Overview
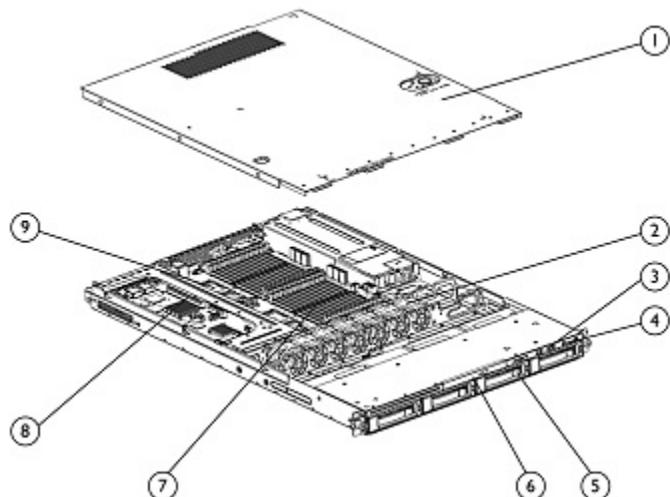
Hot Plug SAS/SATA or Non-Hot Plug SATA Models

Front View:

1. Access panel
2. System fans
3. Front-panel USB 2.0 ports
4. Power switch/system status LEDs
5. Standard 1st , 2nd , 3rd and 4th 3.5" hot-plug SAS/SATA or non-hot plug SATA hard drive bays
6. Optical drive bay
7. Twenty Four DIMM Slots
8. Slot 1:Full-length/Full height x16 PCI-Express Gen2 slot, or
   Slot 1: Half-length/Full height x16 PCI-Express Gen2 slot and
   Slot 2: Low Profile x4 PCI-Express Gen2 slot (accepts x8 cards, internal only)
9. Two (2) AMD Opteron 6100 series processors
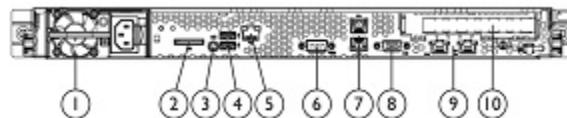
Rear View:

1. Power supply
2. Optional SD Card Reader
3. Unit Identification LED (UID)
4. Two USB ports
5. Optional Lights-Out 100 10/100Mbps port
6. Serial port
7. (2) RJ45 GbE LAN ports (3rd & 4th port)
8. VGA port

9. (2) RJ45 GbE LAN ports (1st & 2nd port)
10. Slot 1:Full-length/Full height x16 PCI-Express Gen2 slot, or
    Slot 1: Half-length/Full height x16 PCI-Express Gen2 slot and
    Slot 2: Low Profile x4 PCI-Express Gen2 slot (accepts x8 cards, internal only)

At A Glance

Introducing the HP ProLiant DL165G7, 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 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**:

Overview

- ○ Internal storage capacity:
  - SATA Capacity: Support for up to 8.0TB (4 x 2TB) with Hot Plug Model. 8.0TB (4 x 2TB) with Non Hot Plug Model
  - SAS Capacity: Support for up to 8.0 TB (4 x 2TB) with Hot Plug Model
- **Network Controller**:
  - ○ (2) HP NC362i Integrated Dual Port Gigabit Server Adapter (4 ports total)
- **Storage Controllers**:
  - ○ Non-Hot Plug SATA Models: HP Embedded B110i SATA Smart Array RAID Controller
  - ○ Cold Plug SATA Models: HP Embedded B110i SATA Smart Array RAID Controller
  - ○ Hot Plug SATA/SAS Models: HP P410 Smart Array Controller or HP Smart Array Hot Plug Advance Pack for B110i SATA RAID license key upgrade.
- **Expansion Slots**:
  - ○ Standard - PCI-Express assembly includes:
    - Slot 1: Either full-length/full height PCI-Express Gen2 x16 or half-length/full height when internal slot is installed
    - Slot 2: half-length/low-profile PCI-Express Gen2 x4 (x8 connector) (Internal ONLY)
- **Infrastructure Management**:
  - ○ HP Lights-Out 100 with optional LO100 Advanced Licenses for Virtual KVM and Virtual Media.
  - ○ 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, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control for Linux supports Linux-based central management servers.
- **USB Ports**:
  - ○ Up to Six USB ports (two front & two rear standard, 2 internal option)
- **Optical Drive**:
  - ○ Support for one (optional): Slim 9.5 mm DVD-ROM or DVD/CD RW
- **Power Supply**:
  - ○ 500W Power Supply [Non-Hot Plug, PFC (Autoswitching)]
  - ○ Optional FIO high-efficiency pluggable power supplies: 750W Power Supply
- **Form Factor**:
  - ○ Rack (1U)
  - ○ Fixed mounting rails included with all models
- **Deployment/Serviceability**:
  - ○ HP ProLiant DL165 G7 models have tool-less fixed rails which provide support for racks with round mounting holes and tool-free support for racks with square mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 26" - 36
  - ○ Tool-less access to all system components for easy serviceability
  - ○ 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; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 3 year Next Day Parts replacement, 0-Years Labor, 0-Years Onsite support. Warranty terms may vary by region. 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	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 6134 (2.3 GHz, 12MB Level 3 Cache, 80W) **NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.
	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W)
	AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W) **NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.
	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W)
	AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache, 80W) **NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Upgradeability	Upgradeable to two processors

