



Ultimate Business Protection

The foundation of secure business
for small and medium-sized companies

2nd edition

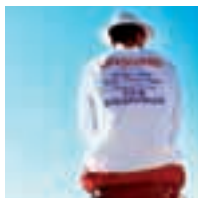
Simply StorageWorks



Reliable data protection is one of the most important challenges that businesses face today. To ensure data availability in the event of any threat, it's essential that you have the appropriate data protection and recovery strategy in place.

How can this guide help?

As part of the Ultimate Business Protection programme, this guide has been designed specifically to help small and medium-sized businesses (SMBs) choose the data protection strategy that's right for them. Split into four parts, it will help lay the foundations for a secure and successful business.



Part 1: The importance of data protection (pages 3–7)

Why is data protection one of the key business issues today? What happens when data isn't protected? How do you begin planning your solution?



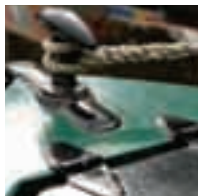
Part 2: Choosing your HP solution (pages 8–17)

Here we consider five specific backup and restore solutions, based on different end-user environments, that will help you identify your own particular needs.



Part 3: Choosing your products and services (pages 18–24)

Decide which HP tape drives, autoloaders or tape libraries are right for you; discover the benefits of HP software and media; and see how HP Services can help support your solution.



Part 4: Complete your knowledge (pages 25–27)

Get a full understanding of backup and restore with quick answers to commonly asked questions and simple definitions of the key technology terms.

Looking for something else?

This guide is part of the HP Simply StorageWorks initiative, which offers comprehensive information on the complete storage portfolio from HP for small and medium-sized businesses.

If you require information on network attached storage (NAS) and storage area network (SAN) solutions, please refer to the Easy as NAS and My First SAN solution guides.

Contact your local HP representative for details, or visit www.hp.com/apac/simple

Part 1: Focussing on data protection



Why is data protection important?

Data is the backbone of every organisation. Whatever business you are in, enormous amounts of data are needed every day to keep it running. If you also consider that data volumes are increasing by 80% a year (according to IDC analysts), it is clear that it must be protected against a variety of threats.

What's more, it is no longer only large enterprises that require sophisticated data protection strategies. Small and medium-sized businesses have increasingly tough demands as well.

What would happen if the data on your systems was wiped out by a power surge or

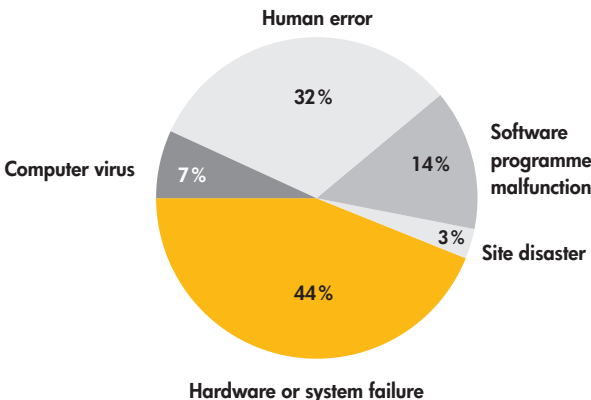
system failure? What if a fire or flood destroyed your electronic or paper-based records? Would you be able to recover all of your information?

And what if a crucial manual backup had been forgotten? Would you know which customers to invoice – and how much? Could you pay your bills? Could your business continue to run?

Given the importance of information and the potential high cost associated with data loss, reliable data protection is no longer an option – it's an obligation. Whether you need to capture, distribute and protect data automatically, or ensure fast and affordable backup and recovery, data protection must be performed in a systematic manner.

"24% (of SMBs) don't have a disaster recovery plan at all."

Small Business Pipeline, February 2005



Causes of downtime and data loss, Source: ZDNet, October 2002

Start planning your data protection solution

Fifty percent of companies that lose their data go out of business immediately, and ninety percent don't survive more than two years.*

To avoid this high level of risk, it's vital that you choose a data protection solution that fits your needs and solves your current issues, such as:

- Having to attach a tape drive to every server adds a lot of duplication of resources that you may want to rationalise
- Having your backup located in many places makes management and disaster-recovery planning very complicated
- Is the LAN big enough to handle the volume of traffic produced when running your backups? Can you manage your backup windows to keep the network free during working hours?
- Do dedicated backup servers provide the best use of your resources? Can the infrastructure scale to meet growing needs over time?

The first step in planning your data protection solution is to understand what type of IT environment you are running:

DAS environments

Direct attached storage (DAS) is the simplest backup and restore environment, usually consisting of a standalone tape drive attached directly to the server it is protecting. Businesses that operate DAS usually:

- Require only daily or weekly backups
- Maintain fewer than five networked servers
- Require only a single operating system
- Do not require online business-critical operations

LAN environments

Local area network (LAN)-based backup is often used by businesses that operate continuous processes with multiple servers and workstations. Storage backup devices are connected to the LAN and managed centrally from a single console through a single backup server – reducing hardware costs and management time. Businesses that operate LAN-based backup usually:

- Require a continuous, business-critical operation
- Require hourly or daily backups
- Have more than five networked servers
- Run multiple operating systems
- Need to automate their backup process
- Have unpredictable data growth

SAN environments

Businesses that run a storage area network (SAN) have similar characteristics to those that operate a LAN. But in addition:

- They are likely to have a large and possibly complex network, needing as close to 100% uptime as possible
- They will probably also have dedicated IT staff, exponential data growth and a need for instant recovery

A SAN system provides sophisticated backup, giving you:

- High levels of scalability for data capacity and performance
- A dedicated backup network that enables your LAN to provide network users with faster response times
- The opportunity to use disk-assisted storage for instant recovery
- Simplified recovery procedures with direct backup from your application servers

*According to research firm Baroudi Bloor International. Source: Sarbanes-Oxley Compliance Journal, December 22, 2005.



What is HP's approach?

HP offers solutions for the simplest to the most complex IT environments, running different operating systems and business applications as well as support for heterogeneous environments. Our portfolio includes a rich array of solutions for the capture, distribution, restoration and protection of data, ensuring that you have it available when you need it.

But how do you choose the strategy that's right for you?

First, you need to consider and understand the value that your IT brings to the business. For example, can an application be down for 24 hours without significantly affecting the business? Or would an outage of just minutes be catastrophic?

There are two key measures to help you assess this: the Recovery Time Objective (RTO), which is the amount of time a business process can be down; and the Recovery Point Objective (RPO), which is the amount of data you can afford to lose. For 24x7 applications, the RPO could be the most recent transaction, whereas for file servers it could be last night's backup.

