

Overview

The HP ProLiant ML310 G3 Storage Server is an entry-level 5U tower form factor Network Attached Storage (NAS) solution that delivers easy to use, rapidly deployable networked storage with multi-protocol file sharing and print serving which is perfect for a small workgroup, small business or remote office.

Windows Storage Server 2003 Release 2 (WSS 2003 R2) operating system is pre-installed and includes storage specific management tools. The hardware is also pre-configured allowing the ProLiant ML310 G3 Storage Server to be up and running in minutes.

HP ProLiant ML310 G3 Storage Server models are available in four different storage capacity models.

What's New

- Improved productivity, more robust storage management and simple branch office integration with new Windows Storage Server 2003 Release 2 version of the operating system
 - Easier to use, HP enhanced Microsoft Management Console - based User Interface
-

What is a Storage Server? HP uses the Storage Server product name to describe its NAS solutions. NAS solutions are specialized file-serving devices that support heterogeneous files in a high-capacity storage solution on Ethernet based networks. NAS solutions also provide specific features to simplify the tasks and reduce the resources associated with data storage and management. The objective of NAS technology is to simplify manageability and improve data access to clients and applications. A NAS solution will generally provide network accessible storage to a mix of clients and servers running different operating systems.

Product Features

Processor	<ul style="list-style-type: none"> • Intel Pentium 4 3.0 GHz Single Core/800 MHz FSB - 1 MB L2(320 GB and 640GB Models) • Intel Pentium D 3.0 GHz Dual Core/800 MHz FSB - 2 x 1 MB L2 (1TB and 2TB Models)
Memory	<ul style="list-style-type: none"> • 512 MB (Standard) to 4 GB (Maximum) PC2-4200 DDR2 SDRAM DIMM Memory running at 533MHz with Advanced ECC Capabilities (320 GB and 640 GB Model) • 1 GB (Standard) to 4 GB (Maximum) PC2-4200 DDR2 SDRAM DIMM Memory running at 533MHz with Advanced ECC Capabilities (1TB and 2TB Models)
Operating System	<ul style="list-style-type: none"> • Windows Storage Server Release 2 2003 pre-installed. Includes: <ul style="list-style-type: none"> ○ HP Enhanced, File Server Management Console ○ File Server Resource Manager for quotas, file screening and storage reporting ○ Print Server support <ul style="list-style-type: none"> ▪ New print management console ▪ Up 5 printers supported in Workgroup Edition ▪ Unlimited printer support in Standard Edition ○ Microsoft Services for Network File System (NFS) ○ Distributed File System Replication, including <ul style="list-style-type: none"> ▪ DFS Management Console ▪ Configuration and Diagnostic Tools ○ Unlimited Client Access License (CAL) included
Storage Controller	<ul style="list-style-type: none"> • Embedded SATA Controller (320GB Model) • HP 6 Port SATA RAID Controller (640GB, 1TB and 2TB models)
Internal Storage	<ul style="list-style-type: none"> • Hot-plug 1" 7200 RPM SATA Hard Drives standard <ul style="list-style-type: none"> ○ 2 x 160 GB (320 GB Model, not upgradeable to 4 drives) ○ 4 x 160 GB (640 GB Model) ○ 4 x 250 GB (1 TB Model) ○ 4 x 500 GB (2 TB Model)
Optical Drive	<ul style="list-style-type: none"> • 16x DVD+RW Internal
Expansion Slots	<ul style="list-style-type: none"> • (2) PCI-X 64 bit/100 MHz expansion slots • (1) PCI Express x4 expansion slot • (1) PCI Express x1 expansion slot
Network Controller	<ul style="list-style-type: none"> • Embedded NC320i PCI Express 10/100/1000T Gigabit network adapter

Product Features

Interfaces

- Parallel - 1
- Serial - 1
- Pointing Device (Mouse) - 1
- Graphics - 1
- Keyboard - 1
- USB - 5 (2 front; 2 rear; 1 internal)
- Dedicated USB - 1 (available for USB tape connectivity)
- Network RJ45 (Ethernet) - 1
- iLO 2 Remote Management Port - 1

Management

- Remote system management via Web-based Graphical User Interface (GUI), Remote Desktop or Telnet
- Remote hardware management via Integrated Lights Out 2 (iLO 2)

Form Factor

- 5 U Tower (Optional Tower to Rack Kit available)

Power Supply

- Single 370 Watt Power Factor Correcting (PFC)

Fans

- Single Non-hot plug, non-redundant system fan
NOTE: Does not include fans in CPU heatsink or power supply

Warranty

- The ML310 G3 Storage Server comes with a standard 1-1-1 warranty (1 year parts exchange, 1 year labor and 1 year onsite, next business day response)

Software Components

Optional Software from HP for Storage Server

- **HP OpenView Storage Mirroring** - HP OpenView Storage Mirroring offers a host-based application that performs remote copy over an IP LAN/WAN. Key features include asynchronous replication that can be scheduled to a fine granular level, Logical Unit Number (LUN), file or byte level. Other features include multiple replication configuration options including peer-to-peer and many-to-one. In addition, Storage Mirroring is a very cost effective disaster recovery alternative from one host to another within a LAN, storage center, or between direct attached storage in metro offices and regional centers. Additional configurations allow replication from small office environments to ensure business continuity without an outside IT staff.

