



## HP StorageWorks tape and disk-to-disk data protection

Family guide

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HP protects the integrity of your data and helps you regain access to it. We have a range of change-ready, cost-effective, and trusted solutions that provide the appropriate level of protection based on your specific business requirements.

## Protect your data and safeguard your assets

You already know about exponential data growth. Digital information is doubling every 18 months. For some, that growth is even faster. Your information assets are invaluable to your company, so managing and protecting those assets is a critical priority. Data loss can impact revenue, your customers, and your reputation. In fact, some businesses can even fail due to a data loss or a prolonged period of downtime. That's why many companies are looking for solutions that protect data today—and manage even higher volumes in the future.

A proactive approach to data protection and recovery begins with IT—as business, and specifically business outcomes, depend on the performance, ease of use, and flexibility of your underlying technology. Lowering costs, improving operational efficiency and ROI, and mitigating risk are all achievable outcomes. But you need the right solution in place with a solid infrastructure foundation. And protecting your data also involves keeping it available and rapidly recoverable. As your dependence on data increases, achieving these outcomes is even more important.

There are other factors to consider also. You want cost-effective storage infrastructure. You want to quickly and easily recover relevant data whenever and wherever needed. You want to preserve data integrity through enhanced security. And you want to meet stringent and changing regulatory mandates with greater ease.

HP can help you protect the integrity of your data and regain access to it when you need it. We have a range of change-ready, cost-effective, and trusted solutions that provide the appropriate level of protection based on your specific business requirements. Our data protection and recovery solutions are compatible and scalable—growing and adapting to your changing business demands. They come in a wide variety of choices, ranging from tape backup to multiple layers of online, nearline and offline protection. And the newer technologies—such as disk-to-disk backup, virtual tape libraries, data deduplication, and low-cost hard drives—enable you to add layers of data protection that go beyond traditional solutions at prices that are more affordable than ever. These include:

- Traditional backup options that help you protect against viruses and data corruption while enabling you to reduce the effects of user error
- Two-stage backup, which improves the recovery time when compared to tape alone
- Two-stage backup with virtual tape, which increases backup and recovery performance while also improving system and user efficiency

This guide provides a comprehensive look at the complete HP data protection and recovery solution offering. Choose the solution that best fits your business requirements and budget, and get the assurance you need—knowing your assets are protected. You can also complement your HP hardware and software purchase with HP range of services offerings and be able to experience total peace of mind. HP Services offers a single point of accountability and support to help you reduce the cost and complexity of maintaining your storage environment.

Take the time now to safeguard your assets with any one or a combination of the hardware, software, and services offerings listed in this guide. HP portfolio offers a range of choices, so you can find the best fit. It delivers great ease of deployment, use, and management for greater efficiency across the board.

And finally, the low total cost of ownership you derive means additional value for as long as you own our products. In essence, the solutions described in this guide will provide superior protection for your data, and even more important, your vital business operations.

# HP StorageWorks RDX Removable Disk Backup System

The HP StorageWorks RDX Removable Disk Backup System delivers an easy-to-use, affordable, and rugged removable backup solution for small businesses with limited time, knowledge, or experience to dedicate to data protection.

## Entry-level



**HP StorageWorks RDX160 Removable Disk Backup System**  
Simplifies removable backup for micro or small businesses at an affordable price



**HP StorageWorks RDX320 Removable Disk Backup System**  
Simplifies removable backup for micro or small businesses at an affordable price



**HP StorageWorks RDX500 Removable Disk Backup System**  
Simplifies removable backup for micro or small businesses at an affordable price

<b>Model differentiator</b>	External/Internal RDX Removable Disk Backup System, 160 GB native storage capacity	External/Internal RDX Removable Disk Backup System, 320 GB native storage capacity	External/Internal RDX Removable Disk Backup System, 500 GB native storage capacity
<b>Maximum capacity (native)</b>	160 GB Note: 320 GB compressed capacity available through 2:1 application-based data compression	320 GB Note: 640 GB compressed capacity available through 2:1 application-based data compression	500 GB Note: 1 TB compressed capacity available through 2:1 application-based data compression
<b>Performance (maximum data transfer rate)</b>	30 MB/sec Note: Up to 108 GB/hr	30 MB/sec Note: Up to 108 GB/hr	30 MB/sec Note: Up to 108 GB/hr
<b>Load/Unload cycles (cartridge)</b>	5,000 cycles Note: Minimum cartridge usage life	5,000 cycles Note: Minimum cartridge usage life	5,000 cycles Note: Minimum cartridge usage life
<b>Media compatibility</b>	HP RDX 160 GB cartridge and HP RDX 320 GB cartridge and HP RDX 500 GB cartridge. Note: Forward and backward compatibility to all current and future RDX cartridges	HP RDX 160 GB cartridge and HP RDX 320 GB cartridge and HP RDX 500 GB cartridge. Note: Forward and backward compatibility to all current and future RDX cartridges	HP RDX 160 GB cartridge, HP RDX 320 GB cartridge and HP RDX 500 GB cartridge. Note: Forward and backward compatibility to all current and future RDX Cartridges
<b>Type of device interfaces</b>	USB 2.0	USB 2.0	USB 2.0
<b>Cartridge robustness</b>	1 m (39.4 in.) drop to tile over concrete floor	1 m (39.4 in.) drop to tile over concrete floor	1 m (39.4 in.) drop to tile over concrete floor
<b>Form factor (docking station)</b>	Half-height, 5.25 inches (internal module)	Half-height, 5.25 inches (internal module)	Half-height, 5.25 inches (internal module)
<b>Warranty</b>	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24* In order to increase ROI and product uptime, and reduce the cost of ownership, HP recommends that customers extend the standard product warranty with a 3-year Next Business Day Parts Exchange Care Pack Service	Hardware installation 3-year Support Plus 24* In order to increase ROI and product uptime, and reduce the cost of ownership, HP recommends that customers extend the standard product warranty with a 3-year Next Business Day Parts Exchange Care Pack Service	Hardware installation 3-year Support Plus 24* In order to increase ROI and product uptime, and reduce the cost of ownership, HP recommends that customers extend the standard product warranty with a 3-year Next Business Day Parts Exchange Care Pack Service
<b>QuickSpec URL</b>	<a href="http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.pdf">http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.pdf</a>		

