL3x5 Gen11 x16 Primary FIO Riser Kit for LFF Rear Cage | N/A | N/A | O | N/A | N/A | O | 1 or 2 FHHL | X16 |
| HPE ProLiant DL3x5 Gen11 x16 Low Profile Secondary Riser Kit | N/A | N/A | N/A | N/A | N/A | O | 1 HHHL | X16 |

**Notes:** D = Default on server; O = Optional; N/A = not supported or slot/connector not present.

## HPE Networking

**Notes:**

- Requires Performance Fan kit for 100/200 Gigabit Ethernet Adapters or InfiniBand adapters.
- 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://www.hpe.com/psnow/doc/A00002507ENW**

### PCIe Adapters

**1 Gigabit Ethernet adapters**

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

**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 |
| NVIDIA Ethernet 10/25Gb 2-port SFP28 NVMe-oF Crypto Adapter for HPE | S2A69A |

**100/200 Gigabit Ethernet adapters**

| | |
|---|---|
| Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 Adapter for HPE | P73111-B21 |
| Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE | P25960-B21 |
| Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE | P21112-B21 |
| NVIDIA Ethernet 100Gb 2-port NVMe-oF Offload Adapter for HPE | R8M41A |
| HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC | R4K46A |

### OCP 3.0 Adapters

**1 Gigabit Ethernet OCP adapters**

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

## Core Options

| | |
|---|---|
| **10/25 Gigabit Ethernet OCP adapters** | |
| 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 |
| 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 |
| **100/200 Gigabit Ethernet adapters** | |
| Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 OCP3 Adapter for HPE | P73114-B21 |
| Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE | P22767-B21 |

**Notes:** Requires OCP1 upgrade cable kit (P56658-B21) to support PCIe Gen5 x16 bandwidth on OCP21 slot

## HPE InfiniBand

**Notes:**

- Requires Performance Fan kit (P58465-B21) and subject to the recommended system ambient temperature.
- Requires OCP upgrade cable kit (P56658-B21) for 200Gb OCP adapters (P31323-B21 or P31348-B21)
- For more information, please visit: **HPE InfiniBand Options for HPE ProLiant and Apollo Servers**

| | |
|---|---|
| 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 InfiniBand HDR/Ethernet 200Gb 1-port QSFP56 PCIe4 x16 MCX653105A-HDAT Adapter | P23664-B21 |
| HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter | P31324-B21 |
| HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 OCP3 MCX653436A-HDAI Adapter | P31348-B21 |
| HPE InfiniBand NDR 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter | P45641-B21 |
| HPE InfiniBand NDR200/Ethernet 200GbE 2-port QSFP112 PCIe5 x16 MCX755106AC-HEAT Adapter | P65333-B21 |
| HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter | P45642-B22 |

## Core Options

### Recommended System Ambient Temperature – Default riser or 4 PCIe enablement kit

| | | 16SFF/20EDSFF/ 24EDSFF/8LFF | | 24SFF | | 12LFF/36EDSFF | |
|---|---|---|---|---|---|---|---|
| **P/N** | **Description** | **Slot#1/2/3** | **Slot#6** | **Slot#1/2/3** | **Slot#6** | **Slot#1/2/3** | **Slot#6** |
| P31324-B21 | HPE IB HDR/EN 200Gb 2p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P10180-B21 | MLX MCX623105AS 200GbE 1p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P25960-B21 | MLX MCX623106AS 100GbE 2p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| R8M41A | HPE NV60100M 100Gb 2p Strg Offload Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P21112-B21 | INT E810 100GbE 2p QSFP28 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P45641-B21/B23 | HPE IB NDR 1p OSFP MCX75310AAS Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P45642-B21/B22 | HPE IB NDR200 1p OSFP MCX75310AAS Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P23664-B21 | HPE IB HDR/EN 200Gb 1p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P65333-B21 | HPE IB NDR200 200Gb 2p QSFP112 adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P23666-B21 | HPE IB HDR100/EN 100Gb 2p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P23665-B21 | HPE IB HDR100/EN 100Gb 1p QSFP56 Adptr | 30C | AOC: 27C | 30C | AOC: 24C | 30C | AOC: Not support DAC: 25C |
| P08458-B21 | INT E810 10/25GbE 4p SFP28 Adptr | 30C | 30C | 30C | 30C | 30C | STD fan: 25C |

## Core Options

### Recommended System Ambient Temperature – 6 PCIe enablement kit

| P/N | Description | 16SFF/20EDSFF/ 24EDSFF/8LFF | | 24SFF | | | 12LFF/36EDSFF | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Slot#5 | Slot#6 | Slot#4 | Slot#5 | Slot#6 | Slot #1 | Slot#4 | Slot#5 | Slot#6 |
| P31324-B21 | HPE IB HDR/EN 200Gb 2p QSFP56 Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P10180-B21 | MLX MCX623105AS 200GbE 1p QSFP56 Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P25960-B21 | MLX MCX623106AS 100GbE 2p QSFP56 Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| R8M41A | HPE NV60100M 100Gb 2p Strg Offload Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P21112-B21 | INT E810 100GbE 2p QSFP28 Adptr | 30C | AOC: 25C | 30C | 30C | AOC: 22C | 30C | 30C | 30C | AOC: Not support DAC: 25C |
| P45641-B21/B23 | HPE IB NDR 1p OSFP MCX75310AAS Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P45642-B21/B22 | HPE IB NDR200 1p OSFP MCX75310AAS Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P65333-B21 | HPE IB NDR200 200Gb 2p QSFP112 adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P23664-B21 | HPE IB HDR/EN 200Gb 1p QSFP56 Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P23666-B21 | HPE IB HDR100/EN 100Gb 2p QSFP56 Adptr | AOC: 28C | AOC: 25C | AOC: 28C | AOC: 25C | AOC: 22C | AOC: 25C | AOC: 25C | AOC: 25C | AOC: Not support DAC: 25C |
| P23665-B21 | HPE IB HDR100/EN 100Gb 1p QSFP56 Adptr | 30C | AOC: 25C | 30C | 30C | AOC: 22C | 30C | 30C | 30C | AOC: Not support DAC: 25C |
| P08458-B21 | INT E810 10/25GbE 4p SFP28 Adptr | 30C | 30C | 30C | 30C | 30C | 30C | 30C | STD fan: 25C | STD fan: 25C |