Chipset	AMD Chipset SR5670/SP5100

Cache Memory	Model Series 6000 12MB shared L3

Memory Protection	Advanced ECC

Memory One of the following depending on Model	Type	DDR3 Registered (RDIMM) or Unbuffered (UDIMM)	
	Standard	Entry Model	4 GB (2 x 2 GB) RDIMMs
		Base Model	8 GB (4 x 2 GB) RDIMMs
		Performance Model	16 GB (8 x 2 GB) RDIMMs
		Efficiency Model	4 GB (2 x 2 GB) RDIMMs
	Maximum (RDIMM)	256 GB	(8 x 16 GB + 16 x 8 GB)
	Maximum (UDIMM)	64 GB	(16 x 4 GB)

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.

DDR3 memory options part number decoder

Standard Features

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

CAPACITY
* 1GB
* 2GB
* 4GB
* 8GB
* 16GB

RANK
* 1R=single
* 2R=dual
* 3R=quad

DATA WIDTH
* x8=8
* x4=4

MEMORY TYPE
PC3=DDR3

VOLTAGE
* Blank=1.5V
* L=1.35V

MODULE BANDWIDTH
* 8500MB/s (DDR3-1066)
* 10600MB/s (DDR3-1333)

DIMM TYPE
* E=Unbuffered with ECC
* R=Registered

CAS LATENCY
* 7=7-7-7
* 8=8-8-8
* 9=9-9-9
*Future Speed May Be Two Digits

SPECIAL DESCRIPTOR (If Needed)
* LP (Low Power)
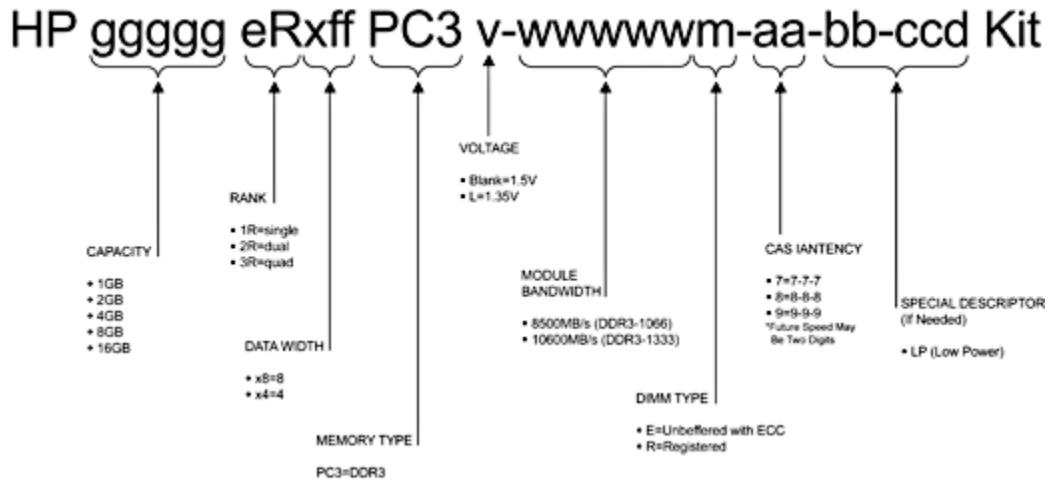
Network Controller   (2) HP NC362i Integrated Dual Port Gigabit Server Adapter

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Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Device No.**	Form Factor	Notes
1	PCI-Express 2.0	x16	x16	5	0	Full Height/Full Length	3.3 volts
2***	PCI-Express 2.0	x4	x8	2	0	Low Profile, Internal Only	3.3 volts

* 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).
***In order to access expansion slot #2, the low profile internal only slot, expansion slot #1 may only be populated with a half length, full height form factor card.

Storage Controller   Non-Hot Plug SATA   HP Smart Array B110i SATA RAID Controller
NOTE: To enable RAID for embedded SATA controller, use EZ set-up CD to download driver, hpahcisr.sys, is part of the 8.20 PSP, Smart Start, EZSetup CD. For more information on Smart Array B110i, go to: www.hp.com/go/sataraid

Cold Plug SATA Models   HP Smart Array B110i SATA RAID Controller
NOTE: Supported on LFF models only.

Hot Plug SATA/SAS   HP Smart Array P410 Controller (RAID 0/1/1+0)
HP Smart Array P410 Controller 256 BBWC (RAID/0/1/1+0/5/5+0)
NOTE: Transfer rate: up to 3 Gb/s SATA, up to 6 Gb/s SAS.

HP Smart Array B110i SATA RAID Controller
NOTE: Hot plug functionality requires the addition of a Smart Array Advanced Pack License Key upgrade (P/N TC421A)
NOTE: To enable RAID for embedded SATA controller, use EZ set-up CD to download driver, hpahcisr.sys, is part of the 8.20 PSP, Smart Start, EZSetup CD. For more information on Smart Array, go to: www.hp.com/go/sataraid

NOTE: A diskette drive or virtual FDD using LO100 Advanced Pack is needed to install storage controller drivers during a Windows operating system installation from a CD.
NOTE: Addition of the battery backed cache upgrade enables BBWC, RAID 5, 5+0, array expansion, logical drive extension, RAID migration, and stripe size migration.
NOTE: RAID 6 functionality requires the addition of Smart Array Advanced Pack (P/N: 516471-B21).

