

### Overview

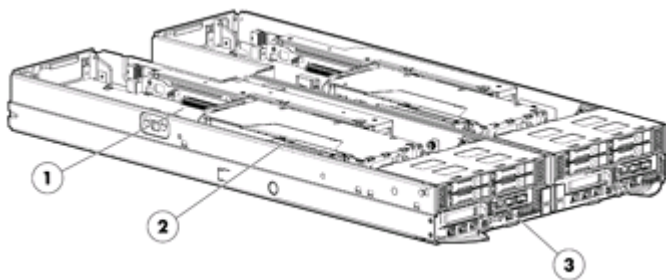
The HP ProLiant SL250s Gen8 Server series with HP ProActive Insight architecture delivers even greater levels of configurability for high performance and scale-out deployments, to help lower total cost of ownership.

Up to four HP ProLiant SL250s Gen8 nodes, in a 4U modular form factor, fit into the HP s6500 scalable system. In addition, each node can support up to three GPUs or four additional 2.5-inch hard drives.

The SL250s Gen8 Server series includes the exclusive HP SmartMemory and delivers a 25% increase in memory bandwidth to improve performance for certain applications.

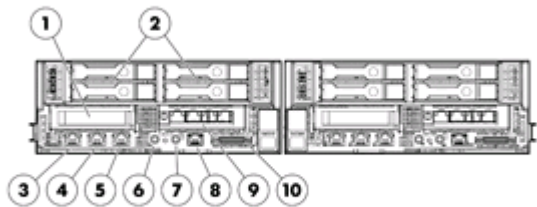
Delivering on the promise of server lifecycle automation, the SL250s Gen8 features the exclusive HP Active Health System that provides continuous, proactive, monitoring for over 1600 system parameters with zero impact to application performance.

**NOTE:** The 2U Open View image below shows two SL250s side by side to denote the left and right trays. Each unit is a 2U, half-width form factor.



#### 2U Open View:

1. Rear dual GPU placement. This location is also for the optional SFF 2.5" hard drive kit to enable four (4) SFF HDD's in place of the GPUs.
2. Single GPU riser mounts and underneath is Support for two Intel® Xeon® E5-2600 sequence processors and 16 memory slots. This location is also for the optional SFF 2.5" hard drive kit to enable four (4) SFF HDD's in place of the GPUs
3. FlexibleLOM networking option slot



#### 2U Front View:

1. PCIe Expansion slot
2. Four Hot-Plug Drive Slots
3. Dedicated iLO4 Management Port
4. (1) 1GbE Ports
5. (1) 1GbE Ports
6. Power Button
7. Health LED
8. UID LED
9. Serial Port
10. SUV (Serial/USB/Video)

### What's New

- Add support for Intel's Xeon Phi 5110p Coprocessor

### 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

#### Entry Processors

**NOTE:** All support up to 1066MHz 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 to 1333MHz 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)

#### Performance Processors

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

**NOTE:** For 130W CPU support and configuration, please contact your HP account team.

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

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

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

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)

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

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 2 indicates the maximum potential bin increments when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 and 1 cores 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 (options for 1600, 1333, 1066MHz).

**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 v#, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number

#### Cache Memory

One of the following depending on Model

20MB (1x20MB) Level 3

**NOTE:** For Eight-core processors.

15MB (1x15MB) Level 3

**NOTE:** For Six-core processors.

10MB (1x10MB) Level 3

**NOTE:** For Quad-core processors.

5MB (1x5MB) Level 3

**NOTE:** For Dual-core processors.

### Standard Features

#### Chipset

Intel® C600 Series Chipset

Intel® E5-2600 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

#### On System Management Processor

HP iLO (Firmware: HP iLO 4)

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

#### Memory Protection

Advanced ECC (multi-bit error protection)

#### Memory

Type HP SmartMemory  
DDR3 Registered (RDIMM), Unbuffered (UDIMM)

DIMM Slots Available 16 total DIMM Slots available

Maximum (RDIMM) (per server tray) 256GB (16 x 16GB) Memory DIMMs

Maximum (UDIMM) (per server tray) 128GB (16 x 8GB)

**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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM.

**NOTE:** HP certified SmartMemory must be used to guarantee full 1600MHz speeds.

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1333MHz, or 1066MHz. Please see the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient).

#### Network Controller

HP Ethernet 1Gb 2-port 361i

### Standard Features

Expansion Slots	Expansion Slots #	Technology	Bus Width*	Connector Width	Form Factor	Notes
	Low Profile	PCIe 3.0	x8	x8	Half-length, half-height	Front Panel Access
	FlexibleLOM	PCIe 3.0	x16	x16	FlexibleLOM	Front Panel Access
	GPU1 rear bottom	PCIe 3.0	x16	x16	Full-length, full height	GPU only
	GPU2 rear top	PCIe 3.0	x16	x16	Full-length, full height	GPU only
	GPU3 front top	PCIe 3.0	x16	x16	Full-length, full height	GPU only

\*Indicates the number of physical electrical lanes running to the connector

### 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](http://www.hp.com/support/rbsu).

### Storage Controller

HP H220i Host Bus Adapter (B320i Dynamic Smart Array with FW update)

### Internal Storage Devices

Diskette Drives	Via USB through the SUV port, external support only
Optical Drives	Via USB through the SUV port, external support only
Hard Drives	None ship standard

### Standard Features

#### Maximum Internal Storage

#### 2U Half Width tray

Hot Plug SATA SFF 2.5"	4.8 TB	4 x 1.2TB
Hot Plug SAS SFF 2.5"	4.0TB	4 x 1TB
Hot Plug SATA SSD 2.5"	3.2TB	4 x 800GB
Hot Plug SAS SSD 2.5"	3.2TB	4 x 800GB
Quick Release (Non-Hot Plug) SATA 2.5"	4.0TB	4 x 1TB
Quick Release (Non-Hot Plug) SAS 2.5"	4.8TB	4 x 1.2

**NOTE:** The Non-Hot Plug Quick Release drives can only be used when implementing the internal SFF kit and not implementing the GPUs

**NOTE:** The SL250 SFF Internal Enablement Kit (PN: 679991-B21) allows for up to four SFF HDD to be implemented in place of the three GPUs.

