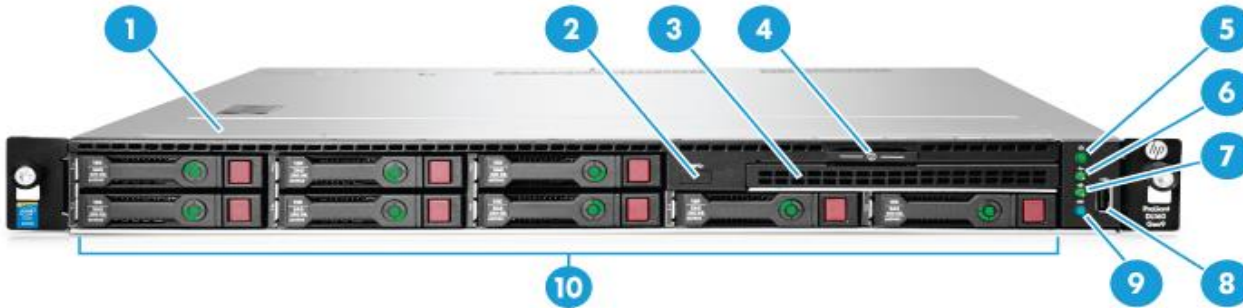


Overview

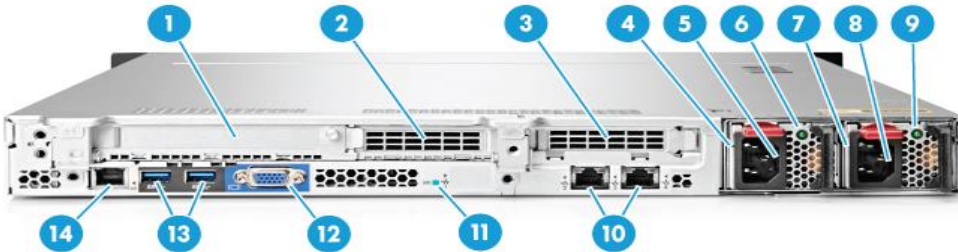
HP ProLiant DL160 Generation9 (Gen9)

The HP ProLiant DL160 Gen9 is the next generation 2P 1U value server replacing DL360e Gen8. It delivers the right balance of performance, storage, reliability, manageability and efficiency in a dense and compact chassis, to meet the needs of a diverse set of customers- from SMBs and service providers with a wide range of workloads - from general purpose IT to the New Style of IT, such as, Big Data and Cloud.



Front View

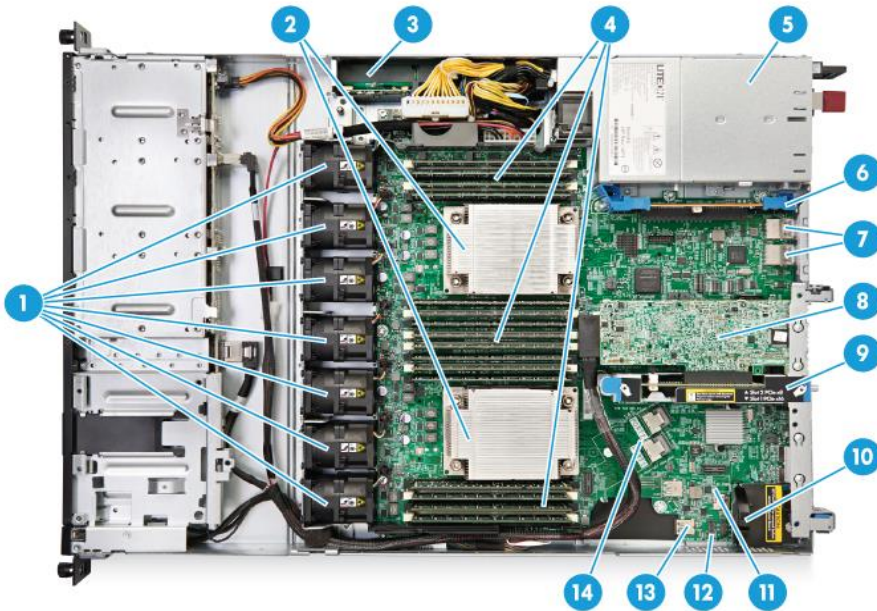
1. Access Panel
2. Optional USB3.0 (optional with 8SFF only)
3. Optical disk drive bay
4. Serial label pull tab
5. Power On/Standby button and system power LED
6. Health LED
7. NIC status LED
8. USB 2.0 connector
9. UID button/LED
10. 8SFF drive cage



Rear view

1. PCIe3 slot 1 (primary, associated with processor 1)
2. PCIe3 slot 2 (primary, associated with processor 1)
3. PCIe3 slot 3 (secondary, associated with processor 2)
4. Power supply 2 bay
5. Power supply 2 Power Connector (Optional)
6. Power supply 2 LED (Optional)
7. Power supply 1 bay
8. Power supply 1 power connector
9. Power Supply 1 LED
10. Embedded 2x1GbE network adapter
11. Unit ID LED
12. Video Connector
13. USB3.0 connectors
14. Dedicated iLO connector (optional)

Overview



Internal View

1. Hot Swappable fans (up to 7)
2. Processor heat sinks (processors with HP Smart Sockets placed below heat sinks)
3. HP Smart Storage Battery (optional)
4. DDR4 DIMM slots (up to 16)
5. Power supply bay
6. Connector for secondary PCIe riser (associated with CPU2)
7. Embedded 2x1GbE network adapter
8. HP Smart Array P440 controller (optional)
9. Primary PCIe riser (2 PCIe3 slots associated with CPU1)
10. Dedicated iLO module connector (optional)
11. MicroSD card slot
12. Internal SATA ports (one for ODD and another one reserved)
13. Internal USB 3.0 connector
14. Embedded B140i SATA controller (2x SATA ports for up to eight drives)

Standard Features

NOTE: For more information regarding Intel Xeon processors, please see the following URL:
<http://www.intel.com/xeon>

Intel® Xeon® processor E5-2600 v3 product family is designed to deliver the best combination of performance, built-in capabilities, and cost-effectiveness. One (or two) of the following Intel® Xeon® E5-2600 v3 processors based on the model

Processor One of the following depending on Model	Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
	E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
	E5-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
	E5-2650Lv3	1.8GHz	12	25MB	65W	9.6GT/s	2133
	E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
	E5-2630v3	2.4Ghz	8	20MB	85W	8.0GT/s	1866
	E5-2630Lv3	1.8GHz	8	25MB	55W	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

Chipset
 One of the following
 depending on Model
 Intel® C610 Series Chipset
 Intel® E5-2600v3 Processor Family
NOTE: For more information regarding Intel chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>.

