Overview
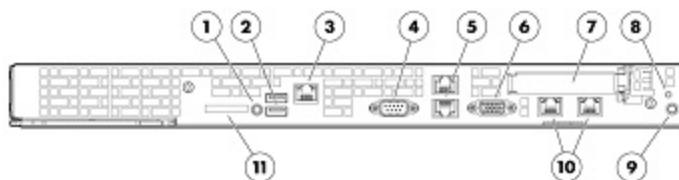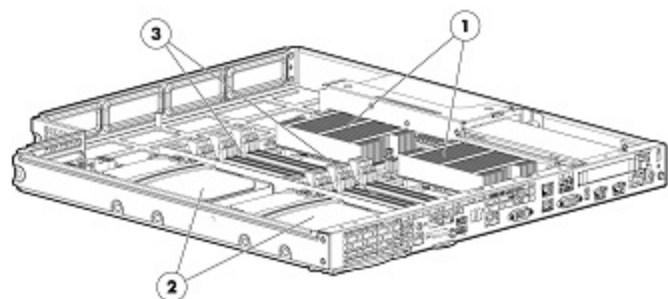

Inside View:

1. Up to Two AMD Opteron™ Processor 6100 series
2. Two 3.5" or four 2.5" non-hot plug hard drives using a quick release drive carrier
3. 24 DDR3 DIMM slots

Front View:

1. UID
2. (2) USB Ports
3. Optional Dedicated Management port
4. Video Port
5. (2) 1Gbit NIC
6. Serial Port
7. Optional low profile x16 PCI-e Gen 2
8. Health LED
9. Power Button
10. (2) 1Gbit NIC
11. Optional SD Slot

At A Glance

Introducing the HP ProLiant SL165z G7, now available with the latest high performance Opteron Eight and Twelve Core processors, 24 DDR3 memory DIMMs, 2 PCIe Gen2 slots, four NIC ports and an Easy Setup CD.

- **Processors**:
  - Supports up to two AMD Opteron™ 6000 series Eight-Core and Twelve-Core processors
  - Supports DirectConnect Architecture
  - Supports Power Now
- **Memory**:
  - Up to 256GB, using 2x8GB Dual-Rank and 1x16GB Quad-Rank PC3-8500R-7 DDR3 Registered (RDIMM) memory per memory channel, operating at 800MHz in 24 slots. (See memory section for population rules)
  - Up to 192GB, using 8GB PC3-10600R or PC3-8500R DDR3 Registered (RDIMM) memory, operating at 800MHz when populated at 3 DIMMs per Channel in 24 slots.
  - Up to 64GB, using PC3-10600E DDR3 Unbuffered (UDIMM) memory, operating at 1066MHz when populated at 2 DIMMs per Channel in 16 slots.
- **Internal Drive Support**:
  - Support for up to two 3.5" non-hot plug Serial ATA (SATA) hard drives using a quick release drive carrier
  - Support for up to four 2.5" non-hot plug Serial ATA (SATA) or Solid State Drive (SSD) hard drives using a quick release drive carrier and the SFF drive cage
- **Network Controller**:
  - Two HP NC362i Integrated Dual Port Gigabit Server Adapter (4 ports total)
- **Storage Controllers**:
  - HP Embedded B110i SATA RAID Controller (RAID 0, 1, 10)
- **Expansion Slots**:
  - Optional - PCI-Express assembly includes:
    - Slot 1: Low-profile PCI-Express Gen2 x16
    - Slot 2: low-profile PCI-Express Gen2 x4 (x8 connector) (internal only)
- **Infrastructure Management**:
  - HP ProLiant Onboard Administrator Powered by Lights Out 100i
  - Remote Management support (IPMI 2.0 and SMASH support
  - Virtual Media plus Virtual KVM support with LO100i Advanced license
  - HP Insight Control for Linux, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simple management console. HP Insight Control for Linux supports Linux-based servers and management consoles.
- **USB Ports**:
  - Four USB ports (2 front, 2 internal option)
- **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)

