

### Overview

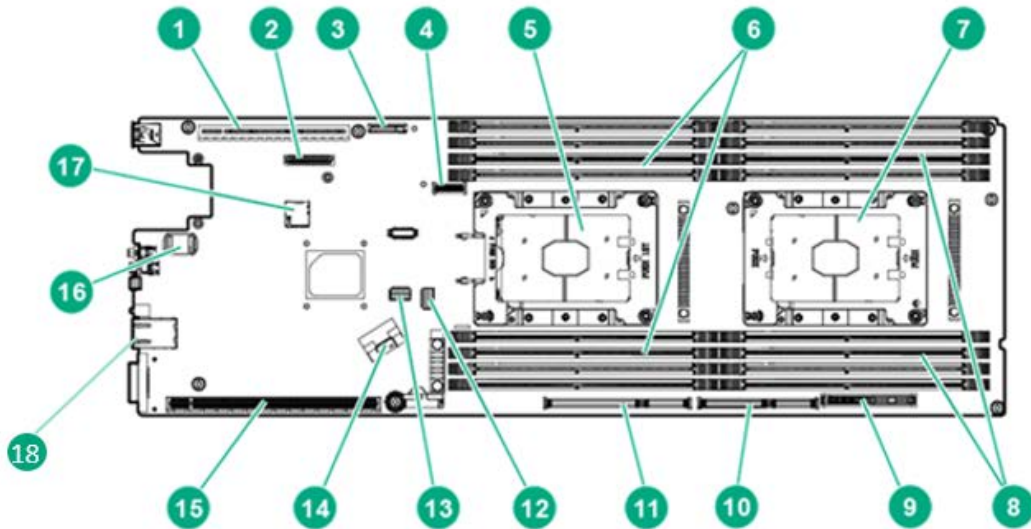
#### HPE ProLiant XL190r Gen10 Server

The ProLiant XL190r Gen10 Server is a 2U half-width, 2P server with the same configuration options as the XL170r for CPU and memory, but has additional PCIe slots in multiple configurations providing support for additional expansion cards and support for two (2) accelerators per server.

This server leverages Intel's latest Xeon Scalable Family series processors options ranging from Bronze to Platinum, increasing performance up to 30-40%, and DDR4 HPE SmartMemory, at speeds of up to 2666 MHz and 1.5TB maximum which boosts bandwidth and efficiency up to 66% over previous generation servers.

The dense and flexible HPE Apollo 2000 Chassis can accommodate up to two 2U hot-swap server trays to meet various workload needs while lowering TCO.

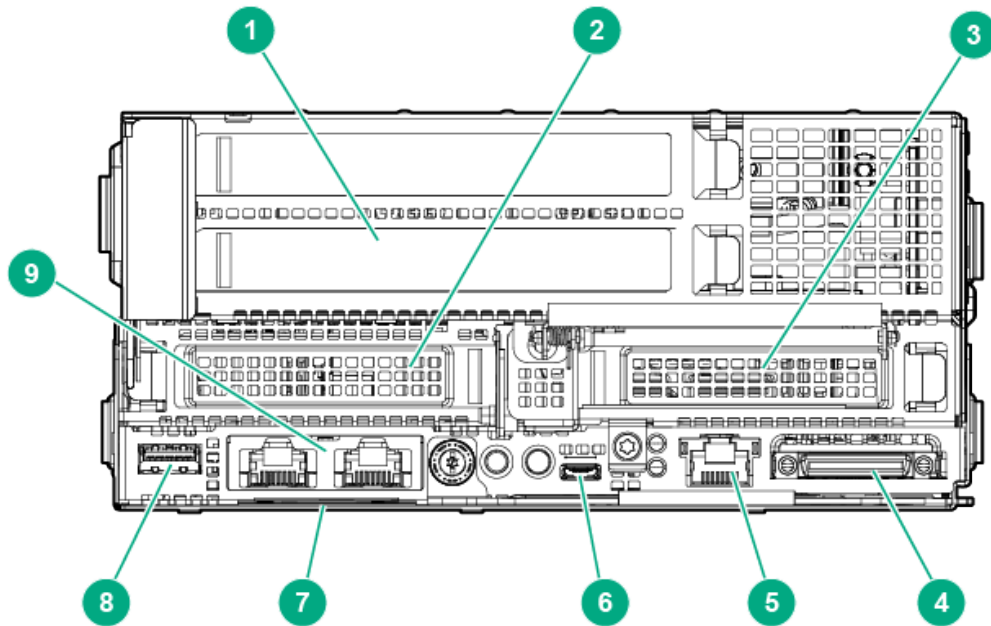
Rack scale power efficiency is fueled by the optional HPE Apollo Platform Manager for rack, chassis, server and component level management.



Front View

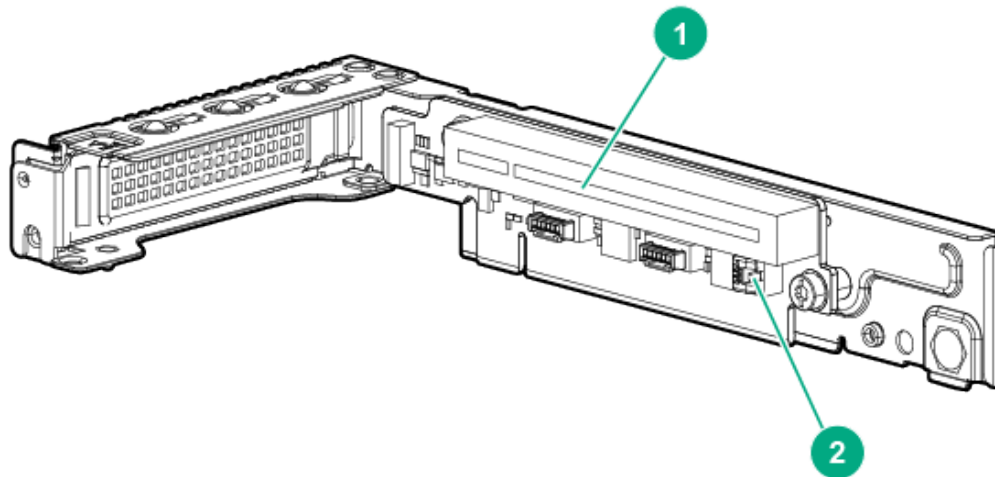
| Item | Description             | Item | Description                  |
|------|-------------------------|------|------------------------------|
| 1    | Primary riser slot 1    | 10   | Secondary riser slot 4       |
| 2    | mLOM connector          | 11   | Secondary riser slot 3       |
| 3    | System battery          | 12   | Slimline connector (SATA x4) |
| 4    | M.2 SSD riser connector | 13   | System maintenance switch    |
| 5    | Processor 1             | 14   | Slimline connector (SATA x8) |
| 6    | DIMMs for processor 1   | 15   | Secondary riser slot 2       |
| 7    | Processor 2             | 16   | TPM connector                |
| 8    | DIMMs for processor 2   | 17   | microSD slot                 |
| 9    | Bayonet board slot      | 18   | iLO dedicated port           |

Overview



2U Node Rear Panel Components

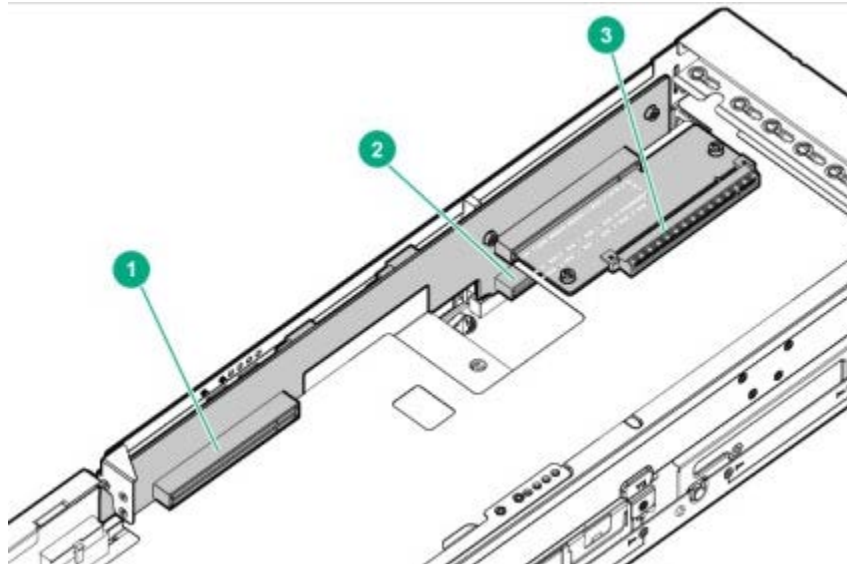
| Item | Description           | Item | Description                               |
|------|-----------------------|------|---|
| 1    | Dual Width GPU slot 3 | 6    | iLO service port                          |
| 2    | Slot 1                | 7    | Node serial number and iLO label pull tab |
| 3    | Slot 2                | 8    | USB 3.0 connector                         |
| 4    | SUV connector         | 9    | mLOM module                               |
| 5    | Dedicated iLO port    |      |   |



