

QuickSpecs

HPE ProLiant XL170r Gen9 Server

Overview

HPE ProLiant XL170r Gen9 Server

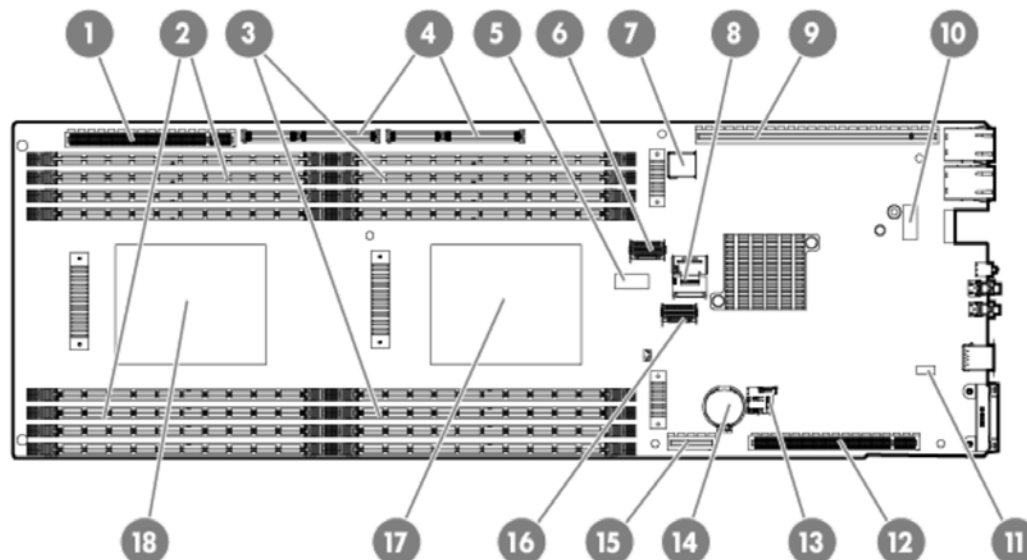
The ProLiant XL170r Gen9 Server is a 1U half-width, 2-processor server with configuration options for:

- Performance and efficient CPUs -- Intel Xeon E5-2600v3 and E5-2600v4 series processor options with choices from 4-18 Cores, 1.6GHz – 3.5GHz CPU speed, and power ratings between 85-145 Watts
- 16 memory DIMM slots with up to 512GB DDR4 memory at up to 2400 MHz
- 2 I/O slots for a choice of networking and clustering options including : 1Gb, 10Gb, 40Gb Ethernet, 56 Gb/s FDR InfiniBand, FibreChannel and options for either 1 PCIe slot plus a FlexibleLOM or 2 PCIe slots

The Apollo 2000r series chassis accommodates 4 independently serviceable ProLiant XL170r Gen9 servers with up to 80 servers in a 42U rack with 1 to 4 servers per chassis.

Rack scale power efficiency is easy with Advanced Power Management for rack, chassis, server and component level management

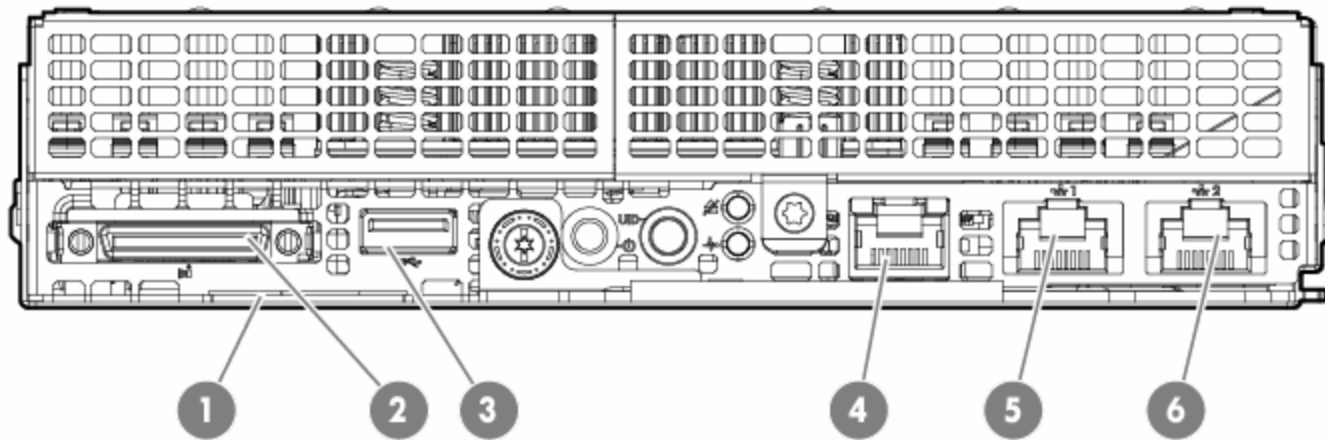
Front View



Item	Description	Item	Description
1	Bayonet board slot	10	Dedicated iLO port connector
2	DIMMs for processor 2	11	NMI header
3	DIMMs for processor 1	12	PCIe x16 riser board connector*
4	PCIe x40 riser board connector*	13	microSD slot
5	System maintenance switch	14	System battery
6	Mini-SAS connector 1 (SATA x4)	15	M.2 SSD riser connector
7	Internal USB 3.0 connector	16	TPM connector
8	Mini-SAS connector 2 (SATA x4)	17	Processor 1
9	PCIe x24 riser board connector*	18	Processor 2

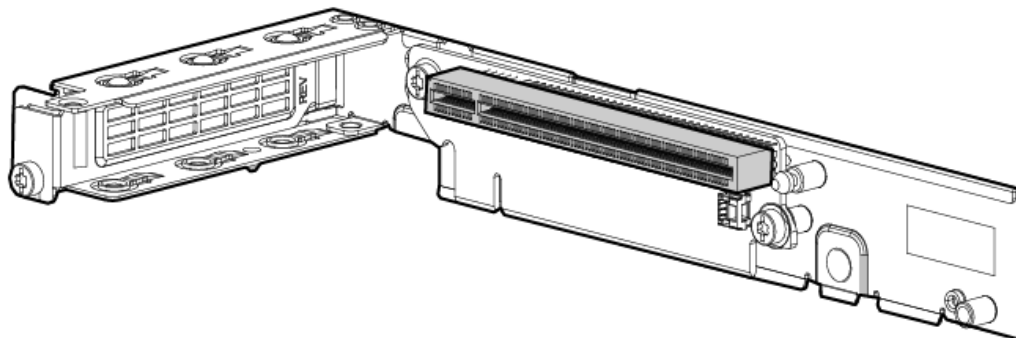
Rear View

Overview



Item	Description
1	Node serial number and iLO label pull tab
2	SUV connector
3	USB 3.0 connector
4	Dedicated iLO port (optional)
5	NIC connector 1
6	NIC connector 2

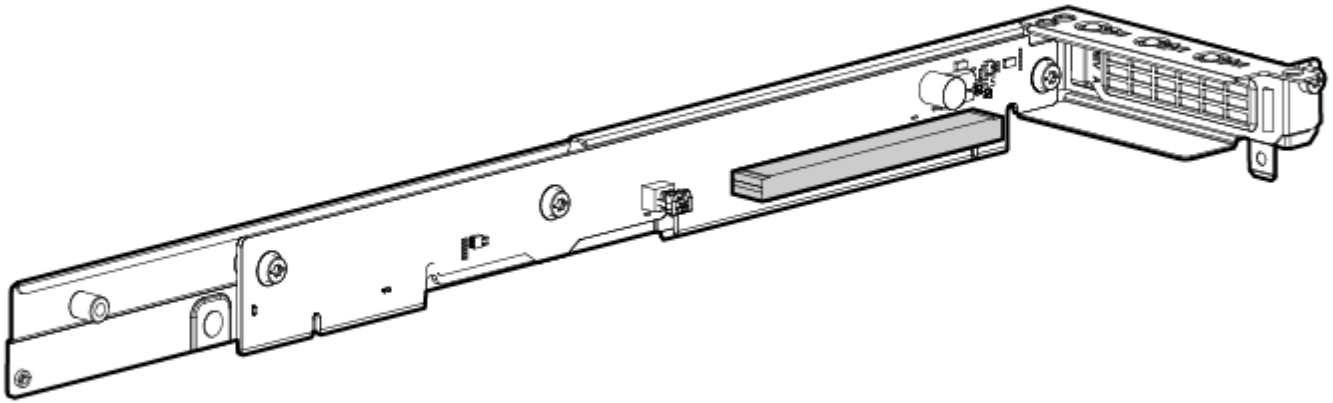
Single-slot left PCI riser cage assembly



Item	Form factor	Slot number	Slot description
1	Low-profile PCIe card	1	PCIe3 x16 (16, 8, 4, 1) for Processor 1

