

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

Ralph Armstrong
EMC Backup Recovery Systems

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EMC²

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



ATLs

- 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

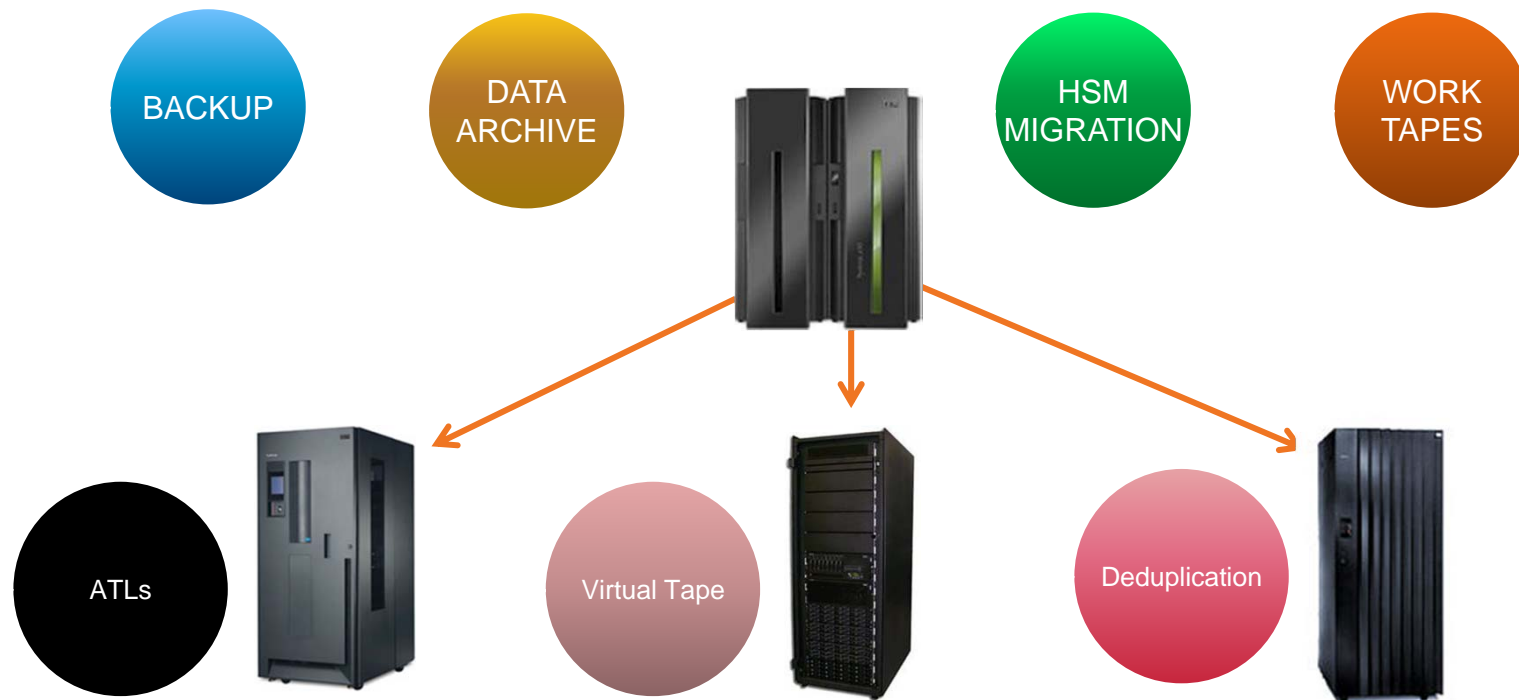


Virtual Tape
(tape stacking)

