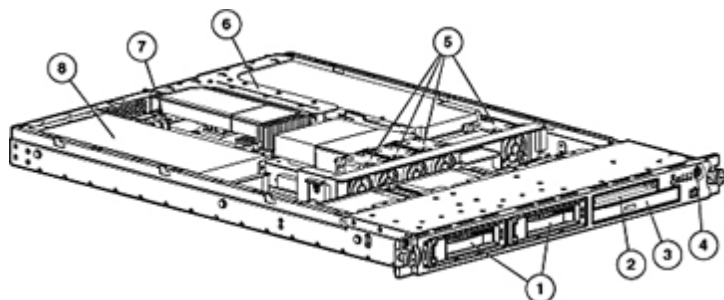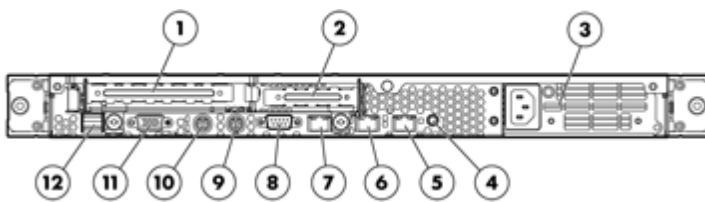*Overview*

Front View:

1. Support for up to two Hot Plug or Non Hot Plug SATA or SAS Hard Drives
2. Optional Floppy Drive Assembly Option Kit or Optional Front Video Connector
3. Optional CD-ROM, DVD-ROM, or DVD-RW Drive
4. Power Button, UID Button, and Front LED Indicators
5. Non Hot Plug Dual Rotor Fans with N+1 Redundancy
6. Two PCI Slots (2 PCI-Express x8 connectors standard)
7. Four PC2-5300 ECC DDR2 Memory Slots
8. Power Supply (420 Watt)

Rear View:

1. PCI Express expansion slot 2, (optional PCI-X, full-length)
2. PCI Express expansion slot 1, low-profile, half-length
3. Power supply
4. UID button/LED
5. NIC 2 Port
6. NIC 1 Port
7. Integrated Lights-Out 2 (iLO 2) management port
8. Serial connector
9. Keyboard connector
10. Mouse connector
11. Video connector
12. USB connectors (2)

What's New

- Dual-Core Intel Pentium D processor 925 is now available as a Configure-To-Order (CTO) option.

At a Glance

- **Processor:**
  - Dual-Core Intel® Xeon® 3000 processor sequence, or
  - Dual-Core Pentium D 800 or 900 series processor, or
  - Single core Pentium 4 600 series processor, or
  - Single core Celeron D processor
  - Intel 3000 Chipset with up to 1066MHz Front Side Bus (FSB)
- **Memory:**
  - Supports up to 8 GB of PC2-5300 (667 MHz) Unbuffered DDR2 ECC SDRAM Memory
  - 4 DIMM sockets
- **Storage Controller:**
  - 2 Port SATA Controller with RAID 0/1 support
- **Internal Drive Support:**
  - Up to two 3.5" (Large Form Factor) SATA or SAS hard drives
    - SAS drives require optional SAS Host Bus Adapter (HBA)
    - Optional hot plug hard drive configuration
  - Internal storage capacity of up to 1.5TB (2 x 750GB SATA hard drives)

Overview

- o Optional CD, DVD, or DVD-RW drive
- o Optional Floppy Drive Assembly Option Kit
- **Network Controller**:
  - o Embedded NC324i PCI Express Dual Port Gigabit Server Adapter
- **Expansion Slots**:
  - o Two total slots:
  - o (1) Full length PCI Express x8 slot (x8 connector)
    - Can be replaced with a full-length 64-bit /133MHz PCI-X slot
  - o (1) Half-length, low-profile PCI Express x1 slot (x8 connector)
- **USB 2.0 Ports**:
  - o 4 Total: (1) front; (1) internal; (2) rear accessible ports
  - o Internal USB port for flexible storage, security, or USB drive key deployment
- **Redundancy**:
  - o 4 dual rotor internal fans with N+1 redundancy
- **Management**:
  - o Integrated Lights-Out 2 featuring Integrated Remote Console with KVM over IP performance over shared network access
  - o HP ProLiant Essentials Foundation Pack, including HP Systems Insight Manager, SmartStart, Rapid Deployment Pack
  - o Front Panel status LEDs including system health and UID
- **Form Factor**:
  - o 1U (1.70" / 4.32 cm) Rack Mount Chassis
  - o 24.0" (60.96 cm) Deep
  - o Spring-loaded universal sliding rails included with all models
- **Warranty**:
  - o Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty (three year parts, one year labor, one year on-site support). Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SAS hard drives. SATA hard drives have a one-year warranty.

