Smarter Backup and Recovery Management for Big Data with Tectrade Helix Protect

Redguides

for Business Leaders

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- See how to cut the cost and complexity of protecting large data volumes
- Learn about the advanced data reduction capabilities of IBM Tivoli Storage Manager
- Understand how to deliver a world-class backup catalog

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Executive overview

Businesses and public sector organizations of all sizes are increasingly dependent on their IT systems to manage almost every aspect of their operations. As the demand for online services and the automation of business processes continues, the amount of data that these organizations need to manage is increasing dramatically every year.

This growth in data volume tends to increase the management time and cost of maintaining backup and archive operations. At the same time, many organizations are under pressure to deliver *always on* access to data and meet more aggressive service level agreements (SLAs). Meeting these requirements while operating within a limited IT budget or while actively seeking to reduce IT costs often proves to be a significant challenge.

As a consequence, the concept of out-tasking backup and archive operations can be an attractive option, especially now that cloud backup offerings are becoming more widely available and mature. These cloud solutions typically run over a standard Internet connection. For smaller organizations with low data volumes, they often represent a cost-effective solution that will deliver a reliable data protection service and improved SLAs.

However, many of these cloud solutions are built on platforms that cannot deliver the scalability, performance, and flexibility that are required by larger organizations that have more complex systems landscapes and larger amounts of data to protect. Often, cloud backup offerings are little more than remote vaults that offer a limited catalog of services and little protection against failed or missed backups. The recovery times they offer are unlikely to meet the SLAs demanded by larger organizations because it is not feasible to restore large amounts of data quickly enough through a limited bandwidth Internet connection.

By contrast, the Tectrade Helix Protect platform is designed for mid-sized and large organizations that are interested in out-tasking their backup and archive operations, but that do not want to compromise SLAs, security, or flexibility. The Helix Protect solution is a pay-as-you-go, managed private cloud backup, recovery, and disaster recovery platform. The service is billed on a monthly basis, and the pricing includes all the required hardware, software, and management services.

Because the solution is based on private cloud technologies, the backup operations are performed by an on-premise device that sits within the client's firewall. Meanwhile, the overall service is managed remotely by a team of experts from Tectrade. A primary copy of the backup data remains on-premise under the customer's control, and a second copy is moved off-site either to the customer's own disaster recovery facility or to a secure Tectrade location.

The service is underpinned by highly robust hardware and mature software from IBM®, in addition to expert services from Tectrade. Tectrade manages the whole backup service down to the level of individual groups of servers. In many cases, this approach helps to reduce customer administration time by up to 100 percent while delivering backup success of 98 percent or better for critical servers.

This IBM Redguide™ publication explains the business challenges that the Tectrade Helix Protect solution helps to address. It explores the advantages of the offering and provides deeper insight into the solution itself. This guide also provides examples of how customers can use the solution.

Business challenges

Organizations of all kinds are increasingly coming to realize that a large proportion of the value of their business is in the data stored in their IT systems. As a simple example, without reliable access to data on current orders, production schedules, inventory levels, and supply chain, a manufacturer cannot hope to deliver its products to customers on time.

This data needs to be available and protected. If a major incident occurs and servers fail, it is critical to avoid loss of data and to ensure that a rapid recovery is possible. For this reason and to keep management costs at a minimum, most mid-sized and large organizations have already moved from distributed backup solutions, where each system has its own backup system that is managed separately. They are moving to more centralized and standardized backup solutions.

The relentless growth in data that many organizations are experiencing is putting an increasing strain on these centralized backup architectures. This growth in data can be driven by many factors such as the following examples:

- Corporate expansion
- The need to manage and analyze the business at ever-increasing levels of detail
- The ongoing automation of previously manual processes

Scalability is often an issue, particularly when the business needs to meet the needs of an *always on* user community.

Organizations are facing some of the following typical problems with backup management:

- Complex backup environments require more time and effort for administration, which increases costs and distracts IT staff from more valuable activities.
- Finding staff with the appropriate skills can be difficult and expensive.
- Over-running backup windows affect the performance and availability of systems, reducing users productivity.
- Recovery processes are time-consuming and unreliable, often failing to meet the organization's recovery time objective (RTO) and recovery point objective (RPO).
- Limited reporting capabilities make it difficult to monitor backup and restore performance accurately or to identify and address issues quickly.
- Maintenance costs for backup software are high, and license management and compliance issues are complex.
- Processes for managing tape storage systems and for transporting and storing tapes offsite are onerous and expensive.

