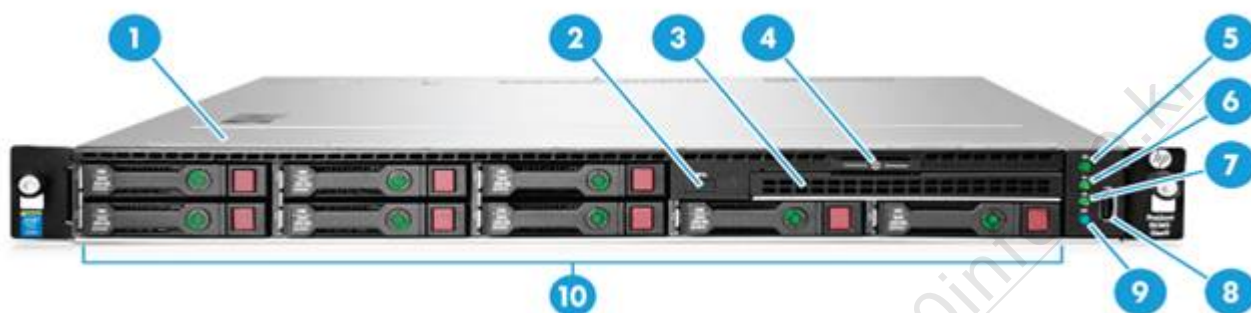


### Overview

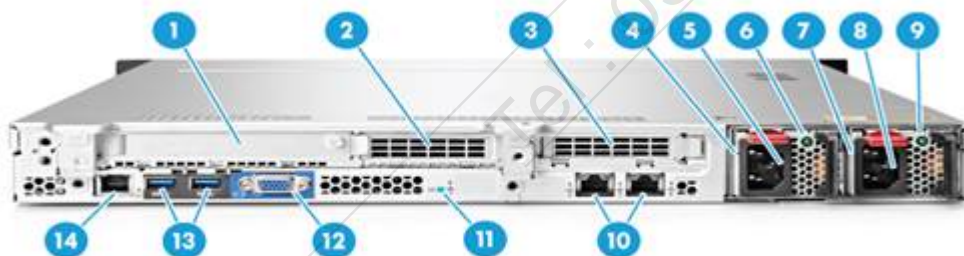
### HP ProLiant DL160 Generation9 (Gen9)

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

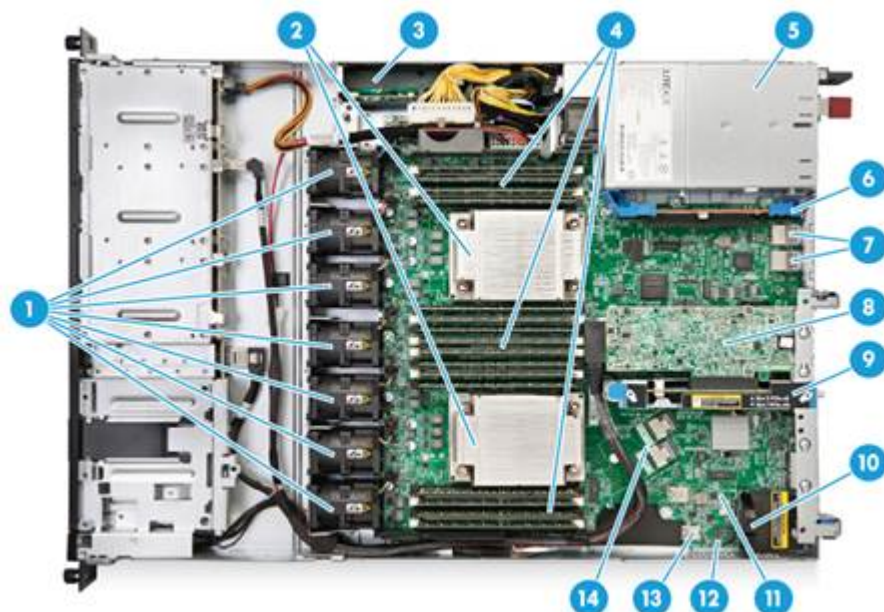
1. Access Panel
2. Optional USB3.0 (optional with 8SFF only)
3. Optical disk drive bay
4. Serial label pull tab
5. Power On/Standby button and system power LED
6. Health LED
7. NIC status LED
8. USB 2.0 connector
9. UID button/LED
10. 8SFF drive cage



#### 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 1 bay
5. Power supply 1 Power Connector (Optional)
6. Power supply 1 LED (Optional)
7. Power supply 2 bay
8. Power supply 2 power connector
9. Power Supply 2 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. Entry level power supply bay (1x900W shown)
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 <http://www.intel.com/xeon>.

<b>Processor</b> 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	30MB	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	20MB	55W	8.0GT/s	1866
	E5-2623v3	3.0GHz	4	10MB	105W	8.0GT/s	1866
	E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
	E5-2609v3	1.9GHz	6	15MB	85W	6.4GT/s	1600
	E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600

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

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

**Memory** Type:  
One of the following HP SmartMemory depending on model  
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)

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

**Network Controller** 1Gb 361i Ethernet Adapter 2 Ports per controller

Expansion Slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
CPU1 PCIe riser slots	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	Expansion Technology	Bus	Connector	Bus	Device	Form Factor	Notes
FlexibleLOM riser slots	Slots #	Width	Width	Number	Number		
	1	Flexible LOM	x8	x8		Flexible LOM	Processor 1 (can only be used for flexibleLOMs)
	2	PCIe 3.0	x8	x8		Low profile slot	Processor 1
NOTE: This riser is mandatory for installing flexibleLOMs.							
CPU2 riser PCIe slots	Expansion Technology	Bus	Connector	Bus	Device	Form Factor	Notes
	Slots #	Width	Width	Number	Number		
	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.		

<b>Internal Storage Devices</b> One of the following depending on model	Optical Drives	Optional: DVD-ROM, DVD-RW
	Hard Drives	None ship standard
	Hard Drive Bays	8 SFF drive bays total with Optical Bay
		4 LFF drive bays total with Optical bay
		<b>NOTE:</b> HP ProLiant DL160 Gen9 server offers both SFF and LFF versions in CTO. The Optical Drive bay is available with both models.
	<b>NOTE:</b> Drive cage changes are not supported.	
	<b>NOTE:</b> 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	CAPACITY		CONFIGURATION
One of the following depending on model	Hot Plug SFF SAS	16.0TB	8 x 2TB
	Hot Plug SFF SATA	16.0TB	8 x 2TB
	Hot Plug LFF SAS	32.0TB	4 x 8TB
	Hot Plug LFF SATA	32.0TB	4 x 8TB
	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** HP 550W FIO Power Supply

One of the following HP 800W/900W Gold AC Power Input Module depending on model

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

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

System Fans	Non-redundant	Redundant
One of the following 1P model depending on model	3 fans	4 fans
2P model	6 fans	7 fans
<b>NOTE:</b> Redundant fan option kit (PN: 725587-B21) can be bought separately if redundancy is required with 1P or 2P configurations.		
<b>NOTE:</b> Additional fans required with 2P configurations are included in "-B21" processor option kits.		

