RETIRED: This document has been officially retired, and the base products listed herein are now considered obsolete and are no longer available for sale. Consequently, the information contained within may no longer be current. This document is provided exclusively for reference and informational purposes.

Overview

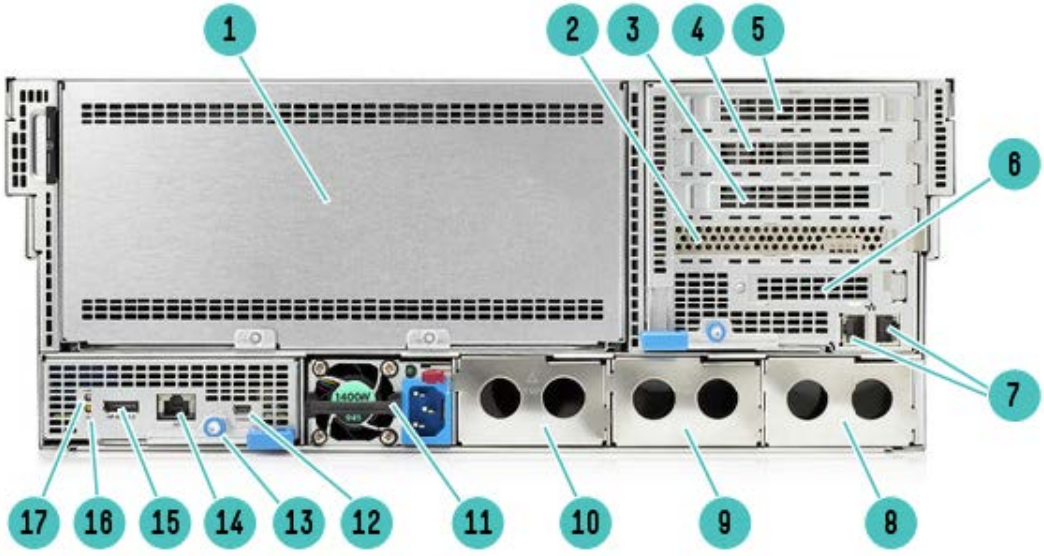
HPE Apollo 4500 System

With the HPE Apollo 4500 Systems, HPE challenges the notion that one-size-fits all for Big Data infrastructure by creating purpose-built systems that specifically address storage and analytics workloads. For object storage, the ultra-dense Apollo 4510 includes 1 server and up to 68 Large Form Factor (LFF) drives in a 4U chassis for a maximum of 680 TB per system.. For Hadoop® and other Big Data solutions, the Apollo 4530 uniquely offers 3 servers per chassis, ideal for housing 3 copies of data in a single system.

HPE Apollo 4510 Model Front View:

1. SFF 2.5" hard drives on node
2. Quick Reference Code
3. HDD backplane Health LED
4. Logical array status
5. UID LED
6. Eject node button
7. Backup LED
8. SUV Connector – VGA and USB
9. Server Tray Health LED
10. UID LED
11. Power Indicator LED

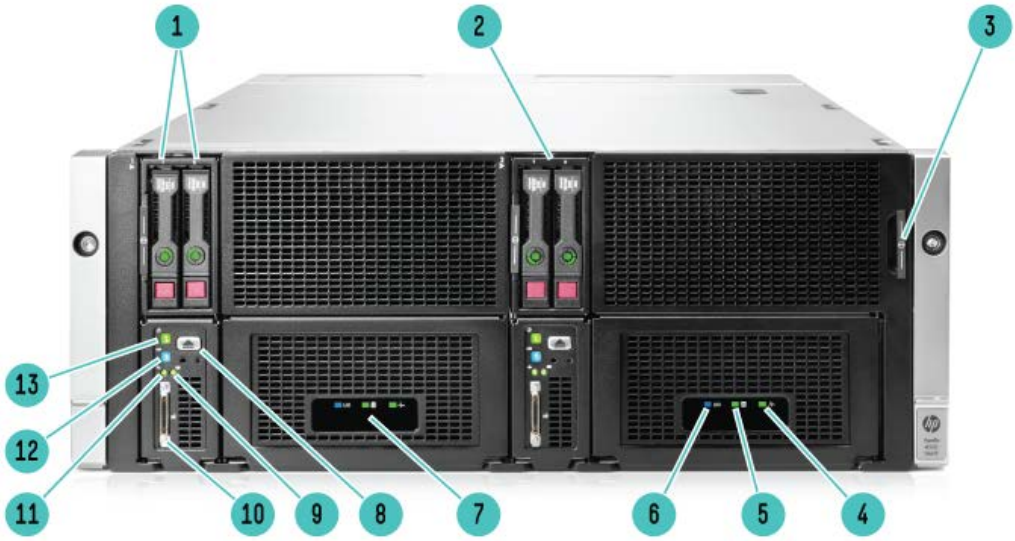
Overview



HPE Apollo 4510 Model Rear View:

1. Rear cage kit (blank) – Supports up to 8 LFF HDD/SSD
2. PCIe Slot 1
3. PCIe Slot 2
4. PCIe Slot 3
5. PCIe Slot 4
6. FlexibleLOM
7. 2 X 1Gb Ethernet ports
8. Power Supply 4 (blank)
9. Power Supply 3 (blank)
10. Power Supply 2 (blank)
11. Power Supply 1
12. Reserved
13. Module Removal Pin (non-hot-pluggable)
14. Dedicated iLO4 Port
15. HPE-APM 2.0 Interface Port (Rack management interface)
16. Chassis management controlled health indicator
17. Chassis management controller UID indicator

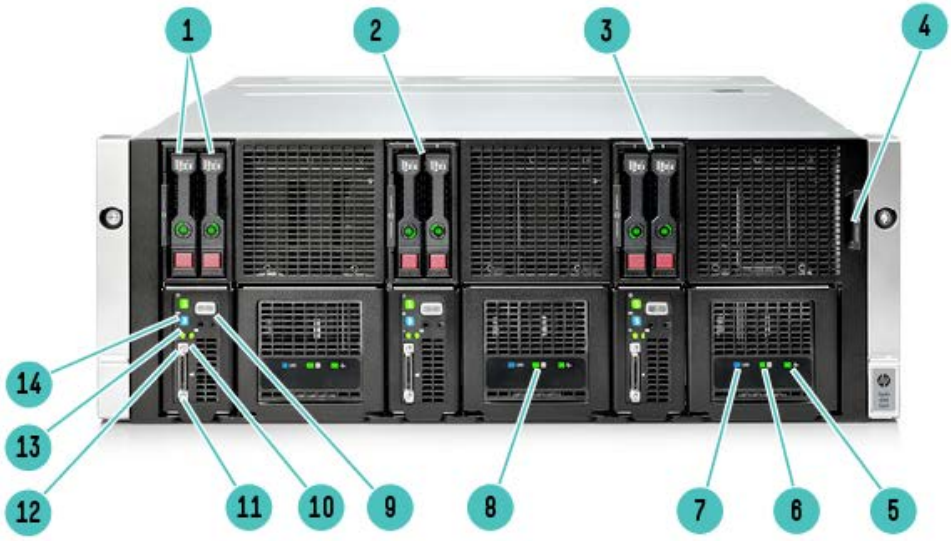
Overview



HPE Apollo 4520 Model Front View

1. SFF 2.5" hard drives on node (2)
2. Server Node 2
3. Quick Reference Code
4. HDD backplane Health LED
5. Logical array status
6. UID LED
7. LFF hard drives connected to Server Node 1
8. Eject node button
9. Backup LED
10. SUV Connector – VGA and USB
11. Server Tray Health LED
12. UID LED
13. Power Indicator LED

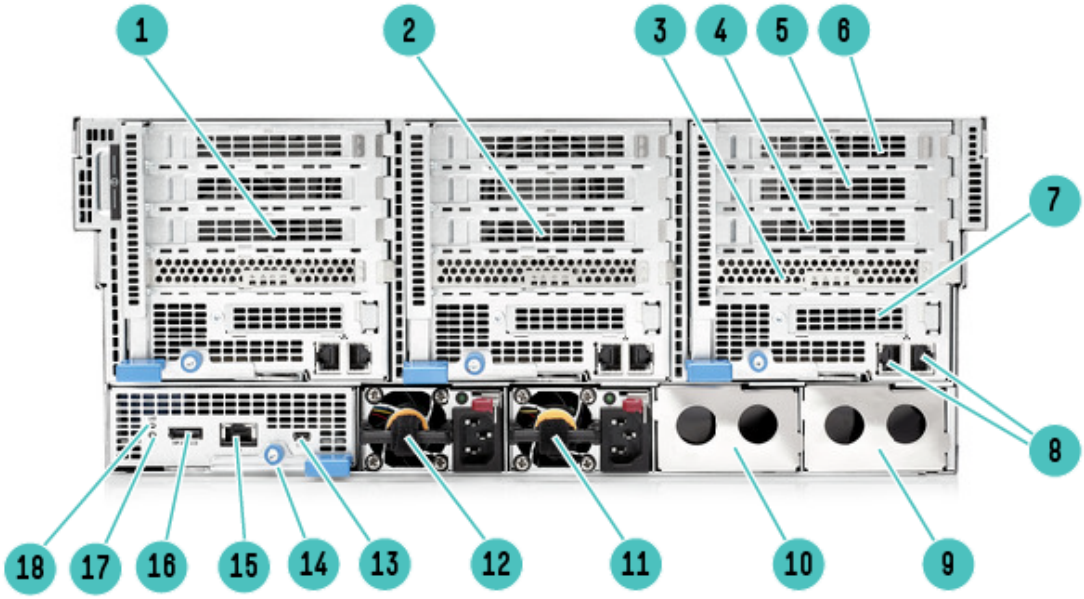
Overview



HPE Apollo 4530 Model Front View:

1. SFF 2.5" hard drives on node (2)
2. Server Node 2
3. Server Node 3
4. Quick Reference Code
5. HDD backplane Health LED
6. Logical array status
7. UID LED
8. LFF hard drives connected to Server Node 2
9. Eject node button
10. NIC Status
11. SUV Connector – VGA and USB
12. Backup LED
13. Server Tray Health LED
14. Power Indicator LED

Overview



HPE Apollo 4530 Model Rear View:

1. I/O Module Server Node 3
2. I/O Module Server Node 2
3. PCIe Slot 1 in Server Node 1
4. PCIe Slot 2 in Server Node 1
5. PCIe Slot 3 in Server Node 1
6. PCIe Slot 4 in Server Node 1
7. FlexibleLOM in Server Node 1
8. 2 X 1Gb Ethernet ports
9. Power Supply 4 (blank)
10. Power Supply 3 (blank)
11. Power Supply 2
12. Power Supply 1
13. Reserved
14. Module Removal Pin
15. Dedicated iLO4 Port
16. HPE-APM 2.0 Interface Port (Rack management interface)
17. Chassis management controlled health indicator
18. Chassis management controller UID indicator

Overview

HPE Apollo 4510 System

Overview

What's New

HPE Apollo 4520 System

NOTE: Each server tray contains two expander modules for shared storage

HPE Apollo 4530 System

- Intel® Xeon® Processor E5-2600 v4 Series
- HPE DDR4-2400MHz Low Voltage Memory Kit
- 4U Form Factor
- Up to 4 PCIe Gen 3.0 Slots
- Up to 68 LFF drives in Apollo 4510 System
- M.2 support
- Smart Array and HBA support for boot SFF drives
- 16 DIMMs – DDR4 memory
- Gen9 Power supplies (800W and 1400W)
- Support for DC power supply
- 12G SAS

