Overview

The HP ProLiant DL100 G2 Storage Server is an affordable and compact Windows-powered file and print solution that enables small and remote office environments to consolidate multiple direct-attached storage (DAS) installations and management interfaces to a single centralized Network Attached Storage (NAS) device. This solution can also be a cost-conscious way to add storage to your network very quickly, or it can be an effective disk-based backup or replication target. It supports multiple file sharing protocols and Windows storage-specific tools that make file share maintenance both easy and powerful. And with the optional Microsoft® iSCSI Software Target, you can upgrade to host block-based storage for Exchange, SQL or other applications.

This network storage solution not only aids in consolidation, storage expansion, and cost reduction, but also helps you spend less time and effort deploying and managing file and print services. It comes with Microsoft Windows Storage Server 2003 Release 2 Operating System pre-installed, and user storage is pre-configured. It's quick to install and it's Windows through-and-through--if you know how to use the Microsoft Management Console (MMC), you probably already know how to manage it. And the unique Rapid Start-up Wizard streamlines installation even more. Finally, remote management capability at both the system level and at the hardware component level (IPMI v2.0) means you can manage and troubleshoot from anywhere.

The DL100 G2 Storage Server leverages industry-standard components to protect and optimize your hardware investment: it packs the storage and I/O you need into only 1U of rack space; it offers four capacity points--starting with the entry-level 320GB model--to help you balance your storage requirements with affordability; and it integrates seamlessly into HP ProLiant or StorageWorks environments.

What is a ProLiant Storage Server?

We use the ProLiant Storage Server product name to describe our enhanced Windows-powered file and print server solutions for small or medium business, branch office, workgroup, or data center IT environments. These network storage devices are built on industry-standard HP ProLiant servers and come with either Microsoft Windows Storage Server 2003 or Windows Unified Data Storage Server 2003 operating system pre-installed. Like any Network Attached Storage (NAS) device, they are pre-configured and install in minutes. And since they're Windows-based, network integration is easy and management has a familiar look and feel. So you can add storage to your network quickly and spend less time on storage management, then get back to what matters most-your business.

What's New

- All ProLiant DL100 G2 Storage Server SKUs now ship with a high-performance dual-core Pentium D processor

Overview

Product Features

A single centralized network storage appliance to manage and protect	Simplify tasks and lower your total cost of storage ownership by consolidating islands of direct-attached storage to one easy-to-use Windows platform. You can also use a DL100 G2 Storage Server as a low-cost disk-based backup/replication target.
Multi-protocol file serving	Support for SMB/CIFS, NFS, HTTP, FTP, WebDAV, AppleTalk, and NetWare file protocols allow you to deploy in a wide range of heterogeneous file serving environments.
Storage-specific Windows management tools	Tools like Directory Quotas, Storage Reporting, File Screening, Index-based Search, and Distributed File System (DFS) Replication for remote offices make Windows file share management both easy and powerful.
Microsoft® iSCSI Software Target support	Upgrade your ProLiant Storage Server to host block-based application storage to further consolidate and lower hardware and administrative costs (also requires operating system upgrade from Workgroup Edition to Standard Edition).
Microsoft® Windows Storage Server 2003 Release 2 Operating System pre-installed	It's Windows! It fully integrates with Microsoft Active Directory and Distributed File System (DFS) environments and you are probably already familiar with the Microsoft Management Console (MMC)-based interface.
Pre-configured user storage and Rapid Start-up Wizard	Go from out-of-the-box to setting up rights and file serving in minutes. It's the fastest way to add secure storage to your network.
Remote manageability	You can manage and troubleshoot from anywhere at both the system level--with Remote Desktop or HTTPS-- and at the hardware component level--using Intelligent Platform Management Interface (IPMI) 2.0
Affordable and compact platform	Packs storage (up to 2TB raw), memory, and I/O into only 1U of rack space and offers four capacity points--starting with the entry-level 320GB model--to help you balance your storage requirements with how much you want to spend
HP ProLiant industry-standard hardware	Relax-your investment is protected because you're not locked into a proprietary platform. And you can seamlessly integrate into HP ProLiant or StorageWorks management environments.
Print server support	Don't forget that the DL100 G2 Storage Server is a Windows print server too (for up to five networked printers), offering consolidation benefits to your Windows print environment.

