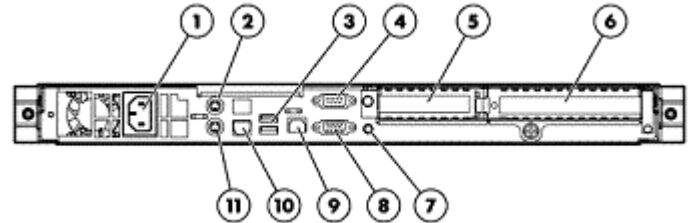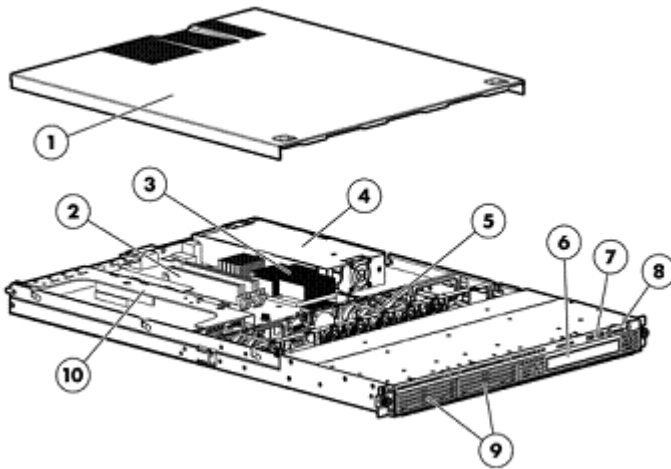*Overview*

Front View:

1. Cover
2. Four PC2-6400 UB ECC DDR2 Memory Slots
3. Processor Socket (Intel® Xeon®, Core™2, Pentium® or Celeron®)
4. Power Supply (350 Watt)
5. 3 Non Hot Plug Dual Rotor Fans
6. Optional 12.7mm DVD-ROM, or DVD-RW Drive
7. Two upfront USB connectors
8. Power Button, UID Button, and Front LED Indicators
9. Support for up to two Non-Hot Plug SATA or SAS Hard Drives
10. Two PCI express Slots (2 PCI-Express x8 connectors standard, one x8, one x4 Lanes)

Rear View:

1. Power supply cable socket
2. Mouse connector
3. USB connectors (2)
4. Serial connector
5. Expansion slot 2, PCI-e x4, low-profile, half-length
6. Expansion slot 1, PCI-e x8, Full high, Full-length (PCI-X optional)
7. UID button/LED
8. Video connector
9. DL120 G5 HP Lights Out 100c management NIC port (optional)
10. NIC Port
11. Keyboard connector

What's New

- Support for SATA Non-Hot Plug Midline Hard Drives

At a Glance

The HP ProLiant DL120 G5 Server is an entry-level rack-optimized server providing you with all confidence of a HP ProLiant server. The single processor, 1U server is ideal for single-application IT infrastructure, web and edge-of-network applications. The HP ProLiant DL120 provides two PCI-Express slots with an option to replace one PCI-Express slot with a PCI-X slot. Optional upgrades, including HP HBAs and Smart Array Controllers, provide support for SAS hard disk drives. An optional DL120G5 HP Lights Out 100c (LO100c) Remote Management Card provides cost-effective remote management from anywhere, anytime. Plus, you get the cost-effective solution of a single-processor platform with the performance advantages of dual-core or quad-core.

