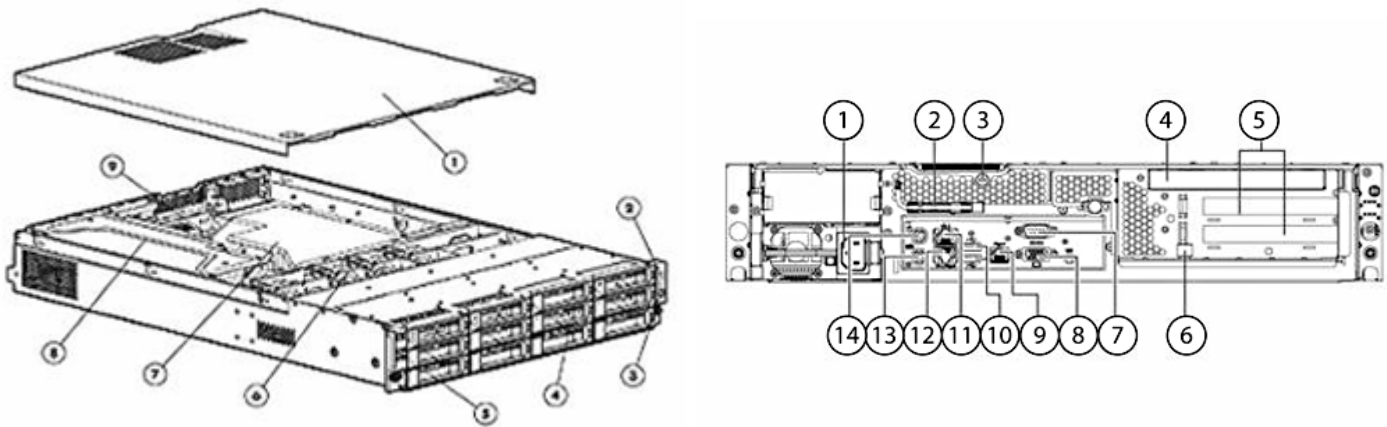


Overview

You have better things to do than worry about file storage. You're juggling multiple interfaces, security concerns, and shrinking backup windows--all while your users demand more and more storage space. You need high-capacity file storage that's powerful, scalable, and easy to manage, and you need it quickly.

A DL185 G5 Storage Server is the fast and easy way to add high-density 2U rack-mount networked file storage to your small or medium IT environment. The Microsoft Windows-powered operating system is pre-installed and internal storage is pre-configured, so you're up and serving files in minutes. Support for multiple protocols enables you to consolidate to a centralized network attached storage (NAS) solution or to create a backup/replication target. A single file/print solution to manage, scale, and secure helps you spend less time and effort on maintenance and management, and industry-standard building blocks protect your investment by ensuring compatibility with your network and applications.



Front View:

1. Access panel
2. Front LED Indicators
3. Power on/off
4. Twelve Large Form Factor (LFF) 3.5" drive bays for SATA or SAS hard drives
5. Front USB Ports (2)
6. Non Hot plug Non redundant fans (4 fans)
7. Air Baffle
8. PCI Cage
9. System Board

Rear View:

1. Power supply cable socket
2. T10/T15 Wrench
3. Thumbscrew for top cover
4. Rear DVD-ROM drive
5. PCI expansion card slots (top slot occupied by Smart Array P800 controller)
6. Thumbscrew for PCI cage
7. Serial port
8. VGA port
9. Lights-Out 100i Port
10. Two USB 2.0 ports
11. GbE LAN port for NIC2
12. GbE LAN port for NIC1
13. PS/2 keyboard port (purple)
14. PS/2 mouse port (green)

Overview

What is a ProLiant Storage Server? ProLiant Storage Servers are 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 R2 or Windows Unified Data Storage Server 2003 operating system pre-installed. Like many Network Attached Storage (NAS) devices, they support heterogeneous file serving environments and are pre-configured to install in minutes. And since they're Windows-based, network integration is easy, your antivirus and backup applications run right on the box, 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: running your business.

What's New

- A high-capacity and high-performance 5.4TB SAS model (AM472A) featuring twelve 450GB SAS HDDs

Highlights

HP ProLiant DL185 G5 Storage Servers deliver high capacity and high performance with entry-level affordability. Quad-Core processing, up to 12TB storage capacity, and ready external expandability enhance this ultra-dense 2U file serving solution for small, medium, and workgroup environments.

