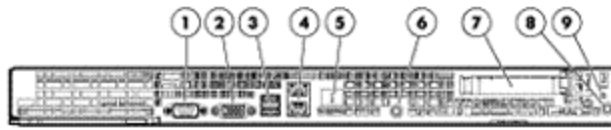
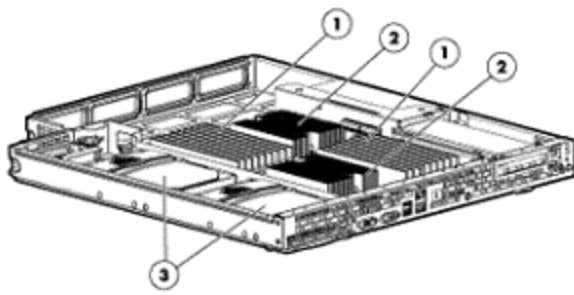


Overview



Open View:

1. 18 DDRs DIMM slots
2. Up to two Intel® Quad-Core 5500 sequence processors
3. Two 3.5" non-hot plug hard drives using a quick release drive carrier

Rear View:

1. Serial Port
2. Video Port
3. (2) USB Ports
4. (2) 1Gbit NIC
5. Optional Dedicated Management port
6. UID
7. Optional low profile x16 PCI-e Gen 2
8. Power Button
9. Health LED

What's New

- Support for up to two Intel® 5600 sequence processors
- Support for Low-voltage memory

At A Glance

The HP ProLiant SL160z G6 server is part of a new family, HP ProLiant SL6000, of HP server solutions optimized for scale-out customers to greatly reduce costs, maximize power efficiency, by sharing power supplies and fans, and maintain total flexibility.

Two independent HP ProLiant SL160z G6 Servers go into the 2U HP ProLiant z6000 G6 Chassis. The HP ProLiant SL160z G6 Server is a two socket Intel server with 18 DDR3 DIMM sockets and support for a low profile x16 PCI-e Gen 2 and an internal x4 PCI-e Gen 2 slot.

The HP ProLiant SL160z G6 is optimized for applications needing large amounts of memory and I/O expansion.

● Processors:

- Supports up to two Intel® 5600 sequence processors
- Six-Core Intel® Xeon® processors 5600 sequence with 12MB Level 3 cache (depends on model)
- Quad-Core Intel® Xeon® processors 5600 sequence with 12MB Level 3 cache (depends on model)
- Supports up to two Intel® 5500 sequence processors
- Supports up to two Intel® Quad-Core 5500 sequence processors
- Quad-Core Intel® Xeon® processors 5500 sequence with 4MB or 8 MB Level 3 cache (depends on model)
- Intel® 5520 Chipset

● Memory:

- Up to 192GB (16GB kits populating 12 DIMM slots), using PC3-8500R DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated in 12 slots
 - Up to 24GB, using PC3-10600E DDR3 Unbuffered (UDIMM) memory, operating at 1066MHz when fully populated at 2 DIMMs per Channel in 12 slots
- NOTE:** Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

● Internal Drive Support:

- Support for up to two 3.5" non-hot plug Serial ATA (SATA) or Serial Attached SCSI (SAS) hard drives using a quick release drive carrier
- Support for up to four 2.5" non-hot plug Serial ATA (SATA), Serial Attached SCSI (SAS), or Solid State Drive (SSD) hard drives using a quick release drive carrier and the SFF drive cage

● Network Controller:

- HP NC362i Integrated Dual Port Gigabit Server Adapter

● Storage Controllers:

- Non-Hot Plug SATA Models: HP Embedded Smart Array B110i SATA RAID Controller (RAID 0, 1, 10)
- NOTE:** Transfer rate: up to 3 Gb/s SATA
- NOTE:** A HP Smart Array controller is required for SAS Hard Drives

● Expansion Slots:

- Up to two available PCI Express 2.0 slots:
 - Optional Slot 1: low-profile x16 PCI-Express 2.0
 - Optional Slot 2: low-profile internal only x4 PCI-Express 2.0

Overview

- **Management:**

- HP ProLiant Onboard Administrator Powered by Lights-Out 100 with optional LO100i Advanced Licenses for Virtual KVM and Virtual Media
- The HP ProLiant Easy Set-up CDs and ISO image downloads offer Assisted and Manual single server installation, setup, and deployment capability. Capabilities provided are:
 - AutoRun
 - Assisted Installation Microsoft Windows 2003 Server and Microsoft Windows 2008 Server.
 - OS and SW available for Manual Installation are listed on each servers' QuickSpecs
- HP Insight Diagnostics
- Smart Components - a self-executable software consisting of driver and firmware
- HP Smart Update Manager - a single system and multi-server deployment tool for Windows environments that works with Smart Components to provide customers with easy-to-use GUI and Script-based deployment capacity
- SmartStart Scripting Toolkit - an automated scalable deployment utility
- Insight Management Agents for environmental monitoring that is similar to and consistent with that of HP ProLiant 300 series servers and above servers and that allows integration to HP Systems Insight Manager (SIM)
- Array Configuration Utility (ACU)
- Array Diagnostics Utility (ADU)
- HP Insight Control for Linux (IC-Linux), a product option, delivers essential lifecycle management that can help save time and money by integrating discovery, server deployment, firmware updates & provisioning, health & performance management, remote management, and virtualization. This makes it easy to optimize your IT infrastructure through a single, simple management console. The Insight Control for Linux suite supports Linux-based servers and management consoles.

- **Operating Systems and Virtualization Software Support for ProLiant Servers:**

- Supports Windows, RHEL, SLES, Solaris, VMware ESX, and Citrix Essentials for XenServer

- **USB Ports:**

- Three USB ports (two front, one internal)
 - **NOTE:** In order to utilize the internal USB port the USB cable (P/N: 536769-B21) must be connected to the internal USB header.

- **Optical Drive:**

- External support only

- **Power Supply:**

- The 2U chassis supports three power supply options:
 - Common Slot Power Supplies enable power capping and hot-pluggability
 - HP 1200W CS HE Silver Power Supply (Hot Plug, Autoswitching) (optional)
 - HP 750W CS HE Gold Power Supply (Hot Plug, Autoswitching) (optional)
 - HP 460W CS HE Gold Power Supply (Hot Plug, Autoswitching) (optional)

- **Form Factor:**

- HP ProLiant z6000 G6 Chassis - 2U
- HP ProLiant SL160z Server - 1U server tray

- **Deployment/Serviceability:**

- HP ProLiant SL160z G6 models have two different rail kits to choose from:
 - 10U bulk rail kit - Used to fit in HP 10000 series racks
 - One 10U bulk rail kit will hold up to five z6000 chassis, thus ten SL160z G6 servers
 - 2U rail kit - Used to fit in 3rd party racks or to sell one z6000 chassis at a time
 - One 2U rail kit will hold one z6000 chassis, thus two SL160z servers
- Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement

- **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, and 1 year on-site service. 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>.