Storage Mirroring is an excellent choice for low bandwidth; low storage volume changes and meets business recovery goals within minutes or hours.

Storage Mirroring offers low initial investment costs compared to alternative storage-based and fabric-based replication products.

For more information: <http://h18006.www1.hp.com/products/storage/software/inas/index.html>

- **HP OpenView Storage Data Protector** - The HP OpenView Storage Data Protector software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes.

Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution.

The ProLiant ML310 G3 Storage Server supports using Data Protector as the backup software solution. For more information on HP OpenView Data Storage Protector:

<http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html>

Non-HP Software for Exchange Backup and Archive

HP has qualified CommVault Systems to provide simplified and cost-effective Exchange data management and protection solutions for HP ProLiant Storage Server customers. The solution helps SMB customers address the issues of growing business and regulatory compliance requirements for data retention, reduced data backup windows and increasing storage management administration cost and complexity.

CommVault's QiNetix software suite running on an HP ProLiant Storage Server device includes the following key features:

- Complete protection and management of Microsoft Exchange and NAS data, including backup, restore, archiving and data migration to secondary storage devices.
- Use of HP ProLiant Storage Server devices as backup and archive targets to stage Microsoft Exchange and other data.
- Content-based indexing of Exchange data to assist in compliance and specific searching of Exchange e-mail text, e-mail attachments and Windows files.

For more information on CommVault QiNetix software for HP ProLiant Storage Server, please visit:

http://www.commvault.com/mk/get/hp_smb_req

NOTE: Support for this software is provided by CommVault.

Software Components

Warranty The HP ProLiant ML310 G3 Storage Server comes with a 1-1-1 warranty (1 year parts exchange, 1 year labor, and 1 year on-site, next business day response)

Warranty Upgrade Options

- Response – Upgrade on-site response from next business day to same day 4-hours
- Coverage – Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration – Select duration of coverage for a minimum period of 1 year or multiple years

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased. Specifically HP Care Pack services include

Product number(s)	Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
AE393A	Support Plus for Storage	1 year	UD551E	HA110A1 - 8YP
AE394A		3 years	UD553E	HA110A3 - 8YP
AE395A		4 years	n/a	HA110A4 - 8YP
AE396A		5 years	n/a	HA110A5 - 8YP
AE397A				
AE398A	Support Plus 24 for Storage	1 year	UD552E	HA109A1 - 8YP
AE399A		3 years	UD554E	HA109A3 - 8YP
AE400A		4 years	n/a	HA109A4 - 8YP
AE401A		5 years	n/a	HA109A5 - 8YP
AE402A				
AE403A	Proactive 24 (P24)	1 year	n/a	HA111A1 - 8YP
AE404A		3 years	n/a	HA111A3 - 8YP
AE405A		4 years	n/a	HA111A4 - 8YP
AE406A		5 years	n/a	HA111A5 - 8YP
AE407A				
AE408A	6 hour CTR	1 year	UD555A/E	HA11051 - 8YP
AE409A		3 years	UD556A/E	HA105A3 - 8YP
AE410A		4 years	n/a	HA105A4 - 8YP
AE411A		5 years	n/a	HA105A5 - 8YP
AE412A				

Service and Support, HP Care Pack, and Warranty Information

HP Proactive 24	<ul style="list-style-type: none"> • An integrated hardware and software support solution that combines efficient problem prevention with responsive technical assistance whenever you need it. • Improves the effectiveness of technologies across your IT infrastructure, and also, establishes a collaborative relationship between you and HP that strengthens your IT team and gives you rapid access to our expertise as issues arise
HP Support Plus	<ul style="list-style-type: none"> • Increases the performance and availability of your IT infrastructure with comprehensive, consistent hardware and software services. HP Services engineers deliver onsite hardware support and over-the-phone software support 13 hours per day, 5 days per week. • Encompasses the HP ProLiant Storage Server products, selected multi-vendor hardware and provides trouble-shooting software problems which range from the Storage Server 2003 operating system to the available utilities. In addition, this service makes software updates available to you at substantial savings. • Provides recovery and re-configuration assistance of the HP ProLiant Storage Server using the recovery disk and your saved configuration file.
HP Support Plus 24	<ul style="list-style-type: none"> • Provides all the benefits of the regular Support Plus Care Pack, plus HP Services engineers are available to deliver onsite hardware and over-the-phone software support around-the-clock 365 days per year.

Software Product Services

- Standard HP warranty ensures Software media will be free of physical defects for a period of 90 days from delivery.
- These services are available to upgrade the warranty to (1 or 3) full year of 9 hours by 5 days (or 24x7) software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service.

Hardware Product Services

- Installation services
- On-site maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work
- Migration service consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URLs listed below:
http://www.hp.com/hps/storage/ns_nas.html

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased.