Interfaces	Video	1 (Vaux Support)
	HP iLO Remote Management	1 GbE (Optional)
	Network Port	
	USB	4 USB ports (standard); 1 (optional) Front: 1xUSB 2.0 std; 1xUSB3.0 optional (with 8SFF models only) Rear: 2xUSB 3.0 Internal: 1xUSB 3.0
	Micro SD Slot	1 Micro SD
<b>NOTE:</b> 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	2x1GbE network ports

Operating Systems and Virtualization Software Support for ProLiant Servers	<a href="#">Microsoft Windows Server</a> <a href="#">Red Hat Enterprise Linux (RHEL)</a> <a href="#">SUSE Linux Enterprise Server (SLES)</a> <a href="#">Oracle Solaris</a> <a href="#">VMware</a>
<b>NOTE:</b> 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: <a href="http://www.hp.com/go/ossupport">http://www.hp.com/go/ossupport</a> and our driver download page <a href="http://www.hp.com/support/DL160Gen9">http://www.hp.com/support/DL160Gen9</a> .	



Standard Features

Upgradeability	Upgradeable to two processors (24 cores) One of the following Up to 16 DIMM slots available depending on model
	<b>NOTE:</b> 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 Optional 2nd CPU riser slot (x16, low profile) <b>NOTE:</b> 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 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 <b>NOTE:</b> Supports A3/A4 extended ambient temperature. <b>NOTE:</b> Refer to technical specifications section for more details.
Graphics	Integrated Matrox G200eH2 video standard <ul style="list-style-type: none"><li>1280 x 1024 (32 bpp)</li><li>1920 x 1200 (16 bpp)</li></ul>
HP Server UEFI/Legacy ROM	<b>HP Server UEFI /Legacy ROM</b> 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. <b>NOTE:</b> The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <a href="http://www.hp.com/go/proliantuefi/docs">http://www.hp.com/go/proliantuefi/docs</a> . UEFI enables numerous new capabilities specific to HP ProLiant servers such as: <ul style="list-style-type: none"><li>Secure Boot</li><li>Operating system specific functionality</li><li>Support for &gt; 2.2 TB (using GPT) boot drives</li><li>USB 3.0 Stack</li><li>Embedded UEFI Shell</li><li>Mass Configuration Deployment Tool using HP RESTful API.</li><li>PXE boot support for IPv6 networks</li><li>Boot support for option cards that only support a UEFI option ROM</li></ul> For more information please visit <a href="http://www.hp.com/go/proliant/uefi">http://www.hp.com/go/proliant/uefi</a> . <b>NOTE:</b> For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI. <b>NOTE:</b> HP Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.
Form Factor	1U Rack form factor One of the following 8SFF and 4LFF version: depending on model 1.7" (4.4cm) Height x 17.1" (43.5cm) Width x 23.9" (60.8cm) Length



### Standard Features

<b>Embedded Management</b>	<b>HP Integrated Lights-Out (HP iLO)</b>	Monitor your servers for ongoing management, service alerting, reporting and remote management with HP iLO. Learn more at <a href="http://www.hp.com/go/ilo">http://www.hp.com/go/ilo</a> .
	<b>UEFI</b>	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at <a href="http://www.hp.com/go/ProLiant/uefi">http://www.hp.com/go/ProLiant/uefi</a> .
	<b>HP RESTful API</b>	RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server. Learn more at <a href="http://www.hp.com/go/restfulapi">http://www.hp.com/go/restfulapi</a> .
	<b>Intelligent Provisioning</b>	Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at <a href="http://www.hp.com/go/intelligentprovisioning">http://www.hp.com/go/intelligentprovisioning</a> .
	<b>Embedded Remote Support</b>	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 <a href="http://www.hp.com/go/insightonline/info">http://www.hp.com/go/insightonline/info</a> .
<b>NOTE:</b> For more information, visit: <a href="http://www.hp.com/go/ilo">http://www.hp.com/go/ilo</a> or HP iLO Management Engine technologies whitepaper.		

<b>Server utilities</b>	<b>HP Smart Update</b>	Optimize firmware and driver updates with HP Smart Update solutions. Learn more at <a href="http://www.hp.com/go/smartupdate">http://www.hp.com/go/smartupdate</a> .
	<b>HP Systems Insight Manager (HP SIM)</b>	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 <a href="http://www.hp.com/go/sim">http://www.hp.com/go/sim</a> .
	<b>Scripting Tool Kit and Windows PowerShell</b>	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 <a href="http://www.hp.com/go/ProLiantSTK">http://www.hp.com/go/ProLiantSTK</a> or <a href="http://www.hp.com/go/powershell">http://www.hp.com/go/powershell</a> .
	<b>HP RESTful Interface Tool</b>	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 <a href="http://www.hp.com/go/restfulapi">http://www.hp.com/go/restfulapi</a> .
	<b>HP iLO Mobile Application</b>	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: <a href="http://www.hp.com/go/ilo/mobileapp">http://www.hp.com/go/ilo/mobileapp</a> .
	<b>HP Insight Online</b>	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 <a href="http://www.hp.com/go/insightonline/info">http://www.hp.com/go/insightonline/info</a> .

<b>Security</b>	Power-on password Serial interface control Administrator's password TPM 1.2 UEFI
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<b>Warranty</b>	<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><b>NOTE:</b> 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:</p>
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Standard Features

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>.

Tel : 051-891-2000  
www.2000info.co.kr



### Optional Features

<b>Embedded Management</b>	<b>iLO Essentials</b>	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 <a href="http://www.hp.com/go/iLO/essentials">http://www.hp.com/go/iLO/essentials</a> .
	<b>iLO Scale-Out</b>	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 <a href="http://www.hp.com/go/iLO/scale-out">http://www.hp.com/go/iLO/scale-out</a> .
	<b>iLO Advanced</b>	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 <a href="http://www.hp.com/go/iloadvanced">http://www.hp.com/go/iloadvanced</a> .
<b>Server Management</b>	<b>HP Insight Control</b>	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 <a href="http://www.hp.com/go/insightcontrol">http://www.hp.com/go/insightcontrol</a> .
	<b>HP OneView Advanced</b>	HP OneView Advanced is converged management that eliminates infrastructure complexity with automation simplicity. This modern architecture is designed to accelerate your IT operations across servers, storage, and network resources using software-defined approaches and automation, see <a href="http://www.hp.com/go/oneview">http://www.hp.com/go/oneview</a> .
<b>Rack and Power Infrastructure</b>	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 <a href="#">HP Rack and Power Infrastructure</a> .	
<b>High Performance Clusters</b>	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. <a href="http://www.hp.com/go/clusters">http://www.hp.com/go/clusters</a> .	
<b>HPC Interconnects</b>	<b>NOTE:</b> 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: <a href="http://www.hp.com/techservers/clusters/ucp/index.html">http://www.hp.com/techservers/clusters/ucp/index.html</a> .	

### Optional Features

#### 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:

- **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 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 create a virtual array within your host server. Manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. HP ProLiant Gen9 servers include a 3-year limited license for HP StoreVirtual VSA software with 1TB of capacity at no extra cost. Simply select to install HP StoreVirtual VSA software during server setup within Intelligent Provisioning. More information, instructional videos, and free console management software are available at <http://www.hp.com/go/vsa1TB>.

