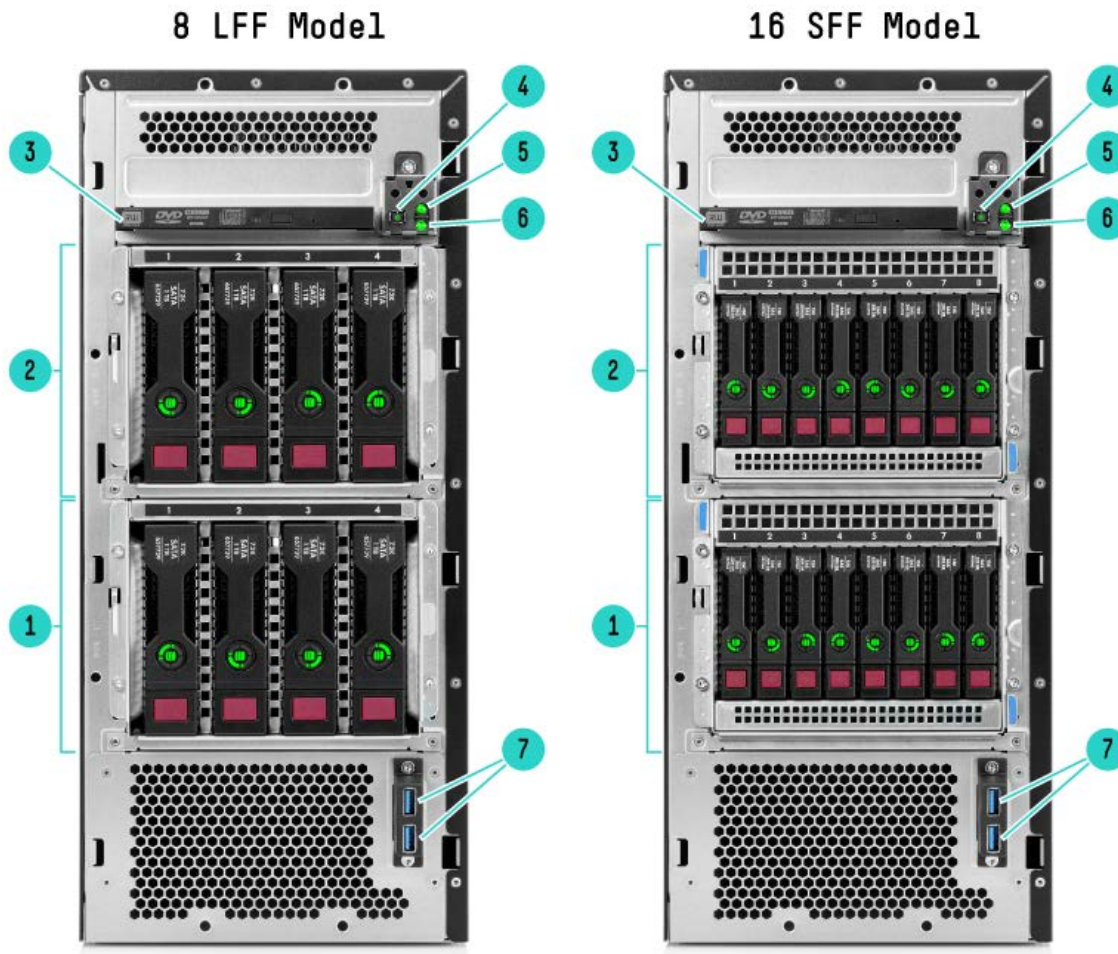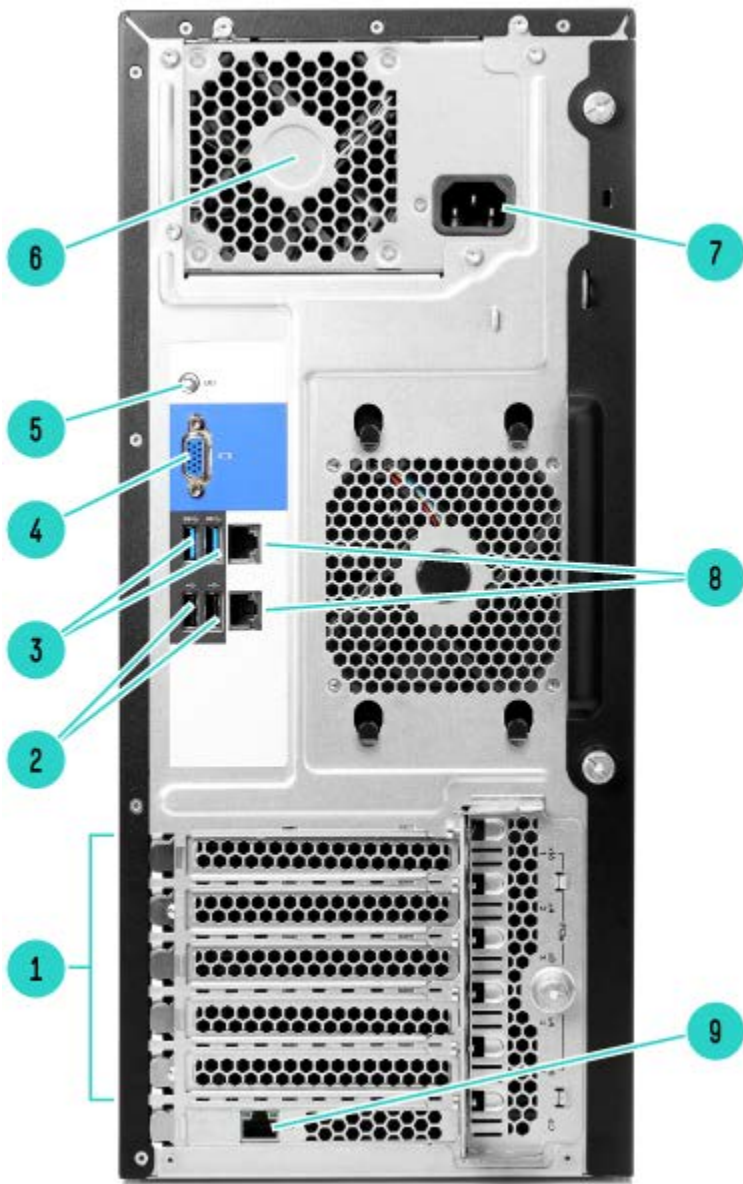## Overview

