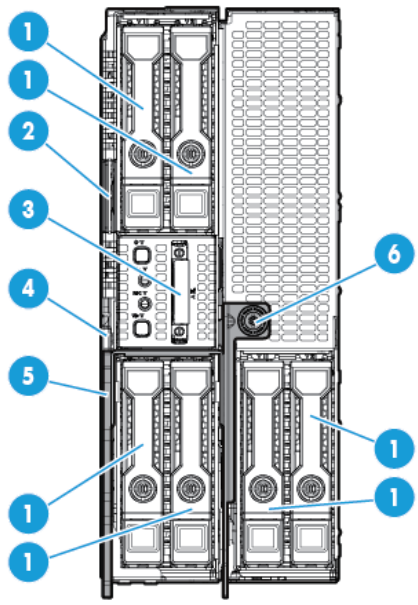
Overview

HP ProLiant XL250a Gen9 Server

The HP ProLiant XL250a Server delivers 2P performance with dual accelerators, while taking advantage of the Apollo 6000 System's modular flexibility and rack-scale efficiency. This server leverages Intel's latest Xeon E5-2600 v3 series processors increasing performance up to 70%, and DDR 4 HP Smart Memory, which boosts bandwidth and efficiency up to 50% over previous generation servers.

The modular HP Apollo a6000 Chassis can accommodate up to 5 double slot XL250a server trays to address various workload needs.

Rack scale power efficiency is improved by an external power shelf, with easy Advanced Power Management for rack, chassis, server and component level management

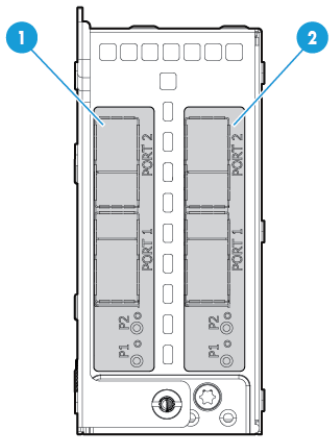


Item Description

Front View Item Description

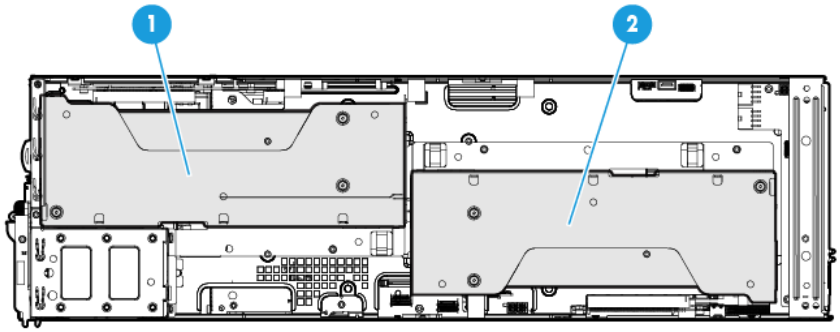
1. Drive bays (6)
2. Serial label pull tab
3. SUV connector
4. Server release latch
5. Server release lever
6. Server release lever thumbscrew

Standard Features



IO Module View Item Description

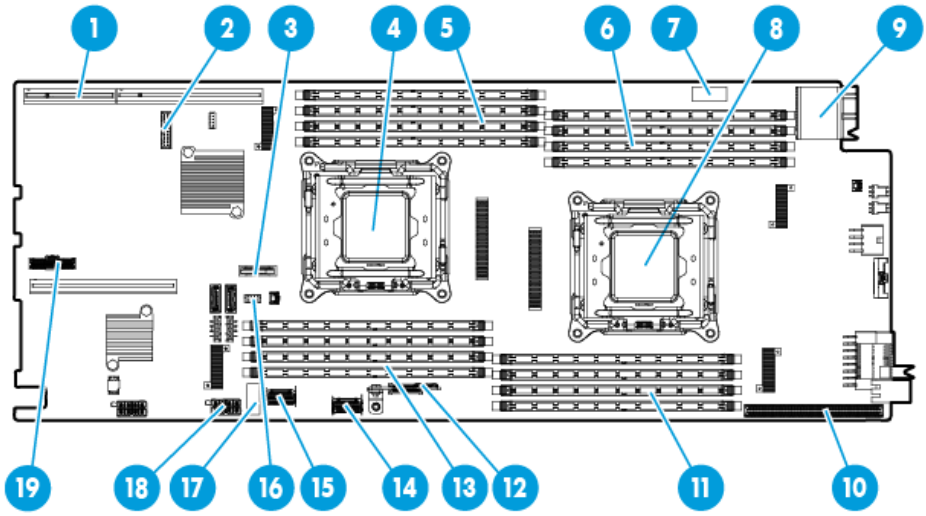
1. PCIe3 x16 (16, 8, 4, 2, 1)
2. PCIe3 x8 (8, 4, 2, 1)



Top View Item Description

1. Front Accelerator
2. Rear Accelerator

Standard Features



Top View Item Description (lower tray)

