Luminex Mainframe Virtual Tape Solutions

CAVMEN:

Chicago **A**rea
VM (and Linux)
Enthusiasts

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Discussion Topics
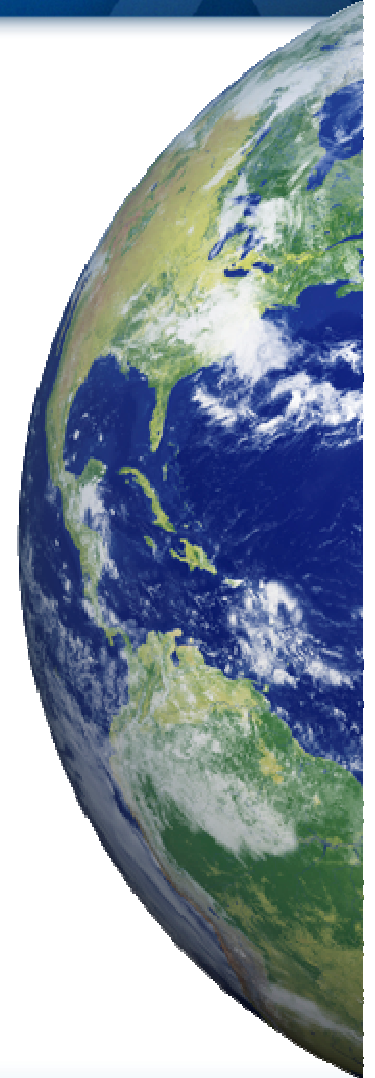
- Luminex At A Glance