HPE ProLiant ML110 Generation9 (Gen9)

The HPE 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 bay
7. Power supply power connection
8. Network RJ-45 ports (2)
9. HPE ML Gen9 dedicated iLO port kit (optional)

Overview
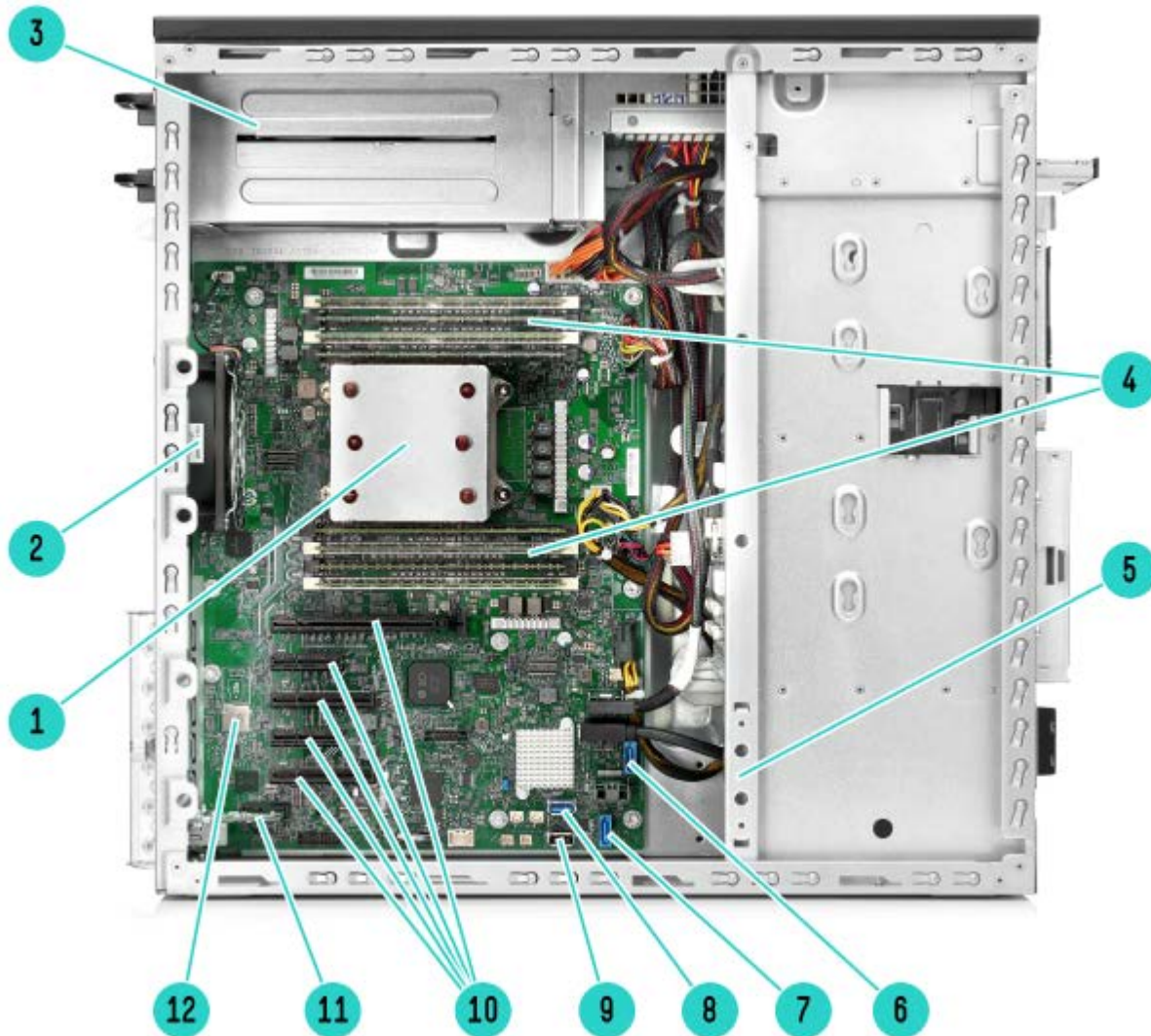
Internal View

1. One (1) processor and heatsink with HPE 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
One of the following depending on model

Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
E5-2640v3	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
One of the following depending on model

10MB (1 x 10MB) Level 3
NOTE: For Four-core processors.
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

HPE iLO (Firmware HPE iLO4 2.3) 2GB NAND
NOTE: 1GB USB user space configurable via UEFI and accessible via iLO. Read and learn more in the **HPE iLO QuickSpecs**.