#### Interfaces

Network RJ-45	Two 1GbE NIC ports
FlexibleLOM	ProLiant Gen8 servers offer a new networking technology - Flexible Network Technology. The SL250 Gen8 server offers the customer the choice of 1Gigabit, 10Gigabit or InfiniBand FlexibleLOM solutions depending on workload. For further details on the choices, see FlexibleLOM in the Networking Section of this document.
KVM	Serial USB Video Port (SUV)
Micro SD	1 (internal)
USB Ports	1 (internal)
HP iLO Remote Management Network Port	1 Gb Dedicated
Health LED	1 front
Power	1 front
UID	1 front

#### Industry Standard Compliance

ACPI 2.0b Compliant  
 PCIe 3.0 Compliant  
 WOL Support  
 Microsoft® Logo certifications  
 PXE Support  
 USB 1.1 and 2.0 Compliant  
 SMBIOS 2.6.1

### Standard Features

#### Server Power Cords

One 6' Highline (IEC-IEC) power cord ships standard

**NOTE:** HP ProLiant SL servers are primarily connected to PDU's in data center racks so they ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant SL server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately.

**NOTE:** If customers require a power cord, they can check the power cord matrix for the appropriate cord. 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](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://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\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.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 two power output options - 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.

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](http://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 or n+n 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\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.html)

### Standard Features

#### System Fans

HP s6500 Redundant Fan Kit

**NOTE:** This kit includes only 1 fan

**NOTE:** This selection must be ordered in quantities of 8 (PN 617856-B21)

HP s6500 Non-Redundant Fan Kit

**NOTE:** This kit includes only 1 fan

**NOTE:** This selection must be ordered in quantities of 8 (PN 617858-B21)

**NOTE:** all 8 fan bays must be populated with either redundant or non-redundant fans

**NOTE:** mixing and matching of fans is not allowed

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

[Microsoft Windows Server](#)

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

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

[VMware](#)

**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/SL250sGen8>

#### 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

Fully configured SL250 is 2U, half-width

Fully configured SL6500 chassis is 4U, full-width

### 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](http://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](http://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](http://www.hp.com/go/ilo/mobileapp)

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

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### Standard Features

#### **HP Insight management** HP Service Pack for ProLiant (SPP)

HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) version 5 provide a new, 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 all 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 on each Service Pack for ProLiant.

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 version 5 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 has been re-written to provide a more 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 will 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 interdependencies, when determining the correct updates and order of update deployment.

**NOTE:** The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from [www.hp.com/go/spp/download](http://www.hp.com/go/spp/download). More information can be found: [www.hp.com/go/spp](http://www.hp.com/go/spp) and <http://www.hp.com/go/hpsum>

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#### **Security**

Power-on password  
Keyboard password  
QuickLock, Network Server Mode  
Serial interface control  
Administrator's password  
iLO 4 (Integrated Lights-Out 3) has 12 customizable user accounts and SSL encryption  
iLO 4 can be disabled via a Global Setting  
iLO Advanced supports directory services integration

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### Standard Features

#### Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for one year 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.

**NOTE:** Server Warranty includes 1 year Parts, 1 year Labor, 1-year on-site 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. 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 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>

#### 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 iLO Scale-Out

HP iLO Scale Out offers, Remote Serial Console (text-based video re-direction via SSH), email-based alerting, remote system log, serial record/playback and power management capabilities. These features can significantly assist customers purchasing "SL" series to manage their servers. It is ideal for the web hosting/cloud service providers, High Performance Computing and Scale-Out businesses.

If customers require more advanced features such as graphical remote console, multi-user collaboration, and video record/playback they can purchase HP iLO Advanced.

#### 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>

### Optional Features

#### 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. <a href="http://www.hp.com/go/clusters">http://www.hp.com/go/clusters</a>
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. <a href="http://www.hp.com/techservers/clusters/ucp/index.html">http://www.hp.com/techservers/clusters/ucp/index.html</a>
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. <a href="http://www.hp.com/go/cmu">http://www.hp.com/go/cmu</a>
HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. <a href="#">HP HPC Linux Value Pack</a>

#### 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-

### Optional Features

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](http://www.hp.com/go/storage/software).

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#### 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 anytime.

[www.hp.com/go/insightonline](http://www.hp.com/go/insightonline)

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#### 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>.

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#### HP Enterprise 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>

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### Optional Features

- GPU Computing Modules** Each SL250s tray will accommodate up to three GPUs, with options including HP NVIDIA Tesla M2075, M2070Q, M2090, K10, K20, K20x computational accelerator modules and Intel® Xeon Phi™ 5110p Coprocessor. The NVIDIA M2070Q module enables computational acceleration as well as high-end QUADRO® graphics. The other modules are primarily for computational acceleration.
- NOTE:** Each SL250s tray will accommodate up to three GPUs. In order to support three HP NVidia Tesla M2075 or M2090, inlet temperature of 25C is required. Max number of M2070Q, K10, K20, K20x, and Xeon Phi 5110p modules supported at this time is two per SL250s tray.
- NOTE:** When adding GPU solutions to the SL250s server, one must utilize the HP 1200W CS Platinum Power Supply Kit, 578322-B21, for all four power supply slots.
- NOTE:** When implementing three M2090's in the SL250s, one must run at the default power cap of 225W. If implementing two or one, one can run at the higher power cap of 250W.
- NOTE:** One must configure a minimum of 4GB of memory per CPU when GPU's are installed.
- NOTE:** Mixing of GPGPU's or coprocessors within the same server is not allowed.

### Service and Support

#### Service and Support

##### **HP Technology Services for Industry Standard Servers and BladeSystem**

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.

##### **What HP ProLiant and BladeSystem Services can do for you**

HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for their business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help deliver high levels of application availability through proactive service management and advanced technical response

You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three support recommendations - **Optimized Care, Standard Care, and Basic Care** - available for each product group. Such support solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support recommendations for servers, storage, networking and software.