## Core Options

### Suggested System Ambient Temperature – OCP Networking

| | | 16SFF/20EDSFF /24EDSFF/8LFF | | 24SFF | | 12LFF/36EDSFF | |
|---|---|---|---|---|---|---|---|
| **P/N** | **Description** | **OCP21** | **OCP22** | **OCP21** | **OCP22** | **OCP21** | **OCP22** |
| P31323-B21 | HPE IB HDR/EN 200Gb 1p QSFP56 OCP3 Adptr | 30C | AOC: 25C | AOC: 28C | AOC: 20C | AOC: 25C | Not support |
| P31348-B21 | HPE IB HDR/EN 200Gb 2p QSFP56 OCP3 Adptr | 30C | AOC: 25C | AOC: 28C | AOC: 20C | AOC: 25C | Not support |
| P22767-B21 | INT E810 100GbE 2p QSFP28 OCP3 Adptr | 30C | AOC: 25C | 30C | AOC: 23C | 30C | AOC: Not support DAC: 25C |
| P26269-B21 | BCM 57504 10/25GbE 4p SFP28 OCP3 Adptr | 30C | 30C | 30C | AOC+STD fan: 27C | 30C | AOC+STD fan: 25C |

**Notes:** Not support = configuration not allowed because of thermal limitation.

### Accelerators

NVIDIA L4 24GB PCIe Accelerator for HPE S0K89C

**Notes:**

- This is a PCIe Gen4 x 16 single-width HHHL GPU card.
- This GPU can only be selected with GPU CTO Server.

## 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
HPE SN1700Q 64Gb 1-port Fibre Channel Host Bus Adapter R7N86A
HPE SN1700Q 64Gb 2-port Fibre Channel Host Bus Adapter R7N87A

## Power and Cooling

### Cooling

HPE ProLiant DL3X5 Gen11 1U CPU Performance Heat Sink Kit P58457-B21
HPE ProLiant DL3X5 Gen11 2U Standard Heat Sink Kit P58458-B21
HPE ProLiant DL3X5 Gen11 2U Performance Heat Sink Kit P58459-B21

**Notes:**

- If processor up to 240W is selected, then Standard Heat Sink (P58458-B21) and Standard Fan Kit (P58464-B21) must be selected.
- If processor more than or equal to 260W is selected, then Performance Heat Sink (P58459-B21) and Performance Fan Kit (P58465-B21) must be selected.
- If processor less than or equal to 300W is selected along with 4LFF or 8SFF mid tray drive cage, then 1U Performance Heat Sink (P58457-B21) and Performance Fan Kit (P58465-B21) must be selected.

## Core Options

| | |
|---|---|
| HPE ProLiant DL3X5 Gen11 2U Standard Fan Kit | P58464-B21 |
| HPE ProLiant DL3X5 Gen11 2U Performance Fan Kit | P58465-B21 |

**Notes:** Performance Fan Kit (P58462-B21) must be selected if any of the below options are selected

- GPU CTO server (P54208-B21)
- 8SFF/4LFF Midtray drive cage (P57108-B21, P57109-B21, P57112-B21) or Rear drive cage (P57110-B21, P57113-B21)
- 100/200GB network adapters or InfiniBand network adapters

**Cooling options summary**

| Front Drive Bay | Mid Tray | Rear | CPU cTDP | Heat Sink | Fan Kit |
|---|---|---|---|---|---|
| up to 12LFF/ 24SFF/ 36EDSFF | N/A | N/A | <=240W | Standard | Std Fan |
| | N/A | N/A | >240W | Performance | Std Fan |
| | N/A | 4LFF or 2SFF | <=240W | Standard | Perf fan |
| | N/A | 4LFF or 2SFF | >240W | Performance | Perf fan |
| | 4LFF or 8SFF | Any | <=300W | 1U Performance | Perf fan |
| GPU CTO server | N/A | N/A | <=240W | Standard | Perf fan |
| | N/A | N/A | >240W | Performance | Perf fan |

## Power Supplies

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, and 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:**

- Select a minimum (1), maximum (2) power supplies
- All power supplies in a server should match. Mixing Power Supplies is not supported.
- 1600W Power supplies only support high line voltage (200VAC to 240VAC).
- Before making a power supply selection it is highly recommended that the HPE Power Advisor is run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: **https://poweradvisorext.it.hpe.com/?Page=Index**
- HPE ProLiant servers ship with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs). Visit **HPE Power Cords and Cables** for a full list of optional power cords

| | |
|---|---|
| HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit | 865408-B21 |
| 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 |
| HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit | P44712-B21 |
| 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)