At a Glance

The HP ProLiant DL100 G2 Storage Server is a Windows-based 1U rack mount network storage solution that delivers multi-protocol file sharing and print serving and in a powerful and affordable package. It's easy to install and manage, making it perfect for a small workgroup, small business or remote office.

- **Operating System:** Windows Storage Server 2003 Release 2 (Workgroup Edition) pre-installed.
  - HP-enhanced File Server Management Console
  - File Server Resource Manager for quotas, file screening and storage reporting
  -

Overview

- Print Server support
  - New print management console
  - Support for up to five network attached printers
- Microsoft Services for Network File System (NFS)
- Distributed File System Replication, including
  - DFS Management Console
  - Configuration and Diagnostic Tools
- Unlimited Client Access License (CAL) included

- **Processor:**
  - Dual-Core Intel Pentium D Processor (3.0 GHz, 800MHz FSB, 2 x 2MB L2 cache)
- **Memory:**
  - PC2-4200 unbuffered DDR2 ECC SDRAM
    - 512 MB standard (320GB and 640GB models)
    - 1 GB standard (1TB and 2TB models)
  - 4 DIMM sockets; expandable to 4GB max
- **Storage Controller:**
  - Hardware-based SATA RAID controller (640GB, 1TB and 2TB models only)
- **Internal Drive Support:**
  - Front loading, hot plug, 7200 RPM SATA Hard Disk Drives
    - 2 x 160GB (320GB model)
    - 4 x 160GB (640GB model)
    - 4 x 250GB (1TB model)
    - 4 x 500GB (2TB model)
  - Internal 8x Slimline DVD+RW
- **Network Controller:**
  - Embedded Dual-port Broadcom 5751 10/100/1000 NIC
- **Expansion Slots:**
  - Two total PCI-X 64-bit 133MHz expansion slots:
    - (1) Full-height, full-length slot (for SCSI backup HBA or SA642 controller for external storage expansion with MSA20)
    - (1) Low-profile, half-length slot (occupied by HW RAID controller in 640GB, 1TB and 2TB models)
- **USB 2.0 Ports:**
  - Four Total: (2) front, (2) rear
- **Redundancy:**
  - Hard drives: Hot-plug SATA and RAID protected
  - Chassis fans: N+1 redundant
- **Management:**
  - Microsoft Management Console (MMC)-based user interface
  - Remote system management via Remote Desktop or Telnet
  - Remote hardware management via IPMI 2.0
- **Form Factor:**
  - 1U Rack
- **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 and memory. SATA hard drives have a one-year warranty

Standard Features

Processor	Dual-Core Intel Pentium D (3.0 GHz / 800MHz Front Side Bus)		
Cache Memory	4MB (2 x 2MB) Level 2 Cache		
Memory Protection	Advanced ECC		
Memory One of the following depending on model	**Type**	PC2-4200 (533MHz) unbuffered ECC DDR2 SDRAM; Interleaving optional (enabled when DIMMs populated in pairs)	
	DIMM Sockets	4	
	Standard	512 MB (320GB and 640GB models) 1 GB (1TB and 2TB models)	
	Maximum Memory	4 GB	
Network Controller	Embedded Dual-port Broadcom 5751 10/100/1000 NIC		
Expansion Slots (PCI-x Riser)	**Slot Number 1**	**Bus Speed**	64-bit, 133MHz
		Height / Length	Full-height / Full-length
		Hot Plug	no
		Pre-installed adapter	N/A
	Slot Number 2	**Bus Speed**	64-bit, 133MHz
		Height / Length	Low-profile / Half-length
		Hot Plug	no
		Pre-installed adapter	Hardware RAID controller (640GB, 1TB, and 2TB models); N/A (320GB mode)
Storage Controllers	Hardware-based SATA RAID controller (RAID 0/1/10/5)--640GB, 1TB and 2TB models only		
Storage	**Optical Drive**	Internal Slimline 8x DVD+RW drive	
	Hard Drives	Front loading, hot plug, 1.5G SATA, 7200 RPM Hard Disk Drives • 2 x 160GB (320GB model) • 4 x 160GB (640GB model) • 4 x 250GB (1TB model) • 4 x 500GB (2TB model)	
Maximum Internal Storage (raw)	2 TB	4 x 500GB SATA	