**NOTE:** For more information about Storage Software including QuickSpecs, please see: <http://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

<b>HP Technology Services</b>	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.
<b>Protect your business beyond warranty with HP Care Pack Services</b>	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.
<b>Optimized Support recommendation</b>	<p><b>HP Proactive Care – 24x7 coverage, four hour response, three year Care Pack Service</b> 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.</p> <p>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. <a href="http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf">http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf</a></p> <p><b>HP ProLiant Server Hardware Installation</b> Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <a href="http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf">http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf</a></p>
<b>Standard Support recommendation</b>	<p><b>HP Foundation Care - 24x7 coverage, three year Care Pack Service</b> 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. <a href="http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&amp;cc=us&amp;lc=en">http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&amp;cc=us&amp;lc=en</a></p> <p><b>HP ProLiant Hardware Installation</b> Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <a href="http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf">http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf</a></p>
<b>Related Services</b>	<p><b>Data Center Platform Consulting Services</b> 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. <a href="http://www.hp.com/services/consulting">http://www.hp.com/services/consulting</a></p> <p><b>Data Privacy Services</b> Protect your data through better media management. HP Data privacy services help manage and protect sensitive data. <a href="http://www.hp.com/services/dataprivacy">http://www.hp.com/services/dataprivacy</a></p> <p><b>Factory Express for Servers and storage</b> 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. <a href="http://www.hp.com/go/factory-express">http://www.hp.com/go/factory-express</a></p> <p>Additional HP Care Pack services can be found at: <a href="http://www.hp.com/go/cpc">http://www.hp.com/go/cpc</a>.</p>
<b>Parts and Materials</b>	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.
4. Not all models are available in all regions. Check with your local country HP offices for availability.

**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 (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.

**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	769506-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	HP ProLiant DL160 Gen9 E5-2630v3 2P 32GB-R P440/4G 8SFF 800W RPS Perf Server
Processor	Intel®Xeon®E5-2603v3		Intel®Xeon®E5-2609v3	Intel®Xeon®E5-2630v3
Number of Processors	One			
Memory	8GB (1x8GB Registered DIMMs, 2133 MHz) <b>NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.</b>		16GB (2x8GB Registered DIMMs, 2133 MHz) <b>NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.</b>	32GB (2x16GB Registered DIMMs, 2133 MHz)
Network Controller	HP Embedded Dual Port 361i Adapter Network Interface			
Storage Controller	HP Dynamic Smart Array B140i	HP H240 FIO Smart Host Bus Adapter		HP Flexible Smart Array P440/4G FIO Controller
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			3 Standard (1-FH/HL, 2-LP) PCIe 3.0
Power Supply	(1) HP 550W FIO Power Supply			HP 800W Redundant Power Supply
Fans	3 hot swap fans, non-redundant		4 hot swap fans, redundant	7 hot swap fans, redundant
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)			
Energy Star				Meets Energy Star requirements
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			

Pre-configured Models

Country Code Key	xx1 = B21	Worldwide
	xx1 = 291	Japan
	xx1 = AA1	PRC

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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, it 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 w 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		
DIMM Slots	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 Embedded Dual Port 361i Adapter Network Interface		
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

Select one or two processors from Core options-Processor section below,
  - If one processor is desired, select one xxxxxx-L21
  - If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.
  - Up to 2 processors supported. Mixing different processor models is not supported.
  - DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

For the 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, 6 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.
- HP Memory

Select one or more memory from Core options-Memory section below,
  - LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM and RDIMM.
  - HP memory from previous generation servers are not qualified or warranted with this HP ProLiant Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.
  - If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors all DIMM slots are available.
  - Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://www.hp.com/go/proliant-energy-efficient>.
  - Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, 1600MHz or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://www.hp.com/go/ddr4config>.
- HP Power Supplies

Select one or more power supplies from Core Options-Power Supplies section below:
  - 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 Information - Factory Integrated Models

configuration. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.

- 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.

### Step 3: Choose Additional Factory Integratable Options

#### HP Unique Options

Select one or more Unique options from Core options section below.

- This section may contain FIO options, please see the Unique options section below.
- FIO indicates that this option is only available as a factory installable option.

#### HP Drives

Select one or more drives from Core options-HP Drives section below:

- 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.
- Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
- The HP ProLiant Gen9 Smart Storage solutions are equipped with re-designed Small Form Factor (SFF 2.5 in) and Large Form Factor (LFF 3.5 in) hot plug carriers for HP Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove".

#### HP FlexibleLOM

Select a FlexibleLOM from Core options-Networking section below,

- Only one FlexibleLOM can be added to the server. These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.
- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/ProLiantNICs>.

#### HP Networking

Select a standup NIC adapter from Core options-Networking section below,

- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/ProLiantNICs>.
- These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

**HP Storage Controllers** Select one or more Storage options from Additional options section below.

- The embedded B140i controller will operate in UEFI only mode. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22
- This section may contain FIO options, please see HP Storage Controllers section below.
- FIO indicates that this option is only available as a factory installable option.

#### HP I/O Expansion Options

Select one or more Riser Kit options from Core options section below.

- To take advantage of the additional PCI slot upgrade, the second processor must be installed.
- This section may contain FIO options, please see HP I/O Expansion Options section below.
- FIO indicates that this option is only available as a factory installable option.

#### HP Cooling Options

Select one or more Fan Kits from Core options section below.

- This section may contain FIO options, please see HP Cooling Options section below.
- FIO indicates that this option is only available as a factory installable option.

#### HP Rail Kits

Select one type of rail kit from Additional options section below.

- Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen9 server.
- To assist in the installation of the server into the rack, an optional installation tool is available by contacting your local services representative (p/n 695539-001).
- See HP Rack Options in Additional Options section of this QuickSpecs for more rack kit choices.

**Caution:** HP recommends that a minimum of two people are required for all Rack Server installations. Please

Configuration Information - Factory Integrated Models

refer to your installation instructions for proper tools and number of people to use for any installation.

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Core Options

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

HP Unique Options	HP DL180 Gen9 Dedicated iLO Management Port Kit	725581-B21
	HP DL160 Gen9 CPU1 Riser FIO Kit	725585-B21
	<b>NOTE:</b> This riser enables two PCIe3 slots. Either of this riser kit and FlexibleLOM riser kit (781844-B21) is mandatory for all configurations.	
	HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit	725586-B21
	<b>NOTE:</b> CPU 2 is required if this riser is to be installed, enables one PCIe3 slot.	
	HP DL160 Gen9 Quick Release Ear FIO Kit	774609-B21
	<b>NOTE:</b> This option kit is required for Security Bezel.	
	HP DL160 Gen9 Front USB 3.0 Enablement Kit	725594-B21
	<b>NOTE:</b> This kit is required to enable a front USB3.0 port on SFF models only.	
	HP DL160 Gen9 FlexibleLOM Enablement Kit	781844-B21
	<b>NOTE:</b> This riser kit is required when flexibleLOM is selected.	
	HP AHCI-Enable FIO Setting	801845-B21
	<b>NOTE:</b> This needs to be selected when Advanced Host Controller Interface mode is required on B140i controller.	

HP Processors	<b>Entry Processors - E5-2600v3 series Processors</b>	
	HP DL160 Gen9 Intel®Xeon®E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	733943-B21
	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) Processor Kit	763235-B21
	HP DL160 Gen9 Intel®Xeon®E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	763235-L21
	<b>Base Processors - E5-2600v3 series Processors</b>	
	HP DL160 Gen9 Intel®Xeon®E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	733935-B21
	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) Processor Kit	733937-B21
	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) Processor Kit	733939-B21
	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) Processor Kit	763241-B21
	HP DL160 Gen9 Intel®Xeon®E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	763241-L21
	HP DL160 Gen9 Intel®Xeon®E5-2623v3 (3GHz/4-core/10MB/105W) Processor Kit	779836-B21
	HP DL160 Gen9 Intel®Xeon®E5-2623v3 (3GHz/4-core/10MB/105W) FIO Processor Kit	779836-L21
	<b>Performance Processors - E5-2600v3 series Processors</b>	
	HP DL160 Gen9 Intel®Xeon®E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	733931-B21
	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) Processor Kit	733933-B21
	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) Processor Kit	763237-B21
	HP DL160 Gen9 Intel®Xeon®E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	763237-L21