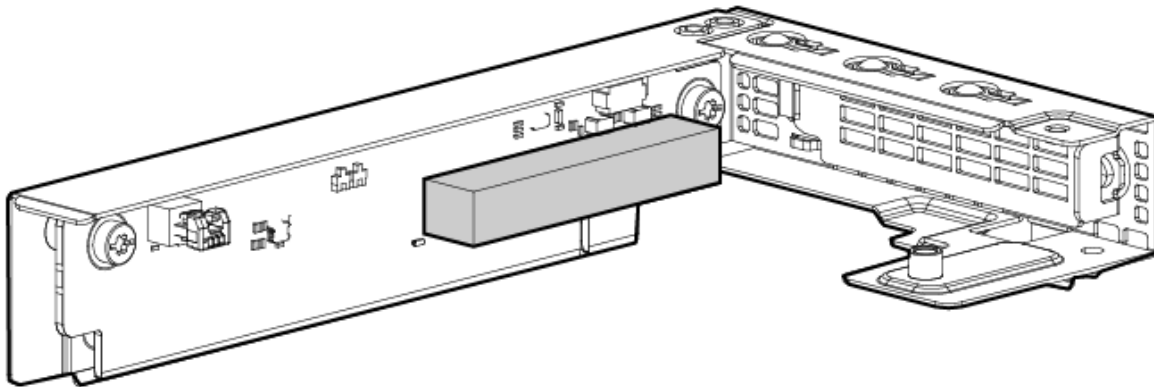
Overview

Single-slot 1U node right PCI riser cage assembly



Item	Form factor	Slot number	Slot description
1	Low-profile PCIe NIC card	2	PCIe3 x16 (16, 8, 4, 1) for Processor 2

FlexibleLOM 1U node riser cage assembly



Item	Form factor	Slot number	Slot description
1	FlexibleLOM	FlexibleLOM slot	PCIe3 x8 for Processor 1

Standard Features

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

Processor
One of the following depending on Model

E5-2600 v3 series Processors (Please follow product offering to fill out processor SKU)

Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
E5-2699v3	2.3GHz	18	45MB	145W	9.6GT/s	2133
E5-2698v3	2.3GHz	16	40MB	135W	9.6GT/s	2133
E5-2697v3	2.6GHz	14	35MB	145W	9.6GT/s	2133
E5-2695v3	2.3GHz	14	35MB	120W	9.6GT/s	2133
E5-2690v3	2.6GHz	12	30MB	135W	9.6GT/s	2133
E5-2683v3	2.0GHz	14	35MB	120W	9.6GT/s	2133
E5-2680v3	2.5GHz	12	30MB	120W	9.6GT/s	2133
E5-2670v3	2.3GHz	12	30MB	120W	9.6GT/s	2133
E5-2667v3	3.2GHz	8	20MB	135W	9.6GT/s	2133
E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
E5-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
E5-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
E5-2643v3	3.4GHz	6	20MB	135W	9.6GT/s	2133
E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
E5-2637v3	3.5GHz	4	15MB	135W	9.6GT/s	2133
E5-2630v3	2.4Ghz	8	20MB	85W	8.0GT/s	1866
E5-2609v3	1.9GHz	6	15MB	85W	8.0GT/s	1600
E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600

Standard Features

Processor
One of the following depending on Model

E5-2600 v4 series Processors (Please follow product offering to fill out processor SKU)

Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
E5-2603v4	1.7GHz	6	15MB	85W	6.4GT/s	1866
E5-2609v4	1.7GHz	8	20MB	85W	6.4GT/s	1866
E5-2620v4	2.1GHz	8	20MB	85W	8.0GT/s	2133
E5-2623v4	2.6GHz	4	10MB	85W	8.0GT/s	2133
E5-2630Lv4	1.8GHz	10	25MB	55W	8.0GT/s	2133
E5-2630V4	2.2GHz	10	20MB	85W	8.0GT/s	2133
E5-2640V4	2.4GHz	10	25MB	90W	8.0GT/s	2133
E5-2643V4	3.4GHz	6	20MB	135W	9.6GT/s	2400
E5-2650LV4	1.7GHz	14	35MB	65W	9.6GT/s	2400
E5-2650V4	2.2GHz	12	30MB	105W	9.6GT/s	2400
E5-2660V4	2.0GHz	14	35MB	105W	9.6GT/s	2400
E5-2667V4	3.2GHz	8	25MB	135W	9.6GT/s	2400
E5-2680V4	2.4GHz	14	35MB	120W	9.6GT/s	2400
E5-2683V4	2.1GHz	16	40MB	120W	9.6GT/s	2400
E5-2690V4	2.6GHz	14	35MB	135W	9.6GT/s	2400
E5-2695V4	2.1GHz	18	45MB	120W	9.6GT/s	2400
E5-2697V4	2.3GHz	18	45MB	145W	9.6GT/s	2400
E5-2698V4	2.2GHz	20	50MB	135W	9.6GT/s	2400
E5-2697AV4	2.6GHz	16	40MB	145W	9.6GT/s	2400
E5-2699V4	2.2GHz	22	55MB	145W	9.6GT/s	2400

Processor
One of the following depending on Model

E5-1600 v3 series Processors (Please follow product offering to fill out processor SKU)

Model	CPU frequency	Cores	L3 Cache	Power	DDR4 Hz
E5-1680v3	3.2GHz	8	20MB	140W	2133
E5-1650v3	3.5GHz	6	15MB	140W	2133
E5-1630v3	3.7GHz	4	10MB	140W	2133

NOTE: these processors are supported with the following risers kits.

- HPE XL170r FLOM x8 R Riser Kit-798180-B21
- HPE XL170r/190r LP PCIe16 L Riser Kit- 798178-B21
- HPE XL170r Gen9 LP PCIe16 R Riser Kit-819939-B21

Chipset

Intel® C610 Series Chipset

NOTE: For more information regarding Intel® chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>.

On System Management Processor

HPE iLO (Firmware: HPE iLO 4)

NOTE: For more information, visit: <http://www.hp.com/go/ilo>

Memory Protection Advanced ECC (multi-bit error protection)

Standard Features

Memory Online Spare Mode (Rank Spare Mode)

Memory	Type	HPE SmartMemory DDR4 Load Reduced (LRDIMM), or Registered (RDIMM)
	DIMM Slots Available	16 DIMM Slots available
	Maximum (LRDIMM) (per server tray)	2TB (16 x 128GB)

NOTE: HPE memory from previous generation servers are not fully compatible with the HPE ProLiant XL170r Gen9 Server.

NOTE: To realize the performance memory capabilities listed in this document, HPE SmartMemory is required. For additional information, please see the HPE SmartMemory QuickSpecs at:

<https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04111535>

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

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, or 1600MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

Network Controller	Ethernet Options
	HPE Ethernet 1Gb 2P 332T Adapter
	HPE Ethernet 1Gb 4-port 331T Adapter
	HPE Ethernet 1Gb 2P 361T Adapter
	HPE Ethernet 10Gb 2P 530SFP+ Adapter
	HPE Ethernet 10Gb 2P 530T Adapter
	HPE Ethernet 10Gb 2P 560SFP+ Adapter
	HPE Ethernet 10Gb 2P 561T Adapter
	HPE Ethernet 10G 2-port 546SFP+ Adapter
	HPE XL170r/190r Dedicated NIC IM Board Ki
	HPE 1Gb Ethernet 4P 331FLR Adapter
	HPE Ethernet 1Gb 4-port 366FLR Adapter
	HPE Eth 4x25Gb 1p 620QSFP28 Adptr
	HPE Ethernet 10Gb 2P 560FLR-SFP+ Adapter
	HPE FlexFabric 10Gb 2P 534FLR-SFP+ Adapter
	HPE FlexFabric 10Gb 2P 533FLR-T Adapter
	HPE FlexFabric 10Gb 2P 556FLR-SFP+ Adapter
	HPE FlexFabric 10Gb 4-port 536FLR-T Adapter
	HPE FlexFabric 10Gb 2-port 536FLR-T Adapter
	HPE Ethernet 10Gb 2P 546FLR-SFP+ Adapter
	HPE Ethernet 10Gb 2-port 562SFP+ Adptr
	HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adpt
	HPE StoreFabric CN1200E-T 10Gb CAN
	HPE StoreFabric CN1100R-T 10Gb CAN
	InfiniBand Options
	HPE IB FDR/EN 40Gb 2P 544+FLR-QSFP Adapter
	HPE IB QDR/EN 10Gb 2P 544+FLR-QSFP Adapter
	HPE IB FDR/EN 40Gb 2P 544+QSFP Adapter
	HPE IB FDR 2P 545FLR-QSFP Adapter
	HPE IB FDR 2P 545QSFP Adapter
	QLogic 4X QDR IB PCI-e G2 HCA
	HPE 100Gb 1p OP101 QSFP28 x16 OPA Adptr
HPE IB EDR/EN 100Gb 1P 840QSFP28 Adapter	
HPE IB EDR/EN 100Gb 2P 840QSFP28 Adapter	

NOTE: the ambient operating temperature cannot exceed 20 ° C/68 ° F
Riser Options to support FlexibleLOM cards

Standard Features

HPE XL170r FLOM x8 R Riser Kit

NOTE: The HPE XL170r FLOM x8 R Riser Kit (798180-B21) is required to order the FlexibleLOM options.