Standard Features

Interfaces (rear)	**Serial**	1
	USB 2.0 Ports	2 front; 2 rear
	Graphics	1
	Keyboard	1
	Mouse	1
	Network RJ-45	2
Management	Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS) Remote system management via Remote Desktop or Telnet Remote hardware management via Intelligent Platform Management Interface (IPMI) 2.0--Hitachi 2168 BMC controller	
Form Factor	Rack (1U)	
Industry Standard Compliance	ACPI 2.0 PCI 3.0 Compilant PXE Support WOL Support Microsoft® Logo certifications USB 2.0	
Server Power Cords	**Worldwide**	One 10' Highline (IEC-IEC) power cord ship standard
Power Supply	350w (single, non-redundant)	
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	9 chassis fans, 2 power supply fans (non-redundant)	

Optional Software from HP for Storage Servers

- **Microsoft® iSCSI Software Target -** Powerful iSCSI software target solution for HP ProLiant Storage Servers that provides affordable storage provisioning, protection, and availability for small and medium office environments. The software adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It helps administrators consolidate storage capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.
  For more information:
  http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html
- **HP StorageWorks Storage Mirroring Software -** HP StorageWorks 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.
For more information: http://h18006.www1.hp.com/products/storage/software/sm/index.html

- **HP OpenView Storage Data Protector Software -** 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 DL320s 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
- **HP StorageWorks File Migration Agent -** HP FMA is an automated solution designed to help simplify Windows-based file, web, and application server administration in small business to enterprise environments. This is accomplished through policy-based file migration and archive to popular storage targets, including HP StorageWorks Reference Information Storage System (RISS), HP StorageWorks File System Extender, and NAS, via Common Internet File System (CIFS). For more information:
  http://h18006.www1.hp.com/products/storage/software/fma/
- **HP Systems Insight Manager Software -** HP SIM 5.x is the first unified server and storage management platform. Now, from a single management console, administrators can manage their complete HP server and storage environment with a feature rich, extensible and secure management tool set.
  HP SIM also serves as a central access point for ProLiant Essentials, Integrity Essentials, and Storage Essentials software options that deliver targeted functionality for these platforms. For more information:
  http://h18013.www1.hp.com/products/servers/management/hpsim/index.html
- **Insight Management Agents -** Allow 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.
- **HP Storage Essentials NAS Manager Software -** Provides comprehensive Network Attached Storage (NAS) management capabilities for HP ProLiant Storage Server. Visualize your distributed HP NAS solutions and centrally manage their capacity, performance, events, and dependencies to ensure NAS availability and performance and unify SAN and NAS management. For more information on the complete line of HP Storage Essential products go to: http://www.hp.com/go/storageessentials

Standard Features

Warranty

The DL100 G2 Storage Server comes with a standard 3-1-1 warranty (3 year parts exchange, 1 year labor and 1 year onsite, next business day response)

Services Included with the Product

One year of HP Software Support, standard 9x5 business hours (software technical support and software product and documentation updates).

Service and Support 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 1year 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	Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
AE435B AE436B AE437B AE438B	HP Software Support for Storage, 9 x 5	1 year	Bundled	Bundled
		3 years	n/a	HA106A3-87R
		4 years	n/a	HA106A4-87R
		5 years	n/a	HA106A5-87R
	HP Software Support for Storage, 24 x 7	1 year	n/a	HA107A1-87R
		3 years	n/a	HA107A3-87R
		4 years	n/a	HA107A4-87R
		5 years	n/a	HA107A5-87R
	Support Plus for Storage	1 year	UF987E	HA109A1-87R
		3 years	UF990E	HA109A3-87R
		4 years	n/a	HA109A4-87R
		5 years	n/a	HA109A5-87R
		Post Warranty	UF993PE	n/a
	Support Plus 24 for Storage	1 year	UF988E	HA110A1-87R
		3 years	UF991E	HA110A3-87R
		4 years	n/a	HA110A4-87R
		5 years	n/a	HA110A5-87R
		Post Warranty	UF994PE	n/a
	Proactive 24 (P24)	1 year	n/a	HA111A1-87R
		3 years	n/a	HA111A3-87R
		4 years	n/a	HA111A4-87R
		5 years	n/a	HA111A5-87R
	6 hour CTR	1 year	UF989E	HA105A1-87R
		3 years	UF992E	HA105A3-87R
		4 years	n/a	HA105A4-87R
		5 years	n/a	HA105A5-87R
	Installation	n/a	U7986E	HA113A1-5D6

HP Software Support

- Connect with HP Response Center engineers via telephone, electronic communication, or FAX for assistance in resolving software implementation or operations problems.
-

Standard Features

	● HP Services provides corrective support to resolve identifiable and reproducible software product problems, and to help you identify problems that are difficult to reproduce. ● 9x5 coverage - Service is available during standard business hours, Monday through Friday (excluding holidays).
HP Software Support, 24 x 7	● Provides all the benefits of the regular Software Support, plus HP Services engineers are available around the clock 365 days per year.
HP Support Plus	● 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	● 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
HP Proactive 24	● 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

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.