- Processor:
    - ○ Dual-Core Intel® Xeon® 7400 processor sequence
    - ○ Dual-Core Intel® Xeon® 5200 processor sequence
    - ○ Quad-Core Intel® Xeon® 3300 processor sequence
    - ○ Quad-Core Intel® Xeon® 3200 processor sequence

Overview

- ○ Dual-Core Intel® Xeon® 3100 processor sequence
- ○ Dual-Core Intel® Xeon® 3000 processor sequence
- ○ Dual-Core Intel® Pentium® E2160 processor
- ○ Single-Core Intel® Celeron® 440 processor
- ○ Intel® 3200 Chipset with up to 1333MHz Front Side Bus (FSB)
- **Memory**:
  - ○ Supports up to 8 GB of PC2-6400 (800 MHz) Unbuffered DDR2 ECC SDRAM Memory
  - ○ 4 DIMM sockets
- **Storage Controller**:
  - ○ Embedded SATA Controller with RAID 0/1 support
    - NOTE: Transfer Rate: 3.0 Gb/s SATA
- **Internal Drive Support**:
  - ○ Two 3.5" (Large Form Factor) SATA or SAS hard drives
    - ■ SAS drives require optional SAS Host Bus Adapter (HBA) or Smart Array Controller
  - ○ Internal storage capacity of up to 4.0TB (2 x 2TB SATA hard drives)
  - ○ Optional DVD-ROM or DVD-RW optical drive
- **Network Controller**:
  - ○ Embedded NC105i Gigabit Server Adapter
- **Expansion Slots**:
  - ○ Two total slots:
    - ■ (1) Full length PCI Express x8 slot (x8 connector)
    - ■ Can be replaced with a full-length 64-bit /133MHz PCI-X slot
    - ■ (1) Half-length, low-profile PCI Express x4 slot (x8 connector)
- **USB 2.0 Ports**:
  - ○ Up to 5 Total: (2) front; (1) internal; (2) rear accessible ports
  - ○ Internal USB port (optional) for flexible storage, security, or USB drive key deployment
- **Management**:
  - ○ Standard Lights Out 100 IPMI 2.0 reporting
  - ○ DL120G5 HP Lights Out 100c Remote Management Card (Optional)
  - ○ Front Panel status LEDs including system health and UID
- **Form Factor**:
  - ○ 1U (1.69" / 4.30 cm) Rack Mount Chassis
  - ○ 27.5" (69.85 cm) Deep
  - ○ New fixed mounting rails included with all models
- **Warranty**:
  - ○ This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. (3-1-1 warranty in AP and Brazil, excluding Japan). 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

QuickSpecs

Standard Features

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

Processor	**Single-Core Processors**
	Single-Core Intel® Celeron® processor 440 (2.00GHz, 512KB L2 cache, 800MHz FSB)
	NOTE: Available via Configure-to-order only. See Factory Integrated Models section for more details.

Cache Memory *One of the following depending on Model*	12 MB L2 Cache NOTE: For Models with Intel® Xeon® processor X3360.
	8 MB L2 Cache NOTE: For Models with Intel® Xeon® processor X3330, X3320, E3120, and E3110.
	6 MB L2 Cache NOTE: For Models with Intel® Xeon® processor E3110.
	1 MB L2 Cache NOTE: For Models with the Intel® Pentium processor E2160.
	512 KB L2 Cache NOTE: For Models with the Intel® Celeron processor 440.

Chipset	Intel® 3200 Chipset

Memory Protection	ECC

Memory *One of the following depending on Model*	Type	PC2-6400 (800MHz) Unbuffered ECC DDR2 SDRAM Interleaving optional (Enabled when DIMMs populated in pairs)
	DIMM Sockets	4
	Standard - Pentium E2160 Models	1 GB (1 x 1 GB)
	Maximum Memory	8 GB

Network Controller	Embedded NC105i Gigabit Server Adapter

QuickSpecs

HP ProLiant DL120 Generation 5 (G5)

Standard Features

Expansion Slots	Technology	Bus Width***	Connector Width	Bus Number*	Device No.**	Form Factor	Notes
1 (Standard)	PCIe	X8	x8	0	1	Full length, full height slot	This PCIe slot can be replaced with optional PCI-X slot below
2 (Standard)	PCIe	X4	x8	0	28	Low profile slot	
1 (Optional)	PCI-X (133MHz, 3.3Volt)	64-bit	N/A	0	1	Full length, full height slot	

* Default bus assignment (in decimal). 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)

*** Indicates the number of physical electrical lanes running to a PCI-e connector.

Storage Controllers

Integrated Intel® 82801IR Serial ATA Host Controller with RAID 0/1 support.
NOTE: The non-hot-plug drive option kits include a SATA cable along with the drive itself. This cable allows the drives to be connected to the embedded SATA controller. The cables are point to point.

