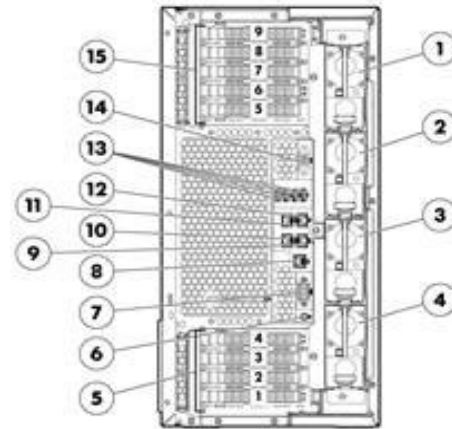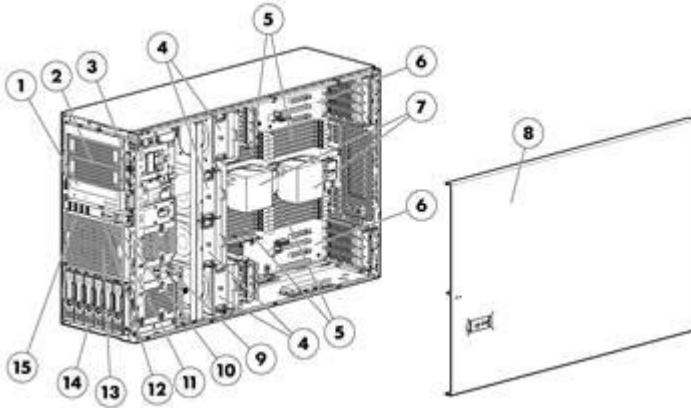# QuickSpecs

Overview

The HP ProLiant ML350p Gen8 Server series is the latest generation of the best-selling ProLiant ML servers delivering best-in-class performance, availability and maximum expandability for enterprise data centers, remote branch offices and growing businesses. Incorporating key HP technologies from the HP ProActive Insight architecture, the ML350p Gen8 provides innovations in memory, server management, firmware management and server storage. It combines these innovations with the latest Intel® Xeon® processors for a system with unsurpassed flexibility and performance.

Front View:

1. Half height SATA DVD ROM or DVD RW optical drive

2. Two (2) removable media bays

3. Systems Insight Display (rack and CTO models only)

4. Four (4) system fans

5. Twenty-four (24) DIMM slots: DDR3 Load Reduced (LRDIMM), Registered (RDIMM) or Unbuffered (UDIMM)

6. Nine (9) PCIe expansion slots (8 PCIe 3.0 and 1 PCIe 2.0)

7. Two (2) processor heatsinks

8. Quick removal access panel

9. Power On / Standby button and system power LED button

10. NIC Activity LED

11. Health LED

12. UID LED button

13. Optional drive cage

14. Standard drive cage (6 LFF or 8 SFF)

15. Four (4) USB connectors

Rear View:

1. Power supply 1(CTO)

2. Power supply 2(CTO)

3. Power supply 3 (Default)

4. Power supply 4 (Default)

5. Four (4) PCIe slots (for processor 1)

6. UID LED button

7. Serial connector

8. iLO connector

9. NIC connector 4

10. NIC connector 3

11. NIC connector 2

12. NIC connector 1

13. Four (4) USB connectors

14. Video connector

15. Five (5) PCIe slots (for processor 2)

What's New

- Support E5-2680 v2 Intel IvyBridge processor

Standard Features

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

Processor	
One of the following depending on Model	**E5-2600 v2 series Processors**

Entry Processors
NOTE: All support up to 1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2609 v2 (2.5GHz/4-core/10MB/6.4GT-s QPI/80W)

Intel® Xeon® E5-2603 v2 (1.8GHz/4-core/10MB/6.4GT-s QPI/80W)

Base Processors
NOTE: All support up to1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2640 v2 (2.0GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1600, HT, Turbo2- 3/3/3/3/3/3/4/5)

Intel® Xeon® E5-2630 v2 (2.6GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)

Intel® Xeon® E5-2620 v2 (2.1GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)

Intel® Xeon® E5-2630L v2 (2.4GHz/6-core/15MB/7.2GT-s QPI/60W, DDR3-1600, HT, Turbo2- 2/2/2/2/3/4)

Performance Processors
NOTE: All support up to 1866MHz DDR3 memory speeds.

Intel® Xeon® E5-2697 v2 (2.7GHz/12-core/30MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 3/3/3/3/3/3/3/4/5/6/7/8)

Intel® Xeon® E5-2690 v2 (3.0GHz/10-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 3/3/3/3/3/3/3/4/5/6)

Intel® Xeon® E5-2680 v2 (2.8GHz/10-core/25MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2- 3/3/3/3/3/4/5/6/7/8)

Intel® Xeon® E5-2670 v2 (2.5GHz/10-core/25MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2- 4/4/4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2667 v2 (3.3GHz/8-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 3/3/3/3/4/5/6/7)

Intel® Xeon® E5-2650 v2 (2.6GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2- 4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2643 v2 (3.5GHz/6-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 1/1/1/1/2/3)

Intel® Xeon® E5-2637 v2 (3.5GHz/4-core/15MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 1/1/2/3)

E5-2600 series Processors

Entry Processors
NOTE: All support up to 1066MHz DDR3 memory speeds.

Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/6.4GT-s QPI/80W)

Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/6.4GT-s QPI/80W)

Base Processors
NOTE: All support up to1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/8.0GT-s QPI/60W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Standard Features

Performance Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/8.0GT-s QPI/135W, DDR3-1600, HT, Turbo2-4/4/4/5/5/7/7/9)

Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/8.0GT-s QPI/130W, DDR3-1600, HT, Turbo2-4/4/5/5/5/7/8/8)

Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/8.0GT-s QPI/115W, DDR3-1600, HT, Turbo2-4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/8.0GT-s QPI/130W, DDR3-1600, HT, Turbo2- 3/3/3/4/5/6)

Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/8.0GT-s QPI/115W, DDR3-1600, HT, Turbo2-4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 5/5/6/6/7/7/8/8)

Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)

Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/8.0GT-s QPI/70W, DDR3-1600, HT, Turbo2-2/2/3/3/4/4/5/5)

Intel® Xeon® E5-2643 (3.3GHz/4-core/10MB/8.0GT-s QPI/130W, DDR3-1600, HT, Turbo2- 1/1/2/2)

Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/8.0GT-s QPI/80W, DDR3-1600, HT, Turbo2- 5/5)

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.
NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 or 1 core(s) active.
NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.
NOTE: Up to 2 processors supported. Mixing different processor models is not supported.
NOTE: For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = L for low power SKUs.

Cache Memory
One of the following depending on Model

30MB (1 x 30MB) Level 3
NOTE: For Twelve-core processors.

25MB (1 x 25MB) Level 3
NOTE: For Ten-core processors.

20MB (1 x 20MB) Level 3
NOTE: For Eight-core processors.

15MB (1 x 15MB) Level 3
NOTE: For Six-core processors.

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

5MB (1 x 5MB) Level 3
NOTE: For Dual-Core processors.

Standard Features

Chipset	Intel® C600 Chipset
	Intel® E5-2600 Processor Family
	Intel® E5-2600v2 Processor Family
	NOTE: For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.

Upgradeability	Upgradeable to two processors
	NOTE: Total 4, 8, 12 ,16, 20 or 24 cores
	NOTE: Processor upgrade available from Intel® Xeon® Processors E5-2600 to E5-2600 v2. Please contact HP Technology Sales (http://www.hp.com/support), your local HP Re-seller, or reference the following Customer Advisory: ProLiant Servers-Instructions for Upgrading an HP ProLiant Gen8 Server from an Intel Xeon Processor E5-2600 to an Intel Xeon Processor E5-2600 v2, regarding critical details before upgrading. An explanation of requirements and limitations are provided.
	NOTE: Customers who use ML350p Gen8 sandy bridge processors need to purchase Heatsink lever upgrade kit 749245-B21 when plan to upgrade to Ivy bridge processor
	Up to 24 DIMM slots available for higher memory capacity
	Up to 24 SFF Hard Drive Bays; Or 18 LFF Hard Drive Bays
	8 PCIe 3.0 and 1 PCIe 2.0 I/O slots for additional communications and storage expansion
	Redundant Power Supply and Redundant Fans
	Optical Drive Bay (up to 3)

On System Management Chipset	HP iLO (Firmware: HP iLO4)
	NOTE: For more information, visit: http://www.hp.com/go/ilo

Memory Protection	Advanced ECC
	Online Spare
	Lock-step mode

Standard Features

Memory	Type	HP SmartMemory
		DDR3 Load Reduced (LRDIMM), Registered (RDIMM) or Unbuffered (UDIMM)
	DIMM Slots Available	24
	Maximum Capacity (LRIDMM)	768GB (24 x 32GB LRDIMM @1866MHz)
	Maximum Capacity (RDIMM)	384GB (24x 16GB RDIMM @1866MHz)
	Maximum Capacity (UDIMM)	128GB (16 x 8GB UDIMM @1866MHz)

NOTE: 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 Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.
NOTE: If only one processor is installed, only 12 DIMM slots are available. When populating with two processors 24 DIMM slots are available. For maximum speed on some memory options on 16 DIMM slots may be populated.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1866MHz, 1600MHz, 1333MHz, or 1066MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Network Controller	HP 1Gb Ethernet 4-port 331i Adapter

Expansion Slots

Expansion Slot #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
9	PCIe 3.0	x4	x8	32	Full Length/Full Height	For processor 2
8	PCIe 3.0	x16	x16	32	Full Length/Full Height	For processor 2
7	PCIe 3.0	x4	x8	32	Full Length/Full Height	For processor 2
6	PCIe 3.0	x16	x16	32	Full Length/Full Height	For processor 2
5	PCIe 2.0	x4	x8	0	Half Length/Full Height	For processor 2
4	PCIe 3.0	x4	x8	0	Full Length/Full Height	For processor 1

Standard Features

3	PCIe 3.0	x16	x16	0	Full Length/Full Height	For processor 1
2	PCIe 3.0	x4	x8	0	Full Length/Full Height	For processor 1
1	PCIe 3.0	x8	x16	0	Full Length/Full Height	For processor 1

NOTE: Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.
NOTE: Nine total expansion slots. Three PCIe 3.0 x16 (x16 speed); One PCIe 3.0 x16 (x8 speed); Four PCIe 3.0 x8 (x4 speed); One PCIe 2.0 x8 (x4 speed).

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU).