Standard Features

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.

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

Standard Features

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	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

In the following steps you will be guided through a series of steps to help you configure a Storage Server.
NOTE: Except for CTO SDRAM, options ship separately and are not factory integrated.

Step 1- Choose a Model

Select one of four available models of the DL100 G2 Storage Server.
NOTE: Four different internal capacity models are available, 320GB, 640GB, 1TB and 2TB based on raw storage capacity, not user storage.

HP ProLiant DL100 G2 Storage Server Common Specifications	**Operating System**	Windows Storage Server 2003 Release 2, Workgroup Edition
	Processor	Intel Pentium D (3.0 GHz / 800MHz FSB)
	Processor Cache Memory	4MB (2 x 2MB) Level 2 Cache
	Memory Type	PC2-4200 (533MHz) unbuffered ECC DDR2 SDRAM
	Network Controller	Embedded Dual-port Broadcom 5751 10/100/1000 NIC
	Optical Drive	Internal Slimline 8x DVD+RW drive
	Form Factor	Rack (1U)
	Remote hardware management	IPMI 2.0, NIC port 1

HP ProLiant DL100 G2 320GB SATA Storage Server AE435B	**Memory**	512 MB standard, expandable up to 4 GB
	Storage Controller	None (OS supports software RAID 0 and 1)
	Internal storage	Front loading, hot plug, 7200 RPM 1.5G SATA Hard Disk Drives • 2 x 160 GB (320 GB raw capacity, 126 GB user capacity - RAID1)
	Expansion Slots	Two PCI-X 64-bit 133MHz expansion slots • Full-height, full-length slot (open) • Low-profile, half-length slot (open)

HP ProLiant DL100 G2 640GB SATA Storage Server AE436B	**Memory**	512 MB standard, expandable up to 4 GB
	Storage Controller	HW RAID Controller (Supports RAID 0,1,10,and 5)
	Internal storage	Front loading, hot plug, 7200 RPM 1.5G SATA Hard Disk Drives • 4 x 160 GB (640 GB raw capacity, 430 GB user capacity - RAID 5)
	Expansion Slots	Two PCI-X 64-bit 133MHz expansion slots • Full-height, full-length slot (open) • Low-profile, half-length slot (occupied by HW RAID controller)

HP ProLiant DL100 G2 1TB SATA Storage Server AE437B	**Memory**	1GB (2x512MB) standard, expandable up to 4 GB
	Storage Controller	HW RAID Controller (Supports RAID 0,1,10,and 5)
	Internal storage	Front loading, hot plug, 7200 RPM 1.5G SATA Hard Disk Drives • 4 x 250 GB (1TB raw capacity, 681 GB user capacity - RAID 5)
	Expansion Slots	Two PCI-X 64-bit 133MHz expansion slots • Full-height, full-length slot (open) • Low-profile, half-length slot (occupied by HW RAID controller)
HP ProLiant DL100 G2 2TB SATA Storage Server AE438B	**Memory**	1GB (2x512MB) standard, expandable up to 4 GB
	Storage Controller	HW RAID Controller (Supports RAID 0,1,10,and 5)
	Internal storage	Front loading, hot plug, 7200 RPM 1.5G SATA Hard Disk Drives • 4 x 500GB (2TB raw capacity, 1.36 TB user capacity - RAID 5)
	Expansion Slots	Two PCI-X 64-bit 133MHz expansion slots • Full-height, full-length slot (open) • Low-profile, half-length slot (occupied by HW RAID controller)

Step 2 – Add More Memory

Memory	512MB of Advanced ECC PC2-4200 DDR SDRAM DIMM Memory Kit (1 x 512MB)	390825-B21
	1024MB of Advanced ECC PC2-4200 DDR SDRAM DIMM Memory Kit (1 X 1024MB)	390824-B21
	NOTE: The ProLiant DL100 G2 Storage Server has 4 memory slots allowing a total of 4GB of memory maximum (4 x 1024MB)	
	NOTE: If a ProLiant DL100 G2 Storage Server requires field replacement, the memory option(s) should be removed and re-installed into the ProLiant DL100 G2 Storage Server replacement unit.	