- 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

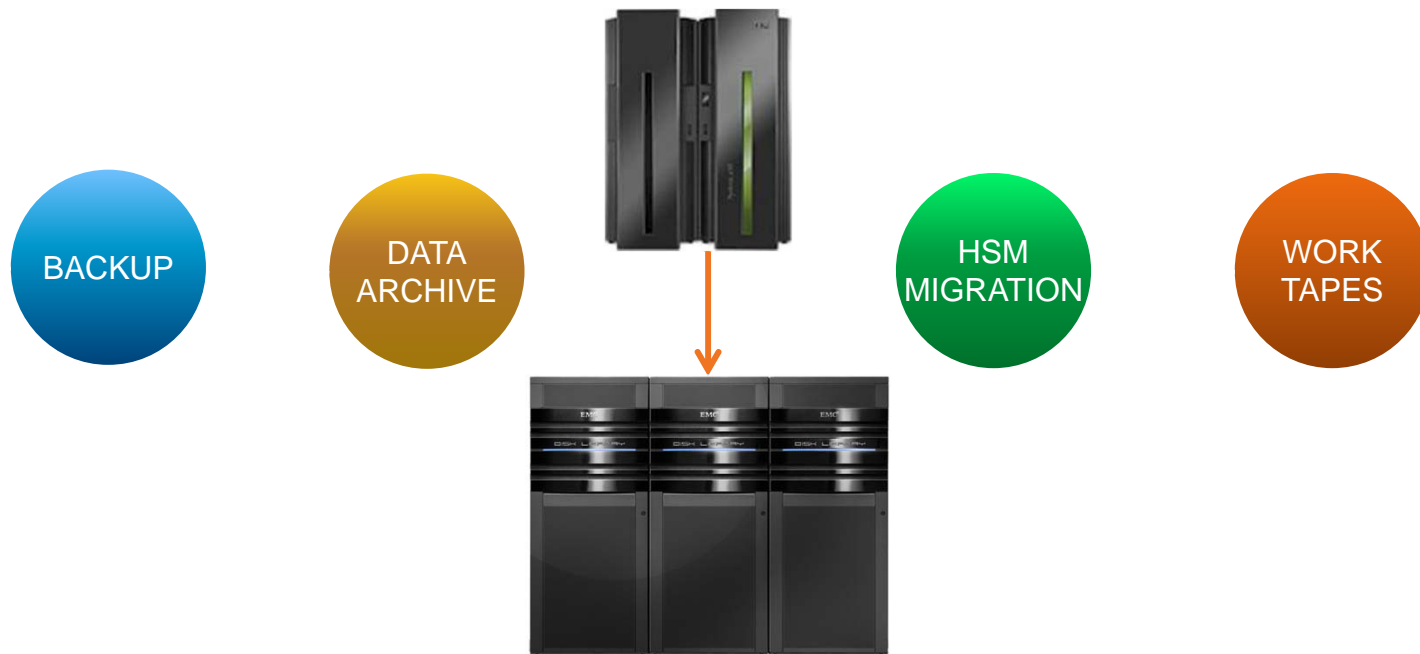
The Challenge of Managing Mainframe Tape

What is the Right Sub-System for My Tapes?



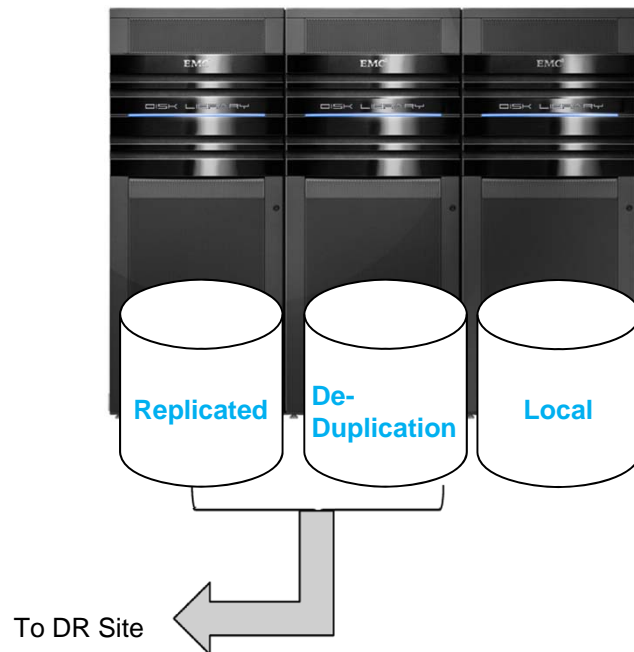
Installations often have more than 1 Sub-System