- Pre-Sales Consulting

- Common Goals and Requirements

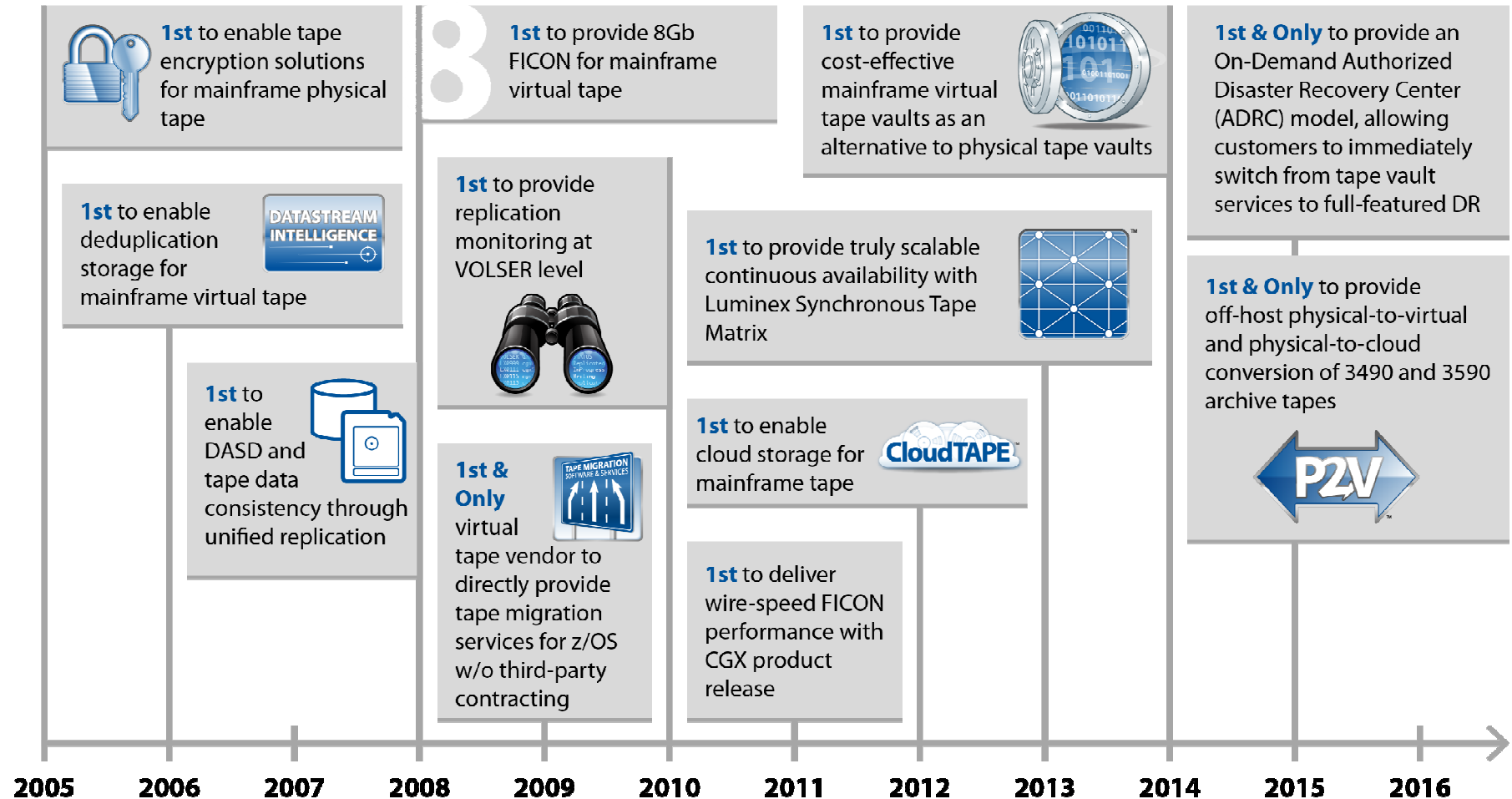- MVT Solution Overview

- Support and Installation Services

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Luminex At A Glance

- **Delivering z/OS, z/VM & z/VSE data solutions worldwide for 20+ years**
  - Enabling mainframes to leverage distributed systems resources via native I/O channels
  - Renowned for its industry-leading, enterprise-class mainframe virtual tape solutions
- World Alliance of VSE & VM (WAVV) Sponsor 2006 – 2014
- SHARE Sponsor 2000-2016
- IBM Business Partner
  - Strategic Partner for IBM ProtecTIER Mainframe Edition

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Luminex's Heritage of Innovation

1st to enable tape encryption solutions for mainframe physical tape

1st to enable deduplication storage for mainframe virtual tape

DATASTREAM INTELLIGENCE

1st to enable DASD and tape data consistency through unified replication

1st to provide 8Gb FICON for mainframe virtual tape

1st to provide replication monitoring at VOLSER level

1st & Only virtual tape vendor to directly provide tape migration services for z/OS w/o third-party contracting

TAPE MIGRATION SOFTWARE & SERVICES

1st to provide cost-effective mainframe virtual tape vaults as an alternative to physical tape vaults

1st to provide truly scalable continuous availability with Luminex Synchronous Tape Matrix

1st to enable cloud storage for mainframe tape

CloudTAPE

1st to deliver wire-speed FICON performance with CGX product release

1st & Only to provide an On-Demand Authorized Disaster Recovery Center (ADRC) model, allowing customers to immediately switch from tape vault services to full-featured DR

1st & Only to provide off-host physical-to-virtual and physical-to-cloud conversion of 3490 and 3590 archive tapes

P2V

| 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |

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Luminex Customers
Partial List of Domestic Accounts

ARAMARK	**MassMutual** FINANCIAL GROUP®	**WELLS FARGO** Dealer Services	OppenheimerFunds® The Right Way to Invest	**BARCLAYS CAPITAL**	**First Data.**
PA	MA	CA	CO	NY	NE
NISSAN	**H** Health Management™ Associates	OneBeacon™ INSURANCE	**MITSUBISHI MOTORS**	LOS ANGELES UNIFIED SCHOOL DISTRICT BOARD OF EDUCATION	Bank of Tokyo
TN	FL	MA	CA	CA	NJ
Hormel	**MOLINA®** HEALTHCARE	**Kawasaki**	**hms**	**DISA**	BlueCross BlueShield of Mississippi
USA	UT	CA	NY	PA, UT	MS
McKESSON	**Winn Dixie**	**TALBOTS** Established 1877	**LANDS' END**	**st** symphony teleca	Compuware
GA, CA	FL	FL	WI	TX, AR	MI
IBM BCRS	**SUNGARD**	**hp** Enterprise Services	**IDAHO** DEPARTMENT OF LABOR	UNIFIED JUDICIAL SYSTEM STATE OF ALABAMA	LA Z BOY™
USA	USA	USA	ID	AL	MI

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Sample Luminex z/VM and z/VSE Customers

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AL	**IL** BIM-EPIC	**IL** BIM-EPIC	**IL**
ID	**CA**	**WI**	**WA**
NY CA Dynam	**CA**	**TX**	**FL** BIM-EPIC
MA	**UK**	**PR**	**PH** CA Dynam
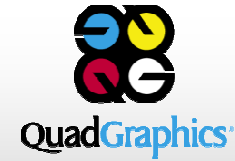
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Typical Customer Goals and Requirements
Luminex Virtual Tape Solutions Can Improve All Tape Operations

Replace Aging Infrastructure	**Improve Disaster Recovery Plan**	**Improve Data Security**
Reduce or Eliminate Physical Tape	**Reclaim Data Center Floor Space**	**Higher Availability**
Reduce Costs	**Increase Performance/ Efficiency**	**What Else?**

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Luminex Subject Matter Experts
Consultants for all Mainframe Virtual Tape Options

- Luminex SEs are mainframe virtual tape subject matter experts

  - Pre-sales consulting & tape study/analysis is available

  - Sizing & configuration recommendations are available

  - They'll architect the best solution & install it!