Step 3 – Upgrade Operating System

Upgrade any DL100 G2 Storage Server model from the pre-installed Windows Storage Server 2003 R2 (Workgroup Edition) operating system to the Windows Storage Server 2003 R2 (Standard Edition) operating system.
NOTE: Windows Storage Server 2003 R2 (Workgroup Edition) supports print serving for up to 5 network attached printers. This "Workgroup to Standard Edition O/S Upgrade" option upgrades those models to an unlimited number of network attached printers. It also enables the Single Instance Storage (SIS) feature--which eliminates duplicate files when enabled--and compatibility with Microsoft iSCSI Target Software. SIS is not available on the default Workgroup license and Microsoft iSCSI Target Software requires Standard Edition by license. Finally, it allows an external storage enclosure to be attached to a DL100 G2 Storage Server (the Workgroup license allows a maximum of four drives only). An external storage upgrade kit (AE439A)--which includes a new Standard Edition License, Smart Array 6402 and a MSA20 with four 250GB SATA HDDs--is available (see below) if you want to purchase a bundled external storage solution.

Workgroup to Standard Edition O/S Upgrade	Windows Storage Server 2003 Release 2 Workgroup to Standard Edition License Upgrade **NOTE:** This upgrade is compatible with HP ProLiant Storage Servers only	AE479A

Step 4 - Add Optional Software

Microsoft® iSCSI Software Target

Microsoft iSCSI Software Target adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It is a powerful iSCSI software solution that provides affordable application storage provisioning, protection, and availability for small and medium office environments. It helps administrators consolidate storage capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.

NOTE: Microsoft iSCSI Target Software is licensed for use with HP ProLiant Storage Servers with either the Standard or Enterprise Edition of the Windows Storage Server 2003 R2 Operating System. All DL100 G2 models require the Workgroup to Standard Edition Upgrade (AE479A) to ensure compatibility.

Microsoft iSCSI Target Software 1 LTU	T4433A

NOTE: For more information go to HP's Microsoft® iSCSI Software Target website at:
http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html

HP StorageWorks Storage Mirroring Software

HP StorageWorks Storage Mirroring (SM) Software 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 Highlights:

- High availability with Microsoft Windows 2000/NT/2003servers
- 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 StorageWorks Storage Mirroring Media Kit v4.5	T4440A
HP StorageWorks Storage Mirroring NAS Edition LTU 1	T4445A
HP StorageWorks Storage Mirroring NAS Edition LTU 10	T4446A

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

Step 5 – Add Tape Backup

NOTE: The HP ProLiant DL100 G2 Storage Server has only one full-length, full-height PCI-x expansion slot which can either be used to add a SCSI card for tape backup or to add a Smart Array 642 controller card to support an external MSA20 storage enclosure.

SCSI Host Bus Adapter	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
Tape Backup Devices	For more information on the compatible tape devices for the DL100 G2 Storage Server go to: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html	

Step 6 - Add External Storage

NOTE: The HP ProLiant DL100 G2 Storage Server has only one full-length, full-height PCI-x expansion slot which can either be used to add a SCSI card for tape backup or to add a Smart Array 642 controller card to support an external MSA20 storage enclosure.

DL100 G2 Storage Server External Storage Enclosure Bundle	Includes: one Smart Array 642 controller; one Modular Smart Array 20 enclosure with 4 x 250GB 7200 rpm 1.5G SATA drives; Windows Storage Server Workgroup to Standard License Upgrade; cables to connect the MSA20 to the DL100 G2 Storage Server.	AE439A

Step 7 - Add a Power Cord

NOTE: The ProLiant DL100 G2 Storage Server is designated as a rack mount solution and ships standard with rack mount PDU power cables, if a customer desires to not rack the ProLiant DL100 G2 Storage Server the appropriate power cord option kit must be ordered.