Single-Slot left PCI riser cage assembly

| Item | Form factor               | Slot number | Slot description                        |
|------|---------------------------|-------------|---|
| 1    | low profile PCIe NIC card | 1           | PCIe3 x16 (16, 8, 4, 1) for Processor 1 |
| 2    | N/A                       | N/A         | Storage backup power connector          |

## Overview



**2U secondary riser for processor 2 cage assembly**

| Item | Form factor                                     | Slot number | Slot description                        |
|------|---|-------------|---|
| 1    | Accelerator Card                                | 4           | PCIe3 x16 (16, 8, 4, 1) for Processor 2 |
| 2    | Storage controller or low-profile PCIe NIC card | 2           | PCIe3 x16 (16, 8, 4, 1) for Processor 2 |
| 3    | Accelerator Card                                | 3           | PCIe3 x16 (16, 8, 4, 1) for Processor 2 |

## Standard Features

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

### Processors

| Intel Xeon Models       | CPU Frequency | Cores | L3 Cache | Power | QPI           | CPU Frequency |
|-------------------------|---------------|-------|----------|-------|---------------|---------------|
| Platinum 8158 Processor | 3.0 GHz       | 12    | 24.75 MB | 150W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Platinum 8156 Processor | 3.6 GHz       | 4     | 16.50 MB | 105W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Platinum 8153 Processor | 2.0 GHz       | 16    | 22.00 MB | 125W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6152 Processor     | 2.1 GHz       | 22    | 30.25 MB | 140W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6148 Processor     | 2.4 GHz       | 20    | 27.50 MB | 150W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6144 Processor     | 3.5GHz        | 8     | 24.75 MB | 150W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6142 Processor     | 2.6 GHz       | 16    | 22.00 MB | 150W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6140 Processor     | 2.3 GHz       | 18    | 24.75 MB | 140W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6138 Processor     | 2.0 GHz       | 20    | 27.50 MB | 125W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6138F Processor    | 2.0 GHz       | 20    | 27.50 MB | 135W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6136 Processor     | 3.0 GHz       | 12    | 24.75 MB | 150W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6134 Processor     | 3.2 GHz       | 8     | 24.75 MB | 130W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6132 Processor     | 2.6 GHz       | 14    | 19.25 MB | 140W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6130 Processor     | 2.1 GHz       | 16    | 22.00 MB | 125W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6130F Processor    | 2.1 GHz       | 16    | 22.00 MB | 135W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6128 Processor     | 3.4 GHz       | 6     | 19.25 MB | 115W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6126 Processor     | 2.6 GHz       | 12    | 19.25 MB | 125W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 6126F Processor    | 2.6 GHz       | 12    | 19.25 MB | 135W  | 3 @ 10.4 GT/s | 2666 MT/s     |
| Gold 5122 Processor     | 3.6 GHz       | 4     | 16.50 MB | 105W  | 2 @ 10.4 GT/s | 2400 MT/s     |
| Gold 5120 Processor     | 2.2 GHz       | 14    | 19.25 MB | 105W  | 2 @ 10.4 GT/s | 2400 MT/s     |
| Gold 5118 Processor     | 2.3 GHz       | 12    | 16.50 MB | 105W  | 2 @ 10.4 GT/s | 2400 MT/s     |
| Gold 5115 Processor     | 2.4 GHz       | 10    | 13.75 MB | 85W   | 2 @ 10.4 GT/s | 2400 MT/s     |
| Silver 4116 Processor   | 2.1 GHz       | 12    | 16.50 MB | 85W   | 2 @ 9.6 GT/s  | 2400 MT/s     |
| Silver 4114 Processor   | 2.2 GHz       | 10    | 13.75 MB | 85W   | 2 @ 9.6 GT/s  | 2400 MT/s     |
| Silver 4110 Processor   | 2.6 GHz       | 8     | 11.00 MB | 85W   | 2 @ 9.6 GT/s  | 2400 MT/s     |
| Silver 4109T Processor  | 2.0 GHz       | 8     | 11.00 MB | 70W   | 2 @ 9.6 GT/s  | 2400 MT/s     |
| Silver 4108 Processor   | 2.1 GHz       | 8     | 11.00 MB | 85W   | 2 @ 9.6 GT/s  | 2400 MT/s     |
| Bronze 3106 Processor   | 1.8 GHz       | 8     | 11.00 MB | 85W   | 2 @ 9.6 GT/s  | 2133 MT/s     |

### Chipset

Intel® C622 Chipset (Intel EY82C622 PCH)

**NOTE:** For more information regarding Intel® chipsets, please see the following URL:

<http://www.intel.com/products/server/chipsets/>

## Standard Features

### On System Management Processor

HPE iLO 5 ASIC.

**NOTE:** Read and learn more in the [iLO QuickSpecs](#)

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### Memory

|                      |  |
|----------------------|--|
| Type                 | HPE SmartMemory<br>DDR4 Load Reduced (LRDIMM), or Registered (RDIMM) |
| DIMM Slots Available | 16 DIMM Slots available  |
| Maximum (LRDIMM)     | 1.5TB  |

**NOTE:** HPE memory from previous generation servers are not fully compatible with the HPE ProLiant XL190r Gen10 Server.

**NOTE:** To realize the performance memory capabilities listed in this document, HPE SmartMemory is required.

**NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.

**NOTE:** The maximum memory speed is a function of the memory type, memory configuration, and processor model. Please see [Memory Population Table](#) or the [Online Memory Configuration Tool](#) at:

<http://www.hpe.com/servers/servermemoryconfigurator>

**NOTE:** Memory DIMM availability with a server platform is dependent upon completion of certification testing.

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### Memory Protection

For details on the HPE Server Memory Options RAS feature, visit:

<http://www.hpe.com/docs/memory-ras-feature>.

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### Expansion Slots (EE)

| Expansion Slot # | Technology | Bus Width* | Source        | Connector Width | Form Factor                   |
|------------------|------------|------------|---------------|-----------------|-------------------------------|
| 1                | PCIe 3.0   | x16        | CPU1          | x16             | Low profile                   |
| FlexibleLOM      | PCIe 3.0   | X8         | CPU1          | x16             | FlexibleLOM                   |
| FlexibleLOM      | PCIe 3.0   | X16        | CPU2          | x16             | Low profile                   |
| 3                | PCIe 3.0   | X16        | CPU1/<br>CPU2 | X16             | Full height/max<br>10.5" long |
| 4                | PCIe 3.0   | X16        | CPU2          | X16             | Full height/max<br>10.5" long |

**NOTE:** \*Indicates the number of physical electrical lanes running to the connector.

**NOTE:** Expansion slot 1 requires ordering HPE XL1x0r Gen10 Left LP Riser Kit (874296-B21)

**NOTE:** FlexibleLOM require ordering HPE XL190r Gen10 FLOM Riser Kit (874847-B21)

**NOTE:** Expansion slot 2 HPE XL190r Gen10 P2 Riser Kit (874851-B21)

**NOTE:** Expansion slot 3 and 4 requires ordering HPE XL190r Gen10 FLOM Riser Kit (874847-B21) or HPE XL190r Gen10 P2 Riser Kit (874851-B21)

## Standard Features

### Storage Controller

#### Converged Network Adapters

HPE StoreFabric CN1200E 10Gb CNA  
 HPE StoreFabric CN1200E-T 10Gb CNA  
 HPE CN1100R 2P Converged Network Adapter  
 HPE StoreFabric CN1100R-T 10Gb CAN

#### Smart Array Controller

HPE Smart Array E208i-p SR Gen10 Controller  
 HPE Smart Array E208e-p SR Gen10 Controller  
 HPE Smart Array P408e-p SR Gen10 Controller  
 HPE Smart Array P408i-p SR Gen10 Controller

#### Host Bus Adapter

HPE SN1600Q 32Gb 1p FC HBA  
 HPE SN1600E 32Gb 1p FC HBA  
 HPE SN1600E 32Gb 2p FC HBA  
 HPE SN1200E 16Gb 2p FC HBA  
 HPE SN1100Q 16Gb 1p FC HBA

#### Storage Controller Cable Kits

HPE 96W Smart Storage Battery 145mm Cable  
 HPE XL190r Gen10 S100i SATA Cable Kit  
 HPE XL190r Lft E208ip/P408ip Cbl Kit  
 HPE XL190r Rght E208ip/P408ip Cbl Kit

**NOTE:** AHCI mode is default settings and to convert to S100i mode, HPE FIO Enable Smart Array SW RAID needs to be selected.

| Maximum Internal Storage  | Capacity | Configuration |
|---------------------------|----------|---------------|
| Hot Plug LFF SAS 7.2k     | 60TB     | 6x 10TB       |
| Hot Plug LFF SAS 15k      | 5.4TB    | 6 x 900GB     |
| Hot Plug LFF SATA         | 60TB     | 6 x 10TB      |
| Hot Plug LFF SATA SSD     | 23.04TB  | 6x 3.84TB     |
| Hot Plug LFF SAS SSD      | 9.6TB    | 6x 1.6TB      |
| Hot Plug SFF SAS 7.2k     | 24TB     | 12x 2TB       |
| Hot Plug SFF SAS 10k      | 28.8TB   | 12x 2.4TB     |
| Hot Plug SFF SAS 15k      | 10.8TB   | 12x 900GB     |
| Hot Plug SFF SATA         | 24TB     | 12x 2TB       |
| Hot Plug SFF SATA SSD     | 24.08TB  | 12x 3.8TB     |
| Hot Plug SFF SAS SSD      | 46.08TB  | 12x 3.84TB    |
| NVMe x4 MU SFF SCN DS SSD | 16TB     | 4x 4TB        |

### Internal Storage Devices

Internal MicroSD slot

### Interfaces

#### FlexibleLOM

HPE ProLiant Gen10 servers offer a new networking technology-Flexible Network Technology. The HPE ProLiant Gen10 server offers the customer the choice of 1Gigabit, 10Gigabit, 25Gigabit, InfiniBand, Omni-Path or FlexibleLOM solutions depending on workload. For further details on the choices, see FlexibleLOM in the Networking Section of this document.