Overview

- 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 Chassis - 2U
  - HP ProLiant SL165z Server - 1U server tray
- **Deployment/Serviceability**:
  - HP ProLiant SL165z G7 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 SL165z G7 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 SL165z 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*	**Twelve-Core Processors** AMD Opteron™ Processor Model 6176SE (2.3 GHz, 12MB Level 3 Cache, W) AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache, 80 W) AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W) AMD Opteron™ Processor Model 6168 (1.9 GHz, 12MB Level 3 Cache, 80W) AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W) **Eight-Core Processors** AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W) AMD Opteron™ Processor Model 6134 (2.3 GHz, 12MB Level 3 Cache, 80W) AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W) AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W) AMD Opteron™ Processor Model 6124HE (1.8 GHz, 12MB Level 3 Cache, 65W)

Upgradeability	Upgradeable to two processors

Chipset	AMD Chipset SR5670/SP5100

Cache Memory	12MB shared L3

Memory Protection	Advanced ECC

Memory *One of the following depending on Model*	Type	DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
	Maximum (RDIMM)	256GB (8 x 16GB + 16 x 8GB)
	Maximum (UDIMM)	64GB (16 x 4GB)

Network Controller	Two HP NC362i Integrated Dual Port Gigabit Server Adapter

Expansion Slots

Expansion Slot #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
1	PCI-Express 2.0	x16	x16	5	Low Profile	
2	PCI-Express 2.0	x4	x8	2	Low Profile, Internal Only	

* 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	HP Embedded B110i SATA RAID Controller (RAID 0, 1, 10) **NOTE:** Transfer rate: up to 3 Gb/s SATA **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:** A diskette drive or virtual FDD using LO100i Advanced Pack is needed to install storage controller drivers during a Windows operating system installation from a CD.

Storage	Diskette Drives	Via USB only
	Optical Drives	Via USB only
	Hard Drives	None ship standard
		Up to 2 Non-hot plug SATA 3.5" drives supported
		Up to 4 Non-hot plug SATA, SAS or SSD 2.5" drives (requires SFF drive cage) supported

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	4x120GB

Interfaces	Parallel	None
	Network RJ-45 (Ethernet)	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	3 (two front 1 internal option)

Graphics	32MB shared supporting 1600x1200x16M resolution

Form Factor	HP ProLiant z6000 G6 Chassis - 2U Chassis
	NOTE: Can support two SL165z server trays in the 2U chassis.
	HP ProLiant SL165z G6 Server - 1U server tray

Embedded Manageability	**HP ProLiant Onboard Administrator Powered by LO100i and LO100i Advanced**	HP ProLiant Onboard Administrator Powered by Lights-Out 100i with Optional LO100i Advanced Licenses for Virtual KVM and Virtual Media.

Standard Features:

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

Licensed Features:

- Virtual media (Floppy, CD, USB 2.0)
- Virtual KVM

HP Insight Control management software	**HP Insight Control for Linux**	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).
		HP Insight Control for Linux serves environments requiring a Linux-based management console. See www.hp.com/go/ic-linux.
		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
	HP Insight Control server deployment	HP Insight Control server deployment is an optional deployment solution for HP ProLiant and Integrity servers hosted on a Windows CMS. It automates the process of deploying and provisioning server software, enabling companies to quickly and easily adapt to changing business demands. Insight Control server deployment includes software optimizations for HP servers, including the HP scripting toolkits, configuration jobs for leading industry-standard operating systems, sample unattended files, and HP server support packs that include software drivers, management agents, and important documentation.

Standard Features

Deploying servers can be accomplished either through imaging or through scripting.

Insight Control server deployment is hosted on a Windows server and is intended for heterogeneous environments deploying Windows, Linux, VMware ESX and Microsoft Hyper-V systems.

Insight Control server deployment 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

Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support Microsoft® Logo certifications IPMI 2.0, SMASH CLP, DCMI 1.0 compliant
Security	Power-on password Setup password Diskette boot control Secure Sockets Layer (SSL) Secure Shell (SSH)

Security - Trusted Platform Module

Trusted Platform Module option kit

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 loosing the key could result in data loss.