Standard Features

Processor One of the following depending on Model	Dual-Core Intel Xeon processor 3070 (2.67 GHz, 4MB L2 Cache, 65 Watts, 1066MHz Front Side Bus (FSB)) Dual-Core Intel Xeon processor 3060 (2.40 GHz, 4MB L2 Cache, 65 Watts, 1066MHz FSB) Dual-Core Intel Xeon processor 3050 (2.13 GHz, 2MB L2 Cache, 65 Watts, 1066MHz FSB) Dual-Core Intel Xeon processor 3040 (1.86 GHz, 2MB L2 Cache, 65 Watts, 1066MHz FSB) Dual-Core Intel Pentium D processor 925 (3.0GHz, 2x2MB L2 Cache, 95 Watts, 800MHz FSB) Dual-Core Intel Pentium D processor 820 (2.8 GHz, 2x1MB L2 Cache, 95 Watts, 800MHz FSB) Single-Core Intel Pentium 4 processor 651 (3.4 GHz, 2MB L2 Cache, 86 Watts, 800MHz FSB) Intel Celeron D processor 352 (3.2GHz, 512KB L2 Cache, 86 Watts, 533MHz FSB)

Cache Memory One of the following depending on Model	4MB L2 Cache NOTE: For Models with Intel Xeon processor 3060 and 3070 2MB L2 Cache NOTE: For Models with the Intel Xeon processor 3040 and 3050 2x2MB L2 Cache NOTE: For Models with the Intel Pentium-D processor 925 2x1MB L2 Cache NOTE: For Models with the Intel Pentium-D processor 820 2MB L2 Cache NOTE: For Models with the Intel Pentium-4 processor 651 512KB L2 Cache NOTE: For Models with the Intel Celeron-D processor 352

Chipset	Intel 3000 Chipset

Memory Protection	Advanced ECC

Memory One of the following depending on Model	Type	PC2-5300 (667MHz) Unbuffered ECC DDR2 SDRAM Interleaving optional (Enabled when DIMMs populated in pairs)
	DIMM Sockets	4
	Standard – Celeron D Model	512 MB (1 x 512 MB)
	Standard – Xeon Models	1 GB (1 x 1 GB)
	Maximum Memory	8 GB

Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter

QuickSpecs

Standard Features

Expansion Slots	Slot Number	Bus Speed	Height	Hot Plug	PCI Voltage
PCI-Express Non Hot-Plug Riser (Standard)	2	PCI Express x8 (x8 connector)	Full	no	
	1	PCI Express x1 (x8 connector)	Half	no	
PCI-X Non Hot-Plug Riser (Optional)	2	64-bit/133 MHz PCI-X	Full	no	3.3 Volt
	1	PCI Express x1 (x8 connector)	Half	no	

Storage Controllers	Integrated Intel 82801GR Serial ATA Host Controller with RAID 0/1 support. Hot Plug SAS and SATA controllers available via PCI card option.

Storage	Diskette Drive	Optional Floppy Drive Assembly Option Kit is available
	Optical Drive	Optional CD-ROM, DVD-ROM, & DVD-RW option kits available
	Hard Drives One of the following depending on Model	Hard Drives – Non Hot Plug SATA — Up to 2 non-hot plug SATA 3.5" drives
		Hard Drives – Hot Plug SATA/SAS — Up to 2 hot plug SATA or SAS 3.5" drives **NOTE:** Requires optional PCI card.

Maximum Internal Storage Type	SATA	1.5TB	2 x 750GB SATA
	SAS	600GB	2 x 300GB SAS

Interfaces	Serial	1
	USB 2.0	4 (1 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) (Optional second video connector in front)
	Keyboard	1
	Mouse	1
	Network RJ-45	2
	iLO 2 remote management port	1

Graphics	Integrated ATI ES1000 Video Controller with 16 MB SDRAM Video Memory

Form Factor	Rack (1U), (1.70 in/4.45 cm), 24.0" deep

Standard Features

| ProLiant Essentials Foundation Pack Software | HP Systems Insight Manager | HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.

Through a single management view, HP SIM provides core management services that include device discovery and identification, event views, health monitoring, inventory data collection, software version control and reporting. HP SIM is built on industry standards and is extensible with value-added ProLiant Essentials, Integrity Essentials and Storage Essentials software to meet individual management needs. For more details on HP SIM visit http://www.hp.com/go/hpsim.

HP SIM provides organizations with the following benefits:

- Simplifies and consolidates infrastructure lifecycle management using task and query based functionality
- Provides the foundation for infrastructure automation and virtualization
- Enables IT management based on business processes not hardware platforms
- Lowers infrastructure maintenance cost and frees resources for innovation
- Maximizes resource utilization with virtualization technologies
- Provides a central point of integration between infrastructure and Enterprise management tools such as HP OpenView |

| | SmartStart | SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/smartstart. SmartStart version supported (minimum): SmartStart 7.51. |

| | Insight Management Agents | Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers,

Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at http://www.hp.com/servers/manage. |

| | Subscriber's Choice | Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis. |

| | ROMPaq, support software, and configuration utilities | The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options available in SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at http://www.hp.com/servers/smartstart. |

Standard Features

Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.
Optional ProLiant Essentials Value Packs	Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the ProLiant Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP disc includes 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and is available for purchase with HP servers. For more information, visit: http://www.hp.com/servers/rdp.
- Workload Management Pack – provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.
- Performance Management Pack – a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
- Intelligent Networking Pack – detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus.
- Vulnerability and Patch Management Pack – identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.
- Virtual Machine Management Pack – provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
- Server Migration Pack – The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V)

Optional Remote Management Packs

- Integrated Lights-Out Advanced Pack - upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM remote graphical console, enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication).

