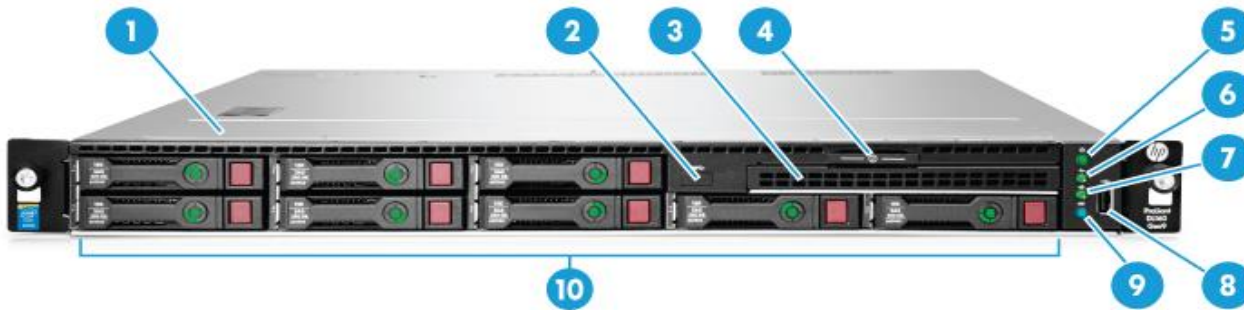


### Overview

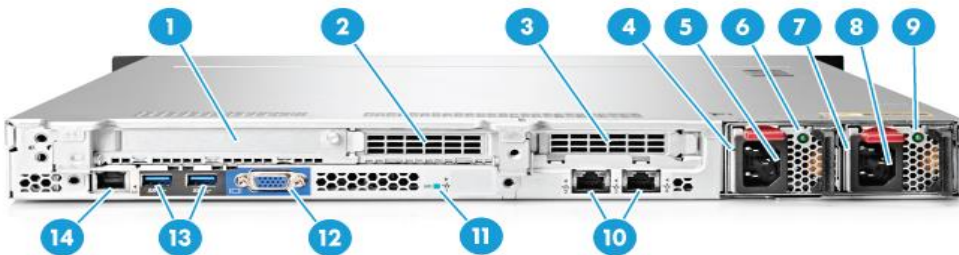
### HP ProLiant DL160 Generation9 (Gen9)

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

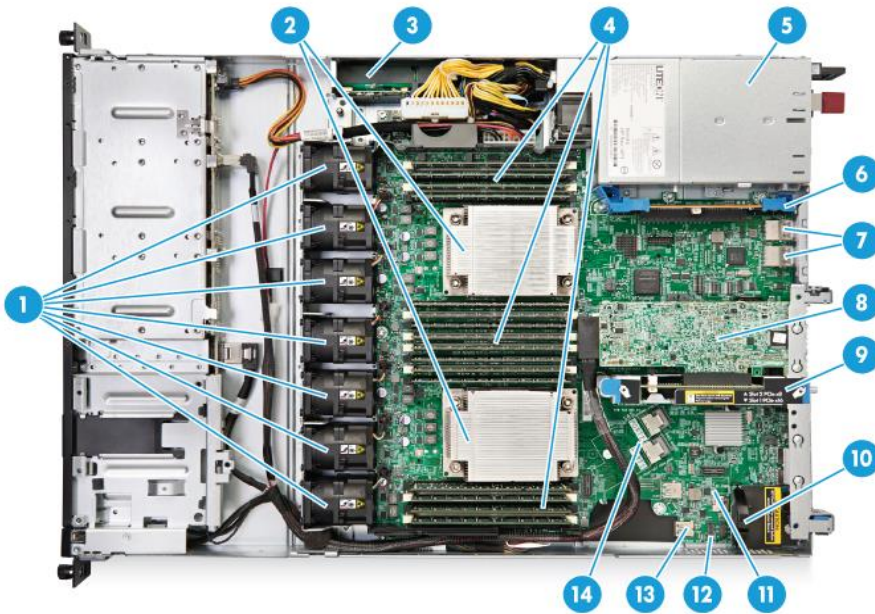


#### Rear view

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. Video Connector
14. Video Connector

