FalconStor®
Defining Data Protection, Again.™

Product Overview

FalconStor Virtual Tape Library (VTL)

High-performance backup and restore with deduplication

FalconStor® Virtual Tape Library (VTL) with deduplication is a disk-based backup solution that optimizes backup and restore, improving performance and enabling rapid remote disaster recovery (DR). This solution bridges legacy backup with a more flexible data protection paradigm through a disk-based architecture that reduces physical storage needs and costs. FalconStor VTL provides WAN-optimized replication for cost-effective DR, also helping to set the stage for cost-effective cloud initiatives. Benefits include longer data retention times and improved restore times, as well as increased data reliability through the elimination of tape shipments.

Sound familiar?
What's breaking legacy backup environments...

- Exploding data growth
  - Data grows at a rate of 50-60% annually
  - Searching for data across multiple backups and locations
- Growing costs
  - Increased spending on storage systems
  - Shrinking IT budgets
  - Longer retention policies require more storage and tape media
  - Skyrocketing WAN requirements, increasing monthly bandwidth cost
- Performance challenges
  - Inability to meet recovery times (RTO, RPO)
  - Difficulty meeting backup windows
  - In D2D environments, tape creation is disruptive to production backup
- Data reliability
  - Difficulty meeting regulatory compliance requirements
  - Longer retention times to meet demanding SLAs
  - Improve reliability of backup/recovery
  - Unreliable data recovery from tape media

BACKUP/RESTORE ISSUES AND CONCERNS

Growing data volumes, the proliferation of server virtualization, and the increased dependence on data availability are all presenting new challenges for legacy backup and recovery solutions. These demands are compounded by shrinking budgets and increased complexities caused by the expansion of remote offices. Today's enterprise data centers manage large heterogeneous environments, often with hundreds of servers running various operating systems and applications, generating petabytes of data.

In some cases, traditional tape backup has been replaced by disk-to-disk (D2D) backup to accelerate backup/recovery processes and improve operational efficiencies. However, explosive data growth drives up storage costs. Each time a full backup is performed, a great deal of data is redundant. This also applies to duplicate data within a backup job, across servers, and across backup jobs (full and incremental), leading to multiple copies taking up valuable disk capacity.

A NEW APPROACH TO FIXING LEGACY BACKUP: SCALABLE GLOBAL DEDUPLICATION

FalconStor VTL is a comprehensive, all-inclusive disk-based backup solution that provides a holistic approach to backup and recovery, helping overcome the obstacles of legacy backup. FalconStor VTL integrates non-disruptively with tape infrastructures, providing longer data retention and improved restore times while increasing data reliability. Its multi-node, high availability (HA) global deduplication architecture scales to accommodate the data protection needs of remote offices and large data centers alike.

FalconStor VTL provides heterogeneous support for major operating systems such as Microsoft Windows, Unix, and Mac, including an extensive list of certified backup software applications. Additionally, FalconStor VTL offers native support for IBM iSeries (AS/400) and mainframe backup applications for the enterprise, and NDMP support for the backup of industry-standard NAS devices.

www.falconstor.com/demos

High availability and performance

Designed as an enterprise-class solution, FalconStor VTL can achieve single-node aggregate backup speeds of 1.6 GB per second, or over 5.8 TB per hour, allowing users to solve the single biggest issue in backup: meeting the backup window. Up to eight nodes can be combined into a single logical cluster, scaling performance to a remarkable 12.8 GB per second or 46TB per hour across the backup environment. FalconStor VTL can restore data quickly, either directly from the deduplication repository or directly from physical tape. Using read-ahead technology and parallel LUN access the FalconStor VTL ensures high-speed restores directly from the deduplication repository. Allowing organizations to bring critical systems back online rapidly helps them to meet stringent SLA requirements.

Scalable to meet data growth needs

FalconStor VTL is the only solution that can independently scale HA backup nodes from cluster deduplication nodes to handle large data sets and extremely demanding backup windows. FalconStor VTL is also one of the only solutions that can deduplicate data seamlessly across nodes without a predefined node/controller designation. For increased design flexibility, deduplication processing can be physically separated from virtual tape backup processing by running each process on a separate server. The FalconStor® Single Instance Repository (SIR) deduplication engine offers 4-node clustering with an N+1 failover architecture. Multiple nodes can run as a single logical repository, providing linearly scalable throughput as nodes are added. If one node fails, the standby node (+1) automatically takes over its workload to ensure continuity. All backups are deduplicated against data in the repository, regardless of the original data source or which node performed the original deduplication, for true global deduplication.