Standard Features

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

E5-2600 v4 Series

Twenty-Two Core Processors

Intel® Xeon E5 2699v4 (2.2GHz/22core/55MB/145W) Processor

Twenty Core Processors

Intel® Xeon E5 2698v4 (2.2GHz/20core/50MB/135W) Processor

Eighteen Core Processors

Intel® Xeon E5 2697v4 (2.3GHz/18core/45MB/145W) Processor
Intel® Xeon E5 2695v4 (2.1GHz/18core/45MB/120W) Processor

Sixteen Core Processors

Intel® Xeon E5 2697Av4 (2.6GHz/16core/40MB/145W) Processor
Intel® Xeon E5 2683v4 (2.1GHz/16core/40MB/120W) Processor

Fourteen Core Processors

Intel® Xeon E5 2690v4 (2.6GHz/14core/35MB/135W) Processor
Intel® Xeon E5 2680v4 (2.4GHz/14core/35MB/120W) Processor
Intel® Xeon E5 2660v4 (2.0GHz/14core/35MB/105W) Processor
Intel® Xeon E5 2650Lv4 (1.7GHz/14core/35MB/65W) Processor

Twelve Core Processors

Intel® Xeon E5 2650v4 (2.2GHz/12-core/30MB/105W) Processor

Ten Core Processors

Intel® Xeon E5 2640v4 (2.4GHz/10-core/25MB/90W) Processor
Intel® Xeon E5 2630Lv4 (1.8GHz/10-core/25MB/55W) Processor
Intel® Xeon E5 2630v4 (2.2GHz/10-core/25MB/85W) Processor

Eight Core Processors

Intel® Xeon E5 2620v4 (2.1GHz/8-core/20MB/85W) Processor

Six Core Processors

Intel® Xeon E5 2603v4 (1.7GHz/6-core/15MB/85W) Processor

E5-2600 v3 Series

Sixteen-Core Processors

Intel® Xeon® E5-2698v3 (2.3GHz/16core/40MB/135W) Processor

Fourteen-Core Processors

Intel® Xeon® E5-2695v3 (2.3GHz/14core/35MB/120W) Processor
Intel® Xeon® E5-2683v3 (2GHz/14core/35MB/120W) Processor

Twelve-Core Processors

Intel® Xeon® E5-2690v3 (2.6GHz/12core/30MB/135W) Processor
Intel® Xeon® E5-2680v3 (2.5GHz/12core/30MB/120W) Processor
Intel® Xeon® E5-2670v3 (2.3GHz/12core/30MB/120W) Processor
Intel® Xeon® E5-2650Lv3 (1.8GHz/12core/30MB/65W) Processor

Ten-Core Processors

Intel® Xeon® E5-2660v3 (2.6GHz/10core/25MB/105W) Processor
Intel® Xeon® E5-2650v3 (2.3GHz/10core/25MB/105W) Processor

Eight-Core Processors

Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor
Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor
Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) Processor

Standard Features

	Six-Core Processors Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor **NOTE:** DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed (options for 2133 and 2400 MHz memory speed are available). **NOTE:** Memory will run slower if a lower speed processor is used **NOTE:** Up to 2 processors supported. Mixing different processor models is not supported. **NOTE:** For the Intel® C610 Series Chipset E5-2600v3 Series and E5-2600v4 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number
Cache Memory One of the following depending on model	**E5-2600v4 Processors** 50MB (1x50MB) Level3 **NOTE:** For Twenty-core processors. 45MB (1x45MB) Level3 **NOTE:** For Eighteen-core processors 40MB (1x40MB) Level3 **NOTE:** For Sixteen-core processors. 35MB (1x35MB) Level3 **NOTE:** For Fourteen-core processors. 30MB (1x30MB) Level3 **NOTE:** For Twelve-core processors. 25MB (1x25MB) Level3 **NOTE:** For Ten-core processors. 20MB (1x20MB) Level3 **NOTE:** For Ten-core processors. **E5-2600v3 Processors** 40MB (1x40MB) Level3 **NOTE:** For Sixteen-core processors. 35MB (1x35MB) Level3 **NOTE:** For Fourteen-core processors. 30MB (1x30MB) Level3 **NOTE:** For Twelve-core processors. 25MB (1x25MB) Level3 **NOTE:** For Ten-core processors. 20MB (1x20MB) Level3 **NOTE:** For Eight-core processors. 15MB (1x15MB) Level3 **NOTE:** For Six-core processors.
Chipset	Intel® C610 Series Chipset Intel® E5-2600 v3 Processor Family Intel® E5-2600 v4 Processor Family For more information regarding Intel® chipsets, please see the following URL: **http://www.intel.com/products/server/chipsets/**.
Legacy Mode	HPE Legacy Mode (FIO Only – P/N 758959-B22) **NOTE:** UEFI is the default mode for CTO SKUs. Can change default to legacy via CTO.
On System Management Processor	HPE iLO (Firmware: HPE iLO 4) For more information, visit: **http://www.hpe.com/go/ilo**
Memory Protection	Advanced ECC (multi-bit error protection) Online Spare

Standard Features

	Lock Step Mode	
Memory Dedicated to each server node	Type	HPE SmartMemory DDR4 Registered (RDIMM and LRDIMM)
	DIMM Slots Available	16 DIMM Slots available
	Maximum (RDIMM or LRDIMMs) per server tray	1024GB (16 x 64GB) Registered memory configurations

NOTE: HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the Hewlett Packard Enterprise SmartMemory QuickSpecs at:
http://h18000.www1.hpe.com/products/QuickSpecs/14225_div/14225_div.html
NOTE: HPE certified SmartMemory must be used to guarantee full 2400 or 2133 MHz speeds.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400 MHz, 2133 MHz, 1866MHz, 1600MHz, or 1333MHz. Please see the Online Memory Configuration Tool at: **http://h22195.www2.hp.com/DDR4memoryconfig/Home/Legal.**

Network Controller HPE Ethernet 1Gb 2-port 361i Adapter

Expansion Slots for Apollo 4510 and Apollo 4530

Dedicated to each server node	Expansion Slots #	Technology	Bus Width*	Connector Width	Form Factor	Notes
	0	PCIe 3.0	X8	X16	Low profile slot	CPU0; FlexibleLOM
	1	PCIe 3.0	X8	X16	Low profile slot	CPU0; SA/HBA
	2	PCIe 3.0	X8	X16	Low profile slot	CPU0; SA/HBA
	3	PCIe 3.0	X8	X16	Low profile slot	CPU1
	4	PCIe 3.0	X8	X16	Low profile slot	CPU1

NOTE: Indicates the number of physical electrical lanes running to the connector.
The expansion slot descriptions above apply to Apollo 4510 and Apollo 4530 models.
The Apollo 4520 System offers choice of "HPE Apollo 4500 x16 I/O Module Kit," which contains one x16 bus width slot and three x8 PCIe slots, or "HPE Apollo 4500 x8 FIO I/O Module," which contains expansion slots identical to above-listed chart.

HPE Server ROM

HPE ROM (Read Only Memory) is now digitally signed using the HPE 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: **https://www.hpe.com/us/en/support.html**

Storage Controllers Dedicated to each server node

Software RAID
HPE Dynamic Smart Array B140i SATA RAID
NOTE: HPE Dynamic Smart Array B140i SATA RAID is located on the server node and controls the two small form factor (SFF/2.5") hard drives and M.2 drives in the server node itself.

Standard Features

Storage Controllers Dedicated to Bulk LFF drives

HPE Smart Array P244br/1G FIO Controller
HPE H244br FIO Smart HBA
NOTE: The P244br and H244br may be used for hardware RAID/HBA of the 2 SFF drives per server node.
NOTE: If SAS drive is selected, P244br or H244br is required.
NOTE: P244br and H244br connect to the 2 SFF drives in the node and provide capability for up to 12G SAS or 6G SATA. If not installed, then the Intel 610 chipset SATA controls the drives.
NOTE: If you do not wish to use RAID/HBA using software or hardware RAID, then the Intel Chipset controls the RAID. The Intel Chipset is the default controller for the SFF drives.
For hardware RAID/HBA of bulk storage LFF drives, one of the following controlled is required:

- SAS Controllers for Internal bulk drives
- HPE Smart Array P440/4G Controller
- HPE Smart Array P840/4G Controller
- HPE H240 Smart HBA

NOTE: The Apollo 4520 System uses HPE H240 Smart HBA for LFF SAS drives, and requires software to manage failover.
NOTE: The Apollo 4520 System supports single and dual installation for the HPE H240 Smart Host Bus Adapter. RAID Mode is not supported.
NOTE: The Apollo 4520 System supports multipath I/O using dual H240 Controllers per server node. See cabling guide for more information (http://h20565.www2.hpe.com/hpsc/doc/public/display?sp4ts.oid=5287871&docId=emr_na-c04787658&docLocale=en_US)

SAS Controllers for External bulk drives
HPE H241 Smart HBA
HPE Smart Array P441/4G Controller
HPE Smart Array P841/4G Controller
NOTE: SA/HBA that end in 1 refer to external controllers for storage outside of the system. 0 refers to internal storage
NOTE: SAS controllers for internal bulk drives reside in I/O module(s) in each system.
NOTE: The Apollo 4510 contains one I/O module; Apollo 4520 has two I/O modules, and Apollo 4530 has three I/O modules

HPE Smart Storage Battery

HPE DL/ML/SL 96W 145mm Smart Stor Battery

NOTE: The Smart Storage Battery is required if one of the following controllers has been selected on a server node:
HPE Smart Array P244br/1G FIO 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

NOTE: The Apollo 4500 System, with its centralized HPE Smart Storage Battery, supports up to two Smart Array Controllers per node in the I/O module.

Internal Bulk Storage Controller Options by Model

The following table shows supported controller choices for each model, per I/O module.