### Overview

- 13. USB3.0 connectors
- 14. Dedicated iLO connector (optional)



### 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>.

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

Processor	Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
One of the following depending on model	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**  
One of the following depending on model

Intel® C610 Series Chipset  
Intel® E5-2600v3 Processor Family

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

**On System Management Chipset**  
One of the following depending on model

HP iLO (Firmware HP iLO4 2.0) 2GB NAND

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

**Memory**  
One of the following depending on model

Type:  
HP SmartMemory  
DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)

DIMM Slots Available 16 (8 DIMM slots per processor, 4 channels per processor, 2 DIMMs per channel)

Maximum Capacity (LRDIMM) 512GB (16 x 32GB LRDIMM @2133MHz)

Maximum Capacity (RDIMM) 256GB (16 x 16GB RDIMM @2133MHz)

**Memory Protection**  
One of the following depending on model

Advanced ECC  
Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.

Online spare  
Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Expansion Slots	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	
<b>NOTE:</b> Bus Width data indicates the number of physical electrical lanes running to the connector.								
CPU 1 FlexibleLOM riser slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
	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
<b>NOTE:</b> This riser is mandatory for installing flexibleLOMs.								

### Standard Features

CPU2 riser PCIe slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
3	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	Entry Models	HP Dynamic Smart Array B140i Controller
One of the following depending on model		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.

Internal Storage Devices	Optical Drives	Optional: DVD-ROM, DVD-RW
One of the following depending on model	Hard Drives	None ship standard
	Hard Drive Bays	8 SFF drive bays total with Optical Bay 4 LFF drive bays total with Optical bay

**NOTE:** HP ProLiant DL160 Gen9 server offers both SFF and LFF versions in CTO. The Optical Drive bay is available with both models.  
**NOTE:** Drive cage changes are not supported.  
**NOTE:** All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen9 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen9 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

Maximum Internal Storage	CAPACITY	CONFIGURATION
One of the following depending on model	Hot Plug SFF SAS	8 x 1.2TB
	Hot Plug SFF SATA	8 x 1TB
	Hot Plug LFF SAS	4 x 6TB
	Hot Plug LFF SATA	4 x 6TB
	Hot Plug SFF SAS SSD	8 x 1.6TB
	Hot Plug SFF SATA SSD	8 x 1.6TB
	Hot Plug LFF SATA SSD	4 x 1.6TB

Power Supply	HP 550W FIO Power Supply
One of the following depending on model	HP 800W/900W Gold AC Power Input Module

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.

The HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input Module with Power Backplane can be configured to support power redundancy in ProLiant servers that offer only a single power supply bay, providing additional protection against power loss. With an 80 Plus Gold power efficiency rating (up to 92%), this power

### Standard Features

option helps to reduce operating expenses while protecting against trapped power capacity in the data center. Each power backplane option can support up to two (2) hot-plug AC power input modules.

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

One of the following depending on model

1P model

#### Non-redundant

3 fans

#### Redundant

4 fans

2P model

#### Non-redundant

6 fans

#### Redundant

7 fans

**NOTE:** Redundant fan option kit (PN: 725587-B21) can be bought separately if redundancy is required with 1P or 2P configurations.