Expansion Slots (EE)	Expansion Slot #	Technology	Bus Width*	Source	Connector Width	Form Factor
	1	PCIe 3.0	x16	CPU1	x16	Low profile
	Expansion Slot #	Technology	Bus Width*	Source	Connector Width	Form Factor
	FlexibleLOM	PCIe 3.0	X8	CPU1	x16	FlexibleLOM
	Expansion Slot #	Technology	Bus Width*	Source	Connector Width	Form Factor
	2	PCIe 3.0	X16	CPU2	x16	Low profile

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

NOTE: Expansion slot 1 requires ordering HPE XL170r Gen9 LP PCIe x16 L Riser Kit (798178-B21)

NOTE: FlexibleLOM require ordering HPE XL170r FLOM x8 R Riser Kit (798180-B21)

NOTE: Expansion slot 2 HPE XL170r LP PCIe x16 R Riser Kit (798182-B21)

HPE Server ROM

HPE ROM (Read Only Memory) is now digitally signed using the Hewlett Packard Enterprise Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HPE ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HPE ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis. The HPE ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HPE ROM-Based Setup Utility (RBSU)).

NOTE: For further information, please refer to the HPE RBSU (ROM based setup utility) user guide:

<http://www.hpe.com/support/rbsu>

HPE Server Unified Extensible Firmware Interface (UEFI) or Legacy Mode

The HPE ProLiant System BIOS is an EDK2 UEFI solution, and adheres to the latest revisions of UEFI Class 2 specifications which supports both legacy boot and UEFI boot operation. The HPE ProLiant XL170r Gen9 defaults to UEFI boot operation and can be factory or field configured for Legacy boot operation.

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

NOTE: For more information on Hewlett Packard Enterprise's ProLiant System BIOS and UEFI, see the UEFI Information Library: <http://www.hpe.com/go/uefi/docs>

NOTE: HPE Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in UEFI mode in the factory.

To modify the server configuration ROM default settings, press F9 in the HPE ProLiant POST screen to enter the UEFI System Utilities screen. By default, the System Utilities menus are in the English language. UEFI enables numerous new capabilities, including both industry standard functionality and features specific to HPE ProLiant servers. Following are some of the features that UEFI enables and that the HPE ProLiant XL170r Gen9 can support when configured for UEFI boot operation:

- Secure Boot - A new feature in which the system firmware, option card firmware, operating systems, and software collaborate to greatly enhance platform security.

Standard Features

- Operating system specific functionality - Microsoft Windows 2012 supports several features only when installed in UEFI mode.
- Support for > 2.2 TB (using GPT) boot drives - Such drives could previously only be used for boot drives when using RAID solutions such as HPE Smart Array.
- UEFI Shell - Provides a pre-boot environment for running scripts and tools. The HPE ProLiant UEFI Shell provides both standard capabilities as well as numerous enhancements.
- PXE boot support for IPv6 networks.
- PXE Multicast Boot allowing for faster PXE deployments for large numbers of servers.
- Boot support for option cards that only support a UEFI option ROM.

NOTE: When the server is configured for UEFI Boot Mode, PXE servers must be configured with a UEFI boot image. When the server boots in UEFI mode, it does not boot media with a legacy OS installation. This includes DOS targets and Windows or Linux systems installed in Legacy mode. The reverse is also true for servers that boot in Legacy mode. If Microsoft Windows 2008 or Windows 2008 R2 is used in UEFI Boot Mode, UEFI Optimized Mode must be disabled (this option is enabled by default). This is required to work around an issue in Windows 2008 / 2008 R2 that requires legacy BIOS components necessary for video operations in Windows.

Storage Controller

Smart Array Controller
 HPE Dynamic Smart Array B140i Controller
 HPE Smart Array P440/4G Controller
 HPE Smart Array P441/4G Controller
 HPE Smart Array P840/4G Controller
 HPE Smart Array P841/4G Controller
 Host Bus Adapter
 HPE H240 Host Bus Adapter
 HPE H241 Smart HBA
 Storage Controller Cable Kits
 HPE XL170r B140i Cbl FIO Kit
 HPE XL170r Gen9 Mini-SAS H240 Cbl Kit
 HPE XL170r Gen9 Mini-SAS P440 Cbl Kit
 HPE XL1x0r Gen9 Mini-SAS P840/440 Cbl Kit

NOTE: The H240 controller and the embedded B140i will operate in UEFI mode only. For legacy support, AHCI mode is required.

Internal Storage Devices

Internal MicroSD slot

Maximum Internal Storage

Hot Plug LFF SAS 7.2k	18.0TB	3 x 6TB
Hot Plug LFF SATA	18.0TB	3 x 6TB
Hot Plug LFF SATA SSD	1.4TB	3x 480GB
Hot Plug LFF SAS SSD	4.8TB	3x 1.6TB
Hot Plug SFF SAS 7.2k	6TB	6x 1.0TB
Hot Plug SFF SAS 10k	10.8TB	6x1.8TB
Hot Plug SFF SAS 15k	3.6TB	6 x600GB
Hot Plug SFF SATA	6TB	6x1TB
Hot Plug SFF SATA SSD	5.8TB	6x960GB
Hot Plug SFF SAS SSD	9.6TB	6x1.6TB

Interfaces

FlexibleLOM

HPE ProLiant Gen9 servers offer a new networking technology-Flexible Network Technology. The HPE ProLiant Gen9 server offers the customer the choice of 1Gigabit, 10Gigabit, InfiniBand or FlexibleLOM solutions

Standard Features

depending on workload. For further details on the choices, see FlexibleLOM in the Networking Section of this document.

KVM	Serial USB Video Port (SUV)
MicroSD	1 (internal)
USB Ports	2 (external via SUV); 1 USB 3.0 (external); 1 (USB 3.0 internal)
HPE iLO Remote Management Network Port	Aggregated via HPE Apollo 2000 Chassis; Option for dedicated NIC IM Board Kit
Health LED	1
Power	1
UID	1
Do not remove LED	1

Industry Standard Compliance

ACPI 2.0b Compliant
PCIe 3.0 Compliant
WOL Support
Microsoft® Logo certifications
PXE Support
USB 1.1,2.0 and 3.0 Compliant
SMBIOS 2.6.1

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/go/proliant-energy-efficient>

<http://www.hp.com/go/hppoweradvisor>.

NOTE: Power Specification and Technical Content for supported power supplies can be found at <http://www8.hp.com/h20195/v2/gethtml.aspx?docname=c04111541>

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Canonical Ubuntu
VMware
CentOS
Fedora
OpenSUSE
Asianux
Debian

NOTE: Only 64-bit versions of these operating systems are supported.

NOTE: For more information on the Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from Hewlett Packard Enterprise , please visit our OS Support Site at: <http://www8.hp.com/us/en/products/servers/management/operating-environments/os-support-matrix.html> and our driver download page: <https://www.hpe.com/us/en/support.html>

Graphics

- Integrated Matrox G200 video standard
- 1280 x 1024 (32 bpp)
 - 1920 x 1200 (16 bpp)
 - HPE iLO 4 On System Management Memory
 - 16 MB Flash
 - 256 MB DDR 3 with ECC (112 MB after ECC and video)

Form Factor

The ProLiant XI170r Gen9 Server is a single-slot tray for the HPE Apollo 2000 Chassis.