1. Front accelerator riser slot and PCIe riser board connector
2. TPM connector
3. System battery
4. Processor 2
5. Processor 2 DIMMs (4)
6. Processor 1 DIMMs (4)
7. Intra-tray signal cable connector
8. Processor 1
9. Rear I/O connector
10. Rear accelerator riser slot connector
11. Processor 1 DIMMs (4)
12. MicroSD card slot riser
13. Processor 2 DIMMs (4)
14. Backplane data connector for drive cage 1
15. Backplane data connector for drive cage 2
16. HP Smart Storage Battery cable
17. System maintenance switch
18. Backplane power connector drive cage 1
19. Front panel LED board cable connector

Standard Features

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

Processor

E5-2600 v3 series Processors

Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
E5-2698v3	2.3GHz	16	40MB	135W	9.6GT/s	2133
E5-2695v3	2.3GHz	14	35MB	120W	9.6GT/s	2133
E5-2690v3	2.6GHz	12	30MB	135W	9.6GT/s	2133
E5-2683v3	2.0GHz	14	35MB	120W	9.6GT/s	2133
E5-2680v3	2.5GHz	12	30MB	120W	9.6GT/s	2133
E5-2670v3	2.3GHz	12	30MB	120W	9.6GT/s	2133
E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
E5-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
E5-2643v3	3.4GHz	6	20MB	135W	9.6GT/s	2133
E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
E5-2637v3	3.5GHz	4	15MB	135W	9.6GT/s	2133
E5-2630v3	2.4Ghz	8	20MB	85W	8.0GT/s	1866
E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
E5-2609v3	1.9GHz	6	15MB	85W	8.0GT/s	1600
E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600
E5-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
E5-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866

Chipset

Intel® C610 Series Chipset

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

On System Management Processor

HP iLO (Firmware: HP iLO 4)

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

Memory Protection

Advanced ECC (multi-bit error protection)
Memory Online Spare Mode (Rank Spare Mode)

Memory

Type	HP SmartMemory DDR4 Load Reduced (LRDIMM), or Registered (RDIMM)
DIMM Slots Available	16 DIMM Slots available
Maximum DIMM (per server tray)	512GB (16 x 32GB)

NOTE: HP memory from previous generation servers (DDR3) are not compatible with the HP ProLiant XL250a Gen9 Server.

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html.

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

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2133MHz or 1866MHz. Please see Memory Population Table or the Online Memory Configuration Tool

Standard Features

at: http://h22195.www2.hp.com/MemoryTool/Home/Legal

Network Controller

Network Module Option to support FlexibleLOM cards
HP Apollo 6000 Dual FlexibleLOM Riser
NOTE: The "HP Apollo 6000 Dual FlexibleLOM Riser" is required for the FlexibleLOM options below.

FlexibleLOM Ethernet Options
HP Ethernet 1Gb 4-port 366FLR Adapter
HP FlexFabric 10Gb 2P 533FLR-T Adptr
HP FlexFabric 10Gb 2P 534FLR-SFP+ Adptr
HP Ethernet 10Gb 2P 546FLR-SFP+ Adptr
HP FlexFabric 10Gb 2P 556FLR-SFP+ Adptr
HP Ethernet 10Gb 2P 560FLR-SFP+ Adptr
HP Ethernet 10Gb 2P 561FLR-T Adptr
FlexibleLOM InfiniBand Options
HP IB FDR/EN 40Gb 2P 544+FLR-QSFP Adptr
HP IB QDR/EN 10Gb 2P 544+FLR-QSFP Adptr
HP IB FDR 2P 545FLR-QSFP Adptr
Additional Network Module Option
HP Apollo 6000 Dual 1GbE 364i FIO Kit

Expansion Slots

Expansion Slot #	Technology	Bus Width*	Connector Width	Form Factor
1	PCIe 3.0	x16	x16	FL/FH Double Width
2	PCIe 3.0	x16	x16	FL/FH Double Width
3	PCIe 3.0	x8	x16	Low profile
FlexibleLOM 1	PCIe 3.0	x16	N/A	FlexibleLOM
FlexibleLOM 2	PCIe 3.0	x8	N/A	FlexibleLOM

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

NOTE: FlexibleLOM slots 1 and 2 require ordering HP Apollo 6000 Dual FlexibleLOM Riser 757401-B21
NOTE: All PCIe slots are internal

HP Server ROM

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

HP 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.

HP 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 HP ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization

Standard Features

- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU).

NOTE: For further information, please refer to the HP RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

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

HP's ProLiant System BIOS is an EDK2 UEFI solution, and adheres to the latest revisions of UEFI Class 2 specifications which supports both legacy boot and UEFI boot operation. The HP ProLiant XL250a Gen9 defaults to UEFI boot operation and can be factory or field configured for Legacy boot operation.