SAS and SATA controllers available via PCI card option
NOTE: If a HBA or SAS controller is ordered for SATA RAID or SAS support, the 4 Lane SAS/SATA Host Fan Out Cable Kit (P/N 457692-B21) must also be ordered to connect the drives.

Storage

Optical Drive	Optional 12.7mm DVD-ROM, or DVD-RW Drive	
Hard Drives	Non-Hot Plug SATA /SAS Up to 2 non-hot plug SATA/SAS 3.5" drives	

NOTE: SAS requires optional HBA or SA card.

Maximum Internal Storage Type

Non-Hot Plug SATA	4.0TB	2 x 2TB SATA
Non-Hot Plug SAS	900GB	2 x 450GB SAS

Interfaces

Serial	1
USB 2.0	5 (2 front, 1 internal, 2 rear)

NOTE: Please see the following URL for additional information regarding USB support:
http://h18004.www1.hp.com/products/servers/platforms/usb-support.html

Graphics	1 (rear)
Keyboard	1
Mouse	1
Management	1 for optional LO100c
Network RJ-45	1

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Standard Features

Graphics	32MB shared supporting 1600x1200x16M resolution

Form Factor	Rack (1U), (1.69 in/4.30 cm), 27.5" deep

Remote Management	Lights-Out 100c	Lights Out LO100c is a Remote Management Card (RMC) for ProLiant 100 series servers that do not have embedded LO100i. The LO100c has all the features of the LO100i Advanced license and allows customers, or their service providers, to remotely manage ProLiant servers over a LAN or the Internet from anywhere, anytime regardless whether the server is located in the same building, across town, or around the globe. With LO100c, users can acquire complete remote control with Virtual KVM (graphical hardware-based, remote console). Users can also access the server's serial console, control system power, update system firmware and software, as well as monitor system environmental conditions. The LO100c remote management card can be accessed from a web browser or command line interface. This virtual "at-the-server" functionality means administrators stay in control of remote HP ProLiant 100 series servers. The HP Lights-Out100c consists of a management processor and firmware that provides cost-effective, entry-level lights-out functionality, basic system board management functions, and diagnostics. **NOTE:** For more information, please refer to the QuickSpecs for the LO100c found at: http://h18004.www1.hp.com/products/servers/management/remotemgmt.html
HP Insight management software	HP Insight Control server deployment	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. See www.hp.com/go/insightcontrol HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.

Industry Standard Compliance	ACPI 3.0 PCI 2.3 Compliant PXE Support WOL Support Microsoft® Logo certifications USB 2.0 IPMI 2.0

Standard Features

Intelligent Manageability	Automatic Server Recovery (ASR)
	Integrated Management Log
	Drive Parameter Tracking (with Smart Array Controllers)
	Dynamic Sector Repairing (with Smart Array Controllers)
	Pre-Failure Warranty (covers processors, SAS hard drives, and memory)
	BIOS Serial Console
	Front and Rear Unit ID (UID) button/LED

Security	Power-on password
	Keyboard password
	USB Port control
	Removable DVD-ROM Drive Assembly (optional)
	Dedicated LO100c management NIC port (optional)
	Administrator's password

Server Power Cords	North America	One 6' Highline (IEC-IEC) power cord ships standard
	Japan	One 6' Highline (IEC) power cord and one 6' Lowline power cord ship standard
	ROW	One 6' Highline (IEC) power cord ships standard

NOTE: HP ProLiant DL120 G5p server ship standard worldwide with a C13 to C14 2M Highline jumper cord. Japanese models also include a 2M Lowline power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific cord. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.