Standard Features

Embedded Management	HPE Integrated Lights Out	Monitor your servers for ongoing management, service alerting, reporting and remote management with iLO. Learn more at http://www.hp.com/go/ilo
	UEFI	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hp.com/go/ProLiant/uefi
	HPE RESTful API	RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server http://www.hp.com/go/restfulapi
	Intelligent Provisioning	Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at http://www.hp.com/go/intelligentprovisioning
Server Utilities	HPE Smart Update	Optimize firmware and driver updates with HPE Smart Update solutions. Learn more at http://www.hp.com/go/smartupdate
	HPE Systems Insight Manager (HPE SIM)	HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-Hewlett Packard Enterprise servers. HPE SIM also integrates with HPE SUM to provide quick and seamless firmware updates. Learn more at http://www.hp.com/go/sim
	Scripting Tool Kit and Windows PowerShell	Provision 1 to many servers using your own scripts to discover and deploy them with HPE Scripting Tool Kit for Windows and Linux or HPE Scripting Tools for Windows PowerShell. Learn more at http://www.hp.com/go/ProLiantSTK or http://www.hpe.com/go/powershell
	HPE RESTful Interface Tool	HPE RESTful API tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at http://www.hp.com/go/restfulapi
	HPE iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hp.com/go/ilo/mobileapp
	HPE Insight Online	HPE Insight Online, available at no additional cost as part of your Hewlett Packard Enterprise warranty, Care Pack or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://www.hp.com/go/insightonline/info .
	Embedded Management	HPE Integrated Lights Out
HPE Insight management software	HPE Service Pack for ProLiant (SPP)	HPE Service Pack for ProLiant (SPP) and HPE Smart Update Manager (HPE SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new Hewlett Packard Enterprise server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HPE SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire HPE Apollo 2000 Chassis. Further improving system uptime and stability is the fact that Hewlett Packard Enterprise provides 12 months of support for each Service Pack for ProLiant release (may vary by region). The user experience around HPE SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HPE SUM and the latest SPP. Optional smaller subsets with only specific types of

Standard Features

servers or specific operating systems are offered to save on download time. The HPE SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HPE SUM provides the tools to optimize stability and consistency throughout the company. While HPE SUM and the SPP recommend the combinations of firmware and system software that Hewlett Packard Enterprise has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the HPE Apollo 2000 chassis. This testing ensures the highest quality as well as providing the input for HPE SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

NOTE: The Service Pack for ProLiant (which includes HPE SUM) can be downloaded from <http://www.hp.com/go/spp/download>. More information can be found: <http://www.hpe.com/go/SmartUpdate> <http://www.hpe.com/go/spp> and <http://www.hpe.com/go/hpsum>

Security

- Power-on password
- Keyboard password
- Serial interface control
- Administrator's password
- iLO 4 (Integrated Lights-Out 4) has 12 customizable user accounts and SSL encryption
- iLO 4 can be disabled via a Global Setting
- iLO Advanced supports directory services integration
- TPM (Trusted Platform Module) 2.0 option

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 one year 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 1 year Parts, 1 year Labor, 1-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://h18004.www1.hpe.com/products/servers/platforms/warranty/index.html>

NOTE: In Asia Pacific, Japan and China, Server Warranty includes 3 years Parts, 3 year Labor, 3-year Onsite support with next business day response

Optional Features

HPE Insight management software

HPE Insight Control

HPE Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see:

<http://www.hpe.com/go/insightcontrol>

HPE Insight Control includes one year of 24 x 7 HPE Software Technical Support and Update Service ensuring rapid access to Hewlett Packard Enterprise support staff and proactive delivery of software updates. For more information about this service, see: <http://www.hpe.com/services/insight>.

HPE iLO Advanced

HPE Integrated Lights-Out Advanced License a product option, providing smart remote server management without compromise. iLO Advanced unlocks the full set of remote administration functionality for all HPE ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see:

<http://www.hpe.com/go/iloadvance>

HPE iLO Scale-Out

The HPE iLO Scale-Out license ideal for web/hosting/cloud service providers and High Performance Computing environments. This license is a specific subset of iLO Advanced functionality, provides fast remote access through Text Console via SSH, lower operational cost with Dynamic power capping, and faster time to resolution through Email-based Alerting and proactive notifications. With this newly designed HPE iLO Scale-Out license HPC customers now have a server management package solely design and priced for their massive data environments. HPE iLO Scale-Out is available on all HPE ProLiant Gen9 servers. For more information, see:

<http://www.hpe.com/go/iLO/scale-out>

HPE Matrix Operating Environment

The HPE Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HPE Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HPE CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).

NOTE: For more information, visit: <http://www.hpe.com/go/matrixoe>

High Performance Clusters

HPE Cluster Platforms

HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <http://www.hpe.com/go/clusters>

HPE HPC Interconnects

High Performance Computing (HPC) interconnect technologies are available for this server as part of the HPE Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by Hewlett Packard Enterprise when integrated within a Hewlett Packard Enterprise cluster. Flexible, validated solutions can be defined with the help of configuration tools.

<http://www.hpe.com/techservers/clusters/ucp/index.html>

Optional Features

HPE Insight Cluster Management Utility

HPE Insight Cluster Management Utility (CMU) is a Hewlett Packard Enterprise-licensed and Hewlett Packard Enterprise-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <http://www.hpe.com/go/cmu>

HPE Insight Online

HPE Insight Online is a new addition to the HPE Support Center for one stop, secure access to product and Hewlett Packard Enterprise support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HPE Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at any time. <http://www.hp.com/go/insightonline>

Service and Support

Service and Support The support Care Packs chosen for the chassis are applied to this server node at no additional cost. HPE Technology Services for HPE Apollo 2000 HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time. Support for the HPE Apollo 2000, APM and chassis are all covered by support purchased at the chassis level. This simplifies your support experience and can reduce total cost of ownership over support purchased per server.

What HPE Technology Services can do for you
We can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. Our services solutions include more than just uplift of base warranty; we help deliver high levels of application availability through proactive service management and advanced technical response. Protect your business beyond warranty with HPE Pointnext operational services that provide total support expertise to meet your IT and business needs. We have made it simple to select among 3 levels of recommended services; optimized, standard, or basic.

Additional Recommended Services

HPE Installation and Startup for Insight Control Software / HPE SIM
Provides for the deployment and basic configuration of HPE Insight Control or HPE SIM (Systems Insight Manager) on HPE ProLiant servers
<http://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

For a Hyperscale Environment, Datacenter Care is our most flexible and comprehensive support offering. Hewlett Packard Enterprise works in partnership with our customers to provide end-to-end tailored support for your existing IT environments while aiding you on your converged cloud journey. It leverages the integrated technology, people, processes, and partner ecosystem of Hewlett Packard Enterprise to deploy, help operate, and evolve your data centers on their journey from traditional data centers to converged cloud. With the ability to configure support tailored to your needs, we offer you flexibility that is cost effective. Datacenter Care is made from "building blocks" of services, each tested and delivered globally. These can be combined to deliver the services that you require, and are monitored and updated to change as your needs change. Start with the core building blocks of an assigned account service manager, enhanced call handling, proactive and reactive support, and add on other services that are tailored to your specific needs. Proactive and reactive support are configured to deliver the level of support needed by the different components in a data center, to meet both SLA and cost targets.

For SMB to Enterprise customers
HPE Technology Services meets business challenges with the right services solution.

For more information

To learn more on HPE ProLiant servers, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:

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

To find the full list of Care Pack SKUs for the HPE Apollo family of products, go to:

<http://hpe.com/go/lookuptool> and in step 2 select HPE ProLiant, then select HPE Apollo family.

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.

Service and Support

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

Configuration Information – Factory Integrated Models

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 a 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: The HPE Apollo 2000 Chassis is required to support the server. Refer to HPE Apollo 2000 Chassis QuickSpecs for additional information.

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

HPE CTO Model HP ProLiant XL170r Gen9 1U Node Configure-to-order Server 798155-B21

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

HPE XL1x0r Gen9 Intel® Xeon® E5-1630v3 (3.7GHz/4-core/10MB/140W) Processor Kit	845119-L21
HPE XL1x0r Gen9 Intel® Xeon® E5-1650v3 (3.5GHz/6-core/15MB/140W) Processor Kit	845121-L21
HPE XL1x0r Gen9 Intel® Xeon® E5-1680v3 (3.2GHz/4-core/20MB/140W) Processor Kit	845123-L21
HP XL1x0r Gen9 Intel Xeon E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	793012-L21
HP XL1x0r Gen9 Intel Xeon E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	793050-L21
HP XL1x0r Gen9 Intel Xeon E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	793014-L21
HP XL1x0R Gen9 Intel Xeon E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	793016-L21
HP XL1x0r Gen9 Intel Xeon E5-2630v3 (2.4GHz/8-core/20MB/85W) FIO Processor Kit	793018-L21
HP XL1x0r Gen9 Intel Xeon E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	793020-L21
HP XL1x0r Gen9 Intel Xeon E5-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	793022-L21
HP XL1x0r Gen9 Intel Xeon E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	793024-L21
HP XL1x0r Gen9 Intel Xeon E5-2670v3 (2.3GHz/12-core/30MB/120W) FIO Processor Kit	793026-L21
HP XL1x0r Gen9 Intel Xeon E5-2680v3 (2.5GHz/12-core/30MB/120W) FIO Processor Kit	793028-L21
HP XL1x0r Gen9 Intel Xeon E5-2690v3 (2.6GHz/12-core/30MB/135W) FIO Processor Kit	793030-L21
HP XL1x0r Gen9 Intel Xeon E5-2697v3 (2.6GHz/14-core/35MB/145W) FIO Processor Kit	793032-L21
HPE ProLiant XL170r Gen9 Special Server	850312-L21
HP XL1x0r Gen9 Intel Xeon E5-2637v3 (3.5GHz/4-core/15MB/135W) FIO Processor Kit	793034-L21
HP XL1x0r Gen9 Intel Xeon E5-2643v3 (3.4GHz/6-core/20MB/135W) FIO Processor Kit	793036-L21
HP XL1x0r Gen9 Intel Xeon E5-2667v3 (3.2GHz/8-core/20MB/135W) FIO Processor Kit	793038-L21
HP XL1x0r Gen9 Intel Xeon E5-2683v3 (2GHz/14-core/35MB/120W) FIO Processor Kit	793046-L21
HP XL1x0r Gen9 Intel Xeon E5-2698v3 (2.3GHz/16-core/40MB/135W) FIO Processor Kit	793054-L21
HP XL1x0r Gen9 Intel Xeon E5-2699v3 (2.3GHz/18-core/45MB/145W) FIO Processor Kit	793056-L21

