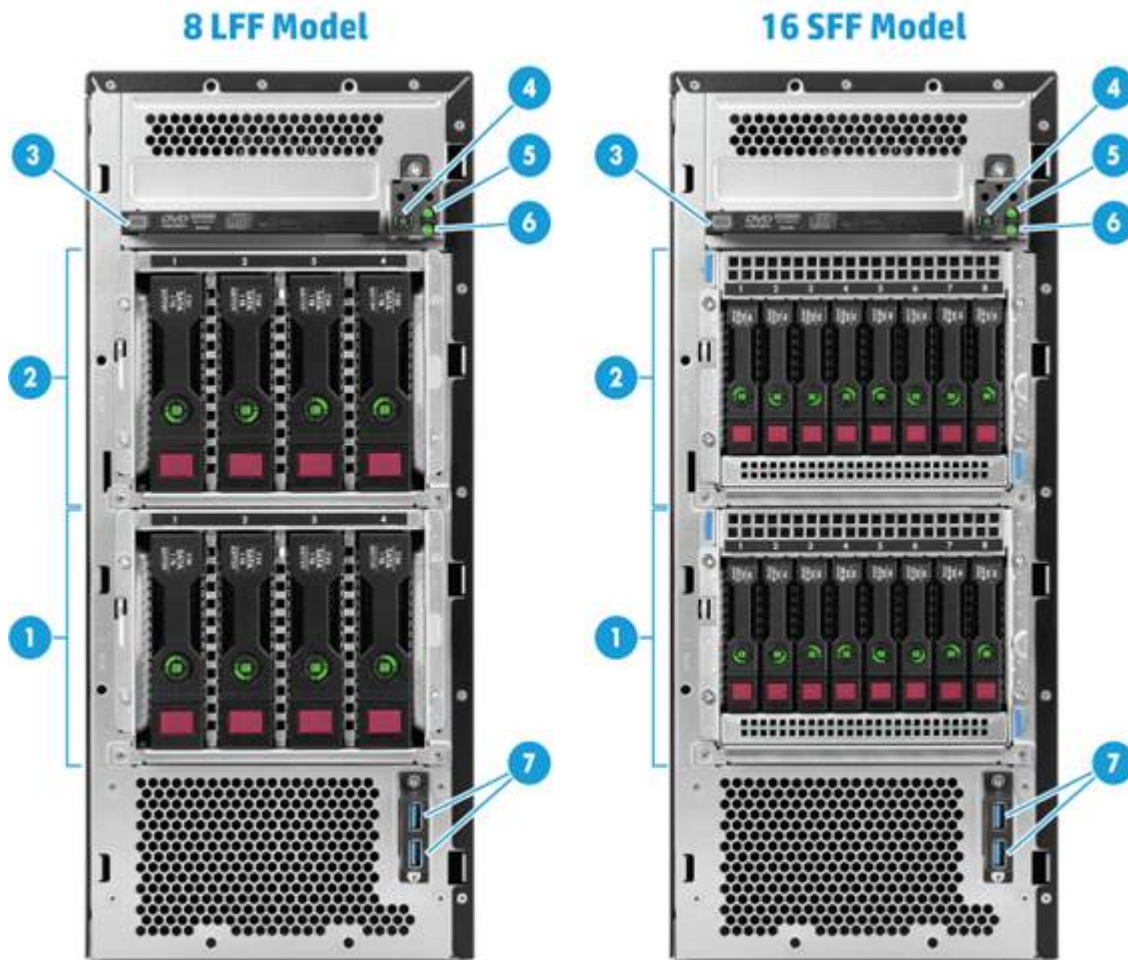


Overview

HP ProLiant ML110 Generation 9 (Gen9)

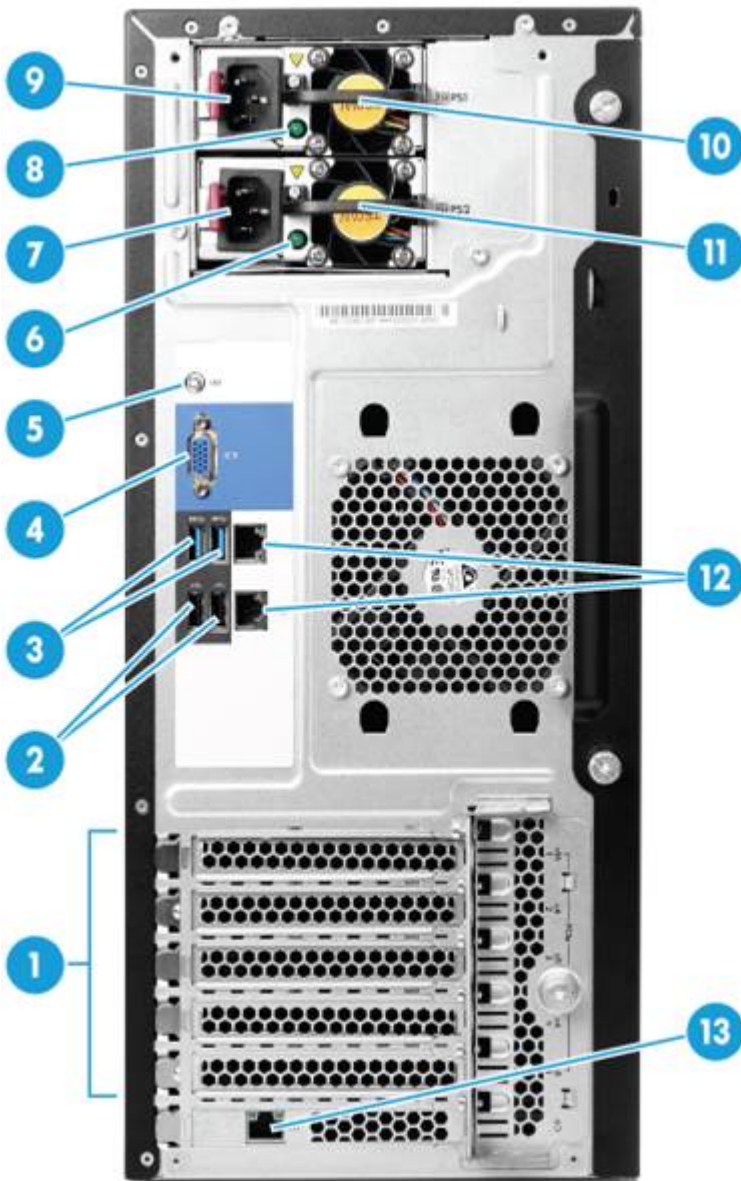
The HP ProLiant ML110 Gen9 Server is a 1P/ 4.5U affordable single-socket tower server featuring better performance, expansion, and growth than previous 1P single-socket tower models. Designed to meet small and midsized businesses' performance compute demands the ML110 Gen9 delivers exceptional value at an affordable price.



