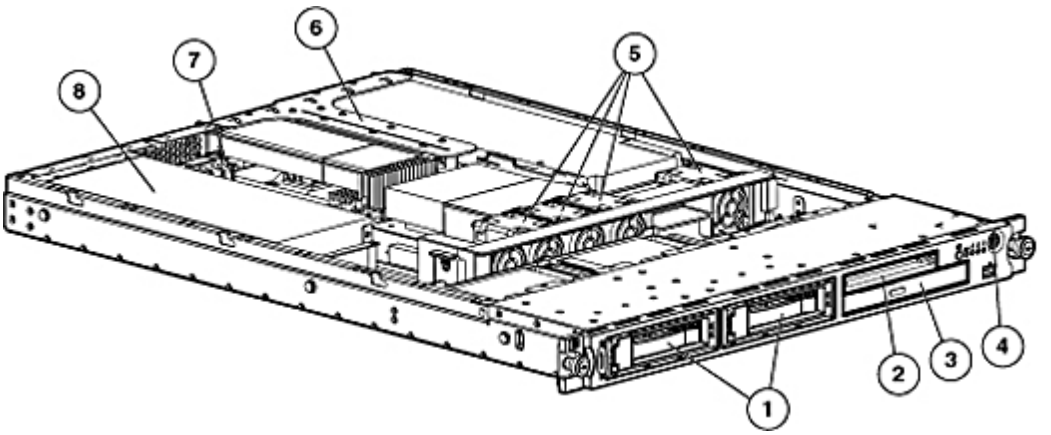
Overview



1. Support for up to two Hot Plug SATA or SAS hard drives
2. Optional 1.44MB Diskette Drive Assembly Option Kit
3. CD-ROM/DVD-ROM/DVD-RW Drive Assembly Option Kit (optional)
4. Front LED Indicators
5. Fan Assembly, 4 non hot-plug Dual Rotor Fans with N+1 Redundancy
6. Two PCI slots, PCI-Express x4 and x1 standard (x8 connectors)
7. Four PC2-4200 ECC DDR2 Memory Slots - 8 GB maximum
8. Power Supply (450 Watt)

What's New

- New Option: Dual Core Intel Pentium-D 950 processor (3.4GHz, 2 x 2MB Cache, 800MHz Front Side Bus)

At a Glance

The HP ProLiant DL320 G4 Server delivers Enterprise level features and performance at an entry level price. The Intel Dual Core processors and DDR2 Memory support put the finishing touches on this ultra-dense 1U solution for the savvy Enterprise and SMB customer.

The performance features of the ProLiant DL320 G4 include up to 8GB of PC2-4200 DDR2 memory and the new Intel Pentium D 900 series processors with 4 Megabytes of Level 2 cache. The ProLiant DL320 G4 also features iLO 2, the Next generation Lights-Out management delivering server remote control for any occasion. Dual PCI Express slots provide the ultimate in I/O serial performance and investment protection, while the optional PCI-X full length riser provides customers with legacy support. In addition to dual integrated gigabit NICs, the ProLiant DL320 G4 also supports SATA with RAID 0/1 standard, with Hot Plug SAS and SATA as an optional upgrade.

- Processors:
  - Dual-core Pentium D 900 series processors with 4M (2x2M) of L2 Cache
    - 3.4 GHz, 3.2 GHz, 3.0 GHz, and 2.8 GHz Dual-core Pentium D Processors with 4MB of L2 Cache (2x2MB)
  - Single core Pentium 4 600 series processors with 2MB of L2 cache
    - 3.6 GHz, 3.4 GHz, 3.0 GHz Single Core Pentium 4 Processors with 2MB of L2 Cache
  - Single core Celeron processors
    - 2.93 GHz Celeron D Processor with 256KB of L2 Cache
  - Intel E7230 Chipset with 800MHz Front Side Bus (533MHz for Celeron Processors)
  - Ability to purchase Microsoft Windows Server 2003 for Embedded Systems with Microsoft ISA Server 2004 Standard Edition configure to order from HP:
    - More details available at http://www.hp.com/servers/DL320FW-VPN-Cache