Our Proactive 24 annuity service (with the SAN Module) allows continuous SAN/NAS growth by ensuring that your entire SAN/NAS is safely kept updated with analysis and recommendations on relevant, ongoing firmware (FW) changes and it ensures rapid resolution of complex SAN/NAS issues.

Our SAN Solution Service is a one-time review of your entire SAN/NAS and all the components (applications, HBAs, switches and FW, arrays etc) to ensure that all components are at tested, HP Certified levels. The HP SAN Design/Architecture Service provides as broad and as deep a review and recommendation as needed of how your SAN/NAS environment can be designed and implemented to meet your business storage needs.

Service and Support, HP Care Pack, and Warranty Information

The on-going support offerings include various response times (4 hour same day, next day, etc) as well as coverage periods (Monday - Friday, 24x7, 1 yr, 3 yr, etc). These services are available for both hardware and software to ensure all customer support needs are met and can be purchased from either value or volume channels.

Finally HP offers an optional migration service to assist the customer in moving to the newest product release. This may be in the form of a defined kit and service, or may alternatively be performed on a time & material basis.

HP Services allows the customer to leverage HP's experience in selecting and configuring the most widely used security features, and provides an environment that is immediately more available due to increased change control and significantly improved data security.

For more information on these and other service options, please contact any of our worldwide sales offices or visit our Web site at: http://www.hp.com/hps/storage/ns_nas.html

Installation Services

The service deployment activities will include:

- Unpacking the product, performing initial inspection, and setting up product hardware and power connectivity
- Connecting Customer-provided cables
- Setting the network address and setting appropriate domain variables in the NAS operating system
- Configuring the storage by creating a file share
- Configuring user mapping to make the share available for access
- Creating a sample file data copy or Snapshot

Product number(s):	Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
All	Installation for Storage (per event)	One time	Available	HA113A1 - 5D6

Components

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling

Product Configuration Wizard

In the following steps you will be guided through a series of steps to help you configure a Storage Server.

NOTE: options ship separately and are not factory integrated.

Step 1 - Order required model

Select one of four available models of the ML310 G3 Storage Server. The ProLiant ML310 G3 Storage Server is a fixed capacity box that is not upgradeable.

Specifications for HP ProLiant ML310 G3 320 GB Storage Server AE393A - Americas AE394A - Asia Pacific AE395A - Europe AE396A - Australia AE397A - China	Processor	Intel Pentium 4 630 3.0 GHz/800 - 2MB L2
	Memory	512 MB of memory standard, expandable to 4 GB
	OS	Windows Storage Server 2003 Release 2, Workgroup Edition
	Storage Controller	Embedded SATA Controller (320GB Model)
	Hard Drive (Internal storage)	Hot plug, 7200 RPM SATA Hard Disk Drives, 2 x 160 GB (320 GB raw capacity, 126 GB user capacity - RAID1)
	RAID Support	Software RAID 0, 1

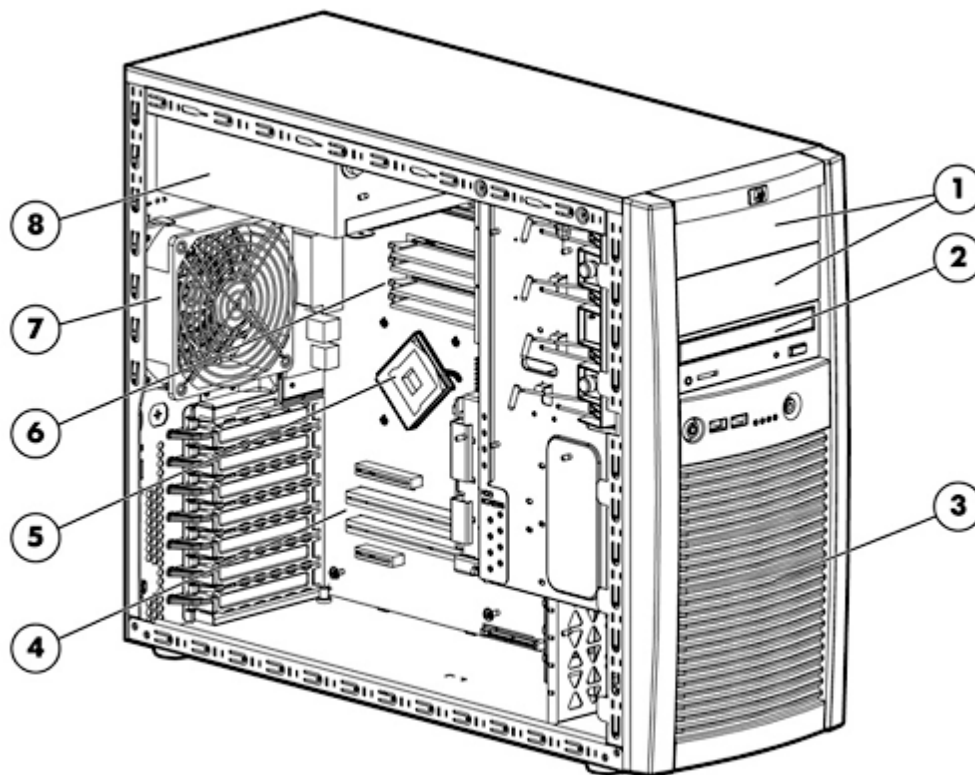
Specifications for HP ProLiant ML310 G3 640 GB Storage Server AE398A - Americas AE399A - Asia Pacific AE400A - Europe AE401A - Australia AE402A - China	Processor	Intel Pentium 4 630 3.0 GHz/800 - 2MB L2
	Memory	512 MB of memory standard, expandable to 4 GB
	OS	Windows Storage Server 2003 Release 2, Workgroup Edition
	Storage Controller	HP 6 Port SATA RAID Controller
	Hard Drive (Internal storage)	Hot plug, 7200 RPM SATA Hard Disk Drives, 4 x 160 GB (640 GB raw capacity, 430 GB user capacity - RAID 5)
	RAID Support	Hardware RAID 0,1, 5, 0+1