### Core Options

#### HP Memory

##### Registered DIMMs (RDIMMs) for E5-2600v3 Series

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

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

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

##### HP Standard Memory

HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803026-B21
HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803028-B21

**NOTE** These are standard memory DIMMs with no Smart Memory features.

#### 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 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781518-B21
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 900GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785069-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 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781516-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 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785067-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC 512e Enterprise 3yr Warranty Hard Drive	748387-B21
HP 1.8TB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 512e 3yr Warranty Hard Drive	791034-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
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 1TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765464-B21
HP 2TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765466-B21

##### SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 600GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	765424-B21
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



### Core Options

HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765259-B21
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	761477-B21
HP 4TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765257-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
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793699-B21
HP 8TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793703-B21
<b>SAS Hot Plug LFF (3.5-inch) Performance Drives</b>	
HP 4TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793669-B21
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793671-B21
<b>SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives</b>	
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
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765453-B21
HP 2TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765455-B21
<b>SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>	
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765255-B21
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 512e 1yr Warranty Hard Drive	765253-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
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793683-B21
HP 8TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793695-B21
<b>SATA Hot Plug LFF (3.5-inch) Performance Drives</b>	
HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drives	793665-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793667-B21
<b>SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>	
HP 4TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801888-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801886-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801884-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801882-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21
<b>12G SAS Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives</b>	
HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741155-B21
<b>12G SAS Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	



### Core Options

HP 1.6TB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779176-B21
HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779172-B21
HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779168-B21
HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779164-B21
<b>12G SAS Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives</b>	
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
HP 1.6TB 12G SAS Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	762272-B21
<b>12G SAS Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives</b>	
HP 800GB 12G SAS Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	762270-B21
<b>6G SATA Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
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
<b>6G SATA Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives</b>	
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
HP 1.6TB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	757339-B21
HP 1.6TB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	757342-B21
<b>6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value G1 Solid State Drives</b>	
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756657-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756636-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756621-B21
<b>6G SATA Hot Plug SFF (2.5-inch) Enterprise Light G1 Solid State Drives</b>	
HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21
<b>6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value M1 Solid State Drives</b>	



### Core Options

HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764929-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764925-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764923-B21
<b>6G SATA Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives</b>	
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
<b>6G SATA Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives</b>	
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
<b>6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value G1 Solid State Drives</b>	
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756660-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756639-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756624-B21
<b>6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value M1 Solid State Drives</b>	
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764945-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764943-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764941-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764939-B21
<b>6G SATA Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives</b>	
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 Converter 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 Converter 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
<b>6G SATA Hot Plug LFF (3.5-inch) Enterprise Light G1 Solid State Drives</b>	
HP 960GB 6G SATA Light Endurance LFF 3.5-in SC Converter ENT Light 3yr Wty G1 Solid State Drive	756604-B21
<b>6G SATA Hot Plug LFF (3.5-inch) Enterprise Boot Solid State Drives</b>	
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
<b>M.2 SSD</b>	

### Core Options

HP Dual 120GB Value Endurance Solid State M.2 Enablement Kit for ProLiant ML/DL Servers	777894-B21
HP Dual 120GB Value Endurance Solid State M.2 Enablement Kit for ProLiant ML/DL Servers	777894-B21
HP 120GB Value Endurance Solid State M.2 Enablement Kit for ProLiant ML/DL Servers	788028-B21
<b>NOTE:</b> M.2 drives go in PCIe slots and use B140i SATA controller only.	
<b>Hard Drive Blank Kits</b>	
HP Large Form Factor Hard Drive Blank Kit	666986-B21
HP Small Form Factor Hard Drive Blank Kit	666987-B21

<b>HP Networking</b>	<b>1 Gigabit Ethernet adapters</b>	
	HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
	HP Ethernet 1Gb 4-port 366T Adapter	811546-B21
	HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
	HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
	<b>10 Gigabit Ethernet adapters</b>	
	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
	HP Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
	<b>NOTE:</b> A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.	
	<b>NOTE:</b> Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. See cables/options below.	
	<b>FlexibleLOM Adapters</b>	
	HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
	HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
	HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
	HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
	HP FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
	HP Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
	<b>NOTE:</b> FlexibleLOM riser kit (P/N: 781844-B21) is required when any flexibleLOM is selected.	
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://www.hp.com/go/ProLiantNICs">http://www.hp.com/go/ProLiantNICs</a> .	

<b>HP InfiniBand</b>	HP InfiniBand FDR 2-port 545QSFP Adapter	702211-B21
	HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
	QLogic InfiniBand 4X QDR PCI-E G2 Dual Port HCA	583211-B21
	<b>NOTE:</b> Please see the QuickSpecs for additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html">http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html</a> .	

<b>HP I/O Expansion Options</b>	HP DL160 Gen9 CPU1 Riser FIO Kit	725585-B21
	<b>NOTE:</b> This riser enables two PCIe3 slots and either of FlexibleLOM riser kit (PN: 781844-B21) or CPU1 riser FIO kit is required in every configuration.	
	HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit	725586-B21
	<b>NOTE:</b> CPU 2 is required if this riser is to be installed, enables one PCIe3 slot.	
	HP DL160 Gen9 FlexibleLOM Enablement Kit	781844-B21
	<b>NOTE:</b> This enablement kit is required when flexibleLOM is selected.	

Core Options

HP Power Supplies	HP Entry-Level Power Supplies	
	HP 550W FIO Power Supply Kit	730941-B21
	HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input FIO Module	813534-B21
	<b>NOTE:</b> HP Server RPS FIO Backplane Kit (P/N: 813535-B21) is required for this power supply.	
	<b>NOTE:</b> Up to two of these option kits can be installed in one system.	
	<b>NOTE:</b> This FIO kit only be bought integrated in the server. It cannot be ordered as standalone option after server purchase.	
	<b>NOTE:</b> With just one power supply module installed, up to 900W wattage is supported while with both power supply modules installed in RPS mode, up to 800W is supported.	
	HP Server Redundant Power Supply Backplane FIO Kit	813535-B21
	<b>NOTE:</b> Required for RPS capability.	
	<b>NOTE:</b> This FIO kit only be bought integrated in the server. It cannot be ordered as standalone option after server purchase.	
	HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input Module	744689-B21
	<b>NOTE:</b> HP Server RPS Backplane Kit (P/N: 745813-B21) is required for this power supply.	
	<b>NOTE:</b> Up to two of these option kits can be selected in one system.	
	<b>NOTE:</b> This kit is only available as option kit and cannot be factory installed in the server.	
	<b>NOTE:</b> With just one power supply module installed, up to 900W wattage is supported while with both power supply modules installed in RPS mode, up to 800W is supported.	
	HP Server Redundant Power Supply Backplane Kit	745813-B21
	<b>NOTE:</b> Required for RPS capability.	
	<b>NOTE:</b> This kit is only available as option kit and cannot be factory installed in the server.	
	<b>NOTE:</b> 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.	
	<b>NOTE:</b> 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: <a href="http://www.hp.com/go/hppoweradvisor">http://www.hp.com/go/hppoweradvisor</a> .	
HP Cooling Options	HP DL160 Gen9 Redundant Fan Kit	725587-B21
	<b>NOTE:</b> 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 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
HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License	C6N36ABE

**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\\_div/12631\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.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 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 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 1yr 24x7 Tech Support and Updates Single Svr License	BD775A
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

### Additional Options

#### 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 Operations Analytics for HP OneView LTU	K8G29A
HP Operations Analytics for HP OneView E-LTU	K8G29AAE
HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	E5Y43A
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 Media Kit Phys No Lic	E5Y37A

**NOTE:** Full licenses of HP OneView Advanced also provide the right-to-use HP Insight Control without additional charge.