All three service recommendations include support services from the broader portfolio of Foundation Care and Proactive Care services.

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#### Optimized Care

##### **Optimized Care: Supports maintaining servers at optimum performance availability**

###### **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>

###### **HP Installation and Startup for Insight Control Software / HP SIM**

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) on HP ProLiant ML and DL series servers or HP BladeSystem servers  
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

###### **3-Year HP 24x7 4 hour Response, Proactive Care or Critical Advantage**

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you  
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf>

**Additional Services:** Data Center Transformation Services

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### Service and Support

#### Standard Care

**Standard Care:** Service recommendation that maintains high level of server availability

##### **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>

##### **HP Installation and Startup for Insight Control Software / HP SIM**

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) on HP ProLiant ML and DL series servers or HP BladeSystem servers  
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

##### **3-Year HP 24x7 4 hour Response, Collaborative Support**

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to HP. If the problem is with HP HW, the representative will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

**Additional Services:** Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware) Installation & Start Up and Software Support; Microsoft or Linux or VMware education courses; +60 Proactive Select Credits

#### Basic Care

**Basic Care:** delivers minimum recommended support service level

##### **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>

##### **3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service**

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers  
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

**Additional Services:** Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware) Installation & Start Up and Software Support; +30 Proactive Select Credits, Factory Express.

#### Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more  
<http://www.hp.com/go/insightremotesupport>



### Service and Support

#### HP Support Center

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

HP's Support Center Mobile App\* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

*\*HP's Support Center Mobile App is subject to local availability*

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#### Warranty / Service Coverage

For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

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#### For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized 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.

### HP ProLiant SL250s G8 2U Server

### 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:** Configure-to-order (CTO) servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option is only available as a factory installable option.

**NOTE:** If you already have an s6500 chassis skip to Step 1A.

### Step 1: Base Configuration (choose one from each list unless otherwise noted)

<b>HP Chassis</b>	HP ProLiant s6500 without Fans 4U Configure-to-order Chassis	614167-B21
	<b>NOTE:</b> You must choose Power Supplies and fans as the chassis does not include them.	
	<b>NOTE:</b> If you already have an s6500 chassis you can buy server trays below.	

### Step 1A: Select Nodes

**NOTE:** Mixing and matching of half width trays is supported in the s6500 chassis.

**NOTE:** If you do not fill up chassis with servers, the HP node blank Kit 622372-B21 needs to be ordered for each half width 1U space unpopulated.

<b>HP Server Nodes</b>	HP ProLiant SL250s Gen8 2U PCIe Gen3 Left Tray Configure-to-order Svr	698723-B21
	HP ProLiant SL250s Gen8 2U PCIe Gen3 Right Tray Configure-to-order Svr	698724-B21

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

<b>HP Processors</b>	<b>NOTE:</b> If 2 processors are desired, select one xxxxx-L21 and one xxxxxx-B21	
	<b>Entry Processors</b>	
	<b>NOTE:</b> All support up to 1066MHz memory speeds.	
	HP SL250s Gen8 Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/80W) FIO Processor Kit	662326-L21
	HP SL250s Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	662327-L21
	<b>Base Processors</b>	
	<b>NOTE:</b> All support up to 1333MHz DDR3 memory speeds.	
	HP SL250s Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) FIO Processor Kit	662323-L21
	HP SL250s Gen8 Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/95W) FIO Processor Kit	662324-L21
	HP SL250s Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) FIO Processor Kit	662325-L21
	HP SL250s Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) FIO Processor Kit	662332-L21
	<b>Performance Processors</b>	
	<b>NOTE:</b> All support up to 1600MHz DDR3 memory speeds.	
	<b>NOTE:</b> For 130W CPU support and configuration, please contact your HP account team.	
	HP SL250s Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) FIO Processor Kit	662319-L21
	HP SL250s Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) FIO Processor Kit	662320-L21
	HP SL250s Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) FIO Processor Kit	662321-L21
	HP SL250s Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	662322-L21
	HP SL250s Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) FIO Processor Kit	662331-L21
	HP SL250s Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) FIO Processor Kit	662330-L21
	<b>NOTE:</b> DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.	

### Configuration Information - Factory Integrated Models

#### 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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM.

#### Registered DIMMs (RDIMMs)

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

#### Unbuffered with ECC DIMMs (UDIMMs)

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

**NOTE:** For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator)

**NOTE:** There is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel)

**NOTE:** PC3L is a low voltage memory.

**NOTE:** Memory Min and Max depends on number of processors and type of memory:

### Configuration Information - Factory Integrated Models

#### Step 3: Choose Additional Factory Integratable Options

HP Insight Software

HP Insight Control ML/DL/BL FIO Bndl Lic

C6N36A

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#### 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. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

<b>HP Unique Options</b>	HP SL250 SFF Internal Enablement Kit	679991-B21
	<b>NOTE:</b> The SFF enablement kit allows up to four SFF HDD to be implemented in place of the three GPUs.	
	<b>NOTE:</b> This SFF enablement kit will not work with the Smart Array P420 Controller (631670-B21) due to cable restrictions.	
	HP SL250 GPU K10/K20 Enable Kit	711947-B21
	<b>NOTE:</b> Each NVidia K10/K20/K20x card requires 1 of these enablement kits.	
	HP SL250 Coprocessor Enable Kit	711949-B21
	<b>NOTE:</b> Each Xeon Phi Coprocessor card requires 1 of these enablement kits	

### HP Processors

#### Entry Processors

**NOTE:** All Entry Processors support up to 1600MHz DDR3 memory speed.

HP SL250s Gen8 Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/80W) Processor Kit	662326-B21
HP SL250s Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) Processor Kit	662327-B21

#### Base Processors

**NOTE:** All Base Processors support up to 1333MHz DDR3 memory speed.

HP SL250s Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) Processor Kit	662323-B21
HP SL250s Gen8 Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/95W) Processor Kit	662324-B21
HP SL250s Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor Kit	662325-B21
HP SL250s Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Kit	662332-B21