Overview

- Memory:
  - Up to 8 GB of PC2-4200 UB DDR2 SDRAM Memory
  - Standard configurations of 512 MB to 2 GB of memory
- Storage Controller:
  - HP embedded 2 Port SATA Controller with RAID 0/1 support
- Internal Drive Support:
  - Internal storage capacity of up to 1.5TB (2 x 750GB SATA hard drives) or 600GB (2 x 300GB SAS hard drives)
  - Optional CD,DVD, or DVD-RW drive and Floppy drive
- Network Controller:
  - Embedded NC324i PCI Express Dual Port Gigabit server adapter
- Expansion Slots:
  - Two total slots: (1) full length 64-bit/133 PCI Express x4 slot (x8 connector) (full-length PCI-X is available with optional PCI-X riser card for models containing the 900 series or 600 series processors); (1) half-length, low-profile PCI Express x1 slot (x8 connectors)
  - Standard Dual PCI Express slots offers high performance and investment protection for customers
- USB 2.0 Ports:
  - 4 Total: (1) front; (1) internal (2) rear accessible ports
  - Internal USB port for flexible storage, security, or USB drive key deployment
- Redundancy:
  - 4 dual rotor fans ship standard. 4 dual rotor fans total supported internally. N+1 (1 rotor only) redundancy.
- Management:
  - Embedded Integrated Lights Out 2 (iLO 2) Remote Management with full sideband (UMP) support
  - Integrated Remote Console
  - Virtual KVM technology
  - Automatic Server Recovery (ASR), ROM Based Setup Utility (RBSU), HP System Insight Manager, Status LEDs including system health and UID and SmartStart
- Form Factor:
  - 1U (1.70") Form Factor
- Deployment/Serviceability:
  - Standard spring-loaded Universal sliding rails for in rack servicing
- Warranty:
  - 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	Intel Pentium D processor 950 with EM64T - 3.4 GHz Intel Pentium D processor 940 with EM64T - 3.2 GHz Intel Pentium D processor 930 with EM64T - 3.0 GHz Intel Pentium D processor 920 with EM64T - 2.8 GHz Intel Pentium 4 processor 660 with EM64T - 3.6 GHz Intel Pentium 4 processor 650 with EM64T - 3.4 GHz Intel Pentium 4 processor 630 with EM64T - 3.0 GHz Intel Celeron D processor 341 with EM64T - 2.93 GHz

Processor Cache One of the following depending on Model	Pentium D models	4MB Level 2 Cache (2 x 2MB)
	Pentium 4 models	2MB Level 2 Cache (2 x 1MB)
	Celeron D models	256KB Level 2 Cache

Chipset One of the following depending on Model	Pentium D and Pentium 4 models	Intel E7230 chipset with 800MHz Front Side Bus
	Celeron D models	Intel E7230 chipset with 533MHz Front Side Bus

Memory Protection	Advanced ECC

Memory One of the following depending on Model	Type	PC2-4200 UB DDR2 SDRAM
	Standard - Pentium D models	1 GB (1x 1024 MB)
	Standard - Pentium D models	2 GB (2 x 1024 MB)
	Standard - Celeron D model	512 MB (1 x 512 MB)
	Maximum	8 GB

Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter

Expansion Slots	Slot Number	Bus Speed	Height	Hot Plug	PCI Voltage
PCI-Express Non Hot-Plug Riser	1	PCI Express x4 (x8 connector)	Full	no	
	2	PCI Express x1 (x8 connector)	Half	no	
PCI-X Non Hot-Plug Riser (Optional)	1	64-bit/133 MHz PCI-X	Full	no	3.3 Volt
	2	PCI Express x1 (x8 connector)	Half	no	

Standard Features

Storage Controllers	HP embedded 2 Port SATA Controller with RAID 0/1 support. Hot Plug SAS and SATA controllers available via PCI card option.		
Storage	Diskette Drive	Optional 1.44 MB Diskette Drive option kit is available	
	Optical Drive	Optional CD-ROM, DVD-ROM, & DVD-RW option kits available	
	Hard Drives One of the following:	None 80GB SATA HDD	
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	
	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)		

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 7.4.
	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.