Memory

Type:
HPE 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)

Standard Features

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.

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	HPE ML Gen9 Dedicated iLO Port Kit	x1	x1			Dedicate for ML Series	

Storage Controller

One of the following depending on model

Entry Models	HPE Dynamic Smart Array B140i Controller

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

Base Models	HPE Dynamic Smart Array B140i Controller

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

Standard Features

Internal Storage Devices	Optical Drive	Optional SATA 9.5mm DVD-ROM Optical Drive

Internal Storage Devices
One of the following depending on model

Optical Drive
Optional SATA 9.5mm DVD-ROM Optical Drive
Optional SATA 9.5mm DVD RW Optical Drive
NOTE: Optical is optional in pre-configured 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 3 blanks and 8SFF includes 7 blanks. Additional hard drive blanks can be ordered using either P/N 666986-B21 for the HPE LFF HDD Blank Kit or P/N 666987-B21 for the HPE 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: NHPE 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)
NOTE: 16SFF is limited to P840 controller.
NOTE: H240 8LFF/8SFF require 2 cable kit P/N: 784606-B21.
NOTE: P84016SFF require 2 cable kit P/N: 784608-B21.

Maximum Internal Storage
One of the following depending on model

	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

Power Supply
One of the following depending on model

HPE 350W ATX-Gen9 Power Supply FIO Kit
HPE 550W ATX-Gen9 Power Supply Kit
HPE 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.

HPE 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 HPE ProLiant Gen9 Essential Series servers.

The HPE 550W FIO Power Supply is the standard, non-redundant AC power supply option for most HPE 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.

Standard Features

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 HPE Power Advisor Tool located at **http://www.hp.com/go/hppoweradvisor**.

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

System Fans		Non-redundant	Redundant
One of the following depending on model	1P 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
	HPE 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 Hewlett Packard Enterprise 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)

Industry Standard Compliance

ACPI 2.0b Compliant
PCIe 3.0 Compliant
PXE Support
WOL Support
Novell Certified

Standard Features

IPMI 2.0, SMASH CLP, DCMI 1.0 compliant
Microsoft® Logo certifications
USB 3.0 Support
SMBIOS 2.7.1
ASHRAE A3

Graphics   16 bit color: maximum resolution of 1600 x 1200
Integrated Matrox G200 video standard
32 bit color: maximum resolution of 1280 x 1024

- 16 MB Flash
- 128 MB DDR3

HPE Server   **HPE Server UEFI /Legacy ROM**
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. HPE 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 HPE 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 HPE 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 HPE 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: HPE Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.

Form Factor   Tower (4.5U)
NOTE: Sliding Shelf - 234672-B21 is optional to support rack form factor.

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

Standard Features

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**.	
RESTful API	A single programmatic web interface that allows you to manage and monitor your HPE ProLiant server using basic HTTP operations (GET, PUT, POST, DELETE and PATCH). RESTful API for iLO 4 conforms to the Redfish 1.0 DMTF standard (iLO firmware version v2.30 or higher required for Redfish conformance). 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	Hewlett Packard Enterprise embedded remote support, when used with Insight Online direct connect or HPE Insight Remote Support, allows HPE ProLiant servers to transmit hardware events directly to HPE or an HPE Authorized Partner for automated phone home support. Learn more at **http://www.hp.com/go/insightonline/info**.	

Server utilities	**Smart Update**	Optimize firmware and driver updates with Smart Update solutions including Smart Update Manager (SUM) and Service Pack for ProLiant (SPP). Learn more at **http://www.hp.com/go/smartupdate**.
	HPE Systems Insight Manager (HPE SIM)	HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-HPE servers. HPE SIM also integrates with 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 Scripting Tool Kit for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at **http://www.hp.com/go/ProLiantSTK** or **http://www.hp.com/go/powershell**.
	RESTful Interface Tool	Scripting tool to provision servers using iLO 4 RESTful API to discover and deploy servers at scale. Learn more at **http://www.hp.com/go/resttool**
	HPE 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**.
	HPE Insight Online	HPE Insight Online, available at no additional cost as part of your HPE warranty, Care Pack or contractual support agreement with HPE, 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 HPE 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

Standard Features

Administrator's password
TPM 1.2
UEFI

Warranty   This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of Hewlett Packard Enterprise 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 HPE 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 Hewlett Packard Enterprise 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**	HPE 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 HPE iLO Essentials at **http://www.hp.com/go/iLO/essentials**.
	iLO Scale-Out	HPE 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	HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE 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 HPE iLO Advanced at **http://www.hp.com/go/iloadvanced**.

Server Management	**HPE Insight Control**	HPE 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**.