NOTE: For UEFI boot operation, boot environment and OS image installations should be configured properly to support UEFI.
NOTE: For more information on HP's ProLiant System BIOS and UEFI, see the UEFI Information Library: http://www.hp.com/go/uefi/docs.
NOTE: HP Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in UEFI mode in the factory.

To modify the server configuration ROM default settings, press F9 in the HP ProLiant POST screen to enter the UEFI System Utilities screen. By default, the System Utilities menus are in the English language.

UEFI enables numerous new capabilities, including both industry standard functionality and features specific to HP ProLiant servers. Following are some of the features that UEFI enables and that the HP ProLiant XL250a Gen9 can support when configured for UEFI boot operation:

- Secure Boot - A new feature in which the system firmware, option card firmware, operating systems, and software collaborate to greatly enhance platform security.
- Operating system specific functionality - Microsoft Windows 2012 supports several features only when installed in UEFI mode.
- Support for > 2.2 TB (using GPT) boot drives - Such drives could previously only be used for boot drives when using RAID solutions such as HP Smart Array.
- UEFI Shell - Provides a pre-boot environment for running scripts and tools. The HP ProLiant UEFI Shell provides both standard capabilities as well as numerous enhancements.
- PXE boot support for IPv6 networks.
- PXE Multicast Boot allowing for faster PXE deployments for large numbers of servers.
- Boot support for option cards that only support a UEFI option ROM.

NOTE:

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

Storage Controller

Smart Array Controller
HP Dynamic Smart Array B140i Controller

Standard Features

HP Smart Array P440 Controller
Host Bus Adapter
HP H240 Smart HBA
Storage Controller Cable Kits
HP XL250a Mini-SAS H240 Cbl
HP XL250a Mini-SAS P440 Cbl
HP XL250a Mini-SAS B140i FIO Cbl
Other Storage Controller Options
HP P440 Smart Storage Battery (12W)

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

Internal Storage Devices Internal MicroSD slot

Maximum Internal Storage		
Hot Plug SFF SAS (6G) HDD	6TB	6 x 1TB
Hot Plug SFF SAS (12G) HDD	12TB	6 x 2TB
Hot Plug SFF SAS SSD	11.52TB	6 x 1.92TB
Hot Plug SFF SATA HDD	12TB	6 x 2TB
Hot Plug SFF SATA SSD	4.8TB	6 x 800GB

HP Computational and Graphics Accelerators

Accelerator Enablement Kits
HP XL250a NVIDIA GPU Enablement Kit
HP XL250a Intel Coprocessor Enablement Kit
HP XL250a AMD GPU Enablement Kit
Accelerators
Intel Xeon Phi 5110P Coprocessor Kit
Intel Xeon Phi 7120P Coprocessor Kit
HP NVIDIA Tesla K40 12GB Module
HP NVIDIA Tesla K80 Dual GPU Module
HP AMD FirePro S9150 Accelerator Kit
NOTE: Maximum of 2 accelerators are supported per XL250a tray
NOTE: One Accelerator Enablement Kit is required per Accelerator

Interfaces	
KVM	Serial USB Video Port (SUV)
MicroSD	1 (internal)
USB Ports	2 (external via SUV)
HP iLO Remote Management Network Port	Aggregated via HP Apollo a6000 Chassis
Health LED	1
Power	1
UID	1
FlexibleLOM	HP ProLiant Gen9 servers offer a new Flexible Network Technology offering the customer a choice of 1Gigabit, 10Gigabit or InfiniBand in a FlexibleLOM. For further details on the choices, see FlexibleLOM in the Networking Controller section of this document.

Industry Standard Compliance

ACPI 2.0b Compliant
PCIe 3.0 Compliant

Standard Features

WOL Support
Microsoft® Logo certifications
PXE Support
USB 1.1 and 2.0 Compliant
SMBIOS 2.6.1

Power Specifications

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Operating Systems and Virtualization Software Support for ProLiant Servers

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

NOTE: Only 64-bit versions of these operating systems are supported.
NOTE: For more information on the HP Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: http://www.hp.com/go/ossupport and our driver download page: http://www.hp.com/support

Graphics

Integrated Matrox G200 video standard

- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

HP iLO 4 On System Management Memory

- 16 MB Flash
- 256 MB DDR3 with ECC (112 MB after ECC and video)

Form Factor

The ProLiant XL250a Gen9 Server is a double-slot tray for the HP Apollo a6000 Chassis.

Embedded Management

HP Integrated Lights Out	Monitor your servers for ongoing management, service alerting, reporting and remote management with iLO. Learn more at www.hp.com/go/ilo.
UEFI	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at www.hp.com/go/ProLiant/uefi.
HP RESTful API	RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server.www.hp.com/go/restfulapi .
Intelligent Provisioning	Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at www.hp.com/go/intelligentprovisioning.
Server Utilities	
HP Smart Update	Optimize firmware and driver updates with HP Smart Update solutions.