## Core Options

### HPE Security

HPE Trusted Supply Chain for HPE ProLiant P36394-B21

**Notes:**

- HPE Trusted Supply Chain is an optional security upgrade intended for agencies and regulated industries needing enhanced security and compliance needs. Applying this option to a DL345 Gen11 CTO server ensures it is built in the USA in a secured facility by vetted HPE personnel assigned to the manufacturing processes. A multitude of checkpoints/inspections for malicious microcode and counterfeit parts are performed throughout the server build, and additional safeguards are put in place against cyber-exploits throughout the server lifecycle. Learn more at **http://www.hpe.com/security**
- This option requires the selection of HPE Gen11 Intrusion Detection Kit (P48922-B21)
- This option requires the selection of either HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features (BD505A) or HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features (512485-B21)
- This option is limited to stand-alone DL345Gen11 CTO servers only. The HPE Trusted Supply Chain configuration will not be available if the server is ordered as factory integrated into a rack
- One instance of the following Electronic License to Use is required per order (not per server): R6X85AAE (HPE Trusted Supply Chain E-LTU)
- This option cannot be selected with TAA instruction SKU or TAA CTO Models.

HPE ProLiant DL385 Gen11 Intrusion Cable Kit P55713-B21

**Notes:** This provides a physical connection from the chassis board and hood and detects any physical intrusion into the chassis, providing security during the entire supply chain process of shipping, receiving distribution, and operation.

HPE Bezel Lock Kit 875519-B21

**Notes:** The Bezel lock kit (875519-B21) must be selected along with the bezel kit (P50400-B21).

HPE Gen11 2U Bezel Kit P50400-B21

HPE iLO Common Password FIO Setting P08040-B21

**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

### Additional Cable Options

HPE ProLiant DL3X5 Gen11 OCP1 Upgrade Cable Kit P56658-B21

**Notes:** Supports PCIe x16 bandwidth at OCP slot 21. Required if one of the following options is in the order

- OCP InfiniBand network adapters (P31323-B21, P31348-B21)
- BCM 57504 10/25GbE 4p SFP28 Adaptor (P26269-B21)
- Intel E810 100GbE 2p QSFP28 OCP3 Adptr (P22767-B21)

HPE ProLiant DL3X5 Serial Port Enablement Kit P50887-B21

**Notes:** This cable kit supports an optional serial port at the rear of the server.

# Core Options

## Software as a Service Management

### HPE Compute Ops Management

| | |
|---|---|
| HPE Compute Ops Management Standard 3-year Upfront ProLiant SaaS | R7A11AAE |
| HPE Compute Ops Management Standard 5-year Upfront ProLiant SaaS | R7A12AAE |
| HPE Compute Cloud Management Server FIO Enablement | S1A05A |
| HPE Compute Ops Management Standard 7-year Upfront ProLiant SaaS | S2E10AAE |
| HPE Compute Ops Management Advanced 1-year Upfront ProLiant SaaS | S5E58AAE |
| HPE Compute Ops Management Advanced 3-year Upfront ProLiant SaaS | S5E59AAE |
| HPE Compute Ops Management Advanced 5-year Upfront ProLiant SaaS | S5E60AAE |
| HPE Compute Ops Management Advanced 7-year Upfront ProLiant SaaS | S5E61AAE |

# Additional Options

## Rail Kits

Easy Install rail kits contain telescoping rails which allow for in-rack serviceability.
To assist in the installation of the server into the rack an optional installation tool is available by contacting your local services representative.

**Notes:**

- HPE rail kits are designed to work with HPE racks in compliance with industry standard EIA-310-E. In the event a customer elects to purchase a third-party rack for use with an HPE rail kit, any such use is at customer's own risk. HPE makes no express or implied warranties with respect to such third-party racks and specifically disclaims any implied warranties of merchantability and fitness for a particular purpose. Furthermore, HPE has no obligation and assumes no liability for the materials, design, specifications, installation, safety, and compatibility of any such third-party racks with any rail kits, including HPE rail kits.
- Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and the number of people to use for any installation.

| | |
|---|---|
| HPE DL3XX Gen11 Easy Install Rail 2 Kit | P52351-B21 |
| **Notes:** This Rail kit can be selected with 8LFF/8SFF/24SFF/EDSFF CTO server. | |
| HPE Ball Bearing Rail 8 Kit | P52345-B21 |
| **Notes:** This Rail kit can be selected with GPU CTO server. | |
| HPE DL38X Gen10 Plus 2U Cable Management Arm for Rail Kit | P22020-B21 |
| **Notes:** CMA can be selected only with the Rail kit. | |
| Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 Adapter for HPE | P73111-B21 |
| HPE ProLiant Compute DL3XX Gen12 2U Cable Management Arm for Rail Kit | P70744-B21 |

## HPE Tape Backup

For the complete range of tape drives, autoloaders, libraries and media see: **https://www.hpe.com/us/en/storage/storeever-tape-storage.html**

For hardware and software compatibility of Hewlett Packard Enterprise tape backup products please visit the StoreEver Tape Solutions in SPOCK (requires registration/login) **https://h20272.www2.hpe.com/SPOCK/default.aspx**

Only external drives supported
All libraries and autoloaders supported via compatible FC or SAS controller. Refer to the StoreEver Tape Soutions Compatibilty Matrix link above