On System Management Chipset
 One of the following
 depending on Model
 HP iLO (Firmware HP iLO4 2.0) 2GB NAND
NOTE: For more information, visit: <http://www.hp.com/go/ilo>

Memory
 One of the following
 depending on Model
 Type:
 HP SmartMemory
 DDR4 Registered (RDIMM)
 or Load Reduced (LRDIMM)
 DIMM Slots Available 16 (8 DIMM slots per processor, 4 channels per processor, 2 DIMMs per channel)
 Maximum Capacity (LRDIMM) 512GB (16 x 32GB LRDIMM @2133MHz)
 Maximum Capacity (RDIMM) 512GB (16 x 32GB RDIMM @2133MHz)
NOTE: 32GB RDIMM will be available in December 2014

Memory Protection
 One of the following
 depending on Model
 Advanced ECC Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.
 Online spare Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Expansion Slots
 CPU1 PCIe riser slots

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
1	PCIe 3.0	x16	x16		Full-height, half-length Slot	Processor 1
2	PCIe 3.0	x8	x8		Low profile slot	Processor 1

NOTE: Bus Width data indicates the number of physical electrical lanes running to the connector.

Standard Features

CPU 1 FlexibleLOM riser slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
	1	PCIe 3.0	x8	x8			Full-height, half-length Slot	Processor 1
	2	PCIe 3.0	x8	x8			Low profile slot	Processor 1 (can be used only be used for flexibleLOMs)

NOTE: This riser is mandatory for installing flexibleLOMs.
NOTE: FlexibleLOM riser kit will be available in December 2014

CPU2 riser PCIe slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
	3	PCIe 3.0	x16	x16			Low profile slot	Processor 2

NOTE: When populating slots on CPU2 riser, second processor must be installed.

NOTE: Only one of the CPU1 PCIe risers can be selected in any given configuration.

NOTE: One of the CPU 1 risers is mandatory for all configurations.

Storage Controller One of the following depending on Model	Entry Models	HP Dynamic Smart Array B140i Controller HP H240 FIO Smart Host Bus Adapter
	Base Models	HP H240 FIO Smart Host Bus Adapter
	Performance Models	HP Smart Array P440/4G Controller

NOTE: B140i provides support for up to 8 SATA drives, data transmission speeds up to 6Gb/s and supports RAID 0, 1 & 5.
NOTE: H240 provides support for up to 8 SAS/SATA drives, data transmission speeds up to 12Gb/s and supports RAID 0, 1 & 5.
NOTE: P440 provides support for up to 8 SAS/SATA drives, data transmission speeds up to 12Gb/s.
NOTE: Performance Model will be available for ordering in December 2014.

Internal Storage Devices One of the following depending on Model	Optical Drives	Optional: DVD-ROM, DVD-RW
	Hard Drives	None ship standard 8 SFF drive bays total with Optical Bay 4 LFF drive bays total with Optical bay NOTE: HP ProLiant DL160 Gen9 server offers both SFF and LFF versions in Configure-to-Order Models. The Optical Drive bay is available with both models. NOTE: Drive cage changes are not supported.
	Hard Drive Bays	NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen9 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen9 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

Maximum Internal Storage One of the following depending on Model	CAPACITY	CONFIGURATION
	Hot Plug SFF SAS	9.6TB 8 x 1.2TB
	Hot Plug SFF SATA	8.0TB 8 x 1TB
	Hot Plug LFF SAS	24.0TB 4 x 6TB
	Hot Plug LFF SATA	24.0TB 4 x 6TB
	Hot Plug SFF SAS SSD	12.8TB 8 x 1.6TB
	Hot Plug SFF SATA SSD	12.8TB 8 x 1.6TB
	Hot Plug LFF SATA SSD	6.4TB 4 x 1.6TB

Standard Features

Power Supply
One of the following depending on Model

HP 550W FIO Power Supply

HP Entry-Level Power Supplies provide lower-cost options for customers trying to balance their need for enterprise class efficiency and reliability while maintaining lowest possible hardware costs. All Entry-Level power supply options have been designed specifically for HP ProLiant Gen9 Essential Series servers.

The HP 550W FIO Power Supply is the standard, non-redundant AC power supply option for most HP ProLiant Gen9 Essential servers. It features Silver-level (89%) certified power efficiency with a set of features optimized for the Gen9 Essential-series rack and tower servers.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the [ProLiant Power Cables](#) web page.

To review the power requirements for your selected system, please use the HP Power Advisor Tool located at www.hp.com/go/hppoweradvisor.

Power specifications and technical content for all HP Server power supplies can be found at www.hp.com/go/proliant/powersupply.

System Fans
One of the following depending on Model

1P model

2P model

Non-redundant

3 fans

Non-redundant

6 fans

Redundant

4 fans

Redundant

7 fans

NOTE: Redundant fan option kit (PN: 725587-B21) can be bought separately if redundancy is required with 1P or 2P configurations.
NOTE: Additional fans required with 2P configurations are included in "-B21" processor option kits.