Standard Features

Storage	Diskette Drives	Via USB only
	Optical Drives	Optional SATA 9.5mm DVD-ROM Optical Drive
		Optional SATA 9.5mm DVD RW Optical Drive
	Hard Drives	Up to 4 Non-hot plug SATA 3.5" drives
		Up to 4 Hot plug SAS/SATA 3.5" drives
		Up to 8 Hot plug SAS/SATA 2.5" drives

Maximum Internal Storage	Non-Hot Plug LFF SATA	8.0TB	4 x 2TB
	Hot Plug LFF SATA	8.0TB	4 x 2TB
	Hot Plug LFF SAS	8.0TB	4 x 2TB
	Hot Plug SFF SAS	4.0TB	8 x 500GB

Interfaces	Parallel	None
	Network RJ-45(Ethernet)	4 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	6 (two front, two internal, two rear)

NOTE: One optional internal USB connector is reserved for connection to the rear SD Card Reader (592710-B21)

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.

Graphics	32MB shared supporting all display resolutions up to 1600x1200 16bpp@75Hz

NOTE: 8MB is dedicated to video memory.

Form Factor	Rack (1U), (1.75 in/4.45 cm)

Standard Features

Embedded Manageability	HP LO100 Advanced	HP Lights-Out 100 with Optional LO100 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

NOTE: Flexible and volume quantity (AKA) license kits are available for the Lights-Out 100 Advanced Pack licenses as well as Electronic License To Use (E-LTU). AKA Tracking licenses require a 100 unit minimum forecast at initial contract signing. For these additional part numbers, please refer to each software products. QuickSpecs at this link for more information: www.hp.com/go/lo100

HP Insight Control management software	HP Insight Control for Linux	HP Insight Control for Linux, as a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. The Insight Control for Linux installs and license software modules that are integrated into HP System Insight Manager.

The HP Insight Control for Linux (IC-Linux) serves environments requiring a Linux-based management consoles. See: www.hp.com/go/ic-linux

HP Insight Control include 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.

	Insight Control server deployment	HP Insight Control server deployment is a 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. 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

Standard Features

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

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.

NOTE: For more information about TPM, including a white paper, go to:
http://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 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

500 Watts, auto-switching, high efficiency, PFC (Power Factor Correcting).
NOTE: Factory upgradeable to high-efficiency 750W pluggable power supply.

Standard Features

System Fans	4 non-hot plug system fans ship standard with 1P models, optional upgrade to N+1 redundant. 7 non-hot plug system fans ship standard with 2P models, N+1 Redundant Standard

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Microsoft Windows Server 2008 Hyper V
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Solaris 10 for x86/x64 based Systems
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/DL165G7.

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/dl165.

Rack Support

The DL Fixed Rail System supports installation in racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 24" - 36".

Telco Rack Support

Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. For additional information, please visit: www.hp.com/go/rackandpower
NOTE: The 4 post Telco racks also supported.

Standard Features

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

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 24x7 4 hr Response service support coverage
- **Deployment Service** - Hardware Installation

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

- **Support Service** - 3Year 24x7 24 hr Call to repair service support coverage
- **Support Service** - 3-Year 24x7 6 hr Call to repair service support coverage
- **Support Plus** - 24x7 24 hr Call to repair service support including OS coverage Operating

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://h20219.www2.hp.com/services/us/en/warranty/carepack-servers-proliant.html

HPC Interconnects

NOTE: High Performance Computing (HPC) interconnect technologies are available for the DL165 G7 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, Gigabit Ethernet or Myrinet Interconnects:
http://www.hp.com/techservers/clusters/ucp/index.html

HPC Interconnects	**InfiniBand**	PCI-Express Generation 2 adapters
	Gigabit Ethernet	Use embedded ports or optional 10GbE NICs
	10-Gigabit Ethernet	PCI-Express Generation 2

Models

Cold Plug/Hot Plug Serial ATA (SATA)/Serial Attached SCSI (SAS) Models

HP DL165G7 6172 Hot Plug SAS/SATA 590261-xx1	**Processor(s)**	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W)
	Cache Memory	12 MB shared L3 cache
	Memory	16GB (8 x 2GB) PC3-10600R (RDIMM)
	Network Controller	2x HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410/ 256MB BBWC
	Hard Drive	None ship standard
	Internal Storage	Up to 8 Small form factor Hot Plug drives 4.0TB (8 x 500GB Hot Plug 2.5" SAS Hard Drives), Maximum
	Optical Drive	None ship standard
	Form Factor	1U

HP DL165G7 6136 Hot Plug SAS/SATA 590260-xx1	**Processor(s)**	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W)
	Cache Memory	12 MB shared L3 cache
	Memory	8GB (4 x 2GB) PC3-10600R (RDIMM)
	Network Controller	2x HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410
	Hard Drive	None ship standard
	Internal Storage	8.0TB (4 x 2TB Hot Plug 3.5" SATA Hard Drives), Maximum 8.0TB (4 x 2TB Hot Plug 3.5" SAS Hard Drives), Maximum
	Optical Drive	None ship standard
	Form Factor	1U