**NOTE:** Additional fans required with 2P configurations are included in "-B21" processor option kits.

#### Interfaces

Video

1 (Vaux Support)

HP iLO Remote Management Network Port

1 GbE (Optional)

USB

4 USB ports (standard); 1 (optional)  
Front: 1xUSB 2.0 std; 1xUSB3.0 optional (with 8SFF models only)  
Rear: 2xUSB 3.0  
Internal: 1xUSB 3.0

Micro SD Slot

1 Micro SD

**NOTE:** The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.

LOM Network Ports

2x1GbE network ports

#### Operating Systems and Virtualization Software Support for ProLiant Servers

[Microsoft Windows Server](#)

[Red Hat Enterprise Linux \(RHEL\)](#)

[SUSE Linux Enterprise Server \(SLES\)](#)

[Oracle Solaris](#)

[VMware](#)

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

#### Upgradeability

One of the following depending on model

Upgradeable to two processors (24 cores)

Up to 16 DIMM slots available

**NOTE:** To take advantage of all 16 DIMMs, second processor must be installed.

FlexibleLOM slot for 1Gigabit or 10 Gigabit Ethernet or QDR/FDR InfiniBand networking options

Optional 2nd CPU riser slot (x16, low profile)

**NOTE:** 2nd CPU must be installed if this riser is configured.

Up to 8 SFF Hard Drive Bays; or 4 LFF Hard Drive Bays

Redundant Power Supply

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

### Standard Features

USB 3.0 Support  
ASHRAE A3/A4  
**NOTE:** Supports A3/A4 extended ambient temperature.  
**NOTE:** Refer to technical specifications section for more details.

**Graphics** Integrated Matrox G200eH2 video standard

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

**HP Server  
UEFI/Legacy ROM**

**HP Server UEFI /Legacy ROM**  
Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HP ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.  
**NOTE:** The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hp.com/go/proliantuefi/docs>.  
UEFI enables numerous new capabilities specific to HP ProLiant servers such as:

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

**For more information please visit** <http://www.hp.com/go/proliant/uefi>.  
**NOTE:** For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.  
**NOTE:** HP UEFI FIO 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  
depending on model 8SFF and 4LFF version:  
1.7" (4.4cm) Height x 17.1" (43.5cm) Width x 23.9" (60.8cm) Length

**Embedded  
Management**

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

**UEFI** Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at <http://www.hp.com/go/ProLiant/uefi>.

**HP RESTful API** RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server: Learn more at <http://www.hp.com/go/restfulapi>.

**Intelligent Provisioning** Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at <http://www.hp.com/go/intelligentprovisioning>.

**Embedded Remote Support** HP's embedded remote support, when used with Insight Online direct connect or HP Insight Remote Support, allows HP ProLiant servers to transmit hardware events directly to HP or an HP Authorized Partner for automated phone home support. Learn more at <http://www.hp.com/go/insightonline/info>.

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

### Standard Features

<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>HP OneView Standard</b>	HP OneView Standard can inventory, monitor, alert, and report on your G6, G7, Gen8, and Gen9 servers, while using the HP OneView user interface. Annual support is optionally available. Learn more at <a href="http://www.hp.com/go/oneview">http://www.hp.com/go/oneview</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> .

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<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: <a href="http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html">http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html</a>.</p>
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### Optional Features

#### Embedded Management

##### iLO Essentials

HP iLO Essentials is the preferred license for small and medium business that offers full remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HP iLO Essentials at <http://www.hp.com/go/iLO/essentials>.

##### iLO Scale-Out

HP iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments. 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 <http://www.hp.com/go/iLO/scale-out>.

##### iLO Advanced

HP iLO Advanced licenses offer smart remote functionality without compromise, for all HP ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HP iLO Advanced at <http://www.hp.com/go/ioloadvanced>.

#### Server Management

##### HP Insight Control

HP Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see <http://www.hp.com/go/insightcontrol>.

##### HP OneView Advanced

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

#### Rack and Power Infrastructure

HP Rack and Power Infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HP Rack and Power infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PODs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, HP is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at [HP Rack and Power Infrastructure](#).

#### High Performance Clusters

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

#### HPC Interconnects

**NOTE:** High Performance Computing (HPC) interconnect technologies are available for this server under the HP Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand Interconnects: <http://www.hp.com/techservers/clusters/ucp/index.html>.