	1xH240	2xH240	1xP440	2xP440	1xP840
Apollo 4510	X	X	X	X	X
Apollo 4520	X	X			
Apollo 4530	X		X		

Internal Storage Devices

USB Drive	Via USB port, external support only
Hard Drives	None ship standard

Standard Features

	Drive Bays	2 SFF drive bays total in each HPE ProLiant XL450 Server 68 LFF drive bays total in chassis for Apollo 4510 46 LFF drive bays total in chassis for Apollo 4520 (23 drives per server) **NOTE:** The Apollo 4520 contains 2 expanders per server tray. These allow for shared storage across the two servers 45 LFF drive bays total in chassis for Apollo 4530 (15 drives per server)
Maximum Internal Storage	Apollo 4510: 1x68 Model - 68 LFF Drives per node **NOTE:** To achieve 68 LFF drives, the optional 8 drive rear cage must be purchased **NOTE:** The default bulk drive support is 60 LFF drives.	
	Hot Plug LFF SAS	680 TB 68 x 10TB
	Hot Plug LFF SATA	680 TB 68 x 10TB
	Hot Plug LFF SAS SSD	108.8 TB 68 x 1.6TB
	Hot Plug LFF SATA SSD	65.3 TB 68 x 960 GB
	Hot Plug SFF SATA SSD	3.84TB 2 x 1.92TB
	Hot Plug SFF SAS SSD	3.2 TB 2 x 1.6TB
	Hot Plug SFF SATA	2 TB 2 x 1TB
	M.2 2280 SSD	680 GB 2 x 340GB
	NOTE: The node consists of two SFF (2.5") hard drive bays on the front of the server **NOTE:** M.2s were not previously available with the SL4500, but are available for the Apollo 4500 Gen9 Systems **NOTE:** The main storage section in the chassis has 60 LFF (3.5") hard drive bays, with an optional rear drive cage (only available on the Apollo 4510) which fits 8 additional LFF drives and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.	
	Apollo 4520: 23 LFF Drives per node, 2 nodes total for a total of 46 LFF Drives per chassis	
	Hot Plug LFF SAS	460TB 46 x 10TB
	Hot Plug LFF SAS SSD	73.6TB 46 x 1.6TB
	Hot Plug SFF SAS SSD	6.4 TB 4 x 1.6TB
	M.2 2280 SSD	1.02 TB 4 x 340GB
	NOTE: Each node contains two SFF (2.5") hard drive bays on the front of the node. **NOTE:** M.2s were not previously available with the SL4500, but are available for the Apollo 4500 Gen9 Systems **NOTE:** The main storage section in the chassis has 46 LFF (3.5") hard drive bays, 23 bays per node, and they can be populated with any combination of SAS HDD or SSD drives to achieve desired performance. **NOTE:** There are also 2 SAS expanders per server tray which allow for server failover	

Interfaces Dedicated to each server node	Network RJ-45	Two 1GbE NIC ports **NOTE:** Customers can elect to use a FlexibleLOM, which enables customers to increase I/O capacity
	Management Network Port	1GbE Dedicated **NOTE:** Management port is shared (located on management module)
	Health LED	1 front
	Power	1 front
	UID for node	1 front per node and 1 rear on management module
	UID for storage	1 per display board
	SUV	Serial + USB + video (all in one) **NOTE:** HPE 36pin SUV Dongle Cord Kit P/N is 676277-B21

Standard Features

Industry Standard Compliance	ACPI 5.0 Compliant PCIe 3.0 Compliant WOL Support Microsoft® Logo certifications PXE Support USB 1.1 and 2.0 Compliant SMBIOS 3.0.0
Server Power Cords	6' Highline (IEC-IEC) power cord ships standard **NOTE:** HPE Apollo servers are primarily connected to PDU's in data center racks so they ship standard with only a PDU power cord (416151-B21). If a user wishes to power an Apollo system using a 120V receptacle (NEMA-15), the NEMA power cord must be ordered separately. **NOTE:** If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix: **ProLiant Power Cables**.
Power Specifications	To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at URL: **https://paonline56.itcs.hpe.com/?Page=Index.** **NOTE:** Power Specification and Technical Content for supported power supplies can be found at: **http://h18000.www1.hpe.com/products/QuickSpecs/14209_div/14209_div.html**
Common Slot Power Supply	The HPE Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HPE Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HPE CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HPE CS power supply options provide efficiency ratings of up to 94% and are available in two power output options - 800W, and 1400W - allowing the user to "right-size" a power supply for their specific server configuration. All HPE Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations. It is highly recommended that you use the HPE Power Advisor in defining the "Right-Size" power supply for your needs. HPE Power Advisor can be accessed at: **https://paonline56.itcs.hpe.com/?Page=Index.** **NOTE:** Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail. **NOTE:** The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on **http://www.80Plus.org .** **NOTE:** Redundant Power: Optional redundant power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).
System Fans	System ships standard with 5 hot-plug fan modules.
Operating Systems and Virtualization Software Support for ProLiant Servers	**Microsoft Windows Server** **Canonical Ubuntu** **Red Hat Enterprise Linux (RHEL)** **SUSE Linux Enterprise Server (SLES)** **VMware** **NOTE:** The Apollo 4520 supports Microsoft Windows Server, Red Hat Enterprise Linux, and SUSE Linux Enterprise Server **NOTE:** Only 64-bit versions of these operating systems are supported. **NOTE:** For more information on Hewlett Packard Enterprise's Certified and Supported ProLiant

Standard Features

		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: **https://www.hpe.com/us/en/servers/server-operating-systems.html** and our **driver download page**.
Graphics (per node)		Integrated Matrox G200 video standard • 1280 x 1024 (32 bpp) • 1920 x 1200 (16 bpp)
Form Factor		4U form factor
On System Management	HPE iLO Management Engine	HPE iLO Management Engine is a comprehensive set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HPE iLO Management Engine comes standard on all HPE ProLiant Gen9 servers. The HPE iLO Management Engine portfolio includes: • HPE iLO Mobile App: Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: **http://www.hpe.com/info/ilo/mobileapp** • HPE iLO: The HPE iLO (Integrated Lights-Out) management processor is the core foundation for the HPE iLO Management Engine • HPE Agentless Management: Provides built in server health monitoring and alerting capability without OS agents, that starts working the moment a power cord and an Ethernet cable are connected. • HPE Active Health System: Always on, continuous monitoring for increased stability and shorter downtimes; 100% configuration history; Health and service alerts and easy export and upload to Service and Support. • HPE Intelligent Provisioning: Lets customers provision and configure a single server without any separate media. No more SmartStart CDs or Smart Update Firmware DVD are needed. – To start Intelligent Provisioning: ▫ Press the F10 key during the ProLiant Gen9 server boot process (also known as power on self-test or POST). ▫ Press the F10 key during the ProLiant Gen9 server boot process (also known as power on self-test or POST). ▫ Please go to the Intelligent Provisioning website at **https://www.hpe.com/us/en/product-catalog/detail/pip.5219984.html** for additional information and to view usage videos. ▫ Use the Service Pack for ProLiant (SPP) at **http://h17007.www1.hpe.com/us/en/enterprise/servers/products/service_pack/spp/index.aspx** to get firmware and software updates. **NOTE:** For more information, visit: **http://www.hp.com/go/ilo** or HPE iLO Management Engine technologies whitepaper
HPE Insight Management	HPE Service Pack for ProLiant	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 BladeSystem enclosures. 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. 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 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

Standard Features

providing the option of multiple local or shared repositories which can be easily updated from hpe.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 BladeSystem enclosure components (Onboard Administrator and Virtual Connect). 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://h17007.www1.hpe.com/us/en/enterprise/servers/products/service_pack/spp/index.aspx**. More information can be found: **http://www.hpe.com/servers/smartupdatemanager**

Security

Power-on password

QuickLock, Network Server Mode

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

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 resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
NOTE: Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
http://h20564.www2.hpe.com/hpsc/wc/public/home .
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	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. 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: **https://www.hpe.com/us/en/servers/management.html** .
	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: **iLO Advanced**
	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 **HPE CloudSystem Matrix**
High Performance Clusters	HPE HPC Interconnects	**High Performance Computing (HPC) interconnect technologies** are available for this server. These high-speed InfiniBand and 10 Gigabit interconnects are fully supported by Hewlett Packard Enterprise.
	HPE Insight Cluster Management Utility	**https://www.hpe.com/us/en/product-catalog/detail/pip.3296361.html** 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.
	HPE HPC Linux Value Pack	HPE HPC Linux Value Pack (Value Pack) is a Hewlett Packard Enterprise-licensed and Hewlett Packard Enterprise-supported option to Hewlett Packard Enterprise insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HPE-MPI parallelization library.
HPE Insight Online		**HPE Insight Online** is a new addition to the HPE Support Center for one stop, secure access to product and HPE 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.
Factory Express Portfolio for Servers and Storage		HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Optional Features

	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. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services for your specific server model please contact your sales representative or go to: **Factory Express**.
HPE Simple Configurator (OCS)	OCS is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact The Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. **One Config Simple (OCS)**

Service and Support

Service and Support	HPE Technology Services for Apollo Servers 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. Protect your business beyond warranty with HPE Pointnext operational services HPE Pointnext operational services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.
Optimized Care	Supports maintaining servers at optimum performance availability HPE Proactive Care with 24x7 coverage, three year Care Pack Service HPE Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to Hewlett Packard Enterprise. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HPE ProLiant server. **http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf**
Standard Care	Supports maintaining high level of server availability Foundation Care 24x7, three-year Care Pack Service HPE Foundation Care 24x7 connects you to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. Hardware onsite response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call for hardware or software questions. **http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en**
Related Services	Data Privacy – protect your data through better media management. HPE Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. **https://www.hpe.com/us/en/services/platform-consulting-services.html** HPE Datacenter Care service HPE Datacenter Care helps you 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 Hewlett Packard Enterprise via a single point of accountability for Hewlett Packard Enterprise and others' products. For more information, visit **https://www.hpe.com/us/en/services/datacenter-care-options.html** Data Center Platform Consulting Services Choose HPE Technology Services Consulting to modernize and migrate your key systems. These services help fine tune your data center to improve security, management and efficiency across IT infrastructure, operations, and facilities and prepare you for the new style of IT. Hewlett Packard Enterprise understands the needs of the data center of the future and will serve as your guide for the journey. **https://www.hpe.com/us/en/services/platform-consulting-services.html**
Connect Hewlett Packard Enterprise your devices to	Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77% reduction in down time, near 100% diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, 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 Hewlett Packard Enterprise support.

Service and Support

HPE Support Center	Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more **http://www.hp.com/go/hpsc** The HPE 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 personalize IT support anywhere, anytime. HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Care Pack or Hewlett Packard Enterprise contractual support agreement. **NOTE:** The Hewlett Packard Enterprise Support Center Mobile App is subject to local availability
Warranty / Service Coverage	For ProLiant servers and storage systems, the services cover HPE-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by Hewlett Packard Enterprise as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.
For more information	To learn more on HPE ProLiant servers and HPE BladeSystem servers, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit: **http://www.hp.com/services/proliant**
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.

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: Factory Integrated Models must start with a CTO Server.
NOTE: FIO indicates that this option is only available as a factory installable option.
NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack

Step 1: Base Configuration (choose one of the following configurable Chassis models)

HPE Chassis - Apollo 4510 Model	HPE Apollo 4510 Gen9 Configure-to-Order Chassis	799581-B21
	NOTE: Standard 5 hot-plug fan modules included in the chassis.	
	NOTE: Supports up to 68 LFF drives (rear drive cage kit required). One node total	
	HPE Apollo 4520 Gen9 Configure-to-order Chassis	799581-B22
	NOTE: Standard 5 hot-plug fan modules included in the chassis.	
	NOTE: Supports up to 46 LFF drives Two nodes total	
	HPE Apollo 4530 Gen9 Configure-to-order Chassis	799581-B23
	NOTE: Standard 5 hot-plug fan modules included in the chassis	
	NOTE: Supports 45 LFF drives with up to 15 per node. Three nodes total	

Step 1A: Select required Chassis Options (only one of the following from each category unless otherwise noted)

HPE Power Supplies	**NOTE:** A minimum of two power supplies per chassis is required. **NOTE:** Prior to making a power supply selection it is highly recommended that the HPE Power Advisor is run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: **https://paonline56.itcs.hpe.com/?Page=Index**	
	HPE Flex Slot Titanium Power Supply Kits	
	NOTE: The following power supplies offer up to 94% efficiency.	
	HPE 800W Flex Slot Titanium Hot Plug Power Supply Kit	720482-B21
	HPE Flex Slot Slot Power Supplies	
	NOTE: The following power supplies offer up to 94% efficiency.	
	HPE 800W Flex Slot Platinum Hot Plug Power Supply Kit	720479-B21
	HPE 1400W Flex Slot Platinum Plus Hot Plug Power Supply Kit	720620-B21
	HPE 800W Flex Slot -48VDC Hot Plug Power Supply Kit	720480-B21
	HPE 800W Flex Slot Universal Hot Plug Power Supply Kit	720484-B21
	NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables.	
HPE Rail Kits	HP 4.3U Server Rail Kit	681254-B21
	NOTE: One Rail Kit is required for every chassis in a rack	