HP DL165G7 6128 Hot Plug SAS/SATA 590259-xx1	**Processor(s)**	AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W)
	Cache Memory	12 MB shared L3 cache
	Memory	4GB (2 x 2GB) PC3-10600R (RDIMM)
	Network Controller	2x HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array B110i
	Hard Drive	None ship standard
	Internal Storage	8.0TB (4 x 2TB Hot Plug 3.5" SATA Hard Drives), Maximum 8.0TB (4 x 2TB Hot Plug 3.5" SAS Hard Drives), Maximum
	Optical Drive	None ship standard
	Form Factor	1U

HP DL165G7 6128HE Pluggable SATA 590258-xx1	**Processor(s)**	AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W)
	Cache Memory	12 MB shared L3 cache
	Memory	4GB (2 x 2GB) PC3-10600R (RDIMM)
	Network Controller	2x HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array B110i
	Hard Drive	None ship standard
	Internal Storage	8.0TB (4 x 2TB Hot Plug 3.5" SATA Hard Drives), Maximum 8.0TB (4 x 2TB Hot Plug 3.5" SAS Hard Drives), Maximum
	Optical Drive	None ship standard
	Form Factor	1U

Models

Country Code Key	xx=00	U.S.
	xx=29	Japan
	xx=37	APD
	xx=42	Euro
	xx=AA	PRC

Configuration Information - Factory Integrated Models

Step 1: Base Configuration

Non-Hot Plug SATA Model (choose one of the following configurable models)

HP DL165G7 NHP CTO Chassis — 591660-B21

Factory Integrated Model ships with:

Two HP NC362i Integrated Dual Port Gigabit Server Adapters

Slot 1: FL /FH PCI-Express x16 Gen 2 slot or
Slot 1 : HL/FH x16 PCI-Express Gen2 slot and
Slot 2 : HL/LP x8 PCI-Express Gen2 slot (internal only)

HP Smart Array B110i SATA RAID Controller

One Highline IEC Power Cord

4 Fixed, Non-Redundant Fans (standard); 6 Fixed, N+1 Redundant Fans (standard with addition of second processor)

Rack (1U), (1.75 in / 4.45 cm)
Tool-less Fixed Rails

Hot Plug/Cold Plug Models

HP DL165G7 LFF CTO Chassis — 592226-B21
HP DL165G7 SFF CTO Chassis — 592227-B21

Factory Integrated Model ships with:

Two HP NC362i Integrated Dual Port Gigabit Server Adapters

Slot 1: FL /FH PCI-Express x16 Gen 2 slot or
Slot 1 : HL/FH x16 PCI-Express Gen2 slot and
Slot 2 : HL/LP x8 PCI-Express Gen2 slot (internal only)

One Highline IEC Power Cord

4 Fixed, Non-Redundant Fans (standard); 6 Fixed, N+1 Redundant Fans (standard with addition of second processor)

Rack (1U), (1.75 in / 4.45 cm)
Tool-less Fixed Rails

Configuration Information - Factory Integrated Models

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

HP Processors	**NOTE:** If 2 processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.	
	AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W) FIO Kit	601111-L21
	AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W) FIO Kit	601110-L21
	AMD Opteron™ Processor Model 6134 (2.3 GHz, 12MB Level 3 Cache, 80W) FIO Kit	601115-L21
	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W) FIO Kit	601112-L21
	AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W) FIO Kit	601116-L21
	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W) FIO Kit	601113-L21
	AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache, 80W) FIO Kit	601118-L21

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 2Rx8 PC3-10600R-9 Kit	593913-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.

Configuration Information - Factory Integrated Models

HP Hard Drives	**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	NOTE: A minimum of one SATA Non-Hot Plug hard drive is required ONLY when purchasing Non-Hot Plug CTO Chassis Model (P/N 591660-B21) in Step 1.	

Serial-ATA (SATA) Non-Hot Plug Hard Drives (Non-Hot Plug Models Only)

SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive	571232-B21
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive	458947-B21

SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	507774-B21
HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	507772-B21
HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	462595-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458941-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458939-B21

HP Storage Controllers	**NOTE:** With the HP Smart Array P410 Controller, the addition of the battery backed cache upgrade enables BBWC, RAID 5, 5+0, array expansion, logical drive extension, RAID migration, and stripe size migration. In order to upgrade to RAID 6, at least 256MB Cache and a Battery is required in addition to the Smart Array Advanced Pack license (P/N 516471-B21).	
	NOTE: To use the internal only PCI-e slot when purchasing the Hot Plug CTO Chassis, a HP Smart Array P410 controller must be selected. When selecting the HP Smart Array P212 Controller (P/N 491191-B21), the controller will be installed in the x16 slot since it has both an internal and external port. This prevents the use of the internal slot and no PCI-E slots will be available.	
	NOTE: A minimum of one primary HP Storage Controller is required ONLY when purchasing SFF CTO Chassis Model (P/N 592227-B21) in Step 1.	