To quickly find the HP storage products that fit your specific needs, visit [www.hp.com/go/product-selector](http://www.hp.com/go/product-selector)

\*Additional levels of service available

## HP StorageWorks DAT tape drives

Protect your small or medium business with a dependable range of DAT drives from HP that balance price and performance with a range of capacity-point, performance, and connectivity options.

### Entry-level



**HP StorageWorks DAT 40 Tape Drive**  
Dependable entry-level backup solution



**HP StorageWorks DAT 72 Tape Drive**  
Dependable backup solution



**HP StorageWorks DAT 160 Tape Drive**  
Highest DAT capacity and performance available

<b>Interface</b>	SCSI, USB	SCSI, USB	SCSI, SAS, USB
<b>Recording technology</b>	DAT 40	DAT 72	DAT 160
<b>OBDR support</b>	Yes	Yes	Yes
<b>Compressed storage capacity</b>	40 GB	72 GB	160 GB
<b>Form factor</b>	5.25 inches, half-height	5.25 inches, half-height	5.25 inches, half-height
<b>Compressed transfer rate</b>	22 GB/hr	22 GB/hr	50 GB/hr
<b>WORM support</b>	No	No	Yes
<b>Warranty and services included</b>	3-year global, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year global, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year global, next business day, parts exchange, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*

\*Additional levels of service available

# HP StorageWorks LTO Ultrium tape drives

HP StorageWorks Linear Tape Open (LTO) Ultrium tape drives offer broad compatibility, support for One-Button Disaster Recovery (OBDR), manageability, and legendary HP support.

## Mid-range



**HP StorageWorks LTO Ultrium 232 Tape Drive**  
Enterprise-class capacity, performance, and reliability



**HP StorageWorks LTO Ultrium 448 Tape Drive**  
Best mix of features and value



**HP StorageWorks LTO Ultrium 448c Tape Blade**  
Integrated data protection for BladeSystem c-Class



**HP StorageWorks SB920c Tape Blade**  
Integrated data protection for BladeSystem c-Class

<b>Recording technology</b>	LTO Ultrium 1	LTO Ultrium 2	LTO Ultrium 2	LTO Ultrium 3
<b>Compressed capacity (2:1)</b>	200 GB	400 GB	400 GB	800 GB
<b>Sustained transfer rate (compressed 2:1)</b>	115 GB/hr	173 GB/hr	173 GB/hr	432 GB/hr
<b>Buffer size</b>	64 MB	64 MB	64 MB	64 MB
<b>Interface</b>	Wide Ultra2 SCSI (LVD)	Ultra160 SCSI (LVD) or 3 Gb/sec SAS	3 Gb/sec SAS	3 Gb/sec SAS
<b>Form factor</b>	5.25 inches, half-height	5.25 inches, half-height	Half-height BladeSystem c-Class blade form factor	Half-height BladeSystem c-Class blade form factor
<b>Encryption capability</b>	No	No	No	No
<b>WORM capability</b>	No	No	No	Yes
<b>Warranty and services included</b>	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*

\*Additional levels of service available

# HP StorageWorks LTO Ultrium tape drives (continued)

HP StorageWorks LTO Ultrium tape drives offer broad compatibility, support for One-Button Disaster Recovery (OBDR), manageability, and legendary HP support.