#### KVM

Serial USB Video Port (SUV)

## Standard Features

|   |  |
|---|--|
| <b>MicroSD</b>                                | 1 (internal)   |
| <b>USB Ports</b>                              | 2 (external via SUV); 1 USB 3.0 (external);                                |
| <b>HPE iLO Remote Management Network Port</b> | Aggregated via HPE Apollo 2000 Chassis; or on board dedicated iLO NIC port |
| <b>Health LED</b>                             | 1  |
| <b>Power</b>                                  | 1  |
| <b>UID</b>                                    | 1  |
| <b>Do not remove LED</b>                      | 1  |

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### Operating Systems and Virtualization Software Support for ProLiant Servers

Windows Server 2012 R2 (Most Recent Version)

Windows Server 2016 (Most Recent Version)

VMware ESXi 6.0 U3

VMware ESXi 6.5 and U1 upon release

Red Hat Enterprise Linux (RHEL) 6.9 and 7.3

SUSE Linux Enterprise Server (SLES) 11 SP4 and 12 SP2

CentOS

**NOTE:** CentOS not directly supported / Community Supported (Based on RHEL so RHEL testing and enablement applicable to CentOS) CentOS 6.9 / CentOS 7.3.

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

**<http://h20566.www2.hp.com/portal/site/hpsc/public/psi/home?sp4ts.oid=1010026818>**

### Industry Standard Compliance

ACPI 6.1 Compliant

PCIe 3.0 Compliant

WOL Support

Microsoft® Logo certifications

PXE Support

USB 3.0 Compliant (internal); USB 2.0 Compliant (external ports via SUV)

SMBIOS 3.1

UEFI 2.6

Redfish API

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### Power Specifications

To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at URL:

**<http://www.hp.com/servers/powersupplies>**

**NOTE:** Power Specification and Technical Content for supported power supplies can be found at:

**<https://www.hp.com/info/qs>**

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## Standard Features

### Graphics

Integrated Matrox G200 video standard

- 1280 x 1024 (32 bpp)
  - 1920 x 1200 (16 bpp)
  - HPE iLO 5 On System Management Memory
  - 32 MB Flash
  - 512 MB DDR 3 with ECC (112 MB after ECC and video)
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### HPE Server UEFI /Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen10 servers have a UEFI Class 2 implementation and support both UEFI Mode (default) and Legacy BIOS Mode.

**NOTE:** The UEFI System Utilities tool is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hpe.com/servers/uefi>.

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

- Secure Boot and Secure Start enable for enhanced security
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using iLO RESTful API that is Redfish API Conformant.
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM
- Network Stack configurations
- Workload Profiles for simple performance optimization

UEFI Boot Mode only:

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

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

**NOTE:** UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant XL190r Gen10 Server.

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### Form Factor

The ProLiant XL190r Gen10 Server is a single-slot 2U node for the HPE Apollo 2000 Chassis.

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## Standard Features

### 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>

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### UEFI

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

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### iLO RESTful API

iLO RESTful API is Redfish API conformance and offers simplified server management automation such as configuration and maintenance tasks based on modern industry standards. Learn more at: <http://www.hpe.com/info/restfulapi>

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### Server Utilities

#### Active Health System

The HPE Active Health System (AHS) is an essential component of iLO management portfolio that provides continuous, proactive health monitoring of HPE servers. Learn more at: <http://www.hpe.com/servers/ahs>

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#### Active Health System Viewer

Use the Active Health System Viewer, a web-based portal, to easily read AHS logs and speed problem resolution with HPE self-repair recommendations. Learn more at <http://www.hpe.com/servers/ahsv>

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### Smart Update

Keep your servers up to date with HPE's Smart Update solution by using Smart Update Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLiant (SPP). <http://www.hpe.com/info/smartupdate>.

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### Warranty

This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners (may vary by region). Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty.

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

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### Warranty and Services - Options

**NOTE:** HPE ProLiant XL190r Gen10 Servers are covered under the HPE Service Contract applied to the HPE ProLiant Server. No separate HPE support services need to be purchased.

Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS batteries over 12KVA. See the specific high value options that require additional support: <http://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-8876ENW.pdf>

## Service and Support

### HPE Pointnext Service and Support

The support of HPE XL190r tray covers the tray and all included options. It is recommended to have the same attached support level for the Server tray as the chassis

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### HPE Technology Services for Apollo Systems

#### Protect your business beyond warranty with HPE Support Services

HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation. From the onset of your transformation journey, Advisory and Transformational Services focus on designing the transformation and creating a solution roadmap. Professional Services specializes in creative configurations with flawless and on-time implementation, and on-budget execution. Finally, operational services provides innovative new approaches like Flexible Capacity and Datacenter Care, to keep your business at peak performance. HPE is ready to bring together all the pieces of the puzzle for you, with an eye on the future, and make the complex simple.

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### Get connected to Hewlett Packard Enterprise to improve your support experience

#### Connect your devices:

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time and improve diagnostic accuracy with a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.

Learn more about getting connected at <http://www.hpe.com/services/getconnected>

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### Recommended HPE Support Services for your XL190r: Supports maintaining servers at optimum performance availability:

HPE Proactive Care\* with 24x7 coverage, three year Support Service

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This Service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers. <https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

**NOTE:** \*HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.

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## Service and Support

### **Standard recommendation: HPE Foundation Care 24x7, three-year Support Service**

HPE Foundation Care 24x7 gives you access to HPE 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. In addition, collaborative software support is included in this service that provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

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### **Basic recommendation: HPE Foundation Care NBD, three-year Support Service**

HPE Foundation Care Next Business Day connects you to HPE during business hours for assistance on resolving issues – This service features need based next business day hardware onsite response and software call back within two hours. In addition, Collaborative software support and provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

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### **Other Related Services**

#### **HPE Server Hardware Installation**

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf>

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#### **HPE Installation and Startup Service**

Provides for the installation of your HPE hardware according to product specifications including options as well as installation of the operating system. The HPE service delivery technician will connect the product to a LAN as appropriate and enable remote support to allow for automatic case creation for hardware failures.

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#### **HPE Datacenter Care service**

HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services “building blocks.” You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with HPE via a single point of accountability for HPE and others’ products. For more information, visit

<http://www.hpe.com/services/datacentercare>

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#### **DC for Hyperscale**

Datacenter Care for Hyperscale is available for Service Providers and HPC customers who use a scale out approach to computing with a high volume homogenous infrastructure and resilient architecture can take advantage of this environment support tailored to their operating model.

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#### **HPE Factory Express for Servers and storage**

HPE Factory Express offers configuration, customization, integration and deployment services for HPE servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HPE products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers, as well as the HPE MSAXxxx, HPE 3PAR suite, HPE XP, rackable tape libraries and configurable network switches.

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## Service and Support

### HPE Technology Services Support Credits

Offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

### HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book a class today and learn how to get the most from your technology investment. <http://www.hpe.com/ww/learn>

### HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers. Learn more at <http://www.hpe.com/support/hpesc>

HPE's Support Center Mobile App\* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.

**NOTE:** \*HPE Support Center Mobile App is subject to local availability.

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

### Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

**NOTE:** 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 Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

**NOTE:** FIO indicates that this option is only available as a factory installable option.

**NOTE:** HPE Apollo 2000 Chassis is required to support the server. Refer to their QuickSpecs for additional information.