Sustained deduplication rates of over 3 GB per second

Unique to FalconStor VTL, deduplication policies can be assigned to each individual job, conveying a specific deduplication method, replication policy, or tape output policy for long-term archiving. Deduplication can be assigned to run simultaneously with data ingest, after the first virtual tape is created (concurrent), or post-process, offering the ultimate in flexibility and performance. Combined with high-speed protocols such as 8Gb Fibre Channel (FC) and 10GbE iSCSI, FalconStor VTL can sustain deduplication rates of over 800 MB/sec per node, linearly scaling in performance to a sustained deduplication rate of 9.7 TB per hour as cluster nodes are added.

FALCONSTOR VTL PROVIDES...

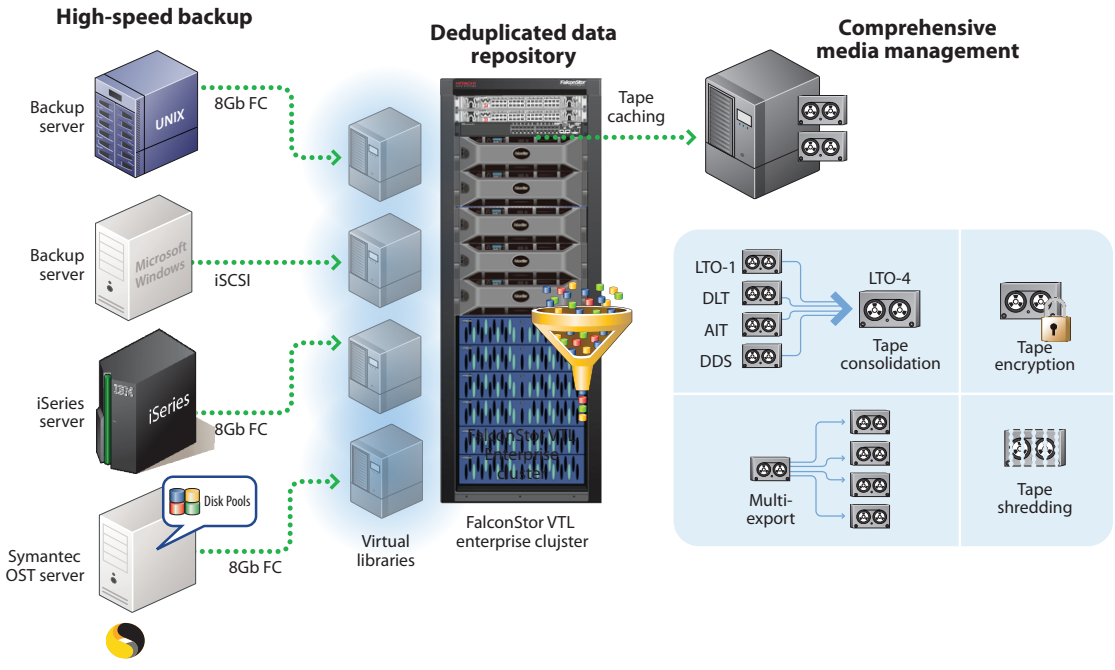
Integrated deduplication

Deduplication is a method of eliminating redundant data so that only unique instances are retained on disk. FalconStor VTL with deduplication reduces capacity requirements for data protection by as much as 95%, based on average 20:1 deduplication ratio, allowing you to keep weeks or months worth of data on disk for fast, dependable restore. In addition, it reduces WAN bandwidth requirements by replicating only unique data globally. From a cost perspective, deduplication also reduces storage, power, and cooling requirements, lowering OPEX.

HOW IT WORKS:

The FalconStor SIR deduplication engine examines the data stream, checking for blocks of data that are identical, and removing redundant copies. Data indexing ensures that all of the data can be recovered. When a file read request is initiated for data restore, the deduplication system can detect the links and read the blocks.