High-end



**HP StorageWorks LTO Ultrium 920 Tape Drive**  
Excellent solution for storage intensive environments



**HP StorageWorks LTO Ultrium 960 Tape Drive**  
High-capacity feature reduces costs, provides greater storage consolidation



**HP StorageWorks LTO-4 Ultrium 1760 Tape Drive**  
Fourth-generation of LTO tape drive technology designed for direct attached storage



**HP StorageWorks LTO-4 Ultrium 1840 Tape Drive**  
Fourth-generation of LTO tape drive technology designed for medium and enterprise markets

<b>Recording technology</b>	LTO Ultrium 3	LTO Ultrium 3	LTO Ultrium 4	LTO Ultrium 4
<b>Compressed capacity (2:1)</b>	800 GB	800 GB	1.6 TB	1.6 TB
<b>Sustained transfer rate (compressed 2:1)</b>	432 GB/hr	576 GB/h	576 GB/hr	864 GB/hr
<b>Buffer size</b>	64 MB	128 MB	128 MB	128 MB
<b>Interface</b>	Ultra320 SCSI (LVD) or 3 Gb/sec SAS	Ultra320 SCSI (LVDS)	Ultra 320 SCSI (LVDS) or 3 Gb/sec SAS	Ultra320 SCSI (LVDS) or 3 Gb/sec SAS
<b>Form factor</b>	5.25 inches, half-height	5.25 inches, full-height	5.25 inches, half-height	5.25 inches, full-height
<b>Encryption capability</b>	No	No	AES 256-bit	AES 256-bit
<b>WORM capability</b>	Yes	Yes	Yes	Yes
<b>Warranty and services included</b>	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support	3-year, next business day, parts exchange, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*

\*Additional levels of service available

## HP StorageWorks Rack-mount Kit family

The HP StorageWorks Rack-mount Kits are a high-density, rack-mountable tape drive solution for direct-attach small computer system interface (SCSI), serial-attached SCSI (SAS), and universal serial bus (USB) backup and archiving applications. The Rack-mount Kit family is ideal for customers who have rack environments and are looking for a tape backup solution with a

smaller footprint. HP StorageWorks Rack-mount Kits are supported on HP ProLiant and AlphaServer platforms. HP StorageWorks DAT and LTO Ultrium tape drives support HP StorageWorks One-Button Disaster Recovery—which allows you to restore your entire system at the touch of a button without the need for system disks or software CDs—as well as HP StorageWorks Library and Tape Tools, which help make installation, management, and troubleshooting easier.

# HP StorageWorks tape autoloaders

Automated backup that is easy to install and to use—HP StorageWorks tape autoloaders are an ideal backup solution for small to medium companies with limited IT support or remote sites of larger companies.

Entry-level

Mid-range



**HP StorageWorks DAT 72x10 Tape Autoloader**  
Low-cost, entry-level automated backup solution



**HP StorageWorks 1/8 G2 Tape Autoloader**  
High capacity and standard features in a compact form factor

<b>Tape drives supported</b>	1 DAT 72	1 LTO-4 Ultrium 1760 1 LTO-3 Ultrium 920 1 LTO-2 Ultrium 448
<b>Number of cartridge slots</b>	10	8
<b>Maximum capacity (compressed 2:1)</b>	720 GB**	12.8 TB
<b>Maximum sustained transfer rate (compressed 2:1)</b>	21.6 GB/hr	576 GB/hr
<b>Form factor</b>	1U	1U
<b>Interface</b>	Ultra160 LVD SCSI	3 Gb/sec SAS Ultra320 LVD SCSI Ultra160 LVD SCSI
<b>Encryption capability</b>	N/A	AES 256-bit for LTO-4 Ultrium drives only
<b>Warranty and services included</b>	1-year, next business day, parts exchange, limited warranty plus 9x5 phone support	1-year, next business day, parts exchange, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*

\*Additional levels of service available

\*\*Not recommended as a 720 GB tape drive

# HP StorageWorks business-class tape libraries

HP StorageWorks business-class tape libraries provide centralized backup in a single automated device, freeing valuable IT resources for more strategic work. These libraries are ideal for medium to large IT networks experiencing uncertain data growth, with or without a storage area network (SAN).

Entry-level

Mid-range

High-end



**HP StorageWorks MSL2024 Tape Library**  
High-capacity data storage



**HP StorageWorks MSL4048 Tape Library**  
Lots of storage in a small space



**HP StorageWorks MSL8096 Tape Library**  
Full-featured with exceptional storage density

<b>Number and type of tape drives supported</b>	1 LTO-4 Ultrium 1840 1-2 LTO-4 Ultrium 1760 1 LTO-3 Ultrium 960 1-2 LTO-3 Ultrium 920 1-2 LTO-2 Ultrium 448	1-2 LTO-4 Ultrium 1840 2-4 LTO-4 Ultrium 1760 1-2 LTO-3 Ultrium 960 1-4 LTO-3 Ultrium 920	2-4 LTO-4 Ultrium 1840 2-4 LTO-4 Ultrium 1760 2-4 LTO-3 Ultrium 960 2-4 LTO-3 Ultrium 920
<b>Number of cartridge slots</b>	24	48	96
<b>Maximum capacity (compressed 2:1)</b>	38.4 TB	76.8 TB	153.6 TB
<b>Maximum sustained transfer rate (compressed 2:1)</b>	1.1 TB/hr (2 drives)	2.3 TB/hr (4 drives)	3.4 TB/hr (4 drives)
<b>Interface</b>	4 Gb Native Fibre Channel Ultra320 LVD SCSI Ultra160 LVD SCSI 3 Gb/sec SAS	4 Gb Native Fibre Channel Ultra320 LVD SCSI 3 Gb/sec SAS	4 Gb Native Fibre Channel Ultra320 LVD SCSI 3 Gb/sec SAS
<b>Encryption capability</b>	AES 256-bit for LTO-4 Ultrium drives only	AES 256-bit for LTO-4 Ultrium drives only	AES 256-bit for LTO-4 Ultrium drives only
<b>Form factor</b>	2U	4U	8U
<b>Warranty and services included</b>	1-year, next business day, parts exchange, limited warranty plus 9x5 phone support	1-year, next business day, parts exchange, limited warranty plus 9x5 phone support	1-year, next business day, onsite, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*