Standard Features

		Learn more at www.hp.com/go/smartupdate.
	HP Systems Insight Manager (HP SIM)	HP SIM allows you to monitor the health of your HP ProLiant Servers and HP Integrity Servers, and also provides you with basic support for non-HP servers. HP SIM also integrates with HP SUM to provide quick and seamless firmware updates. Learn more at www.hp.com/go/sim
	Scripting Tool Kit and Windows PowerShell	Provision 1 to many servers using your own scripts to discover and deploy them with HP Scripting Tool Kit for Windows and Linux or HP Scripting Tools for Windows PowerShell. Learn more at www.hp.com/go/ProLiantSTK or www.hp.com/go/powershell.
	HP RESTful Interface Tool	HP RESTful API tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at www.hp.com/go/restfulapi
	HP iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: www.hp.com/go/ilo/mobileapp
	HP Insight Online	HP Insight Online, available at no additional cost as part of your HP warranty, Care Pack or contractual support agreement with HP, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at www.hp.com/go/insightonline/info.
Embedded Management	**HP Integrated Lights Out**	Monitor your servers for ongoing management, service alerting, reporting and remote management with iLO. Learn more at www.hp.com/go/ilo.
HP Insight management software	**HP Service Pack for ProLiant (SPP)**	HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP 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 HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of the entire HP Apollo 6000 System. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release (may vary by region. The user experience around HP 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 HP 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 HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP 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 HP Apollo 6000 System. This testing ensures the highest quality as well as providing the input for HP 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 HP SUM) can be downloaded from www.hp.com/go/spp/download. More information can be found: http://www.hp.com/go/SmartUpdate, www.hp.com/go/spp and http://www.hp.com/go/hpsum

Security

Power-on password
Keyboard 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
TPM (Trusted Platform Module) 1.2 option

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners (may vary by region). Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty.
NOTE: Server Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html.

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

Optional Features

HP Insight management software	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see: http://www.hp.com/go/insightcontrol. HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see: http://www.hp.com/services/insight.
	HP iLO Advanced	HP 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 HP ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see: http://www.hp.com/go/iloadvance.
	HP iLO Scale-Out	The HP iLO Scale-Out license ideal for web/hosting/cloud service providers and High Performance Computing environments. This license is a specific subset of iLO Advanced functionality, provides fast remote access through Text Console via SSH, lower operational cost with Dynamic power capping, and faster time to resolution through Email-based Alerting and proactive notifications. With this newly designed HP iLO Scale-Out license HPC customers now have a server management package solely design and priced for their massive data environments. HP iLO Scale-Out is available on all HP ProLiant Gen9 servers. For more information, see: http://www.hp.com/go/iLO/scale-out.
	HP Matrix Operating Environment	The HP 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 HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). **NOTE:** For more information, visit: http://www.hp.com/go/matrixoe.
High Performance Clusters	HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html

Optional Features

	HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
HP Insight Online	HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP 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. www.hp.com/go/insightonline	
HP Advanced Power Manager	The HP Advanced Power Manager (HP APM) is an optional rack level solution. HP APM will automatically discover hardware components and enable bay level power on and off, server metering, aggregate dynamic power capping, configurable power-up dependencies and sequencing, consolidated Ethernet access to all resident iLOs, and asset management capabilities. HP APM features rack level event logging, RADIUS authentication, integrated serial concentrator, up to 11 local user accounts, read only service port, and supports SNMP, SSH, Syslogd, telnet.	

Service and Support

Service and Support

The XL250a tray is part of the HP Apollo a6000 Chassis. Support for this tray needs to be purchased at a chassis level. Please refer to HP Apollo a6000 Chassis quick spec documentation for details.

HP Technology Services for Industry Standard Servers
HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP 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 HP Care Pack Services
HP Care Pack 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.

Get connected to HP to improve your support experience

Connecting products to HP will help prevent problems with 24x7monitoring, pre-failure alerts, automatic call logging, and parts dispatch. With Connected products, you can have a dashboard to manage your IT anywhere, anytime, from any device.

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc

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

** HP Support Center Mobile App is subject to local availability

Parts and Materials

HP will provide HP-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 HP due to malfunction.

For more information

To learn more on HP ProLiant servers, please contact your HP sales representative or HP Authorized Channel Partner or visit: http://www.hp.com/services/proliant

To find the full list of Care Pack SKUs for the HP Apollo family of products, go to: http://hp.com/go/lookuptool and in step 2 select HP ProLiant, then select HP Apollo family.

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, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

NOTE: FIO indicates that this option is only available as a factory installable option.
NOTE: HP Apollo a6000 Chassis and HP Apollo 6000 Power Shelf are required to support the server. Refer to their QuickSpecs for additional information.

