



Disk is the New Tape

Introduction

Given the ever-decreasing cost of disk storage, it is no surprise that disk-based backup systems are gaining popularity for superior speed, capacity, and reliability. On the other hand, the cost and portability nature of traditional tape backup systems make it appealing and still relevant. As is usually the case, the truth lies somewhere in the middle: finding a way to blend the best of virtual tape and physical tape can deliver an optimal overall storage and backup solution. Virtual Tape Library (VTL) systems can increase the speed of data backup and recovery and deliver operational savings, all while reducing the need for physical tape.

In the following sections, we will discuss the methods for improving the backup process by adding a VTL system. VTL done right can accelerate backups while providing the very best options for reliability, availability and data encryptions. By supplementing a backup process with VTL, companies can unify and simplify protection for mixed, open, and mainframe environments.

Audience

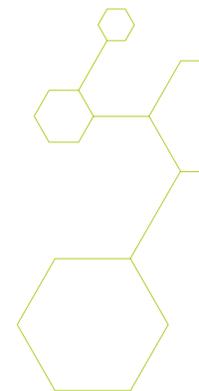
The intended audience of this whitepaper is DSI customers, prospects, partners and others who want to learn more about the process of moving from tape to disk and what system enhancements can be expected from a VTL solution.

From Big Data to Big Assets

Physical tape swapping for storage and backups is a tedious ritual. It involves nightly, and weekly full backups, and switching and storing tape (offsite for disaster recovery or otherwise). Not only that, the backup window is always shrinking in the era of 24/7 business. Even the newest tape technologies are lacking when it comes to keeping pace with today's datacenter requirements. Mechanical failure and even human error are factors that can creep in at any point along the way.

Tape-only backup systems are too manual intensive and error-prone for today's most dynamic enterprises. The digital universe is growing exponentially and enterprises are working hard to ensure that their datacenters can keep up. Consider this: researchers from IDC and EMC estimate that the size of data being created, consumed and stored by 2020 will amount to over 5,200GB per person on the planet. **(Source: Eweek: Storage in 2014: An overview. January 8, 2014).** The question becomes how can enterprises effectively store, backup, and leverage

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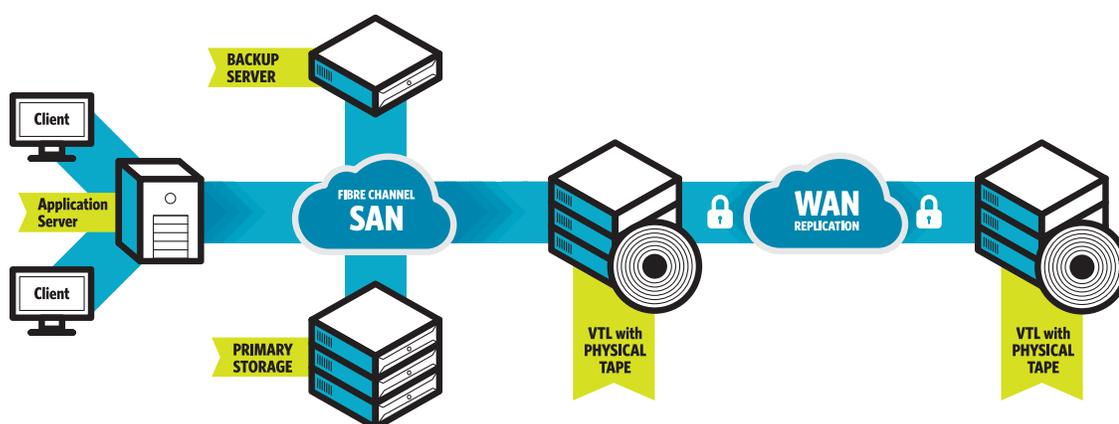


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this much information? Critical customer data, governance and compliance data, and information about partners and competitors are all information sources organizations rely on to stay competitive in the marketplace. With the ever growing data surge, how can companies harness information to improve their bottom line? The answer in part can be found in VTL systems.

How VTL Works

VTL systems emulate physical tape and tape libraries – appearing as just another tape drive to backup software applications. The big difference is that while they appear as tape, they act like disk. This is a significant advantage because disk-based backups cut the time it takes to both backup and restore critical data significantly, by as much as 75% in some cases. On the back-end, most VTL solutions offer a means to copy and directly stream the related backup data onto physical tape – completely removed from impact to production systems.



Maintaining Existing Back up Processes

The ability to easily integrate and pair VTL with an existing tape-based infrastructure is a primary benefit of virtual tape. Because virtual tape systems send data over a fibre channel or IP (iSCSI) networks, this enables seamless integration with many existing backup infrastructures and processes. A centralized managed virtual tape library looks and essentially behaves as a dedicated physical library to each server. It is also easy to deploy and comparable to adding a new tape drive or library in a datacenter environment. Further, once configured, VTLs are very much a set-it-and-forget-it application. They simply assign tape activity to new device addresses, enabling backups to run faster than a physical tape solution while protecting important data in a RAID array. A VTL system also offers backup acceleration and data encryption services in the backup environment without changing the configuration of the physical tape library.

In addition, each solution adapts to customers' existing IT environment and reduces costs by shrinking the need for physical tape. Virtual tape appliances provide performance backups and compliance assurance at a much lower cost compared to traditional tape. In general, there is also much less time and maintenance required than traditional tape systems.