High Performance Clusters	HPE Insight Cluster Management Utility (CMU) is an HPE-licensed and HPE-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**.
	HPE 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 HPEC 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 HPE Cluster Platform product portfolio. These high-speed interconnects are fully supported by Hewlett Packard Enterprise 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 HPEC 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 HPE 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:

Optional Features

- **Data Protection and Recovery Software**
  Whether you're a large enterprise or a smaller business, HPE data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
  Hewlett Packard Enterprise 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)**
  Hewlett Packard Enterprise 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**
  Hewlett Packard Enterprise 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 HPE storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HPE StoreVirtual VSA**
  With HPE 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. HPE ProLiant Gen9 servers include a 3-year limited license for HPE StoreVirtual VSA software with 1TB of capacity at no extra cost. Simply select to install HPE 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 Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. **https://h22174.www2.hp.com/SimplifiedConfig/Index**.

Service and Support

Service and Support	**HPE Technology Services for Industry Standard Servers** HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise 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 HPE Care Pack Services** HPE 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** **HPE Proactive Care with 24x7 coverage, three year Care Pack Service** HPE Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HPE. 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 HPE 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** HPE Foundation Care 24x7 connects you to Hewlett Packard Enterprise 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 HPE server. Simplify your support experience and make Hewlett Packard Enterprise 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	**HPE ProLiant Server Hardware Installation** Provides for the basic hardware installation of HPE 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** HPE Factory Express offers configuration, customization, integration and deployment services for HPE 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**.

Service and Support

Data Privacy Services

Protect your data through better media management. HPE 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 HPE Care Pack services can be found at: **http://www.hp.com/go/cpc**.

Get connected to Hewlett Packard Enterprise 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**
HPE Support Center	Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more **http://www.hp.com/go/hpsc**. Hewlett Packard Enterprise 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. HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Care Pack or Hewlett Packard Enterprise contractual support agreement. **** HPE Support Center Mobile App is subject to local availability.**
Parts and Materials	Hewlett Packard Enterprise will provide HPE-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 QuickSpecs, 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 Hewlett Packard Enterprise due to malfunction.
For more information	To learn more on HPE ProLiant servers, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise 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. Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HPE SFF Hard Drive Blank Kit or P/N 666986-B21: HPE 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: Hewlett Packard Enterprise 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]	777160-001	777161-001
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	HPE 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) HPE 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.	

Smart Buy Models

[SKU Number]	799111-S01	807879-S01	807880-S01
Model Name	HP ProLiant ML110 Gen9 E5-2603v3 1.6GHz 6-core 8GB-R B140i 8SFF 1x1TB 550W PS US Server/S-Buy	HP ProLiant ML110 Gen9 E5-1603v3 2.8GHz 4-core 4GB-R B140i 4LFF 1x1TB 350W PS US Server/S-Buy	HP ProLiant ML110 Gen9 E5-1620v3 3.6GHz 4-core 8GB-R B140i 4LFF 1x1TB 550W PS US Server/S-Buy
Processor	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-1603v3	Intel® Xeon® E5-1620v3
Number of Processors	One		
Memory	8GB (2x4GB Registered DIMMs, 2133MHz)	4GB (1x4GB Registered DIMMs, 2133 MHz)	8GB (1x8GB Registered DIMMs, 2133MHz)
Network Controller	Broadcom 5717 Dual-port 1GbE		
Storage Controller	HPE Dynamic Smart Array B140i		
Hard Drive	1TB SATA		
Internal Storage	(8) SFF 6G HP SATA	4 LFF 6G NHP SATA	
Optical Drive	Optional SATA 9.5mm DVD-RW Optical Drive		
PCI-Express Slots	5 PCIe 3.0 slots (without risers)		
Power Supply	(1) HPE 550W ATX-Gen9 Power Supply Kit	(1) HPE 350W ATX-Gen9 Power Supply FIO Kit	(1) HPE 550W ATX-Gen9 Power Supply Kit
Fans	1 non hot plug, non-redundant		
Management	iLO Management (standard)		
Form Factor	Tower (4.5U)		
Warranty	Server Warranty includes Next Business Day Foundation Care 3x3x3		

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, Hewlett Packard Enterprise recommends the use of an Hewlett Packard Enterprise 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)

CTO Server	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
DIMMSlots	8 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HPE 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)

HPE Processors	**Entry Processors – E5-2600v3 series Processors**	
	HP ML110 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	773167-L21
	HP ML110 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	773169-L21
	Base Processors – E5-2600v3 series Processors	
	HP ML110 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	773158-L21
	HP ML110 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	773162-L21
	HP ML110 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	773173-L21
	HP ML110 Gen9 Intel® Xeon® E5-2623v3 (3GHz/4-core/10MB/105W) FIO Processor Kit	780075-L21
	Performance Processors – E5-2600v3 series Processors	
	HP ML110 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	773156-L21
	Entry Processors – E5-1600v3 series Processors	
	HP ML110 Gen9 Intel® Xeon® E5-1603v3 (2.8GHz/4-core/10MB/140W) FIO Processor Kit	783017-L21

Configuration Information - Factory Integrated Models

HP ML110 Gen9 Intel® Xeon® E5-1620v3 (3.5GHz/4-core/10MB/140W) FIO Processor Kit	783021-L21
HP ML110 Gen9 Intel® Xeon® E5-1650v3 (3.5GHz/6-core/15MB/140W) FIO Processor Kit	783023-L21

NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE: 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

HPE Memory

NOTE: Select one or more memory kits from below.