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.
NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials

Standard Features

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

NOTE: iLO 2 management processor monitors fans, temperature sensors, power supply sensors and Vrms without having the System Management Driver loaded. In addition to reporting sensor status from all iLO 2 interfaces, the management processor also reports sensor status to the operating system through an IPMI 2.0 specified interface.

Remote Management   Integrated Lights Out 2 (iLO2) Standard Management:

- Virtual Text Remote Console (pre-OS only)
- Remote Serial Console
- Virtual Power Button Control
- Virtual Unit ID control
- Integrated Remote Console
- Dedicated & full function shared network connectivity
- Embedded system health
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- OS independent hardware health status
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege

Intelligent Manageability   Automatic Server Recovery (ASR)
iLO 2 Advanced Pack (optional)
HP Systems Insight Manager
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
Diskette drive control
Diskette boot control
USB Port control
Removable CD-ROM/Diskette Drive Assembly
Administrator's password

Standard Features

Server Power Cords	One 6' Highline (IEC-IEC) power cord ships standard
	NOTE: HP ProLiant DL320 G5 servers hip standard worldwide with a C13 to C14 2M Highline jumper 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 420-Watt PFC Power Supply, CE Mark Compliant
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.
System Fans	4 dual rotor fans ship standard. 4 dual rotor fans total supported internally. N+1 Redundancy (1 rotor only).
Ultra Thin Rack Deployment Overview	For the Ultra Thin Rack Deployment Overview, including best practices for the HP ProLiant DL320 G5, please see the following URL: http://www.hp.com/products/servers/ProLiantdl320/.
Required Cabling	For required cabling information, refer to the Web site at: http://www.hp.com/products/servers/ProLiantdl320/.
OS Support	Windows Server 2003 (web, standard, and enterprise editions; standard and enterprise editions for 64-bit extensions) Red Hat Enterprise Linux SUSE Linux Enterprise Server
	NOTE: Support differences will exist between the SATA and SAS configurations. **NOTE:** For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: http://www.hp.com/go/supportos. **NOTE:** For an up-to-date listing of the latest drivers available for the HP ProLiant DL320, please see: http://h18023.www1.hp.com/support/files/server/us/index.html. **NOTE:** For more Linux OS support & certification information, please visit our the ProLiant & BladeSystem Server Linux matrix http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html **NOTE:** For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html

Standard Features

Rack Airflow Requirements	**Rack 10000 series Cabinets** The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 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: http://h18004.www1.hp.com/products/servers/proliantdl320/index.html.

Rack Kit	The HP ProLiant DL320 quick deploy rail system provides tool-free support for racks with square or round mounting holes (including Compaq/HP 7000*, 9000, 10000 and HP series) with an adjustment range to fit a rack depth of 21.25" to 37.75".
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 MSA1000, 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 ProLiant Smart Buys	The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options. **NOTE:** For detailed specification information on ProLiant Smart Buys please click on the following link: ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf

Standard Features

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. 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. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

NOTE: Server Warranty includes 3 year Parts, 1 year Labor, 1-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

HP Care Pack services include coverage for the HP branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as 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, 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.

HP services provide continuous care and support expertise with committed response designed to meet your IT and business needs.

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 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.

Extended Care – Minimum recommended service support offer designed to ensure customers have access to expert assistance, whenever they need it.

- *4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Committed Care – Cost-effective service options designed to extend HP Services committed response and guaranteed fix times, designed to speed problem resolution.

- *6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Committed Response – Highest HP Support service level recommend to help increase IT performance and availability with comprehensive, consistent hardware and software services

- *Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays*

Deployment Services – HP Installation and Start Up services designed to take time, risk, and worry out of the deployment of ProLiant servers – and free customers people to focus on what they do best, their business.

- *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.*

NOTE: For a complete listing of service offerings and information visit:
http://www.hp.com/services/proliantservices
http://www.hp.com/go/proliant/carepack

Models

DL320 G5 C352 / 512MB 418043-001	Processor	Intel Celeron D processor 352 with EM64T (3.2 GHz, 86 Watts, 533MHz FSB)
	Cache Memory	512KB L2 Cache
	Chipset	Intel 3000 chipset
	Memory	512 MB (Standard) to 8 GB (Maximum) of Advanced ECC PC2-5300 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	None ship standard
	Maximum Internal Storage	1.5TB with SATA drives, 600GB with SAS drives (SAS requires optional PCI controller)
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

DL320 G5 X3050 / 1GB / 80GB SATA HDD 418044-001	Processor(s)	Dual-Core Intel Xeon 3050 processor (2.13 GHz, 65 Watts,1066MHz FSB)
	Cache Memory	2MB L2 Cache
	Chipset	Intel 3000 chipset
	Memory	1 GB (Standard) to 8 GB (Maximum) of Advanced ECC PC2-5300 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD
	Maximum Internal Storage	1.5TB with SATA drives, 600GB with SAS drives (SAS requires optional PCI controller)
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

Models

DL320 G5 X3060 / 1GB 418045-001	Processor(s)	Dual-Core Intel Xeon 3060 processor (2.4 GHz, 65 Watts,1066MHz FSB)
	Cache Memory	4MB L2 Cache
	Chipset	Intel 3000 chipset
	Memory	1 GB (Standard) to 8 GB (Maximum) of Advanced ECC PC2-5300 UB DDR2 SDRAM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	None
	Maximum Internal Storage	1.5TB with SATA drives, 600GB with SAS drives (SAS requires optional PCI controller)
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