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 Integrated Lights-Out processor to full virtual presence and control with graphical console and virtual media.

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
Intelligent Manageability	Automatic Server Recovery (ASR) iLO 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)
Security	Power-on password Keyboard password Diskette drive control Diskette boot control USB Port control Removable CD-ROM/Diskette Drive Assembly Administrator's password
Server Power Cords	One 6' Lowline and one 6' Highline (IEC-IEC) power cord ships standard
Power Supply	Auto-sensing 450-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 (1 rotor only) Redundancy.
Ultra Thin Rack Deployment Overview	For the Ultra Thin Rack Deployment Overview, including best practices for the HP ProLiant DL320 G4, 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/.

Standard Features

OS Support

Microsoft Windows 2000 Server
Windows Server 2003 (web and standard editions; standard edition for 64-bit extensions)
Red Hat Enterprise Linux
SUSE Linux Enterprise Server
Microsoft Windows Server 2003 for Embedded Systems with Microsoft ISA Server 2004 Standard Edition

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
NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at: http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html.
NOTE: For more information on Microsoft Windows Server 2003 Embedded Systems with Microsoft ISA Server 2004 Standard Edition, please visit the product site at: http://www.hp.com/servers/DL320FW-VPN-Cache

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.

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 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.

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

DL320R04 C2.93-256KB, 512MB 391655-001	Processor(s)	Intel Celeron D Processor 341 with EM64T- 2.93 GHz
	Cache Memory	256KB Level 2 cache
	Chipset	Intel E7230 chipset with 533MHz Front Side Bus
	Memory	512 MB (Standard) to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM 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 for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)
DL320G4 P920 A80 Svr 410785-001	Processor(s)	Intel Pentium D Processor 920 with EM64T - 2.8 GHz
	Cache Memory	4MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	80GB SATA HDD
	Maximum Internal Storage	1.5TB for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)
DL320G4 P930 A80 Svr 410786-001	Processor(s)	Intel Pentium D Processor 930 with EM64T - 3.0 GHz
	Cache Memory	4MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	80GB SATA HDD
	Maximum Internal Storage	1.5TB for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

Models

DL320G4 P930 A1 Svr 410787-001	Processor(s)	Intel Pentium D Processor 930 with EM64T - 3.0 GHz
	Cache Memory	4MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM 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 for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)
DL320G4 P950 A1 Svr 434769-001	Processor(s)	Intel Pentium 4 Processor 950 with EM64T - 3.4 GHz
	Cache Memory	2MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	None shipped standard
	Maximum Internal Storage	1.5TB for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)
DL320G4 P950 A80 Svr 434770-001	Processor(s)	Intel Pentium 4 Processor 950 with EM64T - 3.4 GHz
	Cache Memory	2MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	80GB SATA HDD
	Maximum Internal Storage	1.5TB for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

Models

DL320G4 P650 A80 Svr 410788-001	Processor(s)	Intel Pentium 4 Processor 650 with EM64T - 3.4 GHz
	Cache Memory	2MB Level 2 Cache
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	Memory	1 GB (1 x 1 GB) Standard to 8 GB (Maximum) of Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Network Controller	Embedded NC324i PCI Express Dual Port Gigabit server adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	80GB SATA HDD
	Maximum Internal Storage	1.5TB for SATA models, 600GB for SAS models
	Optical Drive	Optional
	Diskette Drive	Optional
	Form Factor	Rack (1U), (1.70 in/4.45 cm)

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.