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 92%. There are three Right Size power options available 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.

Standard Features

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 Silver, ECOS Consulting 80PLUS Silver for 1200w Power Supply. HP has also been working with the EPA on developing an ENERGY STAR? Computer Server specification and plans on offering models that meet the requirements when they are published. Please visit the ENERGY STAR website at: www.energystar.gov for updates on the specification development process and approved 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

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Solaris
VMware
Citrix Essentials for XenServer (Retail)

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/supportos and our driver download page http://www.hp.com/support/SL165zG7.

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.

Rack Support HP ProLiant SL165z G7 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 SL165z G7 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 SL165z servers

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

Standard Features

HP Factory Express Capability

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.

HPC Interconnects

NOTE: High Performance Computing (HPC) interconnect technologies are available for this server 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 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

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 CTO product offerings and requirements.
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 only available as a Factory Installable Option.

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

HP Chassis	HP ProLiant z6000 G6 Chassis	538080-B21
	NOTE: ships with 2U chassis and 3 fans.	
HP Server Node	HP ProLiant SL165z G7 Server	592023-B21
	NOTE: It is required that 2 server trays be purchased.	
	NOTE: Each SL165z tray has 1 system board.	
HP Rail Kits	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 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 Options (only one of the following from each list unless otherwise noted)

HP Processors	**Twelve-Core Processors**	
	AMD Opteron™ Processor Model 6176SE (2.3 GHz, 12MB Level 3 Cache, W)	592052-L21
	NOTE: If 2 processors are desired, select one 592052-L21 and one 592052-B21.	
	AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache,80 W)	592054-L21
	NOTE: If 2 processors are desired, select one 592054-L21 and one 592054-B21.	
	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W)	592056-L21
	NOTE: If 2 processors are desired, select one 592056-L21 and one 592056-B21.	
	AMD Opteron™ Processor Model 6168 (1.9 GHz, 12MB Level 3 Cache, 80W)	592062-L21
	NOTE: If 2 processors are desired, select one 592062-L21 and one 592062-B21.	
	AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W)	592071-L21
	NOTE: If 2 processors are desired, select one 592071-L21 and one 592071-B21.	
	Eight-Core Processors	
	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W)	592064-L21
	NOTE: If 2 processors are desired, select one 592064-L21 and one 592064-B21.	
	AMD Opteron™ Processor Model 6134 (2.3 GHz, 12MB Level 3 Cache, 80W)	592066-L21
	NOTE: If 2 processors are desired, select one 592066-L21 and one 592066-B21.	
	AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W)	592069-L21
	NOTE: If 2 processors are desired, select one 592069-L21 and one 592069-B21.	
	AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W)	595608-L21
	NOTE: If 2 processors are desired, select one 595608-L21 and one 595608-B21.	
	AMD Opteron™ Processor Model 6124HE (1.8 GHz, 12MB Level 3 Cache, 65W)	595610-L21
	NOTE: If 2 processors are desired, select one 595610-L21 and one 595610-B21.	

Configuration Information - Factory Integrated Models

HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB 2Rx4 PC3-10600R-9 Kit	593907-B21
	HP 4GB 1Rx4 PC3-10600R-9 Kit	593911-B21
	HP 4GB 1Rx4 PC3L-10600R-9 Kit	604500-B21
	HP 8GB 2Rx4 PC3L-10600R-9 Kit	604502-B21
	HP 16GB 4Rx4 PC3-8500R-7 Kit	593915-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 2GB 2Rx8 PC3-10600E-9 Kit	593921-B21
	HP 4GB 2Rx8 PC3-10600E-9 Kit	593923-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: http://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 Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
NOTE: Hard drives have either a one year or three year warranty.
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.