Specifications for HP ProLiant ML310 G3 1 TB Storage Server AE403A - Americas AE404A - Asia Pacific AE405A - Europe AE406A - Australia AE407A - China	Processor	Dual Core Intel Pentium D 830 3.0 GHz/800 - 2 x 1 MB L2
	Memory	1 GB of Memory standard, expandable to 4 GB
	OS	Windows Storage Server 2003 Release 2, Workgroup Edition
	Storage Controller	HP 6 Port SATA RAID Controller
	Hard Drive (Internal storage)	Hot plug, 7200 RPM SATA Hard Disk Drives, 4 x 250 GB (1TB raw capacity, 681 GB user capacity - RAID 5)
	RAID Support	Hardware RAID 0,1, 5, 0+1

Specifications for HP ProLiant ML310 G3 2 TB Storage Server AE408A - Americas AE409A - Asia Pacific AE410A - Europe AE411A - Australia AE412A - China	Processor	Dual Core Intel Pentium D 830 3.0 GHz/800 - 2 x 1 MB L2
	Memory	1 GB of Memory standard, expandable to 4 GB
	OS	Windows Storage Server 2003 Release 2, Workgroup Edition
	Storage Controller	HP 6 Port SATA RAID Controller
	Hard Drive (Internal storage)	Hot plug, 7200 RPM SATA Hard Disk Drives, 4 x 500GB (2TB raw capacity, 1.36 TB user capacity - RAID 5)
	RAID Support	Hardware RAID 0,1, 5, 0+1

Product Configuration Wizard

Model Design



- | | |
|--|---|
| 1. Removable Media Bays | 5. Processor Socket (Intel® Pentium® D or Pentium® 4) |
| 2. 16X DVD-ROM | 6. Four DIMM Sockets for up to 4GB DDR2 memory |
| 3. Four Hot-Plug Drive Bays | 7. System Fan |
| 4. Four Expansion Slots (Two PCI-X, Two PCI Express) | 8. 370W Power Supply |

Step 2 - add additional memory

Standard Memory

512 MB of Advanced ECC PC2-4200 DDR2 SDRAM DIMM Memory (320 GB and 640 GB Models)

1024 MB of Advanced ECC PC2-4200 DDR2 SDRAM DIMM Memory (1 TB and 2 TB Models)

Standard Memory Replaced with Optional Memory

Up to 4096-MB (4GB) of memory is available with optional installation of Advanced ECC PC2- 4200 DDR SDRAM DIMM Memory kits.

NOTE: Charts do not represent all possible memory configurations.

Memory		Slot			
		4	3	2	1
Standard	512 MB	Empty	Empty	Empty	512 MB
Standard	1024 MB	Empty	Empty	512MB	512 MB
Maximum	4096 MB	1024 MB	1024 MB	1024 MB	1024 MB

Product Configuration Wizard

Following are memory options available from HP	512 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 512 MB)	390825-B21
	1024 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 1024 MB)	390824-B21
	2048 MB Unbuffered Advanced ECC PC3200 DDR2 (1 x 2048 MB)	393354-B21

Step 3 - add additional network cards

The system comes with an embedded NC320i PCI Express Gigabit NIC. Select additional cards if required for higher performance or redundancy.

Communications	HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
	HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
	HP NC320T PCI Express 1000T Gigabit Server Adapter	367047-B21
	HP NC370F PCI-X Multifunction 1000SX Gigabit Server Adapter	374193-B22
	HP NC370T PCI-X Multifunction 1000T Gigabit Server Adapter	374191-B22
	HP NC1020 PCI 1000T Gigabit Server Adapter	353377-B21
	HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter	313881-B21
	HP NC7771 PCI-X 1000T Gigabit Server Adapter	290563-B21
	HP High-speed PCI soft modem	DC132D

NOTE: RJ11 modem adapter is not included.