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

Models	DL320G4 CTO Chassis	414105-B21
	Factory Integrated Model ships with:	
	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)	

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

Processors	HP C2.93/533-256K DL320G4 FIO Kit	391701-L21
	HP DL320G4 P930 FIO Kit (3.0GHz/2x2MB)	411143-L21
	HP DL320G4 P950 FIO Kit (3.4GHz/2x2MB)	434772-L21
	HP DL320G4 P650 FIO Kit (3.4GHz)	411145-L21
	HP DL320G4 P940 FIO Kit (3.2GHz/2x2MB)	411147-L21
	HP DL320G4 P630 FIO Kit (3.0GHz/2MB)	411149-L21
	HP DL320G4 P660 FIO Kit (3.6GHz/2MB)	411151-L21
Base Memory	2 GB UB PC2-4200 1 x 2GB 2RANK ALL	393354-B21
	1 GB UB PC2-4200 1 x 1GB 2RANK ALL	390824-B21
	512 MB UB PC2-4200 1 x 512 MB 1RANK ALL	390825-B21
Optical Drive	HP DL320G4 DVD-RW DRIVE OPT ALL	395498-B21
	CD ROM Drive Option Assembly Option Kit	372703-B21
	DVD-ROM Drive Assembly Option Kit	374303-B21
	Floppy Drive Assembly Option kit	372702-B21

Step 3: Choose Additional Factory Integratable Options

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

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

ProLiant DL320 G4 Unique Options	HP ProLiant DL320 G3/G4 PCI-X Option Kit NOTE: The HP ProLiant DL320 G4 ships standard with a riser board assembly that has two connectors: • Full-length PCI Express connector (x8 connector, x4 bus speed) • Half-length / Half height PCI Express connector (x8 connector, x1 bus speed) The DL320 G3/G4 PCI-X Option Kit replaces the Full-Length PCI Express connector with a full-length 64-bit / 133MHz PCI-X connector.	417135-B21
	HP DL320G4 DVD-RW DRIVE OPT	395498-B21
	Floppy Drive Assembly Option Kit	372702-B21
	DVD-ROM Drive Assembly Option Kit	374303-B21
	CD ROM Drive Option Assembly Option Kit	372703-B21
	HP ProLiant DL320 G4 Security Server (pre-installed configure to order software only)	409564-B21
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
	ProLiant Essentials Rapid Deployment Pack - Physical Media Kit	434559-B21
	ProLiant Essentials Rapid Deployment Pack Flatpack - single-server license 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	434560-B21
	ProLiant Essentials Workload Management Pack	
	ProLiant Essentials Workload Management Pack, Single Server License	303284-B21

Options

	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	
	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 Featuring: Sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites.	263825-B21
	NOTE: For additional Integrated Light-Out Advanced Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11052_na/11052_na.HTML	
Memory (DIMMs)	2 GB UB PC2-4200 1 x 2 GB 2RANK ALL	393354-B21
	1 GB UB PC2-4200 1 x 1 GB 2RANK ALL	390824-B21
	512 MB UB PC2-4200 1 x 512 MB 1RANK ALL	390825-B21
Internal Storage	HP DL320G4 DVD-RW DRIVE OPT ALL	395498-B21
	CD-ROM Drive Assembly Option Kit	372703-B21
	Floppy Drive Assembly Option Kit	372702-B21
	DVD-ROM Drive Assembly Option Kit	374303-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 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: Please note that Serial ATA hot-plug capability and drive LEDs are not supported by the embedded SATA storage controller.
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/11940_na/11940_na.HTML

Storage Controllers

NOTE: For HP ProLiant DL320 G4 models purchased with Celeron or Pentium-D 800 Series processors, PCI-X is only supported as a Factory Integrated Option.

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
HP Smart Array E200/64MB Controller	409180-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 P400 Controller