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Storage Controller
One of the following
depending on model

Entry Models	HP Smart Array P420i/Zero Memory Controller
Base Models	HP Smart Array P420i/512M FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
	NOTE: The SA-P420i/512M FBWC is standard on tower model and SA-P420i/1G FBWC is standard on rack model.
	HP Smart Array P420i/1G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Performance Models	HP Smart Array P420i/2G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)

QuickSpecs

HP ProLiant ML350p Generation 8 (Gen8)

Standard Features

Internal Storage Devices	**Optical Drives** One of the following depending on model	HP Half-Height SATA DVD-ROM Optical Drive **NOTE:** DVD ROM is standard in entry and base tower models. HP Half Height SATA DVD-RW Optical Drive **NOTE:** DVD-RW is standard in performance tower and all rack models.	
	Hard Drives	None ship standard	
	Hard Drive Bays One of the following depending on model	(6) Hot plug LFF SAS/SATA HDD bays; upgradable to (18) (8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24) **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 Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.	

Maximum Internal Storage One of the following depending on model	Hot Plug LFF SAS	72TB	18 x 4TB
	Hot Plug LFF SATA	72TB	18 x 4TB
	Hot Plug SFF SAS	28.8TB	24 x 1.2TB
	Hot Plug SFF SATA	24TB	24 x 1TB
	Hot Plug SFF SATA SSD	9.6TB	24 x 400GB
	Hot Plug SFF SAS SSD	19.2TB	24 x 800GB
	Hot Plug LFF SATA SSD	7.2TB	18 x 400GB

Interfaces	Serial	1
	Video	1 (rear)
	Network RJ-45 (Ethernet)	5 (1 dedicated for HP Integrated Lights-Out)
	HP iLO Remote Management Network Port	1 Gb Dedicated
	SD slot	1 (internal) **NOTE:** The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
	USB	10 (4 front, 4 rear, 2 internal)

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 2.0 Support
	SMBIOS 2.7.1

Server Power Cords

ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V US wall outlets in a home or office. These servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' country specific NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.

Power Specifications

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Common Slot Power Supplies

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% (80 Plus Platinum) and are available in three power output options – 460W, 750W, and 1200W - allowing the customer to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

HP CS Platinum power supplies are required when enabling HP's Intelligent Power Discovery (IPD) solution. IPD is the first technology to create an automated, energy-aware network between IT systems and facilities. This allows your company to reclaim millions of dollars in wasted power capacity and downtime costs across data centers. For more information on HP's IPD solution, go to www.hp.com/go/ipd.

Standard Features

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor.
NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on 80Plus.org.

Redundant Power: Optional (1 + 1 redundant) power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

System Fans One of the following depending on Model	(4) hot plug, redundant fans plus louvers Fan Redundancy is standard in performance model. Four fans, PCIe baffles plus fan louvers are required for fan redundancy. (3) hot plug, non-redundant fans For fan redundancy in entry and base models, the HP Hot Plug Redundant Fan Kit (659486-B21) must be purchased. HP Hot Plug Redundant Fan Kit includes 4th fan, PCIe baffles and fan louvers.
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Canonical Ubuntu Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Solaris VMware Citrix XenServer **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/ML350pGen8
Graphics	Integrated Matrox G200 video standard ● 1280 x 1024 (32 bpp) ● 1920 x 1200 (16 bpp) HP iLO 4 On System Management Memory ● 16 MB Flash ● 256 MB DDR 3 with ECC (112 MB after ECC and video)
Form Factor	Tower or Rack (5U)

Standard Features

On System Management	HP iLO Management Engine	HP iLO Management Engine is a comprehensive set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 servers. The HP iLO Management Engine portfolio includes:

- **HP iLO**: The HP iLO (Integrated Lights-Out) management processor is the core foundation for the HP iLO Management Engine
- **HP Agentless Management**: Provides built in server health monitoring and alerting capability without OS agents, that starts working the moment a power cord and an Ethernet cable are connected.
- **HP Active Health System**: Always on, continuous monitoring for increased stability and shorter downtimes; 100% configuration history; Health and service alerts and easy export and upload to Service and Support.
- **HP Intelligent Provisioning**: Lets customers provision and configure a single server without any separate media. No more SmartStart CDs or Smart Update Firmware DVD are needed.
  - To start Intelligent Provisioning:
    - Press the F10 key during the ProLiant Gen8 server boot process (also known as power on self-test or POST).
    - Please go to the Intelligent Provisioning website at: www.hp.com/go/intelligentprovisioning for additional information and to view usage videos.
    - Use the Service Pack for ProLiant (SPP) at: www.hp.com/go/spp to get firmware and software updates.
- **HP iLO Mobile App**: Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: www.hp.com/go/ilo/mobileapp

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

Standard Features

HP Insight Management	HP Service Pack for ProLiant (SPP)	HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release.

The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdepencies, when determining the correct updates and order of update deployment.

NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from www.hp.com/go/spp/download. More information can be found: http://www.hp.com/go/SmartUpdate, www.hp.com/go/spp and http://www.hp.com/go/hpsum

HP StoreVirtual VSA	HP StoreVirtual VSA allows you to create fully featured shared storage on a VMware vSphere or Microsoft Hyper-V virtualized server. This server model starting November 2013, includes a limited license for HP StoreVirtual VSA software with 1TB of capacity. To download the license key and StoreVirtual VSA software, visit: www.hp.com/go/unlockVSA.

NOTE: You will need your server serial number in order to complete the registration form. Fully functional, capacity-based licenses are available in 4TB, 10TB, and 50TB sizes. For more information and access to the 60-day free trial, visit: www.hp.com/go/tryVSA

Standard Features

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

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, 3-Year Labor, 3-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

HP Insight Management	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. HP Insight Control also supports Location and Power Discovery Services to automate many configuration, asset tracking, and power management tasks to speed implementation and prevent downtime. For more information, see http://www.hp.com/go/insightcontrol.
		HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see: http://www.hp.com/services/insight.
	HP iLO Advanced	HP Integrated Lights-Out Advanced License a product option, providing smart remote server management without compromise. iLO Advanced unlocks the full set of remote administration functionality for all HP ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see: http://www.hp.com/go/iloadvance
	HP Matrix Operating Environment	The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.
		The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).
		NOTE: For more information, visit: http://www.hp.com/go/matrixoe
High Performance Clusters	HP Cluster Platforms	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.
	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html

Optional Features

HP Insight Cluster Management Utility	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

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 turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

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

HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at any time. www.hp.com/go/insightonline

Optional Features

HP Proactive Insight experience	Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consists of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience 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: www.hp.com/go/proactiveinsightexperience
Factory Express Portfolio 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. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. 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
HP Simple Configurator	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** Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services. **Protect your business beyond warranty with HP Care Pack Services** HP Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs. HP Foundation Care services offer scalable reactive support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response
Optimized Care	**Supports maintaining servers at optimum performance availability** **3-Year HP 6 hour Call to Repair Response, Proactive Care*** Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf **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
Standard Care	**Service recommendation that maintains high level of server availability** **3-Year HP 24x7 4 hour response, Proactive Care Service*** This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf **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
Related Services	**HP Proactive Care Personalized Support - Environmental Option** The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HP Proactive Care Support. **HP Proactive Select Service** Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next

Service and Support

12 months. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf

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

Insight Online/Insight Remote Support

HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution*. Learn more about Insight Remote Support http://www.hp.com/go/insightremotesupport and Insight Online http://www.hp.com/go/insightonline

* Insight Remote Support is a prerequisite for Proactive Care.

Parts and Material

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 ServiceOne Channel Partner. Or visit: http://www.hp.com/services/proliant

Pre-configured Models

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

NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

NOTE: HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

NOTE: If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit.

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

Entry Models

E5-2600 v2 series Processors

HP ProLiant ML350p Gen8 E5-2609v2 1P 4GB-R P420i/ZM 6 LFF 460W PS Server
736947-xx1

Processor	(1) Intel® Xeon® E5-2609 v2 (2.50GHz/4-core/10MB/6.4GT-s QPI/80W) Processor
Cache Memory	10MB (1 x 10MB) L3
Memory	4GB (1x4GB) PC3L-12800R (DDR3-1600LV) Registered DIMMS **NOTE:** 11 DIMM slots available (23 if second processor is purchased).
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/Zero Memory Controller
Hard Drive	None ship standard; includes 5 LFF hard drive blanks
Internal Storage	(6) Hot plug LFF SAS/SATA HDD bays; upgradable to (18)
Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
Power Supply	(1) HP 460W Common Slot Gold Hot Plug Power Supply
Fans	3 hot plug, non-redundant fans
Accessories	USB Keyboard and Mouse ship standard **NOTE:** EURO (-421) Models excludes the keyboard.
Management	HP iLO Management Engine (standard) Optional: HP Insight Control
Form Factor	Tower (5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

E5-2600 series Processors

HP ProLiant ML350p Gen8 E5-2609 1P 4GB-R P420i Hot Plug 6 LFF 460W PS Entry Svr
646675-xx1

Processor	(1) Intel® Xeon® E5-2609(2.40GHz/4-core/10MB/6.4GT-s QPI/80W) Processor
Cache Memory	10MB (1 x 10MB) L3
Memory	4GB (1x4GB) PC3L-10600R (DDR3-1333) Registered DIMMS **NOTE:** 11 DIMM slots available (23 if second processor is purchased).
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/Zero Memory Controller
Hard Drive	None ship standard; includes 5 LFF hard drive blanks

Pre-configured Models

Internal Storage	(6) Hot plug LFF SAS/SATA HDD bays; upgradable to (18)
Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
Power Supply	(1) HP 460W Common Slot Gold Hot Plug Power Supply
Fans	3 hot plug, non-redundant fans
Accessories	USB Keyboard and Mouse ship standard **NOTE:** EURO (-421) Models excludes the keyboard.
Management	HP iLO Management Engine (standard) Optional: HP Insight Control
Form Factor	Tower (5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Base Models

E5-2600 v2 series Processors

HP ProLiant ML350p Gen8 E5-2620v2 1P 8GB-R P420i/512 FBWC 8 SFF 460W PS Server
736958-xx1

Processor	(1) Intel® Xeon® E5-2620 v2 (2.1GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5) Processor
Cache Memory	15MB (1 x 15MB) L3
Memory	8GB (1x8GB) PC3L-12800R (DDR3-1600LV) Registered DIMMS **NOTE:** 11 DIMM slots available (23 if second processor is purchased).
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/512M FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Hard Drive	None ship standard; includes 7 SFF hard drive blanks
Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
Power Supply	(1) HP 460W Common Slot Gold Hot Plug Power Supply
Fans	3 hot plug, non-redundant fans
Accessories	USB Keyboard and Mouse ship standard **NOTE:** EURO (-421) Models excludes the keyboard.
Management	HP iLO Management Engine (standard) Optional: HP Insight Control
Form Factor	Tower (5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