## HPE Racks

- Please see the HPE Advanced Series Racks QuickSpecs for information on additional racks options and rack specifications. **HPE G2 Advanced Series Racks**
- Please see the HPE Enterprise Series Racks QuickSpecs for information on additional racks options and rack specifications. **HPE G2 Enterprise Series Racks**

# Additional Options

## HPE Power Distribution Units (PDUs)

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

## HPE Uninterruptible Power Systems (UPS)

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

## HPE Rack Options

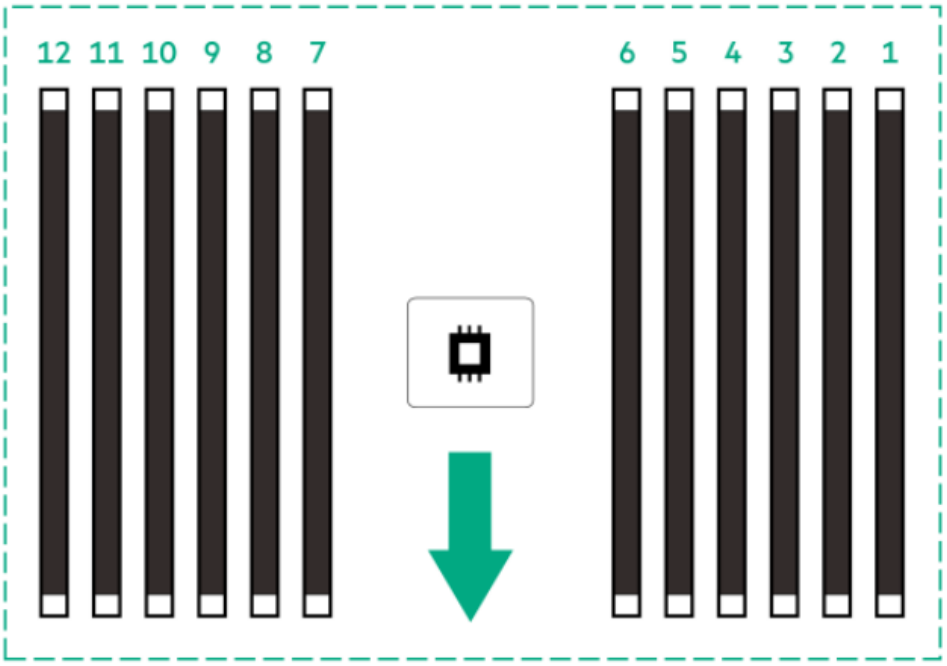
- Please see the **HPE KVM Switches web page** for information on these products and their specifications

## HPE Support Services

### Tech Care

| | |
|---|---|
| HPE 3 Year Tech Care Essential DL345 Gen11 Service | H78X5E |
| HPE 3 Year Tech Care Essential wDMR DL345 Gen11 Service | H78X6E |
| HPE 5 Year Tech Care Essential DL345 Gen11 Service | H78Z9E |
| HPE 5 Year Tech Care Essential wDMR DL345 Gen11 Service | H79A0E |

## Memory

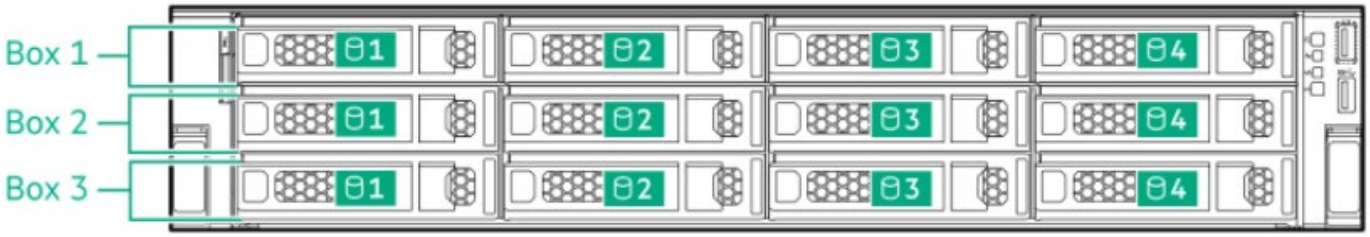



**The arrow points to the front of the server**

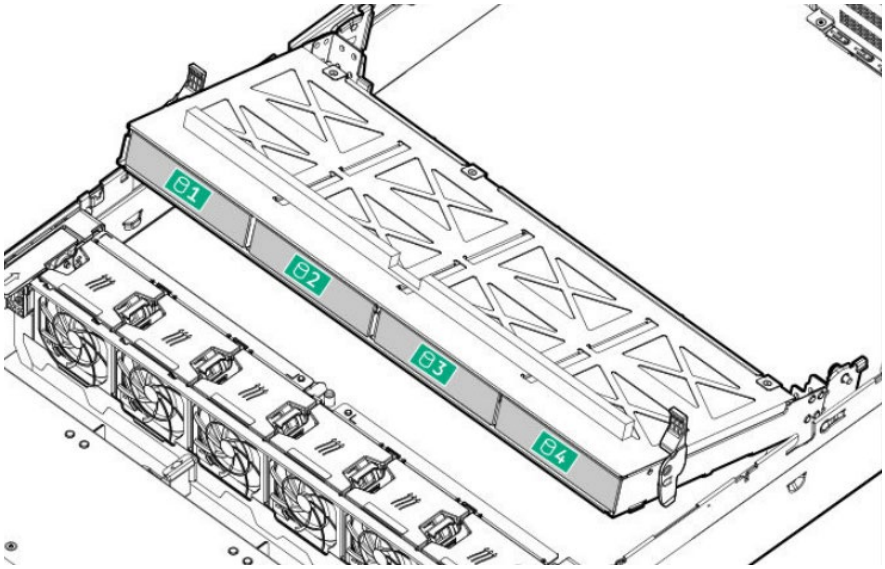
### General Memory Population Rules and Guidelines:

- Install DIMMs only after the corresponding processor is installed.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.
- To realize the performance memory capabilities listed in this document, HPE DDR5 Smart Memory is required. For additional information, please see the: **HPE DDR5 Smart Memory QuickSpecs**
- For details on the Memory Population Rules and Guidelines with AMD EPYC 9004 and 9005 series processors, please go to: **https://www.hpe.com/psnow/doc/a50007481enw**

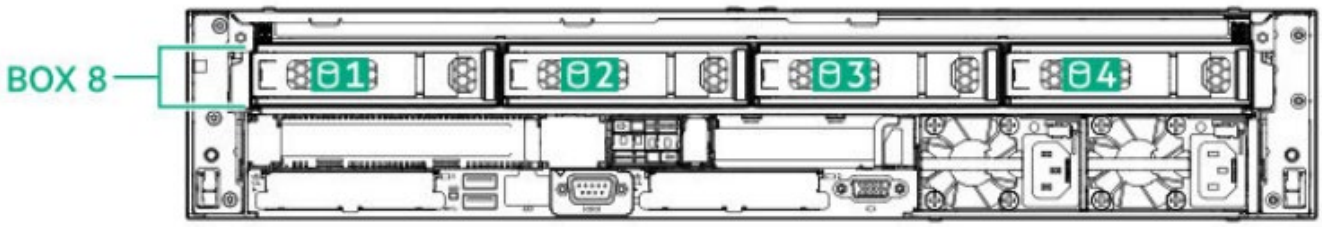
## Storage




**12 LFF Front**

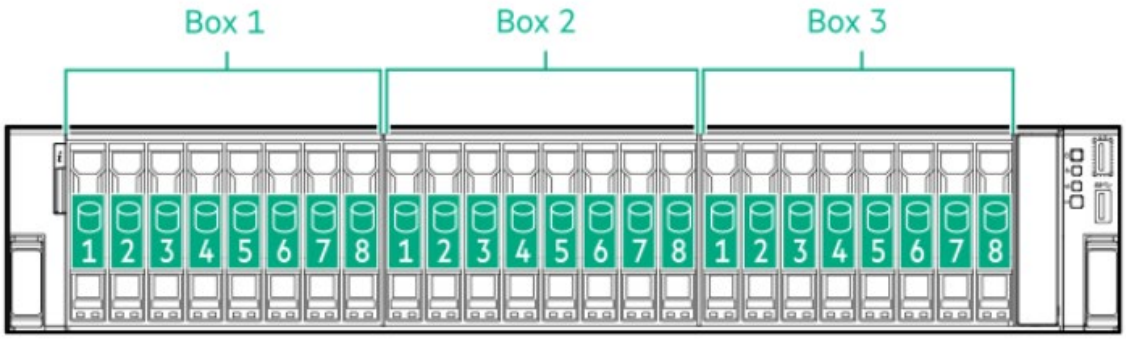



**4 LFF Mid Tray**

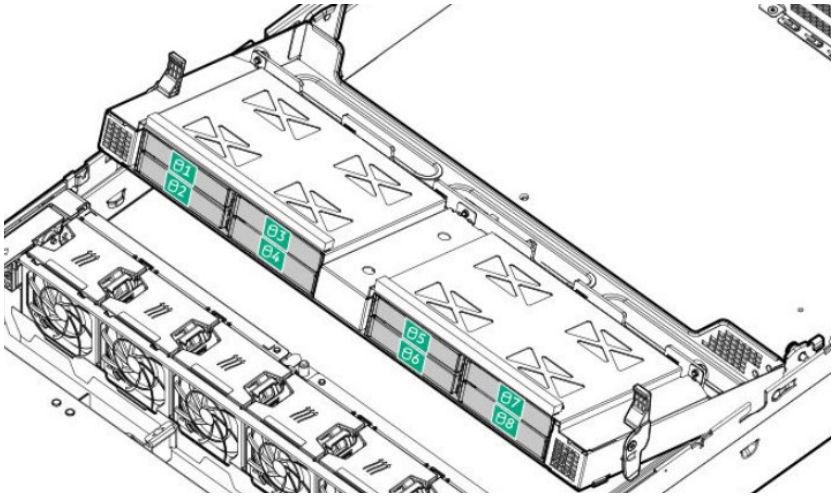



**Rear Panel + 4 LFF drives**

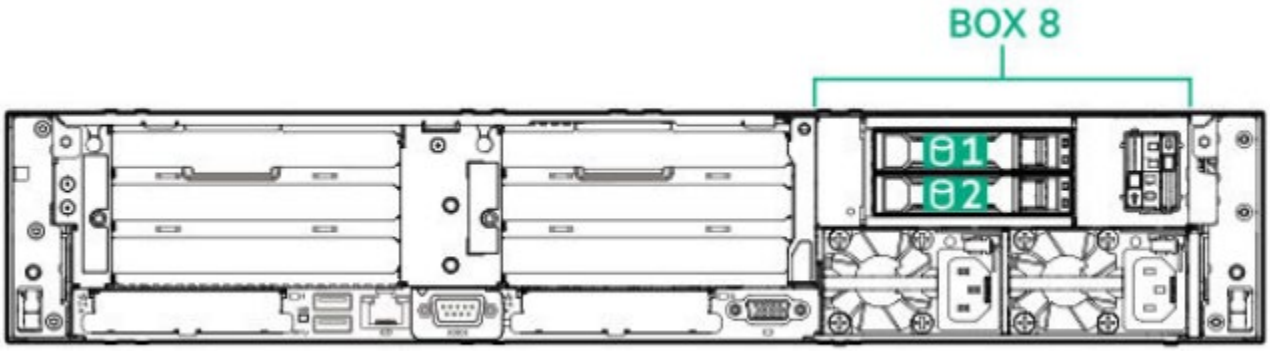
## Storage




**24 SFF Front**

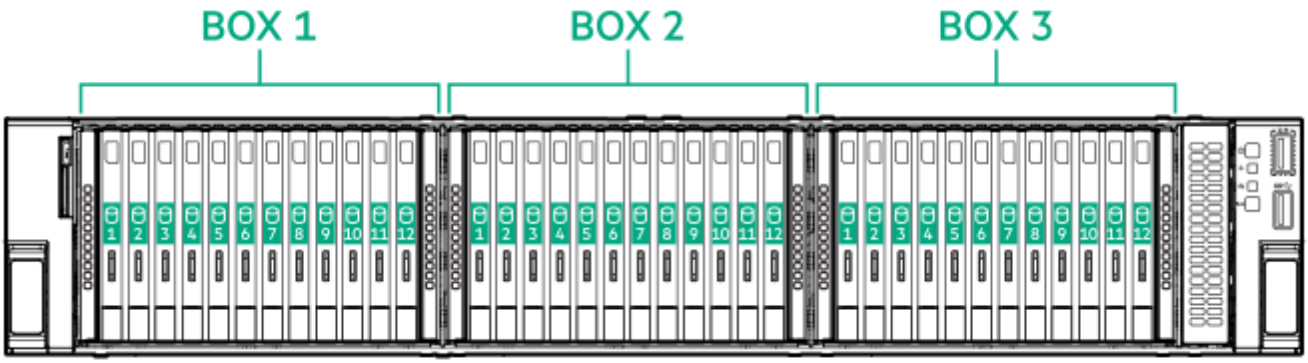



**8 SFF Mid Tray**

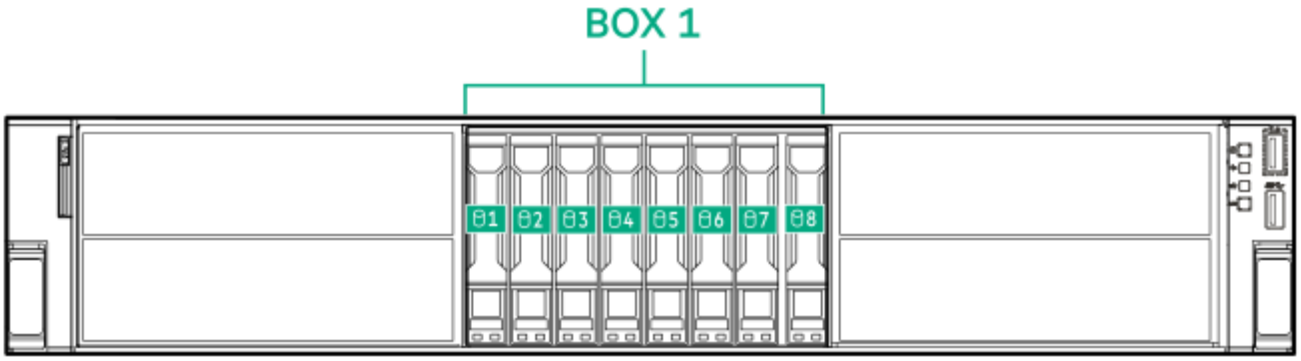



**Rear Panel + rear 2 SFF drives**

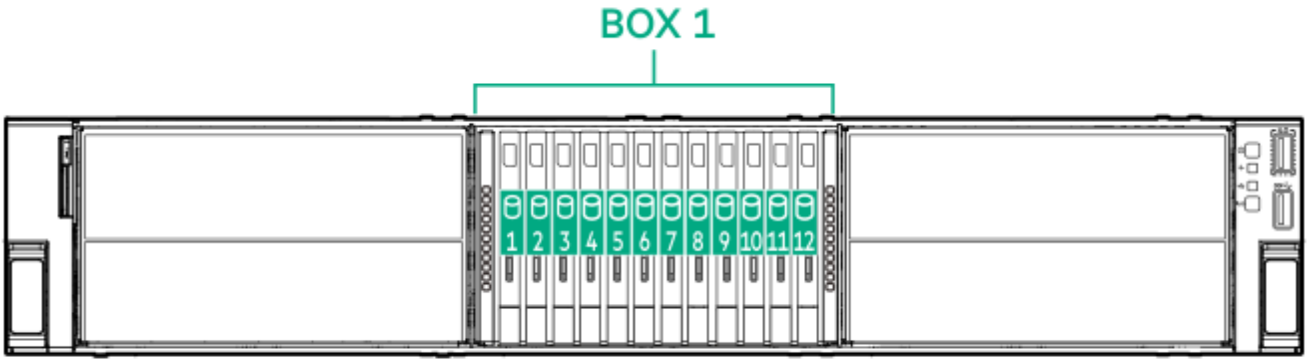
## Storage




**36 EDSFF E3.S 1T Drives**




**8 SFF Drives in GPU CTO server**




**12 EDSFF Drives in GPU CTO server**

# Technical Specifications

## System Unit

**Dimensions** (Height x Width x Depth)

- **8SFF, 24SFF and EDSFF chassis**
  8.75 x 44.8 x 64.6 cm
  3.45 x 17.64 x 25.45 in
- **8LFF chassis:**
  8.75 x 44.8 x 66.3 cm
  3.45 x 17.64 x 26.11 in
- **GPU Chassis:**
  8.75 x 44.8 x 79.87 cm
  3.45 x 17.64 x 31.44 in
- **Package:**
  27 x 60 x 91.77 cm
  10.63 x 23.62 x 36.13 in

**Weight** (approximate)

- 8SFF chassis:
  - Minimum: 8 SFF chassis with 0 drives, 1 processor, 1 power supply, 1 standard heatsink, 1 DIMM, 1 Smart Array controller, and 6 standard fans.
    - 16.04 kg
    - 35.36 lb.