HP Apollo 6000 Power Shelf
http://h18000.www1.hp.com/products/quickspecs/14976_div/14976_div.html
HP Apollo a6000 Chassis
http://h18000.www1.hp.com/products/quickspecs/14974_div/14974_div.html

Step 1: Base Configuration

HP Server	HP ProLiant XL250a Gen9 Accelerator Tray **NOTE:** Select one "-L21" processor and a matching "-B21" processor in step 2.	768535-B21

Step 2: Choose Required Options

HP Processors	HP XL2x0 Gen9 Intel® Xeon® E5-2698v3 (2.3GHz/16-core/40MB/135W) FIO Processor Kit	790710-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2695v3 (2.3GHz/14-core/35MB/120W) FIO Processor Kit	768604-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2690v3 (2.6GHz/12-core/30MB/135W) FIO Processor Kit	768600-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2683v3 (2.0GHz/14-core/35MB/120W) FIO Processor Kit	768602-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2680v3 (2.5GHz/12-core/30MB/120W) FIO Processor Kit	768598-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2670v3 (2.3GHz/12-core/30MB/120W) FIO Processor Kit	768596-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	768594-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	768592-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2643v3 (3.4GHz/6-core/20MB/135W) FIO Processor Kit*	799859-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	768590-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2637v3 (3.5GHz/4-core/15MB/135W) FIO Processor Kit*	799861-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) FIO Processor Kit	768588-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	768586-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	768582-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	768560-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	768618-L21
	HP XL2x0 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	768614-L21
	NOTE: All processors within the server must be identical. **NOTE:** Mixing different processor models are not supported. **NOTE:** The letter "L" following the processor model number denotes lower wattage. ***NOTE:** Some processors will limit the system's inlet ambient support to 25°C **NOTE:** The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the "Memory" section later in this document. **NOTE:** For the maximum supported memory speeds for each processor listed above, please reference the 'Memory Speed by Processor Model' table in the Memory section. **NOTE:** DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. **NOTE:** HT indicates that the processor model supports Intel® Hyper-Threading Technology. **NOTE:** All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 v3 and E5-2609 v3. **NOTE:** Turbo indicates the maximum potential frequency when using Intel® Turbo Boost Technology. The	

Configuration Information – Factory Integrated Models

	frequency boost increment is dependent on the processor SKU and the number of active cores. In general, a higher boost increment is obtained when fewer cores are active. **NOTE:** For the Intel® C610 Chipset E5-2600 v3 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = L for low power SKUs.	
HP Memory	**Registered DIMMs (RDIMMs) – DDR4**	
	HP 8GB 1Rx4 PC4-2133P-R Kit	726718-B21
	HP 8GB 2Rx8 PC4-2133P-R Kit	759934-B21
	HP 16GB 2Rx4 PC4-2133P-R Kit	810744-B21
	HP 32GB 2Rx4 PC4-2133P-R Kit	728629-B21
	Load Reduced DIMMs (LRDIMMs) – DDR4	
	HP 16GB 2Rx4 PC4-2133P-L Kit	726720-B21
	HP 32GB 4Rx4 PC4-2133P-L Kit	726722-B21
	NOTE: Minimum of 2 DIMMs are required per server. **NOTE:** A maximum of 16 DIMMs are supported per XL250a server tray (or 8 DIMMs max per processor). **NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server. **NOTE:** HP memory from previous generation servers (DDR3) is not compatible with this server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HP SmartMemory QuickSpecs at: http://www8.hp.com/h20195/v2/GetHTML.aspx?docname=c04111535 **NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2133MHz or 1866MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: http://h22195.www2.hp.com/MemoryTool/Home/Legal	
HP Storage Controllers	**Storage Controller Cable Kits** **NOTE:** These cables are required to support the various storage controllers.	
	HP XL250a Mini-SAS H240 Cbl	794643-B21
	HP XL250a Mini-SAS P440 Cbl	794647-B21
	HP XL250a Mini-SAS B140i FIO Cbl	796037-B21
	Embedded SATA Controller	
	HP FIO Enable B140i Setting **NOTE:** Embedded SATA controller operates in AHCI mode by default. Select this option to enable RAID and hot-plug features (Embedded SATA controller will operate in Dynamic Smart Array B140i mode).	784308-B21
	Host Bus Adapter	
	HP H240 Smart HBA	726907-B21
	HP H240 FIO Smart HBA	761873-B21
	Smart Array Controller	
	HP Smart Array P440/4G Controller	726821-B21
	HP XL2xx Smart Array P440/4G 12W FIO Kit	786087-B21
	Other Storage Controller Options	
	HP XL2xx 12W w/plg Smart Storage Battery	782961-B21
HP Networking	**Network Module Option to support FlexibleLOM cards**	
	HP Apollo 6000 Dual FlexibleLOM Riser **NOTE:** The HP Apollo 6000 Dual FlexibleLOM Riser requires at least one FLexibleLOM adapter to be selected, a maximum of 2 FlexibleLOM adapters can be selected module.	757401-B21
	Additional Network Module Option	
	HP Apollo 6000 Dual 1GbE 364i FIO Kit	757404-B21
	FlexibleLOM InfiniBand Options	
	HP IB FDR/EN 40Gb 2P 544+FLR-QSFP Adptr	764285-B21