Front View (details for 8LFF and 16SFF)

1. Drive cage
2. Drive cage
3. Optical drive (optional)
4. Power button/LED
5. Health LED
6. NIC status LED
7. USB 3.0 (2) connectors

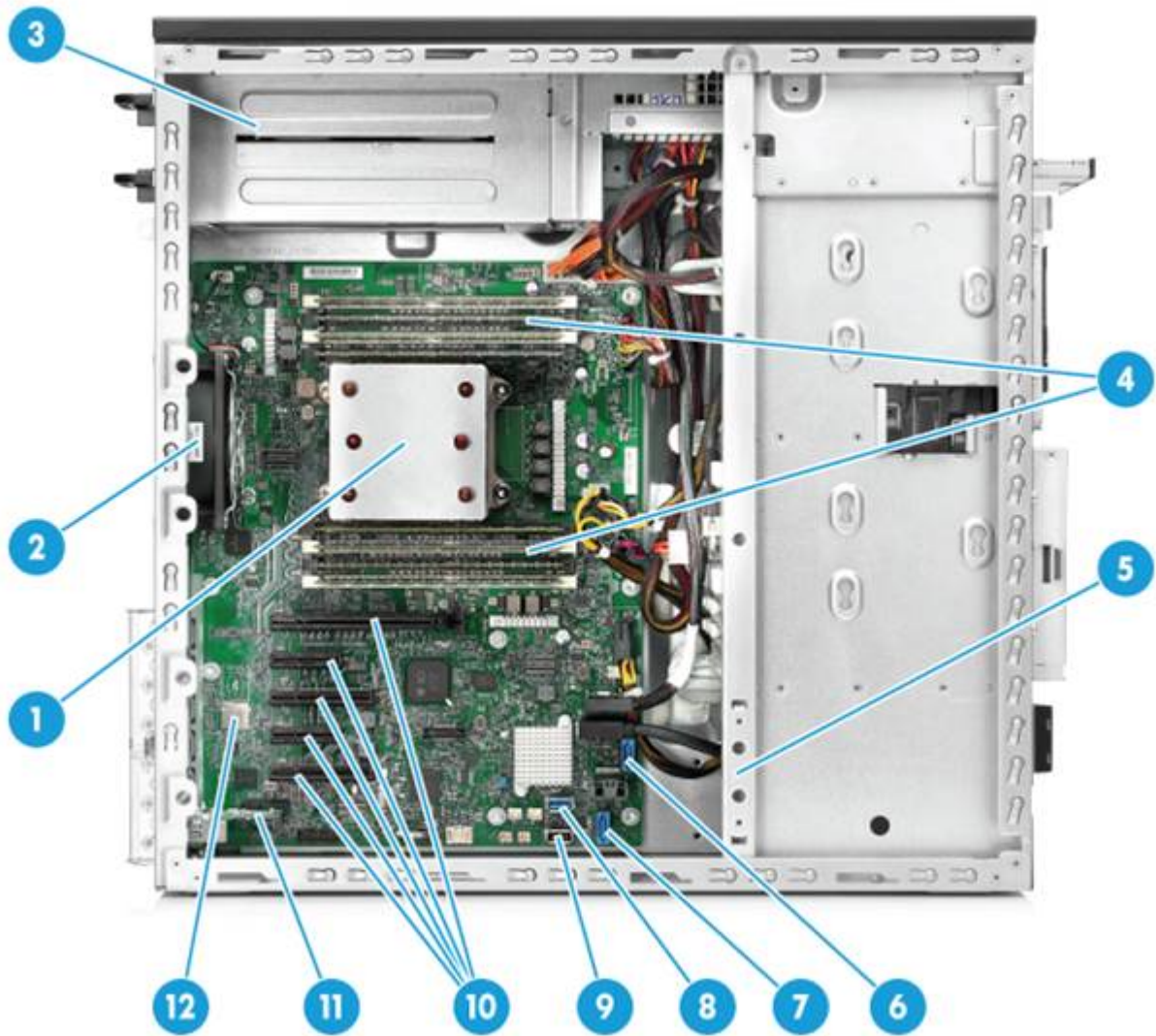
Overview



Rear View

1. PCIe3 Slots (Slots 1-5)
2. USB 2.0 (2) connectors
3. USB 3.0 (2) connectors
4. Video connector
5. UID button/LED
6. Power supply 2 LED
7. Power supply 2 power connection
8. Power supply 1 LED
9. Power supply 1 power connection
10. Power Supply 1 bay
11. Power Supply 2 bay
12. Network RJ-45 ports (2)
13. HP ML Gen9 dedicated iLO port kit (optional)

Overview



Internal View

1. One (1) processor and heatsink with HP Smart Socket Guide
2. System Fan (92x32mm default), upgrade system fan(92x38mm) is required for 140W E5-1600v3 Processor and SAS SSD
3. Power Supply backplane cage
4. Eight (8) DDR4 DIMM slots
5. PCIe fan (option required to support PCIe expansion cards)
6. Front USB 3.0 connector
7. SATA connector 1
8. Internal USB 3.0 connector
9. Internal USB 2.0 connector
10. Five (5) PCIe3 expansion slots
11. Dedicated iLO module slot (optional)
12. MicroSD slot

Standard Features

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

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
	E5-2640v3	2.6GHz	8	20MB	90W	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
	E5-1650v3	3.5GHz	6	15MB	140W	0.0GT/s	2133
	E5-1620v3	3.5GHz	4	10MB	140W	0.0GT/s	2133
	E5-1603v3	2.8GHz	4	10MB	140W	0.0GT/s	1866

NOTE: Up to 1 processor supported. Mixing different processor models is not supported.

Cache Memory 10MB (1 x 10MB) Level 3
 One of the following **NOTE:** For Four-core processors.
 depending on model 15MB (1 x 15MB) Level 3
NOTE: For Six-core processors.
 20MB (1 x 20MB) Level 3
NOTE: For Eight-core processors.
 30MB (1 x 30MB) Level 3
NOTE: For Ten-core processors.

Chipset Intel® C610 Series Chipset
 Intel® E5-2600v3 Processor Family
 Intel® E5-1600v3 Processor
NOTE: This is a 140W processor which need to order with the ML110 Gne9 System fan upgrade kit - 789654-B21.
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 2.1) 2GB NAND
NOTE: 1GB USB user space configurable via UEFI and accessible via iLO. Read and learn more in the [iLO QuickSpecs](#).

Memory Type:
 HP SmartMemory
 DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)
 DIMM Slots Available 8 (8 DIMM slots per processor, 4 channels per processor, 2 DIMMs per channel)
 Maximum Capacity (LRDIMM) 128GB (8 x 16GB LRDIMM @2133MHz)
 Maximum Capacity (RDIMM) 256GB (8 x 32GB RDIMM @2133MHz)
NOTE: This server does not support mixing LRDIMMs or RDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS installation.

Memory Protection 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.