**NOTE:** Server provisioning (via 'HP Insight Control server provisioning') is licensed as part of HP OneView Advanced and provides multi-server OS and driver provisioning. Media kit #BD883A can be ordered for a physical copy of this software (USB flash drive).

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

**NOTE:** Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

#### 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	BD476A
<b>NOTE:</b> 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
<b>NOTE:</b> For additional license kits please see the QuickSpecs at: <a href="http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html">http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html</a> .	

#### HP PCIe Workload Accelerator Options

#### Value Endurance (VE) PCIe Workload Accelerators

HP 6.4TB FH/HL Value Endurance (VE) PCIe Workload Accelerator	763840-B21
HP 3.2TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763838-B21
HP 1.6TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763836-B21
HP 1.3TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763834-B21

#### Light Endurance (LE) PCIe Workload Accelerators

HP 5.2TB FH/HL Light Endurance (LE) PCIe Workload Accelerator	775672-B21
HP 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775670-B21
HP 1.3TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775668-B21
HP 1.0TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775666-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [http://h18000.www1.hp.com/products/quickspecs/14528\\_div/14528\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14528_div/14528_div.html) (Worldwide).

### Additional Options

<b>HP Security</b>	HP 1U Security Bezel Kit	664918-B21
	<b>NOTE:</b> Quick Release Ear option kit (P/N 774609-B21) is required for installing security bezel.	
	HP DL160 Gen9 Quick Release Ear FIO Kit	774609-B21
	<b>NOTE:</b> Quick Release Ear option kit is required for installing security bezel.	
	HP Trusted Platform Module Option	488069-B21
	<b>NOTE:</b> 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: <a href="http://www.hp.com/go/TPM">http://www.hp.com/go/TPM</a> .	
	<b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.	
	<b>NOTE:</b> The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	

<b>HP Storage Controllers</b>	<b>SAS Controllers</b>	
	<b>HP Smart Array Controllers</b>	
	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 Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
	<b>NOTE:</b> Includes the HP Smart Storage Battery.	
	HP Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	726903-B21
	<b>HP Smart Host Bus Adapters</b>	
	HP H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21
	HP H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	<b>HP Cable Options</b>	
	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
	HP DL160 Gen9 4LFF Smart Array B140i SATA Cable FIO Kit	768775-B21
	HP DL160 Gen9 8SFF Smart Array B140i SATA Cable FIO Kit	774611-B21
	<b>NOTE:</b> One of the above cables is required to be selected depending on the combination of chassis and storage controller. Cable option kit descriptions include the right chassis and storage controllers names.	
	<b>NOTE:</b> FIO indicates that this option is only available as a factory installable option. Please select FIO option if you want the option to be factory installed.	
	<b>NOTE:</b> NHP server chassis (Mod-x) includes SATA cables required to connect drives to embedded B140i SATA controller.	
	<b>Optional Software</b>	



Additional Options

HP Secure Encryption No Media Flexible License per Drive	D8S84A
HP Secure Encryption No Media E-LTU per Drive	D8S85AAE
<b>NOTE:</b> HP Secure Encryption is supported when one of the supported Smart Array Controllers or the supported Smart SAS HBA (configured in a RAID mode) is installed in the server. HP Secure Encryption licensing is based on the number of physical drives requiring encryption.	
<b>NOTE:</b> For more information about HP Secure Encryption, go to <a href="http://www.hp.com/go/hpsecureencryption">http://www.hp.com/go/hpsecureencryption</a> .	
HP SmartCache No Media 24x7 Technical Support 1 Svr License	D7S26A
HP SmartCache No Media 24x7 Technical Support Flexible License	D7S27A
HP SmartCache No Media 24x7 Technical Support Electronic License	D7S27AAE
<b>NOTE:</b> HP SmartCache is supported when one of the supported Smart Array Controllers is installed in the server.	
<b>NOTE:</b> HP SmartCache comes standard (no licensing is required) if the HP Smart Array P840 Controller is installed in the server.	
<b>Optional Upgrades</b>	
HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
<b>NOTE:</b> 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	<b>NOTE:</b> For the complete range of tape drives, autoloaders, libraries and media see: <a href="http://www.hp.com/go/tape">http://www.hp.com/go/tape</a> . For hardware and software compatibility of HP tape backup products see: <a href="http://www.hp.com/storage/SPOCK">http://www.hp.com/storage/SPOCK</a> and <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> .	
	<b>NOTE:</b> For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.	
	<b>Tape Drives</b>	
	<b>SAS Rack-Mount Tape Solutions</b>	
	HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
	HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount	EJ014B
	HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
	HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount	EJ013B
	HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive	EH900B
	HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit	EH946C
	HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
	HP StoreEver LTO-3 Ultrium 920 SAS External Tape Drive	EH848B
	HP StoreEver 1U SAS Rack-mount Kit	AE459B
	HP Mini SAS High Density to 4-lane Mini SAS External Fanout 2 Meter Cable	K2R09A
	HP Mini SAS High Density to 4-lane Mini SAS External Fanout 4 Meter Cable	K2R10A
	<b>HP DAT Autoloader</b>	
	HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	C0H19A
	<b>HP MSL2024 Tape Library</b>	
	HP MSL2024 0-Drive Tape Library	AK379A
	<b>HP MSL4048 Tape Library</b>	
	HP MSL4048 0-Drive Tape Library	AK381A
	<b>HP StoreEver MSL6480</b>	
	HP StoreEver MSL6480 Scaleable Expansion Module	QU626A
	HP StoreEver MSL6480 Scalable Base Module	QU625A



### Additional Options

<b>HP Disk Backup</b>	<b>HP RDX Removable Disk Backup System</b>	
	HP RDX320 USB3.0 External Disk Backup System	B7B63A
	HP RDX500 USB 3.0 External Disk Backup System	B7B66A
	HP RDX1000 USB 3.0 External Disk Backup System	B7B69A
	HP RDX 2TB USB3.0 External Disk Backup System	E7X53A
	HP RDX+ 500GB External Backup System	B7B66B
	HP RDX+ 1TB External Backup System	B7B69B
	HP RDX+ External Docking System	C8S07B
	HP D3700 Enclosure	QW967A
	HP D3600 Enclosure	QW968A

<b>HP Storage Options</b>	<b>Emulex Fibre Channel HBAs</b>	
	HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HP StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	<b>QLogic Fibre Channel HBAs</b>	
	HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
	HP StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HP StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
	<b>Converged Network Adapter</b>	
	HP StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A

<b>HP Disk Storage Systems</b>	<b>Disk Enclosures</b>	
	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 D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A

<b>HP Data Center Racks</b>	<b>HP 11000 G2 Series Racks</b>	
	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 Shock 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 QuickSpecs](#) for information on additional racks options and rack specifications.

#### HP Intelligent Series Rack

### Additional Options

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
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 QuickSpecs](#) 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 QuickSpecs](#) for information on additional racks options and rack specifications.