  - Maximum: 8 SFF chassis with 8 drives (no mid/rear drive), 1 processor, 2 power supply, 1 standard heatsink, 12 DIMM, 1 Smart Array controller, and 6 standard fans.
    - 18.83 kg
    - 41.51 lb.
  - Package
    - 4.175kg
    - 9.204 lb.
- 8LFF chassis:
  - Minimum: 8 LFF chassis with 0 drives, 1 processor, 1 power supply, 1 standard heatsink, 1 DIMM, 1 Smart Array controller, and 6 standard fans.
    - 16.97 kg
    - 37.41 lb.
  - Maximum: 8 LFF chassis with 8 drives (no mid/rear drive), 1 processor, 2 power supply, 1 standard heatsink, 12 DIMM, 1 Smart Array controller, and 6 standard fans.
    - 23.95 kg
    - 52.81 lb.
  - Package
    - 4.240 kg
    - 9.347 lb.
- EDSFF chassis:
  - Minimum: EDSFF chassis with 1 drives, 1 processor, 1 power supply, 1 standard heatsink, 1 DIMM, and 6 standard fans.
    - 16.13 kg
    - 35.56 lb.
  - Maximum: EDSFF chassis with 36 drives, 1 processor, 2 power supply, 1 performance heatsink, 12 DIMM, and 6 performance fans.

## Technical Specifications

    - 24.87 kg
    - 54.83 lb.
- GPU chassis:
  - Minimum: GPU chassis with 1 single-width accelerator, 1 EDSFF drives, 1 processor, 1 power supply, 1 standard heatsink, 1 DIMM, and 6 standard fans.
    - 16.97 kg
    - 37.41 lb.
  - Maximum: GPU chassis with 2 double-width accelerators, 12 EDSFF drives, 1 processor, 2 power supply, 1 performance heatsink, 12 DIMM, and 6 performance fans.
    - 27.12 kg
    - 59.79 lb.

### Input Requirements (per power supply)

#### Rated Line Voltage

- 100 to 120 VAC
- 200 to 240 VAC

### BTU Rating

#### Maximum

- For 1600W Power Supply: 5918 BTU/hr. (at 200 VAC), 5884 BTU/hr. (at 240 VAC) for China