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

Six-Core Processors

Intel® Xeon® Processor X5680 (3.33 GHz, 12MB L3 Cache, 130W, DDR3-1333, HT, Turbo 1/1/2/2/3/3)

Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)

Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)

Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)

Quad-Core Processors

Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor L5640 (2.40 GHz, 12MB L3 Cache, 60W, DDR3-1066, HT, Turbo 2/2/3/3/4/4)

Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)

Intel® Xeon® Processor X5560 (2.8 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)

Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)

Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® Processor L5530 (2.40 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor L5506 (2.13 GHz, 4MB L3 Cache, 60W, DDR3-800)

Dual-Core Processors

Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800)

NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.

NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 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.

NOTE: For the Intel 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

Upgradeability

Upgradeable to two processors

Chipset

Intel® 5520 Chipset

Cache Memory

12MB (1 x 12MB) Level 3 cache

NOTE: All 5600 sequence processor models.

8MB (1 x 8MB) Level 3 cache

NOTE: All processor models except for those identified below.

4MB (1 x 4MB) Level 3 cache

NOTE: For processors L5506, E5506, E5504, E5502 and E5502.

Memory Protection

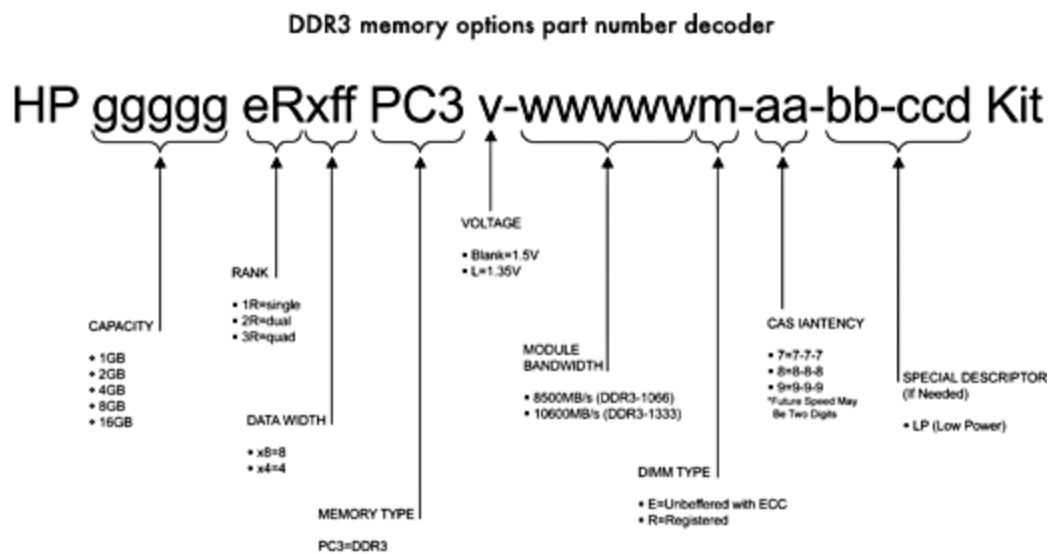
Advanced memory protection

Standard Features

Memory	Type	DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
	Standard (per server tray)	6GB (3 x 2GB) UDIMMs
	Maximum (RDIMM) (per server tray)	192GB (12 x 16GB) for Registered Memory configurations
	Maximum (UDIMM) (per server tray)	48GB (12 x 4GB) for Unbuffered Memory configurations

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at: 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.



Network Controller HP NC362i Integrated Dual Port Gigabit Server Adapter

Expansion Slots	Slot #	Technology	Bus Width	Connector	Bus Number*	Device No.**	Form Factor	Notes
	1	PCI-Express 2.0	x16	x16	1	0	Low Profile	3.3 volts

NOTE: All slots can accept universal keyed PCI cards.

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

Storage Controller Non-Hot Plug SATA HP Embedded Smart Array B110i SATA RAID Controller (RAID 0, 1, 10) Models:

NOTE: To enable RAID on Embedded SATA, use the HP Smart Array B110i SATA Raid controller, To enable use of the B110i, enter the ROM based setup utility(RBSU). The option for enabling RAID can be found in the advanced section of the RBSU. For additional details

www.hp.com/go/SATARAID

NOTE: Transfer rate: 3.0 Gb/s SATA

NOTE: A HP Smart Array controller is required for SAS Hard Drives

NOTE: An external diskette drive, USB floppy drive key or virtual FDD using LO100 Advanced Pack is needed to install storage controller drivers during a Windows operating system installation from a CD.

Storage	Optical Drives	DVD-ROM / DVD RW drives via USB only
	Diskette Drives	Via USB only
	Drive Bays	None ship standard
		Up to 2 Non-hot plug SATA or SAS 3.5" drives
		Up to 4 Non-hot plug SATA, SAS, or SSD 2.5" drives (requires SFF drive cage)

Standard Features

Maximum Internal Storage	Non-Hot Plug SATA 3.5"	4.0TB	2 x 2TB
	Non-Hot Plug SAS 3.5"	600GB	2 x 300GB
	Non-Hot Plug SATA 2.5"	2.0TB	4 x 500GB
	Non-Hot Plug SAS 2.5"	1.2TB	4 x 300GB
	Non-Hot Plug SSD 2.5"	480GB	4 x 120GB

Interfaces	Parallel	None
	Network RJ-45	2 10/100/1000 NIC ports (plus 1 optional dedicated port for the HP ProLiant Lights Out 100i Remote Management)
	Serial	1
	Pointing Device (Mouse)	0 (via USB only)
	Graphics	1
	Keyboard	0 (via USB only)
	USB	3 (two front, one internal) NOTE: In order to connect a USB device internally, the internal USB Cable G6 Kit must be used (536769-B21) NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html .
	Management	1 Optional Dedicated LO100i Management Port
	Health LED	1 front per server node
	Power	1 front per server node
	UID	1 front per server node

Graphics 32MB shared supporting 1600x1200x16M resolution

Form Factor HP ProLiant z6000 G6 Chassis - 2U Chassis
NOTE: Can support two SL160z server trays in the 2U chassis.
HP ProLiant SL160z G6 Server - 1U server tray

Embedded Manageability **HP ProLiant Onboard Administrator Powered by LO100 with LO100i Advanced** HP ProLiant Onboard Administrator Powered by Lights-Out 100 is standard with this server and has LO100i Advanced Licenses for Virtual KVM and Virtual Media available as options.