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	HP IB QDR/EN 10Gb 2P 544+FLR-QSFP Adptr	764286-B21
	HP IB FDR 2P 545FLR-QSFP Adptr	702212-B21
	FlexibleLOM Ethernet Options	
	HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
	HP FlexFabric 10Gb 2P 533FLR-T Adptr	700759-B21
	HP FlexFabric 10Gb 2P 534FLR-SFP+ Adptr	700751-B21
	HP Ethernet 10Gb 2P 546FLR-SFP+ Adptr	779799-B21
	HP FlexFabric 10Gb 2P 556FLR-SFP+ Adptr	727060-B21
	HP Ethernet 10Gb 2P 560FLR-SFP+ Adptr	665243-B21
	HP Ethernet 10Gb 2P 561FLR-T Adptr	700699-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	

Step 3: Choose Additional Factory Integrated Options

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

HP Hard Drive	**12G SAS Hot Plug SFF (2.5-inch) Enterprise Hard Drive** 3yr Warranty Hard Drives	
	HP 1.2TB 12G SAS 10K 2.5in SC ENT HDD	781518-B21
	HP 900GB 12G SAS 10K 2.5in SC ENT HDD	785069-B21
	HP 600GB 12G SAS 10K 2.5in SC ENT HDD	781516-B21
	HP 300GB 12G SAS 10K 2.5in SC ENT HDD	785067-B21
	12G SAS Hot Plug SFF (2.5-inch) Hard Drive 1yr Warranty Hard Drive	
	HP 2TB 12G SAS 7.2K 2.5in 512e SC HDD	765466-B21
	HP 1TB 12G SAS 7.2K 2.5in 512e SC HDD	765464-B21
	12G SAS Hot Plug SFF (2.5-inch) Mainstream Endurance Enterprise H2 Solid State Drive 3yr Warranty H2 Solid State Drives	
	HP 1.6TB 12G SAS ME 2.5in EM SC H2 SSD	779176-B21
	HP 800GB 12G SAS ME 2.5in EM SC H2 SSD	779172-B21
	HP 400GB 12G SAS ME 2.5in EM SC H2 SSD	779168-B21
	HP 200GB 12G SAS ME 2.5in EM SC H2 SSD	779164-B21
	12G SAS Hot Plug SFF (2.5-inch) Write Intensive Solid State Drive 3yr Warranty Solid State Drives	
	HP 800GB 12G SAS WI 2.5in SC SSD	802586-B21
	HP 400GB 12G SAS WI 2.5in SC SSD	802582-B21
	HP 200GB 12G SAS WI 2.5in SC SSD	802578-B21
	12G SAS Hot Plug SFF (2.5-inch) Read Intensive Solid State Drive 3yr Warranty Solid State Drives	
	HP 1.92TB 12G SAS RI 2.5in SC SSD	802891-B21
	12G SAS Hot Plug SFF (2.5-inch) High Endurance Solid State Drive 3yr Warranty Solid State Drives	
	HP 800GB 12G SAS HE 2.5in EP SC SSD	741159-B21
	HP 400GB 12G SAS HE 2.5in EP SC SSD	741155-B21
	HP 200GB 12G SAS HE 2.5in EP SC SSD	741151-B21
	6G SAS Hot Plug SFF (2.5-inch) Midline Hard Drive 1yr Warranty Hard Drives	
	HP 500GB 6G SAS 7.2K 2.5in SC MDL HDD	652745-B21
	HP 1TB 6G SAS 7.2K 2.5in SC MDL HDD	652749-B21
	6G SAS Hot Plug SFF (2.5-inch) Enterprise Hard Drive 1yr Warranty Hard Drives	
	HP 900GB 6G SAS 10K 2.5in SC ENT HDD	652589-B21
	HP 600GB 6G SAS 10K 2.5in SC ENT HDD	652583-B21