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Increased Flexibility to Expand Storage Capacity

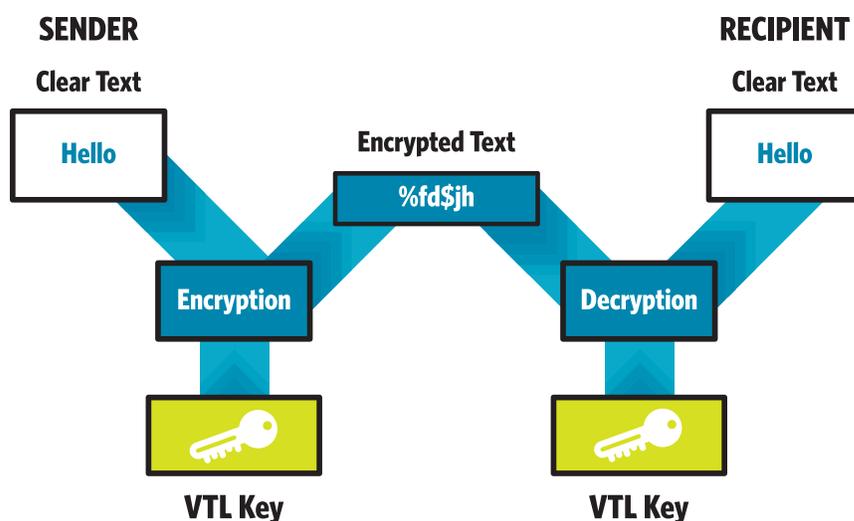
A key advantage to DSI's VTL solutions is the ability to expand storage capacity as needs increase. During initial analysis of an organizations current and future storage needs, DSI will identify the best storage solution with additional room for growth by creating more cartridge slots than needed with the assumption of growth. Cartridges are easily added as organizations storage needs increase. Adding cartridges can be done without taking the system offline. If a company outgrows the amount of cartridge slots, additional slots can be added to an organizations current system, without significant interruptions.

Encryption of Data

Before encryption, data was stored on rotational hard drives and could be read by anyone with access. In an encrypted scenario, the data written on the disk is jumbled using unique algorithms. In this encrypted format, if someone gains access to a hard drive, the data would not be usable without an encryption key. It is the last line of defense in protecting data.

DSI's VTL solutions ensure that both data at rest and data in flight are encrypted. Data at rest is protected by VTL, if an organization is using a virtual tape library as their primary backup solution, encryption algorithms are developed, all of which are managed by the virtual tape solution. Utilizing VTL to manage encryption needs has several advantages. The first advantage allows for secure offsite replication to a remote location. Primary copies of the data are written to the VTL and either through policy, watermark or timestamp those volumes can be written to a remote location via your IP network. While in transit across your IP network the data is encrypted and compressed allowing for a secure method of transmission and compliance. Another benefit to VTL encryption is a compliance benefit, which is native to VTL solutions; operators have the ability to export virtual tape volumes to physical tape volumes, which reside in an encrypted state. The VTL manages encryption keys and does not impact the host cycles throughout this process.

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Reliable Access to Critical Data and Redundancy

Today's VTL systems are faster and more reliable than traditional tape backups because they eliminate mechanical errors and manual intervention that is required with traditional tape-only systems. And unlike traditional backups, virtual tape systems are much less likely to suffer from errors and other malfunctions that cause failed backups.

In a backup environment, virtual tape systems address several areas of concern for operations and management. Because of their reliability, VTLs allow for multi-volume and full-site backup, off-site replication and point-in-time full volume replication. Restores from emulated tape are more reliable, and they are available fast — much more quickly than if the data was located offsite. Disk enhances the reliability, speed, and availability of backups and provides comprehensive data protection.

Data Deduplication

System and data availability becomes a top priority for IT managers looking to improve business productivity and continuity. To better manage data for backup and disaster recovery, many disk-based VTL systems rely on built-in data deduplication capabilities. This is important because without this feature, multiple copies of the same file are created each time a backup takes place. The same applies to duplicate data within a backup job, across servers, and across backup jobs over time. This can take up valuable disk space and becomes burdensome to manage. Data deduplication reduces the amount of backup data stored by eliminating redundant data, maximizes storage utilization and allows IT to retain more backup data for a longer time, while also decreasing bandwidth requirements for replication.

Data deduplication works by comparing blocks of data in order to detect duplicate objects. Deduplication can take place at two levels: file and sub-file level. Post-processing and concurrent processing modes of data deduplication technology tremendously improves the efficiency of disk based backup, and reduces the amount of stored data. It also changes the way data is protected, which is more secure.

Conclusion

While traditional tape systems still have their place in the enterprise, there is no doubt that as the information explosion continues, the adoption of virtual tape will increase. The ever-shrinking backup window, tighter security requirements, and new government regulations all contribute to pressures on organizations to have an efficient, secure and manageable data center. VTL is a solution that offers faster and more reliable backups without giving up validated storage and backup processes already established with tape. IT administrators and leaders looking for new ways to manage shrinking backup windows, surges in data growth, and the growing need for a data deduplication and encryption options are smart to evaluate virtual tape options. When organizations can fully protect and manage critical data, information becomes a tremendous asset that can drive business in the right direction.

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