Standard Features:

- Embedded IPMI reporting
- System event log access
- Remote Serial console (serial redirection)
- Browser, Telnet access
- SMASH-CLP compliant
- IPMI 2.0 compliant
- DCMI 1.0 compliant
- Secure Socket Layer Encryption
- Secure Shell Encryption

Licensed Features:

- Virtual media (Floppy, CD, USB 2.0) with Advanced Licenses
- Virtual KVM with Advanced License

Standard Features

HP Insight Control management software	HP Insight Control for Linux	<p>HP Insight Control for Linux (IC-Linux), as a product option, delivers essential lifecycle management that can help save time and money by integrating discovery, server deployment, firmware updates & provisioning, health & performance management, remote management, and virtualization. This makes it easy to optimize your IT infrastructure through a single, simple management console. The IC-Linux suite installs and licenses software modules that are integrated into HP System Insight Manager (HP SIM).</p> <p>HP Insight Control for Linux serves environments requiring a Linux-based management console. See www.hp.com/go/ic-linux.</p> <p>HP Insight Control for Linux 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, please visit: http://www.hp.com/services/insight</p>
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Core Infrastructure Management	<p>HP Insight Rapid Deployment software</p> <p>HP Systems Insight Manager</p> <p>Subscriber's Choice</p> <p>ROMPaq, software and latest drivers</p>	<p>HP Insight Rapid Deployment software (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant servers. RDP provides a central location (running on a Windows CMS) to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles. For more information, visit: http://www.hp.com/go/rdp.</p> <p>HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.</p> <p>For additional information, please see: http://www.hp.com/go/insight.</p> <p>Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.</p> <p>The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options; downloaded from Software and Drivers download pages website at: http://www.hp.com/go/support and from www.hp.com/servers/easysetup. Contains the following:</p> <ul style="list-style-type: none"> ● HP Insight Management Agents for Systems Insight Manager (SIM) Integration ● HP Systems Management Homepage ● Array Configuration Utility (ACU) ● Array Diagnostics Utility (ADU) ● HP Insight Diagnostics
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Industry Standard Compliance	<p>ACPI V2.0 Compliant</p> <p>PCI 2.2 Compliant</p> <p>PXE Support</p> <p>WOL Support</p> <p>Microsoft® Logo certifications</p> <p>IPMI 2.0</p> <p>DCMI 1.0</p> <p>SMASH CLP compliant</p>
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Security	<p>Power-on password</p> <p>Setup password</p> <p>Diskette boot control</p> <p>Secure Sockets Layer (SSL)</p> <p>Secure Shell (SSH)</p>
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Standard Features

Security - Trusted Platform Module

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

www.hp.com/go/TPM

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

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

Server Power Cords

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

NOTE: HP ProLiant DL and SL servers no longer ship standard with NEMA power cords (163719-002) that allow connection to 110V US wall outlets in a home or office. ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the NEMA power cord (227099-001) must be ordered separately.

If customers require a local 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>.

UPS and PDU Power Cord Matrix

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.

Power Supply

HP has a new design for ProLiant power- the new Common Slot Power Supply bay. This design provides the customer with commonality in power supplies across multiple platforms to save on the cost of spares and allows HP to offer multiple power solutions to fit the customers' needs. Many HP ProLiant Servers come with Common Slot, High Efficiency and Right-Size Power Supplies. The new HP Common Slot power supplies are designed for the highest power efficiency without degrading performance of the ProLiant server. Power Supplies have efficiency ratings up to 94%. There are three wattages to choose from depending on the configuration of your server. To make sure you select the correct power supply to meet your configuration, please use the HP Power Advisor at: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor. All HP Common Slot power sources are UL, CE Mark Compliant, Hot Plug and Redundant.

Common Slot ProLiant It is highly recommended that you use the HP Power Calculator in defining the "Right-Size" power supply for your needs. HP offers three Power Supply Options:

- HP 460Watts, Common Slot, 92% Efficiency
- HP 750Watts, Common Slot, 92% Efficiency
- HP 1200Watts, Common Slot, 90% Efficiency
- HP 1200Watts, Common Slot, 94% Efficiency

The HP ProLiant Common Slot Power supplies meet multiple Energy Efficiency Initiatives: Climate Savers Computing Initiative GOLD and ECOS Consulting 80PLUS GOLD for the 460w and 750w Power Supplies and Climate Savers Computing Initiative PLATINUM, ECOS Consulting 80PLUS PLATINUM for 1200w Power Supply. HP worked with the EPA on developing an ENERGY STAR Computer Server specification and we now offer models that meet the requirements. Please visit the ENERGY STAR website at: www.energystar.gov for a list of qualified platforms.

Optional power supplies can be purchased through power supply option kits (see Power Supply Options for part numbers).

System Fans

3 system fans ship standard in z6000 chassis

Standard Features

Operating Systems and Virtualization Software [Microsoft Windows Server](#)
[Microsoft Windows Server Hyper-V](#)
Support for ProLiant Servers [Microsoft HPC Server 2008](#)
[Red Hat Enterprise Linux \(RHEL\)](#)
[SUSE Linux Enterprise Server \(SLES\)](#)
[Solaris](#)
[VMware ESX](#)
[Citrix Essentials for XenServer](#)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/SL160G6>.

Rack Airflow Requirements

Rack 10000 G2 series Cabinets

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 G2 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).

Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: www.hp.com/servers/SL160z.

Rack Support

HP ProLiant SL160z G6 models have two different rail kits to choose from:

- 10U bulk rail kit - Used to fit in HP 10000 series racks
 - One 10U bulk rail kit will hold up to five z6000 chassis, thus ten SL160z G6 servers
- 2U rail kit - Used to fit in 3rd party racks or to sell one z6000 chassis at a time
 - One 2U rail kit will hold one z6000 chassis, thus two SL160z servers

For additional information, please visit: www.hp.com/go/rackandpower.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAXxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

HP Enterprise Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

<http://www.hp.com/products/configurator>

Standard Features

HPC Interconnects

NOTE: High Performance Computing (HPC) interconnect technologies are available for the SL160z G6 under the Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand or Gigabit Ethernet Interconnects:

<http://www.hp.com/techservers/clusters/ucp/index.html>

InfiniBand	PCI-Express adapters
Gigabit Ethernet	Use embedded ports

Service and Support

HP Care Pack Services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack Services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server that are purchased at the same time or afterward and internal to the enclosure. It also includes the 22" and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalize on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - Simplify ProLiant solution implementation, maintenance and management.

- **Support Service** - 3 Year, 9x5 Next Business Day coverage, excluding HP holidays only
- **Deployment Service** - Hardware Installation only

Enhanced Service - Optimize service level to increase IT performance and availability

- **Support Service** - 3 Year 13x5 Same Business Day, 4-Hour response coverage
- **Deployment Service** - Installation and Start-up only

Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays.

For a complete listing of service offerings and information visit:

<http://www.hp.com/services/proliantservices>

<http://www.hp.com/services/carepack>

Models

Non-Hot Plug Serial ATA (SATA) Model

NOTE: Non-Hot Plug models are not upgradeable to Hot Plug.

NOTE: A rail kit is not included in model - this allows for the purchase of the right size rail kit.

NOTE: This Model includes two HP ProLiant SL160z Server trays. Details below represent configuration of each tray.