HP Smart Array P812/1G Flash Backed Cache Controller	487204-B21
HP P410 w/1G Flash Backed Cache Controller	572532-B21
HP P410 w/512MB Flash Backed Cache Controller	578230-B21
HP P410/Zero Memory FIO Smart Array Controller	462860-B21
HP P410/256MB Smart Array Controller	462862-B21
HP Smart Array P410/256MB w/ Battery FIO	491195-B21
HP P410/512MB BBWC Smart Array Controller	462864-B21

Configuration Information - Factory Integrated Models

HP Power Supplies

CAUTION: 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/hppoweradvisor. 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 High Efficiency 500W Non hot plug FIO Power Supply Kit	593915-B21
HP High Efficiency 750W 92%Power Supply Kit	535683-B21

Step 3: Choose Additional Factory Integratable Options

HP Storage Controllers

NOTE: With the HP Smart Array P410 Controller, the addition of the battery backed cache upgrade enables BBWC, RAID 5, 5+0, array expansion, logical drive extension, RAID migration, and stripe size migration. In order to upgrade to RAID 6, at least 256MB Cache and a Battery is required in addition to the Smart Array Advanced Pack license (P/N 516471-B21).

NOTE: To use the internal only PCI-e slot when purchasing the Hot Plug CTO Chassis, a HP Smart Array P410 controller must be selected. When selecting the HP Smart Array P212 Controller (P/N 491191-B21), the controller will be installed in the x16 slot since it has both an internal and external port. This prevents the use of the internal slot and no PCI-E slots will be available.

HP P212/256MB FIO Smart Array BBWC	491191-B21

NOTE: P212 may be used as external controller only in SFF models.

HP P410/Zero Memory FIO Smart Array Controller	462860-B21
HP Smart Array P410/256MB w/ Battery FIO	491195-B21

Step 4: Choose Additional Options for Factory Integration

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

Core Options

HP Processors	AMD Opteron™ Processor Model 6128 (2.0 GHz, 12MB Level 3 Cache, 80W) Kit	601111-B21
	AMD Opteron™ Processor Model 6128HE (2.0 GHz, 12MB Level 3 Cache, 65W) Kit	601110-B21
	AMD Opteron™ Processor Model 6134 (2.3 GHz, 12MB Level 3 Cache, 80W) Kit	601115-B21
	AMD Opteron™ Processor Model 6136 (2.4 GHz, 12MB Level 3 Cache, 80W) Kit	601112-B21
	AMD Opteron™ Processor Model 6164HE (1.7 GHz, 12MB Level 3 Cache, 65W) Kit	601116-B21
	AMD Opteron™ Processor Model 6172 (2.1 GHz, 12MB Level 3 Cache, 80W) Kit	601113-B21
	AMD Opteron™ Processor Model 6174 (2.2 GHz, 12MB Level 3 Cache, 80W) Kit	601118-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 2Rx8 PC3-10600R-9 Kit	593913-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: PC3L is a low voltage memory.	

HP Optical Drives	DVD-ROM Drive Optical Drive	481045-B21
	DVD RW Drive Optical Drive	481047-B21

HP Hard Drives	**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. **NOTE:** Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	454146-B21
	HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458930-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21
	SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	507774-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	507772-B21

Core Options

HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	462595-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458941-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458939-B21
SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives	
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	571230-B21
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	458945-B21
SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives	
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive	571232-B21
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive	458947-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

HP 120GB 3G SATA 3.5in MDL 1y Wty SSD	570763-B21
HP 60GB 3G SATA 3.5in MDL 1y Wty SSD	570761-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html (Worldwide)

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 600GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21
HP 450GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21
HP 450GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	454232-B21
HP 300GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516814-B21
HP 300GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	416127-B21
HP 146GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	384854-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Wty Hard Drive	507616-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Wty Hard Drive	507614-B21
HP 1TB 3G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Wty Hard Drive	461137-B21
HP 750GB 3G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Wty Hard Drive	461135-B21

NOTE: The purchase of SAS HBA or array controller is required.

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

Core Options

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 NC375T PCI Express Quad Port Gigabit Server Adapter	538696-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 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

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HP Cooling Options   HP DL165G7 Redundant Fan OPT KIT   593114-B21

NOTE: Redundant Fan Option Kit ONLY required for fan redundancy in single processor configurations. Two processor configurations offer N+1 fan redundancy as standard.

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 License Kits 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 Graphic Options	HP Graphic Card Power Adapter Kit	533955-B21

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

HP Storage Controllers	**SAS Controllers**	
	NOTE: To utilize the internal only slot, the HP Smart Array P410 Controller must be selected. The selection of the HP Smart Array P212 Controller for internal and external connectivity, will require the use of the Full Length Full Height PCI-E x16 slot. **NOTE:** With the HP Smart Array P410 Controller, the addition of the battery backed cache upgrade enables BBWC, RAID 5, 5+0, array expansion, logical drive extension, RAID migration, and stripe size migration. In order to upgrade to RAID 6, at least 256MB Cache and a Battery is required in addition to the HP	

Additional Options

Smart Array Advanced Pack license (P/N 516471-B21).

Smart Array P212 Controller

HP Smart Array P212/Zero Memory Controller	462828-B21
HP Smart Array P212/256MB Controller	462834-B21

Smart Array P410 Controller

HP Smart Array P410/256MB Controller	462862-B21
HP Smart Array P410/512MB with BBWC Controller	462864-B21
HP Smart Array P410/512MB with FBWC	578230-B21
HP Smart Array P410/1G with FBWC	572532-B21

Smart Array P411 Controller
NOTE: Controllers for use with external storage only.