#### Performance Processors

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

**NOTE:** For 130W CPU support and configuration, please contact your HP account team.

HP SL250s Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) Processor Kit	662319-B21
HP SL250s Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) Processor Kit	662320-B21
HP SL250s Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) Processor Kit	662321-B21
HP SL250s Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Kit	662322-B21
HP SL250s Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) Processor Kit	662331-B21
HP SL250s Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor Kit	662330-B21

### Core Options

#### 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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM.

#### Registered DIMMs (RDIMMs)

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

#### Unbuffered with ECC DIMMs (UDIMMs)

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

**NOTE:** For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator)

**NOTE:** There is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel)

**NOTE:** PC3L is a low voltage memory.

**NOTE:** Memory Min and Max depends on number of processors and type of memory:

#### 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.

### Core Options

**NOTE:** Hard drives have either a one year or three year warranty.

**NOTE:** The non-hot plug hard drives use a quick release carrier.

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

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 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21

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

HP 1.2TB 6G SAS 10K SFF (2.5-inch) Quick-release Dual Port ENT 3y Warranty Hard Drive	697572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Quick-release Dual Port Enterprise 3yr Warranty Hard Drive	574879-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12244\\_na/12244\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.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 Quick Release SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) Quick Release Midline 1yr Warranty Hard Drive	632080-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) Quick Release Midline 1yr Warranty Hard Drive	632078-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html) (Worldwide)

#### 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 SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives



### Core Options

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
<b>6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives</b>	
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
<b>3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 400GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653120-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653118-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653112-B21
<b>3G SATA MLC Quick Release SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 400GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636625-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636623-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636621-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/14038\\_na/14038\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html)  
(Worldwide)

**NOTE:** The hard drive options are not required when configuring a Drive-less Model.

### Core Options

#### 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 361T Adapter	652497-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21

##### 10 Gigabit Ethernet adapters

**NOTE:** The SL250s Gen8 supports only the low-profile version of the 10GbE Ethernet Adapters.

**NOTE:** Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

HP NC523SFP 10Gb 2-port Server Adapter	593717-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 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21

##### FlexibleLOM Adapters

HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21
HP Ethernet 1Gb 4-port 699FLR Adapter	665240-B21
HP Ethernet 10Gb 2-port 530FLR-SFP+ Adapter	647581-B21
HP FlexFabric 10Gb 2-port 554FLR-SFP+ Adapter	629142-B21
HP Ethernet 10GB 2-port 560FLR-SLP+ Adapter	665243-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [www.hp.com/go/ProLiantNICs](http://www.hp.com/go/ProLiantNICs)

#### HP InfiniBand

HP InfiniBand 4X QDR ConnectX-2 PCIe G2 Dual Port HCA	592520-B21
QLogic InfiniBand 4X QDR PCI-E G2 Dual Port HCA	583211-B21
HP InfiniBand FDR/EN 10/40Gb Dual Port 544FLR-QSFP Adapter	649282-B21
<b>NOTE:</b> Dual port ConnectX-3 FDR/QDR IB or 40/10GbE. No IB Enablement Kit required.	
HP InfiniBand QDR/EN 10Gb Dual Port 544FLR-QSFP Adapter	649283-B21
<b>NOTE:</b> Dual port ConnectX-3 QDR IB or 10GbE. No IB Enablement Kit required.	
HP InfiniBand FDR/EN 10/40Gb Dual Port 544QSFP Adapter	649281-B21
<b>NOTE:</b> Dual port ConnectX-3 FDR/QDR IB or 40/10GbE. No IB Enablement Kit required.	
<b>NOTE:</b> Please see the QuickSpecs for additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13078_na/13078_na.html">http://h18000.www1.hp.com/products/quickspecs/13078_na/13078_na.html</a>	

### 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 License	C6N27A
HP Insight Control E-LTU License	C6N28AAE
HP Insight Control Server Prov Media Kit	BD883A
HP Insight Management Media Kit	C6N31A
HP Insight Control ML/DL/BL Bundle E-LTU	C6N36AAE
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\\_na/12631\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html)

#### HP Integrated Lights-Out (iLO)

#### HP iLO Scale Out

HP iLO Scale-Out incl 3yr Technical Support and Updates Flex Qty Electronic License	BD776AAE
HP iLO Scale-Out incl 3yr Technical Support and Updates Flex Qty License	BD776A
HP iLO Scale-Out incl 3yr Technical Support and Updates Tacking License	BD777A
HP iLO Scale-Out incl 1yr Technical Support and Updates Flex Qty Electronic License	BD778AAE
HP iLO Scale-Out incl 1yr Technical Support and Updates Flex Qty License	BD778A
HP iLO Scale-Out incl 1yr Technical Support and Updates Tacking License	BD779A

**NOTE:** Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <http://www.hp.com/go/ic-linux> (click on Download button).

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

**NOTE:** For additional license options please see the QuickSpecs at: [http://h18000.www1.hp.com/products/quickspecs/13019\\_na/13019\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html)

#### HP Integrated Lights-Out (iLO) Advanced for ProLiant

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity License	512486-B21
HP iLO Advanced Flexible Qty License with 3yr 24x7 Tech Support and Updates	BD506A

### Additional Options

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

**NOTE:** For additional license options please see the Insight Control QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/14276\\_na/14276\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14276_na/14276_na.html)

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

### High Performance Clusters

#### HP Cluster Management Utility

HP Insight Cluster Management Utility 1yr 24x7 Flexible License QL803B

HP Insight Cluster Management Utility 3yr 24x7 Flexible License BD476A

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

HP Insight Cluster Management Utility Media BD477A

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

#### HP HPC Linux Value Pack

HP High Performance Computing Linux Value Pack 1 Processor Flexible License for ProLiant Servers TC293B

**NOTE:** This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). 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.

HP High Performance Computing Linux Value Pack Media Kit for ProLiant Servers TC294A

**NOTE:** This part number can be used to purchase media including software and documentation, which will be delivered to the customer.