NOTE: NC61XX, NC71XX, NC77XX, or NC1020 network adapter (NIC) can be used for redundancy with the embedded NC7761 NIC. When either the embedded NC7761 or the NC1020 is teamed with other HP NICs, Jumbo Frames and LSO features are automatically disabled.

NOTE: A minimum of 1 GB of memory is required for NC370x adapters, with a maximum of two NC370x adapters permitted in a server.

Step 4 - add host based data replication

HP OpenView Storage Mirroring (SM) is an ideal entry host-based software product for IP networks. SM does not require high bandwidth Fibre Channel networks, high capacity replication and zero down time service levels. Storage Mirroring provides near real-time full application or file recovery up to the last byte replication. SM is an excellent choice for low bandwidth; low storage volume changes and meets business recovery goals within tens of minutes or hours. The immediate return on investment is realized in the reduced management cost associated with branch or small offices networks.

Product Configuration Wizard

Product Highlights:

- High availability with Microsoft Windows 2000/NT/2003 servers
- Application aware and supported with Exchange, SQL and Oracle
- Host-based remote storage copy with TCP/IP networks
- Data distribution one-to-many or 'fan-out' to multiple destinations
- Data migration utility for transferring large data projects
- Centralize backup, data protection and recovery operations
- Built in scheduler for off hours replication
- Built in network bandwidth utilization management
- Disaster recovery between source and destination failover sites
- Powered by NSI Software's Double-Take patented 'Sequential Transfer Asynchronous Replication' technology
- Sequential transfer maintains write sequential across multiple files for data integrity

Asynchronous replication allows hosts to continue processing for maximum performance

HP OpenView Storage Mirroring	HP OpenView Storage Mirroring v4.4.2 Media Kit	T2558AA
	HP OpenView Storage Mirroring v4.4.2NAS Edition LTU 1	T3841AA
	HP OpenView Storage Mirroring v4.4.2 NAS Edition LTU 10	T3842AA

NOTE: For more information go to the HP OpenView Storage Mirroring website at:
<http://h18006.www1.hp.com/products/storage/software/sm/index.html>

Step 5 - Add unlimited print support, or Single Instance Storage or External Storage

NOTE: All ML310 G3 Storage Server models using Windows Storage Server 2003 Release 2, Workgroup Edition can support print serving for up to 5 network attached printers. This option upgrades those models to an unlimited number of network attached printers.

This License upgrade also enables the Single Instance Storage (SIS) feature within WSS2003 R2 which eliminates duplicate files when enabled. SIS is not available on the Workgroup License.

This License upgrade also allows an external storage enclosure to be attached to a ML310 G3 Storage Server. The Workgroup license only allows four drives maximum which is the maximum number of internal drives that can be installed in a ML310 G3 Storage Server.

WSS2003 R2 Workgroup to Standard Edition Upgrade	Windows Storage Server 2003 Release 2 Workgroup to Standard Edition License Upgrade	AE479A
---	---	--------

Step 6 - add tape backup solution

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
HP StorageWorks DAT 40 USB External Tape Drive (Carbonite)	DW023A
HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)	DW026A
HP StorageWorks DAT 72 USB External Tape Drive (Carbonite)	DW027A

Product Configuration Wizard

Internal, External, and Rack-Mount Ultrium Tape Drives

HP StorageWorks Ultrium 232 Tape Drive, Internal (Carbonite)	DW064A
HP StorageWorks Ultrium 232 Tape Drive, External (Carbonite)	DW065A
HP StorageWorks Ultrium 448 Tape Drive, Internal (Carbonite)	DW016A
HP StorageWorks Ultrium 448 Rack-mount (Carbonite) - Single drive installed in a 1U rack-mount kit	DW028A

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_div/11739_div.html
(Worldwide)

http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html
(North America)

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>.

Internal, External, and Rack-Mount DAT Drives

HP StorageWorks DAT 72 Tape Drive, Internal (Carbon)	Q1522B
HP StorageWorks DAT 72 Tape Drive, External (Carbon)	Q1523B
HP StorageWorks 1U Rack-Mount Kit with one DAT 72 drive	A7443A

NOTE: Please see the DAT Tape Drive QuickSpecs for controllers, media, and other options:

http://h18000.www1.hp.com/products/quickspecs/11883_div/11883_div.HTML
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/11883_na/11883_na.HTML
(North America)

http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html
(Worldwide)

http://h18006.www1.hp.com/products/quickspecs/12128_na/12128_na.html
(North America)

For an up-to-date listing of the latest O/S and software support details for HP DAT drives, please visit: <http://www.hp.com/go/connect>.

Rack-Mount Tape Drive Enclosures

HP StorageWorks 1U Rack-Mount Kit	A7445A
-----------------------------------	--------

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 DAT 24, DAT40, DAT72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, and Ultrium 448 tape drives.