From here, you can consider the storage technologies available to give you the right level of protection against specific causes of data loss. For example:

- Tape backup effectively protects against virus attacks because data can be restored from the most recent healthy backup. However, recovery time may be longer than your business can tolerate.
- Remote replication of data between sites will provide much faster recovery of a site disruption compared to tape. However, it will not offer the same level of protection against accidental deletion or virus attacks.

Recovery Time Objective (RTO)

The maximum available time the business can afford for a recovery operation.

Recovery Point Objective (RPO)

A measure of the maximum age of data your business can afford to lose.

Identifying your protection needs

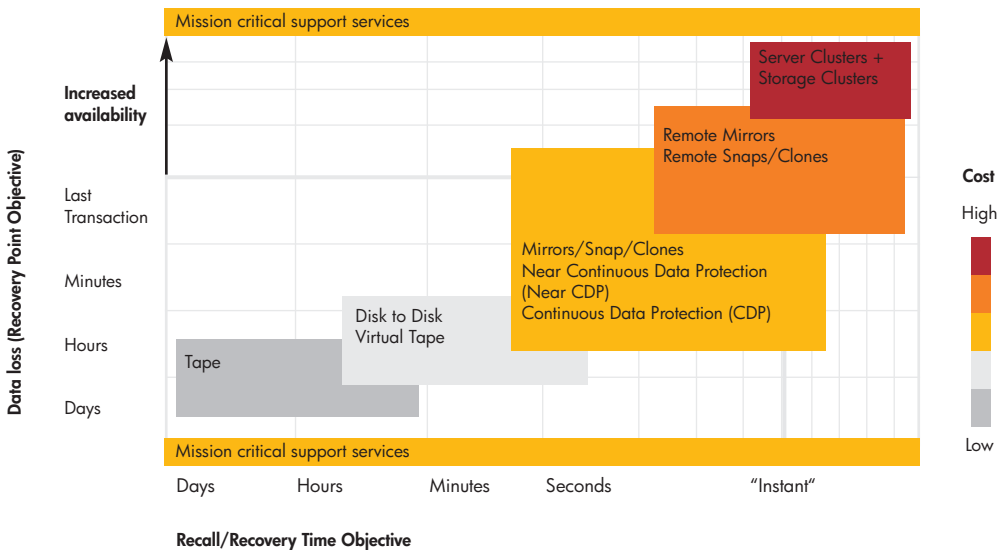
The diagram below shows the spectrum of storage solutions available from HP. It also allows you to visualise where your business protection needs are at this point in time.

Some organisations will only need solutions at the traditional tape end of the spectrum, where a lower entry cost is key and speed of restore is not an imperative. Some will need to look at a selection of different solutions, to cover different SLAs (Service Level Agreements) for restore time and uptime objectives.

From data protection to business protection

When does ordinary data protection become business protection? When you match the value of your data to the storage solution you are using for that data. For example, it is not cost effective to store general e-mail archives on an expensive, always-available disk array – it is far better to deploy a lower-performance, more affordable disk technology and store your e-mail archives on that.

Technology Continuum for Business Continuity and Availability



As shown in the graphic on the previous page, data protection solutions can be disk-assisted or tape-based, depending on how quickly and frequently you need to access and restore your data.

The key characteristics of both technologies are described below, and the HP portfolio of disk and tape solutions is outlined on pages 19–23.

Tape-based data protection

Magnetic tape has been used for data protection for over 50 years – and is still the most cost-effective technology for high capacity and long-term data protection. This is because it offers a number of advantages that have yet to be eclipsed by other technologies:

- Tape media is small and removable, and can therefore be easily stored offsite.
- Its long shelf life of up to 30 years makes it a dependable medium for archiving.
- You get a lot of capacity in a very small space; and because it is removable, capacity is effectively infinite.
- Automated library solutions can be easily integrated into many environments to give very high capacity and multiple cartridge backup operation.

HP provides a wide choice of leading tape-based technologies – including DAT, SDLT and LTO – in a wide range of products, including standalone tape drives, integrated autoloaders and tape libraries.

Disk-assisted data protection

Disk-assisted backup solutions offer several advantages over pure tape solutions. By backing up data from primary disk storage to a cheaper disk technology – before migrating it to tape for archiving – files can be restored quickly by IT staff or even users themselves.

Disk-to-disk (D2D) backup

In a disk-to-disk solution, a disk array is divided into targets for each host that is being backed up. The target cannot be shared between hosts. Once a host has written to the disk, the migration to physical tape happens through that host. This means that the host is involved in the first backup to the disk, and to the transfer to physical tape.

Virtual tape

Virtual tape is a disk device that appears to the SAN as a tape library, tape drive or tape cartridge. By presenting a virtual tape device to the SAN, the pool of storage within it may be dynamically shared amongst multiple hosts. Virtual tape dramatically improves backup and restores performance.

Replication (snapshots, clones and mirrors)

Snapshots, clones and mirrors are the most common disk-assisted technology utilised in enterprise data protection solutions today. By leveraging your investments in high-availability disk arrays, backups can be performed with zero interruption to your applications. Furthermore, data can be restored instantly from the saved images on the disk array.

Clustering

Clustering provides protection against basic hardware failure. A cluster of servers provides fault tolerance because if one server fails, one or more additional servers are still available to take over operations.

Part 2: Identifying your needs

The following scenarios demonstrate the variety of data protection needs faced by many small and medium-sized businesses, and the strategies that HP recommends to ensure business success for each. This will help you identify the right method of data protection for you.



A typical small office environment

Simply Inc. is a small architectural practice of five employees. The chief architect uses a notebook PC; the junior architects and the technician have workstations; and the administrator has a desktop PC – all of which run on Microsoft® Windows®. An HP ProLiant ML310 Server acts as a shared file server for all the firm's CAD drawings.

Recovery Time Objective:

If an outage occurs, Simply Inc. needs to recover its data within 24 hours.

Recovery Point Objective:

If an outage occurs, Simply Inc. needs to recover data from the previous day.

Other considerations:

Simply Inc. is a small practice with a limited IT budget, therefore it needs the most cost-effective solution it can find.

Single-server, entry-level backup solution

To meet its data protection needs, Simply Inc. chose an HP StorageWorks DAT 72 USB Tape Drive. This connects quickly to the file server via USB, and backups are performed easily using the in-box software provided. The USB interface also enables quick connection to the firm's notebook and desktop PCs for individual backup.

Incremental server backups of 3 to 5 GB are performed each night, and a full 50-GB backup is run over the weekend. The technician takes the backup tapes home to ensure data would still be available if a disaster occurred at the office.

The One-Button Disaster Recovery (OBDR) feature of the DAT 72 Tape Drive ensures simple recovery of the whole system from the last full backup tape with one press of a button. It can even restore the whole system setup to a new server if required.