\*Additional levels of service available

## HP StorageWorks business-class tape libraries (continued)

HP StorageWorks business-class tape libraries provide centralized backup in a single automated device, freeing valuable IT resources for more strategic work. These libraries are ideal for medium to large IT networks, with or without a storage area network (SAN), experiencing uncertain data growth.

### High-end



**HP StorageWorks MSL6026/MSL6052 Tape Libraries**  
Scalable, flexible, and manageable



**HP StorageWorks MSL6030/MSL6060 Tape Libraries**  
Scalable, flexible, and manageable

<b>Number and type of tape drive supported</b>	1–16 SDLT 600 (multi-unit)	1–16 LTO-4 Ultrium 1840 (multi-unit) 1–16 LTO-3 Ultrium 960 (multi-unit)
<b>Number of cartridge slots</b>	26–208 (multi-unit)	30–240 (multi-unit)
<b>Maximum capacity (compressed 2:1)</b>	124.8 TB	384 TB
<b>Maximum sustained transfer rate (compressed 2:1)</b>	4.2 TB/hr (16-drive, multi-unit configuration)	13.8 TB/hr (16-drive, multi-unit configuration)
<b>Interface</b>	2 Gb Fibre Channel Ultra160 LVD SCSI	4 Gb Fibre Channel Ultra320 LVD SCSI
<b>Form factor</b>	5U/10U	5U/10U
<b>Warranty and services included</b>	1-year, next business day, onsite, limited warranty plus 9x5 phone support	1-year, next business day, onsite, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*

\*Additional levels of service available

# HP StorageWorks enterprise-class tape libraries

HP StorageWorks enterprise-class tape libraries provide highly reliable backup and restore solutions addressing the mission-critical data storage requirements of high-end enterprise customers.

High-end



**HP StorageWorks EML E-series Tape Library**  
Scalable, manageable, reliable



**HP StorageWorks ESL E-series Tape Library**  
Enterprise-class reliability, performance, capacity, and storage density

<b>Tape drives supported</b>	LTO-4 Ultrium 1840 LTO-3 Ultrium 960	LTO-4 Ultrium 1840 LTO-3 Ultrium 960 SDLT 600
<b>Maximum number of tape drives</b>	1–16	1–44
<b>Maximum number of cartridge slots</b>	71–505 (Note: 8 tape drives maximum with 505 slots)	322–3,546 LTO Ultrium drives 286–3,138 SDLT drives
<b>Maximum capacity (compressed 2:1)</b>	808 TB	5673 TB (LTO-4) 1182 TB (SDLT)
<b>Maximum sustained transfer rate (compressed 2:1)</b>	13.8 TB/hr	38.0 TB/hr
<b>Encryption capability</b>	AES 256-bit with LTO-4 Ultrium tape drives only	AES 256-bit with LTO-4 Ultrium tape drives only
<b>Form factor</b>	12U, 24U, 32U, or 40U	Freestanding
<b>Interface</b>	4 Gb Fibre Channel or 2 Gb Fibre Channel (LTO-3) 4Gb and LTO-4 (2Gb)	4 Gb Fibre Channel or 2 Gb Fibre Channel (LTO-3) 4Gb and LTO-4 (2Gb)
<b>Warranty and services included</b>	1-year, next business day, onsite, limited warranty plus 9x5 phone support	1-year, next business day, onsite, limited warranty plus 9x5 phone support
<b>Recommended services</b>	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*

\*Additional levels of service available

# HP StorageWorks Secure Key Manager

Reduce your risk of costly data breach and reputation damage while improving regulatory compliance with centralized secure encryption key management for HP LTO-4 enterprise tape libraries.

High-end



## HP StorageWorks Secure Key Manager

Centralized secure encryption key management for HP LTO-4 enterprise libraries unlike independent software vendor (ISV) and library-hosted solutions, which are not hardened appliances nor automatic replication architectures

