Replicating Mainframe Tape Data for DR – Best Practices

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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
• 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

- 2,601 GB/day or 30 MB/s sustained 24 hours to write/replicate
- 867 GB/day or 10 MB/s sustained 24 hours to write/replicate
Replication Options

• Replication Management
  • Control Unit-based
    • Luminex Replication
  • Storage-based replication
    • Hitachi Universal Replicator (Asynchronous)
    • HDS TrueCopy (Synchronous)
    • HP, Data Domain, NetApp or Oracle replication
Virtual Tape Control Unit Architecture

- Application transparent – non-intrusive
- No MIPS required
- z/OS, MVS, VM, VSE and OS/390 supported
- Works well with all major tape management systems
- SMS via MTL or Esoterics can be used

Emulates 3490 or 3590 mainframe tape drives
- Hardware Compression Option
- “Wire Speed” up to 8 Gb FICON
- Active – Active with NSPOF
- Dual PS, Fans & Mirrored OS
- Multipathing for HA configurations
- Encryption and Key Management

Internal, NFS or Fibre Channel attached
- Mainframe tape volumes stored as standard files
- Replication for backup/DR
- RAID 6 Data Protection
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
DR Test Mode Feature
Replication During Normal Operations

Site A
1 Primary
Tape Data

Replication to Secondary Site and DR Site in progress

Secondary 2
Tape Data

Site B
DR Test Mode Feature
Replication During DR Testing

Replication to Secondary Site and DR Site continues uninterrupted

Space efficient clone of Tape Data is created for read/write testing; original Tape Data remains untouched
DR Test Mode Feature
After DR Testing is Completed

1. Site A (Primary) → Tape Data
2. Site B (Secondary) ← Tape Data

Replication to Secondary Site and DR Site continues uninterrupted

DR Test Data is purged
Monitoring Tools for Replication

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

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

• Replication monitoring at the VOLSER level is recommended

• Detailed documentation for selectively or completely replicating tape data should be established
Hormel’s Solution & Configuration

Production Site

Production Mainframe
IBM z10

Luminex MVT
- Channel Gateway X
- FICON Channels
- 4.8:1 Compression
- Raid 6
- Installed in a standard rack

Disaster Recovery Site

Production Mainframe
IBM z9

Luminex MVT

IP Replication
- 4 Gb FICON Channels
- 1 GbE x2 Bonded

WAN

Bunker

Complete your sessions evaluation online at SHARE.org/SFEval
Previous Tape Environment

**Production Site**
- Production Mainframe IBM zSeries
- ESCON
- IBM Tape Library 3494 with VTS B10

**Offsite Storage**

**DR Site**
- Production Mainframe IBM zSeries
- ESCON
- IBM Tape Library 3494

**Shipping Tape Media**
Current Tape Environment

Production Site
- Production Mainframe
- IBM zSeries
- Luminex MVT
- Channel Gateway
- Mainframe Virtual Tape
- Control Units with Deduplication Storage
- 8 Gb/s FICON
- Existing Rack

DR Site
- DR Mainframe
- IBM zSeries
- Luminex MVT
- Channel Gateway
- Mainframe Virtual Tape
- Control Units with Deduplication Storage
- 8 Gb/s FICON
- Existing Rack

WAN
NWRDC's Solution & Configuration

**Production Site**
Tallahassee, FL

- **Mainframe**
  - IBM z10

- **Open Systems**

- **FICON**
  - Luminex CGX

- **Fibre Channel Switch**

- **HDS VSP**
  - with Virtualized AMS
    - VSP Mainframe Primary Disk and Open Systems
    - AMS Mainframe Virtual Tape

- **WAN**
  - HUR Replication

**DR Site**
Out of State

- **HDS VSP**
  - Luminex CGX (standby)
Thank You

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