E5-2600 series Processors

HP ProLiant ML350p Gen8 E5-2620 1P 8GB-R P420i Hot Plug 8 SFF 460W PS Base Svr
646676-xx1

Processor	(1) Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5) Processor
Cache Memory	15MB (1 x 15MB) L3
Memory	8GB (2x4B) PC3L-10600R (DDR3-1333) Registered DIMMS **NOTE:** 10 DIMM slots available (22 if second processor is purchased).
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter

Pre-configured Models

	Storage Controller	HP Smart Array P420i/512M FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
	Hard Drive	None ship standard; includes 7 SFF hard drive blanks
	Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	Power Supply	(1) HP 460W Common Slot Gold Hot Plug Power Supply
	Fans	3 hot plug, non-redundant fans
	Accessories	USB Keyboard and Mouse ship standard **NOTE:** EURO (-421) Models excludes the keyboard.
	Management	HP iLO Management Engine (standard) Optional: HP Insight Control
	Form Factor	Tower (5U)
	Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

HP ProLiant ML350p Gen8 E5-2630 1P 8GB-R P420i Hot Plug 8 SFF 750W PS Base Svr 646677-xx1	**Processor**	(1) Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5) Processor
	Cache Memory	15MB (1 x 15MB) L3
	Memory	8GB (2x4GB) PC3L-10600R (DDR3-1333) Registered DIMMS **NOTE:** 10 DIMM slots available (22 if second processor is purchased).
	Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
	Storage Controller	HP Smart Array P420i/1G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
	Hard Drive	None ship standard; includes 7 SFF hard drive blanks
	Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
	Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
	Power Supply	(1) HP 750W Common Slot Platinum Plus Hot Plug Power Supply
	Management	HP iLO Management Engine (standard) Optional: HP Insight Control
	Fans	3 hot plug, non-redundant fans
	Form Factor	Rack (5U)
	Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Performance Models

HP ProLiant ML350p Gen8 E5-2650 2P 16GB-R P420i Hot Plug 8 SFF 750W PS ES Server 678237-xx1	**Processor**	(2) Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/8GT-s QPI/95W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8) Processors
	Cache Memory	20MB (1 x 20MB) L3
	Memory	16GB (4x4GB) PC3L-10600R (DDR3-1333) Registered DIMMS **NOTE:** 20 DIMM slots available.
	Network Controller	HP 1Gb Ethernet 4-port 331i Adapter

Pre-configured Models

Storage Controller	HP Smart Array P420i/2G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Hard Drive	None ship standard; includes 7 SFF hard drive blanks
Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
Power Supply	(2) HP 750W Common Slot Platinum Plus Hot Plug Power Supply
Fans	4 hot plug, redundant fans plus louvers
Accessories	USB Keyboard and Mouse ship standard **NOTE:** EURO (-421) Models excludes the keyboard.
Management	HP iLO Management Engine (standard) HP Insight Control Standard
Energy Star	Meets Energy Star requirements
Form Factor	Tower (5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Performance Models
NOTE: These Models are Energy Star Certified.

E5-2600 v2 series Processors

HP ProLiant ML350p Gen8 E5-2650v2 2P 16GB-R P420i/2GB FBWC 8 SFF 750W RPS Server
736968-xx1

Processor	(2) Intel® Xeon® E5-2650 v2 (2.60GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5) Processors
Cache Memory	20MB (1 x 20MB) L3
Memory	16GB (2x8GB) PC3-14900R (DDR3-1866) Registered DIMMS **NOTE:** 20 DIMM slots available.
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/2G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Hard Drive	None ship standard; includes 7 SFF hard drive blanks
Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
Power Supply	(2) HP 750W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 hot plug, redundant fans plus louvers
Management	HP iLO Management Engine (standard) HP Insight Control Standard
Energy Star	Meets Energy Star requirements
Form Factor	Tower(5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

HP ProLiant ML350p Gen8 E5-2640v2 2P 16GB-R P420i/2GB FBWC 8 SFF

Processor	(2) Intel® Xeon® E5-2640 v2 (2.0GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1600, HT, Turbo2- 3/3/3/3/3/3/4/5) Processors
Cache Memory	20MB (1 x 20MB) L3

Pre-configured Models

750W RPS Server
736967-xx1

Memory	16GB (2x8GB) PC3L-12800R (DDR3-1600LV) Registered DIMMS **NOTE:** 20 DIMM slots available.
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/2G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Hard Drive	None ship standard; includes 7 SFF hard drive blanks
Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
Power Supply	(2) HP 750W Common Slot Platinum Plus Hot Plug Power Supply
Fans	4 hot plug, redundant fans plus louvers
Management	HP iLO Management Engine (standard) HP Insight Control Standard
Energy Star	Meets Energy Star requirements
Form Factor	Rack (5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

E5-2600 series Processors

HP ProLiant ML350p Gen8 E5-2640 2P 16GB-R P420i Hot Plug 8 SFF 750W PS Perf Svr
646678-xx1

Processor	(2) Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5) Processors
Cache Memory	15MB (1 x 15MB) L3
Memory	16GB (4x4GB) PC3L-10600R (DDR3-1333) Registered DIMMS **NOTE:** 20 DIMM slots available.
Network Controller	HP 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HP Smart Array P420i/2G FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Hard Drive	None ship standard; includes 7 SFF hard drive blanks
Internal Storage	(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (24)
Optical Drive	HP Half-Height SATA DVD-RW Optical Drive
Power Supply	(2) HP 750W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 hot plug, redundant fans plus louvers
Management	HP iLO Management Engine (standard) HP Insight Control Standard
Energy Star	Meets Energy Star requirements
Form Factor	Rack(5U)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Pre-configured Models

Country Code Key		Tower Code Key	Rack Code Key
	xx=00	US	US
	xx=01	Australia	N/A
	xx=03	UK	N/A
	xx=04	Germany	N/A
	xx=05	France	N/A
	xx=20	Brazil	N/A
	xx=29	Japan	Japan
	xx=37	APD	APD
	xx=42	Europe **NOTE:** EURO (-421) Models excludes the keyboard.(Excludes USB Keyboard)	Europe
	xx=AA	PRC	PRC

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.
NOTE: Factory Integrated Models must start with a CTO Server.
NOTE: FIO indicates that this option is only available as a factory installable option.
NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

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

HP Models	**ML350p Gen8 Tower Models**	
	HP ProLiant ML350p Gen8 Hot Plug 8 SFF Configure-to-order Tower Server	652065-B21
	Includes:	

HP 1Gb Ethernet 4-port 331i Adapter
HP Smart Array P420i Controller
Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays
Seven (7) HDD blanks
Ten (10) USB ports
Eight (8) PCIe 3.0 slots (3x16, 1x8, 4x4), One (1) PCIe 2.0 slot (1x4)
USB Keyboard & Mouse (optional)
HP iLO Management Engine (standard)
Tower (5U) form factor
SID Module (optional)

HP ProLiant ML350p Gen8 Hot Plug 6 LFF Configure-to-order Tower Server	652066-B21
Includes:	

HP 1Gb Ethernet 4-port 331i Adapter
HP Smart Array P420i Controller
Six (6) Hot-Plug (LFF) SAS/SATA Drive Bays
Five (5) HDD blanks
Ten (10) USB ports
Eight (8) PCIe 3.0 slots (3x16, 1x8, 4x4), One (1) PCIe 2.0 slot (1x4)
USB Keyboard & Mouse (optional)
HP iLO Management Engine (standard)
Tower (5U) form factor
SID Module (optional)

ML350p Gen8 Rack Models

HP ProLiant ML350p Gen8 Hot Plug 8 SFF Configure-to-order Rack Server	652063-B21
Includes:	

HP 1Gb Ethernet 4-port 331i Adapter
HP Smart Array P420i Controller
Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays
Seven (7) HDD blanks
Ten (10) USB ports
Eight (8) PCIe 3.0 slots (3x16, 1x8, 4x4), One (1) PCIe .2.0 slot (1x4)
HP iLO Management Engine (standard)
Rack (5U) form factor
Sliding Rail Kit
SID module (standard)

Configuration Information - Factory Integrated Models

HP ProLiant ML350p Gen8 Hot Plug 6 LFF Configure-to-order Rack Server	652064-B21

Includes:

HP Embedded 1 Gb Ethernet 4-port 331i Adapter
Embedded HP Smart Array P420i Controller
Six(6) Hot-Plug (LFF) SAS/SATA Drive Bays
Five(5) HDD blanks
Ten (10) USB ports
Eight (8) PCIe 3.0 slots (3x16, 1x8, 4x4), One (1) PCIe 2.0 slot (1x4)
HP iLO Management Engine (standard)
Rack (5U) form factor
Sliding Rail Kit
SID module (standard)

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

HP Processors

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

Entry Processors - E5-2600 v2 series Processors
NOTE: All support up to 1333MHz memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2609v2 (2.5GHz/4-core/10MB/80W) FIO Processor Kit	722284-L21
HP ML350p Gen8 Intel® Xeon® E5-2603v2 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	722285-L21

Base Processors - E5-2600 v2 series Processors
NOTE: All support up to1600MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2640v2 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	709491-L21
HP ML350p Gen8 Intel® Xeon® E5-2630v2 (2.6GHz/6-core/15MB/80W) FIO Processor Kit	709492-L21
HP ML350p Gen8 Intel® Xeon® E5-2620v2 (2.1GHz/6-core/15MB/80W) FIO Processor Kit	709493-L21
HP ML350p Gen8 Intel® Xeon® E5-2630Lv2 (2.4GHz/6-core/15MB/60W) FIO Processor Kit	722287-L21

Performance Processors - E5-2600 v2 series Processors
NOTE: All support up to 1866MHz DDR3 memory speeds

HP ML350p Gen8 Intel® Xeon® E5-2697v2 (2.7GHz/12-core/30MB/130W) FIO Processor Kit	722301-L21
HP ML350p Gen8 Intel® Xeon® E5-2690v2 (3.0GHz/10-core/25MB/130W) FIO Processor Kit	709486-L21
HP ML350p Gen8 Intel® Xeon® E5-2680v2 (2.8GHz/10-core/25MB/115W) FIO Processor Kit	709487-L21
HP ML350p Gen8 Intel® Xeon® E5-2670v2 (2.5GHz/10-core/25MB/115W) FIO Processor Kit	709488-L21
HP ML350p Gen8 Intel® Xeon® E5-2667v2 (3.3GHz/8-core/25MB/130W) FIO Processor Kit	722303-L21