### HP Power Distribution Units (PDUs)

#### HP Basic Power Distribution Unit (bPDU)

HP 1.9kVA 120 Volt L5-20 Input (12xNEMA 5-20R) NA/JP Basic PDU	H5M54A
HP 3.6kVA 200-240 Volt Detachable C20 Input ( 12xC13) WW Basic PDU	H5M56A
HP 2.8kVA 120 Volt L5-30 Input (18xNEMA 5-20R) NA/JP Basic PDU	H5M55A
HP 3.6kVA 200-240 Volt Detachable C20 Input (18xC13) WW Basic PDU	H5M57A
HP 4.9kVA 208 Volt L6-30 Input (20xC13) NA/JP Basic PDU	H5M58A
HP 7.3kVA 230 Volt IEC309 32A Input (20xC13) INTL Basic PDU	H5M68A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13) NA/JP Basic PDU	H5M61A
HP 4.9kVA 208 Volt L6-30 Input (24xC13/6xC19) NA/JP Basic PDU	H5M59A
HP 7.3kVA 230 Volt IEC309 32A Input (24xC13/6xC19) INTL Basic PDU	H5M70A
HP 8.3kVA 208 Volt CS8265C Input (30xC13/6xC19) NA/JP Basic PDU	H5M60A
HP 11kVA 230 Volt IEC309 63A Input (30xC13/6xC19) INTL Basic PDU	H5M71A
HP Hardwired 200-240 Volt Input (30xC13/6xC19) WW Basic PDU	H5M75A
HP 5.7kVA 208 Volt L21-20 3-Phase Input (24xC13/3xNEMA 5-20R) NA/JP Basic PDU	H5M63A
HP 8.6kVA 208 Volt L21-30 3-Phase Input (24xC13/3xC19/3xNEMA 5-20R) NA/JP Basic PDU	H5M64A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (24xC13/6xC19) NA/JP Basic PDU	H5M62A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/6xC19) INTL Basic PDU	H5M72A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (36xC13/6xC19) INTL Basic PDU	H5M73A
HP 11kVA 400 Volt IEC309 30A 3-Phase Input (36xC13/6xC19) NA Basic PDU	H5M67A
HP 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU	H3X08A
HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer	H3X09A
HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit	252663-D71
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 7.3kVA 32A High Voltage INTL Core Modular Power Distribution Unit	252663-B33
HP 9.2kVA 40A High Voltage INTL Core Modular Power Distribution Unit	252663-B34
HP 8.6kVA 24A Three Phase NA/JP Modular Power Distribution Unit	AF512A
HP 11kVA 16A Three Phase INTL Modular Power Distribution Unit	AF513A

### Additional Options

HP 14.4kVA 40A Three Phase NA/JP Modular Power Distribution Unit	AF519A
HP 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit	AF511A
HP 22kVA 32A Three Phase INTL Core Modular Power Distribution Unit	AF518A

**NOTE:** To learn more about HP Basic Power Distribution Units (bPDU), please visit the HP website at <http://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 (12xC13) WW Monitored PDU	D9N46A
HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	D9N44A
HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU	D9N45A
HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	G9Z05A
HP 7.3kVA 230 Volt IEC309 32A Input (12xC13) INTL Monitored PDU	G9Z06A
HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU	D9N47A
HP 7.3kVA 230 Volt IEC309 32A Input (20xC13/4xC19) INTL Monitored PDU	D9N48A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13/3xC19) NA/JP Monitored PDU	D9N51A
HP 5.7kVA 208 Volt L21-20 3-Phase Input (18xC13/3xNEMA 5-20R) NA/JP Monitored PDU	D9N52A
HP 8.6kVA 208 Volt L21-30 3-Phase Input (20xC13/3xC19/3xNEMA 5-20R) NA/JP Monitored PDU	D9N53A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (18xC13/3xC19) INTL Monitored PDU	D9N55A
HP 8.3kVA 208 Volt CS8265C Input (30xC13/3xC19) NA Monitored PDU	D9N49A
HP 7.3kVA 230 Volt IEC309 32A Input (32xC13/4xC19) INTL Monitored PDU	D9N50A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N57A
HP 14.4kVA 208 Volt CS8365C 3-Phase Input (12xC13/12xC19)NA Monitored PDU	D9N58A
HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (30xC13/3xC19) NA Monitored PDU	D9N61A
HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (12xC13/12xC19) NA Monitored PDU	D9N62A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (24xC13/3xC19) NA/JP Monitored PDU	D9N54A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Watertight Input (12xC13/12xC19) NA/JP Monitored PDU	G9Z07A
HP 19.9kVA 480 Volt 3-Phase (30 Outlet) NA Monitored PDU	D9N63A
HP 22kVA 400 Volt IEC309 32A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N56A
HP 22kVA 400 Volt IEC309 32A 3-Phase Input (12xC13/12xC19) INTL Monitored PDU	D9N60A
HP 22kVA 400 Volt IEC309 32A 3-Phase Watertight Input (12xC13/12xC19) INTL Monitored PDU	G9Z08A
HP Environmental Sensor for Remote Monitored and Managed PDUs	E2D53A

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

#### HP Intelligent Power Distribution Units (iPDU)

### Additional Options

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 11.4kVA 16A 415V Three Phase L22-20 NA Core Intelligent Power Distribution Unit	AF900A
HP 17.3kVA 24A 415V Three Phase IEC309 NA Core Intelligent Power Distribution Unit	AF901A
HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
HP 22kVA 32A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF527A
HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit	AF538A
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
HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A
HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A

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

#### HP Managed Power Distribution Units (mPDU)

HP 2.8kVA 120 Volt L5-30 Input (24x NEMA 5-20) NA/JP Managed PDU	H8B48A
HP 3.6kVA 200-240 Volt Detachable C20 Input (7xC13/1xC19) WW Managed PDU	H8B49A
HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Managed PDU	H8B50A
HP 7.3kVA 200-240 Volt IEC309 32A Input (20xC13/4xC19) INTL Managed PDU	H8B51A
HP 8.6kVA 208 Volt L15-30 3 Phase Input (18xC13/6xC19) NA/JP Managed PDU	H8B52A
HP 8.6kVA 208 Volt L21-30 3 Phase Input (20xC13/3xC19/1x NEMA 5-20) NA/JP Managed PDU	H8B53A
HP 11kVA 400 Volt IEC309 16A 3 Phase Input (21xC13/3xC19) INTL Managed PDU	H8B54A
HP 14.4kVA 208V CS8365C 3 Phase Input (12xC13/12xC19) NA/JP Managed PDU	H8B55A
HP 17.3kVA 208V IEC309 60A 3 Phase Input (12xC13/12xC19) NA/JP Managed PDU	H8B56A

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

**NOTE:** To learn more, please visit the [HP Uninterruptible Power Systems \(UPS\) web page](#).



### Additional Options

#### HP Rack Mount Consoles, KVM Switches, and Keyboards

#### HP Location Discovery Services

HP Location Discovery Services LCD8500 Kit TL052A

#### HP Rack Mount Consoles

HP LCD8500 1U US Rackmount Console Kit AF630A

HP LCD8500 1U UK Rackmount Console Kit AF631A

HP LCD8500 1U DE Rackmount Console Kit AF632A

HP LCD8500 1U FR Rackmount Console Kit AF633A

HP LCD8500 1U JP Rackmount Console Kit AF642A

HP LCD8500 1U RU Rackmount Console Kit AF643A

HP LCD8500 1U INTL Rackmount Console Kit AF644A

HP LCD8500 1U US TAA Rackmount Console Kit AF645A

HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor AZ882A

#### HP KVM Switches

HP 0x1x8 G3 KVM Console Switch AF651A

HP 0x2x16 G3 KVM Console Switch AF652A

HP TAA 0x2x16 G3 KVM Console Switch AF653A

HP USB Remote Access Key for G3 KVM Console Switches AF650A

HP KVM Console USB Interface Adapter AF628A

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software AF618A

HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software AF619A

HP KVM Console USB 2.0 Virtual Media CAC Interface Adapter AF629A

HP 1x4 USB/PS2 KVM Console Switch AF611A

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

HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software AF622A

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

#### HP USB Keyboard and Mouse

HP USB BFR with PVC Free US Keyboard/Mouse Kit 631341-B21

HP USB BFR with PVC Free Intl Keyboard/Mouse Kit 672097-B33

HP 1U INT Rackmount Keyboard with USB AG086A

HP 1U US Rackmount Keyboard with USB AG072A

**NOTE:** Please see the [HP USB Keyboard and Mouse QuickSpecs](#) for information on additional options and product specifications.

