Mainframe Virtual Tape: Improve Operational Efficiencies and Mitigate Risk in the Data Center

Ralph Armstrong
EMC Backup Recovery Systems

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Agenda

- Mainframe Tape Use Cases
- Traditional Mainframe Tape Systems
- EMC’s DLm6000
- Benefits for Tape Processing
- Summary
Mainframe Tape Use Cases

- **BACKUP**
  - Mixed volume sizes
  - Write intensive
  - Medium retention
  - GDGs
  - Required for DR
  - Often never read
  - Repetitive data

- **DATA ARCHIVE**
  - Large volumes
  - Often extended over multiple days
  - Write intensive
  - Short-term read requirements
  - Long retention
  - Highly variable, non-repetitive data

- **HSM MIGRATION**
  - Large volumes
  - Write / Read intensive
  - Extended over multiple days
  - Long retention
  - Highly variable, non-repetitive data

- **WORK TAPES**
  - Highly variable volume sizes
  - Write / Read intensive
  - Very short retention
Traditional Tape Sub-System Characteristics

- Mount times dependent on robotic arm movement
- Highest-performance once tape is mounted
- Best for large (full) volumes
- Tapes must be moved offsite for DR

- Sub-second mount of volumes in cache
- Longer mount times if volume is stacked on tape
- Ideal for smaller volumes
- Provides IP replication to remote a remote site
The Challenge of Managing Mainframe Tape

What is the Right Sub-System for My Tapes?

Installations often have more than 1 Sub-System
EMC Mainframe Virtual Tape Solution

DLM6000 satisfies the needs of all use cases in a single manageable solution!
DLm6000 Overview

- A VTL that stores tape images permanently on disk.
- Built with EMC’s latest Virtuent 7.0 virtual tape technology.
- Concurrent mixed storage flexibility.
- Allowing individual tapes to be directed to the best storage based on application use case.
Scalability and Availability

- **DLm6000** provides 2 to 6 VTEs
  - 2 FICON Each
  - 256 3480, 3490, 3590 devices
  - Includes application specific optimization for deduplication

- **1 or 2 VNX 7500s**
  - Scalable up to 6.4 PB logical capacity

- **1 or 2 DD890s**
  - Scalable up to 5.7 PB logical capacity of deduplication storage
Individual Tapes Directed to Appropriate Storage

- DLm6000 supports multiple concurrent storage classes (types)
- TMS tape pools (DRTAPE, DDTAPE, LOTAPE) allocate individual tapes to a specific storage class
- Storage classes are configured based on use case (Backup, Archive, Work, HSM)
- Simplifying management and administration of the library
Benefits of Storage Classes

Without Storage Class Support
- 6 FICON, 192 Drives
- VTE
- VTE
- VTE
- Replicated Storage

With Storage Class Support
- 6 FICON, 192 Drives
- VTE
- VTE
- VTE
- Replicated Storage

- Without storage classes, drives, channels, and mainframe UCBs would be dedicated to storage type.
- Each storage type would require a configuration large enough for maximum workload.
- Resulting in extra hardware and/or software.
- With DLm6000 storage class support, drives can be redirected on a tape by tape basis.
- Minimizing the number of drives, channels, and UCBs required.
- Resulting in significant potential cost savings.
Benefits to Backup

- Repetitive 3390 volume dumps (backups) benefit the most from data deduplication.
- DLm6000 includes patented technology to pre-process FDR, DSS, and Upstream data to improve global compression (deduplication).
- Deduplication significantly reduces the storage used locally as well as minimizing the data sent over the IP network for DR purposes.
Benefits to Data Archive

- Data archive applications benefit the most from sub-second data retrieval
- With no robotic arms and data stored permanently on disk, DLm6000 can instantly mount any VOLSER in the library
- EMC advanced indexing techniques allow any block of data to be quickly retrieved regardless of the size of the tape volume
- High-performance data retrieval allows archive from DASD to be done sooner, freeing space for other, more critical purposes
Benefits to HSM Migration

- A specialized version of data archive, HSM migration also benefits from instant mounts and the advanced locate capabilities of DLm6000
- Compared with traditional tape stacking virtual tape systems, DLm6000 eliminates the need to perform both logical (HSM) and physical (VTS) tape recycling.
- Large number of virtual drives eliminates drive contention
- Using the fast recall times DLm6000 can provide HSM ML1 can be eliminated
  - Migrating data directly from L0 to ML2
  - Eliminating mainframe based data compression
  - Freeing ML1 DASD space for other uses
Benefits to Work Tapes

- A disk-based VTL, like DLm6000, provides an ideal storage target for applications requiring work tapes.
- DLm6000 easily and efficiently supports flexible cartridge sizes from very small to very large; using only the space required to hold actual data.
- Applications benefit from quick mounts and high-performance I/O.
- Batch windows can be significantly shortened when many tapes are used during processing.
- Short-term tapes can be automatically directed to local, RAID storage where space can easily be freed and re-allocated when the tape volume is no longer required.
Summary

EMC’s DLm6000

- Mainframes use tape for a variety of applications including Backup, Data Archive, HSM, and Work Files
- These applications have different size, performance, compression and replication requirements
- Most established data centers will have multiple tape sub-systems to handle these diversified requirements
- EMC’s DLm6000 is a highly scalable solution
  - 4 – 12 FICON Channels
  - 512 – 1,536 tape devices
  - 100 TB – 5.7 PB Logical Capacity
- Supporting configuration of multiple storage classes
- Satisfying all application requirements with a single virtual tape solution!
Thank You!