- **Operating System:**
 - Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
- **Processors:**
 - Quad-core AMD Opteron™ Model 2354 2.2GHz
 - One processor standard; up to 2 supported
- **Memory:**
 - 2GB (2 x 1GB) standard (all SATA models)
 - 4GB (2 x 2GB) standard (all SAS models)
- **Storage Controller:**
 - Smart Array P800/512MB Controller (RAID 0/1/5/6) with BBWC and external expansion
- **Drive Support:**
 - Twelve 3.5" (Large Form Factor) hot-plug internal bays that support SATA or SAS HDDs
 - 2 x 250GB SATA LFF (Base SATA model)
 - 8 x 500GB SATA LFF (4TB SATA model)
 - 8 x 750GB SATA LFF (6TB SATA model)
 - 12 x 750GB SATA LFF (9TB SATA model)
 - 12 x 1TB SATA LFF (12TB SATA model)
 - 2 x 146GB SAS LFF (Base SAS model)
 - 8 x 300GB SAS LFF (2.4TB SAS model)
 - 12 x 450GB SAS LFF (5.4TB SAS model)
 - Rear DVD-ROM drive to support System Restore
- **Network Controller:**
 - Embedded NC326i PCIe Dual Port Gigabit Server Adapter
- **Expansion Slots:**
 - (2) Full-length, full-height PCIe x8 slots (one slot occupied by Smart Array P800/512MB controller)
- **Redundancy:**
 - Hot-plug SAS/SATA hard disk drives
 - Redundant non-hot plug power supplies
- **Management:**
 - Microsoft Management Console (MMC)-based user interface
 - Remote system management via Remote Desktop or Telnet
 - HP ProLiant Lights-Out 100i remote management - Advanced Pack included

Overview

- **Form Factor:**
 - Rack (2U), (3.5-inch)
- **Warranty:**
 - Protected by HP Services and a worldwide network of resellers and service providers. One-year Next Business Day, on-site limited global warranty (one year parts, one year labor, one year on-site support). Certain restrictions and exclusions apply.

Features and Benefits

Go from out-of-the-box to file serving in minutes, not hours.

The Windows-powered operating system is pre-installed and user storage is pre-configured, so it's a quick, secure, and easy way to add storage to your network.

A single centralized file server platform to manage and protect

Consolidate islands of direct-attached storage to one easy-to-use Windows NAS platform or create a scalable disk-based backup or replication target. With 12-drive models you can greatly reduce your cost per gigabyte, and new 2-and 6-drive models have open drive slots for flexible internal expansion.

Multi-protocol file serving

Deploy in a wide range of heterogeneous file serving environments with support for SMB/CIFS, NFS, HTTP, FTP, WebDAV, AppleTalk, and NetWare protocols.

Seamless integration into your Windows environment

It's running Windows, so it integrates natively into your Active Directory and DFS environments, runs your favorite antivirus or backup applications, and management via the Microsoft Management Console (MMC) has a familiar look and feel.

Intelligent storage management features

Make more efficient use of storage space using the file de-duplicating Single-instance Storage (SIS) feature and enjoy the benefits of other storage-specific tools like Indexed Search, SharePoint® Services support, Quotas, File Screening, Storage Reporting, and Distributed File System (DFS) Replication.

Remote manageability

You can manage and troubleshoot from outside the office at both the operating system level (with Remote Desktop or HTTPS) and at the hardware component level (using Lights-Out 100i remote management).

HP ProLiant industry-standard hardware

Relax--your investment is protected because you're not locked into a proprietary platform. The high-density 2U rack-mount platform features quad-core processing, support for up to twelve 3.5" SATA or SAS internal hard drives, easy external expansion with HP MSA enclosures, and redundant power supplies.

Print server support

Don't forget that a DL185 G5 Storage Server is a Windows print server too, offering consolidation benefits to your Windows print environment.

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.

Standard Features

Operating System

Microsoft Windows Storage Server 2003 R2, Standard x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Optimized for File Serving: Up to 20% faster file serving performance than a general-purpose Windows Server 2003 R2 installation on the same hardware.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- HP Rapid Start-up Wizard: Simplifies and accelerates new device deployment by walking you through basic system settings step-by-step.
- Single-instance Storage (SIS): Recovers up to 35% of disk space by de-duplicating files and reducing the amount of redundant data stored. Identifies identical files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Windows 2000 or Windows XP.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- Windows SharePoint® Services: A powerful Web-based team collaboration environment that provides an integrated portfolio of collaboration and communication services designed to connect people, information, processes, and systems.
- Distributed File System (DFS) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- Full support of Volume Shadow Copy Service, which creates point-in-time copies of files and folders at predetermined time intervals that can then be accessed from client computers.
- Unlimited Client Access Licenses (CALs) included
- Microsoft Services for Network File System (NFS)
- Support for multiple file serving protocols, including SMB/CIFS, NFS, HTTP, FTP, WebDAV, AppleTalk, and NetWare
- Print Management Console: Manage multiple printers (license for unlimited printer support) from a single console, whether locally or over the WAN
- Support for any number of SATA or SAS drives and multiple network ports

Processor

AMD Opteron™ processor Quad-Core Model 2354 (2.2GHz, 75W ACP)

Cache Memory

4 x 512KB Level 2 and 2MB shared Level 3

Chipset

Intel® 3010 Chipset with 1066MHz FSB

Standard Features

Memory	Type	Registered PC2-5300 DIMMs (DDR2-667)
	Memory Protection	ECC Capabilities
	DIMM Sockets	8
	Maximum configuration	32 GB (8 x 4 GB)
	Base SATA, 4TB SATA, 6TB SATA, 9TB SATA, and 12TB SATA models	
	Standard	2 GB (2 x 1GB)
	Base SAS, 2.4TB SAS, and 5.4TB SAS models	
	Standard	4 GB (2 x 2GB)