<b>Key management</b>	Centralized, automated key generation, archival, and retrieval
<b>Key generation</b>	Advanced Encryption Standard with 256-bit keys (AES-256)
<b>Security standards</b>	FIPS 140-2 Level 2 (re-validation pending from SKM1.0 Certificate #999) Note: The Federal Information Processing Standard (FIPS) Publication 140-2 is a U.S. government computer security standard used to accredit cryptographic modules
<b>Physical security</b>	Dual locking bezel with high-security pick-resistant locks and tamper-evident enclosure seals
<b>Audit logs</b>	Digitally signed logs
<b>Number of clients supported</b>	1 storage client per node with maximum capacity of 5 clients per node
<b>Supported operating systems</b>	ISV backup application transparent
<b>Key granularity</b>	Key per cartridge and key per library partition
<b>Client IOP</b>	Extensible to emerging key management standards
<b>Form factor</b>	1U rack mountable
<b>Clustering and failover</b>	Multi-node, multi-site clustering, automatic key and policy synchronization, failover and recovery; more than 20 nodes supported
<b>Encryption keys per cluster</b>	2,000,000
<b>Attribute bytes per key</b>	2048
<b>Version</b>	V1.1
<b>Warranty and services included with the product</b>	Advance product exchange, Next coverage day, Customer delivers, HP ships return 12 month warranty
<b>QuickSpec URL</b>	<a href="http://h18000.www1.hp.com/products/quickspecs/12814_div/12814_div.pdf">http://h18000.www1.hp.com/products/quickspecs/12814_div/12814_div.pdf</a>

# HP StorageWorks disk-based backup systems

HP StorageWorks D2D100, D2D2500, and D2D4000 Backup Systems deliver consolidated, automated disk-based backup designed expressly for the needs of small- and medium-sized IT environments, including remote and branch offices.

Entry-level



**HP StorageWorks D2D100 Backup System**  
Provides reliable, consolidated data protection for up to six servers in a single, self-managing device

New



**HP StorageWorks D2D2500 Backup System**  
Provides consolidated, disk-based data protection in an intelligent self-managing 1U rack-mountable solution

New



**HP StorageWorks D2D4000 Backup System**  
Provides consolidated, disk-based data protection for small and medium size data centers in an intelligent self-managing 2U rack-mountable solution

<b>Models</b>	D2D120 D2D130	D2D2503i	D2D4004i and D2D4004fc D2D4009i and D2D4009fc
<b>Form factor</b>	Tower	1U rack	2U rack
<b>Total raw capacity</b>	2.0 TB (D2D120) 3.0 TB (D2D130)	3.0 TB (D2D2503i)	4.5 TB (D2D4004) 9.0 TB (D2D4009)
<b>Total usable capacity</b>	1.5 TB (D2D120) 2.25 TB (D2D130)	2.25 TB (D2D2503i)	3.0 TB (D2D4004) 7.5 TB (D2D4009)
<b>Performance (maximum data transfer rate)</b>	50 MB/sec	75 MB/sec	>90 MB/sec
<b>Number of interfaces per device</b>	1	2	2
<b>Type of device interfaces</b>	iSCSI (1 Gb Ethernet) (100Base-T also supported)	iSCSI (1 Gb Ethernet) (100Base-T also supported)	Two 1 Gb Ethernet (iSCSI) Two 4 Gb Fibre Channel
<b>Maximum number of servers supported per D2D System</b>	6	6	16
<b>Disk drive capacity, type</b>	500 GB SATA (D2D120) 750 GB SATA (D2D130)	750 GB SATA	750 GB SATA
<b>Disk drive form factor</b>	3.5 inches	3.5 inches	3.5 inches
<b>Disk drive speed</b>	7200 rpm	7200 rpm	7200 rpm
<b>Number of disk drives</b>	4	4	6 (D2D4004) 12 (D2D4009)
<b>RAID support</b>	Software RAID 5	Hardware RAID 5	Hardware RAID 6
<b>Data deduplication</b>	None	Dynamic deduplication	Dynamic deduplication
<b>Tape devices emulated</b>	HP LTO-2 and LTO-3 tape drives and 1/8 autoloader	HP LTO-2 and LTO-3 tape drives in 1/8 Autoloader or HP VLS generic library	HP LTO-2/LTO-3/LTO-4 tape drives in 1/8 Autoloader, MSL2024, MSL4048, HP VLS generic library
<b>Maximum number of tape devices emulated</b>	6	6	16
<b>Maximum number of virtual tape cartridges emulated</b>	96	288	1536
<b>Optional integrated tape drives</b>	HP StorageWorks Ultrium 920 tape drives	None	None
<b>Direct attach tape drives</b>	HP LTO-2, LTO-3, or LTO-4 Ultrium tape drives	HP LTO-2, LTO-3, or LTO-4 Ultrium tape drives	HP LTO-2, LTO-3, or LTO-4 Ultrium tape drives
<b>Warranty (parts/labor/onsite)</b>	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty	1-year, next-day, parts exchange, limited warranty plus 9x5 phone support for the duration of the warranty
<b>Recommended services</b>	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*	Hardware installation 3-year Support Plus 24*

\*Additional levels of service available

# HP StorageWorks disk-based backup systems (continued)

Integrating seamlessly into existing backup applications and processes, HP StorageWorks disk-based backup systems are designed to accelerate backup and restore performance while improving overall reliability.