EMC Mainframe Virtual Tape Solution



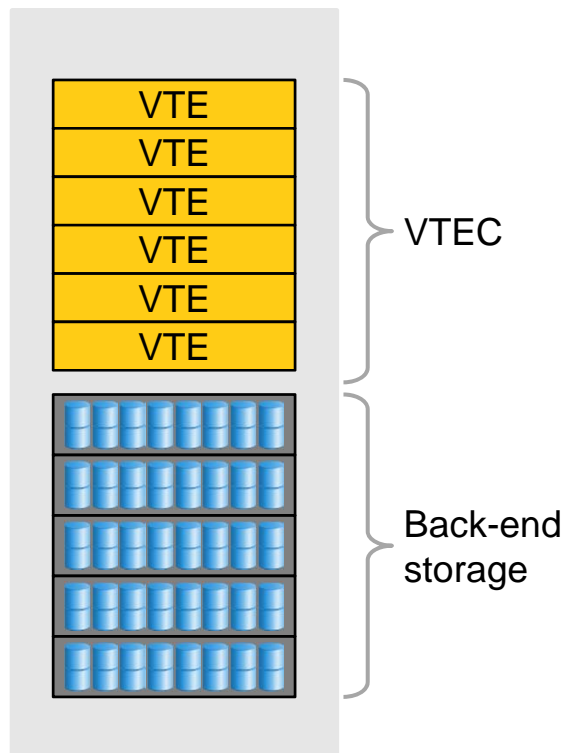
DLM6000 satisfies the needs of all use cases in a single manageable solution!

DLm6000 Overview



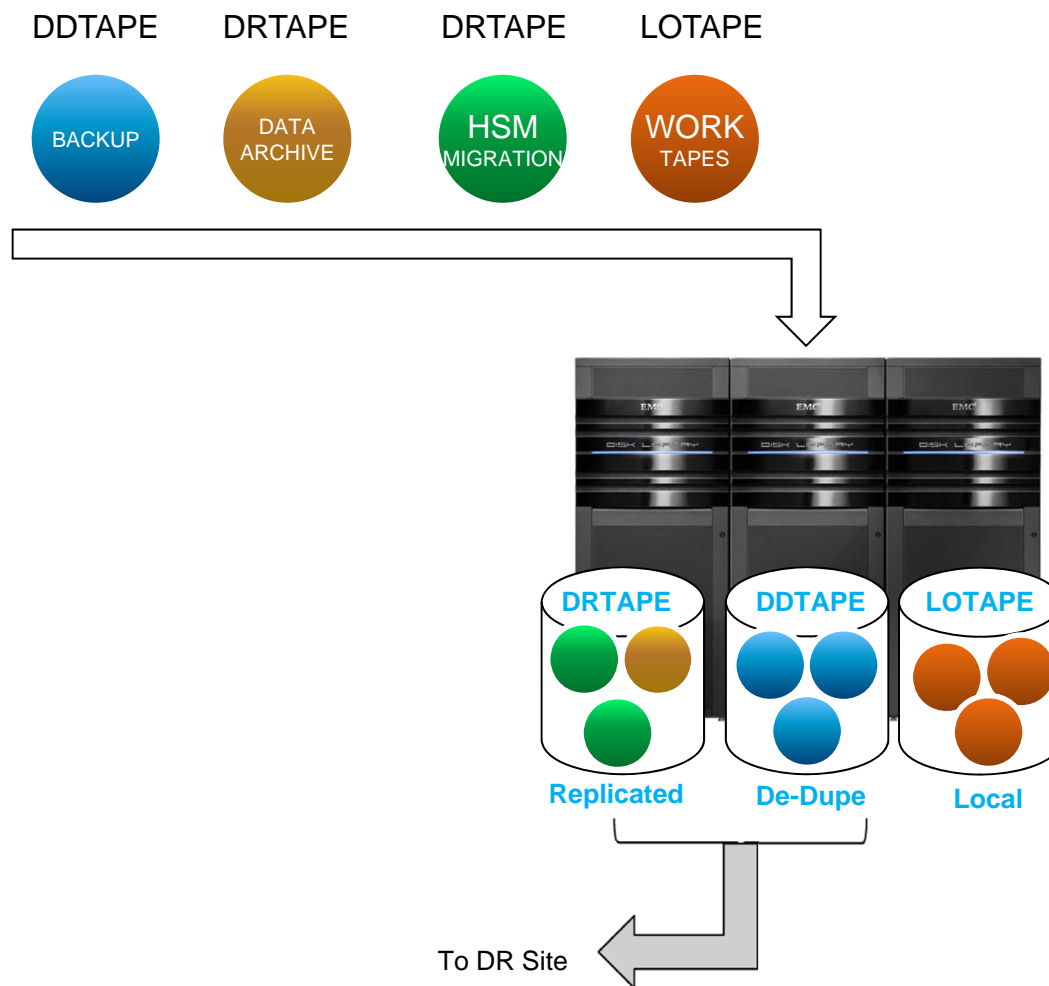
- A VTL that stores tape images permanently on disk.
- Built with EMC's latest Virtuent 7.0 virtual tape technology
- Concurrent mixed storage flexibility
- Allowing individual tapes to be directed to the best storage based on application use case.