Step 1B: Select Nodes

Configuration Information - Factory Integrated Models

HPE Server Nodes - Apollo 4510 model	HPE ProLiant XL450 Gen9 Configure-to-order Server Node for Apollo 4510 Chassis **NOTE:** Select quantity of one	786593-B21
HPE Server Nodes - Apollo 4520 model	HPE ProLiant XL450 Gen9 Configure-to-order Server Node for Apollo 4520 Chassis **NOTE:** Select quantity of two	786594-B22
HPE Server Nodes - Apollo 4530 model	HP ProLiant XL450 Gen9 Configure-to-order Server Node HPE Apollo 4500 x16 FIO I/O Module E: Select quantity of three	786595-B23

Step 2: Choose Required Node Options (only one of the following from each list unless otherwise noted)

HPE Processors

NOTE: If 2 processor servers are desired, select one xxxxx-L21 and one corresponding xxxxxx-B21 for every processor option chosen per node

E5-2600 v4 Series Processors

HPE XL450 Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) FIO Processor Kit	867036-L21
HPE XL450 Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) Processor Kit	843001-L21
HPE XL450 Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) FIO Processor Kit	867032-L21
HPE XL450 Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) Processor Kit	843003-L21
HPE XL450 Gen9 Intel Xeon E5-2697Av4 (2.6GHz/16-core/40MB/145W) FIO Processor Kit	867034-L21
HPE XL450 Gen9 Intel Xeon E5-2683v4 (2.1GHz/16-core/40MB/120W) Processor Kit	843005-L21
HPE XL450 Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) Processor Kit	842991-L21
HPE XL450 Gen9 Intel Xeon E5-2680v4 (2.4GHz/14-core/35MB/120W) Processor Kit	842989-L21
HPE XL450 Gen9 Intel Xeon E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit	842982-L21
HPE XL450 Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) Processor Kit	842999-L21
HPE XL450 Gen9 Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W) Processor Kit	842980-L21
HPE XL450 Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) Processor Kit	842978-L21
HPE XL450 Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit	842973-L21
HPE XL450 Gen9 Intel Xeon E5-2630Lv4 (1.8GHz/10-core/25MB/55W) Processor Kit	842993-L21
HPE XL450 Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit	842971-L21
HPE XL450 Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Kit	842969-L21

HPE Memory

NOTE: Please choose memory options for the first processor of each server node. Up to 8 DDR4 DIMM slots are dedicated per processor socket.
NOTE: HPE memory from previous generation servers are not qualified or warranted with this HPE ProLiant Server. HPE 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 SmartMemory QuickSpecs at: **http://h18000.www1.hp.com/products/QuickSpecs/14225_div/14225_div.html**
NOTE: HPE certified SmartMemory must be used to guarantee full 2133MHz speeds.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400, 2133, or 1866MHz, 1600MHz, or 1333MHz. Please see the Online Memory Configuration Tool at: **https://h22195.www2.hpe.com/ddr4memoryconfig/home/legal**

Registered DIMMs (RDIMM) - For E5-2600 v4 Series Processors

NOTE: The following memory is supported by 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

Configuration Information - Factory Integrated Models

	HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21
	HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
	Load Reduced DIMMs (LRDIMMs) – For E5-2600 v4 Series Processors	
	NOTE: The following memory is supported by 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
	NOTE: The Following memory is supported by E5-2600v3 series processors	
	NOTE: Apollo 4520 requires v4 series memory	
	Registered DIMMs (RDIMM) - For E5-2600 v3 Series Processors **NOTE:** The Following memory is supported by E5-2600 v3 series processors	
	HPE 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-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
	Load Reduced DIMMs (LRDIMMs) – For E5-2600 v3 Series Processors	
	NOTE: The Following memory is supported by E5-2600v3 series processors	
	HPE 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
	HPE 64GB (1x64GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726724-B21
I/O Module	HPE Apollo 4500 x8 FIO I/O Module	855129-B21
	HPE Apollo 4500 x16 I/O Module Kit	855128-B21
	NOTE: HPE Apollo 4500 x16 I/O Module (855128-B21) contains one x16 PCIe slot and three x8 PCIe slots.	

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HPE Storage Controllers	**NOTE:** The controllers below control the 2 SFF drives in the HPE ProLiant XL450 Gen9 Server. If SFF SAS drives are selected, H244br or P244br is required.	
	Smart Host Bus Adapters for 2 SFF boot drives	
	HPE Special Request/Equipment Logistic Service	761878-B21
	NOTE: This controller does not consume a PCIe slot	
	NOTE: Maximum of one FIO “br” controller (H244br, P244br) is allowed to support SFF SAS drives.	
	Smart Array Controllers for 2 SFF boot drives	
	HPE Special Request/Equipment Logistic Service	761871-B21
	NOTE: This controller does not consume a PCIe slot.	
BIOS Mode	HPE Legacy FIO Mode Setting	758959-B22
Controller State	HP FIO Enable Smart Array B140i Setting	784308-B21
	NOTE: If not selecting an HPE Storage Controller, this option may be selected to support RAID and Hot-plug capabilities for SATA hard drives. The B140i does not support SAS hard drives.	
	HPE Manufacturing FIO Enable HBA Mode Setting	792962-B21
	NOTE: This option can only be selected with an HBA card and cannot be selected with HPE Legacy FIO Mode Setting.	
HPE Hard Drives	**NOTE:** The following HPE Hard Drive bundles are Factory Integration Only options. They must be purchased at time of configuration and are not available for field integration	

Configuration Information - Factory Integrated Models

6-pack SATA Hot Plug LFF (3.5-inch) Low Profile Hard Drive Bundles

NOTE: The 6-pack bundles listed below are available for the Apollo 4530 and Apollo 4510 models

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 6TB 6G SATA 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867267-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

6-pack SAS Hot Plug LFF (3.5-inch) Low Profile Hard Drive Bundles

NOTE: The 6-pack bundles listed below are available for the Apollo 4530, Apollo 4520, and Apollo 4510 models

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 6TB 12G SAS 7.2K rpm LFF (3.5in) 512e Low Profile Midline 1yr Wty 6-pack FIO Hard Drive Bundle	867271-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

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

Core Options

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	**E5-2600 v4 Series Processors**	
	HPE XL450 Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) Processor Kit	867036-B21
	HPE XL450 Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) Processor Kit	843001-B21
	HPE XL450 Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) Processor Kit	867032-B21
	HPE XL450 Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) Processor Kit	843003-B21
	HPE XL450 Gen9 Intel Xeon E5-2697Av4 (2.6GHz/16-core/40MB/145W) Processor Kit	867034-B21
	HPE XL450 Gen9 Intel Xeon E5-2683v4 (2.1GHz/16-core/40MB/120W) Processor Kit	843005-B21
	HPE XL450 Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) Processor Kit	842991-B21
	HPE XL450 Gen9 Intel Xeon E5-2680v4 (2.4GHz/14-core/35MB/120W) Processor Kit	842989-B21
	HPE XL450 Gen9 Intel Xeon E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit	842982-B21
	HPE XL450 Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) Processor Kit	842999-B21
	HPE XL450 Gen9 Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W) Processor Kit	842980-B21
	HPE XL450 Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) Processor Kit	842978-B21
	HPE XL450 Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit	842973-B21
	HPE XL450 Gen9 Intel Xeon E5-2630Lv4 (1.8GHz/10-core/25MB/55W) Processor Kit	842993-B21
	HPE XL450 Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit	842971-B21
	HPE XL450 Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Kit	842969-B21
	E5-2600 v3 Series Processors	
	HPE XL450 Gen9 Intel Xeon E5-2698v3 (2.3GHz/16-core/40MB/135W) Processor Kit	797319-B21
	HPE XL450 Gen9 Intel Xeon E5-2695v3 (2.3GHz/14-core/35MB/120W) Processor Kit	797321-B21
	HPE XL450 Gen9 Intel Xeon E5-2683v3 (2GHz/14-core/35MB/120W) Processor Kit	797323-B21
	HPE XL450 Gen9 Intel Xeon E5-2690v3 (2.6GHz/12-core/30MB/135W) Processor Kit	783936-B21
	HPE XL450 Gen9 Intel Xeon E5-2680v3 (2.5GHz/12-core/30MB/120W) FIO Processor Kit	847444-B21
	HPE XL450 Gen9 Intel Xeon E5-2670v3 (2.3GHz/12-core/30MB/120W) Processor Kit	783934-B21
	HPE XL450 Gen9 Intel Xeon E5-2650Lv3 (1.8GHz/12-core/30MB/65W) Processor Kit	783940-B21
	HPE XL450 Gen9 Intel Xeon E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	841821-B21
	HPE XL450 Gen9 Intel Xeon E5-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit	783932-B21
	HPE XL450 Gen9 Intel Xeon E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	783930-B21
	HPE XL450 Gen9 Intel Xeon E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor Kit	783901-B21
	HPE XL450 Gen9 Intel Xeon E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Kit	783899-B21
	HPE XL450 Gen9 Intel Xeon E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit	783897-B21
HPE Memory	**Registered DIMMs (RDIMM) - For E5-2600 v4 Series Processors** **NOTE:** The following memory is supported by 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 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21
	HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21

Core Options

	Load Reduced DIMMs (LRDIMMs) – For E5-2600 v4 Series Processors	
	NOTE: The following memory is supported by 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
	NOTE: The Following memory is supported by E5-2600v3 series processors	
	NOTE: Apollo 4520 requires v4 series memory	
	Registered DIMMs (RDIMM) - For E5-2600 v3 Series Processors	
	NOTE: The Following memory is supported by E5-2600 v3 series processors	
	HPE 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-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
	Load Reduced DIMMs (LRDIMMs) – For E5-2600 v3 Series Processors	
	NOTE: The Following memory is supported by E5-2600v3 series processors	
	HPE 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
	HPE 64GB (1x64GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726724-B21
HPE Hard Drives	**NOTE:** For the Apollo 4510 model, choose up to a total of 68 LFF 3.5" hard drives from the following options using any mix of SAS/SATA/SSD hard drives for desired performance, up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes, and up to 2 M.2 SSDs per node. **NOTE:** For the Apollo 4520 model, choose up to a total of 46 LFF 3.5" hard drives from the following options using any mix of SAS HDD/SSD for desired performance, up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes, and up to 2 M.2 SSDs per node. **NOTE:** For the Apollo 4530 model, choose up to a total of 15 LFF 3.5" hard drives per server node from the following options using any mix of SAS or SATA HDD/SSD for desired performance, up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes, and up to 2 M.2 SSDs per node. **NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components for the subsystem. **NOTE:** Hard drives have either a one year or three year warranty. **NOTE:** For the Apollo 4510 model, up to 8 additional LFF drives may be added in the rear of the system using “HPE Apollo 4510 8HDD Rear Cage Kit” (P/N: 799377-B21).	
	6G SATA Hot Plug SFF (2.5-inch) SC Midline (MDL) Drives	
	HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
	HPE 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
	6G SAS Hot Plug SFF (2.5-inch) SC Midline (MDL) Drives	
	HPE 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
	12G SAS Hot Plug SFF (2.5-inch) SC Enterprise Drives	
	HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759208-B21
	6G SAS Hot Plug SFF (2.5-inch) SC Enterprise Drives	
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785067-B21