#### Storage Software

Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities. Storage software that gets the job done:

- **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



### Optional Features

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>.

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#### 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>.

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### Service and Support

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**HP Technology Services** HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

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**Protect your business beyond warranty with HP Care Pack Services** HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

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**Optimized Support recommendation** **HP Proactive Care – 24x7 coverage, four hour response, three year Care Pack Service**  
Prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. Includes enhanced escalation management. Provides collaborative software call management with two hour call back to reduce troubleshooting on industry leading software.

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

**HP ProLiant Server Hardware Installation**

Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

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**Standard Support recommendation** **HP Foundation Care - 24x7 coverage, three year Care Pack Service**  
Connect to HP for faster problem resolution. Foundation Care provides hardware onsite response within four hours if needed and collaborative software call management with two hour callback for industry leading third party software. Simplify your support experience and make HP your first call for hardware or software questions. <http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

**HP ProLiant Hardware Installation**

Help ensure your new HP ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

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**Related Services** **Data Center Platform Consulting Services**  
These services help modernize key systems and leverage new technology to support a changing business climate and prepare you for the new style of IT. HP understands the needs of the data center of the future and will serve as your guide for the journey. <http://www.hp.com/services/consulting>

**Data Privacy Services**

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

**Factory Express for Servers and storage**

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

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

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**Parts and Materials** HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

### Pre-configured Models

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

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
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
<b>Model Name</b>	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
<b>Processor</b>	Intel® Xeon® E5-2603v3		Intel® Xeon® E5-2609v3	Intel® Xeon® E5-2630v3
<b>Number of Processors</b>	One			
<b>Memory</b>	8GB (1x8GB Registered DIMMs, 2133 MHz) <b>NOTE:</b> Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.		16GB (2x8GB Registered DIMMs, 2133 MHz) <b>NOTE:</b> Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.	32GB (2x16GB Registered DIMMs, 2133 MHz)
<b>Network Controller</b>	HP Embedded Dual Port 361i Adapter Network Interface			
<b>Storage Controller</b>	HP Dynamic Smart Array B140i	HP H240 FIO Smart Host Bus Adapter		HP Flexible Smart Array P440/4G FIO Controller
<b>Hard Drive</b>	None ship standard			
<b>Internal Storage</b>	4 LFF HDD Bays	8 SFF HDD Bays		
<b>Optical Drive Bay</b>	1; (Optional: DVD-ROM, DVD-RW)			
<b>Optical Drive</b>	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)			
<b>PCI-Express Slots</b>	2 Standard (1-FH/HL, 1-LP) PCIe 3.0			3 Standard (1-FH/HL, 2-LP) PCIe 3.0
<b>Power Supply</b>	(1) HP 550W FIO Power Supply			HP 800W Redundant Power Supply
<b>Fans</b>	3 hot swap fans, non redundant		4 hot swap fans, redundant	7 hot swap fans, redundant
<b>Management</b>	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)			
<b>Energy Star</b>				Meets Energy Star requirements
<b>Form Factor</b>	Rack (1U), HP Easy Install Rails			
<b>Warranty</b>	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.			

<b>Country Code Key</b>	xx1 = B21	Worldwide
	xx1 = 291	Japan
	xx1 = AA1	PRC

### Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

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

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

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

### Configuration Information - Factory Integrated Models

- 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: <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 Flexible LOM

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.