NOTE: The HP Smart Array P400 BBWC 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 NOTE: For Smart Array P400 Controller only.	383280-B21
512MB Battery-backed cache upgrade NOTE: For Smart Array P400 Controller only.	405148-B21
NOTE: Please see the following SAS Controller QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, Protocols supported, Peak Data Transfer Rate, Channels, Ports, Drives supported, Cache, RAID support, 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/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 NOTE: The HP 8 Internal Port SAS HBA with RAID requires the purchase of the DL320 SAS/SATA Hot Plug Cable option kit (398307-B21).	347786-B21
HP SATA/SAS 1U Cable Kit NOTE: This option is required for the HP 8 Internal Port SAS HBA with RAID, the HP Smart Array E200 Controller, and the HP Smart Array P400 Controller.	398307-B21
NOTE: Please see the following QuickSpecs for additional information: http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html (SC44Ge HBA) http://h18004.www1.hp.com/products/quickspecs/12332_na/12332_na.html (SAS HBA)	
SCSI Controllers	
NOTE: The HP ProLiant DL320 G3/G4 PCI-X Option Kit is required for all PCI-XControllers.	
Smart Array 6402/128 Controller NOTE: For External drive support only	273915-B21
Smart Array 642 Controller NOTE: For External drive support only	291967-B21
128-MB BBWC (Battery-Backed Write Cache) Enabler NOTE: This 128 MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.	351580-B21
64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 NOTE: For External drive support only	374654-B21
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)	

Communications

NOTE: The HP ProLiant DL320 G3/G4 PCI-X Option Kit is required for all PCI-X NICs.

HP NC110T PCI Express Gigabit Server Adapter	434905-B21
HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
HP NC340T PCI-X 4-port 1000T Gigabit Server Adapter	391661-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC370T PCI-X Multifunction 1000T Gigabit Server Adapter	374191-B22
HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
HP NC7771 PCI-X 1000T Gigabit Server Adapter	290563-B21
HP NC510F PCIe 10 Gigabit Server Adapter NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter.	414126-B21
HP NC510C PCIe 10 Gigabit Server Adapter NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter.	414129-B21

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) NOTE: HP recommends combining this tape drive with the 1U USB Rack-Mount kit (A8007A) for a complete rack-mount solution.	DW022A
HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite) NOTE: HP recommends combining this tape drive with the 1U USB Rack-Mount kit (A8007A) for a complete rack-mount solution.	DW026A

Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite) NOTE: No internal tape drives fit inside this HP ProLiant server. The internal drive shown here is for the 1U and 3U Rack-mount Kit.	DW064A
HP StorageWorks 3U SCSI Rack-mount kit with one Ultrium 460 (Carbon)	350546-B22
HP StorageWorks Ultrium 448 Rack-mount (Carbonite) - Single drive installed in a 1U rack-mount kit	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

Options

	HP StorageWorks 1U SCSI Rack-Mount kit 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.	A7445B
	HP StorageWorks 1U USB Rack-Mount Kit 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.	A8007A
	HP StorageWorks 1U SAS Rack-Mount Kit NOTE: The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the Ultrium 448 SAS tape drive.	AE459A
	HP StorageWorks 3U Rack-mount kit NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, SDLT 320, SDLT 600, Ultrium 215, Ultrium 230, 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	274338-B22
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 NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions NOTE: Please reference the Autoloader 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	AH166A

Options

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 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 Data Protector Express Software	HP DP Express Backup Server Upgrade for ProLiant Software	BB117AP
	HP DP Express Package for Microsoft Small Business Server	BB118AA
	NOTE: Please see the HP Data Protector Express QuickSpecs for additional information regarding the purchase of HP Data Protector Express software: http://h18000.www1.hp.com/products/quickspecs/12337_na/12337_na.html	
	NOTE: To obtain a free licensed copy of HP Data Protector Express for ProLiant edition software, please visit the "Protect Your Data" link accessible from your ProLiant server's System Management Homepage (SMH) software (SmartStart 7.5 or later).	