Core Options

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
6G SATA Read Intensive Hot Plug SFF (2.5-inch) Solid State Drives	
HPE 80GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804575-B21
HPE 120GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804581-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804587-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804593-B21
HPE 800GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804599-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	871768-B21
HPE 1.6TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	804605-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	871770-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	816929-B21
6Gb SATA Mixed Use Hot Plug SFF (2.5-inch) Solid State Drives	
HPE 200GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804613-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	832414-B21
HPE 800GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804625-B21
HPE 1.6TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804631-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	816985-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	816995-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	817011-B21
6Gb SATA Write Intensive-2 Hot Plug SFF (2.5-inch) Solid State Drives	
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 1.2TB SATA 6G Write Intensive SFF (2.5in) SC 3yr Wty SSD	804677-B21
6G SATA Value Endurance Hot Plug SFF (2.5-inch) SC Enterprise Boot Solid State Drives	

Core Options

HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21
6G SATA Mainstream Endurance Hot Plug LFF (2.5-inch) SC Solid State Drives	
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
12G SAS Value Endurance Hot Plug LFF (2.5-inch) SC Enterprise Value Solid State Drives	
HPE 800GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	762261-B21
HP 1.6TB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762263-B21
HPE 300GB 12G SAS 15K rpm LFF (3.5-inch) Low Profile C Enterprise 3yr Warranty Hard Drive	797285-B21
HPE 450GB 12G SAS 15K rpm LFF (3.5-inch) Low Profile C Enterprise 3yr Warranty Hard Drive	797287-B21
HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty HDD	797283-B21
6G SAS Hot Plug with Low Profile LFF (3.5-inch) LP Midline (MDL) Drives	
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) Low Profile Midline 1yr Warranty Hard Drive	797263-B21
HPE 4TB SAS 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797267-B21
HPE 3TB SAS 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797277-B21
HPE 2TB SAS 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797279-B21
HPE 1TB SAS 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797281-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hpe.com/products/QuickSpecs/12244_div/12244_div.html

12G SAS Hot Plug with Low Profile LFF (3.5-inch) LP Midline (MDL) Drives	
HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	857646-B21
HP 8TB 12G SAS 7.2K rpm LFF (3.5-inch) Low Profile Midline 1yr Warranty Hard Drive	805337-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	834031-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	861592-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846516-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	846998-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	846996-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	833928-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	861748-B21
HPE 3TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846530-B21
HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	833926-B21

Core Options

HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846526-B21
HPE 900GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD	870761-B21
6G SATA Hot Plug with Low Profile LFF (3.5-inch) LP Midline (MDL) Drives	
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 8TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	834028-B21
HP 8TB 6G SATA 7.2K rpm LFF (3.5-inch) Low Profile Midline 512e 1yr Warranty Hard Drive	805334-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	846512-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) Low Profile Midline 1yr Warranty Hard Drive	797269-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	846785-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797265-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861683-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	846783-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797271-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861688-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797273-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861681-B21
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty HDD	797275-B21
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861686-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861683-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861688-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861681-B21
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	861686-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **http://h18000.www1.hpe.com/products/QuickSpecs/12244_div/12244_div.html**	
6G SATA Value Endurance Hot Plug LFF (3.5-inch) LP Enterprise Value Solid State Drives	
HPE 400GB SAS 12G Write Intensive LFF (3.5in) LP 3yr Wty SSD	797289-B21
HPE 800GB SAS 12G Write Intensive LFF (3.5in) LP 3yr Wty SSD	797291-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **http://h18000.www1.hpe.com/products/QuickSpecs/14038_div /14038_div.html**	
12G SAS Value Endurance Hot Plug LFF (3.5-inch) LP Enterprise Performance Solid State Drives	
HPE 800GB SAS 12G Read Intensive LFF (3.5in) LP 3yr Wty SSD	797299-B21
HP 1.6TB 12G SAS Value Endurance LFF 3.5-in LPC Enterprise Performance 3yr Wty Solid State Drive	797301-B21

Core Options

NOTE: If SAS drive is selected, then one of the following SAS controllers is required: HPE H244br FIO Smart HBA or HPE Smart Array P244br/1G FIO Controller.

6G SATA Hot Plug LFF (3.5-inch) SC Mixed Use Solid State Drives

HPE 960GB 6G SATA Mixed Use-3 LFF 3.5-in LPC 3yr Wty Solid State Drive	832433-B21
HPE 1.6TB SATA 6G Mixed Use LFF (3.5in) LPC 3yr Wty SSD	846788-B21

6G SATA Hot Plug LFF (3.5-inch) SC Read Intensive Solid State Drives

HPE 480GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty SSD	840987-B21
HPE 800GB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty SSD	840990-B21
HPE 1.6TB SATA 6G Read Intensive LFF (3.5in) LPC 3yr Wty SSD	840993-B21

M.2 Solid State Drives

HPE 120GB 6G SATA Read Intensive M.2 2280 3yr Wty Solid State Drive	777262-B21
HPE 340GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	777264-B21

HPE Networking

1 Gigabit Ethernet Adapters

HPE Ethernet 1Gb 4-port 331T Adapter	647594-B21
HPE Ethernet 1Gb 2-port 361T Adapter	652497-B21

10 Gigabit Ethernet adapters

HPE Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HPE Ethernet 10Gb 2-port 530T Adapter	656596-B21
HPE Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
HPE Ethernet 10Gb 2-port 562SFP+ Adapter	727055-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

25 Gigabit Ethernet adapters

HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter	817753-B21
HPE Ethernet 4x25Gb 1-port 620QSFP28 Adapter	817762-B21

NOTE: Total number of PCIe slots available is 4. This is the total selection from any combination of PCIe options in the following categories: Infiniband, Networking, Controllers, PCIe Accelerators.
NOTE: Total PCIe slots available depends on the number of processors selected. One processor: 2 PCIe slots (slots 1 and 2); Two processors: 4 PCIe slots
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **http://www.hp.com/go/ProLiantNICs**

Infiniband

HPE InfiniBand FDR 2-port 545QSFP Adapter	702211-B21
HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21

Core Options

	HPE InfiniBand EDR/Ethernet 100Gb 1-port 840QSFP28 Adapter	825110-B21
	HPE InfiniBand EDR/Ethernet 100Gb 2-port 840QSFP28 Adapter	825111-B21
	NOTE: Total number of PCIe slots available is 4. This is the total selection from any combination of PCIe options in the following categories: Infiniband, Networking, Controllers, and PCIe Accelerators. **NOTE:** Total PCIe slots available depends on the number of processors selected. If one processor is installed, 2 PCIe slots (Slots 1 and 2). If two processors are installed, 4 PCIe slots are available. **NOTE:** IB EDR must be purchased with HPE Apollo 4500 x16 I/O Module Kit (P/N 855128-B21. One x16 I/O module required per XL450 Server).	
	HPE Intel® Omni-Path Options	
	HPE 100Gb 1-port OP101 QSFP28 x8 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829334-B21
	HPE 100Gb 1-port OP101 QSFP28 x16 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829335-B21
	FlexibleLOM	
	HPE Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
	HPE FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
	HPE FlexFabric 10Gb 4-port 536FLR-T Adapter	764302-B21
	HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter	727054-B21
	HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
	HPE Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
	HPE Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
	HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
	HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter	817749-B21
	NOTE: Does not consume a PCIe slot **NOTE:** Total number of FlexibleLOM slots available is 1. This is the total selection from a combination of FlexibleLOM options in the following categories: Infiniband and Networking	
HPE Storage Controllers	**NOTE:** The controllers below control the 2 SFF drives in the HPE ProLiant XL450 Gen9 Server. If SFF SAS drives are selected, H244br or P244br is required.	
	FIO Host Bus Adapters for 2 SFF boot drives	
	HPE Special Request/Equipment Logistic Service	761878-B21
	HPE H244br 12Gb 2-ports Int Smart Host Bus Adapter	726809-B21
	NOTE: The above H244br SKU is used in BTO model.	
	NOTE: This controller does not consume a PCIe slot.	
	NOTE: Maximum of one FIO “br” controller (H244br, P244br) is allowed to support SFF SAS drives.	
	FIO Smart Array Controllers for 2 SFF boot drives	
	HPE Special Request/Equipment Logistic Service	761871-B21
	NOTE: This controller does not consume a PCIe slot.	
	Host Bus Adapters for Internal LFF Bulk drives	

Core Options

	HPE H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	Host Bus Adapters for External LFF Bulk drives	
	HPE H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	Smart Array Controller for Internal LFF Bulk drives	
	HPE Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
	HPE Smart Array P840/4GB FBWC 12Gb 2-ports Int SAS Controller	726897-B21
	HPE Cable Options	
	HPE Apollo 4520/4530 Mini SAS H240 Cable Kit	808961-B21
	NOTE: If one H240 Controller is ordered, then two cables are required **NOTE:** If one H240 Controller is ordered, then two cables are required	
	HPE Apollo 4510/4520 H240 Cable Kit	808963-B21
	NOTE: If one H240 controller is ordered, then one Apollo 4510/4520 is required	
	NOTE: If two H240 controllers are ordered, then 2 cables are required	
	HP A4500 Mini SAS P440 Cable Kit	808965-B21
	NOTE: If one P440 Controller is ordered, then 1 cable is required	
	HP Apollo 4510 Mini SAS P440 x2/P840 Cable Kit	808967-B21
	NOTE: If two P440 Controllers are ordered, then 1 cable is required	
	NOTE: If one P840 Controller is ordered, then 1 cable is required	
	HPE Apollo 4510 Mini SAS P440 Cable Kit	808969-B21
	Fibre Channel	
	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 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 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HPE 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
HPE Smart Storage Battery	HPE 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
	NOTE: The Smart Storage Battery is required if one of the following controllers has been selected on a server node: HPE Smart Array P244br/1G FIO 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	
	NOTE: The Smart Storage Battery supports up to two Smart Array Controllers on the Apollo 4500 series.	
HPE Power Supplies	**NOTE:** Prior to making a power supply selection it is highly recommended that the HPE Power Advisor is run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: **http://www.hp.com/go/hppoweradvisor.**	
	HPE Flex Slot Titanium Power Supply Kits	

Core Options

	NOTE: The following power supplies offer up to 94% efficiency.	
	HPE 800W Flex Slot Titanium Hot Plug Power Supply Kit	720482-B21
	HPE Flex Slot Platinum Plus Power Supply Kits	
	HPE 800W Flex Slot Platinum Hot Plug Power Supply Kit	720479-B2
	NOTE: The following power supplies offer up to 94% efficiency.	
	NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables	
	HPE 1400W Flex Slot Platinum Plus Hot Plug Power Supply Kit	720620-B21
	HPE Flex Slot Slot Power Supplies	
	NOTE: The following power supplies offer up to 94% efficiency.	
	HPE 800W Flex Slot -48VDC Hot Plug Power Supply Kit	720480-B21
	HPE 800W Flex Slot Universal Hot Plug Power Supply Kit	720484-B2
	NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables	
HPE Rear Cage Kits	HP Apollo 4510 8 Hard Drive Rear Cage Kit	799377-B21
	NOTE: This kit is only available for the Apollo 4510 System.	
	NOTE: This kit supports an additional 8 LFF SSD/HDD	
HPE Tape Options	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 LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
	HPE StoreEver LTO-6 Ultrium 6250 Tape Drive in a 1U Rack Mount Kit	C0L99A
	HPE StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in a 1U Rack Mount Kit	EJ014B
	HPE StoreEver LTO-4 Ultrium 1760 SAS (1) in a 1U Rack Mount Kit	EH946C
	HPE StoreEver 1U SAS Rack Mount Kit	AE459B
	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	C0H18A
	HPE StoreEver 1/8 G2 LTO-6 Ultrium 6250 Fibre Channel Tape Autoloader	C0H19A
	HPE StoreEver 1/8 G2 LTO-5 Ultrium 3000 Fibre Channel Tape Autoloader	BL541B
	HPE StoreEver 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader	BL536B
	HPE StoreEver MSL LTO-7 Ultrium 15000 FC Drive Upgrade Kit	N7P36A
	HPE StoreEver MSL LTO-7 Ultrium 15000 SAS Drive Upgrade Kit	N7P37A
	HPE StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit	C0H27A
	HPE StoreEver MSL LTO-6 Ultrium 6250 Fibre Channel Drive Upgrade Kit	C0H28A
	HPE StoreEver MSL LTO-5 Ultrium 3280 Fibre Channel Drive Upgrade Kit	BL535B
	HPE StoreEver MSL LTO-5 Ultrium 3000 Fibre Channel Drive Upgrade Kit	BL544B
	HPE StoreEver MSL LTO-5 Ultrium 3000 SAS Drive Upgrade Kit	BL540B