#### Rail Kits

HP 1U Small Form Factor Easy Install Rail Kit 734807-B21

HP 1U Cable Management Arm for Easy Install Rail Kit 734811-B21

HP 1U Short Friction Rail Kit 775612-B21

#### HP Other Options

HP Rack LED Light Kit BW939A

HP Kit LCD 1.83m Latch Display Port Cable G7T29A

HP Advanced Power Manager Kit 741192-B21

HP ConvergedSystem Door Branding Kit TK815A

HP ConvergedSystem Rack Light Kit TK816A

HP ConvergedSystem Rack Side Panel 1075mm Kit TK817A

#### HP Uninterruptible HP DirectFlow Three Phase UPS



### Additional Options

#### Power Systems (UPS)

##### Power Unit (1U UPS)

HP R12000 DirectFlow - 1U Rackmount Uninterruptible Power System	G9Y75A
HP R12000 DirectFlow - POD 1U Rackmount Uninterruptible Power System	AF478A
HP RP12000/3 12000VA Three Phase INTL 6U Rackmount Uninterruptible Power System	AF437A

##### Input/Output Module Options for 1U UPS

HP 32A 400-415 Volt Three Phase INTL R12000 DirectFlow UPS IEC309 Input/Output Module	AF488A
HP 30A 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
HP 32A 380 Volt Three Phase China R12000 DirectFlow UPS Unterminated Input/Output Module	AF490A
HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS L22-30 Input/Output Module	AF491A
HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	AF492A
HP 30A 400-415 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	G9Y76A
HP DirectFlow UPS Management Card	AF493A

##### Power Unit (2U UPS)

HP R18000 DirectFlow - 2U Rackmount Uninterruptible Power System	AF479A
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##### Input/Output Module Options for 2U UPS

HP 32A 400-415 Volt Three Phase INTL R18000 DirectFlow UPS IEC309 Input/Output Module	AF483A
HP 30A 380 Volt Three Phase China R18000 DirectFlow UPS Unterminated Input/Output Module	AF485A
HP 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF486A
HP 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF487A
HP 30A 400 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	D9Q02A
HP 30A 400-415V Three Phase NA R18000 DirectFlow UPS 1:1 IEC309 Input/Output Module	AF484A

**NOTE:** All Input/Output Modules support dual output outlets except the AF484A.

##### Battery Pack Options

HP DirectFlow UPS - 1U Rackmount Lithium-ion Battery Pack	AF480A
HP DirectFlow UPS - 3U Rackmount VRLA Battery Pack	AF482A
HP WW DirectFlow Secondary Battery Cable	AF497A

**NOTE:** Please see the [HP DirectFlow Three Phase Uninterruptible Power System QuickSpecs](#) for information on additional options and product specifications.

##### HP Tower UPS

##### HP T750 G4 UPS Models

HP T750 G4 NA/JP Uninterruptible Power System	J2P85A
HP T750 G4 INTL Uninterruptible Power System	J2P88A

##### HP T1000 G4 UPS Models

HP T1000 G4 NA/JP Uninterruptible Power System	J2P86A
HP T1000 G4 INTL Uninterruptible Power System	J2P89A

##### HP T1500 G4 UPS Models

HP T1500 G4 NA/JP Uninterruptible Power System	J2P87A
HP T1500 G4 INTL Uninterruptible Power System	J2P90A

##### HP Rack/Tower UPS

### Additional Options

#### HP R/T2200 G4 UPS Models

HP R/T2200 G4 NA/JP Uninterruptible Power System J2R00A

#### HP R/T3000 G4 UPS Models

HP R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System J2R01A

HP R/T3000 G4 High Voltage NA/JP Uninterruptible Power System J2R02A

HP R/T3000 G4 High Voltage INTL Uninterruptible Power System J2R04A

#### HP R/T3000 G2 Uninterruptible Power System (UPS)

HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System AF466A

HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System AF467A

#### R1500 G4 Models

HP R1500 G4 NA Uninterruptible Power System J2Q99A

HP R1500 G4 JP/TWN Uninterruptible Power System J2R05A

HP R1500 G4 INTL Uninterruptible Power System J2R03A

#### R7000 Uninterruptible Power System (UPS)

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

HP R7000 4U IEC-32A High Voltage INTL Uninterruptible Power System AF463A

#### R5000 Uninterruptible Power System (UPS)

HP R5000 3U L630 High Voltage NA/JP Uninterruptible Power System AF460A

HP R5000 3U IEC309-32A High Voltage INTL Uninterruptible Power System AF461A

#### HP UPS Options

HP R/T2200 G4 Extended Runtime Module J2R09A

HP R/T3000 G4 Extended Runtime Module J2R10A

HP 2U Rack/Tower UPS Shipping Kit L4Q11A

**NOTE:** Please see the [HP Line Interactive Single Phase UPS QuickSpecs](#) for information on additional options and product specifications.

**NOTE:** To learn more, please visit the [HP Uninterruptible Power Systems \(UPS\) web page](#).

### HP USB and SD Options

#### HP Enterprise Mainstream Flash Media Kits for Memory Cards

HP 8GB microSD Enterprise Mainstream Flash Media Kit 726116-B21

HP Dual 8GB microSD Enterprise Midline USB Kit 741279-B21

HP DL160 Gen9 Front USB 3.0 Enablement Kit 725594-B21

**NOTE:** This enablement kit is required to enable front 1xUSB3.0 port with 8SFF models.

### 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

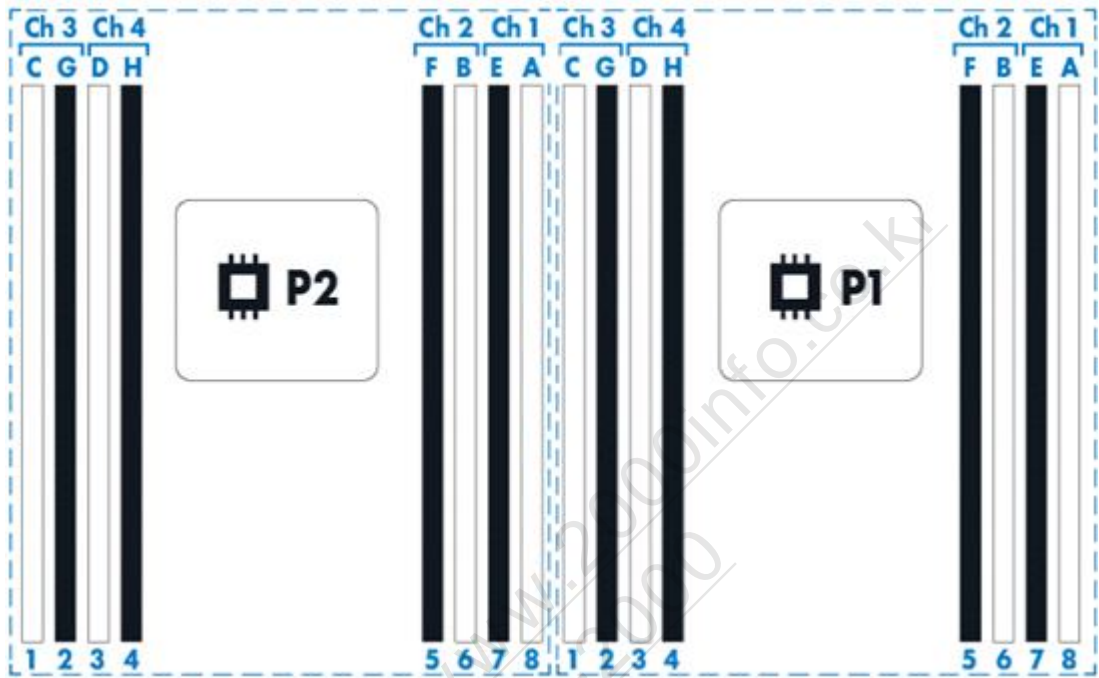
HP Installation ProLiant DL160/DL360e Service U6E11E