[HPE Apollo 2000 Chassis](#)

**Step 1: Base Configuration** (Choose one of the CTO Models below)

#### HPE CTO Model

|   |            |
|---|------------|
| HPE ProLiant XL190r Gen10 2U Node Configure-to-order Server | 867056-B21 |
|---|------------|

**Step 2: Choose Required Options** (only one from each category unless otherwise noted)

#### Processors

##### Intel-Gold Processors

|  |            |
|--|------------|
| HPE XL1x0r Gen10 Intel Xeon-Gold 6148 (2.4GHz/20-core/150W) FIO Processor Kit  | 874292-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6144 (3.5GHz/8-core/150W) FIO Processor Kit   | 880671-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6142 (2.6GHz/16-core/150W) FIO Processor Kit  | 874287-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) FIO Processor Kit  | 874289-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6138 (2.0 GHz/20-core/125W) FIO Processor Kit | 874291-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) FIO Processor Kit  | 874288-L21 |

## Configuration Information

|   |            |
|---|------------|
| HPE XL1x0r Gen10 Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) FIO Processor Kit  | 874290-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6132 (2.6GHz/14-core/140W) FIO Processor Kit | 880669-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5115 (2.4GHz/10-core/85W) FIO Processor Kit  | 879579-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6130 (2.1GHz/16-core/125W) FIO Processor Kit | 874286-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) FIO Processor Kit  | 880667-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) FIO Processor Kit | 874283-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) FIO Processor Kit  | 874282-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5120 (2.2GHz/14-core/105W) FIO Processor Kit | 879583-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Bronze 3104 (1.7GHz/6-core/85W) FIO Processor Kit | 879587-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5118 (2.3GHz/12-core/105W) FIO Processor Kit | 879581-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6152 (2.1GHz/22-core/140W) FIO Processor Kit | 874293-L21 |

### Intel-Silver Processors

|  |            |
|--|------------|
| HPE XL1x0r Gen10 Intel Xeon-Silver 4116 (2.1GHz/12-core/85W) FIO Processor Kit | 879577-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4112 (2.6GHz/4-core/85W) FIO Processor Kit  | 879597-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4108 (1.8GHz/8-core/85W) FIO Processor Kit  | 879591-L21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4109T (2.0GHz/8-core/70W) FIO Processor Kit | 879593-L21 |

**NOTE:** If two processors are desired, select one corresponding xxxxxx-B21. Mixing of processor speeds and types is not supported.  
**NOTE:** DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. For the maximum supported memory speeds for each processor listed above, please reference the 'Memory Speed by Processor Model' table in the Memory section of the QuickSpecs.

## HPE Memory

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2666MHz, 2400MHz, and 2133MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

### Registered DIMMs (RDIMMs) – DDR4-2666

|   |            |
|---|------------|
| HPE 8GB (1x8GB) Single Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 815097-B21 |
| HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit | 815098-B21 |
| HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 815100-B21 |
| HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 835955-B21 |
| HPE 8GB (1x8GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit     | 876181-B21 |

### Load Reduced DIMMs (LRDIMMs) – DDR4-2666

|  |            |
|--|------------|
| HPE 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Smart Memory Kit  | 815101-B21 |
| HPE 128GB (1x128GB) Octal Rank x4 DDR4-2666 CAS-22-19-19 3DS Load Reduced Memory Kit | 815102-B21 |

**NOTE:** Minimum 2 DIMMs are required per server; up to 8 DIMMs per processor.

**NOTE:** If Fabric CPU is installed, minimum of 32GB is required

**NOTE:** A maximum of 16 DIMMs are supported per XL170r server tray (or 8 DIMMs max per processor).

**NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.

**NOTE:** HPE memory from previous generation servers is not compatible with this server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen10. For additional information, please see the HPE SmartMemory QuickSpecs at: <https://www.hpe.com/h20195/v2/GetPDF.aspx/c04355083.pdf>

**NOTE:** For the maximum supported memory speeds for each processor listed above, please reference the 'Memory Speed by Processor Model' table in the Memory section of the QuickSpecs.

**NOTE:** The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document.

## HPE PCIe riser kits

## Configuration Information

|   |            |
|---|------------|
| HPE XL1x0r Gen10 Left Riser FIO Blank Kit   | 874805-B21 |
| <b>NOTE:</b> Minimum 2 Riser Cards must be selected per server.   |            |
| HPE XL1x0r Gen10 Left Low Profile Riser Kit   | 874296-B21 |
| <b>NOTE:</b> HPE XL190r Gen10 P2 Riser Kit (874851-B21) is selected, total available PCIe slots is four (4x16) total available FlexibleLOM slots is 0.  |            |
| <b>NOTE:</b> When HPE XL1x0r Gen10 Left Low Profile Riser Kit & HPE XL190r Gen10 FLOM Riser Kit (874847-B21) is selected, total available PCIe slots is three (3x16) total available FlexibleLOM slots is one.        |            |
| <b>NOTE:</b> When HPE XL1x0r Gen10 Left Low Profile Riser Kit & HPE XL190r Gen10 16NVMe FLOM Riser Kit (874849-B21) is selected, total available PCIe slots is three (3x16) total available FlexibleLOM slots is one. |            |
| HPE XL190r Gen10 P2 Riser Kit   | 874851-B21 |
| HPE XL1x0r Gen10 M2 (NGFF) Riser Kit  | 874853-B21 |
| <b>NOTE:</b> Must have 874853-B21 to support the M.2 devices  |            |
| HPE XL190r Gen10 16NVMe FlexibleLOM Riser Kit   | 874849-B21 |
| HPE XL190r Gen10 FlexibleLOM Riser Kit  | 874847-B21 |
| <b>NOTE:</b> Only 874849-B21 and 874847-B21 can support FLOM adapter  |            |

### HPE Storage Controllers

**NOTE:** Required to select one of the following when SAS drives are installed on the server.

|   |            |
|---|------------|
| HPE Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller  | 804394-B21 |
| <b>NOTE:</b> Supports up to 8 internal SAS/SATA Drives. HPE XL190r Left E208ip/P408ip Cable Kit (874787-B21) or HPE XL190r Right E208i/P408i Cable Kit (874791-B21) must be ordered to support P-series controllers.  |            |
| HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller (Recommended)   | 830824-B21 |
| <b>NOTE:</b> Supports up to 8 internal SAS/SATA Drives. HPE XL190r Left E208ip/P408ip Cable Kit (874787-B21) or HPE XL190r Right E208i/P408i Cable Kit (874791-B21) must be ordered to support P-series controllers.  |            |
| HPE FIO Enable Smart Array SW RAID  | 784308-B21 |
| <b>NOTE:</b> This option enables the Smart Array Software RAID capability; also referenced as B140i or S100i). HPE XL190r Gen10 S100i SATA Cable Kit (874305-B21) must be ordered with this selection. This option may not be selected if HPE Legacy Mode Setting (758959-B22) is selected. |            |

### HPE Storage Cables

|   |            |
|---|------------|
| HPE 96W Smart Storage Battery (up to 20 Devices) with 145mm Cable Kit   | P01366-B21 |
| <b>NOTE:</b> The battery cable kit needs to be selected if the node has the P series controller in the node configuration   |            |
| HPE XL190r Gen10 S100i SATA Cable Kit   | 874307-B21 |
| <b>NOTE:</b> Required to be selected when S100i is the primary controller. This cable supports to connect to SATA drives. Max = 1 of cable kit per Node can be selected.  |            |
| <b>NOTE:</b> R2200 + 2U node - Supports max of 6 SATA hard drive per node   |            |
| R2600 + 2U Node - Supports 6 SATA hard drives per node  |            |
| HPE XL190r Left E208ip/P408ip Cable Kit   | 874787-B21 |
| <b>NOTE:</b> Required to be selected when E208i or P408i is selected in the configuration along with HPE XL1x0r Gen10 Left LP Riser Kit excluding Fabric CPU enablement kit in the configuration  |            |
| HPE XL190r Right E208ip/P408ip Cable Kit  | 874791-B21 |
| <b>NOTE:</b> Required to be selected when E208i or 408i is selected along with one the below mentioned Riser including the Fabric CPU enablement kit in the configuration.<br>(Fabric CPU enablement kit gets installed in the slot1 and hence the controller can be installed only in any one of the right riser ( Slot2) mentioned below) |            |
| HPE XL190r Gen10 FLOM Riser Kit   |            |
| HPE XL190r Gen10 P2 LP Riser Kit  |            |
| HPE XL190r 16NVMe Gen10 P2 LP Riser Kit   |            |

## Configuration Information

**Step 3: Choose Additional Factory Integrated Options** (only one from each category unless otherwise noted)

### BIOS Mode

HPE Legacy FIO Mode Setting 758959-B22

**NOTE:** The system BIOS provides two different Boot Modes: UEFI (Standard) and Legacy BIOS (optional) (758959-B22)

When this option is selected, then BIOS need to be switched from default UEFI Mode to Legacy Mode

### Controller State

HPE FIO Enable Smart Array SW RAID 784308-B21

HPE Manufacturing FIO Enable HBA Mode Setting 792962-B21

**NOTE:** If E208i is the primary controller and if HPE Mfg FIO Enable HBA Mode Setting is selected, then RAID is not allowed – can only be selected with E208i only