**NOTE:** For additional license kits please see the QuickSpecs at:  
[http://h18004.www1.hp.com/products/quickspecs/13485\\_na/13485\\_na.html](http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html)

### 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

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

### Additional Options

**GPU Computing Modules** **NOTE:** Each SL250s tray will accommodate up to three GPUs. In order to support three HP NVidia Tesla M2075 or M2090, inlet temperature of 25C is required. Max number of M2070Q, K10, K20, K20x, and Xeon Phi 5110p modules supported at this time is two per SL250s tray.

**NOTE:** When adding GPU solutions to the SL250s server, one must utilize the HP 1200W CS Platinum Plus Power Supply Kit, 578322-B21, for all four power supply slots.

**NOTE:** When implementing three M2090's in the SL250s, one must run at the default power cap of 225W. If implementing two or one, they can run at the higher power cap of 250W.

**NOTE:** One must configure a minimum of 4GB of memory per CPU when GPU's are installed.

**NOTE:** Mixing of GPGPU's or coprocessors within the same server is not allowed.

NVIDIA Tesla M2075 6GB Computational Module	A0R41A
NVIDIA Tesla M2090 6GB Module	A0J99A
NVIDIA Tesla K10 Dual GPU PCIe Module	B3M66A
NVIDIA Tesla K20 5GB Computational Accelerator	C7S14A
NVIDIA Tesla K20X 6GB Computational Accelerator	C7S15A

**NOTE:** For additional information on NVidia Tesla Modules, please see the QuickSpecs at: [http://h18004.www1.hp.com/products/quickspecs/13743\\_na/13743\\_na.html](http://h18004.www1.hp.com/products/quickspecs/13743_na/13743_na.html)

#### Coprocessor Kits

Intel Xeon Phi 5110p Coprocessor	C1P87A
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#### Enablement Kits

HP SL250 GPU K10/K20 Enable Kit	711947-B21
<b>NOTE:</b> Required when ordering NVidia Tesla K10, K20, or K20x Modules.	
HP SL250 Coprocessor Enable Kit	711949-B21
<b>NOTE:</b> Required when ordering Intel Xeon Phi 5110p Coprocessor.	

### HP Storage Controllers

#### SAS Controllers

##### Smart Array P222 Controller

HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller	631667-B21
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##### Smart Array P420 Controller

HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller	631670-B21
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##### Smart Array P421 Controller

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

#### Optional Upgrades

HP 512MB B-series Dynamic Smart Array Flash Backed Write Cache with 24 inch Cable	676473-B21
HP 24in Super Capacity Option for Smart Array	668944-B21
HP SL250s 4X SFF Smart Array Enablement Kit	670564-B21

### Additional Options

HP SL250 SFF Internal Enablement Kit	679991-B21
<b>NOTE:</b> The SFF enablement kit allows up to four SFF HDD to be implemented in place of the three GPUs.	
<b>NOTE:</b> This SFF enablement kit will not work with the Smart Array P420 Controller (631670-B21) due to cable restrictions.	
HP Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software	BC377A
HP Smart Array Advanced Pack 2.0 No Media Electronic Lic 1yr 24x7 Support Software	BC390AAE
HP SAS License Key No Media 1 Single Server License for B320i	BC393A
<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:	
<a href="http://h18000.www1.hp.com/products/quickspecs/14227_na/14227_na.html">http://h18000.www1.hp.com/products/quickspecs/14227_na/14227_na.html</a> (Smart Array P222 Controller)	
<a href="http://h18000.www1.hp.com/products/quickspecs/14228_na/14228_na.html">http://h18000.www1.hp.com/products/quickspecs/14228_na/14228_na.html</a> (Smart Array P420 Controller)	
<a href="http://h18000.www1.hp.com/products/quickspecs/14229_na/14229_na.html">http://h18000.www1.hp.com/products/quickspecs/14229_na/14229_na.html</a> (Smart Array P421 Controller)	
<a href="http://h18000.www1.hp.com/products/quickspecs/13200_na/13200_na.html">http://h18000.www1.hp.com/products/quickspecs/13200_na/13200_na.html</a> (Smart Array Advanced Pack)	
<b>Host Bus Adapter</b>	
HP H220 Host Bus Adapter	650933-B21
HP H222 Host Bus Adapter	650926-B21
<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:	
<a href="http://h18004.www1.hp.com/products/quickspecs/14336_na/14336_na.html">http://h18004.www1.hp.com/products/quickspecs/14336_na/14336_na.html</a> (HBA 220)	
<a href="http://h18004.www1.hp.com/products/quickspecs/14337_na/14337_na.html">http://h18004.www1.hp.com/products/quickspecs/14337_na/14337_na.html</a> (HBA 222)	

### HP Tape Backup

<b>NOTE:</b> For the complete range of tape drives, autoloaders, libraries and media see: <a href="http://www.hp.com/go/tape">http://www.hp.com/go/tape</a> . For hardware and software compatibility of HP tape backup products see: <a href="http://www.hp.com/storage/SPOCK">http://www.hp.com/storage/SPOCK</a>	
HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
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

### Additional Options

#### HP Uninterruptible Power Systems HP Rack-mountable UPS

##### HP R1500 G3 Uninterruptible Power Supply (UPS)

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\\_na/14059\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14059_na/14059_na.html)

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

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

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

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14058\\_na/14058\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14058_na/14058_na.html)

##### R5000 Uninterruptible Power System (UPS)

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\\_na/14109\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14109_na/14109_na.html)

##### R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System AF462A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14110\\_na/14110\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14110_na/14110_na.html)

**NOTE:** For additional information on HP Uninterruptible Power Systems please go to: [www.hp.com/servers/rackups](http://www.hp.com/servers/rackups).

**NOTE:** For additional information on sizing your server, 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](http://www.hp.com/products/powercords).