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 Gen9 Intel®Xeon®E5-2600v3 Series Processor Family

Memory Bandwidth and Capacity

Memory

[DIMM Type]	Registered Dimms (RDIMMs)			Load Reduced (LRDIMMs)	Unbuffered with DIMMs (UDIMMs)
DIMM Rank	Single Rank		Dual Rank		Quad Rank
DIMM Capacity	4GB	8GB	16GB		32GB
Voltage	Std Voltage 1.2V				
SLOTS THAT CAN BE POPULATED					
16 slot servers	16				
MAXIMUM CAPACITY (GB)					
	64	128	256		512
1 DIMM Per Channel	2133				
2 DIMM Per Channel	2133				

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, CP2-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
	2	G	2	G
	CPU 1		CPU 2	
	Slot #	population order	Slot #	population order
Chnl 4	3	D	3	D
	4	H	4	H
	CPU 1		CPU 2	
	Slot #	population order	Slot #	population order
Chnl 2	5	F	5	F
	6	B	6	B
	CPU 1		CPU 2	
	Slot #	population order	Slot #	population order
Chnl 1	7	E	7	E
	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, E5-2623v3,	1866MHz
E5-2660v3, E5-2650v3, E5-2650Lv3,	2133MHz



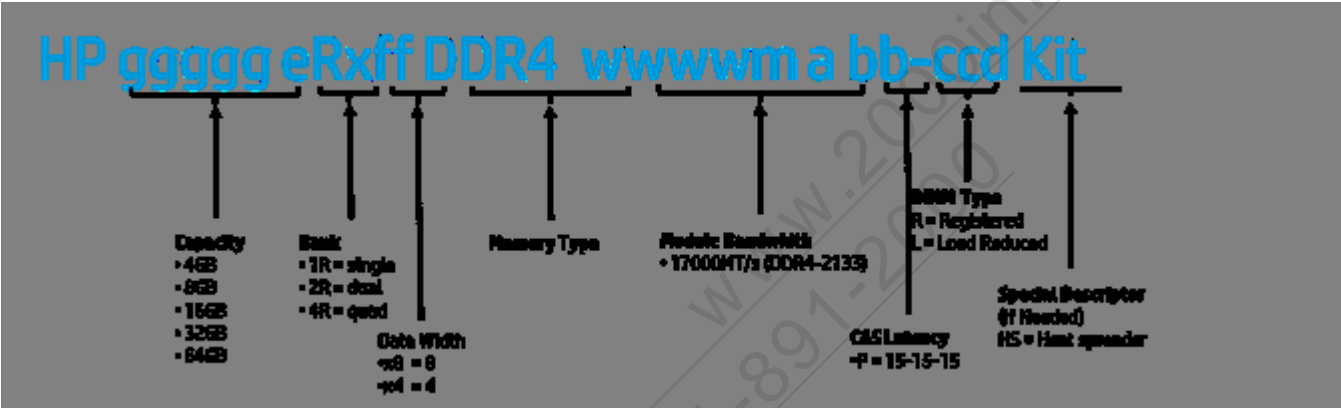
Memory

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)	488GB (15x32GB, 1x8GB)	512GB (16x32GB)
	E5-2609v3,	16GB (2x8GB)	464GB (14x32GB, 2x8GB)	512GB (16x32GB)
	E5-2630v3,	32GB (2x16GB)	480GB (14x32GB, 2x16GB)	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
- 64GB = 65,536MB



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

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Technical Specifications

System Unit	Dimensions	8 SFF - 1.69 x 17.11 x 23.92 inches (4.29 x 43.46 x 60.76 cm)
	(H x W x D)	4 LFF - 1.7 x 17.1 x 23.9 inches (4.29 x 43.46 x 60.76 cm)
Weight	Maximum:	33.04 lb (15kg)
	(approximate)	(all hard drives, power supplies, and processors installed)
	Minimum:	22.03 lb (10kg)
		(one hard drive, power supply, and processor installed)
Input	Rated Line Voltage	100 to 240 VAC
Requirements (for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Input	For 550W Power Supply:
	Current	6.7 A (at 100 VAC)
		3.3 A (at 100 VAC)
	Rated Input	47 to 63 Hz
Frequency	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: <a href="http://www.hp.com/go/proliant-energy-efficient">http://www.hp.com/go/proliant-energy-efficient</a> or <a href="http://www.hp.com/go/hppoweradvisor">http://www.hp.com/go/hppoweradvisor</a> - 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: <a href="http://www.hp.com/servers/ashrae">http://www.hp.com/servers/ashrae</a> .
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: <a href="http://www.hp.com/servers/ashrae">http://www.hp.com/servers/ashrae</a> .		
System performance may be reduced if operating in the extended ambient operating range or with a fan fault.		



Technical Specifications

NOTE: Supports A3 and A4 extended ambient.

Relative Humidity  (non-condensing)	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20° C/hr (36° F/hr).
	Operating	Minimum to be the higher (more moisture) of -12° C (10.4° F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24° C (75.2° F) dew point or 90% relative humidity.
	Non-operating	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.

Technical Specifications

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
	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) PCI Express v 2.0, 5.0 GT/s, two lanes (x2)	
	Data Transfer Method		
	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)

## Technical Specifications

**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.

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### Summary of Changes

Date	Version History	Action	Description of Change
06/01/2015	From Version 6 to 7	Added	New Hard Drives were added to Core Options.  HP OneView LTUs were added to HP Converged Infrastructure Management Software.  New RDX+ external backup options were added.
		Changed	Maximum Internal Storage was revised.
		Removed	Obsolete SKUs were removed from QuickSpecs.
03/30/2015	From Version 5 to 6	Added	New Hard Drives offering.  Optional Software added to HP Storage Controllers.
		Changed	HP Memory, HP Power Supplies, HP Storage Controllers, and HP Disk Storage Systems were revised.
02/09/2015	From Version 4 to 5	Added	Added Network controller, new HP Drives, and new G4 UPS models.
		Changed	HP Drives, HP Tape Backup, HP Disk Backup, HP Rack Mount Consoles, KVM Switches, and Keyboards, HP Uninterruptible Power Systems (UPS), HP Networking, and HP Power Distribution Units (PDUs) sections were revised.
12/01/2014	From Version 3 to 4	Changed	Changes made throughout the entire QuickSpecs.
10/13/2014	From Version 2 to 3	Added	6G SATA Enterprise Value G1 Solid State Drives were added to the Core Option section.  HP PCIe Workload Accelerator Options and HP USB and SD options were added to the Additional Options section.
		Changed	Standard Features and Optional Features sections were revised.
9/19/2014	From Version 1 to 2	Changed	Changes made throughout the entire QuickSpecs.



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



Summary of Changes

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