HP Smart Array P411/256MB Controller	462830-B21
HP Smart Array P411/512MB BBWC	462832-B21
HP Smart Array P411/512MB Flash Backed Write Cache	578229-B21
HP Smart Array P411/1G Flash Backed Write Cache	572531-B21

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)
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)

Optional upgrades

1G Flash Backed Write Cache	534562-B21
512MB Flash Backed Write Cache	534916-B21
HP Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support	516471-B21

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

HP Smart Array Hot Plug Advanced Pack for B110i No Media 1-Server license including 1yr 24x7 Technical Support	TC421A

SAS HBA

HP SC08Ge Host Bus Adapter	488765-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)
http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html (Smart Array P812 Controller)
http://h18000.www1.hp.com/products/quickspecs/13495_div/13495_div.html (Smart Array Advanced Pack)
http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)

Additional Options

HP InfiniBand Options	HP IB 4X DDR PCI-e DUAL PORT HCA	448397-B21
	HP IB 4X QDR Conn-X PCI-e G2 Dual Port HCA	516937-B21
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html	

HP Backup & Recovery Software	**Data Protector Express**	
	HP Data Protector Express 4.0 SP1 Backup Server	BB117BA
	HP Data Protector Express 4.0 SP1 for Microsoft Small Business Server	BB118BA
	HP Data Protector Express Backup Server 4.0 SP1 Upgrade from Data Protector Express Single Server Edition	BB117BT
	NOTE: Only one of these Data Protector Express base products is required. To see available options: http://www.hp.com/go/dataprotectorexpress	

HP Tape Backup	**NOTE:** For the complete range of StorageWorks tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP StorageWorks tape backup products see: http://www.hp.com/go/connect.	
	HP StorageWorks DAT 160 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	Q1587A
	HP StorageWorks 1U USB Rack-Mount Kit with one DAT 320 USB Tape Drive	AP835A
	HP StorageWorks DAT 320 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	AJ830A
	HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	DW085A
	HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	EH847A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Tape Autoloader **NOTE:** Requires HP 1U Tape Autoloader Rack-Mount Kit (AH166A) for rack installation. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	AH558A
	HP StorageWorks MSL2024 Tape Library with one LTO-3 Ultrium 920 SAS Drive **NOTE:** Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	AH559A

Additional Options

HP Disk Backup

NOTE: For the complete range of StorageWorks D2D Backup Systems see: http://www.hp.com/go/d2d. For the complete range of StorageWorks RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP StorageWorks disk backup products see: http://www.hp.com/go/connect.

HP StorageWorks D2D Backup Systems with Backup Data Deduplication

HP StorageWorks D2D2502i Backup System	EJ001A

NOTE: 1.5TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.

HP StorageWorks D2D2504i Backup System	EJ002A

NOTE: 3.0TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.

USB Removable Media RDX Disk Backup Systems

HP StorageWorks RDX320 Internal Removable Disk Backup System	AJ767A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 320GB of disk capacity per data cartridge.

HP StorageWorks RDX500 Internal Removable Disk Backup System	AJ934A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 500GB of disk capacity per data cartridge.

HP StorageWorks RDX750 Internal Removable Disk Backup System	AW577A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 750GB of disk capacity per data cartridge.

HP StorageWorks Options

StorageWorks Fibre Channel HBA

NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html

Brocade Fibre Channel HBAs

HP 81B PCIe 8Gb FC Single Port HBA	AP769A
HP 82B PCIe 8Gb FC Dual Port HBA	AP770A
HP 41B PCIe 4Gb FC Single Port HBA	AP767A
HP 42B PCIe 4Gb FC Dual Port HBA	AP768A

Emulex Fibre Channel HBAs

HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
HP StorageWorks 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4Gb PCI-e HBA	A8003A

QLogic Fibre Channel HBAs

HP StorageWorks 81Q 8Gb PCI-e FC HBA	AK344A
HP StorageWorks 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
HP StorageWorks FC1242SR Dual Channel 4Gb PCI-e HBA	AE312A

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter	AH627A

NOTE: Recommended for MSL SCSI Tape Library connect.

QuickSpecs

Additional Options

	NOTE: Recommended Dual Channel Ultra320 SCSI Controller for connecting multi-drive MSL tape libraries to ProLiant servers.	
	StorageWorks Converged Network Adapter	
	HP CN1000E 2P Converged Network Adapter	AW520A

HP Uninterruptible Power Systems	**HP Rack-mountable UPS**	
	HP R1500 G2 UPS	
	HP, R1.5kVA UPS, 1U, NA	AF419A
	HP, R1.5kVA UPS, 1U, INTL	AF418A
	HP, R1.5kVA UPS, 1U, JPN/TW	AF421A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html (Worldwide)

HP T1000 G3 UPS

HP T1000 G3 UPS, NA/JPN	AF448A
HP T1000 G3 UPS, INTL	AF449A

NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html (Worldwide)

HP T1500 G3 UPS

HP T1500 G3 UPS, NA/JPN	AF450A
HP T1500 G3 UPS, INTL	AF451A

NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html (Worldwide)

NOTE: For additional information on all HP Uninterruptible Power Systems and accessories please go to: www.hp.com/products/ups (Worldwide)

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

HP Rack Series   **HP Rack 10000 G2 Series** (Carbon/Graphite Metallic)

HP Universal Rack 10642 G2 Pallet ALL	AF001A
HP Universal Rack 10642 G2 Shock ALL	AF002A

NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.
NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).
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.