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	HP 450GB 6G SAS 10K 2.5in SC ENT HDD	652572-B21
	HP 300GB 6G SAS 10K 2.5in SC ENT HDD	652564-B21
	HP 300GB 6G SAS 15K 2.5in SC ENT HDD	652611-B21
	6G SATA Hot Plug SFF (2.5-inch) Midline Hard Drive 1yr Warranty Hard Drives	
	HP 1TB 6G SATA 7.2k 2.5in SC MDL HDD	655710-B21
	HP 500GB 6G SATA 7.2k 2.5in SC MDL HDD	655708-B21
	6G SATA Hot Plug SFF (2.5-inch) Hard Drive 1yr Warranty Hard Drives	
	HP 2TB 6G SATA 7.2k 2.5in 512e SC HDD	765455-B21
	HP 1TB 6G SATA 7.2k 2.5in 512e SC HDD	765453-B21
	6G SATA Hot Plug SFF (2.5-inch) Mainstream Endurance Enterprise Solid State Drive 3yr Warranty Solid State Drives	
	HP 800GB 6G SATA ME 2.5in SC EM SSD	691868-B21
	HP 400GB 6G SATA ME 2.5in SC EM SSD	691866-B21
	HP 200GB 6G SATA ME 2.5in SC EM SSD	691864-B21
	HP 100GB 6G SATA ME 2.5in SC EM SSD	691862-B21
	6G SATA Hot Plug SFF (2.5-inch) Value Endurance Enterprise Solid State Drive 3yr Warranty Solid State Drives	
	HP 600GB 6G SATA VE 2.5in SC EV SSD	739898-B21
	HP 300GB 6G SATA VE 2.5in SC EV SSD	739888-B21
	NOTE: Hard drives have either a one year or three year warranty. **NOTE:** The hard drive options are not required when configuring a Drive-less Model. **NOTE: The H240 controller is required when ordering SAS drives** **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.	
HP Computational and Graphics Accelerators	**Accelerator Enablement Kits**	
	HP XL250a NVIDIA GPU Enablement Kit	793583-B21
	HP XL250a Intel Coprocessor Enablement Kit	797899-B21
	HP XL250a AMD GPU Enablement Kit	794645-B21
	Accelerators	
	HP NVIDIA Tesla K40 12GB Module	F1R08A
	HP NVIDIA Tesla K80 Dual GPU Module	J0G95A
	Intel Xeon Phi 5110P Coprocessor Kit	C1P87A
	Intel Xeon Phi 7120P Coprocessor Kit	E2M34A
	HP AMD FirePro S9150 Accelerator Kit	J0H11A
	NOTE: Maximum of 2 accelerators are supported per XL250a tray **NOTE:** One Accelerator Enablement Kit is required per Accelerator	
HP PCIe Workload Accelerators	HP 3.2TB VE PCIe Workload Accelerator	763838-B21
	HP 1.6TB VE PCIe Workload Accelerator	763836-B21
	HP 2.6TB LE PCIe Wrkld Accelerator	775670-B21
	HP 1.3TB VE PCIe Workload Accelerator	763834-B21
	HP 1.0TB LE PCIe Wrkld Accelerator	775666-B21
High Performance Clusters	**HP Cluster Management Utility**	
	HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
	HP Insight Cluster Management Utility 3yr 24x7 Flexible License **NOTE:** These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical	BD476A

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	shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer will also receive a support agreement.	
	HP Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	
HP Rack Options	**HP USB BFR with PVC Free Keyboard/Mouse Kit**	
	HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
	HP USB BFR with PVC Free UK Keyboard/Mouse Kit	631344-B21
	HP USB BFR with PVC Free FR Keyboard/Mouse Kit	631346-B21
	HP USB BFR with PVC Free ES Keyboard/Mouse Kit	631348-B21
	HP USB BFR with PVC Free DE Keyboard/Mouse Kit	631358-B21
	HP USB BFR with PVC Free JP Keyboard/Mouse Kit	631360-B21
	HP USB BFR with PVC Free IT Keyboard/Mouse Kit	631362-B21
	HP USB BFR with PVC Free CN Keyboard/Mouse Kit	631364-B21
	HP USB BFR with PVC Free AE Keyboard/Mouse Kit	638212-B21
	HP USB BFR with PVC Free RU Keyboard/Mouse Kit	638214-B21
	HP USB BFR with PVC Free IN Keyboard/Mouse Kit	672097-D63
	HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit	672097-373
	HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-B33
	HP USB BFR with PVC Free PT Keyboard/Mouse Kit	672097-133
	HP USB BFR with PVC Free TR Keyboard/Mouse Kit	672097-143
	HP USB BFR with PVC Free CZ Keyboard/Mouse Kit	672097-223
	HP USB BFR with PVC Free FI Keyboard/Mouse Kit	672097-353
	HP USB BFR with PVC Free SE Keyboard/Mouse Kit	672097-103
	HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
	HP USB BFR with PVC Free KR Keyboard/Mouse Kit	672097-KD3
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13972_div/13972_div.html (Worldwide)	
Security Hardware	**Trusted Platform Module**	
	HP Trusted Platform Module Option	488069-B21

Memory

HP Memory

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool:
http://h22195.www2.hp.com/MemoryTool/Home/Legal

Memory Subsystem Architecture
Each Intel® Xeon® E5-2600 v3 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 32GB capacity DIMMs are supported for 512GB of memory (16 DIMM slots x 32GB per DIMM).

Memory Population Rules and Guidelines:

- White DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate white slots only.
- Install DIMMs only if the corresponding processor is installed.
- There are two channels per processor with two DIMM slots per channel.
- Memory channel A consists of the two (2) DIMMs that are closest to the processor.
- Memory channel B consists of the two (2) DIMMs that are furthest from the processor.
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- No support for RDIMMs; Non-ECC UDIMMs
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html.
- For memory population rules and additional memory guidelines, please see the HP ProLiant XL250 Gen9 user guide at http://www.hp.com/support.