#### HP Power Distribution Units

##### Monitored PDUs

##### HP Monitored Power Distribution Unit: Full Rack Version

HP 8.6kVA 24A Single Input Three Phase NA/JP Monitored Power Distribution Unit AF504A

HP 8.3kVA 40A Single Input Single Phase NA/JP Monitored Power Distribution Unit AF506A

##### HP Monitored Power Distribution Unit: Half Rack Version

HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit AF914A

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12118\\_na/12118\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html)

##### Modular PDUs 1U/0U

**NOTE:** 1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks).

HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit 252663-D71

HP 4.9kVA 24A High Voltage NA/JP Modular Power Distribution Unit 252663-D72

**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](http://www.hp.com/go/rackandpower).

### Additional Options

**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](http://www.hp.com/products/powercords).

**NOTE:** This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

**NOTE:** Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords:

[http://h18000.www1.hp.com/products/quickspecs/11041\\_na/11041\\_na.html](http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.html)

#### 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 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit AF522A

##### 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\\_na/13650\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13650_na/13650_na.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](http://www.hp.com/go/rackandpower).

#### HP Rack Series

##### HP Intelligent Series Rack

HP 636 1200mm Pallet Intelligent Series Rack BW899A

HP 636 1200mm Shock Intelligent Series Rack BW900A

HP 642 1200mm Pallet Intelligent Series Rack BW907A

HP 642 1200mm Shock Intelligent Series Rack BW908A

HP 647 1200mm Pallet Intelligent Series Rack BW913A

HP 647 1200mm Shock Intelligent Series Rack BW914A

**NOTE:** Please see the QuickSpecs for Technical Specifications:

[http://h18000.www1.hp.com/products/quickspecs/14223\\_na/14223\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14223_na/14223_na.html) (Worldwide)

**NOTE:** For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.



### Additional Options

#### HP Rack Options

##### HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor AZ870A

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\\_na/13731\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13731_na/13731_na.html)

##### 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\\_na/11834\\_na.html](http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html)

##### 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\\_na/13475\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html)

##### HP IP Console Switch G2 with Virtual Media & CAC

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\\_na/13474\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_na.html)

#### HP USB and SD Options

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 4GB Micro SDHC Flash Media Kit 647444-B21

HP 32GB microSD Mainstream Flash Media Kit 700139-B21

HP 36pin Serial/USB/VGA Dongle Cord Kit 676277-B21

#### HP Care Pack Services

HP 3 year 24x7 24 hour Call to Repair ProLiant s6500 Hardware Support UR425E

HP 3 year 24x7 24 hour Call to Repair with Defective Media Retention ProLiant s6500 Hardware Support UR426E



### Additional Options

HP 3 year 4 hour 13x5 ProLiant s6500 Hardware Support	UR400E
HP 3 year 4 hour 13x5 with Defective Media Retention ProLiant s6500 Hardware Support	UR401E
HP 3 year 4 hour 24x7 ProLiant s6500 Hardware Support	UR402E
HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant s6500 Hardware Support	UR403E
HP 3 year 6 hour 24x7 Call to Repair ProLiant s6500 Hardware Support	UR404E
HP 3 year 6 hour 24x7 Call to Repair with Defective Media Retention s6500 Hardware Support	UR405E
HP 3 year Next business day ProLiant s6500 Hardware Support	UR398E
HP 3 year Next business day with Defective Media Retention ProLiant s6500 Hardware Support	UR399E
HP 3 year 4 hour 24x7 ProLiant s6500 Collaborative Support	U1M52E
HP 3 year 4 hour 24x7 ProLiant s6500 Proactive Care Service	U3C72E
HP 3 year Next business day ProLiant s6500 Collaborative Support	U1M46E
HP 3 year Next business day ProLiant s6500 Proactive Care Service	U3C66E
HP 4 year 24x7 24 hour Call to Repair ProLiant s6500 Hardware Support	UR427E
HP 4 year 24x7 24 hour Call to Repair with Defective Media Retention ProLiant s6500 Hardware Support	UR428E
HP 4 year 4 hour 13x5 ProLiant s6500 Hardware Support	UR408E
HP 4 year 4 hour 13x5 with Defective Media Retention ProLiant s6500 Hardware Support	UR409E
HP 4 year 4hour 24x7 ProLiant s6500 Hardware Support	UR410E
HP 4 year 4 hour 24x7 with Defective Media Retention ProLiant s6500 Hardware Support	UR411E
HP 4 year 6 hour 24x7 Call to Repair ProLiant s6500 Hardware Support	UR412E
HP 4 year 6 hour Call to Repair 24x7 with Defective Media Retention ProLiant s6500 Hardware Support	UR413E
HP 4 year Next business day ProLiant s6500 Hardware Support	UR406E
HP 4 year Next business day with Defective Media Retention ProLiant s6500 Hardware Support	UR407E
HP 5 year 24x7 24 hour Call to Repair ProLiant s6500 Hardware Support	UR429E
HP 5 year 24x7 24 hour Call to Repair with Defective Media Retention ProLiant s6500 Hardware Support	UR430E
HP 5 year 4 hour 13x5 ProLiant s6500 Hardware Support	UR416E
HP 5 year 4 hour 13x5 with Defective Media Retention ProLiant s6500 Hardware Support	UR417E
HP 5 year 4 hour 24x7 ProLiant s6500 Hardware Support	UR418E
HP 5 year 4 hour 24x7 with Defective Media Retention ProLiant s6500 Hardware Support	UR419E
HP 5 year 6 hour 24x7 Call to Repair ProLiant s6500 Hardware Support	UR420E
HP 5 year 6 hour 24x7 Call to Repair with Defective Media Retention s6500 Hardware Support	UR421E

Additional Options

HP 5 year Next business day ProLiant s6500 Hardware Support	UR414E
HP 5 year Next business day with Defective Media Retention ProLiant s6500 Hardware Support	UR415E