Core Options

HPE StoreEver MSL LTO-4 Ultrium 1760 SAS Drive Upgrade Kit	AK383B
HPE StoreEver ESL G3 LTO-7 Ultrium 15750 Drive Upgrade Kit	M0T56A
HPE StoreEver ESL G3 LTO-6 Ultrium 6650 Fibre Channel Drive Kit	C0K97A

Additional Options

HPE Apollo Platform Manager	The Apollo Platform Manager is an optional rack level solution for the HPE Apollo 4500 Systems which enable server-level DC (or hardware) power on and off and server-level monitoring. In addition, the APM will automatically discover hardware components which are connected into the APM solution. The APM does not replace rack PDUs, but is designed to enable the utilization of basic, low cost, rack PDUs while providing the functionality of 'switched' PDUs (which provide hardware power on/off of individual servers by turning off the AC power to the power supplies of a given server). Because the servers share power supplies to optimize power efficiency, using 'switched' PDUs to turn off all the power supplies in the chassis will result in the loss of all server nodes in that chassis. The APM solves this by allowing server node-level hardware power on/off of the DC power to the individual server node motherboards.	
	HPE Advanced Power Manager Kit	741192-B21
HPE Insight Software	**HPE Insight Control**	
	HPE Insight Control including 1yr 24x7 TSU E-LTU	C6N28ABE
	HPE Insight Control including 1yr 24x7 Technical Support and Updates 1-server LTU	C6N27A
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. **NOTE:** Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support and Update Service. **NOTE:** Licenses ship without media. The HPE Insight Control Media Kit can be ordered separately, or can be downloaded at: **http://www.hpe.com/go/insightupdates** **NOTE:** For additional license options please see the QuickSpecs at: **http://h18000.www1.hpe.com/products/QuickSpecs/12631_div/12631_div.html** **NOTE:** Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys. **NOTE:** For additional license options please see the QuickSpecs at: **http://h18000.www1.hpe.com/products/QuickSpecs/13019_div/13019_div.html**	
	HPE Integrated Lights-Out (iLO) Advanced for ProLiant	
	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 1yr Support on iLO Licensed Features	512485-B21
	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
	NOTE: For additional license options please see the QuickSpecs at: **http://h18004.www1.hpe.com/products/QuickSpecs/14276_div/14276_div.html** **NOTE:** For more information, visit: **http://www.hpe.com/go/ilo**	

High Performance Clusters	**HPE Cluster Management Utility**	
	HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	
	HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	
	NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activa node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agr	

Additional Options

	HPE Insight Cluster Management Utility Media	
	HPE Insight Cluster Management Utility 3yr 24x7 Flexible E-LTU	
	HPE Insight Cluster Management Utility 1yr 24x7 Flexible E-LTU	
	NOTE: For additional license kits please see the QuickSpecs at: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111735 https://www.hpe.com/h20195/v2/GetHTM**	
HPE Security	HPE Trusted Platform Module Option	488069-B21
	NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2 and 2.0. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: **https://www.hpe.com/h20195/v2/GetPDF.aspx/c04939549.pdf** **NOTE:** ProLiant OS pre-installed units will come with the partition required for TPM deployment. **NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	
Optional Software	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 Power Cords	**NOTE:** HPE ProLiant servers ships with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs).	
	HPE C13 - C14 WW 250V 10A Gray 0.7m Jumper Cord	A0K03A
	HPE C13 - C14 WW 250V 10A Gray 1.37m Jumper Cord	A0K04A
	HPE C13 - C14 WW 250V 10Amp 2.0m Jumper Cord	A0K02A
	HPE C13 - C14 WW 250V 10A Gray 3.0m Jumper Cord	A0K06A
	HPE C13-NEMA 6-15P 10A/250V 3.6m Black Power Cord	A0N33A
	HPE C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
	HPE C13 - C14 WW 250V 10Amp Flint Gray 2.0m Jumper Cord	AF573A
HPE Uninterruptible Power Systems	**HPE Rack-mountable UPS**	
	HPE R1500 G3 Uninterruptible Power Supply (UPS)	
	HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
	NOTE: Please see the QuickSpecs for additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154376**	
	HPE R/T3000 G2 Uninterruptible Power System (UPS)	
	HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
	HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A
	NOTE: Please see the QuickSpecs for additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154342**	
	R5000 Uninterruptible Power System (UPS)	
	HPE R5000 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A
	NOTE: Please see the QuickSpecs for additional information: **http://h18000.www1.hpe.com/products/QuickSpecs/14109_na/14109_na.html**	

Additional Options

R7000 Uninterruptible Power System (UPS)

HPE R7000 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hpe.com/products/QuickSpecs/14110_na/14110_na.html
NOTE: For additional information on Hewlett Packard Enterprise Uninterruptible Power Systems please go to: **http://www.hp.com/servers/rackups .**
NOTE: For additional information on sizing your server, please reference:
http://www.upssizer.com.
NOTE: Please see the UPS and PDU cable matrix's on the HPE Power Protection and Management page. Under Power Cords, click on the "HPE Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: **http://www.hp.com/products/powercords .**

HPE Basic Power Distribution Units (bPDU)

HPE Basic Power Distribution Unit: 1U/0U Version	
HPE Basic 1.9kVA/L5-20P 16A/120V Outlets (12) 5-20R/Horizontal NA/JP PDU	H5M54A
HPE Basic 3.6kVA/60320 C20 Detachable 16A/230V Outlets (12) C13/Horizontal WW PDU	H5M56A
HPE Basic Power Distribution Unit: Half Height Version	
HPE Basic 2.8kVA/L5-30P 24A/120V Outlets (18) 5-20R/Vertical NA/JP PDU	H5M55A
HPE Basic 4.9kVA/60320 C20 Detachable 16A/230V Outlets (20) C13/Vertical WW PDU	H5M57A
HPE Basic 4.9kVA/L6-30P 24A/208V Outlets (20) C13/Vertical NA/JP PDU	H5M58A
HPE Basic 3Ph 8.6kVA/L15-30P 24A/208V Outlets (18) C13/Vertical NA/JP PDU	H5M61A
HPE Basic Power Distribution Unit: Mid Height Version	
HPE Basic 4.9kVA/L6-30P 24A/208V Outlets (24) C13 (6) C19/Vertical NA/JP PDU	H5M59A
HPE Basic 8.3kVA/CS8265C 40A/208V Outlets (30) C13 (6) C19/Vertical NA PDU	H5M60A
HPE Basic 9.2kVA/50A Terminal Block 40A/230V Outlets (30) C13 (6) C19/Vertical WW PDU	H5M75A
HPE Basic 3Ph 5.7kVA/ L21-20P 16A/120-208V Outlets (24) C13 (3) 5-20R/Vertical NA/JP PDU	H5M63A
HPE Basic 3Ph 8.6kVA/L21-30P 24A/120-208V Outlets (24) C13 (3) C19 (3) 5-20R/Vertical NA/JP PDU	H5M64A
HPE Basic 3Ph 8.6kVA/L15-30P 24A/208V Outlets (24) C13 (6) C19/Vertical NA/JP PDU	H5M62A
HPE Basic Power Distribution Unit: Full Height Version	
HPE Basic 3Ph 11kVA/60309 16A/240V Outlets (36) C13 (6) C19/Vertical NA PDU	H5M67A
HPE Basic Power Distribution Unit: 480/277 Volt Version	
HP 13.2kVA 480 Volt IEC309 30A 3-Phase Input (15 Outlet) NA Basic PDU	H3X07A
HPE 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU	H3X08A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111392
NOTE: Additional HPE Power Distribution Units are available. For a complete list of all HPE PDUs and additional information please visit: **https://www.hpe.com/us/en/integrated-systems/rack-power-cooling.html**

Additional Options

HPE Remote Monitoring Power Distribution Units (mPDU)	**HPE Remote Monitored Power Distribution Unit: 1U Version**	
	HPE Metered 2.8kVA/L5-30P 24A/120V Outlets (12) 5-20R/Horizontal NA/JP PDU	D9N43A
	HPE Metered 3.6kVA/60320 C20 Detachable 16A/230V Outlets (12) C13/Horizontal WW PDU	D9N46A
	HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (12) C13/Horizontal NA/JP PDU	D9N44A
	HPE Remote Monitored Power Distribution Unit: Half Height Version	
	HPE Metered 3.6kVA/60320 C20 Detachable 16A/230V Outlets (16) C13/Vertical WW PDU	D9N45A
	HPE Remote Monitored Power Distribution Unit: Mid Height Version	
	HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (4) C19/Vertical NA/JP PDU	D9N47A
	HPE Metered 3Ph 8.6kVA/L15-30P 24A/208V Outlets (18) C13 (3) C19/Vertical NA/JP PDU	D9N51A
	HPE Metered 3Ph 5.7kVA/L21-20P 16A/120-208V Outlets (13) C13 (3)5-20R/Vertical NA/JP PDU	D9N52A
	HPE Metered 3Ph 8.6kVA/L21-30P 24A/120-208V Outlets (18) C13 (3) C19 (3) 5-20R/Vertical NA/JP PDU	D9N53A
	HPE Remote Monitored Power Distribution Unit: Full Height Version	
	HPE Metered 8.3kVA/CS8265C 40A/208V Outlets (30) C13 (3) C19/Vertical NA PDU	D9N49A
	HPE Metered 3Ph 14.4kVA/CS8365C 40A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N58A
	HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (30) C13 (3) C19/Vertical NA/JP PDU	D9N61A
	HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (24) C13 (3) C19/Vertical NA/JP PDU	D9N54A
	HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N59A
	HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N62A
	HPE Metered 3Ph 19.9kVA/L22-30P 24A/277V Outlets (30) RF-203P-HP/Vertical NA PDU	D9N63A
	HPE Environmental Sensor for Remote Monitored PDUs	
	HP Environmental Sensor for Remote Monitored and Managed PDUs	E2D53A
	NOTE: Please see the QuickSpecs for additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04229509**	

HPE Intelligent Power Distribution Units (iPDU)	**iPDU Core Units**	
	HPE Intelligent Modular 4.9kVA/L6-30P 24A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF520A
	HPE Intelligent Modular 8.3kVA/CS8265C 40A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF521A
	HPE Intelligent Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF522A
	HPE Intelligent Modular 3Ph 14.4kVA/CS8365C 40A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF533A
	HPE Intelligent Modular 3Ph 17.3kVA/60309 60A 4-wire 48A/208V (6) C19/Horizontal NA/JP PDU	AF523A
	HP 17.3kVA 24A 415V Three Phase L22-30 NA Core Intelligent Power Distribution Unit	AF902A
	HPE Intelligent Modular 3Ph 17.3kVA/IEC 60309 60A 4-wire 48A/208V (12) C19/Horizontal NA/JP PDU	AF535A
	HPE Intelligent Modular 3Ph 17.3kVA/IEC 60309 30A 5-wire 24A/240V (12) C19/Horizontal NA/JP PDU	AF537A
	iPDU Kits with Standard Extension Bars	