Configuration Information – Factory Integrated Models

HPE XL1x0r Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit	850286-L21
HPE XL1x0r Gen9 Intel Xeon E5-2609v4 (1.7GHz/8-core/20MB/85W) FIO Processor Kit	850288-L21
HPE XL1x0r Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) FIO Processor Kit	850290-L21
HPE XL1x0r Gen9 Intel Xeon E5-2623v4 (2.6GHz/4-core/10MB/85W) FIO Processor Kit	850292-L21
HPE XL1x0r Gen9 Intel Xeon E5-2630Lv4 (1.8GHz/10-core/25MB/55W) FIO Processor Kit	850294-L21
HPE XL1x0r Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/20MB/85W) FIO Processor Kit	850296-L21
HPE XL1x0r Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) FIO Processor Kit	850300-L21
HPE XL1x0r Gen9 Intel Xeon E5-2643v4 (3.4GHz/6-core/20MB/135W) FIO Processor Kit	850302-L21
HPE XL1x0r Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) FIO Processor Kit	850304-L21
HPE XL1x0r Gen9 Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W) FIO Processor Kit	850306-L21
HPE XL1x0r Gen9 Intel Xeon E5-2660v4 (2.0GHz/14-core/35MB/105W) FIO Processor Kit	850308-L21
HPE XL1x0r Gen9 Intel Xeon E5-2667v4 (3.2GHz/8-core/25MB/135W) FIO Processor Kit	850310-L21
HPE XL1x0r Gen9 Intel Xeon E5-2680v4 (2.4GHz/14-core/35MB/120W) FIO Processor Kit	850314-L21
HPE XL1x0r Gen9 Intel Xeon E5-2683v4 (2.1GHz/16-core/40MB/120W) FIO Processor Kit	850316-L21
HPE XL1x0r Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) FIO Processor Kit	850318-L21
HPE XL1x0r Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) FIO Processor Kit	850320-L21
HPE XL1x0r Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) FIO Processor Kit	850322-L21
HPE ProLiant XL170r Gen9 Special Server	850312-L21
HPE XL1x0r Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) FIO Processor Kit	850324-L21
HPE XL1x0r Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) FIO Processor Kit	850326-L21
HPE XL1x0r Gen9 Intel® Xeon® E5-1630v3 (3.7GHz/4-core/10MB/140W) Processor Kit	845119-L21
HPE XL1x0r Gen9 Intel® Xeon® E5-1650v3 (3.5GHz/6-core/15MB/140W) Processor Kit	845121-L21
HPE XL1x0r Gen9 Intel® Xeon® E5-1680v3 (3.2GHz/4-core/20MB/140W) Processor Kit	845123-L21

NOTE: Must select one xxxxxx-L21 processor. If one processor is desired, select one xxxxxx-L21. If two processors are desired, select one corresponding xxxxxx-B21. Mixing of processor speeds and types is not supported.

NOTE: For the Intel® C610 Chipset E5-2600 v3 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = L for low power SKUs.

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology. Turbo indicates the maximum potential frequency when using Intel® Turbo Boost Technology. The frequency boost increment is dependent on the processor SKU and the number of active cores. In general, a higher boost increment is obtained when fewer cores are active. All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 v3 and E5-2609 v3.

Configuration Information – Factory Integrated Models

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: Minimum 2 DIMMs are required if two processors are installed.

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 Gen9. 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 mixed within a server.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400MHz, 2133MHz, 1866MHz, or 1600MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

Registered DIMMs (RDIMMs) - E5-2600 v3 series Processors

HPE 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726717-B21
HPE 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
HPE 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v3 series Processors

HPE 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors

HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21
HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805358-B21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2400 CAS-20-18-18 Load Reduced Memory Kit	809208-B21
HP XL170r/190r Low Profile PCI-E x16 Left Riser Kit	798178-B21

HPE Riser Cards

NOTE: this riser can configure with HPE XL170r Gen9 FLOMx8 R Riser Kit (798180-B21) or HPE XL170r Gen9 LP P2 PCIe16 R Riser Kit(798182-B21) or HPE XL170r Gen9 LP P1 PCIe16 R Riser Kit(819939-B21)

HPE XL170r FlexibleLOM x8 Right Riser Kit	798180-B21
HP XL170r Low Profile PCIe x16 Right Riser Kit	798182-B21

HP XL170r Rear FlexibleLOM Blank FIO Kit	800068-B21
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HP XL170r Rear PCIe Blank FIO Kit	800069-B21
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HPE XL170r Gen9 Low Profile PCIe x16 Right Riser Kit	819939-B21
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NOTE: This riser is only applicable for the 1P solution.

Configuration 1:

- HPE XL1x0r Gen9 LP PCIe16 L Riser Kit 798178-B21
- HPE XL170r Gen9 FLOM x8 R Riser Kit 798180-B21

Configuration 2:

- HPE XL1x0r Gen9 LP PCIe16 L Riser Kit 798178-B21
- HPE XL170r Gen9 LP P1 PCIe16 R Riser Kit 819939-B21

Configuration Information – Factory Integrated Models

HPE Storage Cables	<p>HP XL170/190r Mini-SAS P840/P440 Cable Kit 798205-B21 NOTE:NOTE: If HPE Smart Array P440/4G (P/N 726821-B21) is selected as primary HPE Storage controller in Step 4 below, select 1cable kit per card</p> <p>HP XL170r/190r Mini-SAS H240 Cable Kit 798207-B21 NOTE:NOTE: If HPE Smart H240 HBA (P/N 726907-B21) is selected as primary HPE Storage controller in Step 4 below, select 1cable kit per card</p> <p>HP XL170r Mini-SAS B140 Cable Kit 800060-B21 NOTE:NOTE: If SAS Controller is not selected in Step 4 below, must select for B140i, select 1cable kit per card</p>
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Step 3: Choose Additional Factory Integrated Options (only one from each category unless otherwise noted)

BIOS Mode	<p>HP UEFI FIO Setting 758959-B21 NOTE:NOTE: If B140i is the only primary controller, then this option cannot be selected. When this option is selected, then BIOS need to be switched from default UEFI Mode to Legacy Mode</p>
Controller State	<p>HP Manufacturing FIO Enable HBA Mode Setting 792962-B21 NOTE:NOTE: If H240 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 HBA card. The Legacy Mode Setting and Enable HBA Mode Setting CANNOT be selected together</p> <p>HP AHCI-Enable FIO Setting 801845-B21 NOTE:NOTE: If B140i is the primary controller and if HP AHCI-Enable FIO Setting is selected, then RAID is not allowed.</p>

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.

HPE Processors	<p>HP XL1x0r Gen9 Intel Xeon E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit 793012-B21</p> <p>HPE XL1x0 Gen9 Intel Xeon E5-2695v3 (2.3GHz/14-core/35MB/120W) Processor Kit 793048-B21</p> <p>HP XL1x0r Gen9 Intel Xeon E5-2650Lv3 (1.8GHz/12-core/30MB/65W) Processor Kit 793050-B21</p> <p>HPE XL1x0R Gen9 Intel Xeon E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Kit 793016-B21</p> <p>HP XL1x0r Gen9 Intel Xeon E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit 793014-B21</p> <p>HP XL1x0r Gen9 Intel Xeon E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor Kit 793018-B21</p> <p>HP XL1x0r Gen9 Intel Xeon E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit 793020-B21</p> <p>HP XL1x0r Gen9 Intel Xeon E5-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit 793022-B21</p>
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Configuration Information – Factory Integrated Models

