Utilizing Cloud Storage for Mainframes

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Why Cloud Storage?

• Cloud Storage and Cloud Computing are changing how IT operates – outside of the mainframe data center
• 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
  - Privacy concerns – who is allowed to access my data?
  - 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
Why Cloud Storage? Customer Feedback

- Deployed as a Service
- Usage-based Pricing
- No Maintenance/Tech Refresh Fees
- Help in Eliminating CapEx
- Elastic Flexibility
- Guaranteed SLAs
- Accessed via the Internet or dedicated network link
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

- Mainframe
- FICON
- Luminex MVT

Disaster Recovery Site

- Mainframe
- FICON
- Luminex MVT

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

Third Copy

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval
“Luminex Introduces World’s First Cloud-based Tape Vaulting Solution For Mainframe Environments”

August 8, 2012, at SHARE IBM Mainframe User Group
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
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

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

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

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval
~68% of Tape data is more than 90 days old
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>
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<tr>
<td>5+ Years</td>
<td>611,116.17</td>
<td>39,465.00</td>
<td>41.09%</td>
<td>41.09%</td>
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<tr>
<td>3+ Years - 5 Years</td>
<td>304,034.82</td>
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<td>181 Days - 1 Year</td>
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<td>91-180 Days</td>
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<td>31-60 Days</td>
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<td>3,815.00</td>
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<tr>
<td>0-30 Days</td>
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<td>13,431.00</td>
<td>2.30%</td>
<td>100.00%</td>
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<tr>
<td><strong>Summary:</strong></td>
<td><strong>1,487,395.13</strong></td>
<td><strong>128,575.00</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>
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

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

1. **Local Copy**

**DR Site**
- Replication to the DR Site

2. **Remote Copy for DR**

3rd Copy and/or Archive copy

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

CloudTAPE vaults a copy to the Cloud
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 Cloud as 3rd copy option

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

Production Site

- Tape data reads / writes to local virtual tape

DR Site

- Replicate Backups to the DR Site
- Recover Archive Data at DR

1. CloudTAPE vaults a copy of all Archive Data to the 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 Cloud as 3rd copy option

Complete your session evaluations online at www.SHARE.org/Anaheim-Eval
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
- Primary Operational
- Archive (temporary copy)

**DR Site**

- 2nd Copy
- Optional 2nd Copy

**Cloud Storage**

- Optional 3rd Copy
- Only Copy (after X days)

**Data Use Cases**
- 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 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
CloudTAPE – How it Works

Production Site

Production Mainframe

Luminex Channel Gateways

FICON

No Cloud

sCloud
100% Local
100% Cloud

pCloud
0 – 100% Local
Managed Cache
100% Cloud

DR Site

DR Mainframe

FICON

Luminex Channel Gateway

Complete your sessions evaluation online at SHARE.org/BostonEval
Security Depends on Controlling Points of Access
Trusted Location: A New Authentication Factor

Trusted user location as a new authentication factor can be seamless to the end user, and extremely secure.

Secure location is independent of other authentication factors.
Solutions are invisible to the user – no action required.

Satelles solutions combine with other factors to deliver stronger security AND improved convenience.
Unique Value Derived from Iridium

1. **Worldwide Coverage**
   - No local infrastructure required

2. **Custom Signals**
   - Provide secure time and location capabilities

3. **High Power Broadcasts**
   - Unlike GPS, Signals penetrate buildings

4. **Close to GPS Band**
   - Hardware is based on standard GPS chipsets

5. **Focused Spot Beams**
   - Key feature for proving user location and time

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The Iridium constellation is a deployed asset. No other signal provides this key combination of features.
Trusted Time and Location
Externally Verified Authentication

1. Valid user or hacker initiates secure data access activity

2. User device receives location-specific satellite data

3. User login data and satellite data are sent automatically

4. Satelles determines trusted user location based on satellite data

5. Trusted location is used in decision engine to allow or deny access

Satelles provides authentication service

Satelles Customer

VPN / TLS Socket Connection

TLS Socket

Satelles Authentication Server

Iridium Gateway (Co-located)
CloudTAPE Advantages

• Better Access
  • Access to a 2\textsuperscript{nd} or 3\textsuperscript{rd} 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