Configuration Information - Factory Integrated Models

HP ML350p Gen8 Intel® Xeon® E5-2650v2 (2.6GHz/8-core/20MB/95W) FIO Processor Kit	709490-L21
HP ML350p Gen8 Intel® Xeon® E5-2643v2 (3.5GHz/6-core/25MB/130W) FIO Processor Kit	722304-L21
HP ML350p Gen8 Intel® Xeon® E5-2637v2 (3.5GHz/4-core/15MB/130W) FIO Processor Kit	722305-L21

Entry Processors - E5-2600 series Processors
NOTE: All support up to 1066MHz memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) FIO Processor Kit	660597-L21
HP ML350p Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	660595-L21

Base Processors - E5-2600 series Processors
NOTE: All support up to1333MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) FIO Processor Kit	660600-L21
HP ML350p Gen8 Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) FIO Processor Kit	660599-L21
HP ML350p Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) FIO Processor Kit	660598-L21
HP ML350p Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) FIO Processor Kit	660607-L21

Performance Processors - E5-2600 series Processors
NOTE: All support up to1600MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/135W) FIO Processor Kit	660605-L21
HP ML350p Gen8 Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/130W) FIO Processor Kit	660604-L21
HP ML350p Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) FIO Processor Kit	660603-L21
HP ML350p Gen8 Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/130W) FIO Processor Kit	660608-L21
HP ML350p Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) FIO Processor Kit	660596-L21
HP ML350p Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) FIO Processor Kit	660602-L21
HP ML350p Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	660601-L21
HP ML350p Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) FIO Processor Kit	660606-L21
HP ML350p Gen8 Intel® Xeon® E5-2643 (3.3GHz/4-core/10MB/130W) FIO Processor Kit	678242-L21
HP ML350p Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) FIO Processor Kit	678244-L21

HP Memory	**NOTE:** 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 Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html **NOTE:** LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708637-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21

Configuration Information - Factory Integrated Models

HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708639-B21
HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	731761-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708641-B21

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 2GB (1x2GB) Single Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708631-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21

Configuration Information - Factory Integrated Models

HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.
NOTE: Depending on the memory configuration and processor model, 1866MHz, 1600MHz, and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at www.hp.com/go/ddr3memory-configurator.

HP Power Supplies

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor

HP Common Slot Platinum Plus Power Supply Kits
NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.

HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21

HP Common Slot Gold Power Supplies
NOTE: The following Power Supplies offer up to 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21

HP Common Slot -48VDC Power Supplies

HP 750W Common Slot -48VDC Hot Plug Power Supply Kit	636673-B21

NOTE: The HP 750W Common Slot -48VDC power supply does not ship with a power cable. It has been designed with a terminal block connection allowing for custom design of power cords by the user.

Enablement Kit

Configuration Information - Factory Integrated Models

HP 4X1200W RPS FIO Enablement Kit	659487-B21

NOTE: This kit Requires the selection of either 2 x 1200W power supply kits or 4 x 1200w power supply kits.

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

HP Graphics Options	HP 3rd FIO Graphic Card Power Cable Kit	700835-B21
	NOTE: This FIO kit only require when 3 graphic card order.	
HP SID Module	HP Systems Insight Display FIO Kit	660583-B21
	NOTE: Provides health status for key components (for CTO Tower Models only, standard in Rack Models)	
HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License	C6N36ABE
	NOTE: The Electronic software license is available in EMEA only.	

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be integrated at the factory. Contact your local sales representative for additional information.

HP Unique Options	HP Hot Plug Redundant Fan Kit	659486-B21
	HP Tower to Rack Conversion Tray Kit	659488-B21
	HP Security Bezel Kit	660584-B21

NOTE: For restricting access to a rack model

HP Graphic Card Support Kit   660582-B21
NOTE: The ML350p Gen8 supports up to 3 graphic cards. HP Graphic Card Support Kit (660582-B21) will be required per Graphic Card HP 3rd Graphic Card Power Cable FIO Kit (700835-B21) will be an additional request for the 3rd graphics card support
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: www.hp.com/go/hppoweradvisor.

HP ML350p Gen8 Smart Array Cable Kit   725675-B21
NOTE: While P430 purchased, this option kit needs to be purchased.

HP Processors

Entry Processors - E5-2600 v2 series Processors
NOTE: All support up to 1333MHz memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2609v2 (2.5GHz/4-core/10MB/80W) Processor Kit	722284-B21
HP ML350p Gen8 Intel® Xeon® E5-2603v2 (1.8GHz/4-core/10MB/80W) Processor Kit	722285-B21

Base Processors - E5-2600 v2 series Processors
NOTE: All support up to1600MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2640v2 (2.0GHz/8-core/20MB/95W) Processor Kit	709491-B21
HP ML350p Gen8 Intel® Xeon® E5-2630v2 (2.6GHz/6-core/15MB/80W) Processor Kit	709492-B21
HP ML350p Gen8 Intel® Xeon® E5-2620v2 (2.1GHz/6-core/15MB/80W) Processor Kit	709493-B21
HP ML350p Gen8 Intel® Xeon® E5-2630Lv2 (2.4GHz/6-core/15MB/60W) Processor Kit	722287-B21

Performance Processors - E5-2600 v2 series Processors
NOTE: All support up to 1866MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2697v2 (2.7GHz/12-core/30MB/130W) Processor Kit	722301-B21
HP ML350p Gen8 Intel® Xeon® E5-2690v2 (3.0GHz/10-core/25MB/130W) Processor Kit	709486-B21
HP ML350p Gen8 Intel® Xeon® E5-2680v2 (2.8GHz/10-core/25MB/115W) Processor Kit	709487-B21
HP ML350p Gen8 Intel® Xeon® E5-2670v2 (2.5GHz/10-core/25MB/115W) Processor Kit	709488-B21
HP ML350p Gen8 Intel® Xeon® E5-2667v2 (3.3GHz/8-core/25MB/130W) Processor Kit	722303-B21
HP ML350p Gen8 Intel® Xeon® E5-2650v2 (2.6GHz/8-core/20MB/95W) Processor Kit	709490-B21
HP ML350p Gen8 Intel® Xeon® E5-2643v2 (3.5GHz/6-core/25MB/130W) Processor Kit	722304-B21
HP ML350p Gen8 Intel® Xeon® E5-2637v2 (3.5GHz/4-core/15MB/130W) Processor Kit	722305-B21

Entry Processors - E5-2600 series Processors
NOTE: All support up to 1066MHz memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) Processor Kit	660597-B21
HP ML350p Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) Processor Kit	660595-B21

Base Processors - E5-2600 series Processors
NOTE: All support up to1333MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) Processor Kit	660600-B21

Core Options

HP ML350p Gen8 Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) Processor Kit	660599-B21
HP ML350p Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor Kit	660598-B21
HP ML350p Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Kit	660607-B21

Performance Processors - E5-2600 series Processors
NOTE: All support up to1600MHz DDR3 memory speeds.

HP ML350p Gen8 Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/135W) Processor Kit	660605-B21
HP ML350p Gen8 Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/130W) Processor Kit	660604-B21
HP ML350p Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) Processor Kit	660603-B21
HP ML350p Gen8 Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/130W) Processor Kit	660608-B21
HP ML350p Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) Processor Kit	660596-B21
HP ML350p Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) Processor Kit	660602-B21
HP ML350p Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Kit	660601-B21
HP ML350p Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) Processor Kit	660606-B21
HP ML350p Gen8 Intel® Xeon® E5-2643 (3.3GHz/4-core/10MB/130W) Processor Kit	678242-B21
HP ML350p Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor Kit	678244-B21

Processor Upgrade Kit

HP ML350p Gen8ProcessorUpgrade Lever Kit	749245-B21

NOTE: Customers who use ML350p Gen8 sandy bridge processors need to purchase Heatsink lever upgrade kit 749245-B21 when plan to upgrade to Ivy bridge processor.

HP Memory

NOTE: 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 Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708637-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708639-B21
HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	731761-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21

Core Options

HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708641-B21

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 2GB (1x2GB) Single Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708631-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

Core Options

Load Reduced DIMMs (LRDIMMs)

NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21

Load Reduced DIMMs (LRDIMMs)

NOTE: The following memory is supported by the E5-2600 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: Depending on the memory configuration and processor model, 1866MHz, 1600MHz, and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at www.hp.com/go/ddr3memory-configurator.

HP Optical Drives	HP Half-Height SATA DVD ROM JackBlack Optical Drive	624189-B21
	HP Half-Height SATA DVD RW JackBlack Optical Drive	624192-B21

NOTE: A total of two optical drives can be added. A second and third optical drive requires the HP 2nd Media Bay Cage Kit (Part Number 661618-B21).

HP Hard Drives

NOTE: 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.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	697574-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21

SAS Hot Plug SmartDrive SFF (2.5-inch) Midline 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 SmartDrive LFF (3.5-inch) Enterprise Drives

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21

Core Options

SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives

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

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

6G SATA Hot Plug with SmartDrive 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

6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives

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

NOTE: SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)

6G SATA Value Endurance 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

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

HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	739898-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	739888-B21

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

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

Core Options

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

HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690829-B21
HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690827-B21
HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690825-B21

6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives

HP 400GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653082-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653078-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html (Worldwide)

Hard Drive Kits

NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

HP 2nd Media Bay Cage Kit	661618-B21
HP 5U 6 Large Form Factor (LFF) Hot Plug Drive Cage Kit	659485-B21
HP 5U 8 Small Form Factor (SFF) Hot Plug Drive Cage Kit	659484-B21
HP 5U 6 LFF Expander Hard Drive Cage Kit	661717-B21
HP 5U 8 SFF Expander Hard Drive Cage Kit	661714-B21
HP SFF Gen8 Hard Drive Blank Kit	666987-B21
HP LFF Gen8 Hard Drive Blank Kit	666986-B21

Core Options

> **NOTE:** Mixing of SFF and LFF drive cages is not allowed.
> **NOTE:** Additional Hot Plug Drive Cages require a separate Smart Array controller for each drive cage. HP recommends the HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller (P/N 631670-B21).
> **NOTE:** Expander HDD Cage Kit allows up to 18 LFF / 24 SFF HDDs managed under one single controller. The controller must have a minimum of 512MB FBWC module installed.