Network Controller Embedded NC326i PCIe Dual Port Gigabit Server Adapter

Expansion Slots	Slot Number	Bus Speed	Bus Number*	Device Number**	Hot Plug (Y/N)	PCI Voltage	Notes
	1	x8 PCI-Express	3	0	No	3.3 volts	Full length, full height (occupied by SA P800)
	2	x8 PCI-Express	3	0	No	3.3 volts	Full length, full height

** Slots enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

Storage Controller HP Smart Array P800/512MB Controller with battery-backed write cache (BBWC)

- RAID 0/1/1+0/5 and RAID 6 with Advanced Data Guarding
- x8 2.5G PCIe host interface¹
- External expansion ports

Storage	Hard Drives	Internal:
		<ul style="list-style-type: none"> ● 2 x 250GB SATA 7.2K LFF MDL HDDs (Base SATA model) ● 8 x 500GB SATA 7.2K LFF MDL HDDs (3TB SATA model) ● 8 x 750GB SATA 7.2K LFF MDL HDDs (6TB SATA model) ● 12 x 750GB SATA 7.2K LFF MDL HDDs (9TB SATA model) ● 12 x 1TB SATA 7.2K LFF MDL HDDs (12TB SATA model) ● 2 x 146GB 3G SAS 15K LFF ENT DP HDDs (Base SAS model) ● 8 x 300GB 3G SAS 15K LFF ENT DP HDDs (2.4TB SAS model) ● 12 x 450GB 3G SAS 15K LFF ENT DP HDDs (5.4TB SAS model)
	Optical Drive	Rear DVD-ROM drive

Standard Features

Maximum Storage Capacity (raw)	Internal hot plug LFF SATA	12 TB	12 x 1TB SATA
	Internal hot plug LFF SAS	5.4 TB	12 x 450GB SAS
	Internal plus External	60TB	12 x 1TB LFF SATA int. + 48 x 1TB LFF SATA ext.

Interfaces	Network RJ-45(Ethernet)	NC326i PCIe Dual Port Gigabit Server Adapter
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	5 total ports: (2) USB up front, (2) port rear, (1) port internal (optional) NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html .

Graphics	Integrated on system board <ul style="list-style-type: none">• 32 MB shared supporting 1600 x 1200 x 16 M resolution
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Management	<p>Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS) Remote system management via Remote Desktop or Telnet HP ProLiant Lights-Out 100i Remote Management with Advanced Pack standard</p> <p>Lights-Out 100i Remote Management (LO100i) allows you or your service provider to remotely control and manage a DL185 G5 Storage Servers over a LAN or the Internet regardless of the server's state of operation. LO100i provides the following OS-independent remote control capabilities:</p> <ul style="list-style-type: none">• Virtual power• System event log access• System health• Remote serial console (serial redirection)• Browser, Telnet access• SMASH-CLP compliant• IPMI 2.0 compliant• Advanced Pack (included): Virtual KVM graphic console, Virtual Media (floppy and CD), Secure Socket Layer Encryption, Secure Shell Encryption
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NOTE: For more information on Lights-Out 100i and the Advanced Pack features, please visit http://h18000.www1.hp.com/products/quickspecs/12469_div/12469_div.html

Form Factor	Rack Mount (2U), (3.5 in/8.89 cm)
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Standard Features

Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support Microsoft® Logo certifications IPMI 2.0 Compliant
Server Power Cords	Worldwide Two 10' Highline (IEC-IEC) power cords standard
Power Supply	750Watts, auto-switching; redundant, non-hot-plug
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: http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/index.html .
System Fans	4 system fans standard; non-hot-plug, non-redundant
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://h18000.www1.hp.com/products/servers/proliantdl145/index.html
Telco and Threaded Hole Rack Support	Telco Rack Kit: NOTE: 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

Optional Software

Optional Software from HP for Storage Servers

- **Microsoft® iSCSI Software Target** - Powerful iSCSI software target solution that provides affordable application 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 Data Protector Software** - HP 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.

All ProLiant Storage Servers support using Data Protector as a backup software solution.

For more information on HP Data 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).