Power Supply	Auto-sensing 350-Watt PFC Power Supply, CE Mark Compliant

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.

System Fans	3 dual rotor fans ship standard. 3 dual rotor fans total supported internally.

Required Cabling	For required cabling information, refer to the Web site at: http://h10010.www1.hp.com/wwpc/us/en/sm/WF05a/15351-15351-3328412-241644-241475-3579703.html.

Standard Features

Operating Systems and Virtualization Software	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) 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/DL120G5

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 830 square inches (5,350 sq cm) 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 2.75 inches (7 cm). 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

Rack Kit	The DL120 G5 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 Kit	Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. Go to: www.hp.com/go/rackandpower for more information.

Standard Features

HP Factory Express Capabilities	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 times 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-inch 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 capitalizing 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 support solutions provides a range of support services designed to meet the varying needs of your business. Whether an SMB, or large global corporation, HP has ProLiant server support offers to help you speedily deploy and maximize system uptime.

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

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

Enhanced Service - optimize service level to increase IT performance and availability.

- **Support** - 3 Year 13x5 Same Business Day, 4-Hour response coverage only

Refer to the information on the Installation of a ProLiant on the ProLiant Data Sheet; to be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

NOTE: 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

Models

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

HP DL120 G5 E3110, 1GB, A160, SATA 533983-xx1	Processor	Intel® Pentium® processor E3110 (3.0 GHz, 6MB L2 cache, 65Watts, 1333 FSB)
	Cache Memory	4MB L2 Cache
	Memory	1 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC105i Gigabit Server Adapter
	Storage Controller	Intel 82801 IR Integrated Serial ATA Host Controller
	Hard Drives	1 x 160GB 3.5" Non-hot-plug SATA
	Internal Storage	Non-Hot Plug SAS: 900GB maximum Non-Hot Plug SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 350-Watt PFC Power Supply, CE Mark Compliant
	Form Factor	Rack (1U), (1.69 in/4.30 cm)

HP DL120 G5 X3330, 2GB, A160, SATA 533984-xx1	Processor	Intel® Pentium® processor X3330 (2.66GHz, 6MB L2 cache, 95 Watts, 1333 FSB)
	Cache Memory	6MB L2 Cache
	Memory	2 GB (2x1 GB) (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC105i Gigabit Server Adapter
	Storage Controller	Intel 82801 IR Integrated Serial ATA Host Controller
	Hard Drives	1 x 160GB 3.5" Non-hot-plug SATA
	Internal Storage	Non-Hot Plug SAS: 900GB maximum Non-Hot Plug SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 350-Watt PFC Power Supply, CE Mark Compliant
	Form Factor	Rack (1U), (1.69 in/4.30 cm)

Models

DL120 E2160 1GB A160 SATA 465475-xx1	Processor	Intel® Pentium® processor E2160 (1.80GHz, 1MB L2 cache, 800MHz FSB)
	Cache Memory	1MB L2 Cache
	Memory	1 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC105i Gigabit Server Adapter
	Storage Controller	Intel® 82801IR Integrated Serial ATA Host Controller
	Hard Drives	1 x 160GB 3.5" Non-hot-plug SATA
	Internal Storage	Non-Hot Plug SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 350-Watt PFC Power Supply, CE Mark Compliant
	Form Factor	Rack (1U), (1.69 in/4.30 cm)

Country Code Key	xx=00	North America
	xx=20	Brazil
	xx=29	Japan
	xx=37	APD (Asia excluding Japan)
	xx=42	EURO (Europe / Middle East / Africa)
	xx=AA	PRC

Configuration Information - Factory Integrated Models

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

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

Models	DL120 CTO (Configure-To-Order) Non-Hot Plug Chassis	468653-B21
	Includes:	
	Embedded NC105i Gigabit Server Adapter	
	1 full length PCI Express x8 slot (x8 lane) and 1 half length low profile PCI Express x8 slot (x4 lane)	
	Intel® 82801IR Integrated Serial ATA Host Controller	
	Rack (1U) form factor, (1.69 in/4.30 cm)	
	Fixed, mounting rails	