HP ProLiant SL160z G6, 2 trays, X5550, 6GB 539612-xx1	Processor(s)	One Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)
	Cache Memory	8MB shared L3 cache
	Memory	6GB (3 x 2GB) PC3-10600E (UDIMM)
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Embedded Smart Array B110i SATA RAID Controller (RAID 0, 1, 10)
	Hard Drive	None ship standard
	Internal Storage	Up to 2 large form factor Non-Hot Plug drives/Server tray using quick release carrier
	Power Supply	750W
	Fans	3 system fans ship standard in z6000 chassis
	Form Factor	One HP ProLiant z6000 G6 Chassis Two HP ProLiant SL160z G6 Server

Country Code Key	xx=00	US
	xx=20	Brazil
	xx=29	Japan
	xx=37	APD
	xx=42	Europe
	xx=AA	PRC

Configuration Information - Factory Integrated Models

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

NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

NOTE: FIO indicates that this option is a Factory Installable Option.

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

HP Chassis	HP ProLiant z6000 G6 Chassis NOTE: ships with 2U chassis and 3 fans.	538080-B21
HP Server Node	HP ProLiant SL160z G6 Server NOTE: It is required that 2 server trays be purchased. NOTE: Each SL160z tray has 1 system board.	570145-B21
HP Rail Kits	HP ProLiant z6000 G6 2U rail kit NOTE: 2U rail kit used for HP or 3rd part racks - allows addition of one z6000 chassis at a time.	570226-B21
	HP ProLiant z6000 G6 10U Bulk rail kit NOTE: 10U rail kit used for HP racks ONLY - allows addition of five z6000 chassis at a time.	570227-B21
HP Power Supplies	NOTE: Refer to HP Power Advisor when selecting a power supply for your configuration, www.hp.com/go/hppoweradvisor . Many HP ProLiant Servers now offer new power options, including Common Slot Power Supplies. These power supplies come in multiple power ratings and higher efficiency levels to offer the Right Size solution to fit your configuration. This provides improved power delivery and the advantage of reclaiming lost power. Prior to making a power supply selection it is "highly recommended" that the "HP Power Advisor" is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at " www.hp.com/go/proliant-energy-efficient " or www.hp.com/go/hppoweradvisor	
	HP 460W CS HE Gold Power Supply	503296-B21
	HP 750W CS HE Gold Power Supply	512327-B21
	HP 1200W CS HE Silver Power Supply	500172-B21

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

HP Processors	Six-Core Processors	
	Intel® Xeon® Processor X5680 (3.33 GHz, 12MB L3 Cache, 130W, DDR3-1333, HT, Turbo 1/1/2/2/3/3), FIO NOTE: If 2 processors are desired, select one 591892-L21 and one 591892-B21.	591892-L21
	Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4), FIO NOTE: If 2 processors are desired, select one 591896-L21 and one 591896-B21.	591896-L21
	Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4), FIO NOTE: If 2 processors are desired, select one 591898-L21 and one 591898-B21.	591898-L21
	Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4), FIO NOTE: If 2 processors are desired, select one 591900-L21 and one 591900-B21.	591900-L21
	Quad-Core Processors	
	Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO NOTE: If 2 processors are desired, select one 591906-L21 and one 591906-B21.	591906-L21
	Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO NOTE: If 2 processors are desired, select one 591902-L21 and one 591902-B21.	591902-L21
	Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO NOTE: If 2 processors are desired, select one 591904-L21 and one 591904-B21.	591904-L21
	Intel® Xeon® Processor L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4), FIO NOTE: If 2 processors are desired, select one 591912-L21 and one 591912-B21.	591912-L21

Configuration Information - Factory Integrated Models

Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	591923-L21
NOTE: If 2 processors are desired, select one 591923-L21 and one 591923-B21.	
Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3), FIO	539214-L21
NOTE: If 2 processors are desired, select one 539214-L21 and one 539214-B21.	
Intel® Xeon® Processor X5560 (2.8 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3), FIO	588189-L21
NOTE: If 2 processors are desired, select one 588189-L21 and one 588189-B21.	
Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3), FIO	570804-L21
NOTE: If 2 processors are desired, select one 570804-L21 and one 570804-B21.	
Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	539212-L21
NOTE: If 2 processors are desired, select one 539212-L21 and one 539212-B21.	
Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	539200-L21
NOTE: If 2 processors are desired, select one 539200-L21 and one 539200-B21.	
Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)	591908-L21
NOTE: If 2 processors are desired, select one 591908-L21 and one 591908-B21.	
Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO	539198-L21
NOTE: If 2 processors are desired, select one 539198-L21 and one 539198-B21.	
Intel® Xeon® Processor L5530 (2.40 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	586599-L21
NOTE: If 2 processors are desired, select one 586599-L21 and one 586599-B21.	
Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	539202-L21
NOTE: If 2 processors are desired, select one 539202-L21 and one 539202-B21.	
Intel® Xeon® Processor L5506 (2.13 GHz, 4MB L3 Cache, 60W, DDR3-800), FIO	571696-L21
NOTE: If 2 processors are desired, select one 571696-L21 and one 571696-B21.	
Dual-Core Processors	
Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	591910-L21
NOTE: If 2 processors are desired, select one 591910-L21 and one 591910-B21.	
Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO	571694-L21
NOTE: If 2 processors are desired, select one 571694-L21 and one 571694-B21.	
NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.	
NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 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.	
NOTE: For the Intel 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.	

Configuration Information - Factory Integrated Models

HP Memory

Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
HP 4GB 1Rx4 PC3-10600R-9 Kit	593339-B21
HP 4GB 1Rx4 PC3L-10600R-9 Kit	604504-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
HP 8GB 2Rx4 PC3-10600R-9 Kit	500662-B21
HP 8GB 2Rx4 PC3L-10600R-9 Kit	604506-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 16GB 4Rx4 PC3-8500R-7 Kit	500666-B21
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Unbuffered with ECC DIMMs (UDIMMs)

NOTE: Maximum 12 DIMMs supported per node.

HP 1GB 1Rx8 PC3-10600E-9 Kit	500668-B21
HP 2GB 2Rx8 PC3-10600E-9 Kit	500670-B21
HP 4GB 2Rx8 PC3-10600E-9 Kit	500672-B21

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

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

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

HP Hard Drive

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: The hard drives use a quick release carrier.

NOTE: One 2 Drive SFF Drive Cage (582657-B21) is required when installing 2 SFFF drives

NOTE: when Adding SAS one of the following cable kits needs to be ordered depending on which SAS controller installing - HP P212 SAS 4HDD Cable Kit 574001-B21 or HP P410 SAS 4HDD Cable Kit 583997-B21.

