Mainframe Tape Without Tapes – Users Share Their Perspectives

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Agenda

• What is Mainframe Tape?
• Why Physical Tape?
• Panel Discussion
• Additional Q&A
What is Mainframe Tape?

- The traditional storage pyramid presents tape at or near the broad spectrum at the base
  - Tape Drives?
  - Tape Libraries?
  - Tape Media?
  - Virtual Tape Systems?

- What criteria and conclusions?
  - Cost? TCO?
  - Workflow? ILM?
  - Performance?

- Mainframe Storage World takes a customer usage perspective

- The Four Major areas for Mainframe Tape usage
What is Mainframe Tape?

The Mainframe Storage World

- Primary copies of data
- Backup and Recovery
- Archiving and Compliance
- Sharing data internally and externally
Why physical tape?

Most mainframe virtual tape products address this usage environment

- Applications want disk-based response and performance with host tape management
- Tape drives designed and used like disk drives – 100% duty cycles with fast seek
- Virtual tape products eliminate media capacity waste
Why physical tape?

- For active data disk storage media is the naturally better fit than physical tape media.

- What is the driving factor for physical tape media usage?
  - Portability?
  - Cost?
  - Power?
  - Performance?
  - Simplicity?

- For active data each goal can be served better without requiring physical tape media creation.
Why physical tape?

- Stand-alone and direct-attach library-based tape drives are commonly used.
- Host-based backup software is able to fill physical media and stream large volumes quickly.
  - Large volume support not typical with traditional tape-dependent virtual tape systems.
- Portability is a primary value with native mainframe format tapes.
Why physical tape?

- Shipping unencrypted tapes has become a liability
- Open-systems infrastructure has demonstrated the viability of replicating backup data to remote recovery sites – especially with data deduplication
- Sharing network infrastructure with open-systems is viable (no channel extension) and simplifies enterprise IT operations
- RPO and RTO improved with disk-based replication vs. shipping tapes daily
- Local recovery is immediate
Why physical tape?

- Host archiving applications like HSM and OAM typically use direct-attached library based tape drives
  - Applications are intelligently designed to fill large physical tape media
- Shelf-based tape media is also common and viable
Why physical tape?

- The business need to access archive data quickly (internet response times) is growing
- Compliance requirements have generated an industry of capable disk-based archiving products
- A primary concern is long-term recoverability, which make industry standards more valuable than proprietary media solutions
- An evaluation of performance and TCO may yield surprising results for your environment, especially when leveraging the benefits of data deduplication
Why physical tape?

- Physical tape is often a common distribution media for sharing mainframe data to other internal hosts or to external customers and partners.
- Multi-vendor common 36-track media formats are now quite old but are still being used.
- FTP has taken over much of the external data distribution so that unencrypted physical tapes don’t need to leave the datacenter.
Why physical tape?

- Share datasets in-place between mainframes and open-systems networks and applications!
- Transfer data natively and efficiently using disk-based virtual tape for open systems access! Save CPU cycles compared to FTP by using channel-based transfers
Market Choices and Status

- Installed base of mainframe tape is primarily IBM and Oracle/Sun/StorageTek
- Leading virtual tape products (Sun VSM and IBM TS7740) primarily depend on physical tape
- There are several choices in mainframe disk-based virtual tape without physical tapes
  - Luminex Channel Gateway (with Data Domain deduplication since 2006)
  - EMC/Bustech. EMC DLm announced Feb 2008
  - IBM TS7720 announced Fall 2008
  - Sun VSM disk-based announced Spring 2009
  - IBM TS7680 with deduplication announced February 2010
  - CA-Vtape
Mainframe Tape without Tapes

• The benefits can’t be ignored
• Today’s Modern choices can’t be dismissed
• Save $, improve performance, reduce risk, improve RPO and RTO, and simplify infrastructure
• Your peers, large and small, have successfully reduced and eliminated physical mainframe tape already!
• The question has now shifted for every tape media created:

Why?
End User Experience

Linda Fisher
*Systems Programmer*
Trustmark Corporation
The Company

- Established in 1889
- Diversified financial services company providing banking, wealth management and insurance solutions
- $9.8 billion in assets
- Over 2,600 employees
- Locations in Florida, Mississippi, Tennessee and Texas
What were our Goals and Objectives?

Challenges/Goals:

- New OCC laws required a new disaster recovery plan
- Faster, more reliable disaster recovery
- Remote replication
- Reduce or eliminate mislabeled/missing tapes
- Improve DB2 operations and backup
Previous Tape Environment

Production Site, MS

zSeries Mainframe

Tape Library with Virtual Tape Cache

Onsite Physical Tape Copies

Shipping Tape Media

Offsite Storage
New Tape Environment

Production Site, MS
- zSeries Mainframe
- Virtual Tape

Disaster Recovery Site, AZ
- Virtual Tape
- zSeries Mainframe

WAN
How Did We Do?