## Configuration Information - Factory Integrated Models

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

### Core Options

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

<b>HP Unique Options</b>	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 and 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

#### Entry Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	733943-B21
HP DL160 Gen9 Intel® Xeon® E5-2609v3 (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

#### Base Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	733935-B21
HP DL160 Gen9 Intel® Xeon® E5-2640v3 (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

#### Performance Processors - E5-2600v3 series Processors

HP DL160 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	733931-B21
HP DL160 Gen9 Intel® Xeon® E5-2660v3 (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

### 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

#### 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 Optical Drives

HP 9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
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### Core Options

HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive 726537-B21

#### HP Drives

##### **SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives**

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive 718162-B21

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652589-B21

HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 759212-B21

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652583-B21

HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 759210-B21

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652572-B21

HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 759208-B21

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652564-B21

HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652605-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

##### **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**

HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 761477-B21

HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 695510-B21

HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652766-B21

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652757-B21

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652753-B21

##### **SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives**

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655710-B21

HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655708-B21

##### **SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives**

HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 753874-B21

HP 4TB 6G SATA 7.2k rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 693687-B21

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 628061-B21

HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 658079-B21

HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 657750-B21

HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 658071-B21

##### **SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives**

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive 628065-B21

HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive 659339-B21

HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive 659337-B21

HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive 659341-B21

##### **12G SAS Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives**

HP 800GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive 741159-B21

HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive 741155-B21

HP 200GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive 741151-B21

##### **12G SAS Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives**

HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive 741146-B21



### Core Options

HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741142-B21
HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741138-B21
<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 (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

### Core Options

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 (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>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

### HP Networking

<b>1 Gigabit Ethernet adapters</b>	
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
<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
<b>NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.</b>	
<b>NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. See cables/options below.</b>	
<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

### Core Options

**NOTE:** FlexibleLOM riser kit (P/N: 781844-B21) is required when any flexibleLOM is selected.  
**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
<http://www.hp.com/go/ProLiantNICs>.

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<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

**NOTE:** Please see the QuickSpecs for additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13078\\_div/13078\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html)

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<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 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 FlexibleLOM Enablement Kit	781844-B21
	<b>NOTE:</b> This enablement kit is required when flexibleLOM is selected.	

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<b>HP Power Supplies</b>	<b>HP Entry-Level Power Supplies</b>	
	HP 550W FIO Power Supply Kit	730941-B21
	HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input Module	744689-B21
	HP Server Redundant Power Supply Backplane Kit	745813-B21
	<b>NOTE:</b> Backplane kit is required when 800W/ 900W power supply is selected.	
	<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> .	

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<b>HP Cooling Options</b>	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 an HP approved configurator. Contact your local sales representative for additional information.

<b>HP Insight Software</b>	<b>HP Insight Control</b>	
	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
	<b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.	
	<b>NOTE:</b> 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.	
	<b>NOTE:</b> Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/insightupdates">http://www.hp.com/go/insightupdates</a> .	
	<b>NOTE:</b> For additional license options please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html">http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html</a> .	

<b>Embedded Management</b>	<b>HP iLO Advanced</b>	
	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
	<b>HP iLO Essentials</b>	
	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
	<b>HP iLO Scale-out</b>	
	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

<b>HP Converged Infrastructure Management Software</b>	<b>HP OneView Advanced (with HP iLO Advanced)</b>	
	HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y34A
	HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU	E5Y35AAE
	HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	E5Y43A
	HP OneView incl 3yr 24x7 Supp Bundle 1 Svr E-LTU	E5Y43AAE
	<b>HP OneView Advanced (without HP iLO Advanced)</b>	
	HP OneView w/o iLO Adv incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y38A

### Additional Options

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

**NOTE:** These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media BD477A

**NOTE:** For additional license kits please see the QuickSpecs at: [http://h18004.www1.hp.com/products/quickspecs/12612\\_div/12612\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html).