DL320 G5 X3060 / 1GB / 160GB SATA HDD 418046-001	Processor(s)	Dual-Core Intel Xeon 3060 processor (2.4 GHz, 65 Watts,1066MHz FSB)
	Cache Memory	4MB L2 Cache
	Chipset	Intel 3000 chipset
	Memory	1 GB Standard to 8 GB (Maximum) of Advanced ECC PC2-5300 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD
	Maximum Internal Storage	1.5TB with SATA drives, 600GB with SAS drives (SAS requires optional PCI controller)
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

Configuration Information - Factory Integrated Models

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: This product offering does not support HP Factory Express Server Configuration Level 1.
NOTE: FIO indicates that this option only available as a Factory Installable Option.
NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

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

Models	DL320G5 CTO (Configure-To-Order) Chassis	419405-B21

Includes:
Embedded NC324i PCI Express Dual Port Gigabit server adapter
1 full length PCI Express x8 slot and 1 half length low profile PCI Express x8 slot
Integrated Lights-Out 2 (iLO 2) embedded
Intel® 82801GR Integrated Serial ATA Host Controller
Rack (1U) form factor, (1.70 in/4.45 cm)
Spring-loaded universal sliding rack rails

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

Processors	Intel Celeron-D 352 processor FIO Kit	419402-L21
	Dual-Core Intel Pentium-D 925 Processor FIO Kit	441909-L21
	Dual-Core Intel Xeon 3070 processor FIO Kit	441633-L21
	Dual-Core Intel Xeon 3060 processor FIO Kit	419398-L21
	Dual-Core Intel Xeon 3050 processor FIO Kit	419400-L21
	Dual-Core Intel Xeon 3040 processor FIO Kit	433928-L21
	Single core Intel Pentium-4 651 processor FIO Kit	433930-L21
	Dual-Core Intel Pentium-D 820 processor FIO Kit	433929-L21
Memory	2 GB Unbuffered PC2-5300 ECC DIMM (1 x 2 GB)	432806-B21
	1 GB Unbuffered PC2-5300 ECC DIMM (1 x 1 GB)	432804-B21
	512 MB Unbuffered PC2-5300 ECC DIMM (1 x 512 MB)	432803-B21

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

SCSI Controllers	HP Smart Array 6402/512 FIO Cntrlr	441508-B21
	Smart Array 6402/128 Controller	273915-B21
	Smart Array 642 Controller	291967-B21

Options

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

ProLiant DL320 G5 Unique Options	DL320 G5 PCI-X Option Kit NOTE: The DL320 G5 ships standard with a riser board assembly that has two connectors:	419557-B21

- Full-length PCI Express connector (x8 connector, x8 bus speed)
- Half-length PCI Express connector (x8 connector, x1 bus speed)

The DL320 G5 PCI-X Option Kit replaces the Full-Length PCI Express connector with a full-length 64-bit / 133MHz PCI-X connector.

ProLiant Essentials Value Pack Software	**ProLiant Essentials Intelligent Networking Pack**	
	ProLiant Essentials Intelligent Networking Pack, Windows Edition, Single Server License NOTE: For use with a single server. Contains one license with a unique license activation key and documentation. NOTE: For additional ProLiant Intelligent Networking Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_na/12062_na.HTML	436225-B21
	ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License NOTE: For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12327_na/12327_na.HTML	436229-B21
	ProLiant Essentials Performance Management Pack	
	ProLiant Essentials Performance Management Pack, Single-Server License NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation. NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp. NOTE: For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11925_na/11925_na.HTML	306696-B21
	ProLiant Essentials Rapid Deployment Pack Windows Edition	
	Rapid Deployment Pack, Single-Server License NOTE: This license allows 1 server to be deployed and managed via RDP.	267196-B21
	HP ProLiant Essentials Rapid Deployment Pack - Windows Edition 3.50 MEDIA ONLY FLATPACK NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_na/11053_na.HTML	434559-B21
	ProLiant Essentials Workload Management Pack	
	ProLiant Essentials Workload Management Pack, Single Server License NOTE: For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11452_na/11452_na.HTML	303284-B21
	ProLiant Essentials Vulnerability and Patch Management Pack	
	ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	371645-B21

NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12111_na/12111_na.HTML

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Remote Management	**Integrated Lights-Out Advanced Pack**	
	Integrated Lights-Out Advanced Pack, 1 server License	263825-B21
	Featuring: sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites.	
	Integrated Lights-Out Select Pack	
	Integrated Lights-Out Select Pack, 1 server License	413119-B21
	Featuring: sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers in text console environments.	
	HP Integrated Lights-Out (iLO) Power Management Pack	
	HP iLO Power Management Pack, No Media Single-Server License	436210-B21
	NOTE: This option kit includes 1 license for iLO Advanced and Insight Power Manager.	
	NOTE: For additional Integrated Lights-Out Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12326_na/12326_na.HTML	
	HP Insight Control Environment	
	HP Insight Control Environment, No Media 1 License	436214-B21
	NOTE: For additional Insight Control Environment License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.HTML	
Memory (DIMMs)	2 GB Unbuffered PC2-5300 ECC DIMM (1 x 2 GB)	432806-B21
	1 GB Unbuffered PC2-5300 ECC DIMM (1 x 1 GB)	432804-B21
	512 MB Unbuffered PC2-5300 ECC DIMM (1 x 512 MB)	432803-B21
Floppy Drive Bay Options	Floppy Drive Assembly Option Kit	372702-B21
	DL320 G5 Front VGA Connector	419559-B21
	NOTE: The Front VGA Connector is installed in the floppy drive bay. You cannot install both a Floppy Drive and a Front VGA Connector.	
Optical Drive Bay Options	DVD+/-RW Drive Assembly Option Kit	395498-B21
	DVD-ROM Drive Assembly Option Kit	374303-B21
	CD ROM Drive Option Assembly Option Kit	372703-B21