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

HP Processors	Intel® Celeron 440 processor (2.00GHz, 512KB L2 cache, 800MHz FSB), FIO Kit	468963-L22
	Intel® Pentium E2160 processor (1.80GHz, 1MB L2 cache, 800MHz FSB), FIO Kit	455035-L22
	Intel® Xeon® E3110 processor (3.0GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB), FIO Kit	463436-L22
	Intel® Xeon® processor E3120 processor (3.16 GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB), FIO Kit	493241-L22
	Intel® Xeon® X3360 processor (2.83GHz, 12MB L2 cache, 95 Watts, 1333MHz Front Side Bus FSB), FIO Kit	493245-L22
	Intel® Xeon® X3330 processor (2.66 GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB), FIO Kit	493243-L22
	Intel® Xeon® processor X3220 (2.40GHz, 8MB L2 cache, 1066MHz FSB)	533995-L22
	Intel® Xeon® X3210 processor (2.13GHz, 8MB L2 Cache, 95 Watts, 1066MHz FSB), FIO Kit	455031-L22
	Intel® Xeon® processor E5200 (2.50 GHz, 2MB L2 cache, xx65Watts, 800MHz Front Side Bus FSB, 2M)	533991-L22
	Intel® Xeon® processor E7400 (2.80 GHz, 3MB L2 cache, 65Watts, 1066MHz Front Side Bus FSB, 3M)	533993-L22
HP Memory	HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450260-B21
	HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450259-B21
HP Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	

Configuration Information - Factory Integrated Models

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 1yr Warranty Hard Drive	507774-B21
HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	462595-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458939-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 1yr Warranty Hard Drive	571232-B21
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	458947-B21

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

HP 450GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	454234-B21
HP 300GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417950-B21
HP 146GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417855-B21

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

HP Storage Controllers

SAS Controllers (Required if NHP SAS Hard Drive selected in Step 2)

HP Internal SAS/SATA 4-Port Cable NOTE: This cable option kit is automatically included in any CTO configuration when a HBA or SAS controller is selected.	457692-B21
HP Smart Array E200/128 BBWC Controller	411508-B21
HP Smart Array P800/512 MB BBWC Controller	381513-B21

SAS HBA

HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 3.0 Gb/s SATA, 3 Gb/s SAS.	416096-B21
HP SC40Ge Host Bus Adapter, FIO NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.	449363-B21

Step 4: Choose Additional Factory Integratable Options

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

Core Options

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

HP Unique Options	DL120 G5 HP Lights Out 100c Kit	469085-B21
	NOTE: This remote management card supports the DL120 G5 server only.	

HP Memory	HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450260-B21
	HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450259-B21

HP Optical Drives	HP Slim 12.7mm SATA DVD-ROM Optical Kit	481041-B21
	HP Slim 12.7mm SATA DVD-RW Optical Kit	481043-B21

HP Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SATA Non-Hot Plug 3.5" Midline (MDL) Drives	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507774-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
	HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	462595-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458939-B21
	SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives	
	HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	458947-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide)	
	SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
	HP 450GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	454234-B21
	HP 300GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417950-B21
	HP 146GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417855-B21

QuickSpecs

Core Options

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

HP Networking	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	NOTE: Does not support Windows 2000.	
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	NOTE: Does not support Windows 2000.	
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	
HP I/O Expansion Options	PCI-X Riser Board	450341-B21

Additional Options

HP Entry-Level Server Management	DL120 G5 HP Lights Out 100c Kit	469085-B21
	NOTE: This remote management card supports the DL120 G5 server only.	