Standard Features

Network Controller Broadcom 5717C0 Dual-port 1Gb

Expansion Slots

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
5	PCIe 3.0	x8	x8		Full-height, half-length slot	For processor 1
4	PCIe 3.0	x4	x4		Full-height, half-length slot	For processor 1
3	PCIe 3.0	x8	x8		Full-height, half-length slot	For processor 1
2	PCIe 3.0	x4	x4		Full-height, half-length slot	For processor 1
1	PCIe 3.0	x16	x16		Full-height, ¾ length (up to 9.5") Slot	For processor 1

NOTE: Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.

NOTE: Five total expansion PCIe 3.0 slots. One PCIe 3.0 x16 (x16 speed); Two PCIe 3.0 x 8 (x8 speed); Two PCIe 3.0 x 4 (x4 speed).

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
6	HP ML Gen9 Dedicated iLO Port Kit	x1	x1			Dedicate for ML Series	

Storage Controller Entry Models HP Dynamic Smart Array B140i Controller
 One of the following **NOTE:** B140i can't mix with any standup internal controller.
 depending on model Base Models HP Dynamic Smart Array B140i Controller
NOTE: B140i can't mix with any standup internal controller.

Internal Storage Devices Optical Drive Optional SATA 9.5mm DVD-ROM Optical Drive
 One of the following depending on model Optical Drive Optional SATA 9.5mm DVD RW Optical Drive
NOTE: Optical is optional in BTO models.
 Hard Drives None ship standard
 Hard Drive Bays Up to 4 Non-hot plug SATA 3.5" drives
NOTE: Mixing drive cage types is not allowed.
NOTE: All Pre-configured Models come populated with hard drive blanks installed. The 4LFF configurations includes 1 blanks and 8SFF includes 7 blanks. Additional hard drive blanks can be ordered using either P/N 666986-B21 for the HP LFF HDD Blank Kit or P/N 666987-B21 for the HP SFF HDD Blank Kit. These part numbers for single HDD blanks below are also provided should you require replacement HDD blanks for your server.
NOTE: NHP SATA is limited to B140i controller.
 (4) Hot plug LFF SAS/SATA HDD bays; upgradable to (8)
 (8) Hot plug SFF SAS/SATA HDD bays; upgradable to (16)

Maximum Internal Storage	CAPACITY	CONFIGURATION
Hot Plug LFF SAS	48TB	8x6TB
Hot Plug LFF SATA	48TB	8x6TB
Hot Plug SFF SAS	19.2TB	16x1.2TB
Hot Plug SFF SATA	16TB	16x1TB
Non-Hot Plug LFF SATA	16TB	4x4TB
Hot Plug LFF SAS SSD	12.8TB	8x1.6TB
Hot Plug LFF SATA SSD	12.8TB	8x1.6TB
Hot Plug SFF SAS SSD	25.6TB	16x1.6TB
Hot Plug SFF SATA SSD	25.6TB	16x1.6TB

Standard Features

Power Supply HP 350W ATX-Gen9 Power Supply FIO Kit
 One of the following HP 550W ATX-Gen9 Power Supply Kit
 depending on model HP 750W CS Gold Ht Plg Pwr Supply Kit

NOTE: The first 750W CS Gold Ht Plg Pwr Supply Kit requires the RPS Enablement Kit.

NOTE: The RPS Enablement kit will support two power supplies.

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>.

Rack Options HP T/R CONV TRAY UNIVERSAL Kit
 One of the following
 depending on model

System Fans	Non-redundant	Redundant
One of the following 1P model depending on model	2 fans	NA

NOTE: One (1) Non-hot plug, non-redundant fans ship as standard.

Interfaces	Video	1 (rear)
	Network RJ-45 (Ethernet)	2
	HP iLO Remote Management Network Port	1GbE Optional Port
	Micro SD Slot	1 (internal)
	NOTE: The Micro-SD slot is not a hot-pluggable device. Customers should not attempt to plug a Micro-SD card into the Micro-SD slot while the server is powered.	
	USB 3.0	5 (2 rear, 1 internal, 2 front)
	USB 2.0	3 (2 rear, 1 internal)

Operating Systems and Virtualization Software Support for ProLiant Servers [Microsoft Windows Server](#)
[Canonical Ubuntu](#)
[Red Hat Enterprise Linux \(RHEL\)](#)
[SUSE Linux Enterprise Server \(SLES\)](#)
[VMware](#)

NOTE: 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/ML110Gen9>.

Upgradeability Up to 16 SFF Hard Drive Bays, Or 8 LFF Hard Drive Bays
 Up to 8 DIMM slots
 Redundant Power Supply
 Optional optical drive (up to 1)

Standard Features

Industry Standard Compliance	ACPI 2.0b Compliant PCIe 3.0 Compliant PXE Support WOL Support Novell Certified IPMI 2.0, SMASH CLP, DCMI 1.0 compliant Microsoft® Logo certifications USB 3.0 Support SMBIOS 2.7.1 ASHRAE A3
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Graphics	HP NVIDIA Quadro K2200 GPU Module HP NVIDIA Quadro K4200 GPU Module NOTE: If this SKU is selected, then customer must select HP 750W CS Gold Ht Plg Pwr Supply Kit OR HP 550W ATX-GEN9 Pwr Supply Kit in order. NOTE: This option kit cannot be selected with 350W power supplies due to power consumption. NOTE: The supporting holder kit - 787006-B21 must be selected when K4200 GPU Module kit is ordered.
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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: <ul style="list-style-type: none">● 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 Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.
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Form Factor	Tower (4.5U) NOTE: Sliding Shelf - 234672-B21 is optional to support rack form factor.
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Standard Features

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 .

Server utilities	HP Smart Update	Optimize firmware and driver updates with HP Smart Update solutions. Learn more at http://www.hp.com/go/smartupdate .
	HP Systems Insight Manager (HP SIM)	HP SIM allows you to monitor the health of your HP ProLiant Servers and HP Integrity Servers, and also provides you with basic support for non-HP servers. HP SIM also integrates with HP SUM to provide quick and seamless firmware updates. Learn more at http://www.hp.com/go/sim .
	Scripting Tool Kit and Windows PowerShell	Provision 1 to many servers using your own scripts to discover and deploy them with HP Scripting Tool Kit for Windows and Linux or HP Scripting Tools for Windows PowerShell. Learn more at http://www.hp.com/go/ProLiantSTK or http://www.hp.com/go/powershell .
	HP RESTful Interface Tool	HP RESTful Interface tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at http://www.hp.com/go/restfulapi .
	HP iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hp.com/go/ilo/mobileapp .
	HP Insight Online	HP Insight Online, available at no additional cost as part of your HP warranty, Care Pack or contractual support agreement with HP, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://www.hp.com/go/insightonline/info . NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from http://www.hp.com/go/spp/download . More information can be found: http://www.hp.com/go/SmartUpdate , http://www.hp.com/go/spp and http://www.hp.com/go/hpsum .

Security	Power-on password
	Setup password
	Serial interface control
	Power switch security
	Administrator's password
	TPM 1.2
	UEFI

Standard Features

Warranty

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.

NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:

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

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 . NOTE: HP OneView support for HP ProLiant Gen9 rack (DL) and blade (BL) servers will be available with a future version of HP OneView to be released Early 2015. Customers may purchase HP OneView licenses now, and will be granted rights to use HP Insight Control software and transition to HP OneView with a free upgrade, when available. Customers also have the option to purchase HP Insight Control.
High Performance Clusters		HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu . HP 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 .

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

Service and Support HP Technology Services for Industry Standard Servers

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

Protect your business beyond warranty with HP Care Pack Services

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

Optimized Care Supports maintaining servers at optimum performance availability

HP Proactive Care with 24x7 coverage, three year Care Pack Service

HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HP ProLiant server. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care Package Supports maintaining high level of server availability

Foundation Care 24x7, three-year Care Pack Service

HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues. Hardware onsite response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HP server. 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>

Related Services HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. <http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-9356EN.pdf>

Factory Express for Servers and storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

Data Privacy Services

Protect your data through better media management. HP Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. <http://www.hp.com/services/dataprivacy>

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

Get connected to HP to improve your support experience Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: <http://www.hp.com/go/proactiveinsightexperience>

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

Service and Support

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

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

Parts and Materials HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

For more information

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

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]	777160-xx1	777161-xx1
Model Name	HP ProLiant ML110 Gen9 E5-2603v3 4GB-R B140i 4LFF NHP 350W PS Entry Server	HP ProLiant ML110 Gen9 E5-2620v3 8GB-R B140i 4LFF 350W PS Base Server
Processor	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-2620v3
Number of Processors	One	
Memory	4GB (1x4GB Registered DIMMs, 2133 MHz)	8GB (1x8GB Registered DIMMs, 1600 MHz)
Network Controller	Broadcom 5717 Dual-port 1GbE	
Storage Controller	HP Dynamic Smart Array B140i	
Hard Drive	None ship standard	
Internal Storage	4 LFF HDD Bays (Non Hot Plug)	4 LFF HDD Bays (Hot Plug)
Optical Drive Bay	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)	
Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)	
PCI-Express Slots	5 PCIe 3.0 slots (without risers)	
Power Supply	(1) HP 350W ATX Power Supply	
Fans	1 non hot plug, non-redundant	
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)	
Form Factor	Tower (4.5U)	
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.	

Country Code Key	xx1 = B21	Worldwide
	xx1 = 001	US
	xx1 = 031	UK
	xx1 = 291	Japan
	xx1 = 371	AP
	xx1 = 421	EU
	xx1 = AA1	PRC

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

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, 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 ML110 Gen9 Non Hot Plug 4LFF Configure-to-order Server	HP ProLiant ML110 Gen9 Hot Plug 4LFF Configure-to-order Server	HP ProLiant ML110 Gen9 Hot Plug 8SFF Configure-to-order Server
SKU Number	776933-B21	776934-B21	776935-B21
Processor	1	1	1
DIMM Slots	8 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HP Dynamic Smart Array B140i		
PCIe	5 PCIe 3.0 Slots		
Drive Cage	4LFF Non Hot Plug	4LFF Hot Plug	8SFF Hot Plug
Network Controller	Broadcom 5717 Dual-port 1GbE		
Fans	1 non hot plug, non-redundant		
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
USB	2 front, 2 internal, 4 rear		

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
- 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.
- 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>.

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. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.
- By RPS Enablement Kit power options, mixing of power supplies in the same RPS enablement kit 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



Configuration Information - Factory Integrated Models

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 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 Graphics Options

Select one or more graphics adapter from Additional options section below.

- Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.
- This section may contain FIO options, please see HP Computation & Graphics Accelerators section below.

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 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 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.

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	<p>HP ML110 Gen9 Mini SAS H240 Cable Kit 789648-B21 NOTE: Must be selected for H240 controller. 1 cable kit is required for Hot Plug 4LFF 2 cable kits are required for below: - Hot Plug 4+4 LFF (with additional drive cage) - 8SFF</p> <p>HP ML110 Gen9 Mini SAS P440/P840 Cable Kit 789651-B21 NOTE: Must be selected for P440/P840 controller. 1 cable kit is required for P440x1 2 cable kits are required for P840x1</p> <p>HP ML110 Gen9 System Fan Upgrade Kit 789654-B21 NOTE: When any E5-1600 processor kit or SAS SSD is selected, then this option kit must be ordered.</p> <p>HP ML110 Gen9 PCI Fan and Baffle Kit 784580-B21 NOTE: If any PCIe card is selected, then this option kit must be selected. This option kit cannot be selected if no PCIe card is ordered.</p> <p>HP ML110 Gen9 Redundant Power Supply Enablement Kit 784582-B21 NOTE: If this kit must be selected when 750W CS Gold Ht Plg Pwr Supply Kit is ordered.</p> <p>HP AHCI-Enable FIO Setting 801845-B21 NOTE: This needs to be selected when Advanced Host Controller Interface mode is required on B140i controller.</p>
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HP Processors	<p>Entry Processors - E5-2600v3 series Processors</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit 773167-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit 773169-L21</p> <p>Entry Processors - E5-1600v3 series Processors</p> <p>HP ML110 Gen9 Intel® Xeon® E5-1603v3 (2.8GHz/4-core/10MB/140W) FIO Processor Kit 783017-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-1620v3 (3.5GHz/4-core/10MB/140W) FIO Processor Kit 783021-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-1650v3 (3.5GHz/6-core/15MB/140W) FIO Processor Kit 783023-L21</p> <p>Base Processors - E5-2600v3 series Processors</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit 773158-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit 773162-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit 773173-L21</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2623v3 (3GHz/4-core/10MB/105W) FIO Processor Kit 780075-L21</p> <p>Performance Processors - E5-2600v3 series Processors</p> <p>HP ML110 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit 773156-L21</p>
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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
	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
	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 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

NOTE: User may select any combination of SAS or SATA Hard Drives. However, if RAID is selected and both SAS and SATA Hard Drives have been selected, then only the SAS Drives will be used in the RAID set.

NOTE: If B140i is the primary controller, user can only select SATA drives.

NOTE: SAS drives require the selection of a SAS controller. See card lists in Controllers section.