- For 800W Power Supply: 3207 BTU/hr. (at 100 VAC), 3071 BTU/hr. (at 200 VAC), 3112 BTU/hr. (at 240 VAC) for China Only
- For 500W Power Supply: 1979 BTU/hr. (at 100 VAC), 1911 BTU/hr. (at 200 VAC), 1965 BTU/hr. (at 240 VAC) for China Only

### Power Supply Output (per power supply)

#### Rated Steady-State Power

- For 1600W Power Supply: 1600W (at 240 VAC), 1600W (at 240 VAC)
- For 800W Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VAC) input for China only
- For 500W Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VAC) input for China only

#### Maximum Peak Power

- For 1600W Power Supply: 1600W (at 200 to 240 1VAC), 1600W (at 240 VAC) input for China only
- For 800W Power Supply: 800W (at 100 to 127 VAC), 800W (at 200 to 240 1VAC), 800W (at 240 VAC) input for China only
- For 500W Power Supply: 500W (at 100 to 127 VAC), 500W (at 200 to 240 VAC), and 500W (at 240 VAC) input for China only

# Technical Specifications

## 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. The maximum rate of change is 20°C/hr. (36°F/hr.). The upper limit and rate of change may be limited by the type and number of options installed.

  System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).
- **Extended Ambient Operating Temperature**
  For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft.) above 900 m (2953 ft.) to a maximum of 3050 m (10,000 ft.). The approved hardware configurations for this system are listed at the URL:**http://www.hpe.com/servers/ashrae**

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

  System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
- **Non-operating**
  -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr. (36°F/hr.).