Interfaces

Video	1 (Vaux Support)
HP iLO Remote Management Network Port	1 GbE (Optional)
USB	4 USB ports (standard); 1 (optional) Front: 1xUSB 2.0 std; 1xUSB3.0 optional (with 8SFF models only) Rear: 2xUSB 3.0 Internal: 1x USB 3.0
Micro SD Slot	1 Micro SD NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
LOM Network Ports	2 x 1GbE ports

Operating Systems and Virtualization Software Support for ProLiant Servers

[Microsoft Windows Server](#)
[Red Hat Enterprise Linux \(RHEL\)](#)
[SUSE Linux Enterprise Server \(SLES\)](#)
[Oracle Solaris](#)
[VMware](#)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/DL160Gen9>

Upgradeability
One of the following depending on Model

Upgradeable to two processors (24 cores)
Up to 16 DIMM slots available
NOTE: To take advantage of all 16 DIMMs, second processor must be installed
FlexibleLOM slot for 1Gigabit or 10 Gigabit Ethernet or QDR/FDR InfiniBand networking options
NOTE: FlexibleLOM support will be included in December 2014
Optional 2nd CPU riser slot (x16, low profile)
NOTE: 2nd CPU must be installed if this riser is configured.
Up to 8 SFF Hard Drive Bays; or 4 LFF Hard Drive Bays
Redundant Power Supply



Standard Features

NOTE: Redundant Power Supply will be available in December 2014.
 Redundant Fan
 Optical Drive Bay (8 SFF/4 LFF)

Industry Standard Compliance

ACPI 2.0b Compliant
 PCIe 3.0 Compliant
 PXE Support
 WOL Support
 Microsoft® Logo certifications
 USB 3.0 Support
 ASHRAE A3/A4
NOTE: Supports A3 extended ambient temperature, A4 will be available in December 2014
NOTE: Refer to technical specifications section for more details

Graphics

Integrated Matrox G200 video standard

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

HP Server UEFI/Legacy ROM

HP Server UEFI /Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HP ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.

NOTE: The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hp.com/go/proliantuefi/docs>.

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

- Secure Boot
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool - HP RESTful API.
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM

For more information please visit <http://www.hp.com/go/proliant/uefi>

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

NOTE: Legacy mode can be enabled with a Configure-to-Order Model (758959-B22). All models ship with UEFI as default.

Form Factor

One of the following depending on Model

1U Rack form factor
 8SFF and 4LFF version:
 1.7" (4.4cm) Height x 17.1" (43.5cm) Width x 23.9" (60.8cm) Length

Embedded Management

HP Integrated Lights-Out (HP iLO) Monitor your servers for ongoing management, service alerting, reporting and remote management with HP 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: Learn more at www.hp.com/go/restfulapi.



Standard Features

Intelligent Provisioning	Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at www.hp.com/go/intelligentprovisioning .
Embedded Remote Support	HP's embedded remote support, when used with Insight Online direct connect or HP Insight Remote Support, allows HP ProLiant servers to transmit hardware events directly to HP or an HP Authorized Partner for automated phone home support. Learn more at www.hp.com/go/insightonline/info .

NOTE: For more information, visit: <http://www.hp.com/go/ilo> or HP iLO Management Engine technologies whitepaper.

Server utilities	HP Smart Update	Optimize firmware and driver updates with HP Smart Update solutions. 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 Interface 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 .

Security	Power-on password
	Serial interface control
	Administrator's password
	TPM
	UEFI

Warranty	<p>This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP 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 HP Care Pack 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.</p> <p>NOTE: Server Warranty includes 3-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 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</p>
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Optional Features

Embedded Management	iLO Essentials	HP iLO Essentials is the preferred license for small and medium business that offers full remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HP iLO Essentials at www.hp.com/go/iLO/essentials .
	iLO Scale-Out	HP iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments for the DL160. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit www.hp.com/go/iLO/scale-out .
	iLO Advanced	HP iLO Advanced licenses offer smart remote functionality without compromise, for all HP ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HP iLO Advanced at www.hp.com/go/ioloadvanced .
Server Management	HP Insight Control	HP Insight Control, lets you 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 .
Rack and Power Infrastructure	HP Rack and Power Infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HP Rack and Power infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PODs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, HP is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at HP Rack and Power Infrastructure .	
High Performance Clusters	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 .	
HPC Interconnects	NOTE: High Performance Computing (HPC) interconnect technologies are available for this server under the HP Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand Interconnects: http://www.hp.com/techservers/clusters/ucp/index.html	
Storage Software	Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities. Storage software that gets the job done: <ul style="list-style-type: none"> • Data Protection and Recovery Software Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity. • Data Archive and Migration Software HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage. • Storage Resource Management Software (SRM) HP's storage resource management software reduces operational costs and provides the command and 	



Optional Features

control foundation you need to efficiently manage and visualize your physical and virtual environments.

- **Data Replication Software**
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**
With HP StoreVirtual VSA you can use the power of virtualization to turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

NOTE: For more information available Storage Software including QuickSpecs, please see: www.hp.com/go/storage/software.

One Config Simple (SCE)

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>.

Service and Support

HP Technology Services

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 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.

Optimized Support recommendation

HP Proactive Care – 24x7 coverage, four hour response, three year Care Pack Service

Prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. Includes enhanced escalation management. Provides collaborative software call management with two hour call back to reduce troubleshooting on industry leading software.

As a leading global support provider for Microsoft, Red Hat, VMware, SUSE and other operating systems, HP is able to simplify and shorten your time to resolution with one call for hardware or software questions. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

HP ProLiant Server Hardware Installation

Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-9356EN.pdf>

Standard Support recommendation

HP Foundation Care - 24x7 coverage, three year Care Pack Service

Connect to HP for faster problem resolution. Foundation Care provides hardware onsite response within four hours if needed and collaborative software call management with two hour callback for industry leading third party software. Simplify your support experience and make HP your first call for hardware or software questions. <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>.