Options

Hard Drives	**Serial Attached SCSI - SAS**	
	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
	HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21
	HP 36GB 3G SAS 15K 3.5" SP HDD	375868-B21

NOTE: Serial Attached SCSI - SAS Hard Drives are only supported with optional SAS HBA or RAID cards.
NOTE: Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:
http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.HTML

	Serial ATA (SATA)	
	HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
	HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
	HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
	HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
	HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21

NOTE: Serial ATA hot-plug capability and drive LEDs are not supported by the DL320 G5 embedded SATA storage controller.
NOTE: SATA drives have a 1 year warranty. Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:
http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.HTML

Storage Controllers	**SAS Controllers**	
	Smart Array E200 Controller	

NOTE: The HP Smart Array E200 Controllers require the purchase of the DL320 SAS/SATA Hot Plug Cable option kit (398307-B21).

	HP Smart Array E200/128 BBWC Controller	411508-B21
	128-MB BBWC (Battery-Backed Write Cache) Enabler	351580-B21

NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.

Smart Array E500 Controller

	HP Smart Array E500/256MB Controller	435129-B21

Smart Array P400 Controller
NOTE: The HP Smart Array P400 Controllers require the purchase of the DL320 SAS/SATA Hot Plug Cable option kit (398307-B21).

	HP Smart Array P400/256MB Controller	405132-B21
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	Smart Array P400 Battery Attach 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 P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.

	Battery-backed write cache upgrade	383280-B21

NOTE: For Smart Array P400 Controller only.

512MB Battery-backed cache upgrade 405148-B21
NOTE: For Smart Array P400 Controller only.

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12460_na/12460_na.HTML
(Smart Array E200 Controller)
http://h18000.www1.hp.com/products/quickspecs/12700_na/12700_na.HTML
(Smart Array E500 Controller)
http://h18000.www1.hp.com/products/quickspecs/12400_na/12400_na.HTML
(Smart Array P400 Controller)

SAS HBA

HP SC44Ge Host Bus Adapter 416096-B21

HP 8 Internal Port SAS HBA with RAID 347786-B21
NOTE: The HP SC44G3 HBA and HP 8 Internal Port SAS HBA with RAID requires the purchase of the DL320 SAS/SATA Hot Plug Cable option kit (398307-B21).

HP SATA/SAS 1U Cable Kit 398307-B21
NOTE: This option is required any internal port HBA or controller that has a standard 4 port SAS/SATA connector.

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html
(SC44Ge HBA)
http://h18000.www1.hp.com/products/quickspecs/12332_na/12332_na.HTML
(8 Internal Port SAS HBA)

SCSI Controllers
NOTE: The HP ProLiant DL320 G5 PCI-X Option Kit is required for all PCI -X Controllers.

Smart Array 6402/128 Controller 273915-B21
NOTE: For External drive support only

Smart Array 642 Controller 291967-B21
NOTE: For External drive support only

128-MB BBWC (Battery-Backed Write Cache) Enabler 351580-B21
NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.

64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 374654-B21
NOTE: For External drive support only

SCSI HBA

HP SC11Xe Host Bus Adapter 412911-B21

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11587_na/11587_na.HTML
(Smart Array 6400 Series)
http://h18000.www1.hp.com/products/quickspecs/12069_na/12069_na.HTML
(Smart Array 642)
http://h18000.www1.hp.com/products/quickspecs/11943_na/11943_na.HTML
(HP Single Channel Ultra320 SCSI HBA)
http://h18000.www1.hp.com/products/quickspecs/12566_na/12566_na.HTML
(SC11Xe HBA)

Options

Communications

NOTE: The DL320 G5 PCI-X Option Kit is required for all PCI-X NICs.

HP NC110T PCI Express Gigabit Server Adapter	434905-B21
HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
HP NC510F PCIe 10 Gigabit Server Adapter	414126-B21

NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter.

HP NC510C PCIe 10 Gigabit Server Adapter	414129-B21

NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter.

NOTE: The NC-series network adapters listed above can be used with the integrated NC324i network adapter for ProLiant Teaming and the ProLiant Essentials Intelligent Network Pack applications.

Tape Drives

NOTE: For the complete listing of Tape Drive offerings for this server, please visit: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html For recommended tape drive offerings for this ProLiant server see the following:

USB Tape Drives

HP StorageWorks DAT 40 USB Internal Tape Drive (Carbonite)	DW022A

NOTE: HP recommends combining this tape drive with the 1U USB Rack-Mount kit (A8007A) for a complete rack-mount solution.

HP StorageWorks 1U USB Rack-Mount Kit with one DAT 72 USB Tape Drive	AG594A

SAS Tape Drives

NOTE: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

HP StorageWorks Ultrium 448 SAS Internal Tape Drive	DW085A

NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.