Scalability and Availability



- **Dm6000 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

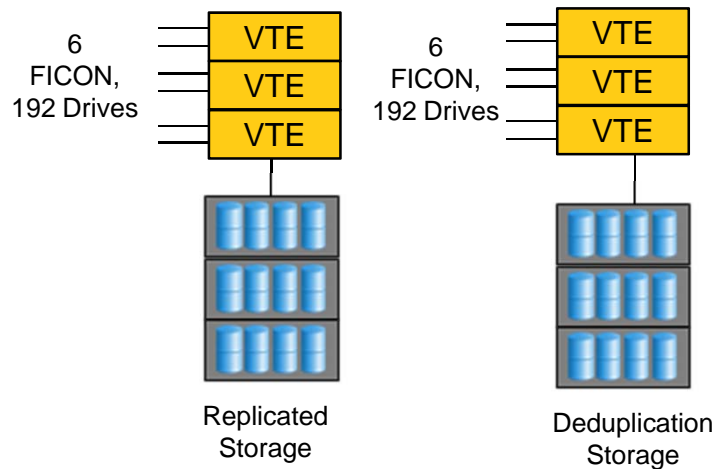
Individual Tapes Directed to Appropriate Storage



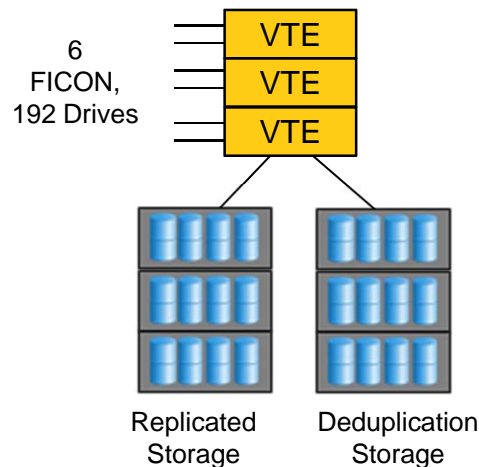
- DLm6000 supports multiple concurrent storage classes (types)
- TMS tape pools (DRTAPE, DDTAPE, LOTAPE) allocate individual tapes to a specific storage class
- Storage classes are configured based on use case (Backup, Archive, Work, HSM)
- Simplifying management and administration of the library