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

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

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

HP 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 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

Core Options

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
HP 2TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765455-B21
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765453-B21

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

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

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

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 (3.5in) 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 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 (3.5in) 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

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

HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741155-B21
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12G SAS Hot Plug SFF (2.5-inch) SC 512e Drives

HP 2TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765466-B21
HP 1.8TB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 512e 3yr Warranty Hard Drive	791034-B21
HP 1TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765464-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC 512e Enterprise 3yr Warranty Hard Drive	748387-B21

6G SATA Hot Plug LFF (3.5-inch) Enterprise Light G1 Solid State Drives

HP 960GB 6G SATA Light Endurance LFF 3.5-in SC Converter ENT Light 3yr Wty G1 Solid State Drive	756604-B21
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6G SATA Hot Plug SFF (2.5-inch) SC Read Intensive Solid State Drives

HP 960GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789155-B21
HP 480GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789145-B21
HP 240GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789135-B21

6G SATA Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21

6G SATA Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives

Core Options

HP 1.6TB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	757339-B21
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717973-B21
HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739898-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21
6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value G1 Solid State Drives	
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
6G SATA Hot Plug SFF (2.5-inch) Enterprise Light G1 Solid State Drives	
HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21
6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value M1 Solid State Drives	
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
6G SATA Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717965-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
6G SATA Hot Plug LFF (3.5-inch) SC Read Intensive Solid State Drives	
HP 960GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789157-B21
HP 480GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789147-B21
HP 240GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789137-B21
6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value G1 Solid State Drives	
HP 1.6TB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	757342-B21
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
6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value M1	

Core Options

Solid State Drives

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

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

HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 718189-B21

HP 600GB 6G SATA Value Endurance LFF 3.5-in SC 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

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

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

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

Hard Drive Blank Kits

HP Large Form Factor Hard Drive Blank Kit 666986-B21

HP Small Form Factor Hard Drive Blank Kit 666987-B21

Hard Drive Kits

HP ML110 Gen9 4LFF Hot Plug Drive Cage Kit 784584-B21

HP ML110 Gen9 8SFF Hot Plug Drive Cage Kit 784586-B21

HP Networking

1 Gigabit Ethernet adapters

HP Ethernet 1Gb 4-port 331T Adapter 647594-B21

HP Ethernet 1Gb 2-port 332T Adapter 615732-B21

HP Ethernet 1Gb 2-port 361T Adapter 652497-B21

HP Ethernet 1Gb 4-port 366T Adapter 811546-B21

10 Gigabit Ethernet adapters

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

HP Power Supplies

HP Entry-Level Power Supplies

HP 750W Common Slot Gold Hot Plug Power Supply Kit 512327-B21

HP ML110 Gen9 350W ATX Gen9 Power Supply FIO Kit 776442-B21

HP 550W ATX Gen9 Power Supply Kit 776444-B21

HP ML110 Gen9 Redundant Power Supply Enablement Kit 784582-B21

NOTE: If this kit must be selected when 750W CS Gold Ht Plg Pwr Supply Kit is ordered.

NOTE: Check power advisor for power consumption for the customer usage case. Power specifications and technical content for all HP Server power supplies can be found at <http://www.hp.com/go/proliant/powersupply>.

Core Options

HP Computation and Graphics Accelerators	HP NVIDIA Quadro K2200 Graphics Accelerator	J0G89A
	HP NVIDIA Quadro K4200 Graphics Accelerator	J0G90A

NOTE: If this SKU is selected, then customer must select HP 750W CS Gold Ht Plg Pwr Supply Kit OR HP 550W ATX-GEN9 Pwr Supply Kit in order.

Note: this option kit cannot be selected with 350W power supplies due to power consumption.

NOTE: HP ML110 Gen9 GPU Supporting Holder Kit must be selected.

HP ML110 Gen9 GPU Supporting Holder Kit

787006-B21

NOTE: Only the above listed Graphics cards are HP standard supported options in this server.

NOTE: The NVIDIA Quadro modules are supported only on 64-bit versions of Linux and Windows operating systems as well as on Virtual Machine client operating systems. The supported bare metal operating systems are RHEL6, SLES 11 and Windows Server 2012 R2.

NOTE: Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.

HP Cooling Options	HP ML110 Gen9 PCI Fan and Baffle Kit	784580-B21
	NOTE: If any PCIe card is selected, then this option kit must be selected. This option kit cannot be selected if no PCIe card is ordered.	
	HP ML110 Gen9 System Fan Upgrade Kit	789654-B21
	NOTE: When any 140W processor kit or SAS SSD is selected, then this option kit must be ordered.	

Additional Options

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

HP Insight Software HP Insight Control

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

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License C6N28ABE

HP Insight Control Server Provisioning Media Kit BD883A

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 24x7 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.

Embedded Management

HP iLO Advanced

HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU E6U64ABE

HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates BD505A

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License 512485-B21

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity License 512486-B21

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking License 512487-B21

HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU E6U59ABE

HP Integrated Lights-Out Essentials including 3yr 24x7 Technical Support and Updates E-LTU E6U61ABE

HP Integrated Lights-Out Essentials including 1yr 24x7 Technical Support and Updates E-LTU E6U62ABE

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 Storage Controllers

SAS Controller

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 P840/4GB FBWC 12Gb 2-ports Int SAS Controller 726897-B21

NOTE: When additional 8SFF Drive cage is ordered and also P840 is selected, then Must select one separate HP ML110 Gen9 Mini SAS P440/P840 Cbl Kit.

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

NOTE: Smart Storage Battery included.

NOTE: Must select battery holder P/N: 786710-B21 when purchase P440.

NOTE: B140i can't mix with any standup internal controller.

HP Smart Array P840/4GB FBWC 12Gb 2-ports Int FIO SAS Controller 761874-B21

NOTE: Smart Storage Battery included.

NOTE: B140i can't mix with any standup internal controller.

NOTE: Must select P840/4G Controller when apply 16SFF.

NOTE: Must select P440/P840 Cable kit, 1 cable kit per controller.

NOTE: Must select P840/4G FIO Controller when additional drive cage is selected.

HP Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller 726903-B21

Additional Options

HP ML110 Gen9 Mini SAS H240 Cable Kit	789648-B21
NOTE: Must be selected for H240 controller.	
1 cable kit is required for Hot Plug 4LFF	
2 cable kits are required for below:	
- Hot Plug 4+4 LFF (with additional drive cage)	
- 8SFF	
HP ML110 Gen9 Mini SAS P440/P840 Cable Kit	789651-B21
NOTE: Must be selected for P440/P840 controller.	
1 cable kit is required for P440x1	
2 cable kits are required for P840x1	
NOTE: Must select battery holder kit when P series FIO controller is selected.	
SAS Controller Options	
HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
HP Host Bus Adapter	
HP H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
HP H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21
NOTE: Must select for H240 controller.	
1 cable kit is required for Hot Plug 4LFF.	
2 cable kits are required for below:	
- Hot Plug 4+4 LFF (with additional drive cage)	
- 8SFF	
Battery Holder	
HP ML150 Gen9 Smart Storage Battery Holder Kit	786710-B21
NOTE: Only support P series controllers.	
Optional Software	
HP Secure Encryption No Media Flexible License per Drive	D8S84A
HP Secure Encryption No Media E-LTU per Drive	D8S85AAE
NOTE: 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.	
NOTE: For more information about HP Secure Encryption, go to http://www.hp.com/go/hpsecureencryption .	
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
NOTE: HP SmartCache is supported when one of the supported Smart Array Controllers is installed in the server.	
NOTE: HP SmartCache comes standard (no licensing is required) if the HP Smart Array P840 Controller is installed in the server.	

