

## Virtual Tape Library

### Key Benefits

#### Scalable System

- > Emulate multiple tape libraries and tape drives; up to 10,000 virtual slots across up to 100,000 virtual cartridges
- > Fast, inline deduplication with up to 1.4 TB/hour of throughput
- > Extended retention providing up to 1.7 PB of deduplication storage
- > 10-30x data reduction average

#### Easy Integration

- > Supports leading backup and archive applications from:
  - Symantec    EMC
  - HP            IBM
  - Microsoft    CommVault
  - Atempo      BakBone
  - Computer Associates
- > Supports leading enterprise applications including:
  - > Database: Oracle, SAP, DB2
  - > Email: Microsoft Exchange
  - > Virtual environments: VMware
- > Simultaneous use of VTL, NAS and Symantec OpenStorage (OST)

#### Management Simplicity

- > Task-based intuitive Graphical User Interface (GUI) for configuration and management
- > Command Line Interface for creating scripts to improve solution integration

#### Multi-Site Disaster Recovery

- > 99% bandwidth reduction
- > Flexible replication topologies
- > Multi-site tape consolidation
- > Remote site replication
- > Cost-efficient disaster recovery

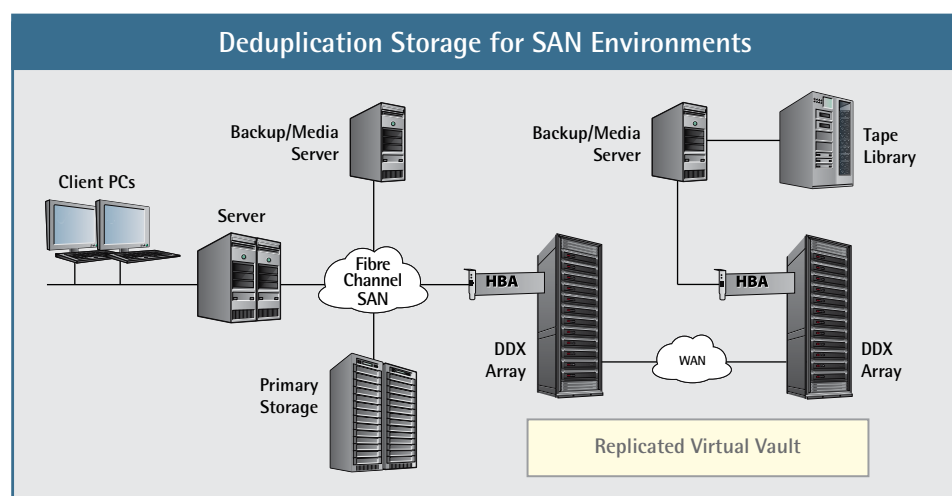
#### Ultra-Safe Storage for Reliable Recovery

- > Continuous recovery verification
- > Continuous fault detection and healing

## High-Speed, Inline Deduplication for SAN Environments

Traditional Virtual Tape Library (VTL) systems and disk backup systems can only provide a front-end, fast cache to a tape library infrastructure, temporarily alleviating backup window problems. None can replace tape automation technology because they lack the requisite economic and operational qualities. These systems cannot cost efficiently retain backup data for any length of time, and backup data is too large to be replicated or "vaulted" over a Wide Area Network (WAN). They do not offer an evolution from tape and its associated challenges and ironically, tape remains the primary method of retention, recoverability and disaster protection.

Data Domain changes all of that. Data Domain high-speed, inline deduplication reduces the amount of backup data by 20x on average. This makes disk backup cost-effective for long-term on-site retention and network-efficient replication of data offsite for disaster recovery (DR).



### Scalable System

The Data Domain VTL option eliminates tape related failures by enabling all Data Domain systems to emulate tape over a Fibre Channel interface. Data Domain VTL option emulates multiple virtual tape libraries with up to 64 virtual LTO tape drives and 10,000 virtual cartridges. The solution seamlessly integrates with your backup infrastructure and into Fibre Channel SAN environments. It offers data protection capacities up to 1.7 PB of logical storage per appliance for a typical enterprise data set and backup policy and up to 1.4 TB/hour of inline deduplication throughput.