Options

HP StorageWorks Modular Smart Array 20	HP StorageWorks Modular Smart Array 20 NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.	335921-B21
	HP StorageWorks Modular Smart Array 20 Starter Kit 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.	366172-B21
HP StorageWorks Modular Smart Array 30	HP StorageWorks Modular Smart Array 30 SB NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	302969-B21
	HP StorageWorks Modular Smart Array 30 DB 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.	302970-B21
HP StorageWorks Modular Smart Array 500	HP StorageWorks Modular Smart Array 500 Generation 2 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	335880-B21
HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 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	201723-B22
HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	AA986A
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

Options

Uninterruptible Power Systems – Rack UPS	HP, R1.5kVA UPS, 1U	AF419A
	HP R3000 VA UPS, 2U, L5-30 NOTE: Replaces non-RoHs compliant part number 192186-001.	AF422A
	HP R3000 VA UPS, 2U, L6-20 NOTE: Replaces non-RoHs compliant part number 192186-002.	AF423A
	HP R3000 VA UPS, 2U, L6-20 NOTE: Replaces non-RoHs compliant part number 192186-292.	AF424A
	HP R3000 VA UPS, 2U, L5-30 NOTE: Replaces non-RoHs compliant part number 192186-291.	AF425A
	HP R5500 VA UPS NOTE: Replaces non-RoHs compliant part number 326529-D71.	AF426A
USB Options	USB Optical Scroll Mouse (Carbonite)	DD441B
	USB 2.0 4-port HUB	DG954A
	HP 1GB Drive Key II- USB 2.0 Flash Drive	AG382AA
	HP 512MB DriveKey II- USB Flash Drive	ED516AA
	USB Floppy Drive	DC361B
ProLiant DL320 Deployment Options	1U Cable Management Arm NOTE: Package contains two cable management arms. 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	365403-B21
HP Rack 5000 Series (Metallic Carbonite)	HP 5642 Rack-Unassembled 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.	358254-B21

Options

HP Rack 10000 Series (Graphite Metallic)	10642 (42U) Infrastructure Rack (Low Voltage)	379006-001
	10642 (42U) Infrastructure Rack (High Voltage)	379005-001
	HP S10614 (14U) Rack Cabinet – Shock Pallet	292302-B22
	HP 10842 (42U, 800mm wide) Rack Cabinet – Pallet	257415-B21
	HP 10842 (42U, 800mm wide) Rack Cabinet – Shock Pallet	257415-B22
	HP 10647 (47U) Rack Cabinet – Pallet	245160-B21
	HP 10647 (47U) Rack Cabinet – Shock Pallet	245160-B23
	HP 10622 (22U) Rack Cabinet – Pallet	245163-B21
	HP 10622 (22U) Rack Cabinet – Shock Pallet	245163-B22
	HP 10622 (22U) Rack Cabinet – Crated	245163-B23
	NOTE: xxxxxx-B21 (pallet) used to ship empty racks shipped on a truck. xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). xxxxxx-B23 (crated) used for air shipments of empty racks. 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.	

HP Rack 10000 Series (Graphite Metallic)	10642 (42U) Infrastructure Rack (Low Voltage)	379006-001
	10642 (42U) Infrastructure Rack (High Voltage)	379005-001
	HP S10614 (14U) Rack Cabinet – Shock Pallet	292302-B22
	HP 10842 (42U, 800mm wide) Rack Cabinet – Pallet	257415-B21
	HP 10842 (42U, 800mm wide) Rack Cabinet – Shock Pallet	257415-B22
	HP 10647 (47U) Rack Cabinet – Pallet	245160-B21
	HP 10647 (47U) Rack Cabinet – Shock Pallet	245160-B23
	HP 10622 (22U) Rack Cabinet – Pallet	245163-B21
	HP 10622 (22U) Rack Cabinet – Shock Pallet	245163-B22
	HP 10622 (22U) Rack Cabinet – Crated	245163-B23
	NOTE: xxxxxx-B21 (pallet) used to ship empty racks shipped on a truck. xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). xxxxxx-B23 (crated) used for air shipments of empty racks. 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 1x 4 Server 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.	

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/	

HP ProLiant DL320 G4 All Models

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

Standard Memory

512 MB PC2-4200 ECC UB DDR2 SDRAM installed (1 x 512 MB SDRAM DIMM) on Celeron D model.
1 GB (1 x 1024 MB SDRAM DIMMs) on all Pentium D models.

Standard Memory Plus Optional Memory

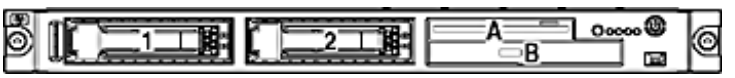
Up to 8 GB memory is available with the optional installation of PC2-4200 ECC DDR2 SDRAM Memory kits.