NOTE: Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.

Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)	DW064A

NOTE: HP recommends combining this tape drive with the 1U SCSI Rack-Mount kit (A7445B) for a complete rack-mount solution.

HP StorageWorks 3U SCSI Rack-mount kit with one Ultrium 460 (Carbon)	350546-B22
HP StorageWorks 1U SCSI Rack-mount kit with one Ultrium 448 SCSI Tape Drive (Carbonite)	DW028B

NOTE: Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items:
http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html
http://h18006.www1.hp.com/products/quickspecs/12128_na/12128_na.html
For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect.

Rack-Mount Tape Drive Enclosures

HP StorageWorks 1U SCSI Rack-Mount kit	A7445B

NOTE: The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.

HP StorageWorks 1U USB Rack-Mount Kit	A8007A

NOTE: The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives.

HP StorageWorks 1U SAS Rack-Mount Kit	AE459A

NOTE: The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the Ultrium 448 SAS and Ultrium 920 SAS tape drives.
NOTE: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

HP StorageWorks 3U Rack-mount kit	274338-B22

NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple LVD SCSI tape drives including DAT 40, DAT 72, DLT VS160, SDLT 320, SDLT 600, Ultrium 232, Ultrium 460, Ultrium 448, Ultrium 920 and Ultrium 960 tape drives.

NOTE: Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits:
http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML

Tape Autoloaders

HP StorageWorks DAT Autoloader

HP StorageWorks DAT 72x10 tape autoloader	AE313A

HP StorageWorks 1/8 Tape Autoloader

HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader	AH165A
HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader	AH164A
HP StorageWorks 1/8 Ultrium 232 G2 Tape Autoloader	AH163A
HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit	AH166A

NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions

NOTE: Please reference the DAT Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution.

Tape Libraries

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Drive Library	AG326B
HP StorageWorks MSL2024 1 Ultrium 920 Drive Library	AH169A
HP StorageWorks MSL2024 2 Ultrium 920 Drive Library	AH170A
HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
HP StorageWorks MSL2024 2 Ultrium 448 Drive Library	AG117A

HP StorageWorks MSL4048 Tape Library

HP StorageWorks MSL4048 1 Ultrium 448 Drive Library	AG320A
HP StorageWorks MSL4048 2 Ultrium 448 Drive Library	AG321A
HP StorageWorks MSL4048 1 Ultrium 920 Drive Library	AH171A
HP StorageWorks MSL4048 2 Ultrium 920 Drive Library	AH172A
HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
HP StorageWorks MSL4048 1 Ultrium 960 4GB FC Drive Library	AG324B
HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
HP StorageWorks MSL4048 2 Ultrium 960 4GB FC Drive Library	AG325B

HP StorageWorks MSL6000 Tape Library

Ultrium 960 technology

HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606B
HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608B
HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607B
HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609B

Ultrium 460 technology

HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598B
HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library	AD600B
HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599B
HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library	AD601B

NOTE: : Please reference the MSL2024, MSL4048, and MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks Modular Smart Array 20

HP StorageWorks Modular Smart Array 20	335921-B21

NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.

HP StorageWorks Modular Smart Array 20 Starter Kit	366172-B21

NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.

NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives.

QuickSpecs

Options

HP StorageWorks Modular Smart Array 30	HP StorageWorks Modular Smart Array 30 SB	302969-B21
	NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	
	HP StorageWorks Modular Smart Array 30 DB	302970-B21
	NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies	
	NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.	

HP StorageWorks Modular Smart Array 500	HP StorageWorks Modular Smart Array 500 Generation 2	335880-B21
	NOTE: Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/11956_na/11956_na.HTML	

HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000	201723-B22
	NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML	

HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf	AA986A
	NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	

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	
	HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A
	HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
	HP StorageWorks FC2143 4Gb PCI-X 2.0 -to-Fibre Channel HBA	AD167A
	HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA	AD168A
	HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA	AB429A
	HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA	AE369A

Uninterruptible Power Systems – Rack UPS	HP, R1.5kVA UPS, 1U	AF419A
	HP R3000 VA UPS, 2U, L5-30	AF422A
	HP R3000 VA UPS, 2U, L6-20	AF423A
	HP R5500 VA UPS	AF426A

USB Options	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B

Options

ProLiant DL320 Deployment Options	Rack Adapter Kit **NOTE:** This kit allows HP rack servers to fit in racks that are 24" wide.	332815-B21
	1U Cable Management Arm **NOTE:** Package contains two cable management arms.	365403-B21
	NOTE: Telco Rack Support - Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp	

HP Rack 5000 Series (Metallic Carbonite)	HP 5642 Rack-Unassembled	358254-B21
	NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_na/12074_na.HTML **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	

HP Rack 10000 G2 Series (Graphite Metallic)	10642 G2 (42U) Rack Cabinet – Pallet	AF001A
	10642 G2 (42U) Rack Cabinet – Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet – Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet – Pallet	AF011A
	10636 G2 (36U) Rack Cabinet – Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet – Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet	AF014A
	10622 G2 (22U) Rack Cabinet - Pallet	AF021A
	10622 G2 (22U) Rack Cabinet - Shock Pallet	AF022A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet	AF041A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet	AF042A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	NOTE: Please see the Rack 10000 G2 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_na/12402_na.HTML **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	

HP Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet – Shock Pallet	292302-B22
	NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). **NOTE:** It is mandatory to use a shock pallet in order to ship racks with equipment installed.	
	NOTE: Please see the Rack 10000 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	

Options

Monitors and Keyboards	TFT7210R Rack Mounted 17" Monitor	348373-B21
	TFT7600 Rackmount Keyboard Monitor	AG052A
	1U Rackmount Keyboard with USB	AG072A

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

HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A

NOTE: Requires PS/2 and one USB port on server.