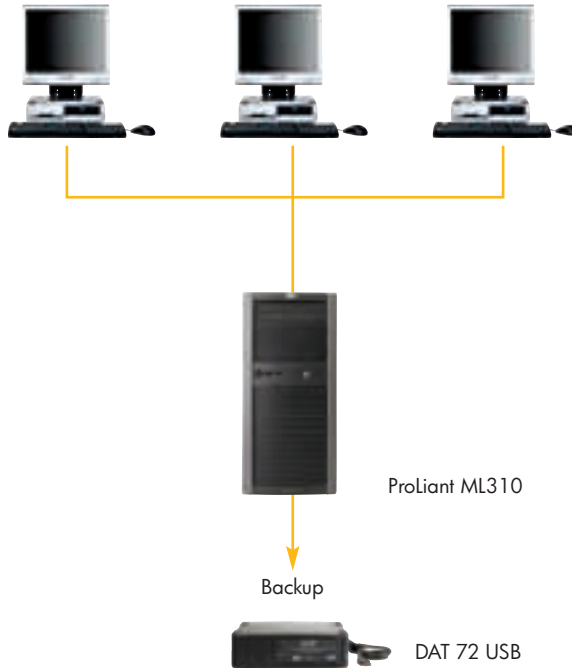
Furthermore, the low cost of DAT media adds to the cost-effectiveness of Simply Inc.'s data protection solution.



"Knowing that HP's One-Button Disaster Recovery will help me get the systems up and running fast if the worst happens, gives me peace of mind."

Technician at Simply Inc.

Single-server, entry-level backup solution



Typical configuration

Description	Part number	QTY
HP StorageWorks DAT 72 USB External Tape Drive	DW027A	1
HP DAT 72 data cartridge, 72 GB	C8010A	4

A typical small business environment with multiple servers

Kalm Associates is a small company that provides accounting and financial management services. It employs 35 staff, who all operate from a single office. The office manager has responsibility for the firm's IT systems, supported by a local reseller. The infrastructure includes a file server to hold customer records – an HP ProLiant ML350 Server – and an additional server for e-mail and print jobs, an HP ProLiant ML370 Server.

Recovery Time Objective:

If an outage occurs, Kalm Associates needs to recover its data within 12 hours.

Recovery Point Objective:

If an outage occurs, Kalm Associates needs to recover data from the previous day.

Other considerations:

Kalm Associates has no online business-critical operations and requires only a daily backup of its data. A solution that is simple to operate is key.

The print and e-mail server, which holds almost 350 GB of data, is backed up by an HP StorageWorks Ultrium 448 Tape Drive, featuring OBDR. A full backup is performed every Friday night, with incremental backups* performed every other night. The office manager stores the weekly full backup offsite for four weeks, so that data can be restored to any point up to a month before. Using Data Protector Express on this server as well means that she can use the same simple backup process for both systems.

For additional protection from more catastrophic disasters, Kalm Associates uses the Data Protector Express Bare Metal Disaster Recovery option. Each new server configuration is recorded to a new disaster-recovery disk, which is stored offsite with the backup tapes. If the worst happens, the server or replacement hardware can be booted from this disk and the whole system can be restored in minutes.

This simple direct-attach storage (DAS) solution makes life very easy for the office manager, who occasionally has to restore lost or corrupted files but has never had to perform a complete disaster recovery. However, on the advice of her reseller, she does a periodic test restore over a weekend, just to ensure that the process will work flawlessly should she ever need it.

DAS-based backup solution

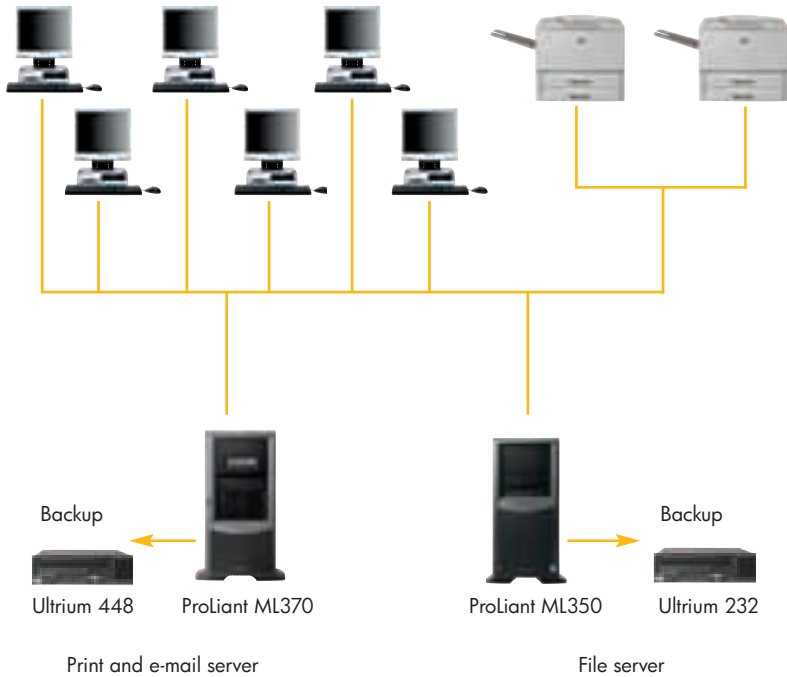
The company selected an HP StorageWorks Ultrium 232 Tape Drive and HP StorageWorks Data Protector Express software to back up the 120 GB of data stored on its file server. The office manager takes the resulting backup tapes home with her each day to protect the data from an onsite disaster.

* What is an incremental backup? Find out on page 27.



“We needed a simple and reliable backup solution, and our reseller told us that you can’t get any easier than HP StorageWorks Ultrium.”
Office Manager at Kalm Associates

DAS-based backup solution



Typical configuration

Description	Part number	QTY
HP StorageWorks Ultrium 232 Tape Drive	DW064A	1
HP Ultrium 1 data cartridge, 200 GB	C7971A	4
HP StorageWorks Ultrium 448 Tape Drive	DW016A	1
HP Ultrium 2 data cartridge, 400 GB	C7972A	4
HP StorageWorks Data Protector Express	BB117AA	2
HP StorageWorks Data Protector Express Bare Metal Disaster Recovery	BB128AA	2

A typical networked environment with two offices

ExeMed is a small firm that specialises in the design and manufacture of specialised medical equipment. It has 100 employees, two offices and a dedicated three-person IT team that looks after a network of seven servers – five in the city centre head office, and two in the second office located in the financial sector across town. These are mainly Intel®-based servers, including the HP ProLiant DL360 Server, several non-HP servers, and an HP 9000 rp4440-8 Server running HP-UX 11i v1.

Recovery Time Objective:

If an outage occurs, ExeMed needs to recover its data within 8 hours.