1U USB Cable Option Kit	396114-B21
-------------------------	------------

NOTE: Converts a 1U SCSI rack-mount kit to a USB interface to support the USB 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_div/10854_div.HTML
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML
(North America)

Product Configuration Wizard

Tape Autoloaders	DAT Autoloader	
	HP StorageWorks DAT 72x6 Tape Autoloader, Internal (Carbon)	Q1566A
	HP StorageWorks DAT 72x6 Tape Autoloader, External (Carbon)	Q1567A
	NOTE: Please see the DAT 72x6 Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media:	
	http://h18006.www1.hp.com/products/quickspecs/11905_div/11905_div.html (Worldwide)	
	http://h18006.www1.hp.com/products/quickspecs/11905_na/11905_na.html (North America)	
	HP StorageWorks 1/8 Tape Autoloader	
	1/8 Ultrium 232 Tape Autoloader, Tabletop	AF202A
	1/8 Ultrium 460 Tape Autoloader, Tabletop	AA927A
	1/8 Ultrium 960 Tape Autoloader, Tabletop	AF204A
1/8 Tape Autoloader Rackmount Kit	C9268R	
NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions		
NOTE: Please reference the 1/8 Tape 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		
HP StorageWorks SSL1016 Tape Autoloader		
SSL1016 Ultrium 460 Tape Autoloader	330821-B21	
NOTE: Please reference the SSL1016 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution.		

Tape Libraries	HP StorageWorks MSL6000 Tape Library	
	Ultrium 960 technology	
	MSL6030, 1 drive, 30 slots, Ultrium 960	AD606A
	MSL6030, 1 drive, 30 slots, Ultrium 960, with embedded FC router	AD608A
	MSL6030, 2 drive, 60 slots, Ultrium 960	AD607A
	MSL6030, 2 drive, 60 slots, Ultrium 960, with embedded FC router	AD609A
	Ultrium 460 technology	
	MSL6030, 1 drive, 30 slots, Ultrium 460	AD598A
	MSL6030, 1 drive, 30 slots, Ultrium 460, with embedded FC router	AD600A
	MSL6030, 2 drive, 60 slot Ultrium 460	AD599A
	MSL6030, 2 drive, 60 slot Ultrium 460, with embedded FC router	AD601A
	NOTE: Please reference the 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 .	

Product Configuration Wizard

Magneto-Optical Jukeboxes	HP StorageWorks 9.1 GB Optical Jukeboxes	
	600mx, 4 drive, 64 slot jukebox	C1160M
	1200mx, 4 drive, up to 128 slots	C1104M
	2200mx, 6 drive, up to 238 slots	C1107M

NOTE: Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at:

http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf

NOTE: Please reference the Magneto-Optical Jukebox data sheets at <http://www.hp.com/go/optical> for additional information needed to create a complete solution.

Ultra Density Optical Jukeboxes	1900ux, 4 drive, 64 slot jukebox	
	3800ux, 4 drive, 128 slot jukebox	AA966A
	7100ux, 6 drive, 238 slot jukebox	AA969A

NOTE: Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at:

http://h18006.www1.hp.com/products/quickspecs/11944_div/11944_div.html

NOTE: Please reference the Ultra Density Optical Jukebox QuickSpecs at <http://www.hp.com/go/optical> for additional information needed to create a complete solution

Step 7 - add external storage option

HP StorageWorks Modular Smart Array 30	NOTE: To run any external SCSI-based devices, the customer must purchase an Internal to External Cable Option kit or an additional SCSI controller for SCSI models. For ATA models, a SCSI controller must be purchased.	
	Windows Storage Server 2003 Release 2 Workgroup to Standard Edition License Upgrade	AE479A
	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 1" Hot Plug Hard Drives.	

Product Configuration Wizard

Step 8 - add UPS/PDU options

Uninterruptible Power Systems – Rack	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn)	326529-D71
	HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l)	326529-B31
	HP UPS R1500 XR (100 to 127) (NA)	204404-001
	HP UPS R1500 XR (208 to 480) (Int'l)	204404-B31
	HP UPS R1500 XR (100 to 127) (Japan)	204404-291
	HP UPS R3000 XR (120V) (NA)	192186-001
	HP UPS R3000 XR (208V) (NA)	192186-002
	HP UPS R3000 XR (100V) (Japan)	192186-291
	HP UPS R3000 XR (208V) (Japan) Compaq UPS R3000 XR (200V) (Japan)	192186-292
	HP UPS R3000 XR (230V) (Int'l - detachable cord)	192186-B31
	HP UPS R3000 XR (230V) (16A IEC309 Plug)	192186-B32
	HP UPS R3000 XR (230V) (16A CEE 7/7 SCHUKO Plug)	192186-B33
	HP UPS R3000 XR (230V) (16A BS-546 Plug)	192186-AR1
	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn)	326529-D71
	HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l)	326529-B31
	UPS R12000 XR N+ x (200-240V) (WW-hardwired)	207552-B22

NOTE: The UPS R12000 XR has a hardwired input and output connection.