SAS Enterprise (ENT) Drives - with quick-release (QR) carrier

HP 600GB 6G SAS 15K 3.5in QR DP ENT HDD	574758-B21
HP 300GB 6G SAS 15K 3.5in QR DP ENT HDD	585980-B21
HP 300GB 6G SAS 10K 2.5in QR DP ENT HDD	574879-B21

SATA Entry (ETY) Drives - with quick-release (QR) carrier

HP 160GB 3G SATA 7.2K 3.5in QR ETY HDD	574021-B21
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SATA Midline (MDL) Drives - with quick-release (QR) carrier

HP 2TB 3G SATA 7.2K 3.5in QR MDL HDD	574755-B21
HP 1TB 3G SATA 7.2K 3.5in QR MDL HDD	574025-B21
HP 500GB 3G SATA 7.2K 3.5in QR MDL HDD	574023-B21
HP 500GB 3G SATA 7.2K 2.5in QR MDL HDD	574953-B21
HP 160GB 3G SATA 7.2K 2.5in QR MDL HDD	574893-B21

NOTE: HP P212 SAS 4HDD Cable Kit (574001-B21) is needed when adding more than two 2.5" hard drives.

SATA Midline (MDL) Solid State Drives - with quick-release (QR) carrier

HP 120GB 3G SATA 2.5in QR MDL SSD	586587-B21
HP 60GB 3G SATA 2.5in QR MDL SSD	586585-B21

Configuration Information - Factory Integrated Models

HP Storage Controllers	<p>HP P212/256 FIO SA Cntrlr w/Battery 491191-B21</p> <p>NOTE: HP P212 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P212 controller (574001-B21)</p> <p>NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)</p> <p>HP Smart Array P410/ZM FIO Controller 462860-B21</p> <p>NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller (583997-B21)</p> <p>HP Smart Array P410/256 MB w/ Battery FIO 491195-B21</p> <p>NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller (583997-B21)</p> <p>NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)</p> <p>HP Smart Array P411/256 MB w/ Battery FIO 491193-B21</p> <p>NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)</p>
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Step 3: Choose Additional Options for Factory Integration

HP Insight Software	<p>HP Insight Control for Linux, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates TC203A</p>
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NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be factory integrated. Please contact your local sales representative for additional information.

HP Unique Options	HP Dedicated MGT Port Kit	516006-B21
	HP PCI-E x4 Riser SL160z G6	571408-B21
	HP I/O Riser x16 SL160/170 G6 KIT	574806-B21
	HP ProLiant z6000 Redundant Fan Kit	538082-B21
	HP Internal USB Cable G6 Kit	536769-B21
	HP ProLiant z6000 Tray blank kit	574551-B21
	NOTE: This is needed to help with cooling if a tray is removed from the z6000.	
	HP ProLiant z6000 Cable Management Kit	575156-B21
	NOTE: This is needed when using Fiber cables.	
	1U Filler Panel Blank Mounting Bracket	579069-B21
	NOTE: This is needed to mount the 1U blanking panel back with server when the server is recessed mounted.	
	HP P212 SAS 4HDD Cable Kit	574001-B21
	NOTE: This is required when adding SAS hard drives using the P212 controller.	
	NOTE: This is required when adding more than two 2.5" hard drives.	
	HP P410 SAS 4HDD Cable Kit	583997-B21
	NOTE: This is required when adding SAS hard drives using the P410 controller.	
	HP z6000 BBWC HDWR KIT	582653-B21
	NOTE: This is required when adding BBWC	
	2 Drive SFF Drive Cage	582657-B21
	NOTE: This is required when adding SFF (2.5") SSD or hard drives	
	HP z6000 Processor / Memory Blank Kit	579255-B21
	NOTE: This is optional to give the best cooling efficiency when server trays are not configured exactly the same in the z6000 chassis	

HP Processor

Six-Core Processors

Intel® Xeon® Processor X5680 (3.33 GHz, 12MB L3 Cache, 130W, DDR3-1333, HT, Turbo 1/1/2/2/3/3)	591892-B21
Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)	591896-B21
Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)	591898-B21
Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)	591900-B21

Quad-Core Processors

Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	591906-B21
Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	591902-B21
Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	591904-B21
Intel® Xeon® Processor L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)	591912-B21
Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2)	591923-B21
Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)	539214-B21
Intel® Xeon® Processor X5560 (2.8 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)	588189-B21
Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)	570804-B21
Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	539212-B21
Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	539200-B21
Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)	591908-B21
Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	539198-B21
Intel® Xeon® Processor L5530 (2.40 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)	586599-B21
Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)	539202-B21
Intel® Xeon® Processor L5506 (2.13 GHz, 4MB L3 Cache, 60W, DDR3-800)	571696-B21

Core Options

Dual-Core Processors

Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	591910-B21
Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800)	571694-B21

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.

NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 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.

NOTE: For the Intel 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

NOTE: Existing SL products cannot be upgraded with 130watt processors, new purchase only

HP Memory

Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
HP 4GB 1Rx4 PC3-10600R-9 Kit	593339-B21
HP 4GB 1Rx4 PC3L-10600R-9 Kit	604504-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
HP 8GB 2Rx4 PC3-10600R-9 Kit	500662-B21
HP 8GB 2Rx4 PC3L-10600R-9 Kit	604506-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 16GB 4Rx4 PC3-8500R-7 Kit	500666-B21
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Unbuffered with ECC DIMMs (UDIMMs)

NOTE: Maximum 12 DIMMs supported per node.

HP 1GB 1Rx8 PC3-10600E-9 Kit	500668-B21
HP 2GB 2Rx8 PC3-10600E-9 Kit	500670-B21
HP 4GB 2Rx8 PC3-10600E-9 Kit	500672-B21

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

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

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.

Core Options

HP Hard Drives

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

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

NOTE: The hard drives use a quick release carrier.

NOTE: One 2 Drive SFF Drive Cage (582657-B21) is required when installing 2 SFF drives

NOTE: When adding SAS one of the following cable kits needs to be ordered depending on which SAS controller installing - HP P212 SAS 4HDD Cable Kit 574001-B21 or HP P410 SAS 4HDD Cable Kit 583997-B21.

SAS Enterprise (ENT) Drives - with quick-release (QR) carrier

HP 600GB 6G SAS 15K 3.5in QR DP ENT HDD	574758-B21
HP 300GB 6G SAS 15K 3.5in QR DP ENT HDD	585980-B21
HP 300GB 6G SAS 10K 2.5in QR DP ENT HDD	574879-B21

SATA Entry (ETY) Drives - with quick-release (QR) carrier

HP 160GB 3G SATA 7.2K 3.5in QR ETY HDD	574021-B21
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SATA Midline (MDL) Drives - with quick-release (QR) carrier

HP 2TB 3G SATA 7.2K 3.5in QR MDL HDD	574755-B21
HP 1TB 3G SATA 7.2K 3.5in QR MDL HDD	574025-B21
HP 500GB 3G SATA 7.2K 3.5in QR MDL HDD	574023-B21
HP 500GB 3G SATA 7.2K 2.5in QR MDL HDD	574953-B21
HP 160GB 3G SATA 7.2K 2.5in QR MDL HDD	574893-B21

NOTE: HP P212 SAS 4HDD Cable Kit (574001-B21) is needed when adding more than two 2.5" hard drives.