Recovery Point Objective:

If an outage occurs, ExeMed needs to recover data from the previous day.

Other considerations:

Because ExeMed runs continuous business processes, it needs to perform frequent backups during the day and overnight on specific servers at scheduled times.

LAN-based backup solution

The company's data protection strategy is straightforward. Incremental backups of 20 to 30 GB are performed each night over the LAN to an HP StorageWorks 1/8 Tape Autoloader with an HP StorageWorks Ultrium 448 Tape Drive. Thanks to superdrive tape technology, each backup fits onto a single data cartridge that the IT manager can take home for offsite storage. A full backup (totalling more than 600 GB) is performed over the weekend, with the autoloader automatically changing the cartridges as required.

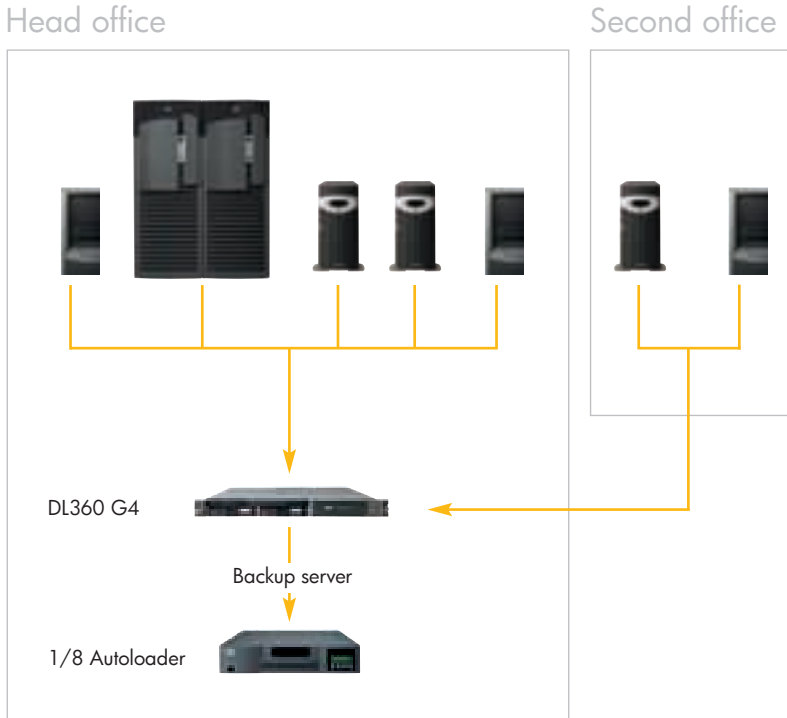
With its main supplier based in the U.S., the company network has to be available 18 hours a day to allow the systems to be updated by the supplier during local business hours. As a result, there is only a six-hour window to complete the backup each night. The Ultrium 448 Tape Drive is up to the challenge. Its data-rate matching feature optimises performance in line with the varying network transfer speed.

Overall, the LAN-based solution has simplified IT management processes, allowing ExeMed to consolidate the backup from multiple servers onto a single device. For added simplicity, the 1/8 Tape Autoloader is housed in the same rack as the HP ProLiant DL360 Server – which manages the backup process in combination with HP OpenView Storage Data Protector software.



"My backups have to be completed by 6am when the first employees come in. Moving up to the tape autoloader ensures the whole cycle can be done without human intervention, day in and day out." IT Manager at ExeMed

LAN-based backup solution



Typical configuration

Description	Part number	QTY
HP StorageWorks 1/8 Ultrium 448 Tape Autoloader	AF203A	1
HP Ultrium 2 data cartridge, 400 GB	C7972A	8
HP OpenView Storage Data Protector 5.5	B6961AA	Included with HP Storage Works 1/8 Autoloader for the first year

A typical environment for high availability and performance

As a growing number of customers place round-the-clock demands on their core data, the IT manager at Delvin Market Research wants to increase the availability and performance of the company's Microsoft SQL Server database, as well as reducing the backup cycles. To do this, he has decided to replace the existing direct-attached storage environment with a cost-effective, high-capacity storage area network (SAN).

Recovery Time Objective:

If an outage occurs, Delvin Market Research needs to recover its data instantly.

Recovery Point Objective:

Delvin Market Research needs to recover all data that was created prior to any outage.

Other considerations:

The SAN environment offers high scalability, availability and utilisation of disk resources, plus simple and centralised management. Delvin needs a backup and recovery solution to match.

Entry-level SAN backup solution

Taking advice and support from the experts at HP Services, Delvin based its solution on an HP StorageWorks Modular Smart Array (MSA) 1500, five HP ProLiant DL580 servers, an HP StorageWorks MSL6030 Tape Library with HP StorageWorks Ultrium 960 Tape Drives and select HP storage software products.

HP OpenView Storage Data Protector 5.5 software* works as the core manager of the solution to monitor backup and restore operations quickly and easily, so system performance and staff productivity are significantly increased.

The Ultrium 960 drives deployed within the MSL6030 Tape Library provide more than enough performance for the daily backup operations, and the MSA1500 works seamlessly with the HP OpenView Storage Virtual Replicator software, which enables IT staff to create point-in-time copies – or “snapshots” – of critical data for near-instant recovery following a disaster.

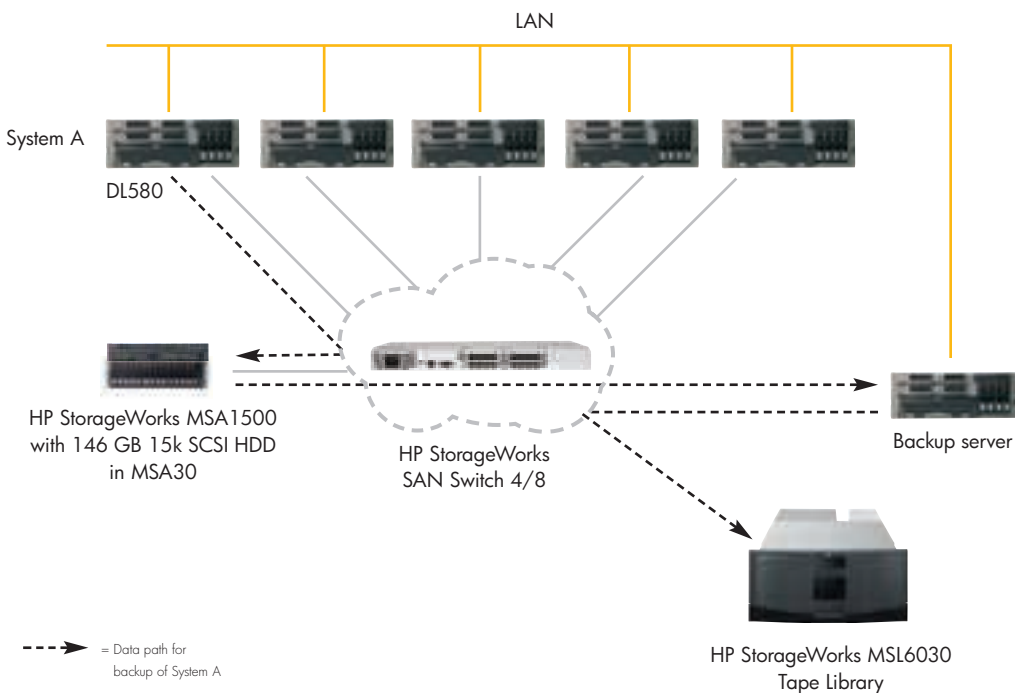
In summary, Delvin Market Research now has the technology in place to back up its data more efficiently than ever – and keep more data online at the same time to serve its growing customer demands. It also has the tools and utilities to recover this data in minutes, should it be corrupted or lost.