Benefits of Storage Classes

Without Storage Class Support

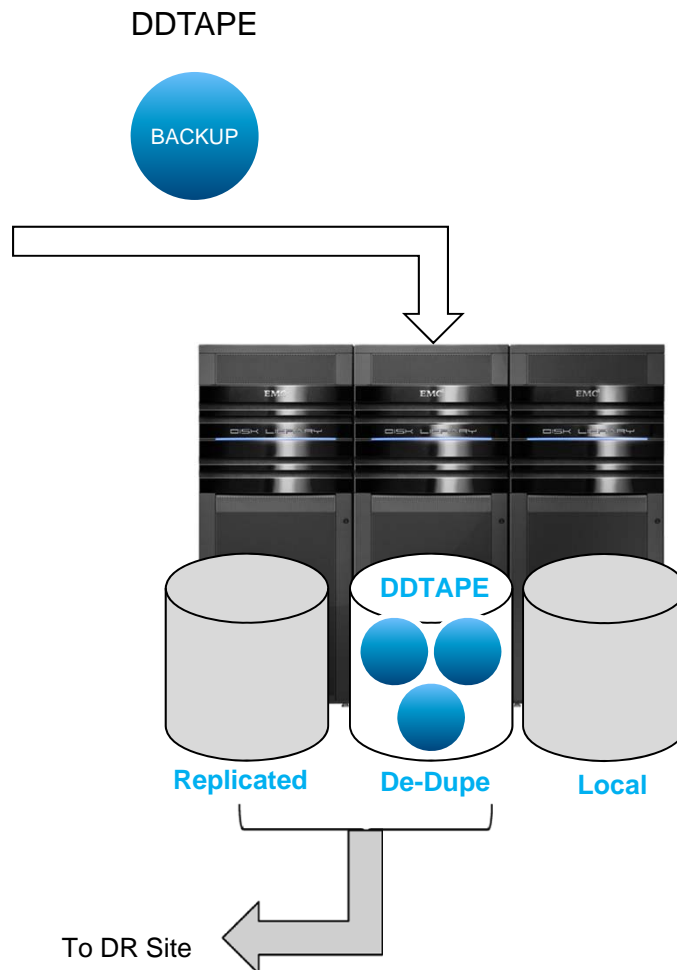


With Storage Class Support



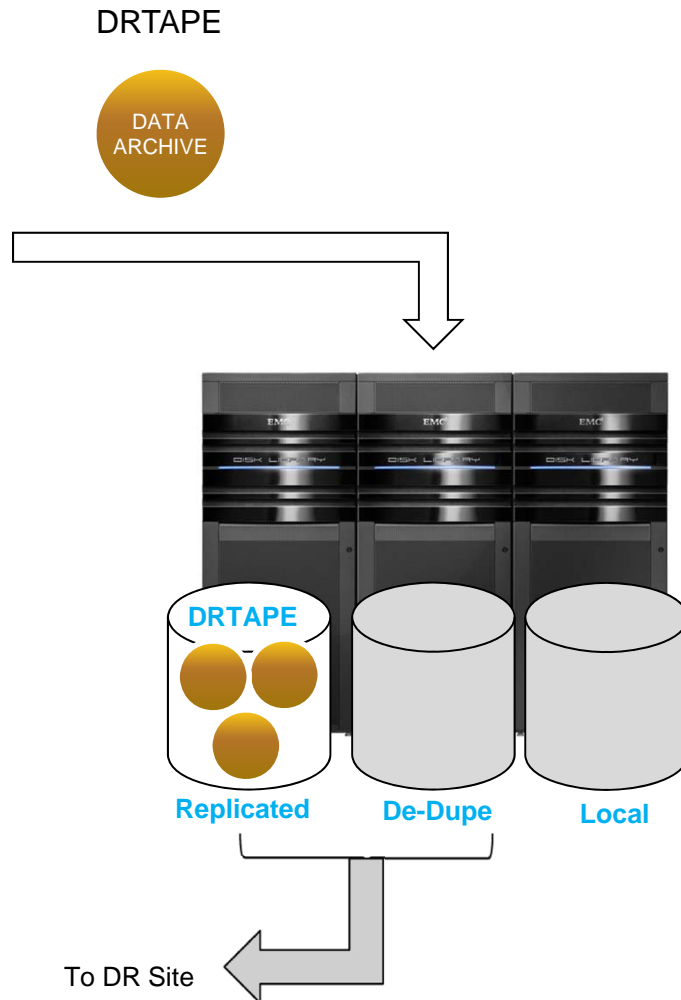
- Without storage classes drives, channels and mainframe UCBs would be dedicated to storage type.
- Each storage type would require a configuration large enough for maximum workload
- Resulting in extra hardware and/or software
- With DLM6000 storage class support drives can be redirected on a tape by tape basis
- Minimizing the number of drives, channels, and UCBs required
- Resulting in significant potential cost savings

Benefits to Backup



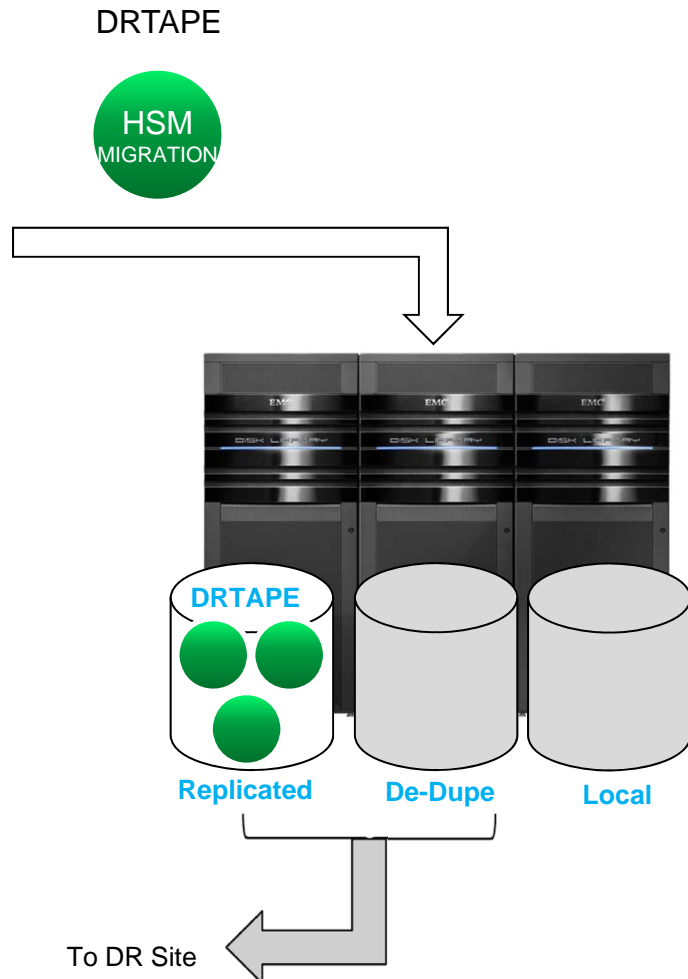
- Repetitive 3390 volume dumps (backups) benefit the most from data deduplication
- DLm6000 includes patented technology to pre-process FDR, DSS, and Upstream data to improve global compression (deduplication)
- Deduplication significantly reduces the storage used locally as well as minimizing the data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

