Understanding Cloud Storage for Mainframes

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Luminex Software, Inc.

Tuesday, August 13
Session #14132
Why Cloud Storage?

- Cloud Storage and Cloud Computing are changing how IT operates – outside of the mainframe data center
  - According to 2013 Symantec report 94% of enterprises are now discussing cloud storage
  - “A majority of respondents (80%) already have some sort of cloud storage in place” Study by Avere
  - “the total cloud storage market is expected to reach $46.8B by 2018 with a CAGR of 40.2%” Markets and Markets report

- Concerns and Questions
- Use Cases
- CloudTAPE - How it Works
- CloudTAPE Advantages
Why Cloud?

- Concerns and Questions (from Symantec study)
  - Unintentional storage of confidential data in the Cloud
  - Multiple storage strategies are complicated to manage
  - Slow to recover data from the cloud
  - Fear of losing data out of enterprise control
  - No easy way to implement a cloud tier
  - Privacy concerns – who is allowed to access my data?
Cloud Storage: Customer Feedback as reported by Nirvanix

Cloud Storage:
- Deployed as a Service
- Usage-based Pricing
- No Maintenance/Tech Refresh Fees
- Help in Eliminating CapEx
- Elastic Flexibility
- Web-based Access
- Guaranteed SLAs
- Accessed via the Internet or dedicated network link
Why Cloud Storage for Mainframe?

- Replace Remaining Physical Tape Infrastructure and Processes
  - Equipment
  - Consumables
  - Transportation
  - Warehousing
  - Floor Space
  - Additional Data Centers
  - Management
Traditional Physical Tape Vaulting and Recall

The traditional process of creating tapes to send offsite to a secure offsite vault or disaster recovery site.
Data Centers and Disaster Recovery without Physical Tape

**Production Site**
- zSeries Mainframe
- Luminex MVT
- FICON

**Disaster Recovery Site**
- zSeries Mainframe
- Luminex MVT
- FICON

Luminex is the leader driving the industry towards tapeless mainframe datacenters

Replication using WAN (No FICON or ESCON channel extension required)
3rd Site Tape Archive

Production Site
- Production Mainframe
- Luminex MVT

Disaster Recovery Site
- Luminex MVT
- DR Mainframe

WAN

Third Copy

Complete your sessions evaluation online at SHARE.org/BostonEval
“Luminex and Nirvanix Introduce World’s First Cloud-based Tape Vaulting Solution For Mainframe Environments”

August 8, 2012, at SHARE IBM Mainframe User Group
Mainframe Tape Performance Characteristics

**LOCAL SITE**
- Fast Read/Write Critical
- Frequent Activity

**REMOTE SITE**
- Fast Read during DR event/test Critical
- Infrequent Activity

**LOCAL SITE**
- Fast Write Critical
- Read Speed Not Critical
- Frequent Activity

**REMOTE SITE**
- Write & Read Speed Not Critical
- Infrequent Activity

**LOCAL SITE**
- Write & Read Speed Not Critical
- Infrequent Activity

**REMOTE SITE**
- Write & Read Speed Not Critical
- Infrequent Activity
Understand Your Data
Tape Analysis by Age Report

<table>
<thead>
<tr>
<th>Category</th>
<th>Capacity (GB)</th>
<th>Current Volumes</th>
<th>% of Total</th>
<th>Cumulative % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5+ Years</td>
<td>117,655.34</td>
<td>69,929.00</td>
<td>8.47%</td>
<td>8.47%</td>
</tr>
<tr>
<td>3+ Years - 5 Years</td>
<td>179,092.39</td>
<td>64,788.00</td>
<td>12.89%</td>
<td>21.35%</td>
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<td>94,375.00</td>
<td>18.77%</td>
<td>40.13%</td>
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<tr>
<td>181 Days - 1 Year</td>
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<td>84,509.00</td>
<td>16.40%</td>
<td>56.53%</td>
</tr>
<tr>
<td>91-180 Days</td>
<td>153,766.02</td>
<td>57,078.00</td>
<td>11.06%</td>
<td>67.60%</td>
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<tr>
<td>61-90 Days</td>
<td>65,719.32</td>
<td>24,592.00</td>
<td>4.73%</td>
<td>72.32%</td>
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<tr>
<td>31-60 Days</td>
<td>61,356.24</td>
<td>20,044.00</td>
<td>4.41%</td>
<td>76.74%</td>
</tr>
<tr>
<td>0-30 Days</td>
<td>323,259.88</td>
<td>140,785.00</td>
<td>23.26%</td>
<td>100.00%</td>
</tr>
<tr>
<td><strong>Summary:</strong></td>
<td><strong>1,389,722.89</strong></td>
<td><strong>556,100.00</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

- ~68% of Tape data is more than 90 days old

Complete your sessions evaluation online at SHARE.org/BostonEval
Understand Your Data
Tape Analysis by Age Report