The following Windows Storage Server features or add-ons are currently NOT supported by HP File Archiving software:

NOTE: Single Instance Storage (SIS) - (NOT SUPPORTED)

NOTE: DFS-Replication (DFS-R) - (NOT SUPPORTED)

Optional Software

NOTE: File Server Resource Manager (FSRM) - Content Filter, & File Screening - (NOT SUPPORTED)

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

- **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>

Service and Support, HP Care Pack, and Warranty Information

Warranty The DL185 G5 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)

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 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	
AG914A	HP Software Support for Storage, 9 x 5	1 year	Bundled	Bundled	
AG915A		3 years	n/a	HA106A3 - 9K9	
AG916A		4 years	n/a	HA106A4 - 9K9	
AG917A		5 years	n/a	HA106A5 - 9K9	
AG918A		HP Software Support for Storage, 24 x 7	1 year	n/a	HA107A1 - 9K9
AG919A	3 years		n/a	HA107A3 - 9K9	
AG920A	4 years		n/a	HA107A4 - 9K9	
AM472A	5 years		n/a	HA107A5 - 9K9	
	Support Plus for Storage		1 year	UK450E	HA109A1 - 9K9
			3 years	UK453E	HA109A3 - 9K9
			4 years	n/a	HA109A4 - 9K9
			5 years	n/a	HA109A5 - 9K9
			Post Warranty	UL100PE	n/a
	Support Plus 24 for Storage		1 year	UK451E	HA110A1 - 9K9
		3 years	UK454E	HA110A3 - 9K9	
		4 years	n/a	HA110A4 - 9K9	
		5 years	n/a	HA110A5 - 9K9	
		Post Warranty	UL101PE	n/a	
	Proactive 24 (P24)	1 year	n/a	HA111A1 - 9K9	
		3 years	n/a	HA111A3 - 9K9	
		4 years	n/a	HA111A4 - 9K9	
		5 years	n/a	HA111A5 - 9K9	
		6 hour CTR	1 year	UK452E	HA112A1 - 9K9
	3 years		UK455E	HA112A3 - 9K9	
	4 years		n/a	HA112A4 - 9K9	
	5 years		n/a	HA112A5 - 9K9	
	Installation		n/a	U7986E	HA113A1 - 5LR

Service and Support, HP Care Pack, and Warranty Information

- | | |
|-----------------------------|---|
| HP Software Support | <ul style="list-style-type: none">● Connect with HP Response Center engineers via telephone, electronic communication, or FAX for assistance in resolving software implementation or operations problems.● 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 | <ul style="list-style-type: none">● 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 | <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. |
| 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 |

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- | | |
|---------------------------|--|
| Software Product Services | <ul style="list-style-type: none">● 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. |
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Service and Support, HP Care Pack, and Warranty Information

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

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

Service and Support, HP Care Pack, and Warranty Information

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

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

NOTE: Options ship separately and are not factory integrated.

Step 1 - Choose a Model

Select one of seven available DL185 G5 Storage Server models.

NOTE: Models names are based on raw storage capacity, not available user storage.

HP ProLiant DL185 G5 Storage Server Common Specifications	Operating System	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Processor	Quad-core AMD Opteron™ Model 2354 (2.2GHz, 75W ACP)
	Cache Memory	4 x 512KB Level 2 and 2MB shared Level 3
	Number of Processors	1 standard; up to 2 supported
	Memory Type	PC2-5300 (667 MHz) Registered DDR2 ECC SDRAM
	Storage Controller	HP Smart Array P800/512MB Controller with battery-backed write cache (BBWC); occupies one PCIe slot
	Network Controller	Embedded NC326i PCIe Dual Port Gigabit Server Adapter
	Expansion Slots	Two full-length, full-height PCIe x8 slots (one slot occupied by SA P800)
	Optical Drive	Rear DVD-ROM drive
	Redundancy	Non-hot-plug redundant power supplies
	Remote Management	HP ProLiant Lights-Out 100i with Advanced Pack Included
	Form Factor	Rack (2U), (3.5-inch)
	Factory Racking	Factory integrates select Storage Servers with other HP products such as HP ProLiant Servers or Enterprise Virtual Arrays. NOTE: #0D1 will appear after the part number on the sales order if HP factory integration is supported.

HP ProLiant DL185 G5 Base SATA Storage Server AG914A	Memory	2GB (2 x 1GB)
	Internal Storage	2 x 250GB SATA 7.2K 3.5" MDL hot-plug HDDs NOTE: Up to 10 additional drives supported.
HP ProLiant DL185 G5 4TB SATA Storage Server AG915A	Memory	2GB (2 x 1GB)
	Internal Storage	8 x 500GB SATA 7.2K 3.5" MDL hot-plug HDD NOTE: Up to 4 additional drives supported.
HP ProLiant DL185 G5 6TB SATA Storage Server AG916A	Memory	2GB (2 x 1GB)
	Internal Storage	8 x 750GB SATA 7.2K 3.5" MDL hot-plug HDDs NOTE: Up to 4 additional drives supported.
HP ProLiant DL185 G5 9TB SATA Storage Server AG917A	Memory	2GB (2 x 1GB)
	Internal Storage	12 x 750GB SATA 7.2K 3.5" MDL hot-plug HDDs

Product Configuration

HP ProLiant DL185 G5 12TB SATA Storage Server AG918A	Memory	2GB (2 x 1GB)
	Internal Storage	12 x 1TB SATA 7.2K 3.5" MDL hot-plug HDDs
HP ProLiant DL185 G5 Base SAS Storage Server AG919A	Memory	4GB (2 x 2GB)
	Internal Storage	2 x 146GB 3G SAS 15K 3.5" DP ENT hot-plug HDDs NOTE: Up to 10 additional drives supported.
HP ProLiant DL185 G5 2.4TB SAS Storage Server AG920A	Memory	4GB (2 x 2GB)
	Internal Storage	8 x 300GB 3G SAS 15K 3.5" DP ENT hot-plug HDDs NOTE: Up to 4 additional drives supported.
HP ProLiant DL185 G5 5.4TB SAS Storage Server AM472A	Memory	4GB (2 x 2GB)
	Internal Storage	12 x 450GB 3G SAS 15K 3.5" DP ENT hot-plug HDDs

Step 2 - Add Another Processor

You can add a second processor to any DL185 G5 Storage Server.