Power Cords	Central Europe - CORD, PWR,AC LINE,EUR,12'	157215-021
	UK, Hong Kong - CORD, PWR,AC,UK/SINGAPORE, 12'	157216-031
	Italy - CORD, PWR,AC LINE,ITL, 12'	157217-061
	Denmark - CORD, PWR,AC LINE,DAN, 12'	157218-081
	Switzerland - CORD, PWR,AC LINE,SWI, 12'	157219-111
	SE Asia, India - CORD, PWR,AC IND/SOUAF, 12'	157220-AR1
	Australia, China, New Zealand - CORD, PWR,AC LINE,AUS/N.ZEAL, 12'	227098-011

UPS Power Cord Reference Guide	***Please see the UPS Power Cord Reference Guide for that lists cable descriptions, requirements, and specifications for UPS units.*** ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.

Step 8 – Add a Rack

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

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet - Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet	AF004A
	10642 G2 (42U) Rack Shock Pallet - for field racking (NA only)	AF007A
	10636 G2 (36U) Rack Cabinet - Pallet	AF011A
	10636 G2 (36U) Rack Cabinet - Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet - Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet	AF014A
	10636 G2 (36U) Rack Cabinet, without door - Shock Pallet	AF015A
	10636 G2 (36U) Rack Cabinet, with Extension, without door - Shock Pallet	AF016A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	
	NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML (Worldwide)	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	

HP Rack 10000 Series (Graphite Metallic)	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
	10642 (42U) Infrastructure Rack (Low Voltage)	379006-001
	10642 (42U) Infrastructure Rack (High Voltage)	379005-001
	NOTE: xxxxxx-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). xxxxxx-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)
NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower

Step 9 – Order HPTS Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with the HP ProLiant DL100 G2 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 DL100 G2 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 Upgrade options"** section for more information on available Care Packs for the DL100 G2 Storage Server.

Memory

HP ProLiant DL100 G2 Storage Server

Standard Memory

PC2-4200 (533MHz) unbuffered DDR2 ECC SDRAM

- 512 MB (320GB and 640GB models)
- 1 GB (1TB and 2TB models)

Maximum Memory

Up to 4 GB memory

NOTE: The chart below represents available configuration options for DL100 G2 Storage Server memory.

NOTE: Interleaving is automatically enabled in configurations where DIMMs are populated in pairs.

Memory		Slot			
		1A	**2A**	**3B**	**4B**
320GB and 640GB models	**512 MB**	512 MB	Empty	Empty	Empty
1TB and 2TB models	**1 GB**	512 MB	Empty	512 MB	Empty
Maximum	**4 GB**	1 GB	1 GB	1 GB	1 GB

Drive Support

	Quantity Supported	Position Supported	Type
Removable Media	1	Internal front	Slimline 8x DVD+RW drive

Serial ATA Hard Drives

	Quantity Supported	Controller
500GB 1.5G SATA 7.2K 250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K	2 (320GB model) 4 (640GB, 1TB, and 2TB models)	None (320 GB model) Hardware RAID Controller (Supports RAID 0,1,10,and 5)

Maximum Raw Storage Capacity

2TB	4 x 500GB SATA Drives (2TB model)

RAID Factory Configuration and Available User Storage

320GB model	Software RAID 1: 126 GB user capacity
640GB model	Hardware RAID 5: 430 GB user capacity
1TB model	Hardware RAID 5: 681 GB user capacity
2TB model	Hardware RAID 5: 1.36 TB user capacity

Technical Specifications

Dimensions (HxWxD)	**Rack**	1.7 x 17 x 26.5 in (4.3 x 43.2 x 67.3 cm)
Weight	**Shipping**	46.89 lb (21.27 kg)
	Out of box	25.64 lb (11.63 kg)
LED Indicators (On Front Panel - if applicable)	Drive Status, Drive Fault, NIC 1 and NIC 2, UID. System power LED's	
Drives Supported	SATA drives. All models ship with hard drives pre-installed	
Input Requirements	**Nominal Line Voltage**	115/230 VAC
	Range Line Voltage	90/264 VAC
	Rate Input Frequency	47 to 63 Hz
	Rated Input Current	6 Amps (115 VAC) , 3 Amps (230 VAC)
Drive Interface	Serial ATA	
Power Supply Output	350 W (rated steady state power output) **NOTE:** 1. +3.3V and +5V total O/P power 130W maximum 2. +3.3V, +5V and +12V total O/P power 324W Maximum	
Relative Humidity (non-condensing)	Operating	8% to 80%
	Shipping	8% to 80%
Temperature Range	Operating	10° to 40° C (50° to 104° F)
	Shipping	-40° to 60° C (-40° to 149° F)

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