

# Cost Effective Tape Vaulting

What a long “space” trip it’s been!

# Site Overview

- Hardware:
  - z9-BC A01
    - DS6800 disk subsystem
    - 3590 tape system
    - OSA (OSC) for 3270 access
    - OSA (OSX) for TCP/IP
    - 3174 supporting 6262 printers
  - Future?
    - Lose the tape drives
    - Lose the 3174 and 6262s

# Site Overview

- Software
  - z/VSE 4.3.0+
    - CSI TCP/IP stack
    - VSE VTAPE for VSAM and LAN
    - Encryption Facility/VSE
  - ISV Software
    - Viaserv ViaSQL
    - CA-Vollie
    - CA-Librarian
    - CA-FAVER2

# Site Overview

- No application processing of tapes
  - A traditional “database” shop (all I/O to disk)
  - Converted from Datacom/DB to VSAM
- Flex-ES system
  - Backups to VSAM virtual tapes on 3390-3
  - FAVER2 backup of virtual tapes to SDLT tape
  - Flex system had too little file system space for effective Faketape archive.
- Z9-BC system
  - Backups to VSAM virtual tapes on 3390-9 disk
  - FAVER2 backup of virtual tapes to 3590 tape
  - Very large capacity permits about 1 week of data on disk

# Motivations

- Direct Costs
  - Maintenance on 3590s about 18K/year
  - Courier and storage costs with Iron Mountain
  - Tape media costs (mostly one time)
- Indirect Costs
  - Operator handling
    - Minimally trained, automation is paramount
  - Overnight exposure
    - Unattended so data doesn't get offsite until morning
  - Security concerns
    - PCI initiatives
    - Lost, missing, damaged, scratched, etc.

# First Steps

- Archival Data
  - Wanted to minimize 3490 to 3590 tape conversion requirements
  - Place files that are not time sensitive on LAN-based virtual tape
    - Purge Files, Monthly backups, etc.
  - Weekly “enterprise backup software” backs these up with the rest of the LAN data.
- Things Learned
  - TCP/IP interface is quite slow
  - Must be careful creating utilities for data retrieval
  - Still must use VSAM-based backup to meet timing requirements for production work
  - Stage to VSAM then copy to LAN-based Vtape
  - The VSE VTAPE Server can be a little quirky
    - Had a problem with “missing” DLBLs at one time

# Second Steps

- Do Something About Performance
  - Applied Windows registry zaps
  - Tried a Linux system but not much better besides the corporate standard is Windows
  - Use asynchronous copying of backup files
    - Use ditto tape-to-tape to copy files overnight
  - TCP/IP explicit ROUTE definitions to server help
  - Investigate hardware based virtual tape solution
    - Could potentially create copies in real time
    - Can be used on “bare metal” installation/recovery
    - Free up some of the local 3390-9 space for other uses
    - Could pay for itself in less than 24 months

# The “Vaulting” Concept

- Replicate Data to Corporate Site
  - Large scale datacenter for corporate systems
  - Total offsite requirement less than ½ TB (nothing by today’s standards).
  - Daily backups less than 4GB in .ZAWS format
  - Leased managed bandwidth to corp. datacenter
  - Network can access dedicated D/R site
- Proof of concept
  - Want to insure data can move a decent rate
  - Management loves the idea but the “opies” just keep dragging their feet (we’ve been waiting 3 months)

# The “Free” Solution

- “Level 1” Backups to VSAM VTape as today
  - Very fast to meet service time requirements
  - Retain “close in” generations for quick restore
- Stage VSAM backups to LAN as .zaws files
  - Asynchronous tape-to-tape copies using DITTO
  - Some non-critical archive jobs can go directly to LAN
- Use Microsoft SyncToy (it’s freeware)
  - Synchronize selected directories to remote site
    - Day of month directories (maybe day of week)
    - Month of year directories
    - Archival directories as required
- No real additional costs over what we have already

# The “Better” Solution

- Acquire a channel attached VTAPE solution
  - Faster, more reliable transfer
  - Could replace “level 1” storage freeing 3390 space
- Stage LAN-based VTAPES to Remote Site
  - Asynchronous copy except that mainframe applications would control and monitor results
  - Still have the option of using SyncToy
- Assumes a Windows based solution
  - A “corporately correct” solution
  - Need to make the “opies” understand that this is a mainframe solution and cannot be treated like other servers on the network.

# Where Are We Now?

- Long history of using VSAM Vtape for Backups
  - High capacity tapes (SDLT & 3590) make possible
  - Once had 100s of offsite tapes, now about 10
- LAN-based VTAPE being used
  - Non time critical applications
  - Still don't trust local LAN admin with backups
- Still Waiting ...