* Find out more about this software on pages 22–23.



“Deploying this SAN solution has fundamentally helped in increasing the availability and performance of our database. We have managed to significantly reduce our backup cycles and are now able to recover our data in minutes if needed.” IT Manager at Delvin Market Research

Entry-level SAN backup solution



Typical configuration

Description	Part number	QTY
HP StorageWorks MSA1500	AA986A	1
HP StorageWorks MSA30 SCSI disk enclosure B2	302969-B21	1
146 GB 15k universal SCSI disk drive	347708-B22	8
HP StorageWorks 4/8 SAN Switch	A8000A	1
HP StorageWorks FCA2242SR 4-Gb FC HBA	A8002A	5
HP 4Gb short-wave SFP Transceivers	A7446A	8
LC/LC FC Multi-Mode Cable (5m)	221692-B22	3
HP StorageWorks MSL6030 2 Ultrium 960 Tape Drive FC Tape Library	AD609A	1
HP Ultrium 3 data cartridge, 800 GB RW	C7972A	30
HP OpenView Storage Data Protector 5.5	B6961AA	1
HP OpenView Storage Virtual Replicator	T3597A	1

A typical environment for DPSS solutions

Asezure Investments has a file server farm with five servers, holding over 700 GB of data. A daily backup is performed on two of these servers, but the remaining three servers are backed up only when the local administration department chooses to, as they have no automated solution. To simplify its backup procedure, Asezure has consolidated its backup strategy into a DPSS environment.

Recovery Time Objective:

With the old backup method, lost files took many hours to be recovered – if they could be recovered at all. Asezure wanted a solution that could recover lost files in just minutes.

Recovery Point Objective:

The IT department wanted to be able to recover data that was created only one hour ago.

Other considerations:

Asezure Investments required a solution that would offer reliable and consistent backups of any new server that it deployed, without having to purchase additional hardware or tape drives.

Data Protection Storage Server (DPSS) backup solution

To meet its data protection needs, the IT department installed a DPSS solution in its data centre. The system automatically receives block-level changes made to local files on the Windows-based file servers at regular intervals, sent directly across the existing network infrastructure. This ensures Asezure can meet its RPO should information be lost or corrupted.

The DPSS solution now contains all the backed-up files of the company's five file servers. And for a further layer of protection, the Data Protection Storage Server is itself backed up to an HP StorageWorks 1/8 Tape Autoloader using HP Data Protector Express software.

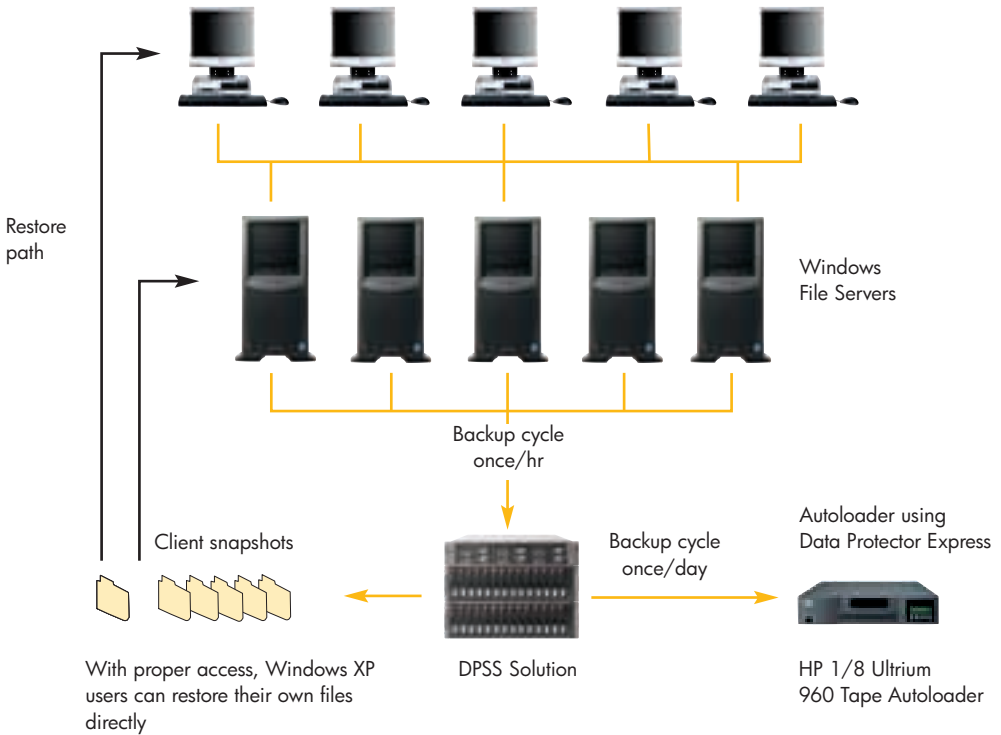
In the event that any of the files backed up by the DPSS are lost or overwritten by a user, they can take the restore process into their own hands. By using the "previous version" restore function in Windows XP, users can interact directly with the DPSS solution and recover their lost file within seconds. This is far quicker than the company's previous restoration method, which could have taken hours.



"Because DPSS integrates into the existing Windows-based infrastructure, backups can happen every hour, and restores can take place in seconds."

IT Director at Asezure Investments

Data Protection Storage Server (DPSS) backup solution



Typical configuration

Description	Part number	QTY
HP Data Protection Storage Server 6 TB solution	398715-B21	1
Data Protection Storage Server LTU for 2 additional servers	403557-B21	2
HP StorageWorks Data Protector Express	BB117AA	1
HP StorageWorks 1/8 Ultrium 960 Tape Autoloader	AF204A	1
HP Ultrium 3 data cartridge, 800 GB RW	C7972A	8

Part 3: Choosing your products and services



Which HP data protection solution is right for you?