HP XL1x0r Gen9 Intel Xeon E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	793024-B21
HP XL1x0r Gen9 Intel Xeon E5-2670v3 (2.3GHz/12-core/30MB/120W) Processor Kit	793026-B21
HP XL1x0r Gen9 Intel Xeon E5-2680v3 (2.5GHz/12-core/30MB/120W) Processor Kit	793028-B21
HP XL1x0r Gen9 Intel Xeon E5-2690v3 (2.6GHz/12-core/30MB/135W) Processor Kit	793030-B21
HP XL1x0r Gen9 Intel Xeon E5-2697v3 (2.6GHz/14-core/35MB/145W) Processor Kit	793032-B21
HP XL1x0r Gen9 Intel Xeon E5-2637v3 (3.5GHz/4-core/15MB/135W) Processor Kit	793034-B21
HP XL1x0r Gen9 Intel Xeon E5-2643v3 (3.4GHz/6-core/20MB/135W) Processor Kit	793036-B21
HP XL1x0r Gen9 Intel Xeon E5-2667v3 (3.2GHz/8-core/20MB/135W) Processor Kit	793038-B21
HP XL1x0r Gen9 Intel Xeon E5-2683v3 (2GHz/14-core/35MB/120W) Processor Kit	793046-B21
HP XL1x0r Gen9 Intel Xeon E5-2698v3 (2.3GHz/16-core/40MB/135W) Processor Kit	793054-B21
HP XL1x0r Gen9 Intel Xeon E5-2699v3 (2.3GHz/18-core/45MB/145W) Processor Kit	793056-B21
HPE XL1x0r Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Kit	850286-B21
HPE XL1x0r Gen9 Intel Xeon E5-2609v4 (1.7GHz/8-core/20MB/85W) Processor Kit	850288-B21
HPE XL1x0r Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit	850290-B21
HPE XL1x0r Gen9 Intel Xeon E5-2623v4 (2.6GHz/4-core/10MB/85W) Processor Kit	850292-B21
HPE XL1x0r Gen9 Intel Xeon E5-2630Lv4 (1.8GHz/10-core/25MB/55W) Processor Kit	850294-B21
HPE XL1x0r Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit	850296-B21
HPE XL1x0r Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) Processor Kit	850300-B21
HPE XL1x0r Gen9 Intel Xeon E5-2643v4 (3.4GHz/6-core/20MB/135W) Processor Kit	850302-B21
HPE XL1x0r Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) Processor Kit	850304-B21
HPE XL1x0r Gen9 Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W) Processor Kit	850306-B21
HPE XL1x0r Gen9 Intel Xeon E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit	850308-B21
HPE XL1x0r Gen9 Intel Xeon E5-2667v4 (3.2GHz/8-core/25MB/135W) Processor Kit	850310-B21
HPE XL1x0r Gen9 Intel Xeon E5-2680v4 (2.4GHz/14-core/35MB/120W) Processor Kit	850314-B21
HPE XL1x0r Gen9 Intel Xeon E5-2683v4 (2.1GHz/16-core/40MB/120W) Processor Kit	850316-B21

Configuration Information – Factory Integrated Models

HPE XL1x0r Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) Processor Kit	850318-B21
HPE XL1x0r Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) Processor Kit	850320-B21
HPE XL1x0r Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) Processor Kit	850322-B21
HPE XL1x0r Gen9 Intel Xeon E5-2697Av4 (2.6GHz/16-core/40MB/145W) Processor Kit	850312-B21
HPE XL1x0r Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) Processor Kit	850324-B21
HPE XL1x0r Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) Processor Kit	850326-B21
HPE XL1x0r Gen9 Intel Xeon E5-1630v3 (3.7GHz/4-core/10MB/140W) Processor Kit	845119-B21
HPE XL1x0r Gen9 Intel Xeon E5-1650v3 (3.5GHz/6-core/15MB/140W) Processor Kit	845121-B21
HPE XL1x0r Gen9 Intel Xeon E5-1680v3 (3.2GHz/4-core/20MB/140W) Processor Kit	845123-B21

NOTE: For the Intel® C610 Chipset E5-2600 v3 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = L for low power SKUs.

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology. Turbo indicates the maximum potential frequency when using Intel® Turbo Boost Technology. The frequency boost increment is dependent on the processor SKU and the number of active cores. In general, a higher boost increment is obtained when fewer cores are active. All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 v3 and E5-2609 v3.

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) - E5-2600 v3 series Processors**

HPE 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726717-B21
HPE 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
HPE 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v3 series Processors

HPE 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors

HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21
HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805358-B21

Configuration Information – Factory Integrated Models

HPE 128GB (1x128GB) Octal Rank x4 DDR4-2400 CAS-20-18-18 Load Reduced Memory Kit 809208-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 Gen9. 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 mixed within a server.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, or 1600MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

HPE Networking

Ethernet Options	
HPE Ethernet 1Gb 2-port 332T Adapter	615732-B21
HPE Ethernet 1Gb 4-port 331T Adapter	647594-B21
HPE Ethernet 1Gb 2-port 361T Adapter	652497-B21
HPE Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HPE Ethernet 10Gb 2-port 530T Adapter	656596-B21
HPE Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HPE Ethernet 10Gb 2-port 561T Adapter	716591-B21
HPE Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
HP XL170r/190r Dedicated NIC IM Board Kit	798192-B21
HPE Ethernet 10Gb 2-port 562SFP+ Adapter	727055-B21
HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter	727054-B21
HPE Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
HPE Ethernet 1Gb 4-port 366T Adapter	811546-B21
HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter	817749-B21
HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter	817753-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.

NOTE: 817753-B21 and 817749-B21 can only support up to 20C ambient temperature with optical cable, 24C with copper cable.

FlexibleLOM Adapters

HPE Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
HPE Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
HPE Ethernet 4x25Gb 1-port 620QSFP28 Adapter	817762-B21
HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
HPE FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
HPE FlexFabric 10Gb 2-port 556FLR-SFP+ Adapter	727060-B21
HPE FlexFabric 10Gb 4-port 536FLR-T Adapter	764302-B21
HPE FlexFabric 10Gb 2-port 556FLR-T Adapter	794525-B21

Configuration Information – Factory Integrated Models

HPE Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter	N3U51A
HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter	N3U52A
HPE StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A
HPE StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
HPE 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
InfiniBand Options	
HPE InfiniBand EDR/Ethernet 100Gb 1-port 840QSFP28 Adapter	825110-B21
HPE InfiniBand EDR/Ethernet 100Gb 2-port 840QSFP28 Adapter	825111-B21
HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
HPE InfiniBand FDR 2-port 545FLR-QSFP Adapter	702212-B21
HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21
HPE InfiniBand QDR/Ethernet 10Gb 2-port 544+FLR-QSFP Adapter	764286-B21
HPE 100Gb 1-port OP101 QSFP28 x16 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829335-B21
HPE 100Gb 1-port OP101 QSFP28 x8 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829334-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hpe.com/go/ProLiantNICs>

M.2	HP XL170r/190r NGFF Riser for M2SATA Kit	798190-B21
HPE Tape Backup	HPE XL1x0r Gen9 New Generation Form Factor 240GB (2x120GB) Riser Drive	844540-B21
	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/BURCompatibility	
	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 1U SAS Rack Mount Kit + LTO-7 Ultrium 15000 Internal Tape Drive	AE459B
		BB873A
	HPE StoreEver 1U SAS Rack Mount Kit + LTO-6 Ultrium 6250 Internal Tape Drive	AE459B
		EH969A
	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/FC Tape Autoloader	N7P35A
		N7P34A
	HPE StoreEver 1/8 G2 LTO-6 Ultrium 6250 SAS/FC Tape Autoloader	COH18A
		COH19A
	HPE StoreEver 1/8 G2 LTO-5 Ultrium 3000 SAS/FC Channel Tape Autoloader	BL536B

Configuration Information – Factory Integrated Models

	HPE StoreEver MSL LTO-7 Ultrium 15000 SAS/FC Drive Upgrade Kit	BL541B N7P37A N7P36A
	HPE StoreEver MSL LTO-6 Ultrium 6250 SAS/FC Drive Upgrade Kit	COH27A COH28A
	HPE StoreEver MSL LTO-5 Ultrium 3000 SAS/FC Drive Upgrade Kit	BL540B BL544B
HPE Hard Drives	Hot Plug SFF Drives	
	HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	832414-B21
	HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804587-B21
	HPE 800GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804599-B21
	HPE 200GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804613-B21
	HPE 800GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804625-B21
	HPE 400GB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872355-B21
	HPE 800GB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872359-B21
	HPE 1.6TB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872363-B21
	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 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765453-B21
	HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765455-B21
	HPE 150GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869374-B21
	HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869376-B21
	HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869378-B21
	HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869384-B21

Configuration Information – Factory Integrated Models

HPE 1.6TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869386-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	822555-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	822567-B21
HPE 1.6TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804631-B21
HPE 480GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty SSD	832417-B21
HPE 200GB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty SSD	804639-B21
HPE 400GB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty SSD	804665-B21
HPE 800GB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty SSD	804671-B21
HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759210-B21
HPE 1.2TB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty SSD	804677-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759212-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759208-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872374-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872376-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872382-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872386-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870757-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870759-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870763-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870765-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21

Configuration Information – Factory Integrated Models

HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-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 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781516-B21
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781518-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785067-B21
HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785069-B21
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e HDD	791034-B21
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 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765464-B21
HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-B21
HPE Small Form Factor Hard Drive Blank Kit	666987-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	832514-B21
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	871768-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	871770-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	872853-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	872855-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	868814-B21