HP Networking

Gigabit Ethernet adapters

HP NC112T PCI Express Gigabit Server Adapter	503746-B21
HP NC365T 4-port Ethernet Server Adapter	593722-B21
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

10 Gigabit Ethernet adapters

HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21

> **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

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HP InfiniBand

QLogic InfiniBand 4X QDR PCI-E G2 Dual Port HCA	583211-B21

> **NOTE:** Please see the QuickSpecs for additional information:
> http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html

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Core Options

HP Power Supplies	**NOTE:** Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.	
	NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor	

HP Common Slot Platinum Plus Power Supply Kits
NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.

HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21

HP Common Slot Gold Power Supplies
NOTE: The following Power Supplies offer up to 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21

HP Common Slot -48VDC Power Supplies

HP 750W Common Slot -48VDC Hot Plug Power Supply Kit	636673-B21

NOTE: The HP 750W Common Slot -48VDC power supply does not ship with a power cable. It has been designed with a terminal block connection allowing for custom design of power cords by the user.

NOTE: Option Kits for AC power supplies include the power supply and one PDU IEC cable.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:
http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

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HP Cooling Options	HP Hot Plug Redundant Fan Kit	659486-B21

Additional Options

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

HP Insight Software	**HP Insight Control**	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	C6N28ABE
	NOTE: The Electronic software license is available in EMEA only.	
	HP Insight Control Server Provisioning Media Kit	BD883A
	HP Insight Management Media Kit	C6N31A
	HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License	T9082AAE
	HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License	452151-B21

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.
NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.
NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.

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

HP Integrated Lights-Out (iLO) Advanced for ProLiant

	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	E6U59ABE
	NOTE: The Electronic software license is available in EMEA only.	
	HP iLO Advanced including 3yr 24x7 Tech Support and Updates Electronic License	E6U64ABE
	NOTE: The Electronic software license is available in EMEA only.	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A

NOTE: For additional license options please see the QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/14276_div/14276_div.html

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

Additional Options

High Performance Clusters	**HP Insight Cluster Management Utility**	
	HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
	HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A

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

	HP Insight Cluster Management Utility Media	BD477A

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

HP I/O Accelerator Options	**Second Generation Accelerators**	
	HP 365GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673642-B21
	HP 785GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673644-B21
	HP 1205GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673646-B21
	HP 2410GB Multi Level Cell G2 PCIe ioDrive2 Duo for ProLiant Servers	673648-B21
	HP 3TB G2 FH/HL PCIe ioDrive2 IO Accelerator for ProLiant Servers	721458-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html
(Worldwide)

HP PCIe Workload Accelerator Options	**Mainstream Endurance (ME) PCIe Workload Accelerators**	
	HP 1.4TB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729307-B21
	HP 700GB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729305-B21
	High Endurance (HE) PCIe Workload Accelerators	
	HP 700GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708090-B21
	HP 350GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708088-B21

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

Additional Options

HP Graphics Options

NOTE: Only the below listed Graphics cards are HP standard supported options in this server.
NOTE: The ML350p Gen8 supports up to 3 graphic cards. HP Graphic Card Support Kit (660582-B21) will be required per Graphic Card.
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: www.hp.com/go/hppoweradvisor.

HP Graphic Card Support Kit	660582-B21
NVIDIA Quadro K4000 PCI-E Graphics Adapter	730870-B21

NOTE: Min/Max rule does not apply to this option. However maximum of Three HP Graphic Card Support Kit can be selected. This Graphic Card Support Kit must be selected along with Graphic cards only.
NOTE: OS support only with 64-bit Only: Red Hat Enterprise Linux 5.x, Red Hat Enterprise Linux 6.x, SUSE Linux Enterprise Server 11 SPx , 64-bit Only: Windows Server 2008 R2 SPx.

HP Security

HP Trusted Platform Module Option	488069-B21

NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: www.hp.com/go/TPM.
NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.
NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

HP Security Bezel Kit	660584-B21

NOTE: For restricting access to a rack model

HP Storage Controllers

SAS Controllers

HP Smart Array P420 Controller

HP Smart Array P420/2GB FBWC 6Gb 2-ports Int SAS Controller	631671-B21
HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller	631670-B21

HP Smart Array P421 Controller

HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller	631674-B21
HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller	631673-B21

Smart Array P430 Controller

HP Smart Array P430/2GB FBWC 6Gb 1-port Int SAS Controller	698529-B21

Smart Array P431 Controller

HP Smart Array P431/2GB FBWC 6Gb 2-ports Ext SAS Controller	698531-B21

Additional Options

HP Smart Array P822 Controller

HP Smart Array P822/2GB FBWC 2-ports Int/4-ports Ext SAS Controller	615418-B21

Optional Upgrades

HP 1GB P-series Smart Array Flash Backed Write Cache	631679-B21
HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
HP 512MB P-series Smart Array Flash Backed Write Cache	661069-B21
HP SmartCache Nm 24x7 Supp 1 Svr Lic	D7S26A
HP SmartCache Nm 24x7 Supp Flex Lic	D7S27A
HP SmartCache Nm 24x7 Supp E-LTU	D7S27AAE

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14228_div/14228_div.html (Smart Array P420 Controller)
http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html (Smart Array P421 Controller)
http://h18000.www1.hp.com/products/quickspecs/14624_div/14624_div.html (Smart Array P430 Controller)
http://h18000.www1.hp.com/products/quickspecs/14625_div/14625_div.html (Smart Array P431 Controller)
http://h18000.www1.hp.com/products/quickspecs/14341_div/14341_div.html (Smart Array P822 Controller)
http://h18000.www1.hp.com/products/quickspecs/14532_div/14532_div.html (SmartCache)

HP Host Bus Adapters

HP H220 Host Bus Adapter	650933-B21
HP H221 Host Bus Adapter	650931-B21
HP H221 PCIe 3.0 SAS HBA	729552-B21
HP H222 Host Bus Adapter	650926-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/14336_div/14336_div.html (HBA 220)
http://h18004.www1.hp.com/products/quickspecs/14222_div/14222_div.html (HBA 221)
http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html (HBA 222)

SCSI HBA

HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21

NOTE: Supports external drive attach

NOTE: Please see the following QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html

QuickSpecs

Additional Options

HP Tape Backup	**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP tape backup products see: http://www.hp.com/storage/SPOCK and www.hp.com/go/ebs. **NOTE:** Installation of tape drive requires ordering of 2nd Media Bay Cage, Part Number 661618-B21.	
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
	HP StoreEver LTO-6 Ultrium 6650 Internal Tape Drive	EH963A
	HP StoreEver LTO-6 Ultrium 6650 External Tape Drive	EH964A
	HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive	EH969A
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
	HP 1/8 G2 LTO-6 Ult 6250 FC Autoloader	C0H19A

HP Tape Storage Systems	**HP StoreEver MSL6480**	
	HP StoreEver MSL6480 Base Module	QU625A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14604_div/14604_div.html (Worldwide)	

HP Disk Backup	**NOTE:** For the complete range of RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP disk backup products see: http://www.hp.com/storage/SPOCK.	
	HP StoreOnce Backup systems	
	HP StoreOnce 2620 iSCSI Backup	BB852A
	HP StoreOnce 4220 Backup	BB855A
	HP RDX Removable Disk Backup Systems USB	
	HP RDX320 USB3.0 External Disk Backup System	B7B63A
	HP RDX500 USB3.0 Internal Disk Backup System	B7B64A
	HP RDX500 USB3.0 External Disk Backup System	B7B66A
	HP RDX1000 USB3.0 Internal Disk Backup System	B7B67A
	HP RDX1000 USB3.0 External Disk Backup System	B7B69A
	NOTE: Please see the following QuickSpecs for additional models and information: http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.html	

HP Disk Storage Systems	**Disk Enclosures**	
	HP D2600 4TB 6G SAS LFF MDL 48TB Bndl	E7W32A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html (Worldwide)	

Additional Options

HP Storage Options	**NOTE:** The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	Brocade Fibre Channel HBAs	
	NOTE: HP ProLiant ML350p Gen8 Server series limited support for Red Hat Enterprise Linux 5.7 (x86and x86_64) when installing with Brocade HBAs.	
	HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AP769B
	HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AP770B
	Emulex Fibre Channel HBAs	
	HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HP SN1000E 16Gb 1-port PCIe Fibre Channel Host Bus Adapter	QR558A
	HP SN1000E 16Gb 2-port PCIe Fibre Channel Host Bus Adapter	QR559A
	HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HP StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	QLogic Fibre Channel HBAs	
	HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
	HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HP StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HP StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
	Converged Network Adapter	
	HP CN1000Q Dual Port Converged Network Adapter	BS668A
	HP CN1100E Dual Port Converged Network Adapter	BK835A
	HP StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A

HP Uninterruptible Power Systems	**HP Tower UPS**	
	HP T750 G2 UPS Models	
	HP T750J JP Uninterruptible Power System	AF456A
	HP T1000 G3 UPS Models	
	HP T1000 G3 1000VA INTL Tower Uninterruptible Power System	AF449A
	HP T1000 G3 1000VA NA Tower Uninterruptible Power System	AF448A
	HP T1000J JP Uninterruptible Power System	AF457A
	HP T1500 G3 UPS Models	
	HP T1500 G3 1400VA INTL Tower Uninterruptible Power System	AF451A
	HP T1500 G3 1400VA NA Tower Uninterruptible Power System	AF450A
	HP T1500J JP Uninterruptible Power System	AF458A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html (Worldwide)	
	HP Rack-mountable UPS	
	HP R1500 G3 Uninterruptible Power Supply (UPS)	

Additional Options

HP R1.5kVA G3 1U INTL Uninterruptible Power System	AF471A
HP R1.5kVA G3 1U JP/TW Uninterruptible Power System	AF470A
HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14059_div/14059_div.html (Worldwide)

HP R/T3000 G2 Uninterruptible Power System (UPS)

HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System	AF468A
HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html (Worldwide)

R5000 Uninterruptible Power System (UPS)

HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14109_div/14109_div.html (Worldwide)

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System	AF463A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14110_div/14110_div.html (Worldwide)

NOTE: For additional information on sizing your HP UPS, please reference:
http://www.upssizer.com

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.