Mid-range

High-end



**HP StorageWorks 6000 Virtual Library System**  
Ideal for small to medium SAN environments



**HP StorageWorks 9000 Virtual Library System**  
Ideal for large to enterprise SAN environments



**HP StorageWorks 12000 Virtual Library System EVA Gateway**  
Ideal for large to enterprise SAN environments

<b>Maximum usable capacity with 2:1 compressible data</b>	122.4 TB Note: With 2:1 compressible data depending on model purchased	1,280 TB Note: With 8 nodes and 2:1 compression	1,080 TB Note: With 8 nodes and 2:1 compression
<b>Maximum performance</b>	600 MB/sec depending on model purchased	4,800 MB/sec Note: With 8 nodes and 2:1 compression	4,800 MB/sec Note: With 8 nodes and 2:1 compression
<b>Data deduplication</b>	Accelerated deduplication	Accelerated deduplication	Accelerated deduplication
<b>Base form factor</b>	3U	9U Note: FC infrastructure kit will take an additional 4U	2U per node
<b>RAID support</b>	Hardware RAID 6 or RAID 5	Hardware RAID 6	Dependent on EVA
<b>Full configuration form factor</b>	18U	136U Note: FC infrastructure kit will take an additional 8U	N/A Note: Form factor is determined by number of nodes and EVA array
<b>Number of virtual drives</b>	128	1024 (128 per node)	1024 (128 per node)
<b>Number of virtual libraries</b>	16	128 (16 per node)	128 (16 per node)
<b>Interface</b>	Two 4 Gb Fibre Channel Ports on HP VLS6200 Four 4 Gb Fibre Channel Ports on HP VLS6600	Two 4 Gb Fibre Channel Ports per node (front side) Two 4 Gb Fibre Channel Ports per node (storage side)	Two 4 Gb Fibre Channel Ports per node (front side) Two 4 Gb Fibre Channel Ports per node (storage side)
<b>Warranty and services included</b>	HP provides a 1-year, next-day, onsite, limited warranty for the HP StorageWorks VLS6000 hardware, plus 9x5 phone support for the duration of the warranty. All hard drive modules have a 1-year, parts exchange, limited warranty, with next business day response, plus 9x5 phone support for the duration of the warranty.	HP provides a 1-year, next-day, onsite, limited warranty for the HP StorageWorks VLS9000 hardware, plus 9x5 phone support for the duration of the warranty. All hard drive modules have a 1-year, parts exchange, limited warranty, with next business day response, plus 9x5 phone support for the duration of the warranty.	HP provides a 1-year, next-day, onsite, limited warranty for the HP StorageWorks VLS Gateway hardware, plus 9x5 phone support for the duration of the warranty.
<b>Recommended services</b>	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*	Hardware installation and startup service 3-year Support Plus 24*
<b>QuickSpec URL</b>	<a href="http://h18000.www1.hp.com/products/quickspecs/12233_div/12233_div.pdf">http://h18000.www1.hp.com/products/quickspecs/12233_div/12233_div.pdf</a>	<a href="http://h18000.www1.hp.com/products/quickspecs/12812_div/12812_div.pdf">http://h18000.www1.hp.com/products/quickspecs/12812_div/12812_div.pdf</a>	<a href="http://h18000.www1.hp.com/products/quickspecs/12804_div/12804_div.pdf">http://h18000.www1.hp.com/products/quickspecs/12804_div/12804_div.pdf</a>

\*Additional levels of service available

## HP storage media

The best hardware deserves the best media—so if you are buying an HP storage solution, then choose HP-branded media. The HP brand is your assurance that the media has been developed and tested as part of a complete storage solution; to give you increased reliability in any given environment.

### LTO Ultrium family



**LTO Ultrium:** HP LTO Ultrium RW/WORM cartridges meet all your demands for high data security, availability and reliability. With a six generation roadmap LTO Ultrium is a technology enterprises can invest in with confidence.

- HP LTO-4 Ultrium storage media offers the most advanced capabilities on tape. With an increased capacity of 1.6 TB and transfer speed of up to 240 MB/sec, fewer tapes are needed to store increasing amounts of data. For extra security, HP LTO-4 Ultrium is available in WORM and now offers AES-256 bit encryption.
- HP LTO-3 and LTO-4 Ultrium storage media are available in two versions: HP LTO Ultrium RW for backup/restore operations and HP LTO Ultrium WORM for compliant, permanent, and tamper-proof archives. The HP LTO Ultrium portfolio includes a choice of custom and non-custom labeled cartridges for improved handling and precision in automated libraries, plus a complete range of LTO Ultrium Storage Media Kits to enable any small business to run competent, regular backups without expert help.

**RDX:** The HP RDX Removable Disk Cartridge provides an easy to use, affordable, and rugged data cartridge for workstations and entry level servers in your micro or small business.

### DAT family



**DDS:** HP DDS data cartridges meet the exacting mechanical, environmental, and durability specifications of computer applications. Tested to durability specifications twice as rigorous as those required by the DDS logo tests, an HP DDS cartridge can consistently do an excellent job. HP DAT 160 data cartridges provide a compressed capacity of up to 160 GB and are exhaustively tested for increased reliability and restore performance.

**DLT, AIT, and Travan:** HP also supplies Super DLTape, DLTape IV, AIT, and Travan media. All products that carry the HP brand are tested to extremes to verify increased reliability for restore.