HP Insight software	**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 Storage Controllers	**SAS Controllers**	
	Smart Array E200 Controller	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	Smart Array E500 Controller	
	HP Smart Array E500/256MB Controller	435129-B21
	Smart Array P800 Controller	
	HP Smart Array P800/512MB BBWC Controller	381513-B21
	Optional Upgrades	
	128-MB BBWC (Battery-Backed Write Cache) Enabler	351580-B21
	NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, and Smart Array 642 Controller.	
	HP Internal SAS/SATA 4-Port Cable	457692-B21
	NOTE: The purchase of any HBA or HP Smart Array Controller requires the purchase of the 4 Lane SAS/SATA host fan out Cable Kit.	
	Battery-backed write cache upgrade	383280-B21
	NOTE: Battery only.	
	512MB Battery-backed cache upgrade	405148-B21
	HP SA-P400 and SA-E500 24 In Battery Cable Kit	417836-B21
	NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the server if a Smart Array E500 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.	

Additional Options

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12460_div/12460_div.html (Smart Array E200 Controller)
http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html (Smart Array E500 Controller)

SAS HBA

NOTE: The purchase of any HBA or HP Smart Array Controller requires the purchase of the 4 Lane SAS/SATA host fan out Cable Kit. (P/N 457692-B21)

HP SC44Ge Host Bus Adapter	416096-B21

NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 3.0 Gb/s SATA, 3 Gb/s SAS.
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA)

SCSI Controllers
NOTE: The HP ProLiant DL320 G5p PCI-X Riser Board Option Kit (P/N 450341-B21) is required for all PCI -X Controllers. This option is compatible with the DL120 G5.

SCSI HBA

HP SC11Xe Host Bus Adapter	412911-B21

NOTE: Recommended HBA for SCSI tape drive connect.

HP Internal SAS/SATA 4-Port Cable	457692-B21

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)

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

QuickSpecs

Additional Options

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

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 **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.	EJ001B
HP StorageWorks D2D2504i Backup System **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.	EJ002B

USB Removable Media RDX Disk Backup Systems

HP StorageWorks RDX320 Internal Removable Disk Backup System **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.	AJ767A

Additional Options

	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

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

Emulex Fibre Channel HBAs

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

QLogic Fibre Channel HBAs

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

StorageWorks Converged Network Adapter

HP CN1000E 2P Converged Network Adapter	AW520A

HP Uninterruptible Power Systems

HP Rack-mountable UPS

HP UPS R1500 G2

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

HP R/T3000 Uninterruptible Power System (UPS)

HP R/T3000 UPS, High voltage, NA/JPN	AF453A
HP R/T3000 UPS, High voltage, detachable inlet cord INTL	AF454A

NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13417_div/13417_div.html (Worldwide)

HP Rack-Mountable R5500 UPS

HP R5500 VA UPS, INTL	AF416A
HP R5500 VA UPS, NA/JPN	AF426A

Additional Options

NOTE: Please see QuickSpecs Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html
(Worldwide)
NOTE: For additional information on sizing your server, please reference:
http://www.upssizer.com

HP Power Distribution Units		
	HP Monitored Power Distribution Unit: Full Rack Version	
	HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A (NA/JPN)	AF504A
	HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A (NA/JPN)	AF506A
	HP 11 kVA S1316 Monitored PDU- single input, 3Ø, 16A (INTL)	AF508A
	HP 7.3 kVA S1132 Monitored PDU- single input, 1Ø, 32A (INTL)	AF510A
	HP Monitored Power Distribution Unit: Half Rack Version	
	HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A (NA/JPN)	AF914A
	HP 7.3 kVA S132 Monitored PDU- single input, 1Ø, 32A (INTL)	AF915A

Modular Power Distribution Units 1U/0U (Up to 32 outlets)
NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).

HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) (NA, Japan) — 252663-D71
NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.

Modular Power Distribution Units 1U/0U (Up to 32 outlets)

HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan) — 252663-D72

8.3 kVA Modular PDU, 40A — 252663-D73

HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l) — 252663-B31

HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW) — 252663-B24
NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

NOTE: Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords:
http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.html
(Worldwide)
NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu.