Additional Options

HP Basic Power Distribution Units (bPDU)	**HP Basic Power Distribution Unit: 1U/0U Version**	
	HP 1.9kVA 120 Volt 12 Outlet NA/JP Basic Power Distribution Unit	H5M54A
	HP 3.6kVA 200-240 Volt 12 Outlet WW Basic Power Distribution Unit	H5M56A
	HP Basic Power Distribution Unit: Half Height Version	
	HP 2.8kVA 120 Volt 18 Outlet NA/JP Basic Power Distribution Unit	H5M55A
	HP 3.6kVA 200-240 Volt 20 Outlet WW Basic Power Distribution Unit	H5M57A
	HP 4.9kVA 208 Volt 20 Outlet NA/JP Basic Power Distribution Unit	H5M58A
	HP 7.3kVA 230 Volt 20 Outlet INTL Basic Power Distribution Unit	H5M68A
	HP 8.6kVA 208 Volt Three Phase 18 Outlet NA/JP Basic Power Distribution Unit	H5M61A
	HP Basic Power Distribution Unit: Mid Height Version	
	HP 4.9kVA 208 Volt 30 Outlet NA/JP Basic Power Distribution Unit	H5M59A
	HP 7.3kVA 230 Volt 30 Outlet INTL Basic Power Distribution Unit	H5M70A
	HP 8.3kVA 208 Volt 36 Outlet NA/JP Basic Power Distribution Unit	H5M60A
	HP 11kVA 230 Volt 36 Outlet INTL Basic Power Distribution Unit	H5M71A
	HP Hardwired 200-240 Volt 36 Outlet WW Basic Power Distribution Unit	H5M75A
	HP 5.7kVA 208 Volt Three Phase 27 Outlet NA/JP Dual Voltage Basic Power Distribution Unit	H5M63A
	HP 8.6kVA 208 Volt Three Phase 30 Outlet NA/JP Dual Voltage Basic Power Distribution Unit	H5M64A
	HP 8.6kVA 208 Volt Three Phase 30 Outlet NA/JP Basic Power Distribution Unit	H5M62A
	HP 11kVA 400 Volt Three Phase 30 Outlet INTL Basic Power Distribution Unit	H5M72A
	HP Basic Power Distribution Unit: Full Height Version	
	HP 11kVA 400 Volt Three Phase 42 Outlet INTL Basic Power Distribution Unit	H5M73A
	HP 11kVA 400 Volt Three Phase 42 Outlet NA Basic Power Distribution Unit	H5M67A
	HP Basic Power Distribution Unit: 480/277 Volt Version	
	HP 13.2kVA 480 Volt Three Phase 15 Outlet NA Basic Power Distribution Unit	H3X07A
	HP 19.9kVA 480 Volt Three Phase 30 Outlet NA Basic Power Distribution Unit	H3X08A
	HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer	H3X09A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14557_div/14557_div.html (Worldwide)

NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit www.hp.com/go/rackandpower.

Additional Options

HP Remote Monitoring Power Distribution Units (rPDU)	**HP Remote Monitored Power Distribution Unit: 1U Version**	
	HP 2.8kVA 120 Volt 12 Outlet NA/JP Monitored Power Distribution Unit	D9N43A
	HP 3.6kVA 200-240 Volt 12 Outlet WW Monitored Power Distribution Unit	D9N46A
	HP 4.9kVA 208 Volt 12 Outlet NA/JP Monitored Power Distribution Unit	D9N44A
	HP Remote Monitored Power Distribution Unit: Half Height Version	
	HP 3.6kVA 200-240 Volt 16 Outlet WW Monitored Power Distribution Unit	D9N45A
	HP Remote Monitored Power Distribution Unit: Mid Height Version	
	HP 4.9kVA 208 Volt 24 Outlet NA/JP Monitored Power Distribution Unit	D9N47A
	HP 7.3kVA 230 Volt 24 Outlet INTL Monitored Power Distribution Unit	D9N48A
	HP 8.6kVA 208 Volt Three Phase 21 Outlet NA/JP Monitored Power Distribution Unit	D9N51A
	HP 5.7kVA 208 Volt Three Phase 21 Outlet NA/JP Dual Voltage Monitored Power Distribution Unit	D9N52A
	HP 8.6kVA 208 Volt Three Phase 24 Outlet NA/JP Dual Voltage Monitored Power Distribution Unit	D9N53A
	HP 11kVA 400 Volt Three Phase 21 Outlet INTL Monitored Power Distribution Unit	D9N55A
	HP Remote Monitored Power Distribution Unit: Full Height Version	
	HP 8.3kVA 208 Volt 33 Outlet NA Monitored Power Distribution Unit	D9N49A
	HP 7.3kVA 230 Volt 36 Outlet INTL Monitored Power Distribution Unit	D9N50A
	HP 11kVA 400 Volt Three Phase 33 Outlet INTL Monitored Power Distribution Unit	D9N57A
	HP 14.4kVA 208 Volt Three Phase 24 Outlet NA Monitored Power Distribution Unit	D9N58A
	HP 16.6kVA 400 Volt Three Phase 33 Outlet NA Monitored Power Distribution Unit	D9N61A
	HP 17.3kVA 208 Volt Three Phase 27 Outlet NA/JP Monitored Power Distribution Unit	D9N54A
	HP 17.3kVA 208 Volt Three Phase 24 Outlet NA/JP Monitored Power Distribution Unit	D9N59A
	HP 22kVA 400 Volt Three Phase 24 Outlet INTL Monitored Power Distribution Unit	D9N60A
	HP 22kVA 400 Volt Three Phase 33 Outlet INTL Monitored Power Distribution Unit	D9N56A
	HP 16.6kVA 400 Volt Three Phase 24 Outlet NA Monitored Power Distribution Unit	D9N62A
	HP 19.9kVA 480 Volt Three Phase 30 Outlet NA Monitored Power Distribution Unit	D9N63A
	HP Environmental Sensor for Remote Monitored PDUs	
	HP Environmental Sensor for Remote Monitored PDUs	E2D53A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14669_div/14669_div.html (Worldwide)

Additional Options

HP Intelligent Power Distribution Units (iPDU)		
	iPDU Core Units	
	HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
	HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
	HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
	HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
	HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
	HP 17.3kVA 24A 415V Three Phase L22-30 NA Core Intelligent Power Distribution Unit	AF902A
	HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
	HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
	HP 22kVA 32A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF527A
	HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
	HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
	HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit	AF538A
	iPDU Kits with Standard Extension Bars	
	HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
	HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
	HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A
	iPDU Extension Bars	
	HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
	HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13650_div/13650_div.html (Worldwide)
NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit: www.hp.com/go/rackandpower.

Additional Options

HP Rack Series	**HP Intelligent Series Rack**	
	HP 636 1075mm Pallet Intelligent Series Rack	BW895A
	HP 636 1075mm Shock Intelligent Series Rack	BW896A
	HP 642 1075mm Pallet Intelligent Series Rack	BW903A
	HP 642 1075mm Shock Intelligent Series Rack	BW904A
	HP 647 1075mm Pallet Intelligent Series Rack	BW911A
	HP 647 1075mm Shock Intelligent Series Rack	BW912A

NOTE: Please see the QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/14223_div/14223_div.html (Worldwide)
NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.

HP Rack Options	**HP Location Discovery Services**	
	HP 36U Location Discovery Kit	BW945A
	HP 42U Location Discovery Kit	BW946A
	HP 47U Location Discovery Kit	BW947A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14429_div/14429_div.html (Worldwide)

	HP USB Keyboard and Mouse	
	HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
	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 AP-Intl Keyboard/Mouse Kit	672097-373
	HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-B33
	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 SE Keyboard/Mouse Kit	672097-103
	HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
	HP USB BFR with PVC Free KR Keyboard/Mouse Kit	672097-KD3

Additional Options

HP USB BFR with PVC Free IN Keyboard/Mouse Kit	672097-D63

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13792_div/13792_div.html (Worldwide)

HP TFT7600 G2 KVM Console Rackmount Keyboard Monitor

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor	AZ871A
HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor	AZ872A
HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor	AZ873A
HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor	AZ874A
HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor	AZ875A
HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor	AZ876A
HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor	AZ877A
HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor	AZ878A
HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor	AZ879A
HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor	AZ880A
HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor	AZ881A
HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor	AZ882A
HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor	AZ883A
HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor	AZ884A
HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13731_div/13731_div.html (Worldwide)

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html (Worldwide)

HP Server Console Switch G2 with Virtual Media & CAC

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 CAT5 1-pack USB Interface Adapter	336047-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html (Worldwide)

HP IP Console Switch G2 with Virtual Media & CAC

Additional Options

HP 1x4 USB/PS2 KVM Console Switch	AF611A
HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html (Worldwide)

Rack Kits

HP Tower to Rack Conversion Tray Kit	659488-B21

HP USB and SD Options

HP Flash Media Kits for USB Drives

HP 2GB USB Flash Media Drive Key Kit	608447-B21

NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions

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

HP Enterprise Performance Flash Media Kits for Memory Cards

HP 32GB SD Enterprise Mainstream Flash Media Kit	700136-B21

HP Enterprise Mainstream Flash Media Kits for Memory Cards

HP 8GB SD Enterprise Mainstream Flash Media Kit	726113-B21

NOTE: Blank SD media device is supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at:
http://www.hp.com/go/proliantvirtualization.
NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13971_div/13971_div.html

Additional Options

HP Care Pack Services	**Proactive Care**	
	NOTE: Collaborative Support plus Proactive services delivered by the onshore, local language Advanced Solution Center (ASC), end-to-end case ownership from a Technical Solution Specialists and Technical Account Manager who remotely delivers firmware/software revision management, proactive scans and incident trend reports. Recommended for customers running a virtualized infrastructure and/or customers who desire an enhanced call support experience.	
	HP 3 year 4 hour 24x7 ProLiant ML350(p) Proactive Care Service	U3A78E
	HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML350(p) Proactive Care Service	U3A81E
	HP 3 year 6 hour Call To Repair 24x7 ProLiant ML350(p) Proactive Care Service	U3A84E
	HP 3 year 6 hour Call To Repair 24x7 with Defective Media Retention ProLiant ML350(p) Proactive Care SVC	U3A87E
	HP 3 year 4 hour 24x7 ProLiant ML350(p) with Insight Control Proactive Care Service	U3N77E
	HP 3 year 4hr 24x7 with Defective Media Retention ML350(p) with Insight Control Proactive Care SVC	U3N80E
	HP 3 year 6 hour Call To Repair 24x7 ProLiant ML350(p) with Insight Control Proactive Care Service	U3N83E
	HP 3yr 6hrCallToRepair 24x7w/Defective Media Retention ML350(p) w/Insight Control Proactive Care SVC	U3N86E
	Proactive Care Personalized Support Option	
	NOTE: To add an onsite Account Support Manager (ASM) to Proactive Care. ASM is an assigned resource who delivers support planning and brings technical expertise and best practices advices for the customer's environment.	
	HP 3 year ISS ProactiveCare Personalized Support	U6W98E
	Installation Services	
	NOTE: Reduce the time required to get your system up and running and help minimize disruptions to your business.	
	HP Install ProLiant ML350(p) Service	U4522E
	HP Startup ProLiant ML350(p) Service	U4523E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack	

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

DDR3 memory population guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:
www.hp.com/go/ddr3memory-configurator

General Guidelines:

- White DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate white slots only.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, balance the total memory capacity between all installed processors
  - Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
  - Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- Do not mix UDIMMs, RDIMMs or LRDIMMs
- Quad rank LR DIMMs are supported at 3 DIMMs per channel.
- DIMMs of different voltages (1.35V & 1.5V) may be mixed in any order
  - The system will power them at the higher voltage
- DIMMs of different speed grades may be mixed in any order
  - The system will select a common optimal speed
- Memory speed is a function of the processor QPI bus speed.