	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	USB Interface Adapter, 1 pack	336047-B21
	Serial Interface adapter – 1 Pack with power supply	373035-B21

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

	HP 1x4 Console Switch	AF611A
	PS2 Server Console Cable, 6 ft, 2 pack	AF612A
	USB Server Console Cable, 6 ft, 2 pack	AF613A

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 Serial Console Server Options	HP 16 Port Serial Console Server	AF101A
	HP 48 Port Serial Console Server	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A

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.

QuickSpecs

Options

Service and Support Offerings (HP Care Pack Services)	*Hardware Services On-site Service*	
	Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4479E
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4480E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4481E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4482E
	Installation & Start-up Services	
	Hardware Installation, Electronic	U4490E
	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, Electronic	U4491E
	Support Plus	
	Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4492E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4493E
	Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U6309E
	Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U8331E

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

Memory

HP ProLiant DL320 G5

Standard Memory
512 MB installed (1 x 512 MB SDRAM DIMM) on Celeron D model.
1 GB (1 x 1 GB SDRAM DIMMs) on all Xeon models.

Standard Memory Plus Optional Memory
Up to 8 GB memory is available with the optional installation of PC2-5300 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				
		1A	2B	3A	4B	Mode
Standard	512 MB	512 MB	Empty	Empty	Empty	Single-bank
Standard	1 GB	1024 MB	Empty	Empty	Empty	Single-bank
Optional	1 GB	512 MB	Empty	512 MB	Empty	Dual-bank interleaved
Optional	2 GB	1 GB	Empty	1 GB	Empty	Dual-bank interleaved
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB	Dual-bank interleaved

Following are memory options available from HP:
- 2 GB Unbuffered PC2-5300 ECC DIMM (1 x 2 GB)   432806-B21
- 1 GB Unbuffered PC2-5300 ECC DIMM (1 x 1 GB)   432804-B21
- 512 MB Unbuffered PC2-5300 ECC DIMM (1 x 512 MB)   432803-B21

QuickSpecs

Storage

1- 2	Two SATA or SAS drive bays	
A	Floppy Drive Bay: Optional Floppy Drive Assembly Option Kit or Optional Front VGA Connector	
B	Optical Drive Bay: Optional CD, CDRW/DVD, or DVD-RW drive	

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
Floppy Drive Assembly Option Kit	Up to 1	A	Integrated
Front VGA Connector	Up to 1	A	Integrated
Low-profile IDE (ATAPI) CD-ROM Drive	Up to 1	B	Integrated IDE (ATAPI)
Low-profile IDE DVD-ROM or DVD-RW Drive	Up to 1	B	Integrated IDE

SAS Hard Drives

	Quantity Supported	Position Supported	Controller
HP 300GB 3G SAS 15K SP HP 146GB 3G SAS 15K SP HP 72GB 3G SAS 15K SP HP 36GB 3G SAS 15K SP	Up to 2	1-2	HP 8 Internal Port SAS HBA with RAID HP Smart Array E200/128 BBWC Controller HP Smart Array E500/256 Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller

Serial ATA Hard Drives

	Quantity Supported	Position Supported	Controller
HP 750GB 1.5G SATA 7.2K HP 500GB 1.5G SATA 7.2K HP 250GB 1.5G SATA 7.2K HP 160GB 1.5G SATA 7.2K HP 80GB 1.5G SATA 7.2K	Up to 2	1-2	HP embedded 2 Port SATA Controller with RAID 0/1 support HP 8 Internal Port SAS HBA with RAID HP Smart Array E200/128 BBWC Controller HP Smart Array E500/256 Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller

QuickSpecs

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 20	Please see the Modular Smart Array 20 QuickSpecs to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/MSA20
Modular Smart Array 30 Family	Up to 14	External	Smart Array 6402/128 Controller Smart Array 642 Controller
Modular Smart Array 500 G2	1	External	Please see the Modular Smart Array 500 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/msa500
Modular Smart Array 1000	Please see the Modular Smart Array 1000 QuickSpecs to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/MSA1000

Maximum Storage Capacity – (SAS drives)

Internal	600GB (2 x 300GB SAS)
External	4.20TB (1 x (14 x 300GB Ultra320))
Total	4.80TB

NOTE: In order to implement integrated SATA RAID with Smart Start 7.4 on Windows 2000/2003, the use of a floppy drive is necessary.

Maximum Storage Capacity – (SATA Drives)

Internal	1.5TB (2 x 750GB SATA)
External	9.0TB (1 x (12 x 750GB SATA))
Total	10.5TB

NOTE: In order to implement integrated SATA RAID with Smart Start 7.4 on Windows 2000/2003, the use of a floppy drive is necessary.
NOTE: The External capacity section relates to the HP StorageWorks Modular Smart Array 20.