Supported Memory Bandwidth on Intel® Xeon® E5-2600 v3 series Processors

DIMM Rank	Register DIMM (RDIMM)		Load Reduced (LRDIMMs)
	Single Rank (1R)	Dual Rank (2R)	Quad Rank (4R)
DIMM Capacity	8GB	16GB	32GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
SLOTS THAT CAN BE POPULATED			
16 slots	16	16	16
MAXIMUM CAPACITY (GB)*			
16 slots	128	256	512
POPULATED DIMM SPEED (MT/s)			
1 DIMM Per Channel	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133
*Maximum Capacity will vary based on individual platform qualification schedule			

Memory

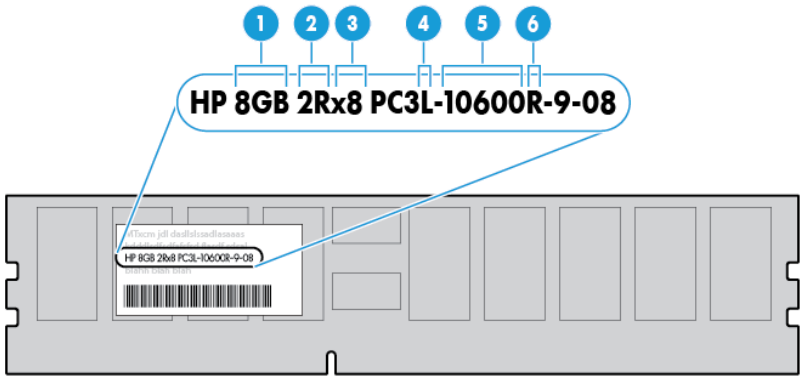
Memory Speed by E5-2600 v3 Series Processor Model

Processor Models	Supported Memory Speeds
E5-2690 v3, E5-2695 v3, E5-2697 v3, E5-2698 v3, E5-2699 v3, E5-2687W v3, E5-2683 v3, E5-2680 v3, E5-2670 v3, E5-2667 v3 , E5-2660 v3, E5-2650 v3, E5-2650L, E5-2643 v3, E5-2637 v3	2133MHz
E5-2640 v3, E5-2630 v3, E5-2630L v3, E5-2623 v3, E5-2620 v3	1866MHz
E5-2609 v3, E5-2603 v3	1600MHz

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

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

Memory options part number decoder



Item	Description	Definition
1	Capacity	8 GByte / 16 GByte / 32 GByte
2	Rank	1R=Single-rank / 2R = Dual-rank / 4R Quad-rank
3	Data Width	x4 = 4-bit / x8 =-bit
4	Memory Generation	DDR4
5	Max. Memory Speed	2133MT/s
6	CasLatency	P=15
6	DIMM type	R= RDIMM (registered) L= LRDIMM (registered)

Memory

Following are memory options available from HP:

HP Memory	**Registered DIMMs (RDIMMs) – DDR4**	
	HP 8GB 1Rx4 PC4-2133P-R Kit	726718-B21
	HP 8GB 2Rx8 PC4-2133P-R Kit	759934-B21
	HP 16GB 2Rx4 PC4-2133P-R Kit	810744-B21
	HP 32GB 2Rx4 PC4-2133P-R Kit	728629-B21
	Load Reduced DIMMs (LRDIMMs) – DDR4	
	HP 16GB 2Rx4 PC4-2133P-L Kit	726720-B21
	HP 32GB 4Rx4 PC4-2133P-L Kit	726722-B21
	NOTE: Minimum of 2 DIMMs are required per server. **NOTE:** A maximum of 16 DIMMs are supported per XL250a server tray (or 8 DIMMs max per processor). **NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server. **NOTE:** HP memory from previous generation servers (DDR3) is not compatible with this server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HP SmartMemory QuickSpecs at: http://www8.hp.com/h20195/v2/GetHTML.aspx?docname=c04111535 **NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2133MHz or 1866MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: http://h22195.www2.hp.com/MemoryTool/Home/Legal	

Technical Specifications

System Unit	**Server Dimensions** (L x W x D)	8.33 x 3.49 x 27.87 in (21.15 x 8.76 x 70.79 cm)	
	Shipping Dimensions (L x W x D)	37.76 x 14.88 x 10.63 in (95.91 x 37.80 x 27.00 cm)	
	Weight (approximate)	Maximum (maximum: two processors, six hard drives, two Accelerators)	30 lb. (13.61 kg)
	System Inlet Temperature	Standard Operating Support	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F). For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: www.hp.com/servers/ASHRAE
		Extended Ambient Operating Support	For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: www.hp.com/servers/ASHRAE System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
		Non-operating	

Technical Specifications

		5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Acoustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and measured average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

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

Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; 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.

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP 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 web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Summary of Changes

Date	Version History	Action	Description of Change:
17-Apr-2015	From version 1 to 2	Changed	Updates and changes made troughout the QuickSpecs
9-Feb-2015	Version 1	Created	Created the QuickSpecs for HP ProLiant XL250a Gen9.