**HP Optical:** The 5.25-inch HP optical media comes with a 100 year, 100 percent defect-free warranty and is engineered to meet and surpass International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC)/American National Standards Institute (ANSI) standards.

**Bar code labeled media:** At no extra cost, HP LTO Ultrium and SDLT cartridges can be supplied with non-custom bar code labels to enable accurate automated retrieval every time. HP LTO Ultrium and SDLT non-custom labeled cartridges can be bought off the shelf, with a bar code sequence pre-determined by HP, from your reseller.

# HP Data Protector Express Software

HP Data Protector Express Software is easy-to-use backup and recovery software for small and mid-sized organizations. It supports Windows®, Linux, and NetWare and backup to disk, tape, or DVD/CD. Easily add online protection for Microsoft® Exchange and Microsoft SQL Server.



## Easy to implement

- Simple, modular product, and licensing structure
- Nine different languages
- All features available on Windows, Linux, and NetWare
- Easily add network backup of additional machines or online backup of applications as needed

## Excellent value and low risk

- All components licensed and priced the same for all supported operating systems
- Includes support for backup and recovery of an unlimited number of networked Windows desktops
- Includes one-year support and access to upgrades and service packs

## Easy to use and manage

- Intuitive and customizable interface is extremely easy to use and does not require user training
- Customization includes role-based security with profiles to allow access to specific functions for specific users
- Management of the entire backup environment can be done from any system—no need for a dedicated user interface console

## Backup data encryption

- Secures data against unauthorized access
- Encryption in the software supports more secure backups to any device
- Supports Ultrium LTO-4 data encryption

## Robust

- Bare Metal Disaster Recovery option gets your system operational again fast
- Automated media and device failover adds resilience to hardware failure

## High performance, advanced features

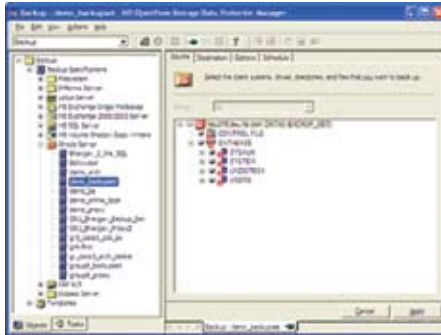
- Reduces the backup window with open file backup and online application backup agents
- Disk-to-Any-to-Any (D2Any2Any) option extends D2D backup capabilities

## Upgrade from HP Data Protector Express Single Server Edition Software

- Data Protector Express Single Server Edition Software is included with all HP StorageWorks tape drives and tape autoloaders
- Easily upgrade to Data Protector Express with all jobs and setting retained
- Upgrade is available using a pre-discounted part number available to all HP StorageWorks tape drives and tape autoloader customers

# HP Data Protector software

A complete backup and recovery solution for medium, large, and enterprise-class organizations.



## Simple installation

HP Data Protector software is easy to deploy and use. It has fully automated software distribution of agent software to all connected clients, including a centralized licensing facility that reduces complexity. Competitive solutions fail to deliver this level of automation.

## Reduced backup windows

HP Data Protector software enables you to respond to the needs for 24x7 application availability by integrating techniques to reduce backup windows. These techniques include online backup, open file backup, or zero downtime backup (local and remote replication).

## Recovery of terabytes of data in minutes

Utilizing Zero Downtime Backup and Instant Recovery, HP Data Protector software increases application uptime, and meets the demands of the most complex enterprises for specific recovery time and recovery point objectives, enabling critical data to be recovered within minutes.

Zero Downtime Backup and Instant Recovery support, the HP StorageWorks XP and EVA Disk Array families, are designed to respond to your needs for 24x7 application availability.

## Extended platform support for disaster recovery

Recover your system with one of the six different Bare Metal Disaster Recovery methods, which are uniquely integrated into HP Data Protector software. These methods allow you to boot from a CD, DVD, or tape, and they can be easily deployed with simple, on-screen instructions.

HP Data Protector's extensive support of all major operating systems, applications, databases, drives, libraries, and disk arrays helps you create solutions that meet your unique and changing infrastructure requirements. See [www.hp.com/go/dataprotector](http://www.hp.com/go/dataprotector) for the latest support matrices and further information.

## First-class support

As with all HP backup and restore solutions, HP Data Protector is fully supported by HP, so you can rest assured that if anything happens we're there to help.

## HP StorageWorks Enterprise Backup Solutions

Implementing an enterprise backup solution can be challenging. HP understands that for any given storage area network (SAN) environment, there may be more than one vendor's hardware and software present. Each of these components, including software, servers, interconnects, and target devices must work together. HP StorageWorks Enterprise Backup Solutions (EBS) provide an extensive selection of certified and supported data protection solutions. They are:

- Broad selection of data protection applications, tape technologies, and operating systems
- Scales from entry-level workgroups to enterprise-level data centers
- Fully tested from Direct Attach SCSI to complex heterogeneous SAN configurations and environments

### Key features and benefits

- **A complete backup and restore solution:** Featuring HP StorageWorks tape automation products (ESL E-series, EML E-series, MSL, Virtual Library Systems, and Tape Autoloaders) including a variety of servers, operating systems, host bus adapters, switches, disk arrays, and software
- **Easy-to-find compatibility tools:** A single point of reference for the latest support information found in the EBS Compatibility Matrix, which contains all the solution interoperability and device compatibility details
- **Support for leading backup applications:** Support for HP Data Protector software and other leading backup and restore applications.