- Increasing data governance and security requirements means that existing backup processes and policies no longer align with best practices.

In response to these challenges, many organizations have upgraded their backup solutions in an attempt to keep data growth under control. For example, deduplication technologies have been deployed to reduce the amount of duplicate data that needs to be stored, and disk-based snapshots have been used to boost recovery performance.

However, although these tactics can help alleviate the immediate issues caused by rising data volumes, they do not necessarily address the longer term strategic challenge. Deduplication can reduce the rate at which backup storage requirements increase. However, if the volume of source data continues to rise, the scalability problems will recur eventually. Disk snapshots are expensive in terms of investment in disk capacity and ongoing energy consumption, making them an impractical option for organizations with large data volumes that need to be protected over a long time.

Cloud backup solutions offer a new strategic option that can remove the pain of administration and deliver predictable costs. However, the challenge for larger organizations is to find a cloud solution that can balance aggressive pricing with the confidence that the required SLAs will be met and real savings in administration time will be delivered. In many cloud backup offerings, low pricing can be achieved only by using inflexible, shared infrastructures and by providing limited management services.

The Tectrade Helix Protect solution aims to meet these requirements by harnessing a private cloud architecture that eliminates many of the typical disadvantages of a cloud backup solution.

Business value of the Helix Protect solution

The business value of the Tectrade Helix Protect solution relies on the following capabilities:

- Specialist management services
- Flexible backup policies
- High performance and data security
- Eliminating capital expenditure with pay-as-you-go pricing
- Proactive data reduction and service reviews

Specialist management services

Many cloud backup providers primarily host companies or network providers who are seeking to drive more business for their centralized data center services. Others might be providers of basic backup services for smaller organizations.

Tectrade, by contrast, is an expert in backup and recovery, with 15 years of experience in delivering enterprise-class backup and archive solutions for mid-sized and large organizations in the private and public sectors. For the last seven years, Tectrade has offered a range of monitoring and managed services that now include the Helix Protect solution.

While many cloud providers are offering little more than a remote storage vault, with no detailed management of individual backups, the Helix Protect solution includes management services that extend down to the level of individual backup jobs. This way, the Tectrade team can restart a failed backup or initiate a fix remotely, with no need for intervention from the customer's in-house IT team.

Tectrade has follow-the-sun operations based in the United Kingdom (UK) and Australia, which enables proactive, 24x7 monitoring and management of customers' backups anywhere in the world.

Flexible backup policies

Typically, managed cloud backup services require a degree of standardization and automation that limits the customer's flexibility, with little ability to customize individual backups to meet specific business needs. This situation can create a problem for mid-sized and large organizations. Often large organizations operate complex IT infrastructures where different types of data require different backup treatment and policies. If a disaster occurs, organizations must understand the relative priority of the servers that need to be recovered and put a robust process in place for restoring the right systems in the correct order.

A fundamental differentiating factor for the Helix Protect solution is the concept of the *backup catalog*. A backup catalog is a framework that maps the required service levels for each major server group and data type within the organization. Table 1 shows an example of the types of data in a backup catalog.

Table 1 Example backup catalog

Server group	Backup type	Target	Schedule	RPO	RTO	Backup versions	Retention	Change rate
File operating system	File level incremental	Disk	Daily	24 hours	24 hours	31	1 month	2%
Application servers	File level incremental	Disk	Daily	24 hours	24 hours	31	1 month	2%
Mail	Storage group full or incremental	Disk	Daily incremental	24 hours	24 hours	7	1 week	3%
SQL	Database full	Disk	Daily full	24 hours	24 hours	7	1 week	3%

The backup catalog provides the customer with a basis for managing the performance of the service. It enables the alignment of individual backup jobs with the SLAs of various data sets, rather than adopting a one-size-fits-all approach. The backup catalog can be as detailed as the customer requires, and backups can be performed as frequently as required by the business.