NOTE: The chart below represents the Pentium D models with 1 GB standard memory, and does not represent all possible configurations. Memory can be populated in any order with any of the supported DIMMs listed. For optimal performance, the total amount of memory in slots 1A and 2A should equal to the total amount of memory in slots 3B and 4B.

Memory		Slot			
		1A	2A	3B	4B
Standard	1 GB	1024 MB	Empty	Empty	Empty
Optional	4 GB	2 GB	Empty	2 GB	Empty
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB

Following are memory options available from HP:

- 2 GB UB PC2-4200 1 x 2 GB 2RANK 393354-B21
- 1 GB UB PC2-4200 1 x 1 GB 2RANK 390824-B21
- 512 MB UB PC2-4200 1 x 512 MB 1RANK 390825-B21



1- 2	Two SATA or SAS drive bays
A	Removable 1.44 MB Diskette Drive Assembly Kit
B	Optional CD-ROM/DVD Drive Assembly Kit

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
1.44-MB Diskette Drive	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
300GB 3G SAS 15K SP 146GB 3G SAS 15K SP 72GB 3G SAS 15K SP 36GB 3G SAS 15K SP	Up to 2	1-2	HP 8 Internal Port SAS HBA with RAID HP Smart Array E200/64MB Controller HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller

Serial ATA Hard Drives

	Quantity Supported	Position Supported	Controller
750GB 1.5G SATA 7.2K 500GB 1.5G SATA 7.2K 250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K 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 E200/64MB Controller HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 20	Please see the Modular Smart Array 20 QuickSpecs below to determine configuration requirements	External	Please see the Modular Smart Array 20 QuickSpecs below see the list of supported controllers
Modular Smart Array 30 Family	Up to 14	External	Smart Array 6402/128 Controller Smart Array 642 Controller 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
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 below to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs

Modular Smart Array 1000: http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML

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 Suported	Controller	Controller Part Number
HP StorageWorks Tape Drives, External DAT 24 USB DAT 40 USB DAT 72 USB	External	USB 2.0 Port	N/A
HP StorageWorks Tape Drives, External Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 920 Ultrium 960 DAT 40 DAT 72 DLT VS160 SDLT 600	External	HP SC11Xe Host Bus Adapter	412911-B21
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
HP StorageWorks USB Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21

Storage

HP StorageWorks Tape Libraries, External 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

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	450 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)
	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)

	Acoustic Noise	Idle at 23 degree C ambient (Fixed Disk Drives Spinning)	
		L WAd (BELS)	=6.4
		Bystander L pAm (dBA)	=47
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	=6.4
		Bystander L pAm (dBA)	=47

Serial ATA Hard Drives	HP 80GB 1.5G SATA 7.2K 3.5" HDD 349237-B21	Capacity	80,000 MB	
		Height	1.028 in/2.611cm	
		Width	4.0 in (10.16 cm)	
		Interface	Serial ATA	
		Transfer Rate Synchronous (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)	

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	450W (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	41.3C	
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)	2000Mb/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)
Integrated Dual Channel Serial ATA Controller	Simultaneous drive transfer channels	2 channels	
	Transfer rate synchronous (maximum theoretical)	150 MB/s per channel; 300MB/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)	

Integrated Serial ATA Controller	**Transfer rate synchronous** (maximum)	150 MB/s per channel; 300MB/s in RAID 0 pair
	Protocol	Serial ATA
	Drive support	HP Universal Serial ATA
	Data transfer modes	ATA data-transfer modes supported SATA 1.0, SATA II PIO modes 0-4 Multiword DMA modes 0-2 Ultra DMA modes 0-6
	RAID levels	0, 1
	Feature	Supports Warranty of SATA Hard Drives Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support
	OS Support	Microsoft Windows 2000 Server 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)
	NOTE: This controller does not support LED functions This controller does not support Hot Plug functions	

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.