Additional Options

HP Tape Backup	<p>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.</p> <p>NOTE: Must select SAS controller to support internal SAS tape drives.</p> <p>NOTE: Tape drive and HDD total amount can't exceed SAS controller support qty.</p> <p>NOTE: Limited to H240 when select Tape Drive.</p> <p>Tape Drives</p> <p>HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader C0H19A</p> <p>HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit C0L99A</p> <p>HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit EH946C</p> <p>HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount EJ014B</p> <p>HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount EJ013B</p> <p>HP StoreEver 1U SAS Rack-mount Kit AE459B</p> <p>HP StoreEver LTO-3 Ultrium 920 SAS External Tape Drive EH848B</p> <p>HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive EH900B</p> <p>HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive EH920B</p> <p>HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive EH958B</p> <p>HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive EH964A</p> <p>HP StoreEver LTO-6 Ultrium 6250 External Tape Drive EH970A</p> <p>HP Tape Storage Systems HP StoreEver MSL6480</p> <p>HP StoreEver MSL6480 Scaleable Expansion Module QU626A</p> <p>HP StoreEver MSL6480 Scalable Base Module QU625A</p> <p>HP MSL2024 0-Drive Tape Library AK379A</p> <p>HP MSL4048 0-Drive Tape Library AK381A</p>
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HP Disk Backup	<p>HP RDX Removable Disk Backup System</p> <p>HP RDX320 USB3.0 External Disk Backup System B7B63A</p> <p>HP RDX500 USB 3.0 External Disk Backup System B7B66A</p> <p>HP RDX1000 USB 3.0 External Disk Backup System B7B69A</p> <p>HP RDX 2TB USB3.0 External Disk Backup System E7X53A</p> <p>HP D3700 Enclosure QW967A</p> <p>HP D3600 Enclosure QW968A</p>
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HP Disk Storage Systems	<p>Disk Enclosures</p> <p>HP D6000 w/35 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 140TB Bundle E7W30A</p> <p>HP D6000 w/70 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 280TB Bundle E7W31A</p> <p>HP D6000 Dual I/O Module Disk Enclosure QQ695A</p> <p>HP D6000 w/35 2TB 6G SAS 7.2K LFF Dual port MDL HDD 70TB Bundle QQ697A</p> <p>HP D6000 w/70 2TB 6G SAS 7.2K LFF Dual port MDL HDD 140TB Bundle QQ698A</p> <p>HP D6000 w/35 3TB 6G SAS 7.2K LFF Dual port MDL HDD 105TB Bundle QQ699A</p> <p>HP D6000 w/70 3TB 6G SAS 7.2K LFF Dual port MDL HDD 210TB Bundle QQ700A</p> <p>HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle E7W32A</p>
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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 KVM Switches	
	HP USB Remote Access Key for G3 KVM Console Switches	AF650A
	HP 0x1x8 G3 KVM Console Switch	AF651A
	HP 0x2x16 G3 KVM Console Switch	AF652A
	HP TAA 0x2x16 G3 KVM Console Switch	AF653A
	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
	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 USB BFR with PVC Free UK Keyboard/Mouse Kit	631344-B21
	HP USB BFR with PVC Free FR Keyboard/Mouse Kit	631346-B21
	HP USB BFR with PVC Free ES Keyboard/Mouse Kit	631348-B21
	HP USB BFR with PVC Free DE Keyboard/Mouse Kit	631358-B21
	HP USB BFR with PVC Free JP Keyboard/Mouse Kit	631360-B21
	HP USB BFR with PVC Free IT Keyboard/Mouse Kit	631362-B21
	HP USB BFR with PVC Free CN Keyboard/Mouse Kit	631364-B21
	HP USB BFR with PVC Free AE Keyboard/Mouse Kit	638212-B21
	HP USB BFR with PVC Free RU Keyboard/Mouse Kit	638214-B21
	HP USB BFR with PVC Free SE Keyboard/Mouse Kit	672097-103
	HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
	HP USB BFR with PVC Free PT Keyboard/Mouse Kit	672097-133
	HP USB BFR with PVC Free TR Keyboard/Mouse Kit	672097-143
	HP USB BFR with PVC Free CZ Keyboard/Mouse Kit	672097-223
	HP USB BFR with PVC Free FI Keyboard/Mouse Kit	672097-353
	HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit	672097-373
	HP USB BFR with PVC Free IN Keyboard/Mouse Kit	672097-D63
	HP USB BFR with PVC Free KR Keyboard/Mouse Kit	672097-KD3
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.		
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 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	
	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	
	Power Unit (2U UPS)		
	HP R18000 DirectFlow - 2U Rackmount Uninterruptible Power System	AF479A	
	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

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 32GB microSD Enterprise Mainstream Flash Media Kit 700139-B21

HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit 737953-B21

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

HP Care Pack Services

Installation & Start-up Services

HP Installation ML310e/ML110 Service U6G21E

HP Startup ML310e/ML110 Service U6G23E

Foundation Care

HP 3 year 24x7 ML110 Gen9 Foundation Care Service U8JB1E

HP 3 year 24x7 with Defective Media Retention ML110 Gen9 Foundation Care Service U8JB2E

HP 3 year 24x7 w/Comprehensive Defective Material Retention ML110 Gen9 Foundation Care Service U8JG2E

Proactive Care

HP 3 year 24x7 ML110 Gen9 Proactive Care Service U8JB3E

HP 3 year 24x7 with Defective Media Retention ML110 Gen9 Proactive Care Service U8JB4E