#### 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).

#### HP Security

HP 1U Security Bezel Kit 664918-B21

**NOTE:** 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

**NOTE:** Quick Release Ear option kit is required for installing security bezel.

HP Trusted Platform Module Option 488069-B21

**NOTE:** The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: <http://www.hp.com/go/TPM>.

**NOTE:** ProLiant OS pre-installed units will come with the partition required for TPM deployment.

**NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

### Additional Options

#### HP Storage Controllers

##### SAS Controllers

##### HP Smart Array Controllers

HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller 726821-B21

HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller 726825-B21

HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller 761872-B21

**NOTE:** Includes the HP Smart Storage Battery

##### HP Smart Host Bus Adapters

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

##### HP Cable Options

HP DL160 Gen9 4LFF Smart Array H240 SAS Cable Kit 725590-B21

HP DL160 Gen9 8SFF Smart Array H240 SAS Cable Kit 774621-B21

HP DL160 Gen9 4LFF Smart Array P440 SAS Cable Kit 725593-B21

HP DL160 Gen9 8SFF Smart Array P440 SAS Cable Kit 774619-B21

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

**NOTE:** 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.

**NOTE:** 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.

**NOTE:** NHP server chassis (Mod-x) includes SATA cables required to connect drives to embedded B140i SATA controller.

##### Optional Upgrades

HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers 727258-B21

**NOTE:** This option is mandatorily required with HP Smart Array controllers. One server can accommodate only 1 Smart Storage Battery that would suffice the requirement of all HP Smart Array controllers.

#### HP Tape Backup

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

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

##### Tape Drives

##### SAS Rack-Mount Tape Solutions

HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit COL99A

HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount EJ014B

HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount EJ013B

HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit EH946C

HP StoreEver 1U SAS Rack-mount Kit AE459B

HP MSL Library Extender Kit AQ746A

##### HP DAT Autoloader

HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader COH19A

##### HP MSL2024 Tape Library

HP MSL2024 0-Drive Tape Library AK379A

##### HP MSL4048 Tape Library

HP MSL4048 0-Drive Tape Library AK381A

##### HP StoreEver MSL6480

HP StoreEver MSL6480 Scaleable Expansion Module QU626A

HP StoreEver MSL6480 Scalable Base Module QU625A

### Additional Options

#### HP Disk Storage Systems

#### Disk Enclosures

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

#### HP Data Center Racks

#### HP 11000 G2 Series Racks

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

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 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 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit	AF511A
HP 22kVA 32A Three Phase INTL Core Modular Power Distribution Unit	AF518A
HP 3.6kVA 200-240 Volt Detachable C20 Input ( 12xC13) WW Basic PDU	H5M56A

### Additional Options

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 7.3kVA 230 Volt IEC309 32A Input (24xC13/6xC19) INTL Basic PDU	H5M70A

**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 (16xC13) WW Monitored PDU	D9N45A
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 7.3kVA 230 Volt IEC309 32A Input (32xC13/4xC19) INTL Monitored PDU	D9N50A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (18xC13/3xC19) INTL Monitored PDU	D9N55A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N57A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A
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

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

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

HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A

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

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

#### Rail Kits

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

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

#### HP Rack Mount Consoles

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor	AZ884A

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

#### HP KVM Switches

HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 1x4 USB/PS2 KVM Console Switch	AF611A

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

#### HP USB Keyboard and Mouse

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

HP USB BFR with PVC Free Intl Keyboard/Mouse Kit 672097-B33  
**NOTE:** Please see the [HP USB Keyboard and Mouse QuickSpecs](#) for information on additional options and product specifications.

**HP Uninterruptible Power Systems (UPS)**     **HP Rack-mountable UPS**

HP R1.5kVA G3 1U INTL Uninterruptible Power System	AF471A
HP R1.5kVA G3 1U JP/TW Uninterruptible Power System	AF470A
HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System	AF468A
HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System	AF463A

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

**HP USB and SD Options**

HP 8GB microSD Enterprise Mainstream Flash Media Kit	726116-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