Additional Options

HP Rack Series	**HP Rack 10000 G2 Series** (Graphite Metallic)	
	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A

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 Rack Options	**HP KVM Switch Options**	
	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
	HP Serial Console Server Options	
	Server console switch 0x2x8	AF616A
	Server console switch 0x2x16	AF617A

NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

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	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B

HP Care Pack Services	**Hardware Services On-site Service**	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UJ252E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UJ253E
	Hardware Services Next Business Day On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	UJ251E
	Installation & Start-up Services	
	Hardware Services 6-Hour Call to Repair On-Site Service	UJ254E
	Hardware Installation, Electronic	UJ261E

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

Memory

HP ProLiant DL120 G5

Standard Memory
NOTE: One of the following depending on model:
1 GB installed (1 x 1 GB SDRAM DIMM) on Dual-Core (E2160) model.

Standard Memory Plus Optional Memory
Up to 8 GB memory is available with the optional installation of PC2-6400 ECC DDR2 SDRAM Memory kits.
NOTE: The chart below does not represent all possible configurations. For best performance, HP recommends dual-bank interleaved mode configurations. For dual-bank interleaved mode, DIMMs must be installed in both banks with equal bank capacities.

Memory		Slot				
		DIMM_CH1_C	DIMM_CH1_A	DIMM_CH2_D	DIMM_CH2_B	Mode
Optional	512 MB	Empty	512 MB	Empty	Empty	Single-bank
Standard	1 GB	Empty	1 GB	Empty	Empty	Single-bank
Optional	1 GB	Empty	512 MB	Empty	512 MB	Dual-bank interleaved
Standard	2 GB	Empty	1 GB	Empty	1 GB	Dual-bank interleaved
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB	Dual-bank interleaved

Following are memory options available from HP:

HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit   450260-B21

HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit   450259-B21

Storage
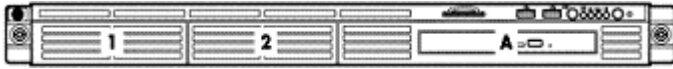
1- 2   Two SATA or SAS drive bays

A   Optical Drive Bay: Optional DVD-ROM, or DVD-RW drive

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
12.7mm IDE DVD-ROM or DVD-RW Drive	Up to 1	A	HP embedded SATA Controller NOTE: Transfer Rate: 1.5 Gb/s SATA

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

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

	Quantity Supported	Position Supported	Controller
400GB 3G SAS 10K DP 450GB 3G SAS 15K DP 300GB 3G SAS 15K DP 300GB 3G SAS 15K SP 146GB 3G SAS 15K DP 146GB 3G SAS 15K SP 72GB 3G SAS 15K SP	Up to 2	1-2	HP 4 Internal Port SAS HBA SC40Ge with RAID (0,1, 1+0) NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required NOTE: Transfer Rate: 1.5 Gb/s SATA, 3Gb/s SAS

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

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K 1TB 3G SATA 7.2K 750GB 3G SATA 7.2K 500GB 3G SATA 7.2K 250GB 3G SATA 7.2K	Up to 2	1-2	6 Port SATA controller with Embedded RAID NOTE: Transfer Rate: 1.5 Gb/s SATA

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

	Quantity Supported	Position Supported	Controller
250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K	Up to 2	1-2	6 Port SATA controller with Embedded RAID NOTE: Transfer Rate: 1.5 Gb/s SATA

Storage

Maximum Storage Capacity – (SAS drives)

Internal	900GB (2 x 450GB SAS)
External	6.30TB (1 x (14 x 450GB SAS))
Total	7.20TB

NOTE: The External capacity section relates to the HP StorageWorks 20 Modular Smart Array.

Maximum Storage Capacity – (SATA Drives)

Internal	4TB (2 x 2TB SATA)
External	24TB [1 x (12 x 2TB SATA)]
Total	28TB

NOTE: In order to implement integrated SATA RAID with Support CD on Windows 2000/2003, the use of a floppy drive is necessary.