Modular PDUs 1U/0U (Up to 32 outlets) NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) (NA, Japan)	252663-D71
	NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan)	252663-D72
	HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l)	252663-B31
	HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC) (WW)	252663-B21
	NOTE: This mPDU (252663-B21), 40A model has a hardwired input.	
HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW)	252663-B24	
NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements. This model may also be used with the high volt UPSs R3000 XR and R6000 For North America, need to order cable PN 340653-001.		
NOTE: Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords: http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML (Worldwide)		

Product Configuration Wizard

HP Monitored Power Distribution Unit	HP PDU with Power Monitoring, Model S1348 - single input, 3-phase, 60A (NA/JPN)	AF916A
	HP PDU with Power Monitoring, Model S1332 - single input, 3-phase, 32A (INTL)	AF917A
PDU Management	HP PDU Management Module	AF400A

Step 9 - add rack mount options

Rack Enabling Kit	ProLiant Rack Enabling Kit	238547-B22
-------------------	----------------------------	------------

NOTE: This is a 5U Rack Enabling Kit that supports the HP ProLiant ML110 and HP ProLiant ML310 servers.

NOTE: Support for racks with round or square mounting holes (including all Compaq and HP Rack System /E and HP Systems), with an adjustment range of 24" - 36".

Step 10 - add a rack

HP Rack 10000 Series (Graphite Metallic)	HP Rack S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	HP Rack 10842 (42U) Rack Cabinet - Pallet	257415-B21
	HP Rack 10842 (42U) Rack Cabinet - Shock Pallet	257415-B22
	HP Rack 10647 (47U) – Pallet	245160-B21
	HP Rack 10647 (47U) – Crated	245160-B23
	HP Rack 10642 (42U) – Pallet	245161-B21
	HP Rack 10642 (42U) – Shock Pallet	245161-B22
	HP Rack 10642 (42U) – Crated	245161-B23
	HP Rack 10636 (36U) – Pallet	245162-B21
	HP Rack 10636 (36U) – Shock Pallet	245162-B22
	HP Rack 10636 (36U) – Crated	245162-B23
	HP Rack 10622 (22U) – Pallet	245163-B21
	HP Rack 10622 (22U) – Shock Pallet	245163-B22
	HP Rack 10622 (22U) – Crated	245163-B23

NOTE: -B21 (pallet) used to ship empty racks shipped on a truck

-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)

-B23 (crated) used for air shipments of empty racks

NOTE: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:

http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML
(North America)

NOTE: For additional information regarding Rack Cabinets, please see the following URL:

<http://h18000.www1.hp.com/products/servers/proliantstorage/racks/index.html>.

Product Configuration Wizard

Rack Options for Rack 10000 Series	HP Rack Light Kit (Neon)	361589-B21
	HP Rack Plinth Kit (Carbon)	251960-B21
	42U Side Panel - Graphite Metallic	246099-B21
	36U Side Panel - Graphite Metallic	246102-B21
	47U Side Panel - Graphite Metallic	255486-B21
	TFT7210R Rack Mounted 17" Monitor	348373-B21
	NOTE: For a complete list of Monitors please view the following URL: http://h18004.www1.hp.com/products/monitors/ .	
	TFT5600 Rack Keyboard Monitor	221546-xx1
	NOTE: For a complete list of Monitors please view the following URL: http://h18004.www1.hp.com/products/monitors/ .	
	1U Rack Keyboard & Drawer (Carbon)	257054-xx1

Country Code Key (for TFT5600 Rack Keyboard Monitor (PN 221546-xx1 and for 1U Rack Keyboard & Drawer (PN 257054-xx1)

XX = 00	US	XX = 09	Norway
XX = 03	UK	XX = 10	Sweden/Finland
XX = 04	Germany	XX = 11	Switzerland
XX = 05	France	XX = 13	Portugal
XX = 06	Italy	XX = 18	Belgium
XX = 07	Spain	XX = 29	Japan
XX = 08	Denmark	XX = B3	International

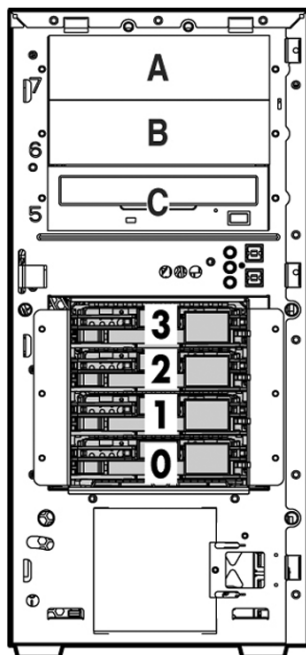
NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-ptions/index.html>.

Step 11 - Order HPTS Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with the HP ProLiant Storage Server. The Care Packs provide support for product software and operating system with extended hours of coverage and reduced response time. And Care Packs allow the customer to budget fixed cost support rather than variable costs that include parts and labor. Note that the standard HP warranty ensures software media will be free of physical defect for a period of 90 days from delivery. However the HP ProLiant ML310 G3 Storage Server products all come with a full year of 9 hours by 5 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service. Extended hours of coverage and additional years of service are available should the customer require more support.