FalconStor VTL provides high-speed backup and direct tape integration



Non-disruptive deployment

Customers can deploy FalconStor VTL with very little disruption to their current backup environments. An extensive, certified set of tape libraries and tape drives replace the existing tape library. Combined with FC SAN support designed to handle block-based, sequential backup traffic, this enables higher throughput and faster backup to disk. Backup methods and policies do not have to change in order for FalconStor VTL to drastically improve backup performance and reliability.

HOW IT WORKS:

FalconStor VTL emulates over 50 popular tape libraries and 30 tape drive formats, ensuring easy and transparent integration into existing backup environments without the need to reconfigure backup jobs. Format awareness for over 32 backup formats maximizes detection of duplicate data, guaranteeing that the same data is aligned the same way each time and improving deduplication efficiency by as much as 40% over generic, fixed, block deduplication methods. In addition, simultaneous support for NDMP, Symantec OpenStorage (OST), Mainframe, and IBM iSeries connectivity provides non-disruptive support for all backup applications in an enterprise.

Seamlessly bridges disk and tape

Many data centers require both disk and tape for tiered backup and archive/compliance needs. FalconStor VTL seamlessly bridges physical and virtual tape operations through best-of-breed tape management capabilities. By integrating seamlessly with the tape environment, FalconStor VTL streamlines operations, preventing isolated silos of backup and unnecessary overhead.

HOW IT WORKS:

A physical tape library can be FC zoned to the FalconStor VTL so that data can be imported from tape to disk, or exported from disk to tape. For DR, deduplicated tapes that have been replicated can be exported, making data directly accessible from the physical tape if needed. Backup software can use its own "tape copy" function to create physical tape from the virtual tape library. A built-in auto-archive feature can automatically export modified data to physical tape.

Automated tape caching

Automated tape caching enhances the functionality of FalconStor VTL by acting as a cache to the physical tape library, providing transparent access to data regardless of its location. With automated tape caching, tapes always appear to be inside virtual libraries and are always visible to the backup application. The backup application always has direct access to data.

HOW IT WORKS:

A tape caching policy contains the data migration triggers and determines which events will activate an action and when it will occur. Tape caching policies are very flexible and can be defined to automatically trigger migration to physical tapes immediately or at a specific time or day. Data is written to physical tape transparently in the background, without impacting production servers.

Tape consolidation

Because backup jobs rarely match the exact size of the target tape, space often gets wasted. Tape consolidation writes multiple virtual tapes to a single physical tape, maximizing utilization of physical media. This significantly reduces the amount of cartridges used, shipped, and stored, lowering overall costs. In fact, the cost savings that can result from tape consolidation alone is often enough to achieve a return on investment (ROI) in this solution.

HOW IT WORKS:

Tape consolidation allows the conversion of virtual media with a smaller capacity to physical media with a higher capacity (i.e. DLT to LTO). This allows newer, larger-capacity physical tape formats to be deployed into the backup infrastructure. There is no need to reconfigure backup jobs, which can continue to run to virtual tapes based on the original assigned tape format.

Multi-tape export

Organizations often need to create multiple copies of physical tapes to meet SLAs and regulatory requirements. FalconStor VTL provides multi-tape export, which creates multiple copies of physical tapes. Multi-tape export increases IT productivity, eliminating the need for manual tape duplication or scripting.

HOW IT WORKS:

FalconStor VTL can create up to five physical copies of virtual tapes as part of automated tape caching or an auto-archive policy; or it can occur during manual export of a single tape. When data is exported, separate export jobs are created for each physical tape copy, and each job is assigned a unique job ID so that it can be tracked, monitored, and recovered.

Secure by design

Because the integrity of corporate data is only as good as its weakest link, it is critical to secure data on backup media and during replication. FalconStor VTL provides encryption of data in flight, during replication. In addition, a secure tape export feature provides comprehensive data integrity for data storage and migration. Moreover, just as deleting a file from a hard drive does not completely destroy the file, deleting a virtual tape does not completely destroy the data on the tape. An integrated tape shredding feature destroys all data on the virtual tape, making it impossible to recover the data.

HOW IT WORKS:

Secure Tape Export. FalconStor VTL enables the creation of encryption keys using the Advanced Encryption Standard (AES) 128 or 256-bit key algorithm. When data is exported to physical tape, an encryption key must be selected to encrypt the data. When that physical tape is imported, the same key must be used to decrypt the data and enable it to be read. Each key consists of a secret phrase and is password-protected. A single key may be applied to all virtual tapes when exported to physical tape, or a unique key may be created for each physical tape.