Processors	AMD Opteron™ processor 2354 (2.2GHz, 75W ACP)	468547-B21
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Step 3 - Add More Memory

NOTE: SATA models include 2GB (2 x 1GB) of SDRAM standard while SAS models include 4GB (2 x 2GB) standard. All models are expandable to 32GB.

NOTE: All models have a total of eight DIMM sockets. See 'Memory' section of QuickSpecs below for more information on memory configuration

Memory	1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
	2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
	2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
	4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
	4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
	8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
	8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21

Product Configuration

Step 4 - Add a Network Adapter

DL185 G5 Storage Servers have one full-length, full-height PCI Express x8 slot available for additional network ports, a backup HBA, or additional expandability.

NOTE: Choose only one expansion card

NOTE: Multifunction Server Adapters support the installed Microsoft Windows Server 2003 Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features

Network Adapters	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
	HP NC510C PCIe 10 Gigabit Server Adapter	414129-B21
	NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter.	
HP NC510F PCIe 10 Gigabit Server Adapter	414126-B21	
NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter.		

Step 5 - Add More Storage

DL185 G5 Storage Servers come standard with one installed Smart Array P800 controller for internal drives and easy external expansion. They have one full-length, full-height PCI Express x8 slot available for additional network ports, a backup HBA, or additional storage expandability

Storage Controllers	SAS Controllers	
	Smart Array P800 Controller	
	HP Smart Array P800/512MB BBWC Controller	381513-B21
	Smart Array E500 Controller	
	Smart Array E500/256MB Controller	435129-B21
	Smart Array P400 Controller	
HP Smart Array P400/256MB Controller	405132-B21	
HP Smart Array P400/512MB BBWC Controller	411064-B21	
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:		
http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html		
(Smart Array E500 Controller)		
http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html		
(Smart Array P400 Controller)		
http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html		
(Smart Array P800 Controller)		
SAS HBAs		

Product Configuration

HP SC44Ge Host Bus Adapter	416096-B21
NOTE: For external tape support only	
NOTE: Please see the following QuickSpecs for additional information: http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA)	
SCSI HBAs	
HP SC11Xe Host Bus Adapter	412911-B21
HP U320e SCSI Host Bus Adapter	AH627A
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	

External Storage Enclosures

HP StorageWorks Modular Smart Arrays	
HP StorageWorks Modular Smart Array 50 Enclosure (MSA50)	364430-B21
NOTE: Rack-mountable 10 drive (2.5" SAS/SATA) 1U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	
HP StorageWorks 60 Modular Smart Array (MSA60)	418408-B21
NOTE: Rack-mountable 12 drive (3.5" SAS/SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	
HP StorageWorks MSA60 1.8TB SAS HDD Bundle (MSA60 w/12 146GB 15K SAS LFF HDD)	AG822A
HP StorageWorks MSA60 9TB SATA HDD Bundle (MSA60 w/12 750GB 15K SATA LFF HDD)	AG823A
HP StorageWorks MSA60 3.6TB SAS HDD Bundle (MSA60 w/12 300GB 15K SAS LFF HDD)	AG824A
HP StorageWorks 70 Modular Smart Array (MSA70)	418800-B21
NOTE: Rack-mountable 25 drive (2.5" SAS/SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	
HP StorageWorks MSA70 1.8TB SAS HDD Bundle (MSA70 w/25 72GB 15K SAS SFF HDD)	AG825A
HP StorageWorks MSA70 3.6TB SAS HDD Bundle (MSA70 w/25 146GB 10K SAS SFF HDD)	AG893A
NOTE: Please see the following QuickSpecs for Technical Specifications additional information: http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.html (MSA50) http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html (MSA60) http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html (MSA70)	

Product Configuration

Hard Drives (Internal Expansion)	SAS Enterprise (ENT) Drives 3.5", Hot Plug	
	HP 450GB 3G 15K 3.5" DP SAS ENT HDD	454232-B21
	HP 300GB 3G SAS 15K 3.5" DP HDD	416127-B21
	HP 146GB 3G SAS 15K 3.5" DP HDD	384854-B21
	HP 72GB 3G SAS 15K 3.5" DP HDD	384852-B21
	SATA Midline (MDL) Drives 3.5", Hot Plug	
	HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
	HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
	HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
	HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21