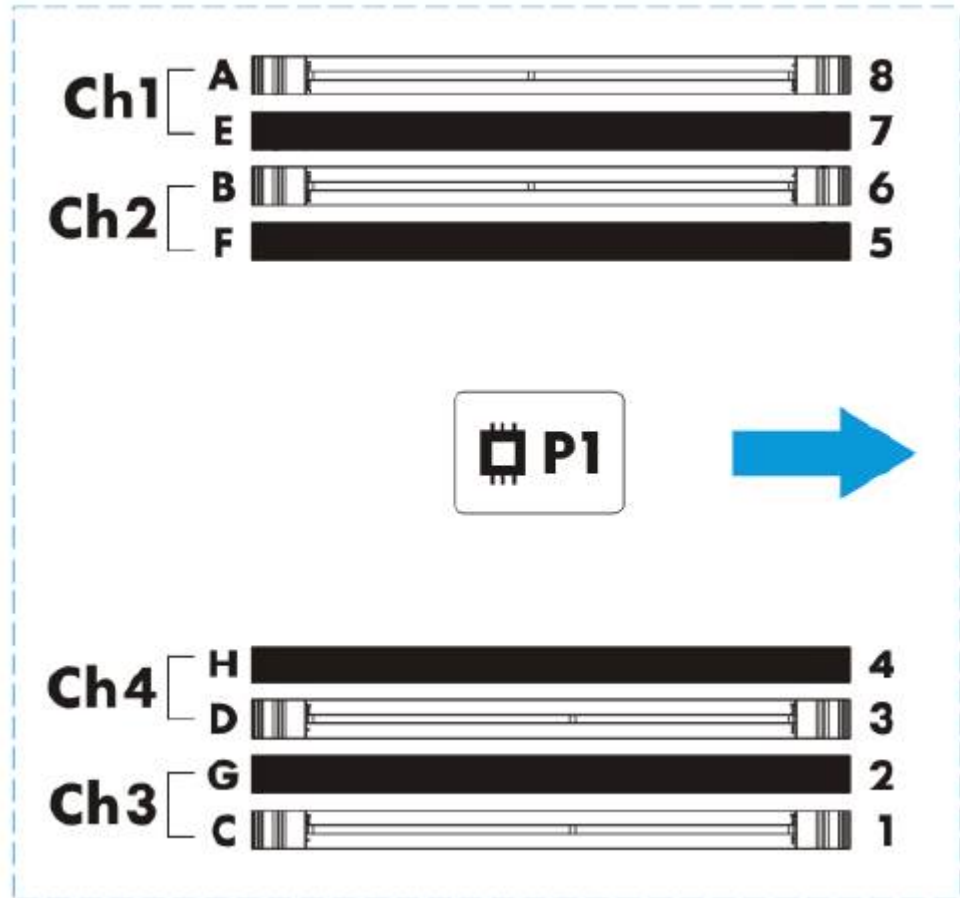
HP 3 year 24x7 w/Comprehensive Defective Material Retention ML110 Gen9 Proactive Care Service U8JG3E

Proactive Care Service

Memory

Memory Subsystem Architecture Each Intel® Xeon® E5-2600v3 family processor socket contains four memory channels per installed processor with one DIMM per channel for a total of four (4) DIMMs or a grand total of eight (8) DIMMs for the server.

Memory Population guidelines



DIMM population order							
1st slot of channel				2nd slot of channel			
A	B	C	D	E	F	G	H
Number of DIMMs to install	1						
	2						
	4						
	8						

General Memory Population Rules and Guidelines:

Memory

- Install DIMMs only if the corresponding processor is installed.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- White DIMM slots denote the first slot to be populated in a channel.
- 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 ML110 Gen9 servers.
- Quad rank LRDIMMs are capable of up to three DIMMs per channel.
- RDIMMs operating at 1.2V.
- 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.
- There are four (4) channels per processor
- There are two (2) DIMM slots for each memory channel; eight (8) total slots.
- Memory channels 1 and 3 consists of the two (2) DIMMs that are furthest from the processor.
- Memory channel 2 and 4 consists of the two (2) DIMMs that are closest to the processor.

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)
DIMM Rank	Single Rank			Dual Rank		
DIMM Capacity	4GB	8GB		16GB	32GB	16GB
DIMM Native Speed (MT/s)	2133					
Voltage	Std Voltage 1.2V					
SLOTS THAT CAN BE POPULATED						
8 slot servers	8	8	8	8		8
MAXIMUM CAPACITY (GB)						
	32	64		128		128
1 DIMM Per Channel	2133					
2 DIMM Per Channel	2133					
3 DIMM Per Channel	1600					

Memory

DIMM slot and configuration diagram

DIMM slot and configuration diagrams

- 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 ...
- alphabetic order: CPU1-A, CPU2-A,CPU1-B,CPU2-B,CPU1-C, CP2-C

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

Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E5-2609v3, E5-2603v3,	1600MHz
E5-1603v3, E5-2640v3, E5-2620v3, E5-2630Lv3, E5-2623v3,	1866MHz
E5-1620v3, E5-1650v3, E5-2660v3,	2133MHz

Standard and Maximum Memory Capacity (Pre-configured Models)

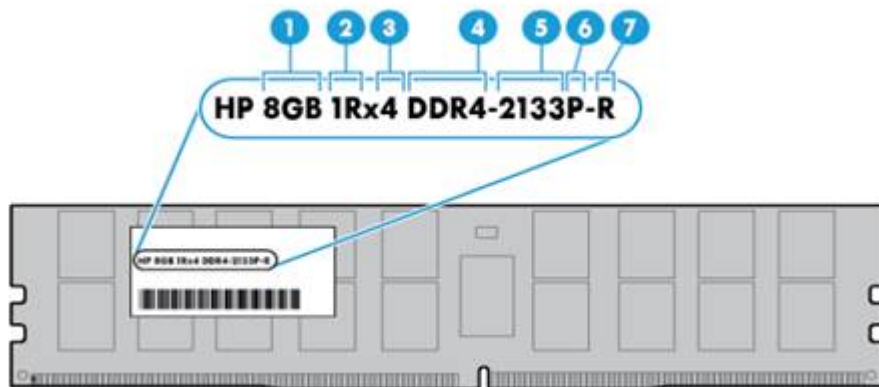
Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
E5-2603v3,	4GB (1x4GB)	228GB (7x32GB, 1x4GB)	128GB (8x16GB)
E5-2620v3,	8GB (1x8GB)	232GB (7x32GB, 1x8GB)	128GB (8x16GB)

Memory

DDR4 memory options part number decoder

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

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



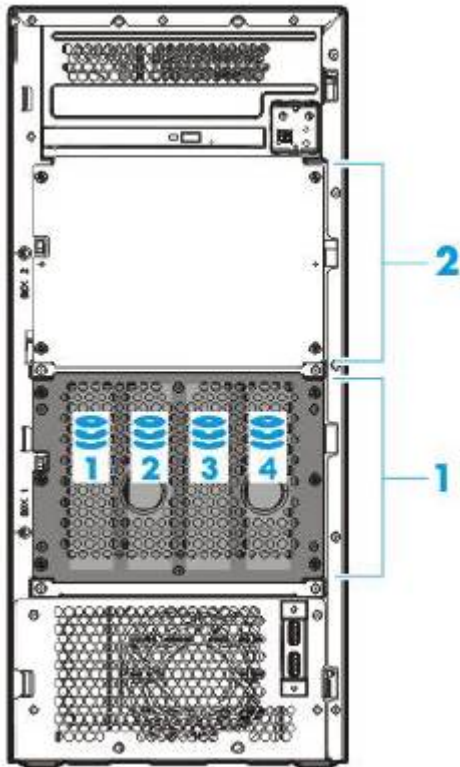
1. Capacity: 4GB/8GB/16GB/32GB
2. Rank: 1R = Single-rank; 2R = Dual-rank; 4R = Quad-rank
3. Data width: x4 = 4-bit; x8 = 8-bit
4. Memory generation: DDR4
5. Maximum memory speed: 2133 MT/s
6. CAS latency: P = 15
7. DIMM type: R = RDIMM (registered); L = LRDIMM (load reduced)