	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
	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
	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

Storage Controllers	HP Smart Array P212/256 MB w/ Battery FIO	491191-B21

NOTE: HP P212 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P212 controller (574001-B21)
NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)

	HP Smart Array P410/ZM FIO Controller	462860-B21

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

	HP Smart Array P410/256 MB w/ Battery FIO	491195-B21

NOTE: HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller (583997-B21)
NOTE: HP z6000 BBWC HDWR KIT is required when adding BBWC (582653-B21)

	HP Smart Array P411/256 MB w/ Battery FIO	491193-B21

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

Configuration Information - Factory Integrated Models

Step 3: Choose Additional Options for Factory Integration

HP Insight Software   HP Insight Control for Linux, No Media 1-Server License Factory-Integratable   TC203A
Option (FIO) including 1 year of 24x7 Technical Support and Updates

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

QuickSpecs

Core Options

NOTE: Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

HP Unique Options	HP Dedicated MGT Port Kit	516006-B21
	HP I/O Riser x16 SL160/SL165/SL170 KIT	574806-B21
	HP PCI-E x4 Riser SL160z and SL165z Kit	571408-B21
	HP SD Card Reader Module OPT KIT	592710-B21
	HP ProLiant z6000 Redundant Fan Kit	538082-B21
	HP Internal USB Cable 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.	
	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 Processor	**Twelve-Core Processors**	
	AMD Opteron™ Processor Model 6176SE (2.3 GHz, 12MB Level 3 Cache, W)	592052-B21
	AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache, 80 W)	592054-B21
	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W)	592056-B21
	AMD Opteron™ Processor Model 6168 (1.9 GHz, 12MB Level 3 Cache, 80W)	592062-B21
	AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W)	592071-B21
	Eight-Core Processors	
	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W)	592064-B21
	AMD Opteron™ Processor Model 6134 (2.3 GHz, 12MB Level 3 Cache, 80W)	592066-B21
	AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W)	592069-B21
	AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W)	595608-B21
	AMD Opteron™ Processor Model 6124HE (1.8 GHz, 12MB Level 3 Cache, 65W)	595610-B21

HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB 2Rx4 PC3-10600R-9 Kit	593907-B21
	HP 4GB 1Rx4 PC3-10600R-9 Kit	593911-B21
	HP 4GB 1Rx4 PC3L-10600R-9 Kit	604500-B21
	HP 8GB 2Rx4 PC3L-10600R-9 Kit	604502-B21
	HP 16GB 4Rx4 PC3-8500R-7 Kit	593915-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 2GB 2Rx8 PC3-10600E-9 Kit	593921-B21
	HP 4GB 2Rx8 PC3-10600E-9 Kit	593923-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: http://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:** The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty.	
	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

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

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
	NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per 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
	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 Options	HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-B21
	HP 4X QDR PCI-e G2 QLogic InfiniBand 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	

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.	

QuickSpecs

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: 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 licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.	
	NOTE: Customer will receive a license entitlement certificate, which 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 Service.	
	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 Insight Control server deployment	
	HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
	HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates	452151-B21
	NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.	
	NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.	
	NOTE: Customer will receive a license entitlement certificate, which 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 Service.	
	NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_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 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 for MSL SCSI Tape Library connect.

NOTE: Recommended Dual Channel Ultra320 SCSI Controller for connecting multi-drive MSL tape libraries to ProLiant servers.