**NOTE:** For more information, customer/resellers can contact:  
<http://www.hp.com/services/carepack>.

### Memory

#### HP ProLiant SL250s Gen8 Server

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

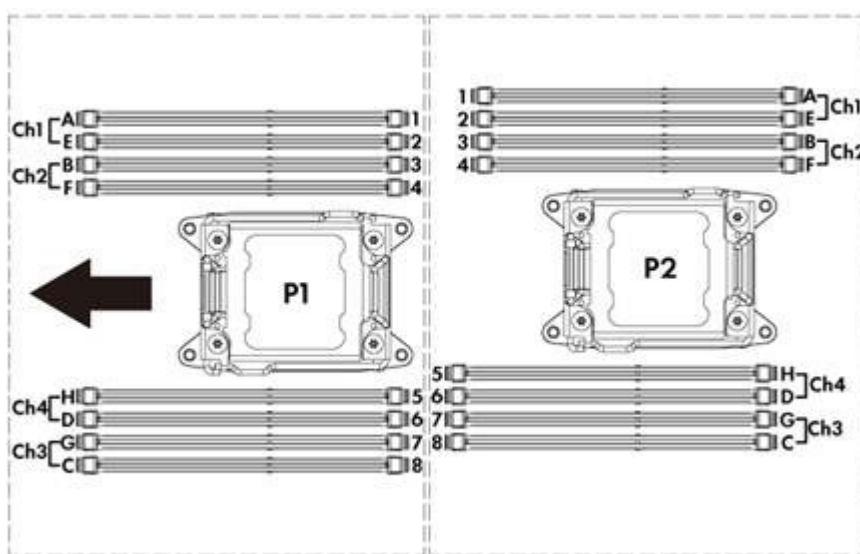
**NOTE:** Chart does not represent all possible memory configurations.

#### 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](http://www.hp.com/go/ddr3memory-configurator)

Each Intel® Xeon® E5-2600 family processor socket contains four memory channels that support two DIMMs each for a total of eight (8) DIMM per installed processor or a grand total of sixteen (16) DIMMs for the server. Up to 16GB capacity DIMMs are supported for 256GB of memory (16 DIMM slots x 16GB per DIMM).



#### Memory Population Rules and 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, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- 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
- RDIMMs operating at either 1.35V or 1.5V may be mixed in any order, but the system will power them at the higher voltage.
- Do not mix RDIMMs and UDIMMs.
- The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.
- The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.

### Memory

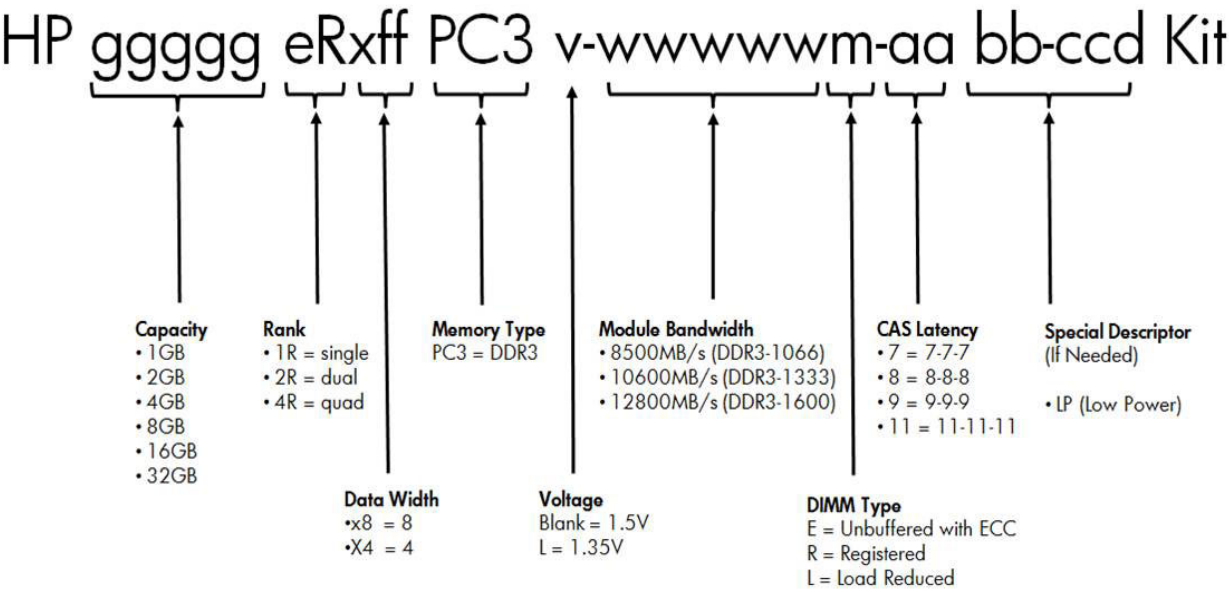
- The maximum memory capacity is a function of the memory type and number of installed processors.
- HP memory from previous generation servers is not qualified on the SL250s Gen8 Server. Certain HP SmartMemory features such as memory authentication and enhanced performance may not be supported.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html).
- For memory population rules and additional memory guidelines, please see the SL250 Gen8 user guide at  
<http://www.hp.com/support>.

DIMM slot/capacity/populated speed table													
DIMM Type	Registered DIMMS (RDIMMs)							Unbuffered with ECC DIMMs (UDIMMs)					
DIMM Rank	Single Rank (1R)			Dual Rank (2R)				Single Rank (1R)		Dual Rank (2R)			
DIMM Capacity	4GB	4GB	8GB	8GB	8GB	16GB	16GB	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MHz)	1600	1333	1600	1333	1600	1333	1600	1333	1600	1333	1600	1333	1600
Voltage	Std	LV	Std	LV	Std	LV	Std	LV	Std	LV	Std	LV	Std
SLOTS THAT CAN BE POPULATED													
16 slot servers	16	16	16	16	16	16	16	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)													
Capacity	64	64	128	128	128	256	256	32	32	64	64	128	128
POPULATED DIMM SPEED (MHz)													
1 DIMM Per Channel	1600	1333	1600	1333	1600	1333	1600	1333	1600	1333	1600	1333	1600
2 DIMM Per Channel	1600	1333	1600	1333	1600	1333	1600	1333**	1600	1333**	1600	1333**	1600
* Maximum capacity will vary based on individual server platform qualification schedule													
** For HP SmartMemory, UDIMM is supported at 2DPC@DDR3-1333. Third party memory may only support up to 2DPC@DDR3-1066.													

- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

### DDR3 memory options part number decoder

Memory



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: [http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM.