HP ProLiant DL160 Hardware Installation

Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-9356EN.pdf>

Related Services

Data Center Platform Consulting Services

These services help modernize key systems and leverage new technology to support a changing business climate and prepare you for the new style of IT. HP understands the needs of the data center of the future and will serve as your guide for the journey. www.hp.com/services/consulting

Data Privacy Services

Protect your data through better media management. HP Data privacy services help manage and protect sensitive data. www.hp.com/services/dataprivacy

Factory Express for Servers and storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Choose how your factory solutions are built, tested, integrated, shipped and deployed. <http://www.hp.com/go/factory-express>

Additional HP Care Pack services can be found at: www.hp.com/go/cpc

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.



Pre-configured Models

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

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Hard Drive Blank Kit or P/N 666986-B21: HP LFF Hard Drive Blank Kit.

NOTE: All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (AOK02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page.

Caution: HP recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

	Entry Models		Base Models
[SKU Number]	769503-B21	769504-B21	769505-B21
Model Name	HP ProLiant DL160 Gen9 E5-2603v3 1P 8GB-R B140i 4LFF 550W PS Entry Server	HP ProLiant DL160 Gen9 E5-2603v3 1P 8GB-R H240 8SFF 550W PS Entry Server	HP ProLiant DL160 Gen9 E5-2609v3 1P 16GB-R H240 8SFF 550W PS Base Server
Processor	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-2609v3
Number of Processors	One		
Memory	8GB (1x8GB Registered DIMMs, 1600 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.	8GB (1x8GB Registered DIMMs, 1600 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.	16GB (2x8GB Registered DIMMs, 1600 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.
Network Controller	HP Ethernet 1Gb 2-port i350 Adapter		
Storage Controller	HP Dynamic Smart Array B140i	HP H240 FIO Smart Host Bus Adapter	
Hard Drive	None ship standard		
Internal Storage	4 LFF HDD Bays	8 SFF HDD Bays	
Optical Drive Bay	1; (Optional: DVD-ROM, DVD-RW)		
Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)		
PCI-Express Slots	2 Standard (1-FH/HL, 1-LP) PCIe 3.0		
Power Supply	(1) HP 550W FIO Power Supply	(1) HP 550W FIO Power Supply	
Fans	3 hot swap fans, non-redundant		4 hot swap fans, redundant
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
Form Factor	Rack (1U), HP Easy Install Rails		
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.		

Configuration Information - Factory Integrated Models

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.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

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

[Chassis]	HP ProLiant DL160 Gen9 Hot Plug 8SFF Configure-to-order Server	HP ProLiant DL160 Gen9 Hot Plug 4LFF Configure-to-order Server	HP ProLiant DL160 Gen9 Non Hot-Plug 4LFF Configure-to-order Server
SKU Number	754520-B21	754521-B21	754522-B21
Processor	2 (optional) x HP Smart Socket Guides		
DIMMSlots	16 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HP Dynamic Smart Array B140i		
PCIe	Optional (None ship standard)		
Drive Cage	8SFF Hot Plug	4LFF Hot Plug	4LFF Non Hot Plug
Network Controller	HP Ethernet 1Gb 2-port i350 Adapter		
Fans	3 hot swap fans, non-redundant		
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
USB	1 front, 1 internal, 2 rear		
Ears	HP Thumbscrew Ears		

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

HP Processors

Entry Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	733943-L21
HP DL160 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	763235-L21

Base Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	733935-L21
HP DL160 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) FIO Processor Kit	733937-L21
HP DL160 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	733939-L21
HP DL160 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	763241-L21

Performance Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	733931-L21
HP DL160 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	733933-L21
HP DL160 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	763237-L21

NOTE: If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.

NOTE: Up to 2 processors supported. Mixing different processor models is not supported.

NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE: For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in a Node, 4 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.

HP Memory

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_na/14225_na.html

NOTE: HP memory from previous generation servers are not fully compatible with Smart Memory features in Gen9 Servers.



Configuration Information - Factory Integrated Models

Registered DIMMs (RDIMMs)

HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21

Load Reduced DIMMs (LRDIMMs) for E5-2600v3 Series

HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
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NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: PC3L is a low voltage memory.

HP I/O Expansion Options

HP DL160 Gen9 CPU1 Riser FIO Kit	725585-B21
HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit	725586-B21

NOTE: When selecting 725586-B21, then second processor is also required.

HP Power Supplies

NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

NOTE: Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HP Power Advisor tool to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.

HP Entry-Level Power Supplies

HP 550W FIO Power Supply Kit	730941-B21
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Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
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HP Converged Infrastructure Management Software

HP OneView

HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	E5Y43A
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HP Security

HP DL160 Gen9 Quick Release Ear FIO Kit	774609-B21
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HP Storage Controllers SAS Controllers

SAS Controller Options

HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
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NOTE: This kit is not supported with the HP ProLiant DL160 Gen9 Non-Hot Plug 4LFF Configure-to-order Server

HP Host Bus Adapter

HP H240 12Gb 1-port Int FIO Smart Host Bus Adapter	761873-B21
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NOTE: This kit is not supported with the HP ProLiant DL160 Gen9 Non-Hot Plug 4LFF Configure-to-order Server

HP Cable Options

HP DL160 Gen9 4LFF Smart Array B140i SATA Cable FIO Kit	768775-B21
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NOTE: This kit is required when using the embedded B140i as the primary controller on the HP ProLiant DL160 Gen9 Hot Plug 4LFF Configure-to-order Server.

HP DL160 Gen9 8SFF Smart Array B140i SATA Cable FIO Kit	774611-B21
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NOTE: This kit is required when using the embedded B140i as the primary controller on the HP ProLiant DL160 Gen9 Hot Plug 8SFF Configure-to-order Server.