Tape Shredding. Tape shredding performs a three-pass wipe of the selected virtual tapes using an algorithm specified by the U.S. Department of Defense (Standard 5220.22-M), helping IT managers meet security and regulatory compliance requirements.

WAN-optimized replication

FalconStor VTL supports both one-to-one and many-to-one replication of deduplicated data, enabling consolidation at a centralized site. With standalone FalconStor VTL storage appliances or virtual appliances deployed at each site, deduplicated virtual tapes in remote locations can be globally replicated via the WAN to the data center, where FalconStor VTL aggregates the data into a clustered repository of globally unique data. Data from remote sites can be exported to physical tape at the central site as needed, eliminating tape entirely at remote sites.

HOW IT WORKS:

WAN-optimized replication includes global deduplication, which scans data prior to transmission to determine if it already exists in the central site. Only unique missing data blocks are sent over the wire, reducing bandwidth requirements by as much as 90%, along with associated costs. Compression prior to flight and bandwidth throttling further optimize WAN utilization. Data can be encrypted in flight (128 or 256 AES encryption) and validated at the DR site to provide data assurance. Additionally, FalconStor VTL provides support for FC replication, a unique feature that enables large data centers to support "dark fibre" links to their DR sites, drastically improving replication and restore performance.

Symantec OST support

FalconStor VTL includes the industry's first FC SAN target for the Symantec OST protocol, accelerating backup from Symantec Media Servers and enabling transparent operations including single pane-of-glass management, high performance, and catalog consistency during Symantec duplication (replication) and tape operations. Additionally, FalconStor VTL can operate in a mixed mode combining Symantec OST logical storage units and virtual tape data from other backup applications.

HOW IT WORKS:

The FalconStor VTL OpenStorage Option is a software interface between Symantec NetBackup 6.5.3 through 6.5.5, and NetBackup 7.0 Media or Master server. With this option, the NetBackup server can perform high-speed backup and recovery to intelligent disk devices over FC. As FalconStor VTL uses disk to emulate physical tape, this option provides an additional disk view through NetBackup. FalconStor VTL supports Symantec Optimized Duplication, which provides integrated replication to local or remote DR sites. For catalog awareness and centralized management, this option allows users to apply a unique retention policy to each catalog copy. This option of FalconStor VTL provides the most efficient way to replicate data to remote locations, and supports the NetBackup direct-to-tape feature, which exports Symantec OST backup images to physical tape for long-term archival.

Management and reporting

For simplified, comprehensive management, the FalconStor VTL solution offers a host of administration features, including extensive command line functionality, historical and real-time reporting, email alerts, and group-based policy management, all via a centralized management console. Additionally, FalconStor VTL provides SNMP support for integration with existing enterprise management solutions, such as HP OpenView, CA Unicenter, IBM Tivoli NetView, and BMC Patrol.

HOW IT WORKS:

Easy-to-use wizards allow customers to configure and manage users and administrators, add/configure clients, set server properties, monitor activity, create deduplication policies/monitor deduplication, and manage the import/export of tapes. Users can also monitor current status of total storage capacity, used storage capacity, and available storage capacity, and run and/or view reports. Predefined enterprise-level reports help manage and monitor FalconStor VTL/SIR clusters, disk space usage, physical resource allocation, comprehensive status information, and storage and performance trending for capacity planning.

FLEXIBLE DEPLOYMENT OPTIONS

Designed with an organization's unique needs in mind, FalconStor VTL is available in several options:

- **FalconStor VTL 100 Series Appliances for SMB/ROBO.** All-in-one appliances for small-to-medium business (SMB) and remote/branch office (ROBO) environments.
- **FalconStor VTL 300 Series Appliances for the Midmarket.** All-in-one appliances for midmarket organizations, scaling from 4TB - 18TB.
- **FalconStor VTL 600 Series Appliances for Enterprises.** All-in-one appliances for the enterprise companies, scaling from 22TB - 68TB
- **FalconStor VTL/SIR Cluster Deduplication Gateway Appliances for Large Enterprises**. High-availability (HA) cluster deduplication gateway appliances that integrate with certified existing SAN storage scaling to over 1PB of usable storage for large enterprises.
- **FalconStor VTL Virtual Appliance.** For ROBO environments leveraging VMware technology.