We Achieved Our Goals:

- New multi-site DR plan has been implemented using remote replication for DASD and tape data
- 3 successful DR tests: 2 full, 1 limited – all painless and fast
- No physical tape is required for DR
- Recovery time improved – *from 13+ hours to about an hour!*
- Reduced cost for tape transportation, media and vaulting
- Nightly processing time reduced by 2-3 hours
- The solution performs better for all applications, including DB2
- 99% Tapeless, physical tapes only used for input and sharing
End User Experience

Benjamin Fernbach
Systems Programmer
Health Management Systems
The Company

• **Background**
  - HMS is a wholly owned subsidiary of HMS Holdings
  - We’re the nation's leader in coordination of benefits and program integrity services for payors of healthcare services.
  - Our clients include health and human services programs in more than 40 states.
    - Including commercial programs and plans, employers, and over 100 Medicaid managed care plans; the Centers for Medicare & Medicaid Services (CMS); and Veterans Administration facilities
  - We recover in excess of $1 billion for our clients every year.
What were our Goals and Objectives?

Challenges/Goals:

- Resolve performance limitations related to archiving with content addressed storage
- Implement a better disaster recovery plan
- Replace aging tape or virtual tape products
Previous Mainframe Archiving Environment

zSeries Mainframe

Content Addressed Storage For Archiving
New Environment

Sungard Facility
Philadelphia

Informatica Server

Dallas

New York City

Mainframe
3 LPARS

EDISRV
Fileserver

LUMINEX
Channel Gateways

DD880
35TB Usable
VSM
07/18/10

DD880
Mainframe Archive
>200TB Logical Used
~19TB Physical Used

DD580
EDISRV FS & MF FTP
>23TB Logical Used
~2.5TB Physical Used

Deduplicated Replication

Deduplicated Replication

Deduplicated Replication
Luminex – EMC Data Domain Environment

**Sungard Facility, Philadelphia**
- Single DD880
- EA, VSM, & SMF
- Up to 143TB Usable
- Up to 14.2PB Logical

**New York City**
- EDISRV Fileserver
- LUMINEX Channel Gateways
- Mainframe - 3 LPARS
- DD880 VSM, SMF, FTP & EDI

**Watertown Facility**
- DD880
- TSM/NBU Backup Environment
- EDI, TSM, NBU, MF FTP
- Up to 143TB Usable
- Up to 14.2PB Logical

**Irving Facility**
- Informatica Server
- NFS/OST
  - Up to 5.4TB/hr
- CIFS
  - Up to 2.5TB/hr
- TSM/NBU Backup Environment
- DD880 Mainframe EA archive
Data Deduplication Rates

Currently Used (GB):

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Last 7 Days:

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Last 24 Hours:

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<td>145.5</td>
<td>7.0</td>
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How Did We Do?

We Achieved Our Goals:

- Replaced previous archiving solution with a higher performance virtual tape solution
- New multi-site DR plan has been implemented for mainframes and open systems
- Recovery time has been improved
- Reduced cost for tape transportation, media and vaulting
- No physical tape is used for archiving
- Reduced storage requirements via 12x+ deduplication
- The solution performs better and does not need DB2 for archiving applications
End User Experience

Oscar Rodriguez
Vice President
Barclays
The Company

Background

• Over 300 years of history and expertise in banking
• A major global financial services provider engaged in retail banking, credit cards, corporate and investment banking and wealth management
• Operates in over 50 countries
• Serves over 48 million customers worldwide
• Employs 147,500 people
What were our Goals and Objectives?

Challenges/Goals:

- Consolidate mainframe operations
- Shipping tape library deemed too risky
- Maintain remote access to archives from UK to US without expensive channel extenders
- Mainframe lease term expiring, need to migrate 380,000 VOLSERs in 48 days (or faster)
Previous Mainframe Environment

Mainframe

IBM TS7740

Tape Library

FICON
New Environment

- Deduplicated Storage
- Luminex Channel Gateway
- Mainframe FICON

Connections:
- WAN
- FICON
How Did We Do?

We Achieved Our Goals:

- Tape migration completed within 60 days
- Eliminated cost of channel extenders with deduplication and low cost WAN
- Eliminated risk of physically moving the tape library
- Eliminated expense of keeping multiple frames vs. a single rack solution:
  - Power
  - Cooling
  - Physical floor space
Data Deduplication Rates

<table>
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<th>Currently Used (GB):</th>
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Mainframe

Luminex Channel Gateways with Deduplication Storage
Q&A

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Health Management Systems

Oscar Rodriguez
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Thank You

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