### Massive Data Reduction For Disk-Based Retention and Recoverability

Data Domain systems are the industry's highest throughput and most scalable deduplication systems for disk backup and network-based DR. Unlike traditional VTLs, the Data Domain Virtual Tape Library (VTL)

software option provides a massive 20x average reduction in backup data and enables Data Domain systems to be easily integrated into Fibre Channel SAN environments. Working in unison with all leading backup software, Data Domain systems enable cost-efficient long term retention on disk and more reliable, high-speed recoveries for backup data in SAN environments.

### Easy Integration into Existing Infrastructures

The Data Domain VTL option is qualified with all leading enterprise backup software and easily integrates into existing enterprise backup infrastructures. Additional deployment flexibility exists with support for simultaneous backup to Data Domain deduplication storage systems using VTL over Fibre Channel, through existing NFS, CIFS and NDMP file service protocols over Ethernet, or as a disk-based target using the application specific interfaces such as

Symantec OpenStorage (OST) option. This deployment flexibility and the simple administration enables IT organizations to rapidly adjust to changing business requirements.

### Management Simplicity

Data Domain systems are very simple to install and manage. Administrators can access Data Domain DD OS through Data Domain Enterprise Manager, a browser-based graphical user interface or through command-line over SSH.

The intuitive task-based Enterprise Manager simplifies initial VTL configuration and ongoing management. Additionally, initial configuration and configuration updates can easily be made for multiple systems along with the monitoring of system states and the state of system operations. Simple script-ability along with SNMP monitoring provides additional management flexibility.

### Multi-Site Disaster Recovery

Using Data Domain Replicator software, virtual cartridges can be vaulted over the WAN to another site for DR, remote office data protection or multi-site tape consolidation. With Data Domain deduplication

technology virtual cartridges are effectively shrunk by 99%, to a size where network-efficient replication is now economically and operationally feasible.

Using minimal bandwidth and with significant savings over other advanced replication alternatives, SAN customers now have a cost-effective DR solution for all of their SAN data.

### Ultra-Safe Storage for Reliable Recovery

Virtual cartridges containing full and incremental backup images are protected using the Data Domain Data Invulnerability Architecture. Recovery is verified at backup time and continuously re-verified to ensure reliable recovery.

BENEFIT	FEATURE	DD690 with VTL	DDX with VTL	Leading VTLs
Cost-efficient backup/recovery storage	\$/GB addressable	Less than \$0.35	Less than \$0.35	\$2 to \$5
Long-term rapid recovery	Deduplication	Yes	Yes	No
Long-term disk-based retention	Addressable capacity <sup>3</sup> (standard - redundant)	700 <sup>1</sup> TB-1.7 <sup>2</sup> PB	11.2 <sup>1</sup> -28.3 <sup>2</sup> PB	48 TB -1.35 <sup>4</sup> PB
Cost-efficient disaster recovery	WAN replication using Data Domain Replicator software	Yes	Yes	No
Reliable recoverability	Continuous end-to-end data integrity verification	Yes	Yes	No
Deployment flexibility	Simultaneous use of VTL, NAS-based backup to disk, and Symantec OpenStorage (OST)	Yes	Yes	No
Simplicity and reduced cost of administration	Ease of installation, integration into backup infrastructure and ongoing management	Yes	Yes	No

1. Mix of typical enterprise data (file systems, databases, mail, developer files), full backup weekly, incremental backup daily

2. Mix of typical enterprise data (file systems, databases, mail, developer files), full backup daily

3. All capacity values are calculated using Base10 arithmetic (i.e., 1TB = 1,000,000,000,000 bytes)

4. Maximum capacity (usable compressed assuming 2:1 compression)

### Data Domain

2421 Mission College Blvd.

Santa Clara, CA 95054

866-WE-DDUPE; 408-980-4800

sales@datadomain.com

22 international offices:

datadomain.com/company/contacts

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