Hard Drives (External Expansion)	SAS Enterprise (ENT) Drives 3.5", Hot Plug	
	HP 450GB 3G 15K 3.5" DP SAS ENT HDD	454232-B21
	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 300GB 3G SAS 15K 3.5" DP HDD	416127-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
	HP 146GB 3G SAS 15K 3.5" DP HDD	384854-B21
	HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21
	HP 72GB 3G SAS 15K 3.5" DP HDD	384852-B21
	SAS Midline (MDL) Drives 3.5", Hot Plug	
	HP 1TB 7.2K 3.5" DP SAS MDL HDD	461137-B21
	HP 750GB 7.2K 3.5" DP SAS MDL HDD	461135-B21
	SAS Enterprise (ENT) Drives 2.5" Drives, Hot Plug	
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21

NOTE: Please see the [SAS Hard Drive QuickSpecs](http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html) 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_div/12244_div.html
(Worldwide)

	SATA Midline (MDL) Drives 3.5", Hot Plug	
	HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
	HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
	HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
	HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21

Product Configuration

SATA Entry (ETY) Drives 2.5", Hot Plug	
HP 120GB 3G SATA 5.4K SFF ETY HDD	458924-B21
HP 60GB SATA 5.4K SFF HDD	379306-B21

NOTE: SATA drives have a 1 year warranty. Please see the SATA 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/12091_div/12091_div.html
(Worldwide)

Step 6 - 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.

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 Storage Mirroring Software provides host-based replication and failover to IP-based networks. Patented replication and failover technology continuously captures byte-level data changes as they occur in your production environment and replicates those changes to one or more servers in any location without geographic limitations. By replicating only the bytes that change, Storage Mirroring Software uses the absolute minimum bandwidth required to replicate customer data. Advanced features allow a customer to control bandwidth usage and queue data for replication during off-peak times if desired. The software does not need special hardware to run and utilizes existing LAN or WAN infrastructure that already exists in their environment - saving time, additional investment, and maintenance. Storage Mirroring Software is storage independent and is a great complement to ProLiant Storage Servers. The flexibility, resource optimization, and application-specific protection enable customers to solidify their data and disaster protection strategies using Storage Mirroring Software.

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

Product Configuration

- 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
- Introducing a new software option (Server Recovery Option) that captures a server's configuration information including OS, patches, drivers, and Service Packs. The IT department can respond to a server failure and use the Server Recover Option to re-create the boot sequence on a new server plus all of the data captured during the replication and send that data to the production site for replacement.
- Introducing a new software feature (Full Server Failover) that creates a one-to-one relationship between two servers. Should a production server fail, the server running Full Server Failover would assume the identity of the production server. The failover can occur over any distance and does not require "Enterprise" versions of the operating system or applications

Special note about Microsoft iSCSI Software Target and replication:

All HP ProLiant Storage Servers include the Distributed File System Replication (DFS-R) feature in the pre-installed Windows Storage Server 2003 R2 and Windows Unified Data Storage Server 2003 operating systems. DFS-R is a file-based replication technology that only replicates files when they are closed. Microsoft iSCSI Software Target does not close the virtual disk files (.vhd files) while they are in use, and so these files are not replicated during normal usage when replicating using DFS-R. Therefore, if iSCSI Software Target virtual disk files need to be replicated, DFS-R should not be used, and HP StorageWorks Storage Mirroring software should be considered instead. Storage Mirroring software asynchronously replicates each write into the file system to a secondary system, and therefore it can be used to effectively replicate iSCSI Software Target virtual disk files.

StorageWorks Storage Mirroring Media Kit v5 T5437A

StorageWorks Storage Mirroring NAS Edition 1 LTU T5442A

StorageWorks Storage Mirroring NAS Edition 10 LTU T5443A

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

Step 7 - Add a Backup Solution

Tape Drives

NOTE: For the complete listing of Tape Drive offerings, please see: <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 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive AG703A

SAS Tape Drives

NOTE: HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.

Product Configuration

HP StorageWorks DAT 160 SAS Internal Tape Drive	Q1587A
NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	
HP StorageWorks Ultrium 448 SAS Internal Tape Drive	DW085A
NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	
HP LTO-3 Ultrium 920 SAS Internal Tape Drive	EH978A
NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	
HP StorageWorks 1U SAS Rack-mount kit with one LTO-4 Ultrium 1760	EH946A
NOTE: Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.	
Ultrium Tape Drives	
HP StorageWorks 1U Rack-mount kit with one Ultrium 448 (Carbonite)	DW028B
HP StorageWorks 1U SCSI Rack-mount kit with one Ultrium 920	EH903A
HP StorageWorks 3U Rack-mount kit with one Ultrium 960 (Carbonite)	Q1595B
HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive	EH926A
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/12128_div/12128_div.html (Worldwide) For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect .	
Rack-Mount Tape Drive Enclosures	
HP StorageWorks 1U SCSI Rack-Mount kit	A7445B
NOTE: The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.	
HP StorageWorks 1U USB Rack-Mount Kit	A8007A
NOTE: The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives.	
HP StorageWorks 1U SAS Rack-Mount Kit	AE459A
NOTE: The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the Ultrium 448 SAS and Ultrium 920 SAS tape drives. NOTE: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.	
HP StorageWorks 3U Rack-mount kit	274338-B22
NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple 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.	