Registered DIMMs (RDIMMs)

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

Unbuffered with ECC DIMMs (UDIMMs)

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



### Memory

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

**NOTE:** For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** There is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel)

**NOTE:** PC3L is a low voltage memory.

**NOTE:** Memory Min and Max depends on number of processors and type of memory:

- One (1) Processor -> R-Dimm: Min 1 // Max 8 U-Dimm: Min 1 // Max 8
- Two (2) Processors -> R-Dimm: Min 2 // Max 16 U-Dimm: Min 2 // Max 16

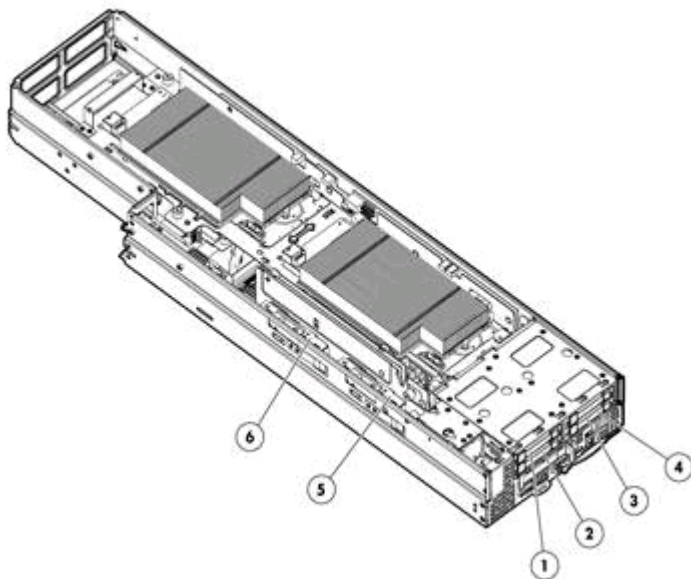
**NOTE:** Intel E5 E5-2620 processor does not support LV DIMMs running at 1.35V. The HP RBSU can be changed to run at 1.5V.

**NOTE:** Not all Intel E5 processor series support 1600MHz or 1333MHz speeds. Memory speed is a function of the processor QPI speed.

**NOTE:** For Registered DIMMs, there is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel). However, Load Reduced DIMMs are capable of supporting up to 3 DIMMs per channel

### Storage

#### 2U Tray



1-4 Up to four 2.5" hot plug hard drive bays

5 Up to four additional 2.5" non hot-plug drives can be configured when the SFF Hard Drive Enablement Kit is implemented in place of the included GPU kit



### Technical Specifications

#### System Unit

**Chassis Dimensions** (H x W 6.96 x 17.638 x 35.236in (17.68 x 44.8 x 89.55cm)

x D) Add fan extension kit  
(with bezel)

**Weight**  
(approximate) Maximum  
(all hard drives, power  
supplies, and processors  
installed) 220lb (99.8kg)

**Input Requirements**  
(per power supply) Rated Line Voltage 90 to 140 VAC  
180 to 264 VAC  
Rated Input Current 7.31A at 115VAC  
3.6A at 230VAC  
Rated Input Frequency 47 to 63 Hz  
Rated Input Power 855W (at 100 VAC),  
840.72W (at 200 VAC)

**Power Supply Output**  
(per power supply) Rated Steady-State Power 653.10W (at 100 VAC),  
653.08W (at 200 VAC)

**System Inlet  
Temperature** Operating 50° to 95° F (10° to 35° C) at sea level with an  
altitude derating of 1.8°F per every 1000 ft (1.0°C  
per every 304.8 m) above sea level to a maximum  
of 10,000 ft (3048 m), no direct sustained  
sunlight. Maximum rate of change is 18°F/hr  
(10°C/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 86°F (30°C).

Non-operating -22° to 140° F (-30° to 60° C)  
Maximum rate of change is 36°F/hr (20°C/hr).

**Relative Humidity**  
(non-condensing) Operating 10% to 90% relative humidity (Rh), 82.4°F (28°C)  
maximum wet bulb temperature, non-  
condensing.

Non-operating 5% to 95% relative humidity (Rh), 101.7°F  
(38.7°C) maximum wet bulb temperature, non-  
condensing.

**Altitude** Operating 10,000 ft (3048 m). This value may be limited by  
the type and number of options installed.  
Maximum allowable altitude change rate is 1500  
ft/min (457 m/min).

Non-operating 30,000 ft (9144 m). Maximum allowable altitude  
change rate is 1500 ft/min (457 m/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

LWAd 6.4

### Technical Specifications

<b>Emissions Classification</b> (EMC)	LpAm	45dBA
	<b>Operating</b>	
	LWAd	6.7
	LpAm	51dBA
	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

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

<b>HP Ethernet 1Gb 2-port 361i Adapter</b>	<b>Network Interface</b>	10Base-T/100Base-TX/1000Base-TX	
	<b>Compatibility</b>	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)	
	<b>Data Transfer Method</b>	PCI Express v 2.1, 5.0 GT/s and 2.5 GT/s bus speeds and supports for x1, x2, x4 links widths (Lanes)	
	<b>Controller</b>	I350 Powerville	
	<b>Network Transfer Rate</b>	10Base-T (Half-Duplex)	10 Mb/s per port, 20 Mb/s Combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 40 Mb/s Combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 200 Mb/s Combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 400 Mb/s Combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 2000 Mb/s Combined
	<b>Connector</b>	RJ-45	
	<b>Cable Support</b>	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

### Technical Specifications

<b>HP H220i Host Bus Adapter</b>	<b>Disk Drive and Enclosure Interface - Transfer rate</b>	6Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
	<b>SAS Connectors</b>	2 internal 4X connectors
	<b>Server Interface</b>	x8 PCIe 3.0 provides 8GB/s maximum bandwidth
	<b>SAS Speed</b>	6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	<b>Cache Memory</b>	None
	<b>Physical Drives Supported</b>	Up to 8 physical drives
	<b>Hot Plug Support</b>	Yes
	<b>RAID Support</b>	None

<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	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: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> . To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
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The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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