Additional Options

	HPE Intelligent Modular 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF531A
	HPE Intelligent Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF532A
	iPDU Extension Bars	
	HPE 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
	HPE 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04123329** **NOTE:** Additional HPE Power Distribution Units are available. For a complete list of all HPE PDUs and additional information please visit: **https://www.hpe.com/us/en/integrated-systems/rack-power-cooling.html.**	
HPE Disk Storage Systems	HPE D6000 Dual I/O Module Disk Enclosure	QQ695A
	HPE D6020 Enclosure with Dual I/O Modules	K2Q28A
	NOTE: Please see **http://h20565.www2.hpe.com/hpsc/doc/public/display?sp4ts.oid=5306918&docId=emr_na-c03502134&docLocale=en_US** for D6000 cabling information.	
HPE Rack Series	**HPE Intelligent Rack Series**	
	HP 36U 600mm x 1200mm Enterprise Pallet Rack	BW899A
	HP 36U 600mm x 1200mm Enterprise Shock Rack	BW900A
	HP 42U 600mm x 1200mm Enterprise Pallet Rack	BW907A
	HP 42U 600mm x 1200mm Enterprise Shock Rack	BW908A
	HP 47U 600mm x 1200mm Enterprise Pallet Rack	BW913A
	HP 47U 600mm x 1200mm Enterprise Shock Rack	BW914A
	NOTE: Rack chosen is required to have a depth of 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack. **NOTE:** Please see the QuickSpecs for Technical Specifications such as height, width, depth, weight and color: : **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04123237** **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: **http://www.hpe.com/go/rackandpower**	
HPE Rack Options	**HPE TFT7600 G2 KVM Console and Monitor (TFT7600 G2)**	
	HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
	HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **http://h18000.www1.hpe.com/products/QuickSpecs/13731_na/13731_na.html**	
	HPE Server Console Switches	
	HP Server Console 0x2x8 Port Analog Switch	AF616A
	HP Server Console 0x2x16 Port Analog Switch	AF617A
	HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04128391**	
	HPE Server Console Switch G2 with Virtual Media & CAC	
	HPE 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
	HPE 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A

Additional Options

	KVM USB Cnsl Itfc Adapter 1PK ALL	336047-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04168373**	
	HPE IP Console Switch G2 with Virtual Media & CAC	
	HPE 1x4 USB/PS2 KVM Console Switch	AF611A
	HPE 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HPE 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HPE 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information **http://h18000.www1.hpe.com/products/QuickSpecs/13474_na/13474_na.html**	
	HPE 32GB microSD Flash Memory Card	700139-B21
	NOTE: For more information, customer/resellers can contact: **http://www.hpe.com/services/carepack**	
HPE Software Solutions	HPE RA for MS Exchange 13 Apollo 4000 d	P9B84A
	Scality RING Single Site Perpetual License per TB (Min 200TB) E-LTU for HPE Servers	P8Y89AAE
	Scality RING Single Site Hardware Lifetime License per TB (Min 200TB) E-LTU for HPE Servers	P8Y90AAE
	Scality RING Geo Perpetual License per TB (Min 200TB) E-LTU for HPE Servers	P8Y91AAE
	Scality RING Geo Hardware Lifetime License per TB (Min 200TB) E-LTU for HPE Servers	P8Y92AAE
	Scality RING Connector for Email App per TB (min 200TB) E-LTU	P8Y93AAE
	Scality RING Engineer Professional Services (per Day) E-LTU	P8Y94AAE
	Scality RING Installation Package (up to 3 Geographical Sites) E-LTU	P8Y95AAE
	Scality RING Capacity Expansion Professional Services per TB of Usable Capacity Expansion E-LTU	P8Y96AAE
	Scality RING Paid POC 5-10 Days Scality Engineer on Site E-LTU	P8Y97AAE
	Scality RING Advanced 3-day Operation Training with Scality Engineer E-LTU	P8Y98AAE
	Scality RING Certification Course (base) per Person E-LTU	P8Y99AAE
	Scality RING Dedicated Care Service Extended Yearly Fee E-LTU	P8Z00AAE
	Scality RING 24/7 Maintenance and Support per TB (Min 200TB) per year E-LTU for HPE Servers	P8Z01AAE
	HPE Lustre Software 1yr Support Subscription E-LTU	P9L65AAE
	HPE Lustre Software 3yr Support Subscription E-LTU	P9L67AAE
	HPE Lustre Software 5yr Support Subscription E-LTU	P9L68AAE
	Hortonworks Data Platform (HDP) Enterprise Subscription 4 N/50TB Raw Strg 1yr 24x7 Supp E-LTU	F5Z52AAE
	Cloudera Enterprise Basic Edition 1 Year Subscription per Node 24x7 Support Physical LTU	G7M27A
	Cloudera Enterprise Basic Edition 1 Year Subscription per Node 24x7 Support E-LTU	G7M27AAE
	Cloudera Enterprise Basic Edition 1 Year Subscription per Node 8x5 Support Physical LTU	G7M28A
	Cloudera Enterprise Basic Edition 1 Year Subscription per Node 8x5 Support E-LTU	G7M28AAE
	Cloudera Enterprise Data Hub Edition 1 Year Subscription per Node 24x7 Support Physical LTU	G7M29A
	Cloudera Enterprise Data Hub Edition 1 Year Subscription per Node 24x7 Support E-LTU	G7M29AAE
	Cloudera Enterprise Data Hub Edition 1 Year Subscription per Node 8x5 Support Physical LTU	G7M30A
	Cloudera Enterprise Data Hub Edition 1 Year Subscription per Node 8x5 Support E-LTU	G7M30AAE
	Cloudera Enterprise Data Hub Edition 1 Year Subscription per Node 24x7 Premium E-LTU	G7M31AAE
	Hortonworks Data Platform (HDP) Enterprise Plus Subscription 4 N/50TB Raw Strg 1yr 24x7 Supp LTU	JP408A

Additional Options

	Hortonworks Data Platform (HDP) Enterprise Plus Subscription 4 N/50TB Raw Strg 1yr 24x7 Supp E-LTU	JP408AAE
	Cloudera Enterprise 1 year Subscription 24x7 Support Flex LTU	L4Z37A
	Cloudera Enterprise 1 Year Subscription 24x7 Support Flex E-LTU	L4Z37AAE
HPE Support	HPE 3y 24x7 Apollo 4530 FC SVC	U8LY6E
	HPE 3 year Foundation Care 24x7 wDMR Apollo 4530 Service	U8LY7E
	HPE 3 year Foundation Care 24x7 wCDMR Apollo 4530 Service	U8LY8E
	HPE 3 year Proactive Care 24x7 Apollo 4530 Service	U8LY9E
	HPE 3 year Proactive Care 24x7 with DMR Apollo 4530 Service	U8LZ0E
	HPE 3 year Proactive Care 24x7 with CDMR Apollo 4530 Service	U8LZ1E
	HPE Install ProLiant SL6000 Service	UR285E
	HPE Installation and Startup SL6000 Service	UR286E
	HPE 3 year Foundation Care 24x7 Apollo 4510 Service	U8MS0E
	HPE 3 year Proactive Care Next business day Apollo 4510 Service	U8MR4E
	HPE 3 year Foundation Care Next business day Apollo 4510 Service	U8MR1E
	HPE 3 Year Foundation Care 24x7 Apollo 4520 Service	H0YX7E
	HPE 3 Year Proactive Care Next Business Day Apollo 4520 Service	H0YX1E
	HPE 3 Year Foundation Care Next Business Day Apollo 4520 Service	H0YW8E
	HPE 3y 24x7 Apollo 4530 FC SVC	U8LY6E
	HPE 3 year Proactive Care Next business day Apollo 4530 Service	U8LY0E
	HPE 3 year Foundation Care Next business day Apollo 4530 Service	U8LX7E

Memory

HPE Apollo 4530, Apollo 4520, and Apollo 4510 Systems

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

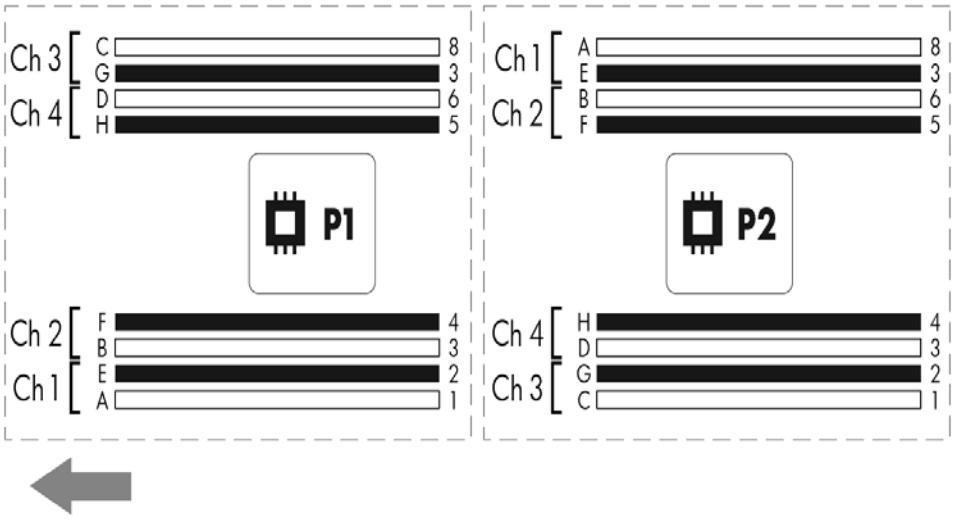
NOTE: Chart does not represent all possible memory configurations.

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool: **http://www.hp.com/go/ddr4memory-configurator**

Memory Subsystem Architecture

Each Intel® Xeon® E5-2600 family processor socket contains four memory channels that support two DIMMs each for a total of eight (8) DIMM per installed processor or a grand total of sixteen (16) DIMMs for the server. Up to 64GB capacity DIMMs are supported for 1024GB of memory (16 DIMM slots x 64GB per DIMM).