### HPE Security Hardware

HPE Gen10 TPM 1.2 FIO Setting 872108-B21

**NOTE:** This can be selected only when TPM 2.0 Gen10 Kit (864279-B21) is selected in the configuration

### HPE Converged Infrastructure Management Software

HPE OneView w/o iLO including 3yr 24x7 Support 1-server FIO LTU P8B31A

HPE OneView for ProLiant DL Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU E5Y43A

**Step 4: Choose Additional Options for Factory Integration from Core and Additional Options sections below**

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

## Core Options

### HPE Processors

#### Intel-Gold Processors

|  |            |
|--|------------|
| HPE XL1x0r Gen10 Intel Xeon-Gold 6148 (2.4GHz/20-core/150W) Processor Kit  | 874292-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6144 (3.5GHz/8-core/150W) Processor Kit   | 880671-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6142 (2.6GHz/16-core/150W) Processor Kit  | 874287-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) Processor Kit  | 874289-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6138 (2.0 GHz/20-core/125W) Processor Kit | 874291-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) Processor Kit  | 874288-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) Processor Kit   | 874290-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6132 (2.6GHz/14-core/140W) Processor Kit  | 880669-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6130 (2.1GHz/16-core/125W) Processor Kit  | 874286-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) Processor Kit   | 880667-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) Processor Kit  | 874283-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) Processor Kit   | 874282-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5120 (2.2GHz/14-core/105W) Processor Kit  | 879583-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 6152 (2.1GHz/22-core/140W) Processor Kit  | 874293-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5115 (2.4GHz/10-core/85W) Processor Kit   | 879579-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5119T (1.9GHz/14-core/85W) Processor Kit  | 882040-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Gold 5118 (2.3GHz/12-core/105W) Processor Kit  | 879581-B21 |

#### Intel-Silver Processors

|  |            |
|--|------------|
| HPE XL1x0r Gen10 Intel Xeon-Silver 4116 (2.1GHz/12-core/85W) Processor Kit | 879577-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4112 (2.6GHz/4-core/85W) Processor Kit  | 879597-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4108 (1.8GHz/8-core/85W) Processor Kit  | 879591-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Silver 4109T (2.0GHz/8-core/70W) Processor Kit | 879593-B21 |
| HPE XL1x0r Gen10 Intel Xeon-Bronze 3104 (1.7GHz/6-core/85W) Processor Kit  | 879587-B21 |

**NOTE:** DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. For the maximum supported memory speeds for each processor listed above, please reference the 'Memory Speed by Processor Model' table in the Memory section of the QuickSpecs.

### HPE Memory

#### Registered DIMMs (RDIMMs) – DDR4-2666

|   |            |
|---|------------|
| HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit | 815098-B21 |
| HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 815100-B21 |
| HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 835955-B21 |
| HPE 8GB (1x8GB) Single Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit   | 815097-B21 |
| HPE 8GB (1x8GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit     | 876181-B21 |

#### Load Reduced DIMMs (LRDIMMs) – DDR4-2666

|   |            |
|---|------------|
| HPE 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Smart Memory Kit | 815101-B21 |
|---|------------|

**NOTE:** HPE memory from previous generation servers (DDR3) is not compatible with this server. HPE DDR4 SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen10. For additional information, please see the HPE DDR4 SmartMemory QuickSpecs at:

<http://www8.hpe.com/h20195/v2/GetHTML.aspx?docname=c04380279>

**NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be miTPMxed within a server.



## Core Options

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2666MHz, 2400MHz, 2133MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://h22195.www2.hp.com/MemoryTool/Home/Legal>

### HPE Networking

#### FlexFabric Options

|  |            |
|--|------------|
| HPE FlexFabric 10Gb 4-port 536FLR-T Adapter    | 764302-B21 |
| HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter | 700751-B21 |
| HPE FlexFabric 10Gb 2-port 533FLR-T Adapter    | 700759-B21 |

#### Ethernet Options

|   |            |
|---|------------|
| HPE XL1x0r Ethernet 10Gb 2-port 568FLR-MMT Adapter                                    | 868227-B21 |
| HPE Ethernet 10Gb 2-port 530SFP Adapter   | 652503-B21 |
| HPE Ethernet 10Gb 2-port 530T Adapter   | 656596-B21 |
| HPE Ethernet 10/25Gb 2-port 631SFP28 Adapter  | 817718-B21 |
| HPE Ethernet 10Gb 2-port 535T Adapter   | 813661-B21 |
| HPE Ethernet 1Gb 4-port 366T Adapter  | 811546-B21 |
| HPE Ethernet 1Gb 2-port 368FLR-T Media Module Adapter                                 | 866464-B21 |
| HPE Ethernet 10Gb 2-port 568FLR-SFP+ Media Module Adapter                             | 866467-B21 |
| HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter                                      | 817749-B21 |
| HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter  | 817753-B21 |
| HPE Ethernet 1Gb 4-port 331T Adapter  | 647594-B21 |
| HPE Ethernet 10Gb 2-port 562T Adapter   | 817738-B21 |
| HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter  | 867328-B21 |
| HPE Ethernet 100Gb 1-port 842QSFP28 Adapter   | 874253-B21 |
| HPE Ethernet 10Gb 2-port 562FLR-T Adapter   | 817745-B21 |
| HPE Ethernet 1Gb 4-port 366FLR Adapter  | 665240-B21 |
| HPE Ethernet 1Gb 4-port 331FLR Adapter  | 629135-B22 |
| HPE Ethernet 10Gb 2-port 535FLR-T Adapter   | 817721-B21 |
| HPE Ethernet 10/25Gb 2-port 631FLR-SFP28 Adapter                                      | 817709-B21 |
| HPE 100Gb 1-port OP101 QSFP28 x16 PCIe Gen3 with Intel Omni-Path Architecture Adapter | 829335-B21 |
| HPE Ethernet 10Gb 2-port 521T Adapter   | 867707-B21 |
| HPE Ethernet 1Gb 2-port 332T Adapter  | 615732-B21 |

#### Ethernet Options - InfiniBand

|   |            |
|---|------------|
| HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter | 764285-B21 |
| HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter     | 764284-B21 |
| HPE InfiniBand EDR 100Gb 1-port 841QSFP28 Adapter                 | 872725-B21 |
| HPE InfiniBand FDR/Ethernet 40/50Gb 2-port 547FLR-QSFP Adapter    | 879482-B21 |
| HPE InfiniBand EDR/Ethernet 100Gb 1-port 840QSFP28 Adapter        | 825110-B21 |
| HPE InfiniBand EDR/Ethernet 100Gb 2-port 840QSFP28 Adapter        | 825111-B21 |
| HPE InfiniBand EDR/Ethernet 100Gb 2-port 841QSFP28 Adapter        | 872726-B21 |

**NOTE:** For 1U, total Slots available for PCIe is 2, total Slots available for FlexLOM is 1. This is a total selection from anything in the following categories: InfiniBand, Networking, Controllers.

## Core Options

### HPE Drives

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

|  |            |
|--|------------|
| HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD      | 870753-B21 |
| HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD      | 872475-B21 |
| HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD      | 872477-B21 |
| HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD      | 870759-B21 |
| HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD      | 872479-B21 |
| HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD | 872481-B21 |
| HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD | 881457-B21 |

#### Enterprise - 12G SAS - LFF Drives

|  |            |
|--|------------|
| HPE 900GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD | 870761-B21 |
|--|------------|

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

|  |            |
|--|------------|
| HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD              | 832514-B21 |
| HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD                                   | 765466-B21 |
| HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD         | 765464-B21 |
| HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD         | 834031-B21 |
| HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD              | 833926-B21 |
| HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD              | 833928-B21 |
| HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD | 857646-B21 |

#### Midline - 12G SAS - LFF Drives

|   |            |
|---|------------|
| HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD                      | 861746-B21 |
| HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD                      | 861748-B21 |
| HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD | 846526-B21 |

#### Midline - 6G SATA SFF Drives

|  |            |
|--|------------|
| HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD | 765455-B21 |
| HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD      | 655710-B21 |

#### Midline - 6G SATA - LFF Drives

|  |            |
|--|------------|
| HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD              | 861683-B21 |
| HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD              | 861686-B21 |
| HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD | 857650-B21 |
| HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD         | 834028-B21 |
| HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD                                   | 861742-B21 |
| HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD              | 861681-B21 |
| HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD                                   | 861744-B21 |

### SSD Selection

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

|  |            |
|--|------------|
| HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 872390-B21 |
| HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872392-B21 |
| HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872394-B21 |
| HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P06584-B21 |
| HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P06586-B21 |
| HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P06588-B21 |
| HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P06590-B21 |
| HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P06592-B21 |