- **Advanced data protection and recovery infrastructure:** Support for the latest technologies—including Ultrium, SDLT, and virtual tape—and advanced features such as WORM and the HP StorageWorks Extended Tape Library Architecture (ETLA)
- **Step-by-step guidance:** Extensive documentation such as the EBS Design Guide and step-by-step guidance through EBS 1-2-3 to design, configure, and implement a data protection solution
- **Expertise when you need it:** With professional services available for consulting, integration, and support through HP Enterprise Backup Solution Packs

## Leverage integrated service solutions for better business outcomes

Competitive IT organizations need an environment that's right for today and ready to evolve as its business needs change. HP Services meets this challenge with services designed to lower IT costs, increase availability, reduce the complexity of multivendor services, and accelerate system implementation.

- A key to business success is an agile IT infrastructure that adapts to changing needs while keeping the business running smoothly. Maintaining predictable service levels is one of the benefits of HP comprehensive support services. We cover the entire IT solution lifecycle to help you design, deploy, integrate, and manage an agile IT infrastructure—including convenient pre-packaged HP Care Pack services options and custom support solutions.
- Break down costly technology silos with our consulting and integration services, which allow you to access, share, and synchronize applications and data across your existing heterogeneous environment.

- Dream of being able to spend more time focusing on your core competencies and less on day-to-day IT services? Our outsourcing services and global IT expertise can make this dream a reality.
- To speed product implementation, consider our factory-direct capabilities. Our plug-and-play solutions are integrated, tested, and shipped in a fully configured rack. Included are pre-delivery site reviews, factory installation and configuration, onsite installation, and product orientation.
- In today's fast-paced business environment, your employees need to quickly assimilate new IT skills. HP can help you achieve this goal with a variety of training services, including instructor-led courses, customized onsite training, and innovative remotely assisted courses.

Capitalize on your IT environment capabilities with a service partner who thoroughly understands server, storage, and network technology in a multi-vendor environment. HP, working in partnership with HP Authorized Channel Partners, has the expertise and skill. Whether your company is a medium-sized organization or a large global corporation, HP Services can help. To learn more, visit [www.hp.com/hps/support](http://www.hp.com/hps/support)

## HP Services

### Scalable, flexible, and reliable—like your storage

As your business grows, your storage needs can change dramatically. You need services and support that can scale in the same way your storage does. HP Services can help you manage and evolve your storage environment so that you can easily handle growth, decrease operational costs, and protect data while reducing risk.

Whatever your storage needs, you can rely on HP and our authorized channel partners to work side by side with you for optimal results. We understand the needs of your dynamic business. That's why we provide a comprehensive range of scalable, affordable, and reliable services to support your disk storage systems, tape storage and media, storage networking, and archiving solutions.

HP recommended service levels:

- **Hardware Installation or Hardware Installation and Startup (if available):** Provides initial hardware installation of your product into your technology environment (system configuration is not included).
- **3-year Support Plus 24:** Provides integrated hardware and software support services designed specifically for your technology. HP Services engineers deliver reactive onsite hardware support and over-the-phone software support around-the-clock.

For more information about HP services and support, contact your HP sales representative or HP Authorized Channel Partner or, visit [www.hp.com/hps/storage](http://www.hp.com/hps/storage)

## Factory Express

HP Factory Express is designed to help you get a better return from your IT investment by providing customization, integration, and deployment services along with your storage and server purchases. It provides predictable, trusted, and tested IT solutions tailored to your business needs. We allow you to customize hardware to your exact specifications in the factory—helping to speed deployment and free up internal resources.

To learn more, visit [www.hp.com/go/factoryexpress](http://www.hp.com/go/factoryexpress)

## Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving, and disk storage systems. Our classes are available in many delivery modalities, from traditional instructor-led courses at one of our 80 training centers worldwide to onsite training customized to your needs or online.

To learn more about our education offerings, visit [www.hp.com/learn/storage](http://www.hp.com/learn/storage)

## Financial Services

HP Financial Services provides innovative financing and financial asset management programs to help customers cost-effectively acquire, manage, and ultimately retire their HP solutions. For more information on these services, please contact your HP representative or visit [www.hp.com/go/hpfinancialservices](http://www.hp.com/go/hpfinancialservices)

## To learn more

For more information on HP StorageWorks nearline data protection solutions, please contact your HP representative or authorized HP reseller, or visit [www.hp.com/go/tape](http://www.hp.com/go/tape)

To quickly find the HP storage products that fit your specific needs, visit [www.hp.com/go/product-selector](http://www.hp.com/go/product-selector)

## Technology for better business outcomes

To learn more, visit [www.hp.com/go/tape](http://www.hp.com/go/tape)

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