Tape Drives, Tape Autoloaders & Tape Libraries

Storage

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html

NOTE: For complete listing of tape drive offerings see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

For details on connecting tape drives to this server, see the following:

	Position Supported	Controller	Controller Part Number
HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB	External	USB port	N/A
HP StorageWorks Tape Drives, External Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 920 Ultrium 960 DAT 40 DAT 72	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks Tape Drives, SAS External Ultrium 448 SAS Ultrium 920 SAS	External	HP 8 Internal Port SAS HBA with RAID 0/1 NOTE: Requires purchase of PCI-X Option Kit (419557-B21).	347786-B21
		HP Smart Array P400/256MB Controller	405132-B21
		HP Smart Array P400/512MB Controller	411064-B21
		NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	
HP StorageWorks Autoloaders, External DAT 72x10 Autoloader 1/8 G2 Tape Autoloader	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks SCSI Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21

Storage

HP StorageWorks USB Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks SAS Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit	External	HP 8 Internal Port SAS HBA with RAID 0/1 **NOTE:** Requires purchase of PCI-X Option Kit (419557-B21).	347786-B21
		HP Smart Array P400/256MB Controller	405132-B21
		HP Smart Array P400/512MB Controller	411064-B21
		NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	
HP StorageWorks Tape Libraries MSL2024 (Ultrium 448, Ultrium 920 and 960-based) MSL4048 (Ultrium 448, Ultrium 920 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based)	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.	N/A

QuickSpecs

Technical Specifications

System Unit	Dimensions (HxWxD)		1.70 x 16.78 x 24.0 in (4.32 x 42.62 x 60.96 cm)
	Weight (no drives installed)		24.0 lb (10.91 kg)
	Weight (fully configured with two hard drives, four DIMM modules, and a PCI expansion board)		27.0 lb (12.27 kg)
	Input Requirements	Range Line Voltage	90 to 264 VAC
		Nominal Line Voltage	100 to 120 VAC/220 to 240 VAC
		Rated Input Current	6 A (100 to120 VAC) to 3 A (200 to 240 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	@ 115V input, Rated input power = 486W (assume output wattage=450W) @ 230V input, Rated input power = 479W (assume output wattage=450W)
	Power Supply Output	Steady State Power	420 W (rated) NOTE: 1. +3.3V and +5V total O/P power 130W Maximum. 2. +3.3V,+5V and +12V total O/P power 324W Maximum.
	Environmental Operating		
	Operating	Ambient Temperature	50° to 95° F (10° to 35° C)
		Temperature Derating	1.8° F per 1000 ft to 10,000 ft (1° C per 300 m to 3000 m)
		Relative Humidity	10% to 90% (non-condensing)
		Maximum wet bulb temperature	82° F (28° C) NOTE: System performance may be reduced if operating with fan fault or above 30° C.
	Non-operating Storage	Temperature	-22° to 140° F (-30 to 60° C)
		Relative Humidity	5% to 95% (non-condensing)
		Maximum wet bulb temperature	102° F (38.7° C)
	Non-operating Shipping	Temperature	-22° to 140° F (-30 to 60° C)
		Relative Humidity	5% to 95% (non-condensing)
		Maximum wet bulb temperature	102° F (38.7° C)

Technical Specifications

Acoustic Noise	Idle at 23 degree C ambient (Fixed Disk Drives Spinning)		
		L WAd (BELS)	6.22 bels
		Bystander L pAm (dBA)	44.1 dBA
	Operating (Random Seeks to Fixed Disks)		
		L $_{WAd}$ (BELS)	6.30 bels
		Bystander L pAm (dBA)	44.9 dBA

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 = 486W (assume output wattage=450W @ 230V input, Rated input power = 479W (assume output wattage=450W)
		Rated input current	6 A, 3 A (110 V, 220 V)
		Steady state power	420W (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	1800 VAC/minute
		Input to ground	1800 VAC/minute
	Maximum Wet Bulb Temperature	106.3° F (41.3° C)	

QuickSpecs

Technical Specifications

Serial ATA Hard Drives	HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD	Capacity	80,026 MB	
		Height*	1.028 in (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth*	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	1.5 Gb/s	
		Seek Time (typical reads, including settling)	Single Track	0.9 ms
			Average	9.0 ms
			Full-Stroke	17.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	156,301,488
		Operating Temperature	41° to 131° F (5° to 55° C)	

Serial ATA Hard Drives	HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	Capacity	160,041 MB	
		Height	1.028 in (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	1.5 Gb/s	
		Seek Time (typical reads, including settling)	Single Track	0.9 ms
			Average	9.0 ms
			Full-Stroke	17.8 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature	41° to 131° F (5° to 55° C)	

Integrated Dual Channel Serial ATA Controller	Simultaneous drive transfer channels	2 channels
	Transfer rate synchronous (maximum theoretical)	150 MB/s per channel; 300 MB/s in RAID 0 pair
	Data transfer method	Intel® 82801FR Integrated Serial ATA Host Controller (non-RAID mode) Intel® 82801FR 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

Technical Specifications

	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 7.4 on Windows 2000/2003, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux)

Embedded NC324i PCI Express Dual Port NIC	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	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	
	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)	2000 Mb/s
	Connector	RJ-45	
	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)