QuickSpecs

Additional Options

HP Rack Options	**Keyboards and Monitors**	
	HP KVM Switch Options	
	Server console switch 0x2x8	AF616A
	Server console switch 0x2x16	AF617A
	HP 1x4 Console Switch	
	0x2x16 KVM Server Console G2 Switch with Virtual Media and CAC	AF618A
	0x2x32 KVM Server Console G2 Switch with Virtual Media and CAC	AF619A
	1x1Ex8 KVM IP Console Switch G2 with Virtual Media and CAC	AF620A
	2x1Ex16 KVM IP Console Switch G2 with Virtual Media and CAC	AF621A
	4x1Ex32 KVM IP Console Switch G2 with Virtual Media and CAC	AF622A

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.

HP USB and SD Options	HP USB-P/S2 Mouse	DC369A
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP DL165G7 SD Card Reader Module OPT KIT	592710-B21

Memory

HP ProLiant DL165 G7 (all models)
NOTE: Memory configurations listed do not apply to "Factory Integrated Models".
Standard Memory
4 GB (2 x 2 GB) PC2-6400 DIMM memory, with Advanced ECC Capabilities memory installed.

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

Memory

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.						

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

Memory

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 2Rx8 PC3-10600R-9 Kit	593913-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: PC3L is a low voltage memory.

Storage

1-4	Hot plug 3.5" SATA or Hot-plug SAS/SATA hard drive bays
A	Optional DVD-ROM, or DVD/CD RW
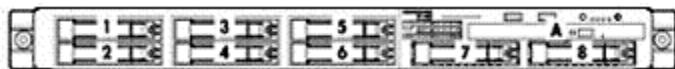
1-8	Eight Hot-plug SAS hard drive bays
A	Optional DVD-ROM, or DVD RW

Drive Support

Removable Media

	Quantity Supported	Position Supported	Controller
DVD-ROM	Up to 1	A	Integrated IDE (ATAPI) (optional)
DVD RW	Up to 1	A	Integrated IDE (ATAPI) (optional)

Hard Drives

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

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

SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array P212 Controller
1TB 3G SATA 7.2K			HP Smart Array P410 Controller
750GB 3G SATA 7.2K			HP Smart Array P812 Controller
500GB 3GSATA 7.2K			
250GB 3G SATA 7.2K			

SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array P212 Controller
1TB 3G SATA 7.2K			HP Smart Array P410 Controller
750GB 3G SATA 7.2K			HP Smart Array P812 Controller
500GB 3G SATA 7.2K			
250GB 3G SATA 7.2K			
160GB 3G SATA 7.2K			

SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array P212 Controller
160GB 3G SATA 7.2K			HP Smart Array P410 Controller
			HP Smart Array P812 Controller

SATA Hot Plug Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller

Storage

	Quantity Supported	Position Supported	Controller
60GB 3.0G SATA SSD 120GB 3.0G SATA SSD	Up to 8	1-8	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
60GB 3.0G SATA SSD 120GB 3.0G SATA SSD	Up to 4	1-4	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
500 6G SAS 7.2K	Up to 8	1-8	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

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

	Quantity Supported	Position Supported	Controller
2TB 6G SAS 7.2K 1TB 6G SAS 7.2K 1TB 3G SAS 7.2K 750 3G SAS 7.2K	Up to 4	1-4	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

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

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K 300GB 3G SAS 10K 146GB 6G SAS 15K 146GB 3G SAS 15K 146GB 6G SAS 10K 146GB 3G SAS 10K 72GB 6G SAS 15K 72GB 3G SAS 10K	Up to 8	1-8	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 450GB 6G SAS 15K 450GB 3G SAS 15K 300GB 6G SAS 15K 300GB 3G SAS 15K 146GB 3G SAS 15K	Up to 4	1-4	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812 Controller

Storage

Tape and Disk Backup

NOTE: For the complete range of StorageWorks tape drives, autoloaders, libraries and media, including the internal fitting models, see: http://www.hp.com/go/tape. For the complete range of StorageWorks D2D Backup Systems see: http://www.hp.com/go/d2d. For the complete range of StorageWorks RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP StorageWorks disk and tape backup products see: http://www.hp.com/go/connect.

	Position	Recommended Controller	Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter Please check the full compatibility information at: http://www.hp.com/go/connect	412911-B21
HP StorageWorks USB Tape Drives, External DAT 40 DAT 72 DAT 160 DAT 320 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives, External DAT 160 DAT 320 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 LTO-5 Ultrium 3000 LTO-5 Ultrium 3280 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P212 SAS controller Please check the full compatibility information at: http://www.hp.com/go/connect	462828-B21
HP StorageWorks SCSI Tape Autoloaders, External DAT 72x10 Autoloader 1/8 G2 Autoloader	External	HP SC11Xe Host Bus Adapter Please check the full compatibility information at: http://www.hp.com/go/connect	412911-B21
HP StorageWorks SCSI Tape Libraries, External MSL2024 MSL4048 MSL8096 MSL6000	External	HP U320e SCSI Dual Channel Controller Please check the full compatibility information at: http://www.hp.com/go/connect	AH627A
HP StorageWorks SAS	External	HP Smart Array P212 SAS controller	462828-B21