## Core Options

|   |            |
|---|------------|
| HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 870144-B21 |
| HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04517-B21 |
| HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04519-B21 |
| HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04521-B21 |
| HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04523-B21 |
| <b>Read Intensive - 6G SATA - SFF - Solid State Drives</b>                              |            |
| HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04556-B21 |
| HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04560-B21 |
| HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04564-B21 |
| HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04566-B21 |
| HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04570-B21 |
| HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04474-B21 |
| HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P04476-B21 |
| HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04478-B21 |
| HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04480-B21 |
| HPE 7.68TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04482-B21 |
| <b>Mixed Use – 6G SATA – M.2 – Solid State Drives</b>                                   |            |
| HPE 240GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD              | 875488-B21 |
| HPE 480GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD              | 875490-B21 |
| HPE 960GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD              | 875492-B21 |
| <b>Read Intensive – 6G SATA – M.2 – Solid State Drives</b>                              |            |
| HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD         | 875498-B21 |
| HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD         | 875500-B21 |
| <b>Read Intensive - 6G SATA - SFF - Solid State Drives</b>                              |            |
| HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | 868818-B21 |
| HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | 868822-B21 |
| HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 868826-B21 |
| <b>Read Intensive - 6G SATA - LFF - Solid State Drives</b>                              |            |
| HPE 480GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD  | P04499-B21 |
| HPE 1.92TB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | P04501-B21 |
| HPE 960GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD  | P09691-B21 |
| <b>Read Intensive – 6G SATA - SFF Solid State Drives</b>                                |            |
| HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | 875503-B21 |
| HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | 875509-B21 |
| HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | 875511-B21 |
| HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 875513-B21 |
| HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P06194-B21 |
| HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P06196-B21 |
| HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P06198-B21 |
| HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P06200-B21 |
| <b>Write Intensive – SAS 12G – SFF Solid State Drives</b>                               |            |
| HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 873351-B21 |
| HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 873355-B21 |
| HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 873357-B21 |
| HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P04541-B21 |

## Core Options

|  |            |
|--|------------|
| HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04543-B21 |
| HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04545-B21 |
| HPE 3.2TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04547-B21 |
| HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09098-B21 |
| HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09100-B21 |
| HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09102-B21 |

### Mixed Use – 12G SAS – SFF Solid State Drives

|  |            |
|--|------------|
| HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872374-B21 |
| HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872382-B21 |
| HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872376-B21 |
| HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 873359-B21 |
| HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 873363-B21 |
| HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 873365-B21 |
| HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04525-B21 |
| HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04527-B21 |
| HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872386-B21 |
| HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 873367-B21 |
| HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04533-B21 |
| HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04537-B21 |
| HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P04539-B21 |
| HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09088-B21 |
| HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09090-B21 |
| HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09092-B21 |
| HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09094-B21 |
| HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P09096-B21 |

### Mixed Use - 12G SAS - LFF Solid State Drives

|   |            |
|---|------------|
| HPE 800GB SAS 12G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | 872380-B21 |
| HPE 1.6TB SAS 12G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | 872384-B21 |
| HPE 1.6TB SAS 12G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | P04535-B21 |
| HPE 800GB SAS 12G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | P04531-B21 |

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

|  |            |
|--|------------|
| HPE 1.92TB SATA 6G Mixed Use LPC (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD | P03610-B21 |
|--|------------|

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

|   |            |
|---|------------|
| HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 872344-B21 |
| HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 872348-B21 |
| HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 872352-B21 |
| HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 875470-B21 |
| HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 875474-B21 |
| HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | 875478-B21 |
| HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | 875483-B21 |
| HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P00896-B21 |
| HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P07922-B21 |
| HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P07926-B21 |
| HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD | P07930-B21 |

## Core Options

|  |            |
|--|------------|
| HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | P07934-B21 |
| HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P09712-B21 |
| HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD   | P09716-B21 |
| HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  | P09722-B21 |
| HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD | P09726-B21 |

### Read Intensive - NVMe - SFF - Solid State Drives

|   |            |
|---|------------|
| HPE 2TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD    | 877986-B21 |
| HPE 480GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD  | 875587-B21 |
| HPE 960GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD  | 875589-B21 |
| HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 875591-B21 |
| HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10214-B21 |
| HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10216-B21 |
| HPE 7.68TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10218-B21 |

### Write Intensive - NVMe - SFF - Solid State Drives

|   |            |
|---|------------|
| HPE 375GB NVMe x4 Lanes Write Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 878014-B21 |
|---|------------|

### Mixed Use - NVMe - SFF - Solid State Drives

|   |            |
|---|------------|
| HPE 400GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 875593-B21 |
| HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 875595-B21 |
| HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 877994-B21 |
| HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 875597-B21 |
| HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | 877998-B21 |
| HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10222-B21 |
| HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10224-B21 |
| HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD | P10226-B21 |

### Bezel Kits

|  |            |
|--|------------|
| HPE Apollo 2000 SFF Bezel Enhanced Kit | 874793-B21 |
| HPE Apollo 2000 LFF Bezel Kit          | 838518-B21 |

### HPE Smart Array Storage Controllers

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

**NOTE:** This controller supports 0 Internal SAS/SATA devices

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

**NOTE:** This controller can support up to 0 internal SAS/SATA devices.

**NOTE:** This controller may be selected to support: SAS Tape Device (External), SAS Storage (External)

**NOTE:** This controller can support up to 0 internal SAS/SATA devices.

**NOTE:** This controller may be selected to support: SAS Tape Device (External), SAS Storage (External)

|   |            |
|---|------------|
| HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller | 804405-B21 |
|---|------------|

|   |            |
|---|------------|
| HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller | 830824-B21 |
|---|------------|

### HBA Storage Controllers

|   |        |
|---|--------|
| HPE StoreFabric SN1600Q 32Gb Single Port Fibre Channel Host Bus Adapter | P9M75A |
| HPE StoreFabric SN1600Q 32Gb Dual Port Fibre Channel Host Bus Adapter   | P9M76A |

## Core Options

|   |        |
|---|--------|
| HPE StoreFabric SN1600E 32Gb Single Port Fibre Channel Host Bus Adapter | Q0L11A |
| HPE StoreFabric SN1600E 32Gb Dual Port Fibre Channel Host Bus Adapter   | Q0L12A |
| HPE StoreFabric SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter | Q0L13A |
| HPE StoreFabric SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter   | Q0L14A |
| HPE StoreFabric SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter | P9D93A |
| HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter   | P9D94A |
| HPE StoreFabric CN1300R 10/25Gb Dual Port Converged Network Adapter     | Q0F09A |
| HPE StoreFabric CN1200R 10GBASE-T Converged Network Adapter             | Q0F26A |

## PCIe Accelerators-

|   |            |
|---|------------|
| HPE 4TB PCIe x4 Lanes Read Intensive HHHL 3yr Wty Digitally Signed Firmware Card    | 877831-B21 |
| HPE 750GB PCIe x4 Lanes Write Intensive HHHL 3yr Wty Digitally Signed Firmware Card | 878038-B21 |
| HPE 3.2TB PCIe x8 Lanes Mixed Use HHHL 3yr Wty Digitally Signed Firmware Card       | 877827-B21 |
| HPE 6.4TB PCIe x8 Lanes Mixed Use HHHL 3yr Wty Digitally Signed Firmware Card       | 877829-B21 |
| HPE 1.6TB PCIe x8 Lanes Mixed Use HHHL 3yr Wty Digitally Signed Firmware Card       | 877825-B21 |

## Additional Options

### Converged Infrastructure Management

|  |          |
|--|----------|
| HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU            | P8B24A   |
| HPE OneView w/o iLO including 3yr 24x7 Support Track 1-server LTU      | P8B25A   |
| HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU | P8B26AAE |
| HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU         | E5Y35AAE |
| HPE OneView including 3yr 24x7 Support Physical 1-server LTU           | E5Y34A   |
| HPE OneView Physical Media Kit LTU                                     | E5Y37A   |

### HPE Integrated Light-Out (iLO)

|  |            |
|--|------------|
| HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features                      | E6U59ABE   |
| HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features                      | E6U64ABE   |
| HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features                        | BD505A     |
| HPE iLO Advanced Flexible Quantity License with 3yr Support on iLO Licensed Features               | BD506A     |
| HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features                    | BD507A     |
| HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features                        | 512485-B21 |
| HPE iLO Advanced Flexible Quantity License with 1yr Support on iLO Licensed Features               | 512486-B21 |
| HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features                    | 512487-B21 |
| HPE iLO Advanced Premium Security Upgrade Electronic License with 3yr Support on Licensed Features | Q7E12AAE   |
| HPE iLO Advanced Premium Security Edition License with 1yr Support on Licensed Features            | Q7E31A     |
| HPE iLO Advanced Premium Security Edition License with 3yr Support on Licensed Features            | Q7E33A     |
| HPE iLO Advanced Premium Security Flex Qty License with 3yr Support on Licensed Features           | Q7E34A     |