See Service and Support section for more information on available Care Packs for the ML310 G3 Storage Server

Storage



A, B Removable Media Bays (1.6" each)

C 16x DVD-ROM

0, 1, 2, 3 Four 1" Hot Plug Hard Drive Bays

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
1.44-MB Diskette Drive	Up to 1	A, B, or C	Integrated
IDE (ATAPI) CD-ROM Drive	Up to 2	A, B, or C	Integrated IDE (ATAPI)
DVD-ROM Drive Option Kit	Up to 2	A, B, or C	Integrated IDE (ATAPI)

Hot Plug SATA -

	Quantity Supported	Position Supported	Controller
1-inch	Up to 4	0-3	Integrated four port SATA Controller
80-GB 7,200 rpm			HP 6-port SATA RAID controller
160-GB 7,200 rpm			Smart Array P600 Controller
250-GB 7,200 rpm			
500-GB 7,200 rpm			

NOTE: Hot plug capability and drive LED status support requires installation of the HP 6-port SATA RAID controller, the Smart Array P600, or a SAS HBA.

NOTE: The HP 4-port SATA/SAS target fan cable (P/N 389653-B21) is required when the HP 6-port SATA RAID controller (P/N 372953-B21) is installed.

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 30 Family		External	Smart Array 642 Controller

Tape Drives, Tape Autoloaders & Tape Libraries

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 (North America)
<http://h18000.www1.hp.com/products/quickspecs/Division/10233.html> (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html (North America)
<http://h18000.www1.hp.com/products/quickspecs/Division/10809.html> (Worldwide)

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

	Quantity Supported	Position Supported	Controller
HP StorageWorks Tape Drives, USB Internal DAT 24 USB DAT 40 USB DAT 72 USB	1	A, B	Embedded USB port
HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB	1 per USB port	External	USB port
HP StorageWorks Tape Drives, Internal Ultrium 215 Ultrium 232 Ultrium 448 DAT 24 DAT 40 DAT 72 DLT VS80 DLT VS160	1	A, B	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
HP StorageWorks Tape Drives, Internal Ultrium 230 Ultrium 460 Ultrium 960 SDLT 320 SDLT 600	1	A + B	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2

Storage

HP StorageWorks Tape Drives, External Ultrium 215 Ultrium 230 Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 960 DAT 24 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320 SDLT 600	1 per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
HP StorageWorks Autoloaders, Internal DAT 72x6 Tape Autoloader	1	B, C	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
HP StorageWorks Autoloaders, External DAT 72x6 Tape Autoloader 1/8 Tape Autoloader SSL1016 Tape Autoloader	1 per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
HP StorageWorks Tape Libraries, External MSL6000 (Ultrium 960-based) MSL6000 (SDLT 600-based) MSL6000 (Ultrium 460-based) MSL5026S2 (SDLT 320-based) MSL5052S2 (SDLT 320-based)	Please reference the MSL Tape Library QuickSpecs to determine configuration requirements	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.

Technical Specifications

System Unit	Dimensions (HxWxD)	17.0 x 7-7/8 x 22 in (43.0 x 20.0 x 55.0 cm)		
	Weight (approximate)	37 lb (16.8 kg)		
	Input Requirements (per power supply)	Range Line Voltage	100-127V and 200-240V	
		Normal Line Voltage	115 to 230 VAC	
	Line Frequency	50 to 60 Hz		
	Rated Input Current	< 6A RMS at 90VAC with maximum load		
	BTU Rating	1,560 BTU		
	SCSI Connectors (SCSI Models only)	One internal HD68 connectors		
		NOTE: Support for either one internal or one external SCSI channel is available. To use the channel for external connection, order an internal-to-external SCSI cable option kit (PN 159547-B22 or 333370-B21).		
	Power Supply Output Power	Rated Steady-State Power	350W	
		Maximum Peak Power	370W	
	Temperature Range	Operating	50° to 86° F (10° to 30° C)	
		Shipping	-40° to 150° F (-40° to 66° C)	
	Relative Humidity (non-condensing)	Operating	20% to 80%	
		Non-operating	5% to 90%	
Acoustic Noise	Idle (Fixed Disk Drives Spinning)	L WAd (BELS)	5.7	
		L pAm (dBA)	40	
	Operating (Random Seeks to Fixed Disks)	L WAd (BELS)	5.7	
		L pAm (dBA)	40	
	<hr/>			
	<hr/>			
Embedded NC320i PCI Express 10/100/1000T Gigabit network adapter	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	Single lane (x1), 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)		

Technical Specifications

Integrated 4 Channel SATA Controller (SATA Models only)	Drives Supported	Up to 4 SATA hard drives (1 drive/channel)
	Channels	4
	Storage Capacity	1 TB
	Maximum SATA Channel Transfer Rate	150 MB/s per channel
	SATA Protocols	SATA-1a
	Internal SATA Connectors	One 4-lane connector (all four channels)
	RAID levels supported	RAID 0, RAID 1

© Copyright 2006 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows are US registered trademarks of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.