## Relative Humidity

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

## Emissions Classification (EMC) – Regulatory Information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:
**http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts**

## 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.

## Technical Specifications

| | |
|---|---|
| **Idle** | |
| LWA,m | 5.5 B Base |
| LpAm | 41 dBA Base |
| Kv | 0.4 B Base |
| **Operating** | |
| LWA,m | 5.6 B Base |
| LpAm | 42 dBA Base |
| Kv | 0.4 B Base |

**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 LWAd), 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.
- System under abnormal conditions may increase the noise level, persons in the vicinity of the product [cabinet] for extended periods should consider wearing hearing protection or using other means to reduce noise exposure.

### 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 website. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

## Summary of Changes

| Date | Version History | Action | Description of Change |
|---|---|---|---|
| 07-Jul-2025 | **Version 33** | Changed | Core Options section was updated.<br>Added: Boot Controller SKUs. |
| 02-Jun-2025 | **Version 32** | Changed | Additional Options section was updated. Update in naming of RDIMMs and SaaS SKUs. |
| 05-May-2025 | **Version 31** | Changed | Core Options section was updated.<br>Added: Very Read Optimized – NVMe – EDSFF E3.S 1T, Read Intensive - 6G SATA - M.2 - Solid State Drives, OCP Adapters and Rail Kits SKUs and European Union ErP Lot 9 Regulation section to include Turkey and Ireland. |
| 07-Apr-2025 | **Version 30** | Changed | Additional Options section was updated.<br>Added: NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting SKU, COM Advanced SKUs and QuickSpecs Survey. |
| 18-Mar-2025 | **Version 29** | Changed | Standard Features section was updated. (AMD EPYC 9xx5 series now support 6400MT/s DIMM speed). |
| 03-Mar-2025 | **Version 28** | Changed | Overview, Standard Features and Additional Options sections were updated. |
| 06-Jan-2025 | **Version 27** | Changed | Core Options section was updated. |
| 02-Dec-2024 | **Version 26** | Changed | Core Options and Additional Options sections were updated. (OBS SKUs were removed) |
| 04-Nov-2024 | **Version 25** | Changed | Standard Features and Core Options sections were updated. |
| 10-Oct-2024 | **Version 24** | Changed | Overview, Standard Features and Core Options sections were updated. |
| 26-Sep-2024 | **Version 23** | Changed | Standard Features (Operating Systems and Virtualization Software Support for HPE Servers) |
| 05-Aug-2024 | **Version 22** | Changed | Standard Features and Core Options sections were updated. |
| 15-Jul-2024 | **Version 21** | Changed | Pre-Configured Models section was updated. |
| 01-Jul-2024 | **Version 20** | Changed | Core Options section was updated. |
| 03-Jun-2024 | **Version 19** | Changed | Pre-Configured Models and Core Options sections were updated. |
| 20-May-2024 | **Version 18** | Changed | Core Options section was updated. |
| 15-Apr-2024 | **Version 17** | Changed | Pre-Configured Models section was updated. |
| 01-Apr-2024 | **Version 16** | Changed | Standard Features, Core Options and Additional Options sections were updated. |
| 04-Mar-2024 | **Version 15** | Changed | Standard Features, Pre-Configured Models, Core Options and Additional Options sections were updated |
| 04-Dec-2023 | **Version 14** | Changed | Standard Features, Service and Support, Pre-Configured Models, Configuration Information, and Core Options sections were updated. |
| 02-Oct-2023 | **Version 13** | Changed | Overview, Standard Features and Core Options sections were updated |
| 05-Sep-2023 | **Version 12** | Changed | Standard Features, Pre-configured Models, Configuration Information, and Core Options sections were updated. |
| 07-Aug-2023 | **Version 11** | Changed | Overview, Standard Features, Pre-Configured Models, Configuration Information, Core Options, Additional Options, Storage, and Technical Specifications sections were updated |
| 10-Jul-2023 | **Version 10** | Changed | Overview, Standard Features, Service and Support, Pre-Configured Models, Configuration Information, Core Options and Memory sections were updated |
| 13-Jun-2023 | **Version 9** | Changed | Overview, Standard Features, Service and Support, Pre-Configured Models, Configuration Information and Core Options sections were updated |
| 01-May-2023 | **Version 8** | Changed | Standard Features and Core Options sections were updated. |
| 17-Apr-2023 | **Version 7** | Changed | Overview and Core Options sections were updated. |
| 03-Apr-2023 | **Version 6** | Changed | Overview, Standard Features, Service and Support, Pre-configured Models, Configuration Information, Core Options, Additional Options Storage, Memory and Technical Specifications sections were updated. |
| 06-Mar-2023 | **Version 5** | Changed | Overview, Standard Features, Configuration Information, additional Options and Technical Specifications sections were updated. |
| 06-Feb-2023 | **Version 4** | Changed | Overview, Standard Features, Configuration Information, additional Options and Technical Specifications sections were updated. |

## Summary of Changes

| Date | Version History | Action | Description of Change |
|---|---|---|---|
| 19-Dec-2022 | **Version 3** | Changed | Standard Features and Configuration information sections were updated. |
| 05-Dec-2022 | **Version 2** | Changed | All sections were updated. |
| 10-Nov-2022 | **Version 1** | New | New QuickSpecs. |

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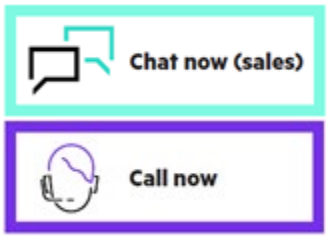
**Contact our presales specialists.**

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Hewlett Packard Enterprise

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

a50004298enw - 16902 - Worldwide - V33 - 07-July-2025