**NOTE:** For additional license options please see the QuickSpecs at:

<https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04154343>

**NOTE:** For more information, visit: <http://www.hpe.com/info/ilo>

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### USB Flash Kit

|                                    |            |
|------------------------------------|------------|
| HPE 32GB microSD Flash Memory Card | 700139-B21 |
| HPE 8GB microSD Flash Memory Card  | 726116-B21 |

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### Security Hardware

#### Trusted Platform Module

|  |            |
|--|------------|
| HPE Trusted Platform Module 2.0 Gen10 Option | 864279-B21 |
|--|------------|

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### HPE Smart Array SmartCache License

|   |          |
|---|----------|
| HPE Smart Array SR SmartCache (Single Key/Single Server) LTU                                | D7S26A   |
| HPE Smart Array SR SmartCache (Single Key/Multiple Servers) LTU                             | D7S27A   |
| HPE Smart Array SR SmartCache (Single Key/Multiple Servers) E-LTU                           | D7S27AAE |
| HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU | Q2F26AAE |

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### USB and SD Options

## Additional Options

HPE USB US Keyboard/Mouse Kit 631341-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [http://h18000.www1.hpe.com/products/QuickSpecs/13972\\_div/13972\\_div.html](http://h18000.www1.hpe.com/products/QuickSpecs/13972_div/13972_div.html)

HPE 36pin Serial/USB/VGA Dongle Cord Kit 676277-B21

### HPE Tape Backup

**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hpe.com/storage/storeever>. For hardware and software compatibility of Hewlett Packard Enterprise tape backup products <http://www.hpe.com/storage/BURACompatibility>

|   |        |
|---|--------|
| HPE StoreEver LTO-7 Ultrium 15000 External Tape Drive                 | BB874A |
| HPE StoreEver LTO-6 Ultrium 6250 External Tape Drive                  | EH970A |
| HPE StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive              | EH958B |
| HPE StoreEver MSL6480 Scalable Base Module                            | QU625A |
| HPE StoreEver MSL2024 0-drive Tape Library                            | AK379A |
| HPE StoreEver MSL4048 0-drive Tape Library                            | AK381A |
| HPE StoreEver 1/8 G2 LTO-7 Ultrium 15000 SAS Tape Autoloader          | N7P35A |
| HPE StoreEver 1/8 G2 LTO-7 Ultrium 15000 FC Tape Autoloader           | N7P34A |
| HPE StoreEver 1/8 G2 LTO-6 Ultrium 6250 SAS Tape Autoloader           | COH18A |
| HPE StoreEver 1/8 G2 LTO-6 Ultrium 6250 Fibre Channel Tape Autoloader | COH19A |
| HPE StoreEver 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader           | BL536B |
| HPE StoreEver MSL LTO-7 Ultrium 15000 SAS Drive Upgrade Kit           | N7P37A |
| HPE StoreEver MSL LTO-7 Ultrium 15000 FC Drive Upgrade Kit            | N7P36A |
| HPE StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit            | COH27A |
| HPE StoreEver MSL LTO-6 Ultrium 6250 Fibre Channel Drive Upgrade Kit  | COH28A |
| HPE StoreEver MSL LTO-5 Ultrium 3000 SAS Drive Upgrade Kit            | BL540B |

### Graphic Card Options

|   |            |
|---|------------|
| NVIDIA Tesla M10 Quad GPU Module                          | Q0J62A     |
| HPE NVIDIA Tesla V100 PCIe 16GB Computational Accelerator | Q2N68A     |
| HPE NVIDIA Tesla P40 24GB Computational Accelerator       | Q0V80A     |
| HPE NVIDIA Quadro P4000 Graphics Accelerator              | Q0V78A     |
| HPE XL190r Gen10 NVIDIA CPU 8-pin Adapter Kit             | 874857-B21 |
| HPE XL190r Gen10 NVIDIA PCIe 8-pin Adapter Kit            | 874859-B21 |
| HPE NVIDIA Tesla P100 PCIe 16GB Computational Accelerator | Q0E21A     |
| HPE NVIDIA Tesla V100 PCIe 32GB Computational Accelerator | Q9U36A     |
| HPE NVIDIA Tesla P4 8GB Computational Accelerator         | Q0V79A     |
| HPE NVIDIA Tesla P100 PCIe 12GB Computational Accelerator | Q2S42A     |

**NOTE:** the following table summaries the configuration options for risers associated with the GPU cards.



## Additional Options

|   | HPE NVIDIA Tesla P100 PCIe 12GB Module (Q2S42A) | NVIDIA Tesla M10 Quad GPU Module (Q0J62A) | HPE NVIDIA Tesla P40 24GB Module (Q0V80A) | HPE NVIDIA Tesla V100 PCIe 16GB Module (Q2N68A) | HPE NVIDIA Quadro P4000 GPU Module (Q0V78A) | HPE NVIDIA Tesla P100 PCIe 16GB Module (Q0E21A) |
|---|---|---|---|---|---|---|
| HPE XL190r Gen10 FlexibleLOM Riser Kit (874847-B21)           | X   | X   | X   | X   | X   | X   |
| HPE XL190r Gen10 16NVMe FlexibleLOM Riser Kit (874849-B21)    | X   | X   | X   | X   | X   | X   |
| HPE XL190r Gen10 P2 Riser Kit (874851-B21)                    | X   | X   | X   | X   | X   | X   |
| HPE XL190r Gen10 PCIe 6-pin to 8-pin Adapter Kit (P00145-B21) |   |   |   |   | X   |   |
| HPE XL190r Gen10 NVIDIA CPU 8-pin Adapter Kit (874857-B21)    | X   |   | X   | X   |   | X   |
| HPE XL190r Gen10 NVIDIA PCIe 8-pin Adapter Kit (874859-B21)   |   | X   |   |   |   |   |

## HPE Memory

## General Memory population rules and guidelines:

**NOTE:** For detailed memory configuration rules and guidelines, please use the [Online DDR4 Memory Configuration Tool](http://www.hpe.com/docs/memory-population-rules): <http://www.hpe.com/docs/memory-population-rules>

## Memory speed:

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

| DIMM Type   | Registered DIMM (RDIMM)      |                              |                               |                               |                               |
|---|------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|
| HPE SKU P/N   | 815097-B21                   | 876181-B21                   | 815098-B21                    | 835955-B21                    | 815100-B21                    |
| SKU Description   | HPE 8GB 1Rx8 PC4-2666V-R Kit | HPE 8GB 2Rx8 PC4-2666V-R Kit | HPE 16GB 1Rx4 PC4-2666V-R Kit | HPE 16GB 2Rx8 PC4-2666V-R Kit | HPE 32GB 2Rx4 PC4-2666V-R Kit |
| DIMM Rank   | Single Rank (1R)             | Dual Rank (2R)               | Single Rank (1R)              | Dual Rank (2R)                | Dual Rank (2R)                |
| DIMM Capacity   | 8 GB                         | 8 GB                         | 16 GB                         | 16 GB                         | 32 GB                         |
| Voltage   | 1.2 V                        | 1.2 V                        | 1.2 V                         | 1.2 V                         | 1.2 V                         |
| DRAM Depth  | 1 Gb                         | 512 MB                       | 2 Gb                          | 1 Gb                          | 2 Gb                          |
| DRAM Width (bit)  | x8                           | x8                           | x4                            | x8                            | x4                            |
| DRAM Density  | 8 Gb                         | 4 Gb                         | 8 Gb                          | 8 Gb                          | 8 Gb                          |
| CAS Latency   | 19-19-19                     | 19-19-19                     | 19-19-19                      | 19-19-19                      | 19-19-19                      |
| DIMM Native Speed (MT/s)  | 2666                         | 2666                         | 2666                          | 2666                          | 2666                          |
| HPE Server Memory Speed (MT/s): Intel Xeon Platinum/Gold 81xx/61xx Processors |                              |                              |                               |                               |                               |
| 1 DIMM per Channel  | 2666                         | 2666                         | 2666                          | 2666                          | 2666                          |
| 2 DIMM per Channel  | 2666                         | 2666                         | 2666                          | 2666                          | 2666                          |
| HPE Server Memory Speed (MT/s): Intel Xeon Gold/Silver 51xx/41xx Processors   |                              |                              |                               |                               |                               |
| 1 DIMM per Channel  | 2400                         | 2400                         | 2400                          | 2400                          | 2400                          |

**Memory**

|  |      |      |      |      |      |
|--|------|------|------|------|------|
| <b>2 DIMM per Channel</b>  | 2400 | 2400 | 2400 | 2400 | 2400 |
| <b>HPE Server Memory Speed (MT/s): Intel Xeon Bronze 31xx Processors</b> |      |      |      |      |      |
| <b>1 DIMM per Channel</b>  | 2133 | 2133 | 2133 | 2133 | 2133 |
| <b>2 DIMM per Channel</b>  | 2133 | 2133 | 2133 | 2133 | 2133 |