The HP StorageWorks Backup Sizing Tool is a free tool that allows you to size and configure the ideal backup solution for your data protection needs.

Features include:

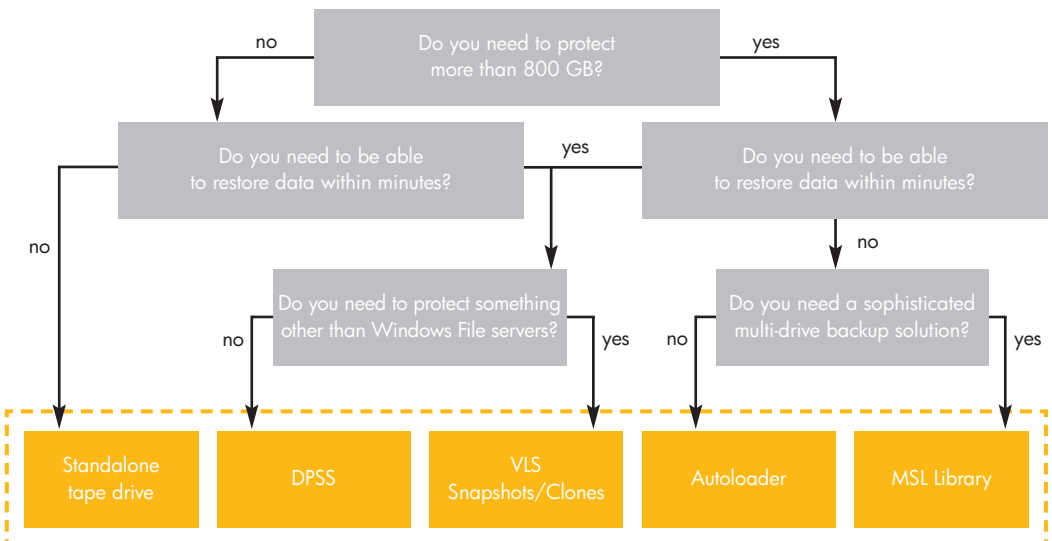
- Ability to export a graphical representation of your completed configuration to Microsoft Visio

- Ability to export your bill of materials (BOM) into a spreadsheet
- Enhanced user interface to simplify navigation and ease of use
- Choice of novice and expert modes to assist users of varying experience

HP ActiveAnswers account members can access or download the tool now at: www.hp.com/go/swbst

If you are not yet a member, it only takes a few minutes to join. Visit: www.hp.com/go/activeanswers

Configure a solution that fits your precise needs



HP StorageWorks tape-based technology offerings

Tape-based storage is the most cost-effective form of data protection. It allows you to move data offsite for archiving, and thereby gives you long-term protection against data loss and equipment failure. HP offers a full portfolio of tape-based solutions, comprising tape drives, autoloaders and libraries.

HP StorageWorks tape drives

All HP StorageWorks DAT and Ultrium tape drives offer a complete backup solution that includes the following:

- One-Button Disaster Recovery (OBDR) – a unique HP feature that enables you to restore systems quickly and effortlessly with the touch of a single button
- HP StorageWorks Data Protector Express – Single Server Edition – an easy-to-use backup application for low-end servers and workstations
- HP Library and Tape Tools (L&TT) – a comprehensive suite of tape drive management utilities (available as a free download)

Furthermore, each tape drive has to pass through an extensive testing programme to ensure connectivity and compatibility with HP and third-party servers, operating systems and software. HP also offers Top Value variants with four additional tape cartridges to provide you with the ability to manage your backup for a whole week.

HP StorageWorks DAT drives

Affordable. Simple. Secure. DAT drives are ideal for entry-level business protection needs. They combine proven reliability with a low cost of ownership, helped by the affordability of DAT media. The range consists of 24-GB, 40-GB and 72-GB drives, available as internal, external and rack-mount models, and you can choose from a native USB 2.0 interface for plug-and-play simplicity or a traditional SCSI connection.

HP StorageWorks Ultrium half-height drives

Half-height Ultrium drives provide simple integration with workstations and smaller servers, while retaining the capacity of traditional full-height drives. They are also more affordable. Available in 200-GB and 400-GB capacities, with unique HP features such as dynamic data rate matching, they use the standard LTO format and are fully read-write compatible with full-height Ultrium drives.

HP StorageWorks Ultrium full-height drives

Full-height Ultrium drives combine 100% duty cycle reliability with a rugged design and all the data-handling features you would expect from HP. They also deliver blazing performance; for example, the HP StorageWorks Ultrium 960 Tape Drive has a transfer rate of 160 MB/sec.



DAT 72 USB



Ultrium 232



Ultrium 960

HP StorageWorks tape autoloaders

Designed to automate the media management and backup process, autoloaders are ideal for environments that have outgrown standalone tape drives and have RTOs of hours to days.

HP StorageWorks DAT 72x6 Autoloader

For environments using DAT technology that have longer backup windows, the most cost-effective automated solution is the six-cartridge DAT 72x6, providing up to one week of unattended security for your data, and room for a cleaning cartridge too.

HP StorageWorks 1/8 Tape Autoloader

Equally at home in a data-centre rack or on a desk next to the office server, this 2U tape autoloader is equipped with a choice of tape drives and can house up to eight data cartridges. All models come with HP OpenView Storage Data Protector – Single Server Edition.

HP StorageWorks tape libraries

For consistent, accurate backup and rapid restore – without the need for specialised resources or time-consuming processes – HP StorageWorks tape libraries offer a perfect solution. They are simple to manage, fit easily into multi-vendor environments, and come complete with intelligent tools to streamline backups and simplify management.

HP StorageWorks MSL2024 Tape Library

The HP StorageWorks MSL2024 Tape Library is an entry-level solution that provides high-capacity storage without consuming valuable rack space. With up to 9.6 TB of native capacity, it can easily tackle backup and recovery jobs normally handled by mid-range tape libraries. The MSL2024 Tape Library offers a choice of the latest-generation LTO tape drives: either one Ultrium 960 or up to two Ultrium 448 tape drives.

HP StorageWorks MSL6000 Tape Library series

The portfolio of HP StorageWorks MSL6000 tape libraries provide centralised backup to a single automated device, freeing valuable IT resources for more strategic work. Ideal for medium to large IT networks – with or without a SAN – that are experiencing uncertain data growth, MSL6000 tape libraries offer maximum flexibility with best-in-class tape drive technology including the HP LTO Ultrium 960 and SDLT 600 tape drives, in addition to Ultrium 460.