Storage

4-bay LFF non-hot-plug drive model

1-4

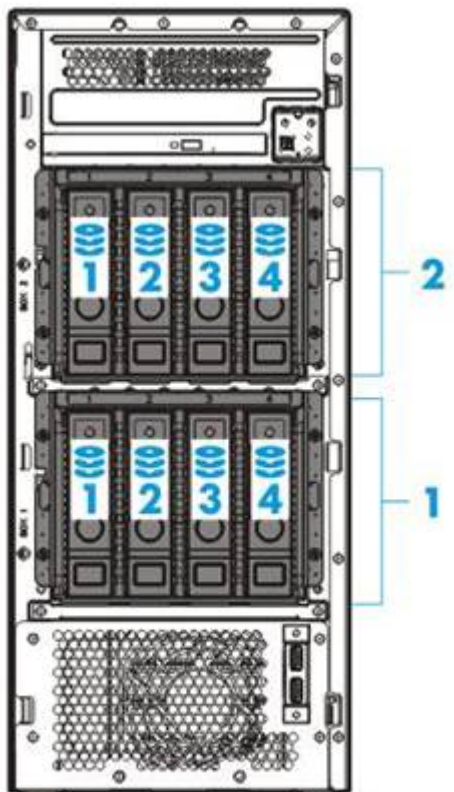
4 x LFF SATA/SSD Non-hot-plug Hard Drive Bays



4-bay LFF hot-plug drive model

1-4

4 x LFF SAS/SSD Hot Pluggable Hard Drive Bays



Storage

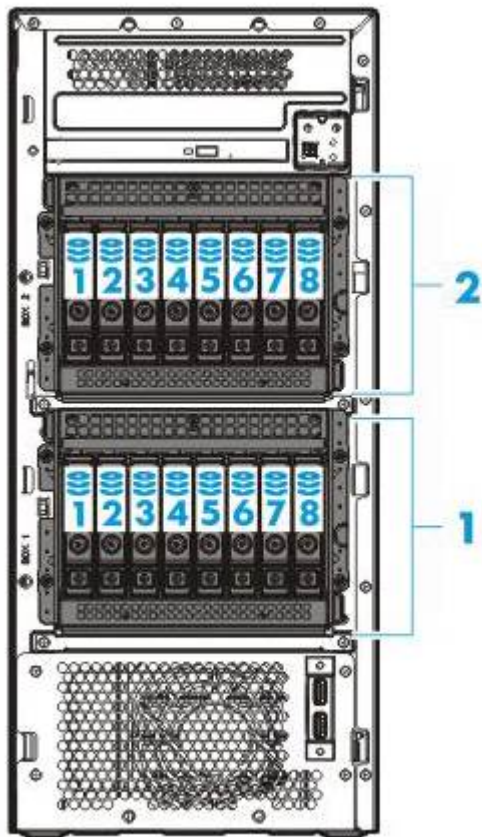
8-bay SFF hot-plug drive model

1 x 1-8

8 x SFF SATA/SSD Hot Pluggable Hard Drive Bays

1 x 2-8

8 x SFF SATA/SSD Hot Pluggable Hard Drive Bays



Maximum Storage Capacity -

Total (8 LFF Drive) 48TB
Total (16 SFF Drive) 25.6TB

Technical Specifications

System Unit	Tower Dimensions	17.32(H) x 7.68(W) x 18.92(D) in (44 x 19.5 x 48.05 cm)
	Tower Weight	Minimum: 27.56lb (12.5kg) Maximum: 55lb (24.9g)
	Input Requirements	Range Line Voltage: 100 to 240 VAC For 350W & 550W Power Supply: 8A (at 100~240 VAC) Rated Input Current Rated Input Frequency: 50 to 60 Hz Rated Input Power: For 550 W Power Supply: < 639 W (at 100 VAC), < 605 W (at 200 VAC) For 350 W Power Supply: < 427 W (at 100 VAC), < 427 W (at 200 VAC)
	BTU Rating	Maximum For 550 W Power Supply: 2204 BTU/hr (at 100 VAC), 2113 BTU/hr (at 200 VAC) For 350 W Power Supply: 1452 BTU/hr (at 100 VAC), 1544 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: http://www.hp.com/go/proliant-energy-efficient or http://www.hp.com/go/hppoweradvisor - Click on the system of interest.
	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 350 W Power Supply: 350 W (at 100 VAC), 350 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 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 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 3048 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/servers/ashrae . For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/servers/ashrae . System performance may be reduced if operating in the extended ambient operating range or with a fan fault. NOTE: Supports A3 extended ambient.
	Relative Humidity	Non-operating: -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr). Operating: Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
	Altitude	Non-operating: 5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. 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 457m/min (1500 ft/min). Non-operating: 9144 m (30,000 ft). Maximum allowable altitude change rate is 457m/min (1500 ft/min).

Technical Specifications

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	3.6 Bels (LFF Non Hot-Plug Base)
	3.6 Bels (LFF Hot-plug Base)
	4.1 Bels (LFF Hot-plug Performance)
L pAm	21 dBA (LFF Non Hot-Plug Base)
	21 dBA (LFF Hot-plug Base)
	27 dBA (LFF Hot-plug Performance)

Operating

L WAd	3.6 Bels (LFF Non Hot-Plug Base)
	3.7 Bels (LFF Hot-plug Base)
	4.2 Bels (LFF Hot-plug Performance)
L pAm	21 dBA (LFF Non Hot-Plug Base)
	21 dBA (LFF Hot-plug Base)
	25 dBA (LFF Hot-plug Performance)

NOTE: Configurations tested for LFF non hot-plug based models included one (1) 1TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: Configurations tested for LFF hot-plug base models included one (1) 1TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: Configurations tested for LFF hot-plug performance models included four (4) 2TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Emissions Classification

FCC Rating	Class B
Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP Dynamic Smart Array B140i Controller	Number of PCI links	Four
	PCI link rate	4 Gb/s
	Storage protocol support	SATA
	SAS/SATA peak data transfer rate	6 Gb/s
	Number of SAS/SATA links	10 links
	SAS/SATA connectivity	2x4 connectors; 2x1 connectors
	Expander support	No
	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

Technical Specifications

HP Ethernet 1Gb 2-port 330i 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	
	Data Transfer Method	PCI Express, two lanes (x2)	
	Controller	BCM5717	
	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
		100Base-TX (Half-Duplex)	1000Mb/s per port, 4000 Mb/s combined
		100Base-TX (Full-Duplex)	2000Mb/s per port, 8000 Mb/s combined
Connector	RJ-45		
Cable Support	10 Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	
	10/100/1000 Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)	

Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>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.</p> <p>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.</p>

Summary of Changes

Date	Version History	Action	Description of Change
06/01/2015	From Version 2 to 3	Added	New Hard Drives were added to Core Options. HP Insight Software section was added to Additional Options. Optional Software was added to HP Storage Controllers.
		Changed	Standard Features was revised. HP Storage Controllers and HP Disk Backup were revised.
		Removed	Obsolete SKUs were removed from QuickSpecs.
04/24/2015	From Version 1 to 2	Added	Smart Buy models added to the NA version only.



hp.com/qref/ml110gen9

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