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, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Unique Options	HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit NOTE: CPU 2 is required if this riser is to be installed, enables one PCIe3 slot.	725586-B21
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HP Processors	Entry Processors - E5-2600v3 series Processors	
	HP DL160 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	733943-B21
	HP DL160 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit	763235-B21
	Base Processors - E5-2600v3 series Processors	
	HP DL160 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	733935-B21
	HP DL160 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor Kit	733937-B21
	HP DL160 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Kit	733939-B21
	HP DL160 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) Processor Kit	763241-B21
	Performance Processors - E5-2600v3 series Processors	
	HP DL160 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	733931-B21
	HP DL160 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit	733933-B21
	HP DL160 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) Processor Kit	763237-B21

HP Memory	Registered DIMMs (RDIMMs) for E5-2600v3 Series	
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
	Load Reduced DIMMs (LRDIMMs) for E5-2600v3 Series	
	HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21

HP Optical Drives	HP 9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
	HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21

HP Drives	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
	HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759212-B21
	HP 600GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	765424-B21
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
	HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759210-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
	HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759208-B21
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
	SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
	HP 450GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737394-B21
	HP 300GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737261-B21
	SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	761477-B21
	HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	695510-B21
	HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
	SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	



Core Options

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	753874-B21
HP 4TB 6G SATA 7.2k rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	693687-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21
SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21
12G SAS Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives	
HP 800GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741159-B21
HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741155-B21
HP 200GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741151-B21
12G SAS Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741146-B21
HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741142-B21
HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741138-B21
12G SAS Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives	
HP 1.6TB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762263-B21
HP 800GB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762261-B21
12G SAS Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives	
HP 800GB 12G SAS Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	762270-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives	
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717973-B21
HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739898-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717965-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21



Core Options

6G SATA Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21

6G SATA Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives

HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718189-B21
HP 600GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	739900-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718183-B21
HP 300GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	739890-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718177-B21

6G SATA Hot Plug LFF (3.5-inch) Enterprise Boot Solid State Drives

HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive	718171-B21
HP 80GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734362-B21

Hard Drive Blank Kits

HP Large Form Factor Hard Drive Blank Kit	666986-B21
HP Small Form Factor Hard Drive Blank Kit	666987-B21

Disk Enclosures

HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
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HP Networking

1 Gigabit Ethernet adapters

HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21

10 Gigabit Ethernet adapters

HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. See cables/options below.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

www.hp.com/go/ProLiantNICs

HP I/O Expansion Options

HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit	725586-B21
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NOTE: CPU 2 is required if this riser is to be installed, enables one PCIe3 slot.

HP Cooling Options

HP DL160 Gen9 Redundant Fan Kit	725587-B21
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NOTE: This kit includes one fan and is required for enabling fan redundancy with 1P and 2P configurations.

Additional 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 Insight Software	HP Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	C6N28ABE
	HP Insight Control Server Provisioning Media Kit	BD883A
	HP Insight Management Media Kit	C6N31A

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 HP Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

NOTE: For additional license options please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html

Embedded Management	HP iLO Advanced	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
	HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
	HP iLO Essentials	
	HP Integrated Lights-Out Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
	HP Integrated Lights-Out Essentials including 3yr 24x7 Tech Support and Updates Single Svr License	BD774A
	HP Integrated Lights-Out Essentials including 3yr 24x7 Tech Support and Updates E-LTU	BD774AAE
	HP Integrated Lights-Out Essentials including 1yr 24x7 Tech Support and Updates Single Svr License	BD775A
	HP Integrated Lights-Out Essentials including 1yr 24x7 Tech Support and Updates E-LTU	BD775AAE
	HP Integrated Lights-Out Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE
	HP iLO Scale-out	
	HP Integrated Lights-Out Scale-Out 3yr 24x7 Tech Support and Updates Flex Quantity License	BD776A
	HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Tracking License	BD777A
	HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD776AAE
	HP Integrated Lights-Out Scale-Out 1yr 24x7 Tech Support and Updates Flex Quantity License	BD778A
	HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD778AAE
	HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Tracking License	BD779A

HP Converged Infrastructure Management Software	HP OneView	
	HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y34A
	HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU	E5Y35AAE
	HP OneView Media Kit Phys No Lic	E5Y37A
	HP OneView w/o iLO Adv incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y38A
	HP OneView w/o iLO Adv inc 3yr 24x7 Supp Flex Qty E-LTU	E5Y39AAE
	HP OneView incl 3yr 24x7 Supp Bundle 1 Svr E-LTU	E5Y43AAE

High Performance Clusters	HP Cluster Management Utility
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Additional Options

HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A
NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
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_na/12612_na.html	

HP Security

HP 1U Security Bezel Kit	664918-B21
HP 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. 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: www.hp.com/go/TPM.

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.

HP Storage Controllers

SAS Controllers

HP Smart Array Controllers	
HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
HP Smart Host Bus Adapters	
HP H240 12Gb 1-port Int Smart Host Bus Adapter	726907-B21

HP Cable Options

HP DL160 Gen9 4LFF Smart Array H240 SAS Cable Kit	725590-B21
HP DL160 Gen9 8SFF Smart Array H240 SAS Cable Kit	774621-B21
HP DL160 Gen9 4LFF Smart Array P440 SAS Cable Kit	725593-B21
HP DL160 Gen9 8SFF Smart Array P440 SAS Cable Kit	774619-B21

NOTE: One of the above cables is required to be selected depending on the combination of server model and storage controller. Cable option kit descriptions include the right server model and storage controllers' names.

NOTE: NHP server model includes SATA cables required to connect drives to embedded B140i SATA controller.

Optional Upgrades

HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
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NOTE: This option is mandatorily required with HP Smart Array controllers. One server can accommodate only 1 Smart Storage Battery that would suffice the requirement of all HP Smart Array controllers.

HP Tape Backup

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HP tape backup products see: <http://www.hp.com/storage/SPOCK> and www.hp.com/go/ebs.