Benefits to Data Archive



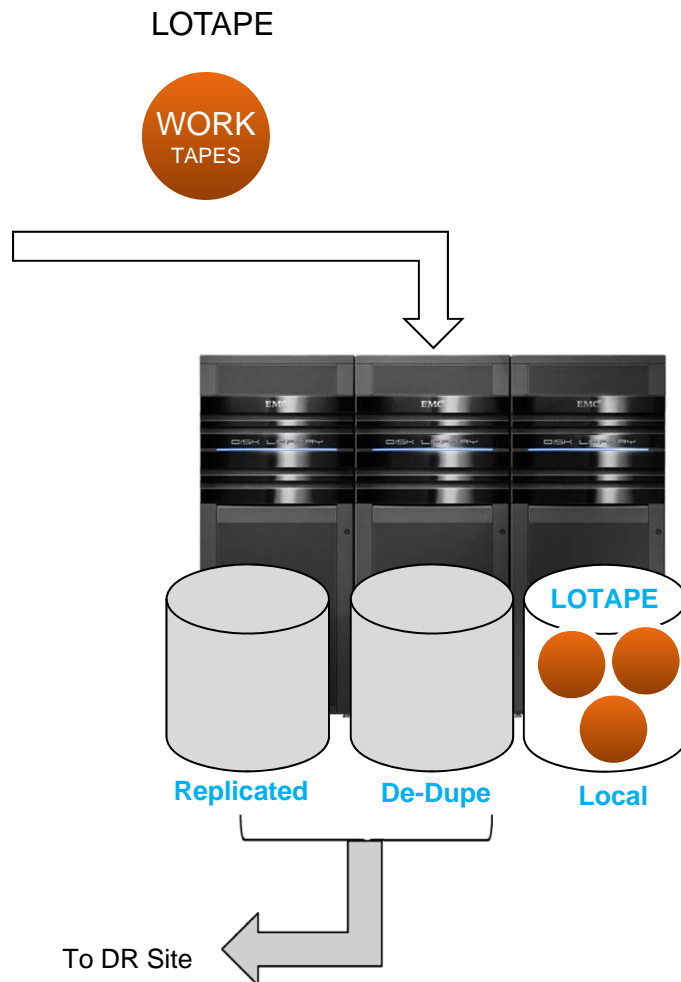
- Data archive applications benefit the most from sub-second data retrieval
- With no robotic arms and data stored permanently on disk, DLM6000 can instantly mount any VOLSER in the library
- EMC advanced indexing techniques allow any block of data to be quickly retrieved regardless of the size of the 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

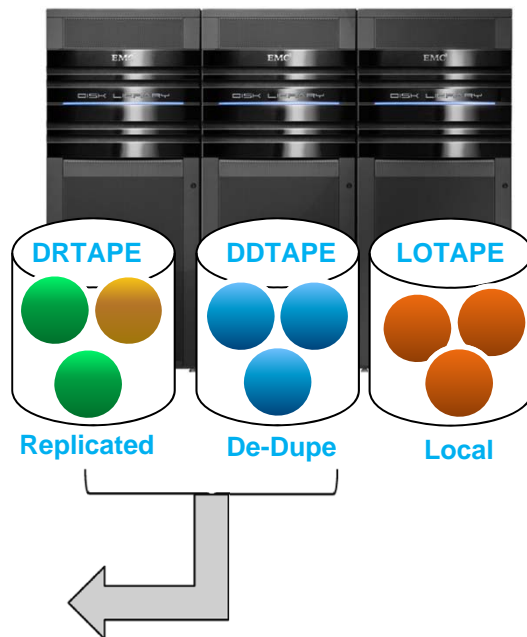
Benefits to Work Tapes



- 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!