Replicating Mainframe Tape Data for DR – Best Practices
Session #10929

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Discussion Topics

• Why Replicate Mainframe Tape Data?
• Network Bandwidth Requirements for Replication
• Replication Options
• Replication Architecture
• Monitoring Tools for Replication
• Summary - Best Practices
• Customers Share Their Experience with Tape Replication for DR
Why Replicate Mainframe Tape Data?

- It is the best way to move tape data between the production and disaster recovery site
  - Much faster than shipping physical tape
  - Eliminates security risk associated with shipping physical tape
  - Eliminates the cost of physical tape media, shipping & storage
- Less complexity compared to physical tape encryption key management
- Dramatically improves the remote disaster recovery plan
  - Improve RPO through continuous replication
  - Recovery time is significantly reduced
Network Bandwidth Requirements for Replication –
Use TMC & SMF records to calculate network requirements
Replication Options

• Replication Management
  • Control Unit-based
  • Deduplication Storage Gateway-based
  • Storage-based replication
Replication Architecture

Goals

• Continuous protection of production tape data – replication never stops
• Allow customer to setup for DR test and clean up after test
• One-time configuration of remote CG for multiple future DR tests
Replication Architecture
Typical Configuration

- CG and virtual tape storage at production site
- CG and virtual tape storage at DR site
- Replication of local virtual tape storage never stops
Monitoring Tools for Replication

- Satisfy legal and audit concerns
- No chain of custody issues
- Replication logs
- VOLSER-level monitoring
- Detailed reporting
Best Practices for Continuous Replication and DR Exercises

• Use a Non-distructive tool & process
  • It will provide continuous protection of the production site’s data
  • Enables non-distructive remote DR tests

• Replication monitoring at the volser level is recommended

• Detailed documentation for selectively or completely replicating tape data should be established
End User Experience

Steve Schwietz
Senior Systems Programmer
Agribank
The Company

- AgriBank, FCB is one of the largest four banks within the national Farm Credit System, with $71 billion in total assets, representing the 7th Farm Credit District.
- As the district hub, Agribank provides IT services for associations across 16 states in the Midwest.
- Agribank employs 225 people in their St. Paul MN corporate office.
- Mainframe Software:
  - z/OS, DB2 (Image Copy), DFdss for backup & recovery, HSM ML2, batch processing and RMM
What were our Goals and Objectives?

Challenges/Goals:

- Improve disaster recovery time
- Eliminate the delays that physical tape imposes on the DR plan
- Replace the aging IBM 3494 tape library
- Replace the tape library before relocating Agribank's data center.
Previous Tape Environment

- 12 frames!
- 8x 3590 tape drives
- 4x 3592 tape drives with encryption
New Tape Environment

Production Site
- zSeries Mainframe
- Luminex Mainframe Virtual Tape
- Channel Gateways
- Deduplication Storage

Disaster Recovery Site
- Luminex Mainframe Virtual Tape
- Channel Gateway
- Deduplication Storage
- zSeries Mainframe
How Did We Do?

Benefits/Achievements

☑ We're completely tapeless!
☑ Reduced floor space - From 12 IBM frames to a single 19" rack
☑ Recovery time went from 3 days, to 4 hours
☑ Several DR test have been successfully completed
☑ Replaced and removed the 3494 tape library, before the data center relocation, which saved significant $ and floor space
End User Experience

Jerry Johnson
Consulting Systems Engineer
LexisNexis
The Company

• A leading global provider of information and technology solutions for the legal, risk management, corporate, government, law enforcement, accounting, and academic markets

• Serves customers in more than 100 countries

• More than 15,000 employees worldwide

• Mainframe Software:
  • z/OS, HSM ML2, DFdss and batch processing
What were our Goals and Objectives?

Challenges/Goals:

- Improve the LexisNexis remote disaster recovery plan
- Reduce the cost for physical tape drive and library maintenance
- Reduce the cost of physical tape media, shipping and off site storage
Previous Tape Environment

- 8x 3480 tape drives
- 16x 3490 tape drives
- 10x 3590 tape drives
- 3000 physical mounts per day
New Tape Environment

Production Site
- zSeries Mainframe
- Luminex Mainframe Virtual Tape
  - Channel Gateways
  - Deduplication Storage

Disaster Recovery Site
- Luminex Mainframe Virtual Tape
- Channel Gateway
- Deduplication Storage
- zSeries Mainframe

- 48 virtual tape drives
- Production tape mounts are virtual only
How Did We Do?

Benefits/Achievements

☑ Virtual tape data is replicated immediately and readily available for DR test and disaster recovery
☑ They eliminated tape media, shipping and off site storage (vault) cost
☑ No tape librarians are required
☑ All tape mounts are now virtual (faster), instead of physical
The Organization

• Comprised of 14 departments including Finance, Law Enforcement, Counter Terrorism, Emergency Management and Aviation
• $1+ billion annual budget
• Over 8,000 employees
• Mainframe Software:
  • z/OS, DB2, HSM, CICS, FDRABR and RMM
What were our Goals and Objectives?

Challenges/Goals:

- Replace the Oracle 9310 tape silo (End of Life and End of Support)
- The new solution should not require changes to any tape applications
- Migrate all old tape cartridges to the new solution
- Maintain long term access to the volsers after the tape migration
- Share all tape drives across all LPARs
Previous Tape Environment

Production Site
- zSeries Mainframe
- StorageTek 9310 Tape Library

- 8x 9840 tape drives
- 20,000 physical tapes

Shipping Tape Media
Offsite Storage
New Tape Environment

- 96 virtual tape drives
- 13 year old data available at disk I/O speeds
- Storage is shared between mainframe and open systems
How Did We Do?

Benefits/Achievements

☑ We're completely tapeless!
☑ No changes to JCL or tape applications were required (it was seamless... )
☑ The DR plan has been substantially improved
☑ All tape cartridges (20,000) have been migrated and the original volsers #'s have been retained
☑ All 96 virtual tape drives are shared across all 3 LPARS
☑ The deduplication storage system used for virtual tape is shared between the mainframe and open systems
☑ Significantly more floor space in the data center has been reclaimed
Thank You

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