Product Configuration

HP StorageWorks 3U SAS Rack-mount Kit AG576A
NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple SAS tape drives including DAT 160 SAS, LTO-2 Ultrium 448 SAS, LTO-3 Ultrium 920 SAS, LTO-4 Ultrium 1760 SAS and LTO-4 Ultrium 1840 SAS 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)

HP D2D Backup System HP StorageWorks D2D120 Backup System EH884A
NOTE: 2TB of Disk Storage.

HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit EH924A
NOTE: 2TB of Disk Storage.

HP StorageWorks D2D130 Backup System EH950A
NOTE: 3TB of Disk Storage.

HP StorageWorks D2D130 Backup System with Data Protector Express Software Kit EH951A
NOTE: 3TB of Disk Storage

HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive EH952A
NOTE: 3TB of Disk Storage.

HP StorageWorks D2D2503i Backup System EH945A
NOTE: 3TB of Disk Storage.

HP StorageWorks D2D4004i Backup System EH938A
NOTE: 4.5TB of Disk Storage.
NOTE: Please see the HP D2D Backup Systems QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/12651_div/12651_div.html
 (Worldwide)

Tape Autoloaders **HP StorageWorks DAT Autoloader**

HP StorageWorks DAT 72x10 tape autoloader AE313B

HP StorageWorks 1/8 Tape Autoloader

HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader AK377A

HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SCSI Tape Autoloader AJ816A

HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader AH165A

HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader AH558A

HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader AH164A

HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit AH166A
NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions
NOTE: Please reference the 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>

Product Configuration

Tape Libraries	HP StorageWorks MSL2024 Tape Library	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 4GB FC Library	AJ034A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SCSI Drive Library	AJ817A
	HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
	HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Library	AG326B
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL2024 1 Ultrium 920 Drive Library	AH169A
	HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 Ultrium 920 SAS Drive Library	AH560A
	HP StorageWorks MSL4048 1 Ultrium 920 Drive Library	AH171A
	HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SCSI Drive Library	AJ818A
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 4GB FC Library	AJ036A
	NOTE: Please reference the MSL 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 Data Protector Express 4.0 Backup Server	BB117BA
	HP Data Protector Express Backup Server 4.0 Upgrade from Data Protector Express Single Server Edition	BB117BT
	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_div/12337_div.html (Worldwide)	

Step 8 - Add UPS, Power, and Rack Options

USB Options	USB 1.44-MB External Diskette Drive	DC141B
	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP Keyboard (USB) standard 2004	DT528A#ABA
	HP USB Internal Cable Kit	451363-B21

Product Configuration

HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x16 Server Console Switch with Virtual Media	AF600A
	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
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm .	
	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A
	NOTE: Required for supporting USB peripherals.	
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 (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	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 .	

Step 9- Order HPTS Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with the HP ProLiant DL185 G5 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 HP ProLiant DL185 G5 Storage Servers 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 DL185 G5 Storage Server.

Memory

Standard Memory

PC2-5300 Registered DIMMs with ECC Capabilities

- 2GB (2 x 1GB): Base SATA, 4TB SATA, 6TB SATA, 9TB SATA, and 12TB SATA models
- 4GB (2 x 2GB): Base SAS, 2.4TB SAS, and 5.4TB SAS models

Maximum Memory

- 32 GB

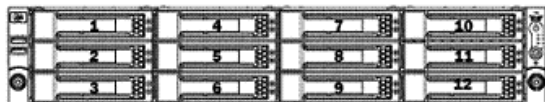
NOTE: Chart does not represent all possible memory configurations.

Memory	Slot							
	1	2	3	4	5	6	7	8
Standard (all SATA models)--2GB	1 GB	1 GB	Empty	Empty	Empty	Empty	Empty	Empty
Standard (all SAS models)--4GB	2 GB	2 GB	Empty	Empty	Empty	Empty	Empty	Empty
Maximum (32 GB)	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB

Memory options:

1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21

Storage



1- 12 Twelve 3.5" (LFF) Hot-Plug SAS/SATA Hard Drive Bays

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media	1	Rear	DVD-ROM Drive

Hard Drives

SAS Enterprise (ENT) Drives 3.5", Hot Plug

	Quantity Configured	Position Supported	Controller
450GB 3G 15K 300GB 3G 15K 146GB 3G 15K 72GB 3G 15K	2 x 146GB (Base SAS model)	1,2	HP Smart Array P800/512MB Controller
	Up to 10 additional drives supported		
	8 x 300GB (2.4TB SAS model)	1-8	
	Up to 4 additional drives supported		
	12 x 450GB (5.4TB SAS model)	1-12	

SATA Hot Plug Midline (MDL) Drives (3.5")

	Quantity Configured	Position Supported	Controller
1TB 3G 7.2K 750GB 3G 7.2K 500GB 3G 7.2K 250GB 3G 7.2K	2 x 250GB (Base SATA model)	1,2	HP Smart Array P800/512MB Controller
	Up to 10 additional drives supported		
	8 x 500GB (4TB SATA model)	1-8	

Storage

8 x 750GB (6TB model)	
Up to 4 additional drives supported	
12 x 750GB (9TB SATA model)	1-12
12 x 1TB (12TB SATA model)	

External Storage

NOTE: DL185 G5 Storage Servers come standard with one installed Smart Array P800 controller for internal drives and easy external expansion.