HP Disk Storage Systems

Disk Enclosures

HP StorageWorks D2700 Disk Enclosure	AJ941A

NOTE: Please see the QuickSpecs for additional options and configuration information at:
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 2GB USB Flash Media Drive Key	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 like SmartStart. 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 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 HWSupp	UR264E
	HP 3y 4h 24x7 SL6000 HW Support	UR265E
	HP 3y 4h24x7 w/DMR SL6000 HWSupp	UR266E
	HP 3y 6h 24x7 CTR SL6000 HW Supp	UR267E
	HP 3y 6h24x7 CTRw/DMR SL6000 HWSup	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 HWSupp	UR272E
	HP 4y 4h 24x7 SL6000 HW Support	UR273E
	HP 4y 4h24x7 w/DMR SL6000 HWSupp	UR274E
	HP 4y 6h 24x7 CTR SL6000 HW Supp	UR275E
	HP 4y 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 HWSupp	UR280E
	HP 5y 4h 24x7 SL6000 HW Support	UR281E
	HP 5y 4h24x7 w/DMR SL6000 HWSupp	UR282E
	HP 5y 6h 24x7 CTR SL6000 HW Supp	UR283E
	HP 5y 6h24x7 CTRw/DMR SL6000 HW Supp	UR284E
	HP 3y 24x7 24h CTR SL6000 HW Sup	UR288E
	HP 3y24x7 24hCTRwDMR SL6000 HW Supp	UR289E
	HP 4y 24x7 24h CTR SL6000 HW Sup	UR290E
	HP 4y24x7 24hCTRwDMR SL6000 HW Supp	UR291E
	HP 5y 24x7 24h CTR SL6000 HW Sup	UR292E
	HP 5y24x7 24hCTRwDMR SL6000 HW Supp	UR293E
	HP Install SL6000 Service	UR285E
	HP Startup SL6000 Service	UR286E
	HP Install nonStdHrs SL6000 SVC	UR287E
	Hardware Installation, Electronic	U9520E
	HP 3y 4h 24x7 ProLiant DL14x/16x HW Supp	U9510E

Additional Options

HP 3y Nbd ProLiant DL14x/16x HW Supp	U9508E

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

QuickSpecs

Memory

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

HP ProLiant SL165z G7 (all models)

Maximum Memory

Up to 246GB memory is available with the optional installation of PC2-8500R-7 Registered DIMM memory kits.

Memory should be installed in pairs and matched for optimum performance.

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 twenty-four (24) memory slots:
    - There are four (4) channels per processor; eight (8) channels per server
    - There are three (3) DIMM slots for each memory channel; twenty-four (24) total slots
    - Memory channel 1 consists of the three (3) DIMMs that are furthest from the processor
    - Memory channel 4 consists of the three (3) DIMMs that are closest to the processor
- 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
- You can only have up to eight (8) ranks installed per channel
- 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, you still run at 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz
- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- 95 Watt CPU's are required for 1333MHz DIMM speeds. All other CPU's are capable of up to 1066MHz

  References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc

- You can only install one quad-rank DIMMs per channel and it must be in the center socket
- You can only install two UDIMMs per channel; if available, the second (or middle) 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

DIMM Type ->	Registered DIMMS (RDIMMs)				Unbuffered with ECC DIMMs (UDIMMs)	
DIMM Rank ->	Single Rank	Dual Rank (2R)		Quad Rank (4R)	Dual Rank (2R)	
DIMM Capacity ->	4GB	2GB	8GB	16GB	2GB	4GB
DIMM Native Speed (MHz) - >	1333	1333	1333	1066	1333	1333
Voltage	LV/Reg	Reg	LV/Reg	Reg	Reg	Reg
SLOTS THAT CAN BE POPULATED						
24 slot servers	24	24	24	8	16	16
MAXIMUM CAPACITY (GB)						
24 slot servers	96	48	192	256*	32	64
POPULATED DIMM SPEED (MHz)						
1 DIMM Per Channel	1333	1333	1333	1066	1333	1333
2 DIMM Per Channel	1333	1333	1333	n/a	1333	1333
3 DIMM Per Channel	1333	1066	1066	n/a	n/a	n/a
* This capacity is achieved by loading 1 16GB in center socket and remaining sockets with 8GB DIMMs						

QuickSpecs

Memory

DIMM slot and configuration diagrams
Basic memory slot & population diagram

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

24 DIMM SLOTS (12 per CPU node)					
	CPU1		**CPU2**		
	slot #	population order	slot #	population order	
Chnl 1	1	A	1	A	Chnl 1
	2	I	2	I	
	3	E	3	E	
Chnl 2	4	C	4	C	Chnl 2
	5	K	5	K	
	6	G	6	G	
Chnl 3	7	B	7	B	Chnl 3
	8	J	8	J	
	9	F	9	F	
Chnl 4	10	D	10	D	Chnl 4
	11	L	11	L	
	12	H	12	H	