NOTE: The External capacity section relates to the HP StorageWorks 20 Modular Smart Array.

Tape and Disk-Based 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 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 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 DAT 160	External	HP SC44Ge SAS Host Bus Adapter Please check the full compatibility information at:	416096-B21

Storage

DAT 320		http://www.hp.com/go/connect	
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			
HP StorageWorks SCSI Tape Autoloaders	External	HP SC11Xe Host Bus Adapter	412911-B21
DAT 72x10 Autoloader		Please check the full compatibility information at:	
1/8 G2 Autoloader		http://www.hp.com/go/connect	
HP StorageWorks SCSI Tape Libraries	External	HP U320e SCSI Dual Channel Controller	AH627A
MSL2024		Please check the full compatibility information at:	
MSL4048		http://www.hp.com/go/connect	
MSL8096			
MSL6000			
HP StorageWorks SAS Tape Autoloaders and Libraries	External	HP SC44Ge SAS Host Bus Adapter	416096-B21
1/8 G2 Autoloader		Please check the full compatibility information at:	
MSL2024		http://www.hp.com/go/connect	
MSL4048			
MSL8096			
HP StorageWorks Fibre Channel Tape Libraries	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.	
MSL2024			
MSL4048			
MSL8096			
MSL6000			
HP StorageWorks USB RDX Removable Disk Backup Systems	External	USB 2.0 port	N/A
RDX160			
RDX320			
RDX500			
RDX750			
HP StorageWorks D2D Backup Systems, iSCSI	External	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
D2D2500i			
D2D4000i			

Storage

| HP StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc | External | Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect |

QuickSpecs

Technical Specifications

			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	
		LWAd	6.26 B
		LpAm	43.8 dBA
		Operating	
		LWAd	6.28 B
		LpAm	44.5 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.

Power Supply	Input voltage specifications	Rated input voltage	100 VAC to 240 VAC
	Input Specifications	Rated input line	90 VAC to 264VAC
		Frequency range	47 to 63 Hz
		Rated input power	@ 115V input, Rated input power = 500W (assume output wattage=350W) @ 230V input, Rated input power = 500W (assume output wattage=350W)
		Rated input current	6 A, 3 A (110 V, 220 V)
		Steady state power	350W (rated)
	BTU Rating	1710 BTU/hr	
	Ambient temperature range	Operating	50° to 118° F (10° to 48° C)
		Non-operating	-40° to 158° F (-40° to 70° C)
	Relative humidity (non-condensing)	Operating	55% to 85%
		Non-operating	5% to 95%
	Dielectric voltage withstand	Input to output	
		Input to ground	
	Maximum Wet Bulb Temperature	106.3° F (41.3° C)	

QuickSpecs

Technical Specifications

Integrated Serial ATA Controller	Simultaneous drive transfer channels	4 channels
	Transfer rate synchronous (maximum theoretical)	150 MB/s per channel; 300 MB/s in RAID 0 pair
	Data transfer method	Intel® 82801IR Integrated Serial ATA Host Controller (non-RAID mode) Intel® 82801IR Integrated Serial ATA Host Controller (RAID Mode)
	Drive support	Serial ATA
	Data transfer modes	Legacy Mode Combined Mode
	Protocol	Serial ATA
	Feature	NCQ (Native Command Queuing); AHCI (Advanced Host Controller Interface)
	RAID levels supported	0, 1
	RAID Features	Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support **NOTE:** This controller does not support Hot Plug functions or LED functions.
	RAID OS Support	Microsoft Windows Server 2003 **NOTE:** In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux)

Embedded NC105i PCIe Gigabit Server Adapter	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
		Combines a triple-speed IEEE 802.3TM - Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	Four lane (x4), 100MHz PCI Express Reference Clock	
	Controller	BCM5722	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	RJ-45 connector	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

Technical Specifications

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.