MSL6030



MSL2024



1/8 Autoloader



The value of HP Ultrium media

HP Ultrium data cartridges endure a continuous testing programme to guarantee the high levels of quality uniquely specified by HP. They are ideally suited for backup and restore operations that have critical requirements for capacity, performance and cost – and will alleviate the pressure of managing growing volumes of data within a shrinking backup window. Here are just some of the benefits you get when you choose HP Ultrium:

- HP has 20 custom-built test chambers in use around the clock. 70,000 tests and 1.3 million test hours a year emulate real-world environmental conditions and usage. The goal of all this testing is to ensure that every tape works reliably the first and every time it is loaded into a drive.
- The Write-Once, Read-Many (WORM) capability is a cost-effective solution to protect, manage and archive compliant data records to meet stringent industry regulations, such as Sarbanes Oxley, Basel II and SEC Rule 17a.
- HP Ultrium 800 GB WORM data cartridges offer the highest storage capacity and backup performance of any tape technology – taking just 12.5 seconds to back up 1 GB of data.
- The new HP Ultrium Non-Custom Label media saves time and money as cartridges come with a unique, pre-sequenced double barcode label already attached. There is no need to wait for a custom labeled solution anymore.
- A smoother base film and smaller magnetic particles contribute to a higher bit density, which allows more data to be recorded on the same amount of tape. The smoother, thinner base film also allows a longer tape to be packed into the cartridge.
- HP warrants Ultrium 800GB WORM cartridges for up to 30 years archival life and/or 260 full backups. This ensures businesses can meet the ever-increasing demands of regulation for data retention and archiving.
- A two-tone coloured cartridge shell enables “across the room” or “in slot” identification of a WORM tape from an RW tape. It is a simple solution, but one that saves time and reduces the risk of error in a busy data centre environment.



HP StorageWorks disk-assisted technology offerings

HP Data Protection Storage Server

The new HP Data Protection Storage Server (DPSS) provides rapid and reliable disk-assisted recovery, for near-continuous data protection of your Windows file servers. The solution can be seamlessly integrated into an existing network infrastructure and configured easily to deliver hourly backup operations of all servers. The backup cycle works at a block level on each server, making each operation quick and of small consequence to the bandwidth of the network.

Disk-assisted backup and user restore capabilities make the DPSS solution one of the fastest and most cost-effective methods for recovering file data lost to user error or equipment corruption. DPSS also allows traditional tape backup device integration to provide full offsite protection processes to be sustained.

The SATA-based HP ProLiant DL100 G2 Data Protection Storage Server is available in 1-TB, 3-TB and 6-TB configurations, suitable for many small and medium-sized organisations wanting to protect Windows file servers in their data centre or branch office environment. This platform offers features such as expansion ports and remote management allowing scalable implementation for the best balance of performance and investment protection.

HP StorageWorks 6000 Virtual Library System

The HP StorageWorks 6000 Virtual Library System (VLS6000) is ideal for SAN environments looking to protect more than four hosts, where performance is a key concern. The VLS6000 seamlessly integrates into your existing backup process, removing the need to change backup software or monitoring policies. This type of solution is ideal for fast, frequent recovery of small or single files or for when you need to improve the overall backup and recovery process. The VLS6000 meets Recovery Time Objectives from seconds to hours.

Advanced Backup to Disk

The Advanced Backup to Disk feature, available in Data Protector 5.5, makes it easy to incorporate disk-to-disk data protection into your backup process.

Most suited for workgroups, branch offices or small to mid-sized data centres that want to protect a limited set of data across a few hosts – and that have RTOs from seconds to hours – it offers reduced recovery time, improved backup performance and branch office backup consolidation.

You can find out more about HP OpenView Storage Data Protector 5.5 on the following page.

HP data protection software offerings

HP offers backup and storage management software suites to suit all environments. For example, Data Protector Express is suited to entry-level environments such as a single-server office using a USB DAT drive; whereas Data Protector 5.5 meets the more complex needs of a heterogeneous, multi-operating system data centre.

HP OpenView Storage Data Protector 5.5

This software is designed to simplify and centralise backup and recovery from both disk and tape by integrating a variety of techniques to eliminate backup windows. These range from online backup, open file backup and instant recovery or zero-downtime backups for continuous 24x7 operations.

Key features and benefits

- **Advanced backup to disk** Improves the backup process with continuous backup of transaction log files, slow clients without multiplexing, easy resource access and sharing.
- **Backup mirroring** This simplifies preparation for disaster-recovery operations and offers remote long-term archiving combined with fast local tape access.
- **Advanced media management (object copy)** Eliminates the need to copy the entire tape or disk, so only portions that have been added during the selected period are copied and appended to the tape or disk.
- **Faster recovery** Recovers terabytes of data in minutes by switching to the backup disk with Instant Recovery. Includes a full range of options for fast and easy recovery of the bare-metal system by booting from CD-ROM, disk or tape.

For more information, visit the Data Protector website at: www.hp.com/go/DataProtector

HP StorageWorks Data Protector Express

HP Data Protector Express is the simplest, but most advanced data-recovery software suite on the market – and a single server licence is included with all HP StorageWorks tape drives, featuring one year of support and access to fixes and version upgrades.

Key features and benefits

Data recovery in any environment

This software provides simple and reliable backup and recovery for file servers, application servers and desktops. It runs in Windows, Linux and NetWare environments, and supports tape, disk and optical backup devices. Highlights include:

- **Ease of use** The graphical user interface can be run locally or remotely with a common look and feel across all operating systems.
- **Reliable backup and restore** D2D and D2D2Any (disk-to-disk-to-any) backup procedures use disk volumes as the backup target, offering fast single file restore performance, reliability and easy scalability.

End-to-end business protection

HP can help you implement an effective business protection strategy without straining your staff and budget. HP's three-pronged approach involves:

- **Data protection** Ready to recover in the event of a data loss.
- **Security protection** Keep your data and systems safe from viruses, spyware and other threats.
- **Business-critical availability** Keep your business systems up and running.

HP Data Protector Express includes one year of support, plus access to fixes and version upgrades.

For more information visit:

www.hp.com/go/dataprotectorexpress

www.hp.com/go/dataprotectorexpress/sse

HP Services

HP Services provides support for each element of your IT environment, at every point of the IT lifecycle.

HP Care Pack Services

HP Care Pack Services are easy-to-buy, easy-to-use packages to support the hardware and software components of your data protection solution. They will help you to maintain high availability, productivity and return on your investment, plus keep your total ownership costs as low as possible. Choose from the following portfolio of service offerings:

- **Deployment Services** Ensure your products are operational with minimal disruption to your business.
- **Hardware Support Services** Deliver high-quality onsite and offsite support.
- **Software Support Services** Offer direct access to HP Response Centres for rapid problem diagnosis and resolution, plus substantial savings on software updates.
- **Support Plus/Support Plus 24** Provide an integrated set of hardware and software problem resolution features at predictable packaged prices.
- **Proactive 24 Service** An integrated hardware and software support solution that combines proactive problem preventative measures with responsive technical assistance.
- **Critical Service** Provides expert proactive services to keep your mission-critical hardware and software highly available, as well as rapid reactive support for seamless problem resolution.