## Memory

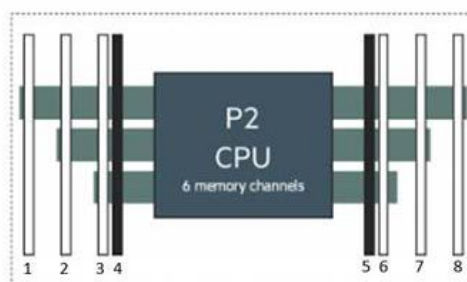
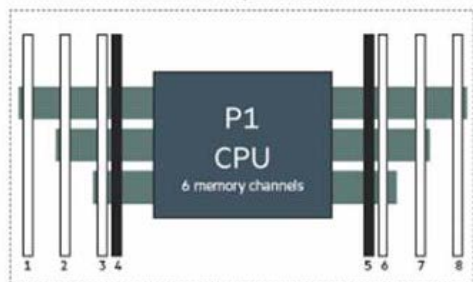
| DIMM Type  | Load-Reduced DIMM (LRDIMM)  |  |
|--|---|--|
| HPE SKU P/N  | 815101-B21  | 815102-B21   |
| SKU Description  | HPE 64GB (1x64GB) Quad Rank x4<br>DDR4-2666 CAS-19-19-19 Load<br>Reduced Smart Memory Kit | HPE 128GB (1x128GB) Octal Rank x4<br>DDR4-2666 CAS-22-19-19 3DS Load<br>Reduced Memory Kit |
| DIMM Rank  | Quad Rank (4R)  | Octal Rank (8R)  |
| DIMM Capacity  | 64 GB   | 128 GB   |
| Voltage  | 1.2 V   | 1.2 V  |
| DRAM Depth   | 2 Gb  | 2 Gb   |
| DRAM Width (bit)   | x4  | x4   |
| DRAM Density   | 8 Gb  | 8 Gb   |
| CAS Latency  | 19-19-19  | 22-19-19   |
| DIMM Native Speed (MT/s)   | 2666  | 2666   |
| <b>HPE Server Memory Speed (MT/s): Intel Xeon Platinum/Gold 81xx/61xx Processors</b> |   |  |
| 1 DIMM per Channel   | 2666  | 2666   |
| 2 DIMM per Channel   | 2666  | 2666   |
| <b>HPE Server Memory Speed (MT/s): Intel Xeon Gold/Silver 51xx/41xx Processors</b>   |   |  |
| 1 DIMM per Channel   | 2400  | 2400   |
| 2 DIMM per Channel   | 2400  | 2400   |
| <b>HPE Server Memory Speed (MT/s): Intel Xeon Bronze 31xx Processors</b>             |   |  |
| 1 DIMM per Channel   | 2133  | 2133   |
| 2 DIMM per Channel   | 2133  | 2133   |

**Memory options part number decoder:**

**NOTE:** For Memory technical specifications, including part number decoder visit: <https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04355083>

**Memory Subsystem Architecture**

Each Intel® Xeon® Scalable family processor socket contains six memory channels per installed processor with one DIMMs per channel for a total of eight (8) DIMMs or a grand total of sixteen (16) DIMMs for the server.



Front of server

HPE ProLiant Apollo 2000 Gen10 server board

2+1+1 slots per channel

## Technical Specifications

### System Unit Specifications

#### Server Dimensions (L x W x D)

3.32 x 7.27 x 27.36 in (8.43 x 18.45 x 69.47 cm)

#### Weight (approximate)

Maximum 25.1 lb (11.39 kg)

### System Inlet Temperature Standard Operating Support

10° to 35°C (50° to 95°F) At sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.

### Extended Ambient Operating Support

5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).

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.

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

### Relative Humidity (non-condensing)

#### Operating

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

#### Non-operating

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

### Altitude

#### Operating

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

#### Non-operating

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

## Technical Specifications

### Acoustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels. Please have your HPE representative provide information from the HPE EMESC website for further technical details regarding the configurations listed below.

**NOTE:** Please have your HPE representative provide information from the HPE EMESC website for further technical details regarding the configurations listed below.r2200 Chassis.

| Configuration SKU | r2200 Chassis    |        |             |
|-------------------|------------------|--------|-------------|
|                   | Entry            | Base   | Performance |
|                   | <b>Idle</b>      |        |             |
| LWAd              | 6.5 B            | 7.3 B  | 8.4 B       |
| LpAm              | 51 dBA           | 59 dBA | 69 dBA      |
|                   | <b>Operating</b> |        |             |
| LWAd              | 6.5 B            | 7.6 B  | 8.8 B       |
| LpAm              | 51 dBA           | 62 dBA | 73 dBA      |

| Configuration SKU | r2600 Chassis    |        |             |
|-------------------|------------------|--------|-------------|
|                   | Entry            | Base   | Performance |
|                   | <b>Idle</b>      |        |             |
| LWAd              | 6.6 B            | 7.5 B  | 8.1 B       |
| LpAm              | 51 dBA           | 64 dBA | 66 dBA      |
|                   | <b>Operating</b> |        |             |
| LWAd              | 7.1 B            | 7.8 B  | 8.7 B       |
| LpAm              | 57 dBA           | 63 dBA | 70 dBA      |

| Configuration SKU | r2800 Chassis    |        |             |
|-------------------|------------------|--------|-------------|
|                   | Entry            | Base   | Performance |
|                   | <b>Idle</b>      |        |             |
| LWAd              | 6.6 B            | 7.5 B  | 8.1 B       |
| LpAm              | 51 dBA           | 64 dBA | 66 dBA      |
|                   | <b>Operating</b> |        |             |
| LWAd              | 8.6 B            | 8.7 B  | 8.9 B       |
| LpAm              | 69 dBA           | 70 dBA | 71 dBA      |

**NOTE:** Acoustics levels presented here are generated by the test configuration only. Acoustics levels will vary depending on system configuration. Values are subject to change without notification and are for reference only.

## Technical Specifications

| <b>Thermal Limitations:</b> |   |   |   |                          |
|-----------------------------|---|---|---|--------------------------|
| <b>Chassis</b>              | <b>12 LFF front end : 9-12 drives</b>                               | <b>12 LFF front end : 0-8 drives (Removable drive blank at Bay 2)</b>                 | <b>24 SFF combo front end</b>                                       | <b>16 NVME front end</b> |
| <b>Processor</b>            | 150W SKU limited to 25C amb., 140W-115W SKUs limited to 30C amb.    | 150W SKU limited to 30C amb.  | 150W SKU limited to 30C amb.  | No limitation            |
| <b>DIMM</b>                 | No limitation   | No limitation   | No limitation   | No limitation            |
| <b>Storage card</b>         | P408i-p & P408e-p limited to 25C amb. (Now working on verification) | P408i-p & P408e-p limited to 30C amb. (Now working on verification)                   | P408i-p & P408e-p limited to 30C amb. (Now working on verification) | TBD                      |
| <b>PCIe NIC card</b>        | TBD   | TBD   | TBD   | TBD                      |
| <b>ALOM</b>                 | TBD   | TBD   | TBD   | TBD                      |
| <b>mLOM card</b>            | TBD   | TBD   | TBD   | TBD                      |
| <b>InfiniBand</b>           | TBD   | TBD   | TBD   | TBD                      |
| <b>FC HBA</b>               | TBD   | TBD   | TBD   | TBD                      |
| <b>Fabric adaptor</b>       | TBD   | TBD   | TBD   | TBD                      |
| <b>GPU : P4000</b>          | No amb. limitation  | No amb. limitation  | No amb. limitation  | No amb. limitation       |
| <b>GPU : M10</b>            | Non-redundant and redundant fan SKUs limited to 22C amb.            | Non-redundant fan SKU : No amb. limitation<br>Redundant fan SKU : Limited to 30C amb. | No amb. limitation  | No amb. limitation       |
| <b>GPU : P40</b>            | TBD   | TBD   | TBD   | TBD                      |
| <b>GPU : P100</b>           | TBD   | TBD   | TBD   | TBD                      |
| <b>GPU : V100</b>           | TBD   | TBD   | TBD   | TBD                      |
| <b>PCIe accelerator</b>     | TBD   | TBD   | TBD   | TBD                      |

### 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 (2012/19/EU) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the **[Hewlett Packard Enterprise web site](#)**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

## Summary of Changes

| Date         | Version History | Action  | Description of Change  |
|--------------|-----------------|---------|--|
| 03-Dec-2018  | Version 6       | Changed | Configuration Information and Core Options sections were updated. Obsolete SKUs were removed   |
| 01-Oct-2018  | Version 5       | Changed | QuickSpecs updated with the current Recommended-Extended Options, Configuration Information, Standard Features , Core Options, Additional Options and SKUs descriptions were updated, Obsolete SKUs were deleted |
| 13-Aug-2018  | Version 4       | Changed | Configuration information and SKUs descriptions were updated, incorporated Recommended and Extended Options.   |
| 02-Apr-2018  | Version 3       | Updated | Update the configuration information section   |
| 09-Oct-2017  | Version 2       | Updated | Update SKUs in the configuration information section   |
| 25-Sept-2017 | Version 1       | New     | New QuickSpecs   |



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

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