Configuration Information – Factory Integrated Models

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
HPE 3.8TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	868830-B21
HPE Apollo 2000 SFF Bezel Kit	838521-B21
NOTE: This bezel kit is required for P100 PCIe card.	
Hot Plug LFF	
HPE Gen9 LFF HDD Spade Blank Kit	807878-B21
HPE 800GB SAS 12G Write Intensive LFF (3.5in) LP 3yr Wty SSD	797291-B21
HPE 400GB SAS 12G Write Intensive LFF (3.5in) LP 3yr Wty SSD	797289-B21
HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty HDD	797283-B21
HPE 960GB 6G SATA Mixed Use-3 LFF 3.5-in LPC 3yr Wty Solid State Drive	832433-B21
HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	834028-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	834031-B21
HPE 1.6TB SATA 6G Mixed Use LFF (3.5in) LPC 3yr Wty SSD	846788-B21
HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846526-B21
HPE 3TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846530-B21
HPE 8TB 12G SAS 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867263-B21
HPE 4TB 12G SAS 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867269-B21
HPE 6TB 12G SAS 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867271-B21
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

Configuration Information – Factory Integrated Models

HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD	870755-B21
HPE 900GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD	870761-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 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 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 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 3TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861688-B21
HPE 8TB 6G SATA 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867261-B21
HPE 4TB 6G SATA 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867265-B21
HPE 6TB 6G SATA 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867267-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 Helium 512e Digitally Signed Firmware HDD	861596-B21
HPE 480GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD	869382-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	861742-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	861744-B21
HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	857646-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	861592-B21

Configuration Information – Factory Integrated Models

	HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846512-B21
	HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846516-B21
	HPE 480GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD	869056-B21
	HPE 1.92TB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware SSD	869058-B21
	HPE Apollo 2000 LFF Bezel Kit	838518-B21
	NOTE: This bezel kit is required for P100 PCIe card.	
HPE Storage Controllers	HPE Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
	NOTE: This controller can support up to 8 internal SAS/SATA devices.	
	NOTE: Selecting this controller means H240 cannot be selected.	
	NOTE: A maximum of 1 may be ordered.	
	HPE Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
	NOTE: This controller supports 0 Internal SAS/SATA devices	
	NOTE: A maximum of 2 may be ordered to support external devices.	
	HPE H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	NOTE: This controller can support up to 8 internal SAS/SATA devices.	
	NOTE: Selecting this controller means P440/4G cannot be selected.	
	NOTE: A maximum of 1 may be ordered.	
	HPE H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	NOTE: This controller supports 0 Internal SAS/SATA devices	
	NOTE: A maximum of 2 may be ordered to support external devices.	
	HPE Smart Array P840/4GB FBWC 12Gb 2-ports Int SAS Controller	726897-B21
	NOTE: This controller supports up to 16 Internal SAS/SATA devices	
	NOTE: A maximum of 1 may be ordered to support external devices.	
HPE PCIe Accelerators	HPE 800GB NVMe Mixed Use HH/HL PCIe Workload Accelerator	803200-B21
	HPE 1.6TB NVMe Mixed Use HH/HL PCIe Workload Accelerator	803202-B21
	HPE 800GB NVMe Write Intensive HH/HL PCIe Workload Accelerator	803195-B21
	HPE 1.6TB NVMe Write Intensive HH/HL PCIe Workload Accelerator	803197-B21
HPE Storage Controllers	Emulex Fibre Channel HBAs	
	HPE StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
HPE Insight Software	Integrated Lights-Out (iLO)	
	HPE iLO Scale Out	

Configuration Information – Factory Integrated Models

HPE iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
HPE iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
HPE iLO Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD776AAE
HPE iLO Scale-Out 3yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD776A
HPE iLO Scale-Out including 3yr 24x7 Tech Support and Updates Tracking LTU	BD777A
HPE iLO Scale-Out 1yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD778A
HPE Integrated Lights-Out (iLO) Advanced for ProLiant	
HPE iLO Scale-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD778AAE
HPE iLO Scale-Out including 1yr 24x7 Tech Support and Updates Tracking LTU	BD779A
HPE iLO Advanced including 3yr 24x7 Tech Support and Updates 1-server LTU	BD505A
HPE iLO Advanced including 3yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD506A
HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
HPE iLO Advanced including 3yr 24x7 Tech Support and Updates Tracking LTU	BD507A
HPE iLO Advanced including 1yr 24x7 Technical Support and Updates 1-server LTU	512485-B21
HPE iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity LTU	512486-B21
HPE iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking LTU	512487-B21
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE

NOTE: For additional license options please see the QuickSpecs at: <http://www8.hp.com/h20195/v2/gethtml.aspx?docname=c04154343>

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

USB Flash Kit

HPE Dual 8GB microSD Enterprise Midline USB Kit	741279-B21
HPE 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21

High Performance Clusters

HPE Cluster Management Utility	
HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	QL803B
HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	BD476A
NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
HPE Insight Cluster Management Utility Media	BD477A
HPE USB US Keyboard/Mouse Kit	631341-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: <http://www8.hp.com/h20195/v2/gethtml.aspx?docname=c04168349>

Security Hardware

Trusted Platform Module	
HPE Trusted Platform Module Option	488069-B21

Configuration Information – Factory Integrated Models

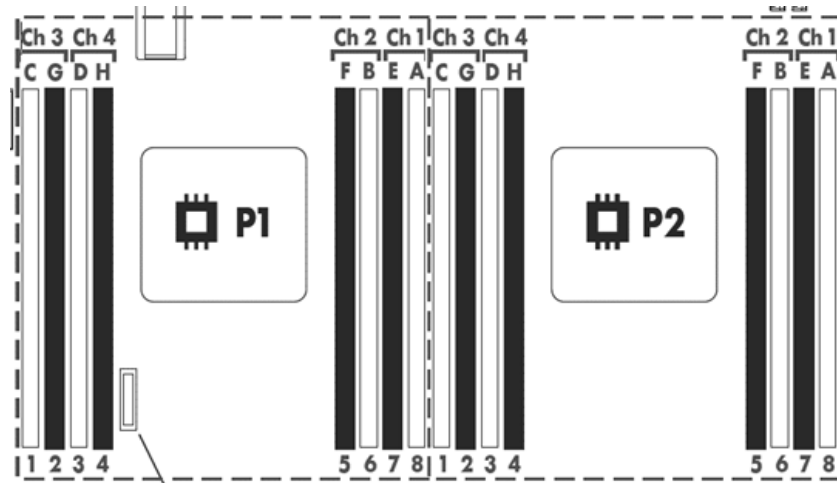
HPE Trusted Platform Module 2.0 Kit

745823-B21

Memory

HPE Memory

Memory Subsystem Architecture Each Intel® Xeon® E5-2600v3 or E5-2600v4 family processor socket contains four memory channels per installed processor with two DIMMs per channel for a total of eight (8) DIMMs or a grand total of sixteen (16) DIMMs for the server.



Memory Population Guidelines DIMM Configuration

NOTE: This information is for Advanced ECC memory mode. If operating in other modes, see the user guide Key.

Alpha- population order

Numeric-DIMM Slot ID for spare replacement

Before Installing DIMMs, review the following population guidelines:

Install DIMMs only if the corresponding processor is installed.

When two processors are installed, balance the total capacity of the DIMM's across the two processors.

White DIMM's slots denote the first slot of a channel (Ch 1-A, Ch 2-B, Ch 3-C, Ch 4-D).

Do not mix RDIMMs and LRDIMMs in the same system.

When only one processor is installed, install DIMMs in sequential alphabetic order; A, B, C, D, E, F, and so forth.

When two processors are installed, install DIMMs in sequential alphabetic order; P1-A, P2-A, P1-B, P2-B, P1-C, P2-C, and so forth.

For DIMM spare replacement, install the DIMMs per slot numbers as instructed by your system software. These are general DIMM population rules.

For specific memory mode population rules see the server user guide on the Hewlett Packard Enterprise website.

General Memory Population Rules and Guidelines:

- White DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate white slots only.
- A minimum of one DIMM is required per server.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors.
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel. Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor.
- Do not mix RDIMMs or LRDIMMs.

Memory

- LRDIMMs are supported up to 2 DIMMs per channel.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- HPE memory from previous generation servers is not compatible with the HPE Apollo 4200 Gen9 Server.
- Certain HPE SmartMemory features such as memory authentication and enhanced performance may not be supported.
- To realize the performance memory capabilities listed in this document, HPE SmartMemory is required. For additional information, please see the HPE SmartMemory QuickSpecs at:
- http://h18000.www1.hpe.com/products/QuickSpecs/14225_div/14225_div.html
- For memory population rules and additional memory guidelines, please see the HPE Apollo 4200 Gen9 user guide at <http://www.hpe.com/support>
- There are four (4) Memory channels per processor; eight (8) channels per 2 processor server.
- There are two (2) DIMM slots for each memory channel; sixteen (16) total slots for 2 processor server.
- Memory channels 1 and 3 consists of the two (2) DIMMs that are furthest from the processor.
- Memory channel 2 and 4 consists of the two (2) DIMMs that are closest to the processor.