The backup catalog also gives the customer's IT department a means of monitoring backup requirements across the organization. This approach enables accurate chargeback to each line of business depending on the amount of data that it needs to back up each month.

High performance and data security

To deliver the SLAs for rapid reliable backup and recovery demanded by mid-sized and large organizations, the Helix Protect solution uses an on-premise appliance, managed remotely by a secure connection. As an additional level of resilience, a second copy of the backup data is moved offsite, either to the customer's disaster recovery facility or to a secure Tectrade facility.

Using an on-premise appliance means that the customer retains physical control over its data. The on-premise appliance enables the customer to benefit from much higher performance for backup and recovery than an Internet-connected remote cloud solution can deliver. This approach helps to meet the tight RTO and RPO that *always on* organizations require.

Eliminating capital expenditure with pay-as-you-go pricing

The pricing model for the Helix Protect solution is based on a simple monthly rate per gigabyte of data at source. The price includes all the required hardware, software, and management services.

Basing the pricing on the amount of source data enables customers' IT departments to charge other departments within their organization for the backup and archive services that they use. By providing a precise monthly report on the usage of the service, the solution helps customers to plan data reduction strategies and control future costs.

Proactive data reduction and service reviews

The Helix Protect solution includes regular service reviews, including reviews by backup and storage architects who advise on data reduction strategies for primary data and the backup and archive copies.

About the Helix Protect solution

The Tectrade Helix Protect solution is a private cloud managed backup solution. At its core is an on-premise appliance that manages data from within the customer's firewall and uses a secure off-site storage facility for a second copy of the backup data. The on-premise appliance underpins high performance backup and recovery, while offsite storage ensures a robust disaster recovery capability.

The on-premise appliance consists of next-generation data protection software, a management server, and the disk and tape systems that are required to store the backup data.

The solution includes the following standard components:

- IBM Tivoli® Storage Manager
- IBM System x® server
- IBM System Storage® disk storage systems

For certain data types or long-term retention requirements, the platform might also include an IBM tape storage system.

Off-site storage consists of various options that are configured to match the customer's SLA, security, and budget requirements.

The IBM hardware and software components that make up the Helix Protect solution are used by large organizations to handle backup and recovery for massive amounts of data. Tectrade has incorporated these technologies into a platform that is both affordable for mid-sized organizations and capable of scaling to meet the requirements of the largest businesses. The platform is configured to meet the customer's particular data profile, backup catalog, and SLA needs, and it is sized for up to five years of growth.

Data protection software

IBM Tivoli Storage Manager is an enterprise-class backup and archiving solution that delivers true *move less or store less* functionality:

- Deduplication reduces total data storage needs by ensuring that when duplicate blocks of data need to be backed up, only a single copy of each block is stored.
- Progressive incremental backup uses a sophisticated algorithm that minimizes the size of individual backups by copying only the data that changed since the previous backup. This approach reduces network traffic and helps to keep backup windows as small as possible. As a result, it reduces the risk of over-running backups that affect user productivity.
- Compression reduces the amount of data that is sent by the Tivoli Storage Manager Client to the central backup server by using compression algorithms at the source. This approach both reduces network traffic and cuts the total backup storage requirements.

Tivoli Storage Manager delivers unified backup and recovery across a wide range of devices and applications in physical and virtual environments. The base pricing for the Helix Protect solution includes access to advanced Tivoli Storage Manager capabilities and future enhancements.

Hardware infrastructure

The on-premise Helix Protect appliance is configured according to the volume of source data that needs to be backed up, the profiles of the various data sets, and the requirements defined in the backup catalog.

The appliance is delivered in a single rack configured with the required components:

- A management server
- Internal or external disk
- A tape library (when appropriate)

Offsite storage can be configured by using various options including the following examples:

- A replicated appliance in the customer's disaster recovery facility or in the Tectrade secure offsite data center
- Copy data moved to tape and moved to a secure tape repository

  The Helix Protect solution charges include all tape movement and storage costs.

Although many cloud providers are using only disk-based methods for backup and archiving, for the larger enterprise, tape still represents a less expensive, more reliable method for long-term data retention. By using Tivoli Storage Manager tape management functions, recovery performance for large data volumes is comparable to or better than disk.