NOTE: LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM and RDIMM

NOTE: HPE memory from previous generation servers are not qualified or warranted with this HPE ProLiant Server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.

NOTE: 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**

NOTE: 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**

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	738629-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

HPE Standard Memory

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

NOTE: These are standard memory DIMMs with no SmartMemory features.

HPE Power Supplies

NOTE: Select quantity one or two HP Entry-Level Power Supplies below. Mixing of power supplies is not supported in the same server.

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

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** .

HPE Entry-Level Power Supplies

Configuration Information - Factory Integrated Models

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

Accessories

HP ML110 Gen9 Redundant Power Supply Enhancement Kit	784582-B21

NOTE: This kit must be selected when 750W CS Gold Hot Plug Power Supply Kit (P/N: 512327-B21) is ordered.

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HPE Storage Controllers

NOTE: Select one controller listed below if ordering SAS Hard Drives in Step 4.

HPE Smart Array Controller

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
NOTE: B140i cannot mix with any standup internal controller.
NOTE: Must also select one HP ML110 Gen9 Mini SAS P440/840 Cable Kit (P/N: 789651-B21)

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

NOTE: Smart Storage Battery included.
NOTE: Must select batter holder P/N: 786710-B21
NOTE: B140i cannot mix with any standup internal controller.
NOTE: Must select P840/4G Controller when utilizing 16 SFF Hard Drives.
NOTE: Must also select one HP ML110 Gen9 Mini SAS P440/840 Cable Kit (P/N: 789651-B21)

HPE Smart Host Bus Adapter

HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21

NOTE: Must select either one HP ML110 Gen9 Mini SAS H240 Cable Kit (P/N: 789648-B21) if utilizing with the Hot Plug 4LFF Model; or two HP ML110 Gen9 Mini SAS H240 Cable Kits if using with additional 4LFF Hot Plug drive cage or with 8SFF Model.

HPE Unique Options

HP AHCI-Enable FIO Setting	801845-B21

NOTE: This needs to be selected when advanced host controller interface mode is required on B140i controller.

HPE Insight Software

HPE Insight Control

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

Step 4: Choose Additional Options for Factory Integration from Core and Additional Options sections below

Core Options

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

HPE Unique 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	
	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.	
	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 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.	
	HP ML150 Gen9 Dedicated iLO Management Port Kit	780310-B21

HPE 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

HPE 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

Core Options

HPE Drives	**NOTE:** User may select any combination of SAS or SATA Hard 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

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

Core Options

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) 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 SFF (2.5-inch) SC Read Intensive Solid State Drives

HP 1.6TB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804605-B21
HP 800GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804599-B21
HP 480GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789145-B21
HP 480GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804593-B21

Core Options

HP 240GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789135-B21
HP 240GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804587-B21
HP 120GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804581-B21
HP 80GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804575-B21

6G SATA Hot Plug RI-3 SFF (2.5-inch) SC Solid State Drives

HP 3.84TB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816929-B21
HP 1.92TB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816919-B21
HP 960GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816909-B21
HP 480GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816899-B21
HP 240GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816889-B21
HP 120GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816879-B21

6G SATA Hot Plug SFF (2.5-inch) SC Write Intensive Solid State Drives

HP 1.2TB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804677-B21
HP 800GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804671-B21
HP 800GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804625-B21
HP 400GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804665-B21
HP 200GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804639-B21

6G SATA Hot Plug SFF (2.5-inch) SC Mixed Use Solid State Drives

HP 1.6TB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804631-B21
HP 480GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	832414-B21
HP 200GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804613-B21

6G SATA Hot Plug MU-3 SFF (2.5-inch) SC Solid State Drives

HP 1.92TB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	817011-B21
HP 960GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816995-B21
HP 480GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816985-B21
HP 240GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816975-B21
HP 120GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816965-B21

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

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

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

HP 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

Core Options

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 1.6TB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804608-B21

Core Options

HP 800GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804602-B21
HP 480GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789147-B21
HP 480GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804596-B21
HP 240GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789137-B21
HP 240GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804590-B21
HP 120GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804584-B21
HP 80GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804578-B21

6G SATA Hot Plug LFF (3.5-inch) RI-3 SCC SSD

HP 3.84TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816933-B21
HP 1.92TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816923-B21
HP 960GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816913-B21
HP 480GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816903-B21
HP 240GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816893-B21
HP 120GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816883-B21

6G SATA Hot Plug LFF (3.5-inch) SC Write Intensive Solid State Drives

HP 1.2TB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804680-B21
HP 800GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804674-B21
HP 400GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804668-B21
HP 200GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804642-B21

6G SATA Hot Plug LFF (3.5-inch) SC Mixed Use Solid State Drives

HP 1.6TB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804634-B21
HP 800GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804628-B21
HP 480GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	832417-B21
HP 200GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804616-B21

6G SATA Hot Plug LFF (3.5-inch) MU-3 SCC SSD

HP 1.92TB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	817015-B21
HP 960GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816999-B21
HP 480GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816989-B21
HP 240GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816979-B21
HP 120GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816969-B21

Core Options

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 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 Conveter 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

HPE Networking	**1 Gigabit Ethernet adapters**	
	HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
	HP Ethernet 1Gb 2-port 332T Adapter	615732-B21

Core Options

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

HPE Power Supplies

HPE Entry-Level Power Supplies

HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-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 HPE Server power supplies can be found at **http://www.hp.com/go/proliant/powersupply**.