Population Guidelines:

- There are four (4) channels per processor; eight (8) channels per server
- There are three (3) DIMM slots for each memory channel; twenty-four (24) total slots
- Memory channels1 and 3 consists of the three (3) DIMMs that are furthest from the processor
- Memory channel 2 and 4 consists of the three (3) DIMMs that are closest to the processor

ML350p Gen8-IVB Supported Memory Bandwidth and Capacity -- Treaty														
DIMM Type	**Registered DIMMS (RDIMMs)**								**Load Reduced (LRDIMMs)**	**Unbuffered with ECC DIMMs (UDIMMs)**				
DIMM Rank	**Single Rank (1R)**				**Dual Rank (2R)**				**Quad Rank (4R)**	**Single Rank (1R)**		**Dual Rank (2R)**			
DIMM Capacity	4GB	4GB	8GB	8GB	8GB	8GB	16GB	16GB	32GB	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MHz)	1600	1866	1600	1866	1600	1866	1600	1866	1866	1600	1866	1600	1866	1600	1866
Voltage	LV	Std	LV	Std	LV	Std	LV	Std	Std	LV	Std	LV	Std	LV	Std
SLOTS THAT CAN BE POPULATED															
24 slot servers	24	24	24	24	24	24	24	24	24	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)*															
24 slot servers	96	96	192	192	192	192	384	384	768	32	32	64	64	128	128

Memory

POPULATED DIMM SPEED (MHz)

1 DIMM Per Channel	1600	1866	1600	1866	1600	1866	1600	1866	1866**	1600	1866	1600	1866	1600	1866
2 DIMM Per Channel	1600	1866	1600	1866	1600	1866	1600	1866	1600**	1600	1866***	1600	1866***	1600	1866***
3 DIMM Per Channel	800	1066	800	1066	800	1066	800	1066	1333**	n/a	n/a	n/a	n/a	n/a	n/a

NOTES:
Memory speed is a function of the processor QPI bus speed.
To realize the performance memory capabilities listed above HP SmartMemory is required.
* Maximum capacity will vary based on individual server platform qualification schedule
** For HP SmartMemory RDIMM supports up to 3DPC@1066 at 1.35V. Third party memory may only support up to 3DPC@1066 at 1.5V.
*** LRDIMM enables 3 DIMMs per channel. HP SmartMemory will supports up to 3DPC@DDR3-1066 at 1.35V. Third party memory may only support 3DPC @DDR3-1066 at 1.5V.
**** For HP SmartMemory, UDIMM is, supported at 2DPC@1333. Third party memory may only support up to 2DPC@1066.
RBSU setting required

ML350p Gen8-IVB Supported Memory Bandwidth and Capacity

DIMM Type	Registered DIMMS (RDIMMs)							Load Reduced (LRDIMMs)	Unbuffered with ECC DIMMs (UDIMMs)					
DIMM Rank	Single Rank (1R)		Dual Rank (2R)					Quad Rank (4R)	Single Rank (1R)		Dual Rank (2R)			
DIMM Capacity	4GB	4GB	8GB	8GB	8GB	16GB	16GB	32GB	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MHz)	1333	1600	1600	1333	1600	1333	1600	1333	1333	1600	1333	1600	1333	1600
Voltage	LV	Std	Std	LV	Std	LV	Std	LV	LV	Std	LV	Std	LV	Std
SLOTS THAT CAN BE POPULATED														
24 slot servers	24	24	24	24	24	24	24	24	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)*														
24 slot servers	96	96	192	192	192	384	384	768	32	32	64	64	128	128
POPULATED DIMM SPEED (MHz)														
1 DIMM Per Channel	1333	1600	1600	1333	1600	1333	1600	1333**	1333	1600	1333	1600	1333	1600

Memory

2 DIMM Per Channel	1333	1600	1600	1333	1600	1333	1600	1333**	1333***	1600	1333***	1600	1333***	1600
3 DIMM Per Channel	800	1066	1066	800	1066	800	1066	1066	n/a	n/a	n/a	n/a	n/a	n/a

NOTES:
Memory speed is a function of the processor QPI bus speed.
To realize the performance memory capabilities listed above HP SmartMemory is required.
* Maximum capacity will vary based on individual server platform qualification schedule
** LRDIMM enables 3 DIMMs per channel. HP SmartMemory will supports up to 3DPC@DDR3-1066 at 1.35V. Third party memory may only support 3DPC @DDR3-1066 at 1.5V.
*** For HP SmartMemory, UDIMM is, supported at 2DPC@1333. Third party memory may only support up to 2DPC@1066.

Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E5-2680, E5-2670, E5-2667, E5-2665, E5-2660, E5-2650, E5-2650L, E5-2637	1600/1333/1066MHz
E5-2640, E5-2630, E5-2630L, E5-2620	1333/1066MHz
E5-2609, E5-2603	1066MHz
E5-2697 v2, E5-2690 v2, E5-2670 v2, E5-2667 v2, E5-2650 v2, E5-2643 v2, E5-2637 v2	1866/1600/1333/1066MHz
E5-2640 v2, E5-2630 v2, E5-2630L v2, E5-2620 v2	1600/1333/1066MHz
E5-2609 v2, E5-2603 v2	1333/1066MHz

Standard and Maximum Memory Capacity (Pre-configured Models)

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2640	16GB (4x 4GB)	336GB (20x16GB, 4x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2620	8GB (2x 4GB)	360GB (22x16GB, 2x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2603	4GB (1x 4GB)	372GB (23x16GB, 1x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2640 v2	16GB (2x 8GB)	336GB (20x16GB, 4x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2620 v2	8GB (1x 8GB)	360GB (22x16GB, 2x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2609 v2	4GB (1x 4GB)	372GB (23x16GB, 1x4GB)	768GB (24 x 32GB)

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

Memory

24 DIMM SLOTS (12 per CPU node)					
	slot #	population order	slot #	population order	
Chnl 1	1	A	1	A	Chnl 1
	2	I	2	I	
	3	E	3	E	
Chnl 2	4	B	4	B	Chnl 2
	5	F	5	F	
	6	J	6	J	
	Processor 1		Processor 2		
Chnl 4	7	L	7	L	Chnl 4
	8	H	8	H	
	9	D	9	D	
Chnl 3	10	K	10	K	Chnl 3
	11	G	11	G	
	12	C	12	C	

Standard memory configuration (1 CPU model)

- 16GB, consisting of two (2) 8GB dual-rank PC3L-10600R-9 RDIMMs (Base Model)

	slot #	population order	slot #	population order	
Chnl 1	1	A; 8GB RDIMM	1	A; empty	Chnl 1
	2	E; empty	2	E; empty	
	3	I; empty	3	I; empty	
Chnl 2	4	B; 8GB RDIMM	4	B; empty	Chnl 2
	5	F; empty	5	F; empty	
	6	J; empty	6	J; empty	
	Processor 1		Processor 2		
Chnl 4	7	l; empty	7	L; empty	Chnl 4
	8	H; empty	8	H; empty	
	9	D; empty	9	D; empty	
Chnl 3	10	K; empty	10	K; empty	Chnl 3
	11	G; empty	11	G; empty	
	12	C; empty	12	C; empty	

Standard memory plus optional memory (1 CPU model)

- 48GB, consisting of two (2) 4GB RDIMMs plus ten (10) 4GB RDIMMs (Base Model)
  - 12x 4GB dual-rank PC3L-10600R-9 RDIMMs

Memory

	slot #	population order	slot #	population order	
Chnl 1	1	A; 4GB RDIMM	1	A; empty	Chnl 1
	2	E; 4GB RDIMM	2	E; empty	
	3	I; 4GB RDIMM	3	I; empty	
Chnl 2	4	B; 4GB RDIMM	4	B; empty	Chnl 2
	5	B; 4GB RDIMM	5	F; empty	
	6	J; 4GB RDIMM	6	J; empty	
	Processor 1		Processor 2		
Chnl 4	7	L; 4GB RDIMM	7	L; empty	Chnl 4
	8	H; 4GB RDIMM	8	H; empty	
	9	D; 4GB RDIMM	9	D; empty	
Chnl 3	10	K; 4GB RDIMM	10	K; empty	Chnl 3
	11	G; 4GB RDIMM	11	G; empty	
	12	C; 4GB RDIMM	12	C; empty	

Standard memory replaced with optional memory (1 CPU model)
RDIMM maximum configuration (1 CPU model)

- 192GB, consisting of twelve (12) 16GB dual-rank PC3L-10600R-9 RDIMMs

	slot #	population order	slot #	population order	
Chnl 1	1	A; 16GB RDIMM	1	A; empty	Chnl 1
	2	E; 16GB RDIMM	2	E; empty	
	3	I; 16GB RDIMM	3	I; empty	
Chnl 2	4	B; 16GB RDIMM	4	B; empty	Chnl 2
	5	F; 16GB RDIMM	5	F; empty	
	6	J; 16GB RDIMM	6	J; empty	
	Processor 1		Processor 2		
Chnl 4	7	L; 16GB RDIMM	7	L; empty	Chnl 4
	8	H; 16GB RDIMM	8	H; empty	
	9	D; 16GB RDIMM	9	D; empty	
Chnl 3	10	K; 16GB RDIMM	10	K; empty	Chnl 3
	11	G; 16GB RDIMM	11	G; empty	
	12	C; 16GB RDIMM	12	C; empty	