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

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

Following are memory options available from HP:

HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB 2Rx4 PC3-10600R-9 Kit	593907-B21
	HP 4GB 1Rx4 PC3-10600R-9 Kit	593911-B21
	HP 4GB 1Rx4 PC3L-10600R-9 Kit	604500-B21
	HP 8GB 2Rx4 PC3L-10600R-9 Kit	604502-B21
	HP 16GB 4Rx4 PC3-8500R-7 Kit	593915-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 2GB 2Rx8 PC3-10600E-9 Kit	593921-B21
	HP 4GB 2Rx8 PC3-10600E-9 Kit	593923-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.
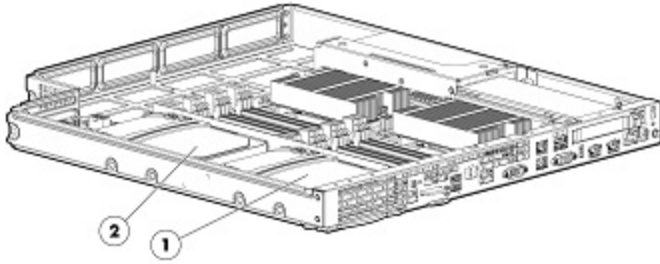**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://www.hp.com/go/proliant-energy-efficient
NOTE: There is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel)
NOTE: PC3L is a low voltage memory.

QuickSpecs

Storage

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

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Drive Support

Hard Drives
NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
NOTE: Hard drives have either a one year or three year warranty.

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 Controller

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SATA Midline (MDL) Drives - with quick release carrier

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K 3.5in 1TB 3G SATA 7.2K 3.5in 500GB 3G SATA 7.2K 3.5in	Up to 2	1-2	HP Embedded SATA Controller
500GB 3G SATA 7.2K 2.5in 160GB 3G SATA 7.2K 2.5in	Up to 4	1-4	HP Embedded SATA Controller

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

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 3.5in 300GB 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. HP Smart Array P410/256MB Controller HP Smart Array P410/512MB with BBWC **NOTE:** HP P410 SAS 4HDD Cable Kit is required when adding SAS hard drives using the P410 controller.
300GB 6G SAS 10K 2.5in	Up to 4	1-4	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 P410/256MB Controller HP Smart Array P410/512MB with BBWC **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 60GB 3G SATA 2.5in	Up to 4	1-4	HP Embedded SATA Controller

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Storage

External Storage

	Quantity Supported	Position Supported	Controller
D2700 Disk Enclosure			

QuickSpecs

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

QuickSpecs

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) (with bezel)	3.46 x 17.64 x 28.1 in (8.79 x 44.80 x 71.37 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	53.7 lb (24.35 kg)
	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
		Rated Input Power	570W (at 100 VAC) 565W (at 200 VAC)
	BTU Rating	Maximum	460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/hppoweradvisor - Click on the system of interest. Example: SL165 G7 - Follow the instructions of the next screens.	
	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	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	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	
		L_{WAd}	6.82 B
		L_{pAm}	51.93 dBA
		Operating	
		L_{WAd}	6.84 B
		L_{pAm}	51.93 dBA
	Emissions Classification (EMC)	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

Technical Specifications

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

HP Embedded B110i SATA RAID Controller (RAID 0, 1, 10)		
	Drives Supported	Up to 4 SATA devices
	Channels	(4) 1.5Gb SATA
	Storage Capacity	4.0TB internal storage
	Data Transfer Method	32-bit/33-MHz PCI bus-master
	Maximum SATA Channel Transfer Rate	1.5Gb/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	266 MB/s per channel
	Protocols	SATA
		PIO Mode [0-4]
	Cable	SATA
	Internal ATA Connectors	Four SATA connectors

Two NC362i Integrated Dual Port Gigabit Server Adapter		
	Network Interface	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)
		10Base-T (Full-Duplex)
		100Base-TX (Half-Duplex)
		100Base-TX (Full-Duplex)
		1000Base-TX (Half and Full-Duplex)
	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	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
		The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.