Why buy an HP Care Pack?

These convenient service packages:

- Reduce time to implementation and time to revenue return through installation and integration to your existing IT environment
- Give you direct access to HP-certified storage support teams, complemented by solution partnerships with leading storage suppliers for technical and problem-solving expertise
- Provide committed response times for SAN and NAS environments to improve performance and reduce downtime risks of your data protection solution
- Ease budget planning and reduce your management costs with fixed-cost support that includes parts and labour

Further support

In addition to these services, HP also offers a range of advanced services that can assist you in setting up and maintaining your data protection solution:

Backup and Recovery Solution Service

Providing fast, effective integration of a new backup and recovery solution, this is managed from start to finish by HP Services experts, who will:

- Analyse your business and IT environment
- Develop a complete integration plan
- Design an architecture that suits your critical requirements
- Validate and monitor your configuration

HP OpenView enhancements for HP Proactive 24 and HP Critical Services

Extending our industry-leading mission-critical support capabilities into your HP OpenView environment.

For more information, please visit:

www.hp.com/hps/carepack

Part 4: Complete your knowledge



Questions and Answers

Q: Are HP storage backup products compatible with other manufacturers' servers?

A: All our DDS and Ultrium products are tested on leading third-party servers. This means you're not tied to any particular vendor, and you can integrate multi-vendor products to your system as required. For specific information, visit: www.hp.com/go/connect

Q: How do I calculate the best backup storage solution for my business?

A: If you are a small to medium-sized business, then consider the sample backup and restore solutions presented in this guide. Once you've decided on the right strategy for your business, you can configure and size the ideal solution using the StorageWorks Backup Sizing Tool at: www.hp.com/go/swbst

Q: Can tape drives back up multiple servers?

A: HP tape drives and autoloaders can back up multiple servers over the network. The most common configuration is to attach the tape drive or autoloader to a backup server, and use the backup software to schedule the backup of servers connected to the LAN.

Q: When should an autoloader or a tape library be considered?

A: When you want to automate your backup process and schedule backups on certain servers at certain times to reduce human

intervention, an autoloader is ideal. An autoloader with a single tape drive will provide efficient, unattended backup and – compared to using standalone tape drives – will save you resources and improve backup reliability.

For customers experiencing uncertain data growth, and with a need for high storage capacity, HP StorageWorks MSL tape libraries provide centralised backup to a single automated device, freeing up valuable IT resources and providing a complete backup and restore solution for small to mid-range environments – with or without a storage area network (SAN).

Q: Are the backup purchases made today future-proof if I need to upgrade due to data growth or critical operations?

A: HP continues to invest in key tape technologies, and works to provide our customers with a clear roadmap for the future. We provide regular updates to our roadmaps and a continued commitment to supplying customers with the best-quality products in tape technology. Today, HP has a range of models that cover the needs of every business, from those with less than 40 GB of data to those that need scalability up to multiple TBs, which allows you to consider alternative capacities and technologies to meet your requirements as your needs change.



Q: What backup applications does HP StorageWorks support?

A: HP supports a wide range of backup applications and solutions. Included with all HP tape drives and autoloaders is a copy HP StorageWorks Data Protector Express Single Server Edition, which allows you to install and work with your backup device right out of the box. For larger and more complex environments HP also supports various backup and recovery software products.

For a complete list of supported backup applications, please refer to www.hp.com/go/connect or www.hp.com/go/ebs

Q: Why should I use HP StorageWorks Data Protector Express?

A: HP StorageWorks Data Protector Express software is an ideal solution for cost-conscious companies that want an easy-to-manage application for data

protection and recovery. Its Windows-like interface means backup and recovery is as easy as selecting a file in Windows Explorer. The software provides simple and reliable backup and recovery for file servers, application servers, and desktops. It runs in Windows, Linux, and NetWare environments, and supports tape, disk, and optical backup devices.

Q: What are snapshots, clones and mirrors?

A: Usually deployed in 24x7 mission-critical environments, these are disk-assisted copies of data that reduce backup and restore time to just seconds. A “snapshot” replicates pointers to data – not the actual data itself – meaning it is virtually capacity free. When a snapshot is created, the array controller starts copying data to a clone, which is a full, identical copy of the data. A mirror is the same as a clone, but is located at a remote second site for disaster-recovery purposes.

Jargon buster

Compressed capacity

Compressed capacity is the amount of data processed or transferred by the device. This data may have been encoded in such way as to compress it, by either software or hardware processing. The tape industry normally quotes a 2:1 compression ratio as the standard, but actual compression ratios vary greatly depending on the type of data being compressed.

DAT – Digital Audio Tape

A term used interchangeably with DDS (Digital Data Storage). Refers to the technology originally used for audio recording, which was adapted by HP and Sony in 1988 for data storage. DAT is an open format produced by multiple manufacturers.

Full backup

When you perform a full backup, all data, applications and OS files on your system are copied to your backup media. This allows you to restore all information in one go, should the worst happen.

Incremental backup

Incremental backups only copy files that have changed since the last full backup. The advantage of this is that it takes less time and uses less media. However, to restore all system information, you will need to load the last full backup, plus all subsequent incremental backups.

LTO – Linear Tape-Open

A magnetic tape format technology developed as an alternative to DLT by a consortium of HP and other manufacturers. The first generation of LTO cartridge (LTO-1) was released in 2000 with a native storage capacity of 100 GB. The latest generation is LTO-3, which provides 400 GB of native capacity per data cartridge.

Native capacity

Native capacity is the actual number of bits and bytes a device or a piece of media can store without considering data compression.

SDLT – Super Digital Linear Tape

Digital Linear Tape uses a proven linear recording technology, a highly accurate tape guide system, and a read-after-write correction system to provide high-capacity and high reliability data backup and restore. The new generations of SDLT tape drives provide enhanced capacity and backup performance.

Ultrium

A high-capacity tape format based on LTO technology. It is an open format used by multiple manufacturers that provides enhanced performance and reliability over earlier formats.

WORM (Write-Once, Read-Many)

A data storage technology that allows information to be written to storage media only once. It is used to prevent data from being altered or erased, and it helps organisations meet regulatory requirements for retaining data securely in an unalterable format.



For information on Ultimate Business Protection and Simply StorageWorks solutions visit: www.hp.com/apac/simply or www.hp.com/apac/ubp

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