UDIMM maximum configuration (1 CPU model)

- 64GB, consisting of eight (8) 8GB dual-rank PC3L-10600E-9 UDIMMs

Memory

	slot #	population order	slot #	population order	
Chnl 1	1	A; 8GB UDIMM	1	A; empty	Chnl 1
	2	E; 8GB UDIMM	2	E; empty	
	3	I; empty	3	I; empty	
Chnl 2	4	B; 8GB UDIMM	4	B; empty	Chnl 2
	5	F; 8GB UDIMM	5	F; empty	
	6	J; empty	6	J; empty	
	Processor 1		**Processor 2**		
Chnl 4	7	L; empty	7	L; empty	Chnl 4
	8	H; 8GB UDIMM	8	H; empty	
	9	D; 8GB UDIMM	9	D; empty	
Chnl 3	10	K; empty	10	K; empty	Chnl 3
	11	G; 8GB UDIMM	11	G; empty	
	12	C; 8GB UDIMM	12	C; empty	

Standard memory replaced with optional memory (2 CPU model)

RDIMM maximum configuration (2 CPU model)

- 768GB, consisting of twenty four (24) 32GB quad-rank PC3-10600LR-9 RDIMMs

	slot #	population order	slot #	population order	
Chnl 1	1	A; 32GB RDIMM	1	A; 32GB RDIMM	Chnl 1
	2	E; 32GB RDIMM	2	E; 32GB RDIMM	
	3	I; 32GB RDIMM	3	I; 32GB RDIMM	
Chnl 2	4	B; 32GB RDIMM	4	B; 32GB RDIMM	Chnl 2
	5	F; 32GB RDIMM	5	F; 32GB RDIMM	
	6	J; 32GB RDIMM	6	J; 32GB RDIMM	
	Processor 1		**Processor 2**		
Chnl 4	7	L; 32GB RDIMM	7	L; 32GB RDIMM	Chnl 4
	8	H; 32GB RDIMM	8	H; 32GB RDIMM	
	9	D; 32GB RDIMM	9	D; 32GB RDIMM	
Chnl 3	10	K;32GB DIMM	10	K;32GB DIMM	Chnl 3
	11	G;32GB DIMM	11	G;32GB DIMM	
	12	C;32GB DIMM	12	C;32GB DIMM	

UDIMM maximum configuration (2 CPU model)

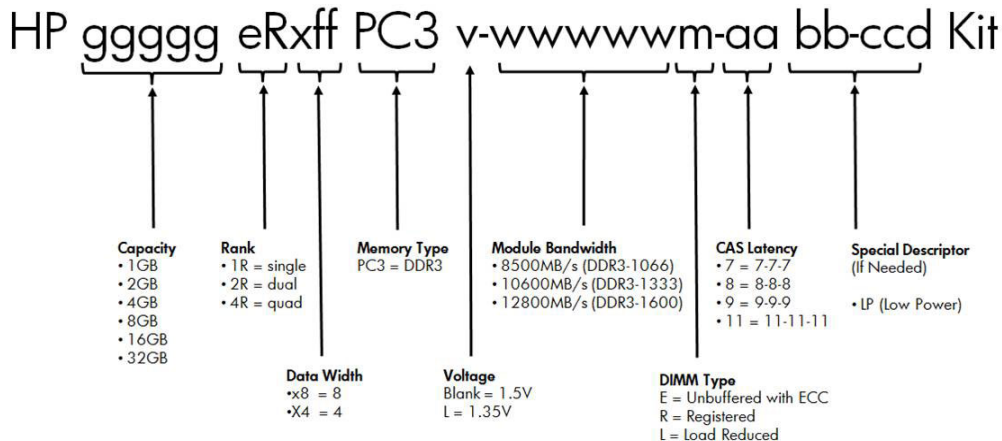- 128GB, consisting of sixteen (16) 8GB dual-rank PC3L-10600E-9 UDIMMs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A; 8GB UDIMM	1	A; 8GB UDIMM	Chnl 1
	2	E; 8GB UDIMM	2	E; 8GB UDIMM	
	3	I; empty	3	I; empty	
Chnl 2	4	B; 8GB UDIMM	4	B; 8GB UDIMM	Chnl 2
	5	F; 8GB UDIMM	5	F; 8GB UDIMM	
	6	J; empty	6	J; empty	
	Processor 1		Processor 2		
Chnl 4	7	L; empty	7	L; empty	Chnl 4
	8	H; 8GB UDIMM	8	H; 8GB UDIMM	
	9	D; 8GB UDIMM	9	D; 8GB UDIMM	
Chnl 3	10	K; empty	10	K; empty	Chnl 3
	11	G; 8GB UDIMM	11	G; 8GB UDIMM	
	12	C; 8GB UDIMM	12	C; 8GB UDIMM	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB
- 32GB = 32768MB

DDR3 memory options part number decoder

HP ggggg eRxff PC3 v-wwwwwm-aa bb-ccd Kit

Capacity
- 1GB
- 2GB
- 4GB
- 8GB
- 16GB
- 32GB

Rank
- 1R = single
- 2R = dual
- 4R = quad

Data Width
- x8 = 8
- X4 = 4

Memory Type
PC3 = DDR3

Voltage
Blank = 1.5V
L = 1.35V

Module Bandwidth
- 8500MB/s (DDR3-1066)
- 10600MB/s (DDR3-1333)
- 12800MB/s (DDR3-1600)

DIMM Type
E = Unbuffered with ECC
R = Registered
L = Load Reduced

CAS Latency
- 7 = 7-7-7
- 8 = 8-8-8
- 9 = 9-9-9
- 11 = 11-11-11

Special Descriptor
(If Needed)
- LP (Low Power)

Following are memory options available from HP:

HP Memory

NOTE: 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 Gen8. For additional information, please see the HP SmartMemory QuickSpecs at:

QuickSpecs

Memory

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708637-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708639-B21
HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	731761-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708641-B21

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

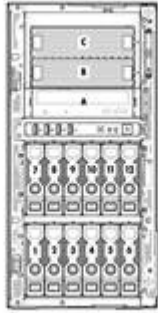|	
HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 2GB (1x2GB) Single Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708631-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21

Memory

HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2600 v2 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2600 series Processors.

HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.
NOTE: Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at www.hp.com/go/ddr3memory-configurator.

Storage

1 - 12	12 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays **NOTE:** Optional 2nd hard drive cage shown in configuration.
A	Optical Drive
B-C	Available half height media bays, for up to two half height optical/tape drives or a single full height tape drive, or both can be populated with a third hard drive cage
1-16	16 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays **NOTE:** Optional 2nd hard drive cage shown in configuration
A	Optical Drive
B-C	Available half height media bays, for up to two half height optical/tape drives or a single, full height tape drives, or both can be populated with a third hard drive cage

Technical Specifications

System Unit			
	Tower Dimensions (H x W x D) (with feet/bezel)	18.19 x 8.58 x 29.13 in (46.2 x 21.8 x 74.0 cm)	
	Rack Dimensions (H x W x D) (with feet/bezel)	8.58 x 19.0 x 28.83 in. (21.8 x 48.26 x 73.22cm)	
	Tower Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	114.84 lb (52.09 kg)
		Minimum (one hard drive, power supply, and processor installed)	70.33 lb (31.9 kg)
	Rack Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	110.36 lb (50.06 kg)
		Minimum (one hard drive, power supply, and processor installed)	60.91 lb (27.63 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 to 240 VAC
		Rated Input Current	7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	852 W
	BTU Rating	Maximum	460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC) 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)
	Power Supply Output (per power supply)	Rated Steady-State Power	460(750) W (at 100 VAC), 460(750) W (at 200 VAC)
		Maximum Peak Power	460(750) W (at 100 VAC), 460(750) W (at 200 VAC)
	System Inlet Temperature	Operating	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 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).

Technical Specifications

	Non-operating	–30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Acoustic Noise

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

Idle

L WAd	3.9 Bels (1P Non-Redundant) 4.2 Bels (2P Redundant)
L pAm	22 dBA (1P Non-Redundant) 24 dBA (2P Redundant)

Operating

L WAd	4.0 Bels (1P Non-Redundant) 4.8 Bels (2P Redundant)
L pAm	22 dBA (1P Non-Redundant) 30 dBA (2P Redundant)

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

Emissions Classification (EMC)	**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.

Technical Specifications

HP Smart Array P420i Controller		
Dimensions	Embedded	
Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA)	
SAS Connectors	2 internal 4X connectors	
Cache Memory Speed	DDR3-1333MHz with 40 or 72-bit wide bus	
Server Interface	x8 PCIe 3.0 provides 32.0GB/s maximum bandwidth	
SAS Speed	8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth	
Cache Memory	Zero Memory RAID has no cache memory 40-bit 512MB ECC protected Flash Backed Write Cache (FBWC) 72-bit 1GB and 2GB ECC protected FBWC	
Logical Drives Supported	Zero Memory, Up to 2 logical volumes (8 physical drives) Up to 64 logical drives with cache	
Host Memory Addressing	64-bit, supporting greater than 4GB server memory space	
RAID Support	RAID 6, 60 (Advanced Data Guarding)	
	RAID 5, 50 (Distributed Data Guarding **NOTE:** A minimum of 512 MB cache is required to enable RAID 5, 50, 6, 60. **NOTE:** HP Smart Array Advanced Pack (SAAP 2.0) is no longer required to enable RAID 6 & 60 (Advanced Data Guarding). However, controller must be in firmware version 4.68 (or later).	
	RAID 1+0 (Striping & Mirroring)	
	RAID 0 (Striping), RAID 1 (Mirroring)	

HP Ethernet 1Gb 4-port 331i 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	BCM5719	
Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 40 Mb/s Combined
	10Base-T (Full-Duplex)	20 Mb/s per port, 80 Mb/s Combined
	100Base-TX (Half-Duplex)	100 Mb/s per port, 400 Mb/s Combined
	100Base-TX (Full-Duplex)	200 Mb/s per port, 800 Mb/s Combined
	1000Base-TX (Half-Duplex)	1000Mb/s per port, 4000 Mb/s Combined
	1000 Base-TX (Full-Duplex)	2000Mb/s per port, 8000 Mb/s Combined
Connector	RJ-45	
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
	10/100/1000Base-TX	Category 5 or better; up to 328 ft (100 m)

Technical Specifications

| **Environment-friendly Products and Approach** | **End-of-life Management and Recycling** | Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment. |