DIMM slot and configuration diagrams



Memory population guidelines

General Memory Population Rules and Guidelines:

- Light DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate light slots only.
- 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.
- Populate DIMMs from heaviest load (dual-rank) to lightest load (single-rank) within a channel. Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- 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 qualified on the HPE Apollo 4530, Apollo 4520, Apollo 4510 Gen9 Systems. 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(Worldwide)**

DIMM Type	Registered DIMMS for E5-2600 v3 Series Processors (RDIMMs)

Memory

DIMM Rank	Single Rank (1R)		Dual Rank (2R)	Dual Rank (2R)	Quad Rank (4R)
DIMM Capacity	4GB	8GB	16GB	16GB	32GB
DIMM Native Speed (MHz)	2133	2133	2133	2133	2133
Voltage	LV	LV	LV	LV	LV
SLOTS THAT CAN BE POPULATED					
16 slots server nodes	16	16	16	16	16
MAXIMUM CAPACITY (GB)*	64	128	256	256	512
1 DIMM Per Channel	2133	2133	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133	2133	2133

Memory Speed by Processor Model	E5-2600 v3 Processor Models	Supported Memory Speed
	E5-2603	1600MHz
	E5-2640v3, E5-2630v3, E5-2620v3, E5-2630Lv3	1866MHz
	E5-2690v3, E5-2670v3, E5-2650v3, E5-2683v3, E5-2650Lv3, E5-2695v3, E5-2660v3, E5-2680v3, E5-2698v3	2133MHz

DIMM Type	Registered DIMMs for E5-2600 v4 Series Processors (RDIMMs)				
DIMM Rank	Single Rank (1R)		Dual Rank (2R)		Quad Rank (4R)
DIMM Capacity	8GB	16GB	32GB	32GB	64GB
DIMM Native Speed (MHz)	2400	2400	2400	2400	2400
Voltage	LV	LV	LV	LV	LV
	SLOTS THAT CAN BE POPULATED				
16 slots server nodes	16	16	16	16	16
MAXIMUM CAPACITY (GB)*	128	256	512	512	1024
1 DIMM Per Channel	2400	2400	2400	2400	2400
2 DIMM Per Channel	2133	2133	2133	2133	2133

Memory Speed by Processor Model	E5-2600 v4 Processor Models	Supported Memory Speed
	E5-2603	1866MHz
	E5-2640v3, E5-2630v3, E5-2620v3, E5-2630Lv3	2133MHz
	E5-2690v3, E5-2670v3, E5-2650v3, E5-2683v3, E5-2650Lv3, E5-2695v3, E5-2660v3, E5-2680v3, E5-2698v3	2400MHz

NOTE: Memory Speed is a function of the processor QBI bus speed.

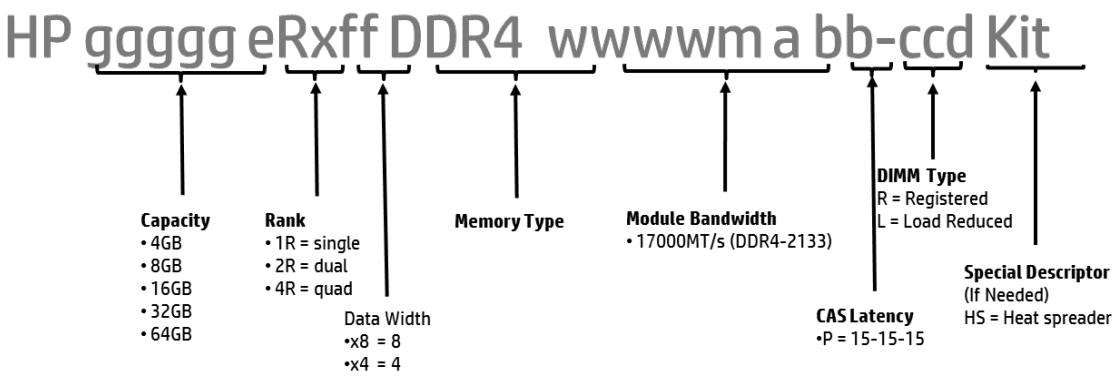
*Maximum capacity will vary based on individual server platform qualification schedule.

NOTE: Capacity references are rounded to the common Gigabyte Values:

Memory

- 4GB = 4096 MB
- 8GB = 8192 MB
- 16GB = 16384 MB
- 32GB = 32768 MB

DDR4 memory options part number decoder



Storage

Apollo 4510 Model Drive IO SAS Port Map for Bulk LFF Storage Area 1x68*:

- Backplane 1 corresponds to drives 1-30 through ports 1A/1B
- If HPE Apollo 4510 8HDD Rear Cage Kit is installed, backplane 1 also corresponds to HDD 65-68
- Backplane 2 corresponds to drives 31-60 through ports 2A/2B
- If HPE Apollo 4510 8HDD Rear Cage Kit is installed, backplane 2 also corresponds to HDD 61-64

NOTE: Drives 61-68 only apply if 8 HDD Option Cage is installed

		68	67	66	65	64	63	62	61		
25	26	27	28	29	30	55	56	57	58	59	60
19	20	21	22	23	24	49	50	51	52	53	54
13	14	15	16	17	18	43	44	45	46	47	48
7	8	9	10	11	12	37	38	39	40	41	42
1	2	3	4	5	6	31	32	33	34	35	36

Front of Chassis

NOTE: This is simple drive zoning

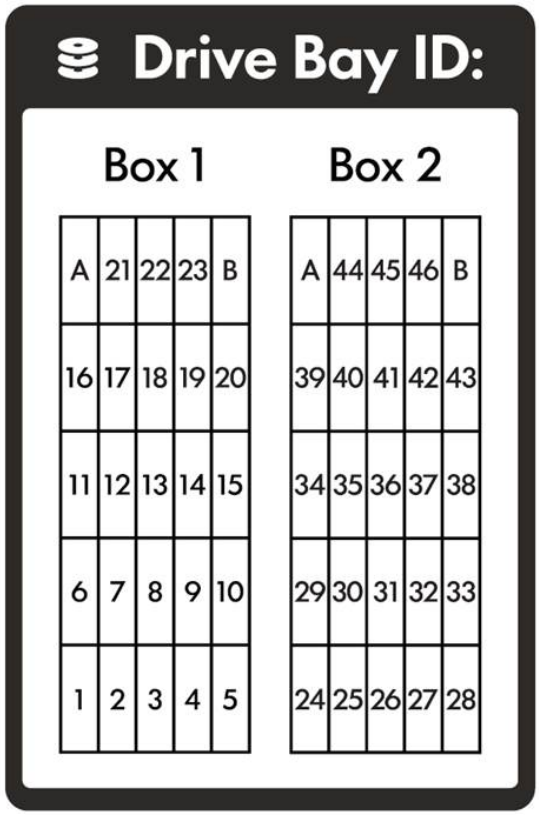
Maximum Storage Capacity – Apollo 4510 Model

Internal (2 SFF Drive Cage)	3.2TB (2 x 1.6TB SFF SAS SSD)
Internal (68 LFF Drive Cage) M.2	544TB (68 x 8TB SAS/SATA LFF) 680GB (2 x 340GB M.2 SSD)
Total	547.9TB **NOTE:** This configuration requires a rear cage kit to support 8 additional LFF drives.

Apollo 4520 Model Drive IO SAS Port Map for Bulk LFF Storage Area 2x23*:

- Box 1 corresponds to backplane 1, drives 1-23
- Box 2 corresponds to backplane 2, drives 24-46
- Bays A and B in boxes 1 and 2 are SAS Expander Modules, which allow H240 HBAs for each server to access all 46 drives.
- Apollo 4520 System requires software for failover

Storage


Drive Bay ID:
Box 1
Box 2
A 21 22 23 B
16 17 18 19 20
11 12 13 14 15
6 7 8 9 10
1 2 3 4 5
A 44 45 46 B
39 40 41 42 43
34 35 36 37 38
29 30 31 32 33
24 25 26 27 28

Technical Specifications

System Unit	Chassis Dimensions (H x W x D) Add fan extension kit (with bezel)	6.88 x 17.45 x 35in (17.48 x 44.33 x 88.9cm) **NOTE:** Rack chosen is required to have 1200mm depth to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack.)	
	Weight (approximate)	Minimum (empty chassis with all pluggable modules removed, including fans)	60 lbs (27.22kg)
		Maximum (all hard drives, power supply, and processor installed)	220lb (99.8kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
		Rated Input Current	For 1400 W Power Supply: 8 A (at 200 VAC), 6.7 A (at 240 VAC) For 800 W Power Supply: 9.4 A (at 100 VAC), 4.5 A (at 240 VAC)
		Rated Input Frequency	50 to 60
	Power Supply Output (per power supply)	Maximum Power	For 1400 W Power Supply: 1400 W (at 200 to 240 VAC) For 800W Power Supply: 800W (at 100-240VAC)
	Power Specifications	To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at URL: **https://www.hpe.com/us/en/about/environment/eco-labels.html** or **http://www.hp.com/go/hppoweradvisor**	
	Power Supply Output (per power supply)	Rated Steady-State Power	
	System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 304.8 m) above sea level to a maximum of 10,000 ft (3048 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
		Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is 36°F/hr (20°C/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) 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.

Technical Specifications

	Altitude	Operating	10,000 ft (3048 m). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
		Non-operating	30,000 ft (9144 m). Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
	Emissions Classification (EMC)	FCC Rating	Class A
		Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
		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.	
HPE Ethernet 1Gb 2-port 361i Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)	
	Data Transfer Method	PCI Express v 3.0, 8.0 GT/s, 5.0 GT/s and 2.5 GT/s bus speeds for a x1 link.	
	Controller	I350 Powerville	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 20 Mb/s Combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 40 Mb/S Combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 200 Mb/s Combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 400 Mb/s Combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 2000 Mb/s Combined
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)
Environment-friendly Products and Approach	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: **https://www.hpe.com/us/en/about/environment/product-recycling.html** To recycle your product, please go to: **https://www.hpe.com/us/en/about/environment/product-recycling.html** or contact your nearest Hewlett Packard 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: **https://www.hpe.com/us/en/about/environment/product-recycling.html** These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM	

Technical Specifications

customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
4-Jun-2018	Version 24	Updated	Remove obsolete SKUs and update information throughout the sections of the QuickSpecs
2-Apr-2018	Version 23	Changed	The Apollo 4520 model was removed.
18-Dec-2017	From version 21 to 22	Updated	Update Notes in the Configuration information
23-Oct-2017	From version 20 to 21	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
7-Aug-2017	From version 19 to 20	Updated	Document updated throughout the document
5-May-2017	From version 18 to 19	Changed	Correct errors throughout the document
17-Feb-2017	From version 17 to 18	Changed	Correct errors throughout the document
28-Nov-2016	From version 16 to 17	Updated	Update Standard Features section
4-Nov-2016	From version 15 to 16	Updated	Remove some HDD SKU´s
26-Sept-2016	From version 14 to 15	Updated	Update information of processors and overall changes
26-Aug-2016	From version 13 to 14	Changed	Change and correct errors throughout the sections
15-Aug-2016	From version 12 to 13	Updated	Updates throughout the QuickSpecs
8-Jul-2016	From version 11 to 12	Updated	Update the wording on the bundles from “4-pack” to “6-pack.”
6-Jun-2016	From version 10 to 11	Updated	Update information of processors and overall changes
15-Apr-2016	From version 9 to 10	Changed	Correct some error on disk capacity
31-Mar-2016	From version 8 to 9	Changed	Change formatting and update the configuration, technical specification and other sections on the document, remove obsoletes
16-Feb-2016	From version 7 to 8	Updated	Update the SDD, SATA and processors information.
1-Dec-2015	From version 6 to 7	Updated	Update the memory section of the QuickSpecs
2-Oct-2015	From version 5 to 6	Updated	Update the technical Configuration Information - Factory Integrated Models
28-Aug-2015	From version 4 to 5	Updated	Update images from Apollo 4510 and 4530.
17-Aug-2015	From version 3 to 4	Updated	Updates throughout the QuickSpecs
17-Jun-2015	From version 2 to 3	Changed	Remove non supported items and add carepacks info.
12-June-2015	From version 1 to 2	Changed	Changes in Technical specifications
1-June-2015	Version 1	Created	Create QuickSpecs for HPE Apollo 4500 System

hp.com/qref/apollo4530gen9

hp.com/qref/apollo4510gen9

Sign up for updates

Summary of Changes

© Copyright 2018 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.
Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Unix is a registered trademark of The Open Group.
Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries.

Hewlett Packard Enterprise

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

c04616501 - 15257 - WorldWide - V24 - 4-June-2018