	Quantity Supported	Position Supported	Controller
Modular Smart Array 60	Up to 4 max per Smart Array P800 controller recommended	External	Smart Array P800 controller
Modular Smart Array 70	Up to 2 max per Smart Array P800 controller recommended	External	Smart Array P800 controller
Modular Smart Array 50 Enclosure	2 per connector (supports 1+1 cascading)	External	Smart Array P800 controller

Maximum Raw Storage Capacity

Internal SAS	5.4TB (12 x 450GB SAS Drives)
Internal SATA	12.0TB (12 x 1TB SATA Drives)
Internal plus External SATA recommended (Smart Array P800/512MB controller and MSA60 external enclosures)	60TB raw (60 x 1TB SATA) [12 x 1TB internal plus SA P800 connected to 4 x MSA60 full of 1TB SATA HDDs]

Storage

Tape Drives, Tape Autoloaders, Tape Libraries & D2D Backup

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/division/10233.html> (Worldwide)

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/division/10809.html> (Worldwide)

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

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

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

	Position Supported	Controller	Controller Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount	External	HP SC44Ge Host Bus Adapter	416096-B21

Storage

HP StorageWorks SCSI Tape Automation, External DAT 72X10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC11Xe Host Bus Adapter HP U320e SCSI Host Bus Adapter NOTE: Only valid for MSL tape libraries.	412911-B21 AH627A
HP StorageWorks SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC44Ge Host Bus Adapter NOTE: Please visit: http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	416096-B21
HP StorageWorks Fibre Tape Libraries, External MSL2024 MSL4048	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A
HP StorageWorks D2D Backup Systems D2D120 D2D130	External	Embedded Network Controller	N/A

Power Specifications

750W Power Supply Spare Kit 451366-291, -AA1, -B21
Operational Input Voltage Range (Vrms) 90Vac to 264Vac full range
Frequency Range (Nominal) (Hz) 47 Hz to 63 Hz

Nominal Input Voltage (Vrms)	100	115	200	220	230	240
Max Rated Output Wattage Rating	750	750	750	750	750	750
Nominal Input Current (Arms)	9.1	7.9	4.3	4.0	3.8	3.7
Max Rated Input Wattage Rating (Watts)	893	888	872	862	862	862
Max. Rated VA (Volt-Amp)	911	906	890	880	880	880
Efficiency (%)	84	84.5	86	87	87	87
Power Factor	0.98	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	<0.43	<0.50	<.0.90	<0.96	<1.00	<1.04
Maximum Inrush Current (A peak)	30A	30A	30A	30A	30A	30A
Maximum Inrush Current Duration (mS)	5mS	5mS	5mS	5mS	5mS	5mS

Technical Specifications

System Unit	Dimensions (H x W x D) (with bezel)	3.44x 17.64 x 27.50 in (8.75 x 44.80 x 69.88cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	51.5 lb (19.22 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 -- 240 VAC
		Rated Input Current	9.10 A (at 100 VAC), 4.5 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	910 W (at 100 VAC), 900 W (at 200 VAC)
	BTU Rating	Maximum	3107.82 BTU/hr (at 100 VAC), 3073.67 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Calculator which is available via the online tool located at URL: http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls	
		<ul style="list-style-type: none"> • Click on the system of interest. Example: DL380 G5 • Follow the instructions of the next screens. 	
	Power Supply Output (per power supply)	Rated Steady-State Power	750 W (at 100 VAC), 750 W (at 200 VAC)
		Maximum Peak Power	750 W (at 100 VAC), 750W (at 200 VAC)
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed.
			Non-operating
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Technical Specifications

Acoustic Noise	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).		
	Idle		
		LWAd	6.7 B
		LpAm	51 dBA
	Operating		
	LWAd	6.7 B	
	LpAm	51 dBA	

NC326i PCIe Dual Port Gigabit Server Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX		
	Compatibility	IEEE 802.3 10Base-T		
		IEEE 802.3 1000Base-T		
		IEEE 802.3 100Base-TX		
	Data Transfer Method	64-bit, 133MHz PCI(X)1.0		
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
100Base-TX (Full-Duplex)		200 Mb/s		
1000Base-TX (Half and Full-Duplex)		2000 Mb/s		
Connector	RJ-45			
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)		
	10/100/1000Base-TX	Category 5 UTP (2 Pair); up to 328 ft (100 m)		

Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p>
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The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Technical Specifications

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