SATA Midline (MDL) Solid State Drives - with quick-release (QR) carrier

HP 120GB 3G SATA 2.5in QR MDL SSD	586587-B21
HP 60GB 3G SATA 2.5in QR MDL SSD	586585-B21

HP Networking

Gigabit Ethernet Adapters

HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC375T PCI Express Quad Port Gigabit Server Adapter	538696-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21

10 Gigabit Ethernet Adapters

HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
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NOTE: A minimum of two Gigabytes (2GB) of server memory is required for each NC522SFP adapter.

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

HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21
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NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each NC550SFP adapter.

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

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

HP Infiniband

HP IB 4X DDR Conn-X PCI-e G2 Dual Port HCA	483514-B21
HP IB 4X DDR PCI-e DUAL PORT HCA	448397-B21
HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-B21
HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA	592521-B21
HP IB 4X QDR PCI-e G2 Dual Port HCA	517721-B21
HP 10 GbE PCI-e G2 Dual Port Adapter	516937-B21
QLogic IB 4X QDR PCI-e G2 Dual-port HCA	583211-B21

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html

Core Options

HP I/O Expansion Options	HP I/O Riser x16 SL160/170 G6 KIT	574806-B21
	HP PCI-E x4 Riser SL160z G6 Kit	571408-B21

HP Power Supplies

CAUTION: In ProLiant Servers that have more than one power slot (bay), only same size power supplies are recommended. If non-matched power supplies are inserted you will get errors and operation will fail.

HP 460W CS HE Gold Power Supply	503296-B21
HP 750W CS HE Gold Power Supply	512327-B21
HP 1200W CS HE Silver Power Supply	500172-B21

NOTE: Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Additional Options

HP Entry-Level Server Management HP LO100i Advanced Pack, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates 530521-B21

NOTE: For additional information, please see the Lights-Out 100i QuickSpecs at: www.hp.com/go/lo100.

HP Insight Software **HP Insight Control for Linux**

HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic TC213AAE

HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates TC209A

HP Insight Control for Linux, Media pack (DVD) - No licenses included TC208A

NOTE: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.

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 software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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

NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html

HP Rail Options HP ProLiant z6000 G6 2U rail kit 570226-B21

NOTE: 2U rail kit used for HP or 3rd part racks - allows addition of one z6000 chassis at a time.

HP ProLiant z6000 G6 10U Bulk rail kit 570227-B21

NOTE: 10U rail kit used for HP racks ONLY - allows addition of five z6000 chassis at a time.

HP SL Universal Switch Rail Kit 592774-B21

NOTE: This kit allows you to install HP or 3rd party switch in the same rack as SL6000.

HP ProCurve 6600 rail kit 538062-B21

NOTE: This rail kit is used to mount the ProCurve 6600 switch recessed with the z6000 chassis.

CISCO 4948 rail kit 574549-B21

NOTE: This rail kit is used to mount the CISCO 4948 switch recessed with the z6000 chassis.

HP Security - TPM HP Trusted Platform Module Option Kit 488069-B21

Additional Options

HP Storage Controllers SAS Controllers

Smart Array P212 Controller

NOTE: HP P212 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P212 controller (574001-B21)

HP Smart Array P212/Zero Memory Controller 462828-B21

HP Smart Array P212/256 MB Controller 462834-B21

Smart Array P410 Controller

NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller (583997-B21)

HP Smart Array P410/256MB Controller 462862-B21

HP Smart Array P410/512MB with BBWC 462864-B21

HP Smart Array P410/512MB with FBWC 578230-B21

HP Smart Array P410/1G with FBWC 572532-B21

Smart Array P411 Controller

HP Smart Array P411/256MB Controller 462830-B21

HP Smart Array P411/512MB Battery Backed Write Cache 462832-B21

HP Smart Array P411/512MB Flash Backed Write Cache 578229-B21

HP Smart Array P411/1G Flash Backed Write Cache 572531-B21

Optional Upgrades

NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)

256 MB Cache Module 462968-B21

NOTE: Supported on HP Smart Array P212 Controller only.

512MB BBWC 462967-B21

NOTE: Supported on HP Smart Array P410 Controller and HP Smart Array P411 Controller only.

Battery Kit upgrade 462969-B21

NOTE: To enable BBWC on the 256MB cache.

NOTE: Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.

512MB Flash Backed Write Cache 534916-B21

1G Flash Backed Write Cache 534562-B21

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

http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html
(Smart Array P212 Controller)

http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html
(Smart Array P410 Controller)

http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html
(Smart Array P411 Controller)

HP StorageWorks Options

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter AH627A

NOTE: Recommended HBA for MSL SCSI Tape Library connect.

HP Modular Smart Array

Disk Enclosures

HP StorageWorks D2700 Disk Enclosure AJ941A

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

http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html
(Worldwide)

Additional Options

HP Rack Series	HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	
	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide)	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower .	

HP USB and SD options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP USB 04 Standard Keyboard	DT528A#ABA

HP Care Pack Services	HP 1y 4h 13x5 SL6000 HW Support	UR258E
	HP 1y 4h 24x7 SL6000 HW Support	UR259E
	HP 1y 6h 24x7 CTR SL6000 HW Supp	UR260E
	HP 3y Nbd SL6000 HW Support	UR261E
	HP 3y Nbd w/DMR SL6000 HW Supp	UR262E
	HP 3y 4h 13x5 SL6000 HW Support	UR263E
	HP 3y 4h13x5 w/DMR SL6000 HW Supp	UR264E
	HP 3y 4h 24x7 SL6000 HW Support	UR265E
	HP 3y 4h24x7 w/DMR SL6000 HW Supp	UR266E
	HP 3y 6h 24x7 CTR SL6000 HW Supp	UR267E
	HP3y 6h24x7 CTRw/DMR SL6000 HW Supp	UR268E
	HP 4y Nbd SL6000 HW Support	UR269E
	HP 4y Nbd w/DMR SL6000 HW Supp	UR270E
	HP 4y 4h 13x5 SL6000 HW Support	UR271E
	HP 4y 4h13x5 w/DMR SL6000 HW Supp	UR272E
	HP 4y 4h 24x7 SL6000 HW Support	UR273E
	HP 4y 4h24x7 w/DMR SL6000 HW Supp	UR274E
	HP 4y 6h 24x7 CTR SL6000 HW Supp	UR275E
	HP4y 6h24x7 CTRw/DMR SL6000 HW Supp	UR276E
	HP 5y Nbd SL6000 HW Support	UR277E
	HP 5y Nbd w/DMR SL6000 HW Supp	UR278E
	HP 5y 4h 13x5 SL6000 HW Support	UR279E
	HP 5y 4h13x5 w/DMR SL6000 HW Supp	UR280E
	HP 5y 4h 24x7 SL6000 HW Support	UR281E
	HP 5y 4h24x7 w/DMR SL6000 HW Supp	UR282E
	HP 5y 6h 24x7 CTR SL6000 HW Supp	UR283E
	HP5y 6h24x7 CTRw/DMR SL6000 HW Supp	UR284E
	HP 3y 24x7 24h CTR SL6000 HW Supp	UR288E
	HP 3y24x7 24hCTRwDMR SL6000 HW Supp	UR289E
	HP 4y 24x7 24h CTR SL6000 HW Supp	UR290E
	HP 4y24x7 24hCTRwDMR SL6000 HW Supp	UR291E
	HP 5y 24x7 24h CTR SL6000 HW Supp	UR292E
	HP 5y24x7 24hCTRwDMR SL6000 HW Supp	UR293E
	HP Install SL6000 Service	UR285E
	HP Startup SL6000 Service	UR286E
	HP Install nonStdHrs SL6000 SVC	UR287E
	HP LO100i Advanced Pack 3 year 24x7 Software Support	UM748E
	HP 3y 4h 24x7 ProLiant DL14x/16x HW Supp	U9510E
	HP 3y Nbd ProLiant DL14x/16x HW Supp	U9508E
	HP Install ProLiant DL14x/16x Service	U9520E