Intel Gen9 Supported Memory Bandwidth for HPE ProLiant Gen9 Intel® Xeon®E5-2600v3 Series Processor Family

DIMM Type	Registered DIMMs (RDIMMs)					Load Reduced (LRDIMMs)		
	Single Rank (1R)		Dual Rank (2R)			Dual Rank (2R)		Quad Rank (4R)
DIMM Capacity	4GB	8GB	8GB	16GB	32GB	16GB	32GB	64GB
DIMM Native Speed (MHz)	2133							
Voltage	Std Voltage 1.2V							
SLOTS THAT CAN BE POPULATED								
16 slot server nodes	16	16	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)*	64	128	128	256	512	256	512	1024

Intel Gen9 Supported Memory Bandwidth for HPE ProLiant Gen9 Intel® Xeon®E5-2600v4 Series Processor Family

DIMM Type	Registered DIMMs (RDIMMs)				Load Reduced (LRDIMMs)			
	Single Rank (1R)		Dual Rank (2R)		Dual Rank (2R)		Quad Rank (4R)	
DIMM Capacity	8GB	16GB	16GB	32GB	32GB		64GB	
DIMM Native Speed (MHz)	2400							
Voltage	Std Voltage 1.2V							
SLOTS THAT CAN BE POPULATED								
16 slot server nodes	16	16	16	16	16		16	
MAXIMUM CAPACITY (GB)*	128	256	256	512	512		1024	

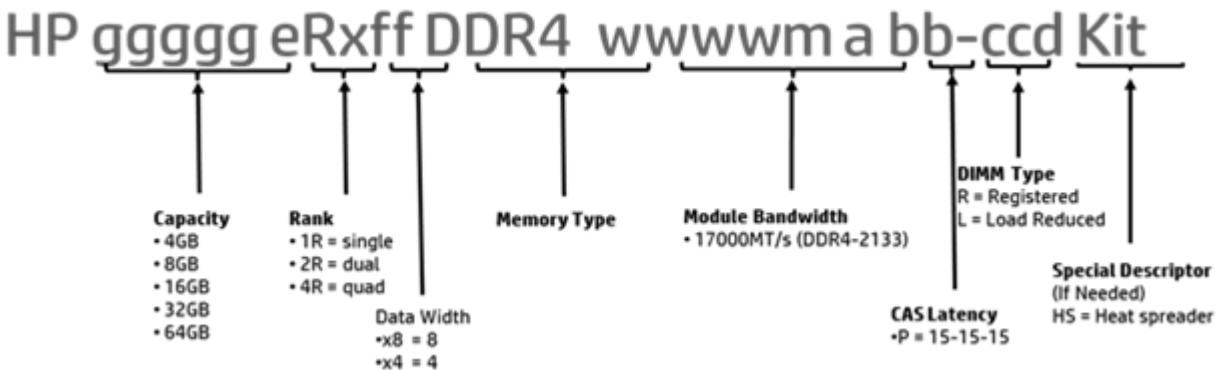
Memory

Memory Speed by Processor Model	Processor Models		Supported Memory Speeds	
	E5-2603v3, E5-2609v3,		1600MHz	
	E5-2620v3, E5-2623v3, E5-2630v3, E5-2630Lv3, E5-2640v3,		1866MHz	
	E5-2637v3, E5-2643v3, E5-2650v3, E5-2650Lv3, E5-2660v3, E5-2667v3, E5-2670v3, E5-2680v3, E5-2683v3, E5-2690v3, E5-2695v3, E5-2697v3, E5-2698v3, E5-2699v3,		2133MHz	
	E5-2603v4, E5-2609v4,		1866MHz	
	E5-2620v4, E5-2623v4, E5-2630v4, E5-2630Lv4, E5-2640v4		2133MHz	
	E5-2637v4, E5-2643v4, E5-2650v4, E5-2650Lv4, E5-2660v4, E5-2667v4, E5-2680v4, E5-2683v4, E5-2690v4, E5-2695v4, E5-2697v4, E5-2697Av4, E5-2698v4, E5-2699v4		2400MHz	
	Standard and Maximum Memory Capacity (Pre-configured Models)	Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory
SFF Model		16GB (1x16GB)	496GB (15x32GB, 1x16GB)	1024GB (16x64GB)
LFF Model		16GB (1x16GB)	496GB (15x32GB, 1x16GB)	1024GB (16x64GB)

DDR4 memory options part number decoder

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

- 2GB = 2,048MB
- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB
- 64GB = 65,536MB



Technical Specifications

System Unit	Server Dimensions (L x W x D)	1.63 x 7.07 x 25.26 in (4.13 x 17.95 x 64.15 cm)		
	Weight (approximate)	Maximum (four hard drives and two processors installed)	3.82 lb (1.73 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	<p>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.hp.com/servers/ASHRAE</p> <p>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.hp.com/servers/ASHRAE</p> <p>System performance may be reduced if operating in the extended ambient operating range or with a fan fault.</p>	
Relative Humidity (non-condensing)	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).		
	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.		
Altitude	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.		
	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).		

Technical Specifications

Acoustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and measured 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.

Configuration SKU	Entry	Base	Performance
Idle			
LWAd	6.9 B	6.9 B	6.9 B
LpAm	51 dBA	51 dBA	51 dBA
Operating			
LWAd	8.0 B	8.3 B	8.7 B
LpAm	62 dBA	66 dBA	72 dBA

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

Acoustic Noise

Apollo2000 Gen 9 Configuration				
Configuration	Entry	Typical	Performance	Others
CPU type and qty	HPE XL1x0r Gen9 ZE5-2630v3 Kit x 1	HPE XL1x0r Gen9 ZE5-2630v3 Kit x1	HPE XL1x0r Gen9 ZE5-2630v3 Kit x2	NA
DIMM type, capacity and qty	HPE Z16GB 2Rx4 PC4-2133P-R Kit x2	HPE Z16GB 2Rx4 PC4-2133P-R Kit x2	HPE Z16GB 2Rx4 PC4-2133P-R Kit x4	NA
HDD type and qty	500GB 6G SATA 7.2K SFF HDD x2	HPE 450GB 12G SAS 15K 2.5in x2	HPE 450GB 12G SAS 15K 2.5in x2	NA
HDD Backplane	24SFF W/O Expander	24SFF W/ Expander	24SFF W/ Expander	NA
HD Controller for flexible storage options	B140i onboard SATA	HPE Smart Array P440/4GB 12Gb Controller	HPE Smart Array P440/4GB 12Gb Controller	NA
LOM for flexibility for multiple ALOM/BLOM	NA	NA	NA	NA
Fan type and count	8038mm x4	8038mm x4	8038mm x4	NA
I/O and Others (Mezz, GPGPU, NIC and etc.)	NA	NA	NA	NA
Cooling Mode Setting	Optimal Cooling	Optimal Cooling	Optimal Cooling	NA
Acoustics Performance				
Sound Power Level in Bels LWAd	Idle:6.6Bel OP: 6.6Bel	Idle:6.9 Bel OP: 6.9Bel	Idle:6.9;Bel OP: 7.1Bel	NA
Sound Pressure Level LpAm	Idle:47 dBA OP:47 dBA	Idle:50 dBA OP:50 dBA	Idle:50 dBA OP: 51 dBA	NA

End-of-life Management and Recycling

Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hpe.com/go/green>

Technical Specifications

To recycle your product, please go to: <http://www.hpe.com/go/green> or contact your nearest Hewlett Packard Enterprise Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <http://www.hpe.com/go/green>. 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
23-Oct-2017	Version 17	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
19-May-2017	From version 15 to 16	Updated	Update information in Configuration Information Section
13-Jan-2017	From version 14 to 15	Changed	Correct broken link from OS
16-Dec-2016	From version 13 to 14	Updated	Add USB Flash Kits
28-Nov-2016	From version 12 to 13	Updated	Update configuration section and correct errors
4-Nov-2016	From version 11 to 12	Updated	Remove some HDD SKUs
15-Aug-2016	From version 10 to 11	Updated	Updates throughout the QuickSpecs
15-Jul-2016	From version 9 to 10	Changed	Change the broken links and update info on the InfiniBand cards
20-May-2016	From version 8 to 9	Updated	Updates throughout the QuickSpecs
31-Mar-2016	From version 7 to 8	Updated	Update the configuration section SKUs
16-Feb-2016	From version 6 to 7	Updated	Update SDD and SATA and processors
8-Jan-2016	From version 5 to 6	Changed	Correct the misinformation and add the HPE Storage options to the QuickSpecs.
1-Dec-2015	From version 4 to 5	Updated	Update the configuration section SKUs
23-Oct-2015	From version 3 to 4	Changed	Correct descriptions for memories section
28-Sept-2015	From version 2 to 3	Updated	Updates throughout the QuickSpecs
17-Aug-2015	From version 1 to 2	Changed	Change and update SKUs for HPE ProLiant XL170r Gen9 Server
30-Mar-2015	Version 1	Created	Create QuickSpecs for HPE ProLiant XL170r Gen9 Server



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

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