HPE 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 HPE 750W CS Gold Ht Plg Pwr Supply Kit OR HPE 550W ATX-GEN9 Pwr Supply Kit in order.

NOTE: This option kit cannot be selected with 350W power supplies due to power consumption.

NOTE: HPE 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 HPE 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 HPE Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HPE Power Advisor is located at: **http://www.hp.com/go/hppoweradvisor**.

HPE 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, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for additional information.

HPE Insight Software	**HPE Insight Control**	
	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 HPE Software Technical Support and Update Service.

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

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

Embedded Management	**HPE 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

HPE Security	HP Trusted Platform Module Option	488069-B21

HPE Storage Controllers	**SAS Controller**	
	HP Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller	820834-B21
	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

Additional Options

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

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

SAS Controller Options

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

HPE 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

Battery Holder

HP ML150 Gen9 Smart Storage Battery Holder Kit	786710-B21

NOTE: Only support P series controllers.

Optional Software

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: HPE SmartCache is supported when one of the supported Smart Array Controllers is installed in the server.

NOTE: HPE SmartCache comes standard (no licensing is required) if the HPE Smart Array P840 Controller is installed in the server.

HPE 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 HPE tape backup products see: **http://www.hp.com/storage/SPOCK** and **http://www.hp.com/go/ebs**.

NOTE: Must select SAS controller to support internal SAS tape drives.

NOTE: Tape drive and HDD total amount can't exceed SAS controller support qty.

NOTE: Limited to H240 when select Tape Drive.

Tape Drives

HPE StoreEver LTO-7 Ultrium 15000 Internal Tape Drive	BB873A
HPE StoreEver LTO-7 Ultrium 15000 External Tape Drive	BB874A
HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	C0H19A
HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit	EH946C
HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount	EJ014B
HP StoreEver 1U SAS Rack-mount Kit	AE459B
HP StoreEver LTO-3 Ultrium 920 SAS External Tape Drive	EH848B

Additional Options

HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive	EH900B
HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
HP Mini SAS High Density to 4-lane Mini SAS External Fanout 2 Meter Cable	K2R09A
HP Mini SAS High Density to 4-lane Mini SAS External Fanout 4 Meter Cable	K2R10A
HPE Tape Storage Systems HPE StoreEver MSL6480	
HP StoreEver MSL6480 Scaleable Expansion Module	QU626A
HP StoreEver MSL6480 Scalable Base Module	QU625A
HP MSL2024 0-Drive Tape Library	AK379A
HP MSL4048 0-Drive Tape Library	AK381A

HPE Disk Backup	**HPE RDX Removable Disk Backup System**	
	HP D3700 Enclosure	QW967A
	HP D3600 Enclosure	QW968A

HPE 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 D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
	HP D6000 w/70 8TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 560TB Bundle	M0T59A
	HP D6000 w/70 6TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 420TB Bundle	M0T57A
	HP D6000 w/35 8TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 280TB Bundle	M0T58A

HPE Rack Mount Consoles, KVM Switches, and Keyboards	**HPE Location Discovery Services**	
	HP Location Discovery Services LCD8500 Kit	TL052A
	NOTE: Please see the **HPE Location Discovery Services QuickSpecs** for information on additional options and product specifications.	
	HPE Rack Mount Consoles	
	HP LCD8500 1U US Rackmount Console Kit	AF630A
	HP LCD8500 1U US TAA Rackmount Console Kit	AF645A
	HPE 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

Additional Options

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

HPE USB Keyboard and Mouse

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

HPE 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

HPE Uninterruptible Power Systems (UPS)

HPE DirectFlow Three Phase 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 30A 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
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 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

Additional Options

NOTE: Please see the **HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs** for information on additional options and product specifications.

HPE Tower UPS

HPE T750 G4 UPS Models

HP T750 G4 NA/JP Uninterruptible Power System	J2P85A

HPE T1000 G4 UPS Models

HP T1000 G4 NA/JP Uninterruptible Power System	J2P86A

HPE T1500 G4 UPS Models

HP T1500 G4 NA/JP Uninterruptible Power System	J2P87A

HPE Rack/Tower UPS

HPE R/T2200 G4 UPS Models

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

HPE 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

R1500 G4 Models

HP R1500 G4 NA Uninterruptible Power System	J2Q99A

R7000 Uninterruptible Power System (UPS)

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

R5000 Uninterruptible Power System (UPS)

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

HPE 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
HP DirectFlow UPS Management Card	AF493A

NOTE: To learn more, please visit the **HPE Uninterruptible Power Systems (UPS) web page**.