Storage

Tape Autoloaders and Libraries, External 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096		Please check the full compatibility information at: http://www.hp.com/go/connect	
HP StorageWorks Fibre Channel Tape Libraries, External MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpecs.	
HP StorageWorks USB RDX Removable Disk Backup System, External RDX160 RDX320 RDX500 RDX750	External	USB 2.0 port	N/A
HP StorageWorks D2D Backup Systems, iSCSI D2D2500i D2D4000i	Rack Mount	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
HP StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc	Rack Mount	Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect	

Power Specifications

HP 500W Power Supply Part Number - AC 500W PSU	515915-B21 FIO					
Input Voltage Range (Vrms)	100 to 240					
Frequency Range (Nominal) (Hz)	47/63					
Nominal Input Voltage (Vrms)	**100**	**120**	**200**	**220**	**230**	**240**
Maximum Rated Output Wattage	500	500	500	500	500	500
Nominal Input Current (A rms)	5.74	4.99	2.86	2.58	2.46	2.36
Max Rated Input Wattage Rating (Watts)	568	568	562	556	556	556
Max. Rated VA (Volt-Amp)	574	574	573	567	567	567
Efficiency (%) at Max. Rated Output Wattage	88	88	89	90	90	90
Power Factor	0.99	0.99	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.42	0.50	0.81	0.91	0.95	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)						

HP 750W Power Supply Part Number - AC 750W PSU	512327-B21 Option Kit						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	**100**	**120**	**200**	**208**	**220**	**230**	**240**
Max Rated Output Wattage Rating	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

NOTE:
To review typical system power ratings use the Active Answers 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

System Specifications

Power

ProLiant DL165 G7 Fully Configured	115V/60Hz	220V/50Hz
Fully Loaded System Input Wattage (W)	568	556
Fully Loaded System Input Current (A rms)	4.99	2.58
Fully Loaded System Thermal (BTU- Hr)	1939.15	1898.18
Fully Loaded System VA (Volt-Amp)	574	567
System Inrush Current with all power supplies loaded (A)	30	30
Power cord requirements	Nema 5-15P to IEC320-C13	IEC320-C13 to IEC320-C14

NOTE: Power shown is for a fully configured system consisting of (2) CPU, (8) double-sided DIMMs, (2) HDDs, (1) CD-ROM, and (2) PCI cards.

Power Cord   AF556A

Server Power Cords

One 6' Highline (IEC-IEC) power cord ships standard
NOTE: HP ProLiant DL 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.

Technical Specifications

System Unit	**Dimensions** (H x W x D) (with bezel)	1.70 x 17.64 x 27.59 in (4.32 x 44.80 x 69.95 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	32.08 lb (14.55 kg)
		Minimum (one hard drive, power supply, and processor installed)	27.4 lb (12.43 kg)
	Input Requirements (per 500W power supply)	Rated Line Voltage	100 to 127 VAC 200 to 240 VAC
		Rated Input Current	4.99A (at 115 VAC), 2.46A (at 230 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	574W (at 100 VAC) 573W (at 200 VAC)
	BTU Rating	Maximum	500W 1700 BTU / hr (at 100 VAC) 1700 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/hppoweradvisor	
		- Click on the system of interest. Example: DL165 G7 - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power	500 Watts (at 100 VAC), 500 Watts (at 200 VAC)
		Maximum Peak Power	500 Watts (at 100 VAC), 500 Watts (at 200 VAC)

Optional High Efficiency Power Supply Specifications

	Input Requirements (per power supply)	Rated Line Voltage	90-110 VAC, 108-132 VAC 180-264VAC
		Rated Input Current	7.4 A (at 115 VAC), 3.6 A (at 230 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	846 W (at 115 VAC), 822W (at 230 VAC)
	BTU Rating	Maximum	750 W 2550 BTU/hr (at 100 VAC), 2550 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient	
		- Click on the system of interest. Example: DL165 G7 - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power	750 W (at 100 VAC), 750W (at 200 VAC)
		Maximum Peak Power	750 W (at 100 VAC), 750 W (at 200 VAC)

Technical Specifications

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 609 m/min (2000 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 609 m/min (2000 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

LWAd	6.03 B
LpAm	46.1 dBA

Operating

LWAd	6.08 B
LpAm	46.4 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

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

Technical Specifications

HP B110i Smart Array Controller		
	Drives Supported	Up to 4 SATA devices
	Channels	4 1.5Gb SATA
	Storage Capacity	3.0TB 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 **NOTE:** Raid support requires optional slot based raid controller.

Smart Array P410/410i Controller		
	Disk Drive and Enclosure Interface	6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA)
	SAS Connectors	2 internal (Mini-SAS) x8 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe 2.0 provides 2GB/s maximum bandwidth
	SAS Speed	x8 6Gb/s SAS provides 4.8GB/s maximum bandwidth
	Cache Memory	40-bit 256MB ECC protected cache (72-bit 512MB BBWC module upgrades available); transportable with battery-backed upgrade
	Logical Drives Supported	Up to 64 logical drives
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) **NOTE:** The minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade is required to enable RAID 6, 6+0 RAID 5, 5+0 (Distributed Data Guarding) **NOTE:** The 256 MB is required to enable RAID 5, 5+0 support of the Smart Array P410i RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)

Technical Specifications

(2x) 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.