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

Memory

HP ProLiant SL160z G6 (all models)

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

NOTE: Charts do 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

Some DIMM installation guidelines are summarized below:

- For servers with eighteen (18) memory slots:
 - There are three (3) channels per processor; six (6) channels per server
 - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
 - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
 - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- If any Quad rank DIMMs are installed, all channels are limited to only 2 DIMMs per channel.
- You can only install two quad-rank DIMMs per channel
- You can only install two UDIMMs per channel; if available, the third slot in the channel must remain empty
- 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 chipset
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4; 2,5; 3,6 on a 3DPC system or 1,4; 2,5; on a 2DPC system

If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

DIMM slot/capacity/populated speed table										
DIMM Type	Registered DIMMs (RDIMMs)							Unbuffered with ECC DIMMs (UDIMMs)		
DIMM Rank	Single Rank (1R)	Dual Rank (2R)				Quad Rank (4R)		Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	2GB	4GB	8GB	8GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz)	1333	1333	1333	1066	1066	1066	1066	1333	1333	1333
SLOTS THAT CAN BE POPULATED										
18 slot servers	18	18	18	18	18	12	12	12	12	12
MAXIMUM CAPACITY (GB)										
18 slot servers	72	36	72	144	144	48	192	12	24	48
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
2 DIMM Per Channel	1333*	1333*	1333*	1066	1333*	800	800	1333	1333	1333*
3 DIMM Per Channel	800	800	800	800	800	N/A	N/A	N/A	N/A	N/A

* Supported at 1333 via setting in ROM based setup utility (RBSU)

NOTES:

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz. If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in



Memory

each of the other channels, the maximum speed will be 1066MHz

- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams

Basic memory slot & population diagram

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

18 DIMM SLOTS (9 per CPU node)					
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G	1	G	Chnl 1
	2	D	2	D	
	3	A	3	A	
Chnl 2	4	H	4	H	Chnl 2
	5	E	5	E	
	6	B	6	B	
Chnl 3	7	I	7	I	Chnl 3
	8	F	8	F	
	9	C	9	C	

Standard memory configuration (1 CPU model)

- 6GB, consisting of three (3) 2GB dual-rank PC3-10600E UDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; empty	2	D; empty	
	3	A; 2GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; empty	5	E; empty	
	6	B; 2GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; empty	8	F; empty	
	9	C; 2GB DIMM	9	C; empty	

Standard memory plus optional memory (1 CPU model)

- 12GB, consisting of three (3) 2GB UDIMMs plus three (3) 2GB UDIMMs
- 3 x 2GB dual-rank PC3-10600 UDIMMs
- 3 x 2GB dual-rank PC3-10600 UDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 2GB DIMM	2	D; empty	
	3	A; 2GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 2GB DIMM	5	E; empty	
	6	B; 2GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 2GB DIMM	8	F; empty	
	9	C; 2GB DIMM	9	C; empty	

Standard memory replaced with optional memory (1 CPU model)

RDIMM maximum configuration

- 96GB, consisting of six (6) 16GB dual-rank PC3-8500 RDIMMs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; 16GB DIMM	1	G; empty	Chnl 1
	2	D; 16GB DIMM	2	D; empty	
	3	A; empty	3	A; empty	
Chnl 2	4	H; 16GB DIMM	4	H; empty	Chnl 2
	5	E; 16GB DIMM	5	E; empty	
	6	B; empty	6	B; empty	
Chnl 3	7	I; 16GB DIMM	7	I; empty	Chnl 3
	8	F; 16GB DIMM	8	F; empty	
	9	C; empty	9	C; empty	

UDIMM maximum configuration (1 CPU model)

- 24GB, consisting of six (6) 4GB dual-rank PC3-10600 UDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 4GB DIMM	2	D; empty	
	3	A; 4GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 4GB DIMM	5	E; empty	
	6	B; 4GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 4GB DIMM	8	F; empty	
	9	C; 4GB DIMM	9	C; empty	

Standard memory replaced with optional memory (2 CPU model)

RDIMM maximum configuration

- 192GB, consisting of twelve (12) 16GB PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; 16GB DIMM	1	G; 16GB DIMM	Chnl 1
	2	D; 16GB DIMM	2	D; 16GB DIMM	
	3	A; empty	3	A; empty	
Chnl 2	4	H; 16GB DIMM	4	H; 16GB DIMM	Chnl 2
	5	E; 16GB DIMM	5	E; 16GB DIMM	
	6	B; empty	6	B; empty	
Chnl 3	7	I; 16GB DIMM	7	I; 16GB DIMM	Chnl 3
	8	F; 16GB DIMM	8	F; 16GB DIMM	
	9	C; empty	9	C; empty	

UDIMM maximum configuration (2 CPU model)

- 48GB, consisting of twelve (12) 2GB dual-rank PC3-10600 UDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 4GB DIMM	2	D; 4GB DIMM	
	3	A; 4GB DIMM	3	A; 4GB DIMM	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 4GB DIMM	5	E; 4GB DIMM	
	6	B; 4GB DIMM	6	B; 4GB DIMM	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 4GB DIMM	8	F; 4GB DIMM	
	9	C; 4GB DIMM	9	C; 4GB DIMM	

Memory

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

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

Following are memory options available from HP:

HP Memory

Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
HP 4GB 1Rx4 PC3-10600R-9 Kit	593339-B21
HP 4GB 1Rx4 PC3L-10600R-9 Kit	604504-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
HP 8GB 2Rx4 PC3-10600R-9 Kit	500662-B21
HP 8GB 2Rx4 PC3L-10600R-9 Kit	604506-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 16GB 4Rx4 PC3-8500R-7 Kit	500666-B21
------------------------------	------------

Unbuffered with ECC DIMMs (UDIMMs)

NOTE: Maximum 12 DIMMs supported per node.