HPE USB and SD Options	**HPE 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

| **HPE Care Pack Services**	**Foundation Care**	
	HPE 3 year Foundation Care 24x7 ML110 Gen9 Service	U8JB1E
	HPE 3 year Foundation Care 24x7 wDMR ML110 Gen9 Service	U8JB2E
	HPE 3 year Foundation Care 24x7 wCDMR ML110 Gen9 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

Additional Options

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

Memory

**Memory
Population
guidelines**
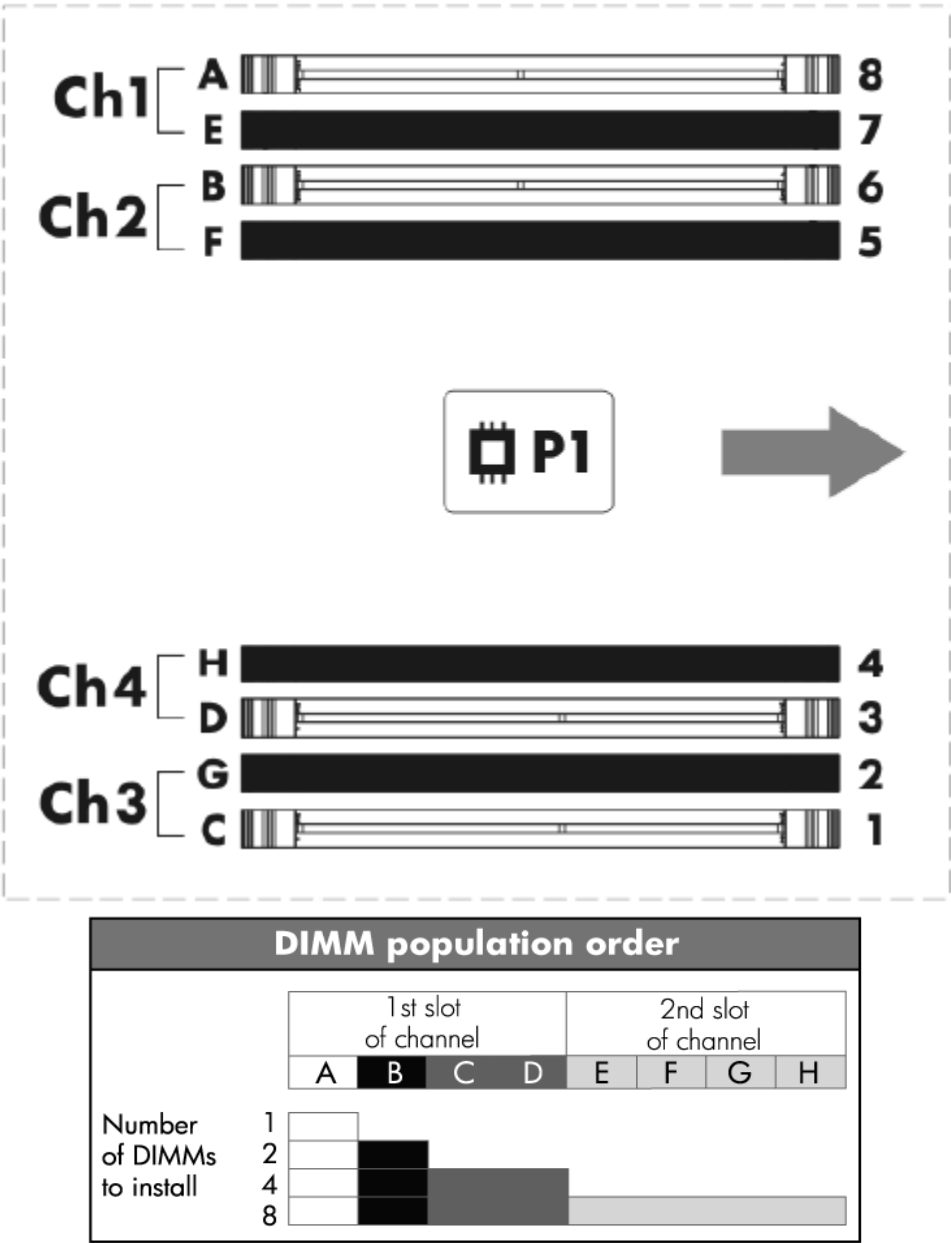
General Memory Population Rules and Guidelines:

. 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.

Memory

. Quad rank RDIMMs are not supported in HPE 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, HPE 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 channels1 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 HPE 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	Single Rank	Dual Rank	Dual Rank	Dual Rank	Dual Rank
DIMM Capacity	4GB	8GB	8GB	16GB	32GB	16GB
DIMM Native Speed (MT/s)	2133	2133	2133	2133	2133	
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	
SLOTS THAT CAN BE POPULATED						
8 slot servers	8	8	8	8	8	8
MAXIMUM CAPACITY (GB)						
	32	64	64	128	256	128
POPULATED DIMM SPEED (MT/s)						
1 DIMM Per Channel	2133	2133	2133	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133	2133	2133	2133
3 DIMM Per Channel	1600	1600	1600	1600	1600	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	

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

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

DDR4 memory options part number decoder

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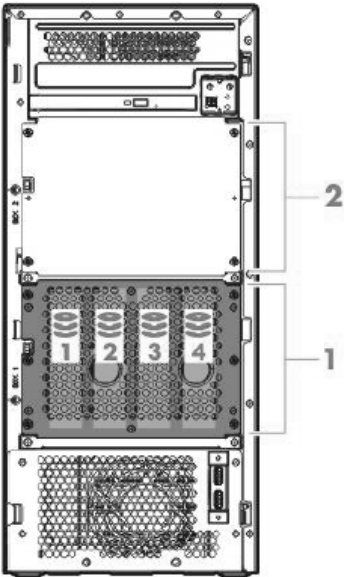
Memory

- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB
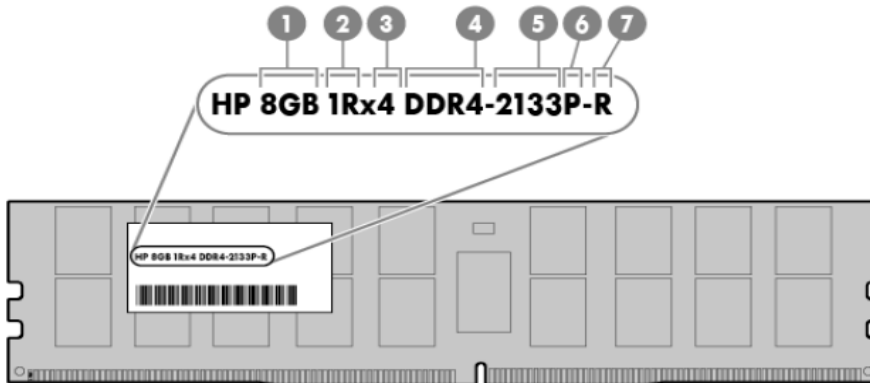
1. Capacity: 4GB/8GB/16GB/32GB
2. Rank: 1R = Single-rank; 2R = Dual-rank; 4R = Quad-rank
3. Data width: x4 = 4-bit; x8 = 8-bit
4. Memory generation: DDR4
5. Maximum memory speed: 2133 MT/s
6. CAS latency: P = 15
7. DIMM type: R = RDIMM (registered); L = LRDIMM (load reduced)
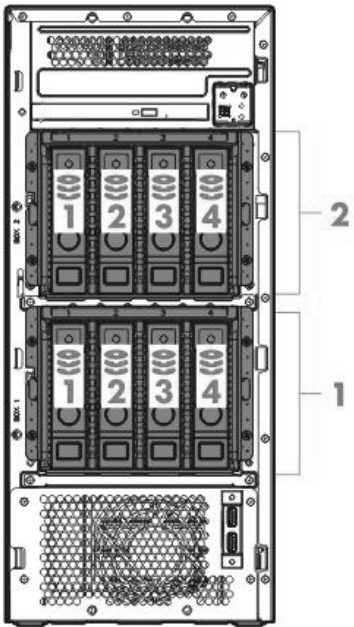
Storage

4-bay LFF non-hot-plug drive model

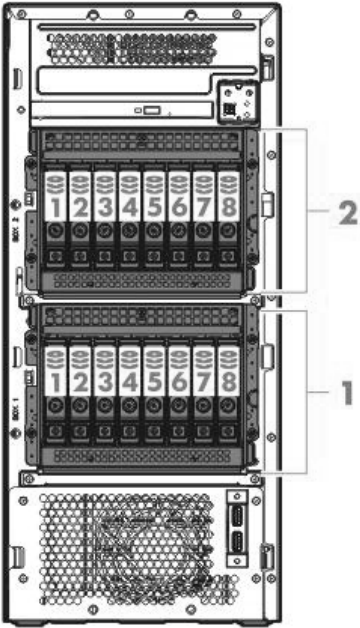1-4   4 x LFF SATA/SSD Non-hot-plug Hard Drive Bays

4-bay LFF hot-plug drive model

1-4   4 x LFF SAS/SSD Hot Pluggable Hard Drive Bays

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

Storage

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: Maximum:	27.56lb (12.5kg) 55lb (24.9g)
	Input Requirements	Range Line Voltage Rated Input Current	100 to 240 VAC For 350W & 550W Power Supply:8A (at 100~240 VAC)
		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°Cper 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 3048m (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

Technical Specifications

		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.
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr(36°F/hr).
Relative Humidity	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) of24°C (75.2°F) dew point or 90% relative humidity.
	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457m/min (1500 ft/min).

Acoustic Noise   Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

Idle

L WAd	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.

Technical Specifications

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.

HPE 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	HPE SSA, SMH, SIM
	Warranty	Server warranty
	HPE Secure Encryption license	Not Supported
	HPE SmartCache License	Not Supported
	HPE Smart Storage Administrator	Supported

HPE 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
	Ports	

Technical Specifications

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**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise 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 Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: **http://www.hp.com/go/green**. These instructions may be used by recyclers and other WEEE treatment facilities as well as HEWLETT PACKARD ENTERPRISE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
17-Dec-2015	From Version 6 to 7	Added	Smart Buy models were added to the NA version.
01-Dec-2015	From Version 5 to 6	Changed	On System Management Chipset, Embedded Management, Server utilities, and HPE Unique Options were revised. Product images were updated.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
28-Sep-2015	From Version 4 to 5	Added	Added new 6Gb SATA Solid State Drives.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
17-Aug-2015	From Version 3 to 4	Changed	Rear view image was replaced. Additional Options was revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
1-Jun-2015	From Version 2 to 3	Added	New Hard Drives were added to Core Options. HPE Insight Software section was added to Additional Options. Optional Software was added to HPE Storage Controllers.
		Changed	Standard Features was revised. HPE Storage Controllers and HPE Disk Backup were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
24-Apr-2015	From Version 1 to 2	Added	Smart Buy models added to the NA version only.

hp.com/qref/ml110gen9

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Summary of Changes

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