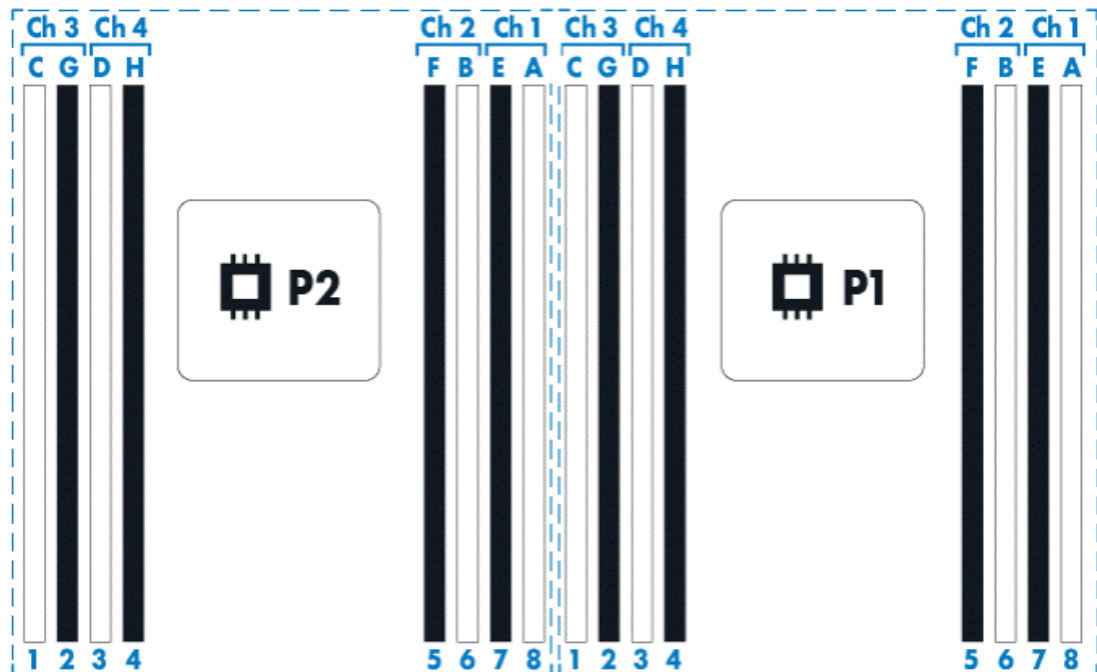
**Installation & Start-up Services**

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					
[DIMM Type]	Registered Dimms (RDIMMs)			Load Reduced (LRDIMMs)	Unbuffered with ECC 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					

### Memory

16 slot servers	16			
<b>MAXIMUM CAPACITY (GB)</b>				
	64	128	256	512
<b>1 DIMM Per Channel</b>	2133			
<b>2 DIMM Per Channel</b>	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, CPU2-C

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

	CPU 1		CPU 2	
	Slot #	population order	Slot #	population order
Chnl 3	1	C	1	C
	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

#### Standard and Maximum Memory Capacity (Pre-configured Models)

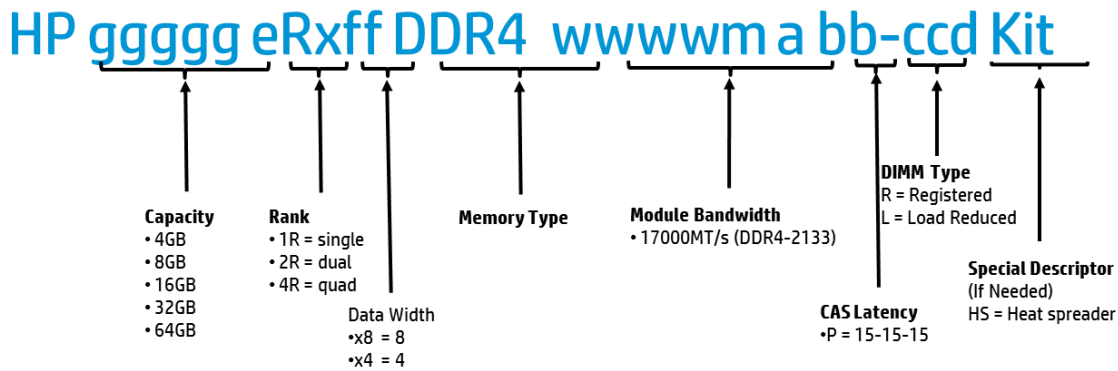
Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
E5-2603v3,	8GB (1x8GB)	248GB (15x16GB, 1x8GB)	512GB (16x32GB)
E5-2609v3,	16GB (2x8GB)	240GB (14x16GB, 2x8GB)	512GB (16x32GB)
E5-2630v3,	32GB (2x16GB)	256GB (14x16GB, 2x16GB)	512GB (16x32GB)