HP 1GB 1Rx8 PC3-10600E-9 Kit	500668-B21
HP 2GB 2Rx8 PC3-10600E-9 Kit	500670-B21
HP 4GB 2Rx8 PC3-10600E-9 Kit	500672-B21

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

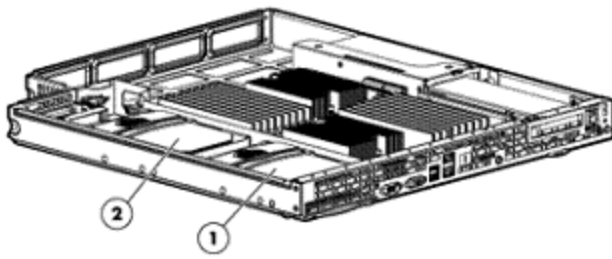
NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient.

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

Storage

- 1-2 Non-hot plug SATA hard drive bays - Using quick release carrier



Drive Support

Hard Drives

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

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

SATA Entry (ETY) Drives - with quick release carrier

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K 3.5in	Up to 2	1-2	HP Embedded SATA RAID Controller NOTE: Transfer rate: 3 Gb/s SATA

SATA Midline (MDL) Drives - with quick release carrier

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K 3.5in	Up to 2	1-2	HP Embedded SATA RAID Controller NOTE: Transfer rate: 3 Gb/s SATA
1TB 3G SATA 7.2K 3.5in			
500GB 3G SATA 7.2K 3.5in			
500GB 3G SATA 7.2K 2.5in	Up to 4	1-4	HP Embedded SATA RAID Controller NOTE: Transfer rate: 3 Gb/s SATA
160GB 3G SATA 7.2K 2.5in			

SAS Enterprise (ENT) Drives - with quick-release carrier

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 3.5in	Up to 2	1-2	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller NOTE: HP P212 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P212 controller.
300GB 6G SAS 15K 3.5in			
300GB 6G SAS 10K 2.5in	Up to 4	1-4	HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller.
			HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller NOTE: HP P212 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P212 controller.
			HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller.

SATA Midline (MDL) Solid State Drives - with quick-release carrier

	Quantity Supported	Position Supported	Controller
120GB 3G SATA 2.5in	Up to 4	1-4	HP Embedded SATA RAID Controller NOTE: Transfer rate: 3 Gb/s SATA
60GB 3G SATA 2.5in			

Storage

External Storage

	Quantity Supported	Position Supported	Controller
D2700 Disk Enclosure	Up to 2	External	HP Smart Array P212/256 MB Controller
	Up to 4	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB Controller

Power Specifications

HP 460W Power Supply							
Part Number - AC 460W PSU	503296-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	200	208	220	230	240
Maximum Rated Output Wattage	460	460	460	460	460	460	460
Nominal Input Current (A rms)	5.5	4.5	2.6	2.5	2.4	2.3	2.2
Max Rated Input Wattage Rating (Watts)	526	520	505	505	503	503	503
Max. Rated VA (Volt-Amp)	548	542	527	527	524	524	524
Efficiency (%) at Max. Rated Output Wattage	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)	1794	1773	1725	1725	1715	1715	1715

HP 750W Power Supply							
Part Number - AC 750W PSU	512327-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	200	208	220	230	240
Maximum Rated Output Wattage	750	750	750	750	750	750	750
Nominal Input Current (A rms)	8.9	7.4	4.3	4.1	3.9	3.7	3.6
Max Rated Input Wattage Rating (Watts)	857	847	824	825	820	820	820
Max. Rated VA (Volt-Amp)	894	884	859	859	854	854	854
Efficiency (%) at Max. Rated Output Wattage	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)	2925	2892	2812	2812	2797	2797	2797

Power Specifications

HP 1200W Power Supply Part Number - AC	500172-B21						
Operational Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	200	208	220	230	240
Maximum Rated Output Wattage	800	900	1200	1200	1200	1200	1200
Nominal Input Current (A rms)	9.7	9.0	7.0	6.8	6.4	9.1	5.9
Max Rated Input Wattage Rating (Watts)	930	1034	1348	1348	1348	1348	1348
Max. Rated VA (Volt-Amp)	970	1079	1406	1406	1406	1406	1406
Efficiency (%) at Max. Rated Output Wattage	86	87	89	89	89	89	89
Power Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)	3174	3530	4600	4600	4600	4600	4600

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

Technical Specifications

System Unit	Dimensions (H x W x D) 3.46 x 17.64 x 28.1 in (8.79 x 44.80 x 71.37 cm) (with bezel)	
	Weight (approximate)	Maximum 53.7 lb (24.35 kg) (all hard drives, power supplies, and processors installed)
	Input Requirements (per power supply)	Rated Line Voltage 90 to 132 VAC 180 to 264 VAC Rated Input Current 5.8 Amps (at 100 VAC) to 2.9 Amps (at 200 VAC) Rated Input Frequency 47 to 63 Hz
	BTU Rating	Rated Input Power 570W (at 100 VAC) 565W (at 200 VAC) Maximum -500W 1940 BTU / hr (at 100 VAC), 1920 BTU/hr (at 200 VAC) 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)
	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
	Power Supply Output (per power supply)	Rated Steady-State Power 500 Watts (at 100 VAC), 500 Watts (at 200 VAC) Maximum Peak Power 500Watts (at 100 VAC), 500 Watts (at 200 VAC) (See Power Specifications Tables)
	System Inlet Temperature	Operating 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F). Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Altitude	Operating 3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). Non-operating 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). Idle <i>L_{WAd}</i> 6.86 <i>L_{pAm}</i> 52.36dBA Operating <i>L_{WAd}</i> 6.89 <i>L_{pAm}</i> 52.60dBA
	Emissions	FCC Rating Class A

Technical Specifications

Classification (EMC)	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
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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.

NC362i Integrated Dual Network Interface Port Gigabit Server Adapter	Integrated 10/100/1000BASE-T Transceiver	
	Combines a triple-speed IEEE 802.3TM - Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.	
Data Transfer Method	Compliant to x1 PCIe Specification	
Controller	Intel® 82576	
Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
	10Base-T (Full-Duplex)	20 Mb/s
	100Base-TX (Half-Duplex)	100 Mb/s
	100Base-TX (Full-Duplex)	200 Mb/s
	1000Base-TX (Half and Full-Duplex)	2000Mb/s
Connector	RJ-45 connector	
Cable Support	Performs all the physical layer functions for 10BASE-T, 100BASE-T, and 1000BASE-T Ethernet on standard Category 5 UTP	

Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.