NOTE: For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.
Tape Drives

HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive	EH900B
HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
HP StoreEver LTO-4 Ultrium 1760 SCSI External Tape Drive	EH922B
HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B

SAS Rack-Mount Tape Solutions



Additional Options

HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount	EJ014B
HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount	EJ013B
HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit	EH946C
HP StoreEver 1U SAS Rack-mount Kit	AE459B
HP MSL Library Extender Kit	AQ746A
HP DAT Autoloader	
HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	COH19A
HP MSL2024 Tape Library	
HP MSL2024 0-Drive Tape Library	AK379A
HP MSL4048 Tape Library	
HP MSL4048 0-Drive Tape Library	AK381A
HP StoreEver MSL6480	
HP StoreEver MSL6480 Scaleable Expansion Module	QU626A
HP StoreEver MSL6480 Scalable Base Module	QU625A

HP Disk Backup

HP RDX Removable Disk Backup System

HP RDX 2TB USB3.0 Internal Disk Backup System	E7X52A
HP RDX 2TB USB3.0 External Disk Backup System	E7X53A

NOTE: For the complete range of RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP disk backup products see: <http://www.hp.com/storage/SPOCK>

HP Disk Storage Systems

Disk Enclosures

HP D6000 w/35 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 140TB Bundle	E7W30A
HP D6000 w/70 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 280TB Bundle	E7W31A
HP D6000 Dual I/O Module Disk Enclosure	QQ695A
HP D6000 w/35 2TB 6G SAS 7.2K LFF Dual port MDL HDD 70TB Bundle	QQ697A
HP D6000 w/70 2TB 6G SAS 7.2K LFF Dual port MDL HDD 140TB Bundle	QQ698A
HP D6000 w/35 3TB 6G SAS 7.2K LFF Dual port MDL HDD 105TB Bundle	QQ699A
HP D6000 w/70 3TB 6G SAS 7.2K LFF Dual port MDL HDD 210TB Bundle	QQ700A

HP Data Center Racks

HP 11000 G2 Series Racks

HP 11648 1075mm Pallet Universal Rack	H6J87A
HP 11648 1075mm Shock Universal Rack	H6J88A
HP 11642 1075mm Pallet Universal Rack	H6J65A
HP 11642 1075mm Shock Universal Rack	H6J66A
HP 11642 1200mm Pallet Universal Rack	H6J67A
HP 11642 1200mm Shock Universal Rack	H6J68A
HP 11636 1075mm Pallet Universal Rack	H6J77A
HP 11636 1075mm Shock Universal Rack	H6J78A
HP 11622 G2 1075mm Pallet Universal Rack	H6J83A
HP 11622 G2 1075mm Shock Universal Rack	H6J84A
HP 11614 1075mm Shock Universal Rack	H6J82A

NOTE: Please see the [HP 11000 G2 Series Racks QuickSpec](#) for information on additional racks options and rack specifications.

HP Intelligent Series Racks

HP 647 1075mm Pallet Intelligent Series Rack	BW911A
HP 647 1075mm Shock Intelligent Series Rack	BW912A
HP 647 1200mm Pallet Intelligent Series Rack	BW913A
HP 647 1200mm Shock Intelligent Series Rack	BW914A
HP 642 1075mm Pallet Intelligent Series Rack	BW903A



Additional Options

HP 642 1075mm Shock Intelligent Series Rack	BW904A
HP 642 1200mm Pallet Intelligent Series Rack	BW907A
HP 642 1200mm Shock Intelligent Series Rack	BW908A
HP 636 1075mm Pallet Intelligent Series Rack	BW895A
HP 636 1075mm Shock Intelligent Series Rack	BW896A
HP 842 1075mm Pallet Intelligent Series Rack	BW917A
HP 842 1075mm Shock Intelligent Series Rack	BW918A

NOTE: Please see the [HP Intelligent Series Racks QuickSpec](#) for information on additional racks options and rack specifications.

HP Value Series Rack

HP V142 1075mm deep Pallet 100 series Rack	AF046A
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NOTE: Please see the [HP Value Series Rack QuickSpec](#) for information on additional racks options and rack specifications.

HP Power Distribution Units (PDUs)

HP Basic Power Distribution Unit (bPDU)

HP 4.9kVA 24A High Voltage NA/JP Core Modular Power Distribution Unit	252663-D74
HP 8.3kVA 40A High Voltage NA/JP Core Modular Power Distribution Unit	252663-D75
HP 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit	AF511A
HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Basic PDU	H5M56A
HP 4.9kVA 208 Volt L6-30 Input (20xC13) NA/JP Basic PDU	H5M58A

NOTE: To learn more about HP Basic Power Distribution Units (bPDU), please visit the HP website at www.hp.com/go/pdu.

HP Monitored Power Distribution Units (mPDU)

HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU	D9N43A
HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU	D9N45A
HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU	D9N47A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A

NOTE: Please see the [HP Monitored Power Distribution Units QuickSpec](#) for information on additional options and product specifications.

HP Intelligent Power Distribution Units (iPDU)

HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A

NOTE: Please see the [HP Intelligent Power Distribution Units QuickSpec](#) for information on additional options and product specifications.

HP Rack Mount Consoles, KVM Switches, and Keyboards

Rail Kits

NOTE: Please see the [QuickSpecs for Technical Specifications and additional information: \[http://h18000.www1.hp.com/products/quickspecs/13972_na/13972_na.html\]\(http://h18000.www1.hp.com/products/quickspecs/13972_na/13972_na.html\)](#)

HP 1U Small Form Factor Easy Install Rail Kit	734807-B21
HP 1U Cable Management Arm for Easy Install Rail Kit	734811-B21

HP Rack Mount Consoles

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
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NOTE: Please see the [HP Rack Console QuickSpec](#) for information on additional options and product specifications.