Management services

The management services included in the Helix Protect solution are delivered remotely by a secure link from the Tectrade UK data center. Support teams based in the UK, Holland, and Australia, provide 24x7 coverage all year long. The teams consist of level-one, level-two, and level-three support personnel. The teams reflect the 15 years of experience that Tectrade has in designing, deploying, and supporting large IBM Tivoli Storage Manager environments.

Case studies

This section highlights three fictitious customer examples.

A city council

The city council to a large urban population is responsible for providing public services. It has several thousand users who use thin client personal computers (PCs) to access central applications on a wide range of platforms. Much of the data is highly sensitive, making the security of its backups a key concern. Following a successful four-week trial, Tectrade was selected to provide a full backup management service.

By using the Helix Protect solution, the council can minimize the complexity of its old per-server licensing model for backup software. It now pays for all backup services on a fixed price basis per gigabyte. This solution has saved a considerable amount of time for the council's busy IT staff because they no longer need to manage compliance. With the 24x7 management services that the Helix Protect solution includes as standard, the council no longer needs to ask its IT team to be on-call during evenings and weekends.

Most important of all, by using the Helix Protect solution, the council can plan its backup costs with absolute certainty. Compared to its previous backup environment, the solution will deliver significant savings over the three contracted years.

A large online retail organization

A large online retail organization had an existing backup solution that was experiencing significant performance issues. Backups ran slowly, and some client/servers were frequently over-running the backup window. Backup success rates were also poor.

The mix of data types in this organization led Tectrade to recommend a Helix Protect appliance that consists of a mix of disk and tape systems. By using this approach, the solution can maximize deduplication while reducing overall costs.

After a lengthy evaluation and proof-of-concept process, the company realized that the Tectrade approach delivers considerable value for its business. As a result, the Helix Protect solution was selected as a replacement for the existing solution. Tectrade now assumes full responsibility for management of the entire backup environment, and the company has seen a significant improvement in both backup performance and success rates.

A large university

This large university needed to find a way to manage, store, and back up several hundred terabytes of data. The cost of adding storage devices and tape drives was unsustainable. The existing approach did not address the basic issue of data duplication and unmanaged growth.

The Helix Protect solution provided a comprehensive data management strategy. It used incremental backups, deduplicated data, and advanced reporting software to back up several hundred servers with data generated by tens of thousands of users.

The university focuses on serving student and faculty needs, and the Tectrade solution provides a complete data management service. Data deduplication minimizes the physical disk requirements for backup storage, avoiding the need to buy more storage devices. Virtualized tape libraries have replaced physical tape libraries, eliminating the expense of moving and managing tapes.

Conclusion

Many organizations' data volumes are currently growing by 30 percent or more per year. The management time and infrastructure required to run increasingly complex backup operations is placing pressure on flat IT budgets.

For the smaller organization, a wide range of online backup solutions can help relieve the management pressure and deliver an acceptable service at an affordable price. However, for the larger, more sophisticated organization, a one-size-fits-all solution might not deliver the flexibility, scalability, security, and service levels that are required.

The Helix Protect solution was developed specifically for mid-sized and large organizations that are looking to reduce operational costs while maintaining or improving service levels. The solution provides true enterprise-class performance, underpinned by management services that are delivered by backup experts and based on highly reliable IBM hardware and software.

Tectrade currently manages over 6,585 backup clients for 125 customers worldwide, protecting 3.8 petabytes of data and delivering an average backup success rate of 99 percent for tier one servers.

If your organization is struggling to deal with growing data volumes and complexity, the Helix Protect solution is a compelling option.

Other resources for more information

For more information, see the following resources:

- Tectrade Helix Protect platform

  http://www.tectrade.com/what-we-do/data-protection/managed-services-cloud/helix-protect-platform.html

- IBM solutions for data protection

  http://www.ibm.com/systems/information_infrastructure/data_protection

- IBM Tivoli Storage Manager

  http://www.ibm.com/software/products/us/en/tivostormana

The team who wrote this guide

This guide was produced by a specialist working with the International Technical Support Organization (ITSO).

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