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<th>Current Volumes</th>
<th>% of Total</th>
<th>Cumulative % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5+ Years</td>
<td>611,116.17</td>
<td>39,465.00</td>
<td>41.09%</td>
<td>41.09%</td>
</tr>
<tr>
<td>3+ Years - 5 Years</td>
<td>304,034.82</td>
<td>10,697.00</td>
<td>20.44%</td>
<td>41.53%</td>
</tr>
<tr>
<td>1+ Years - 3 Years</td>
<td>437,680.34</td>
<td>41,195.00</td>
<td>29.43%</td>
<td>70.95%</td>
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<tr>
<td>181 Days - 1 Year</td>
<td>40,843.12</td>
<td>6,671.00</td>
<td>2.75%</td>
<td>93.70%</td>
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<tr>
<td>91-180 Days</td>
<td>38,887.56</td>
<td>10,059.00</td>
<td>2.61%</td>
<td>96.31%</td>
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<tr>
<td>61-90 Days</td>
<td>9,564.28</td>
<td>3,242.00</td>
<td>0.64%</td>
<td>96.96%</td>
</tr>
<tr>
<td>31-60 Days</td>
<td>11,030.01</td>
<td>3,815.00</td>
<td>0.74%</td>
<td>97.70%</td>
</tr>
<tr>
<td>0-30 Days</td>
<td>34,238.84</td>
<td>13,431.00</td>
<td>2.30%</td>
<td>100.00%</td>
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<tr>
<td><strong>Summary:</strong></td>
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<td><strong>128,575.00</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>100.00%</strong></td>
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</table>

Complete your sessions evaluation online at SHARE.org/BostonEval
Off Site Copy

- Provide remote storage and redundancy without the cost and overhead of a dedicated DR or bunker site
3rd Copy and/or Archive

- Store Data Out-Of-Region
- Compliance / 3rd Copy
- Replace all remote tape vaults
- Primary tape data and Backup may also be stored in Deep Cloud Archive as 3rd copy option

1. Production Site
   - Tape data reads / writes to local virtual tape

2. DR Site
   - Replication to the DR Site
   - Remote Copy for DR

3. CloudTAPE vaults a copy to the Nirvanix Cloud

3rd Copy and/or Archive copy
2nd Copy, Archive Data not stored at DR

- Reduce or eliminate requirement for Archive data at DR site
- Primary tape data and Backup may also be stored in Deep Cloud Archive as 3rd copy option

CloudTAPE vaults a copy of all Archive Data to the Nirvanix Cloud
Offsite / Compliance / Deep Archive
Stored Only in Cloud

- Replace tape on shelves or managed in remote vaults
- Prepares for Data Center relocations
- Primary tape data and Backup may also be stored in Deep Cloud Archive as 3rd copy option

CloudTAPE vaults a copy of all Archive Data to the Nirvanix Cloud

Complete your sessions evaluation online at SHARE.org/BostonEval
How it Works
CloudTAPE Intelligent Storage Management

Production Site

Data Use Case

- Data that must remain local to Production and DR
  - Fast Reads/Writes
  - Fast Read during DR event/test Critical

- Data that must remain local to Production and, optionally, DR
  - Fast Reads/Writes
  - Frequent Activity

- Data that can be offloaded to the Cloud after X days
  - Write & Read Speed Not Critical
  - Infrequent Activity

Example Data

Backup

Operational
(Examples: batch, HSM, test)

Archive

DR Site

Cloud Storage

A

B

C

A 2 copies
B 1 / 2 / 3 copies
C 1 or 2 copies

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CloudTAPE Replication & Vaulting

Integrated with proven RepMon mainframe VOLSER-based replication software

Provides **real-time status monitoring and logging** of virtual tape data writes and replication to the Nirvanix cloud at the VOLSER level

- Provides visual and audit capabilities to confirm when tapes are “in the cloud”
- Satisfy legal and audit concerns
- No chain of custody issues
Mainframe Host-based storage allocation

- Uses Luminex TMACS – Tape Monitoring and Allocation Control Steering
  - Sort / Filter options, including by volser range, dataset names, etc.
- Esoterics
- Additional capabilities for host-based data tiering planned in future releases
Encryption and Security

- It is essential to encrypt data PRIOR to it being sent to the cloud storage
  - Processes and key management in your total control
  - Ensure that any breach of the cloud storage data center does not risk your data
  - Ensure that data cannot be mis-used or subject to government request without your involvement
- Integrates with and leverages CGSafe Luminex encryption and key management
CloudTAPE – How it Works

Production Site
- Production Mainframe
  - FICON
  - FICON
- Luminex Channel Gateways
- Nirvanix API

DR Site
- DR Mainframe
  - FICON
- Luminex Channel Gateway
- Nirvanix API

No Cloud
- sCloud
  - 100% Local
  - 100% Cloud
- pCloud
  - 0 – 100% Local
  - Managed Cache
  - 100% Cloud

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The Largest IT Services Company in the World Selects Nirvanix for Cloud Storage

- #1: IBM $37B
- Nirvanix and IBM Signed a 5-Year OEM Pact
- IBM is integrating Nirvanix cloud storage technology into its SmartCloud Enterprise services portfolio
- IBM determined Nirvanix is the only cloud storage suitable for IBM’s global enterprise customer base
Battle-Hardened, Proven Second Generation Cloud Storage Technology

The Cloud Storage Network

- 10 globally distributed nodes under a single namespace
  - Honolulu, LA, Las Vegas, Dallas, New Jersey, Frankfurt, Geneva, Bern, Tokyo
- Fully redundant infrastructure with integrated load balancing
- SAS 70 Type II compliant operations, physical security
- Secure multi-tenant file system, encryption, SSL
- Full directory structure, storage pools, and child accounts
CloudTAPE Advantages

• Better Access
  • Access to a 2nd or 3rd copy of mainframe tape anywhere in the world, at any time

• Save money
  • Eliminate the cost associated with physical tape media, shipping and off-site storage for vaulting

• Simply Secure
  • Eliminate security issues with physical media

• Compliance
  • Geographic Dispersal of Archive Data

• No changes!
  • Non-disruptive to existing tape applications and datacenter operations
Why Luminex?

• Luminex is the leader in solving real-world customer issues moving to modern mainframe data centers

• Proven Innovation and Technology Leader

• Proven Customer Advocate