HP KVM Switches

HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A

Additional Options

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 1x4 USB/PS2 KVM Console Switch	AF611A

NOTE: To learn more, please visit the [HP KVM Switches web page](#).

HP 1U Rackmount Keyboard with USB

HP 1U US Rackmount Keyboard with USB	AG072A
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NOTE: Please see the [HP 1U Rackmount Keyboard QuickSpec](#) for information on additional options and product specifications.

HP USB Keyboard and Mouse

HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
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NOTE: Please see the [HP USB Keyboard and Mouse QuickSpec](#) for information on additional options and product specifications.

HP Uninterruptible Power Systems (UPS)

HP Rack-mountable UPS

HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
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NOTE: To learn more, please visit the [HP Uninterruptible Power Systems \(UPS\) web page](#).

HP Care Pack Services

Foundation Care

HP 3 year 24x7 DL160 Gen9 Foundation Care Service	U7AZ7E
HP 3 year 24x7 with Defective Media Retention DL160 Gen9 Foundation Care Service	U7AZ8E
HP 3 year 24x7 with Comprehensive Defective Material Retention DL160 Gen9 Foundation Care Service	U7AZ9E

Proactive Care

HP 3 year 24x7 DL160 Gen9 Proactive Care Service	U7BA0E
HP 3 year 24x7 with Defective Media Retention DL160 Gen9 Proactive Care Service	U7BA1E
HP 3 year 24x7 with Comprehensive Defective Material Retention DL160 Gen9 Proactive Care Service	U7BA2E

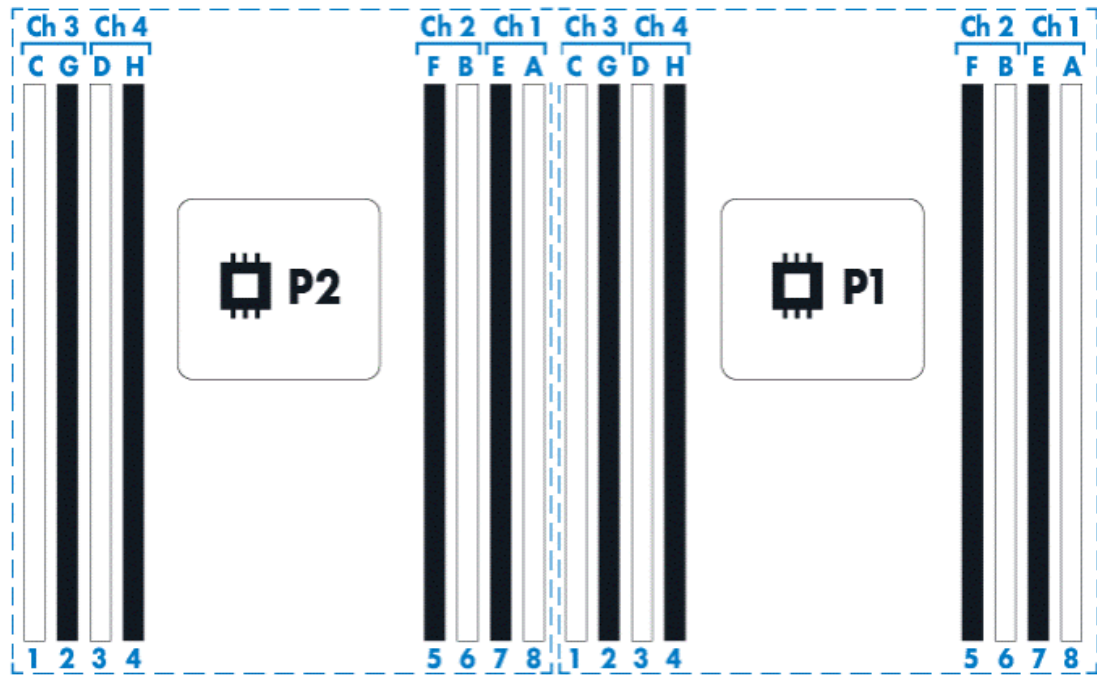
Installation & Start-up Services

HP Installation ProLiant DL160/DL360e Service	U6E11E
HP Startup ProLiant DL160/DL360e Service	U6E13E

Memory

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

Memory Population guidelines



General Memory Population Rules and Guidelines:

- 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 load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors. Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
- Do not mix RDIMMs or LRDIMMs.
- Quad rank RDIMMs are not supported in HP ProLiant DL160 Gen9 servers
- Quad rank LRDIMMs are capable of up to two DIMMs per channel.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required

Intel Gen9 Supported Memory Bandwidth for HP ProLiant Gen8 Intel® Xeon®E5-2600v3 Series Processor Family

Memory Bandwidth and Capacity

[DIMM Type]	Registered Dimms (RDIMMs)		Load Reduced (LRDIMMs)
	Single Rank	Dual Rank	Quad Rank
DIMM Rank			
DIMM Capacity	8GB	16GB	32GB
DIMM Native			

Memory

Speed (MT/s)			
Voltage	Std Voltage 1.2V		
SLOTS THAT CAN BE POPULATED			
16 slot servers	16		
MAXIMUM CAPACITY (GB)			
	128	256	512
1 DIMM Per Channel			
	2133		
2 DIMM Per Channel			
	2133		
3 DIMM Per Channel			
	1600	1600	1600

DIMM slot and configuration diagram

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.
- When one processor is installed, install DIMMs in sequential alphabetic order: A, B, C, D, E, F ...
- When two processors are installed, install DIMMs in sequential alphabetic order: CPU1-A, CPU2-A, CPU1-B, CPU2-B, CPU1-C, CPU2-C

CPU #1 IS PROCESSOR ON RIGHT - LOOKING FROM FRONT OF SERVER

	CPU 1		CPU 2		
	Slot #	population order	Slot #	population order	
Chnl 3	1	C	1	C	Chnl 3
	2	G	2	G	
Chnl 4	3	D	3	D	Chnl 4
	4	H	4	H	
Chnl 2	5	F	5	F	Chnl 2
	6	B	6	B	
Chnl 1	7	E	7	E	Chnl 1
	8	A	8	A	

Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E5-2609v3, E5-2603v3,	1600MHz
E5-2640v3, E5-2630v3, E5-2620v3, E5-2630Lv3,	1866MHz
E5-2660v3, E5-2650v3, E5-2650Lv3,	2133MHz

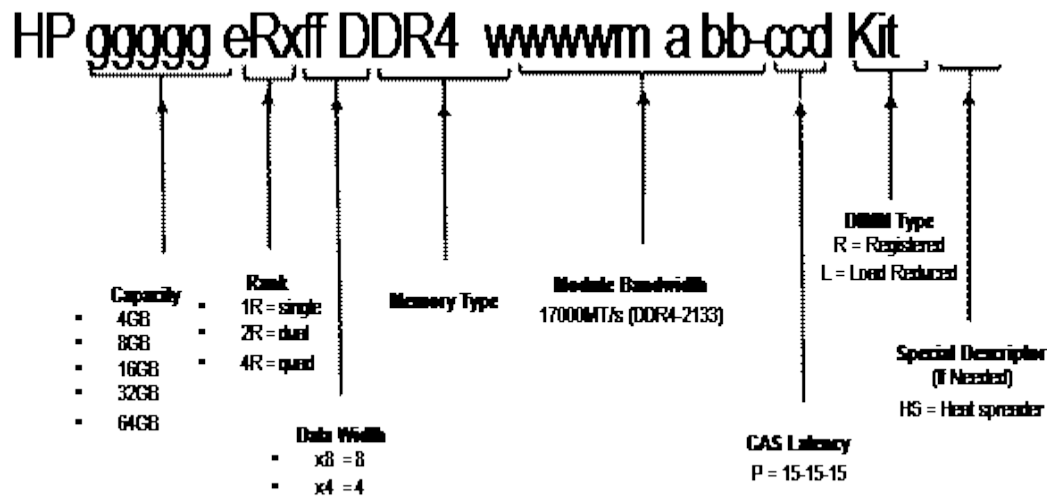
Memory

Standard and Maximum Memory Capacity (Pre-configured Models)	Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
	E5-2603v3,	8GB (1x8GB)	248GB (15x16GB, 1x8GB)	512GB (16x32GB)
	E5-2609v3,	16GB (2x8GB)	240GB (14x16GB, 2x8GB)	512GB (16x32GB)

DDR4 memory options part number decoder

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

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



Storage



1-8

8 x SFF SATA/SAS/SSD Hot Pluggable Hard Drive Bays



1-4

4 x LFF SATA/SAS/SSD Hot Pluggable Hard Drives Bays

Technical Specifications

System Unit	Dimensions (H x W x D)	8 SFF - 1.7 x 17.1 x 23.9 inches (4.29 x 43.46 x 60.76 cm) 8 SFF - 1.7 x 17.1 x 23.9 inches (4.29 x 43.46 x 60.76 cm)
	Weight (approximate)	Maximum: 32.04 lb (15kg) <i>(all hard drives, power supplies, and processors installed)</i> Minimum: 22.03 lb (10kg) <i>(one hard drive, power supply, and processor installed)</i>
	Input Requirements (for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Line Voltage 100 to 240 VAC Rated Input Current For 550W Power Supply: 6.7 A (at 100 VAC) 3.3 A (at 200 VAC) Rated Input Frequency 47 to 63 Hz Rated Input Power For 550 W Power Supply: < 670 W (at 100 VAC), < 660 W (at 200 VAC),
	BTU Rating	Maximum For 550 W Power Supply: 2201 BTU/hr (at 100 VAC), 2153 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the 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 - Click on the system of interest. Example: DL160 Gen9- Follow the instructions of the next screens.
	Power Supply Output	Rated Steady-State Power For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC), Maximum Peak Power For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC),
	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). Extended Ambient Operating Support 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/go/proliant/ashrae For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: www.hp.com/go/proliant/ashrae System performance may be reduced if operating in the extended ambient operating range or with a fan fault.



Technical Specifications

		NOTE: Supports A3 extended ambient, A4 extended ambience will be available in December 2014.
Relative Humidity	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
	(non-condensing)	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 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 declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	L WAd	Entry 5.1 B Base 5.2 B Performance 5.0 B
	L pAm	Entry 34.2 dBA Base 35.9 dBA Performance 34.9 dBA
	Operating	
	L WAd	Entry 5.3 B Base 5.3 B Performance 5.6 B
	L pAm	Entry 36.3 dBA Base 36.2 dBA Performance 39.7 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.	

HP Dynamic Smart Array B140i Controller

Number of PCI links	Four
PCI link rate	4 Gb/s
Storage protocol support	SATA
SAS/SATA peak data transfer rate	6 Gb/s
Number of SAS/SATA links	10 links
SAS/SATA connectivity	2x4 connectors; 2x1 connectors
Expander support	No



Technical Specifications

Drives supported (max)	Up to 10 Internal Drives
RAID support	0, 1, 10, 5 SATA
Software management	HP SSA, SMH, SIM
Warranty	Server warranty
HP Secure Encryption license	Not Supported
HP SmartCache License	Not Supported
HP Smart Storage Administrator	Supported

HP Embedded Dual 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)	
	Ports		
	Data Transfer Method	PCI Express v 2.0, 5.0 GT/s, two lanes (x2)	
	Controller	Intel I350 Powerville	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 40 Mb/s combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 80 Mb/s combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 400 Mb/s combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 800 Mb/s combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 4000 Mb/s combined
Connector	Two RJ-45		
Cable Support	10 Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	
	10/100/1000 Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)	

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.

Technical Specifications



hp.com/qref/dl160gen9

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