### Memory

#### 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

### Technical Specifications

<b>System Unit</b>	<b>Dimensions</b> (H x W x D)	8 SFF - 1.69 x 17.11 x 23.92 inches (4.29 x 43.46 x 60.76 cm) 4 LFF - 1.7 x 17.1 x 23.9 inches (4.29 x 43.46 x 60.76 cm)
	<b>Weight</b> (approximate)	Maximum: 33.04 lb (15kg) (all hard drives, power supplies, and processors installed) Minimum: 22.03 lb (10kg) (one hard drive, power supply, and processor installed)
Input Requirements for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Line Voltage	100 to 240 VAC
	Rated Input Current	For 550W Power Supply: 6.7 A (at 100 VAC) 3.3 A (at 200 VAC)
	Rated Input Frequency	47 to 63 Hz
	Rated Input Power	For 550 W Power Supply: < 670 W (at 100 VAC), < 660 W (at 200 VAC),
<b>BTU Rating</b>	Maximum	For 550 W Power Supply: 2201 BTU/hr (at 100 VAC), 2153 BTU/hr (at 200 VAC)
<b>Power Specifications</b>	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.	
<b>Power Supply Output</b>	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),
<b>System Inlet Temperature</b>	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> .
<p>For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: <a href="http://www.hp.com/servers/ashrae">http://www.hp.com/servers/ashrae</a>.</p> <p>System performance may be reduced if operating in the extended ambient operating range or with a fan fault.</p>		

### Technical Specifications

	Non-operating	<b>NOTE:</b> Supports A3 and A4 extended ambient. -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
<b>Relative Humidity</b>	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
(non-condensing)	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
<b>Altitude</b>	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).
<b>Acoustic Noise</b>	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).	
	<b>Idle</b>	
	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
	<b>Operating</b>	
	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
<b>Emissions Classification</b> (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.

<b>HP Dynamic Smart Array B140i Controller</b>	<b>Number of PCI links</b>	Four
	<b>PCI link rate</b>	4 Gb/s
	<b>Storage protocol support</b>	SATA
	<b>SAS/SATA peak data transfer rate</b>	6 Gb/s
	<b>Number of SAS/SATA links</b>	10 links
	<b>SAS/SATA connectivity</b>	2x4 connectors; 2x1 connectors
	<b>Expander support</b>	No
	<b>Drives supported (max)</b>	Up to 10 Internal Drives
	<b>RAID support</b>	0, 1, 10, 5 SATA

### Technical Specifications

<b>Software management</b>	HP SSA, SMH, SIM
<b>Warranty</b>	Server warranty
<b>HP Secure Encryption license</b>	Not Supported
<b>HP SmartCache License</b>	Not Supported
<b>HP Smart Storage Administrator</b>	Supported

<b>HP Embedded Dual Port 361i Adapter</b>	<b>Network Interface</b>	10Base-T/100Base-TX/1000Base-TX	
	<b>Compatibility</b>	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)	
	<b>Ports</b>		
	<b>Data Transfer Method</b>	PCI Express v 2.0, 5.0 GT/s, two lanes (x2)	
	<b>Controller</b>	Intel I350 Powerville	
	<b>Network Transfer Rate</b>	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
<b>Connector</b>	Two RJ-45		
<b>Cable Support</b>	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)	

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hp.com/qref/dl160gen9



### Summary of Changes

Date	Version History	Action	Description of Change
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