- Experts in replacement of existing mainframe physical & virtual tape products

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Luminex Solutions vs. Physical Tape
Enterprise-class Solutions for All Aspects of Mainframe Tape Use

- Less floor space required

- Less cost for physical tape maintenance, media, shipping and off site storage

- Less time required to test and restore during disaster recovery

- Less complexity for security, encryption and key management

- Less time and fewer IT resources to manage

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Luminex Solutions vs. Physical Tape
Enterprise-class Solutions for All Aspects of Mainframe Tape Use

- More capability in a smaller footprint

- More storage options (including internal, external storage, cloud and remote vaulting)

- More security (no physical tapes to ship)

- More of the industry's leading disaster recovery options

- More powerful continuous availability options

- More value, efficiency and capability

2U
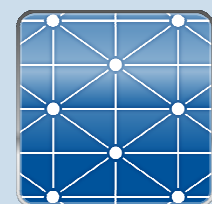
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Luminex MVT Environment
How the Solution Works

	FICON	Native 3590	DataStream Intelligence	Native Storage I/O	Internal SAS	
z/OS	ESCON	3490			Fibre Channel	Tape Data
z/VM	FICON	Native 3590	DataStream Intelligence	Native Storage I/O	Internal SAS	
z/VSE	ESCON	3490			Fibre Channel	

Tape I/O Metadata
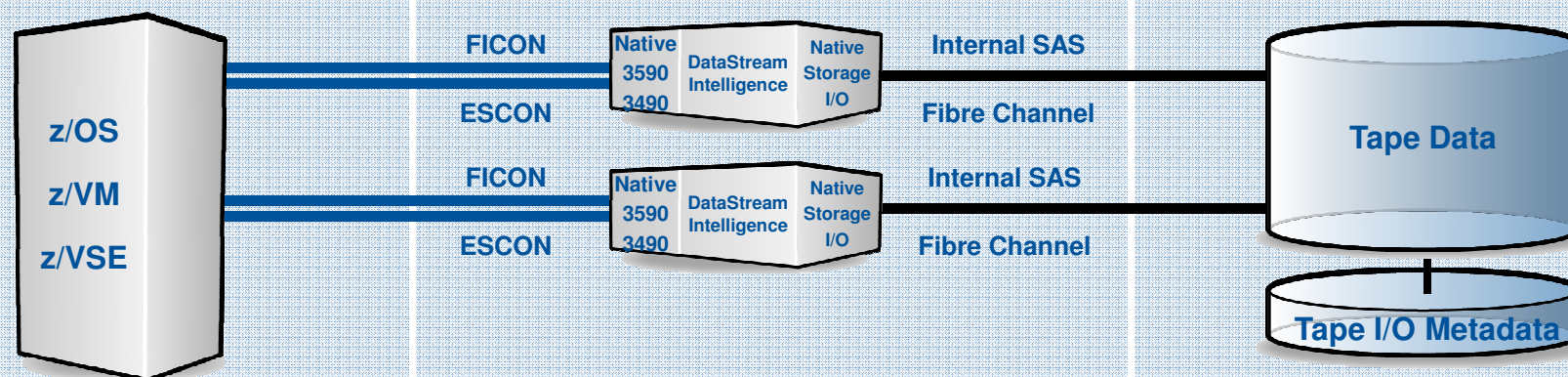
Mainframe

- Application transparent – non-intrusive
- No MIPS required
- z/VM, z/VSE & z/OS supported
- Works well with all major tape management systems

Control Unit

- CGX control unit software emulates 3490 or 3590 mainframe tape drives
- "Wire Speed" up to 8 Gb/s FICON
- Hardware compression with software failover
- DataStream Intelligence™ maximizes compression
- Replication for backup/DR with VOLSER-level monitoring
- Modular design makes adding additional capabilities easy and cost effective

Storage

- Internal or Fibre Channel attached
- Mainframe tape volumes stored as standard files
- RAID data protection
- CloudTAPE ready

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A Better Fit Makes A Better Solution

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MVTi Series

- 2 FICON or ESCON channels
- 10-30 TB host capacity (with 3:1 compression)
- 2U rack mount footprint

MVTe Series

- 2 or 4 FICON or ESCON channels
- Virtually unlimited capacity – PBs and beyond

Optional Features

Synchronous Tape Matrix

Continuous availability with 1+n mirrored writes and non-disruptive auto failover/restore

P2V

Off-host physical-to-virtual and physical-to-cloud conversion of 3490 and 3590 archive tapes
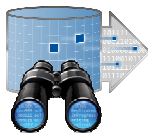
Luminex Replication with RepMon

Improve your disaster recovery plan with remote replication to one or more DR sites and VOLSER-level replication monitoring and auditing

Push Button DR

Disaster recovery and testing with "push button" ease

CGSafe

Encryption and key management

LTMon

Integrated, centralized management from the mainframe console

Data Vaulting Options

CloudTAPE

Cloud-based tape vaulting solution for mainframes

MVT Vault

Cost-effective virtual tape vaults for remote, off site storage

Tape Migration Software and Services

Seamlessly transition physical and virtual tapes with exact copies of original VOLSER numbers and labels

TMACS

Tape Monitoring and Allocation Control System intercepts tape device allocations and steers them to tape devices according to a customizable set of rules

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Luminex MVT Environment
Production and DR Site Configuration Example

Production Site

Disaster Recovery Site

Production Mainframe	Luminex MVT	Replication and Monitoring over IP	Luminex MVT	DR Mainframe

WAN
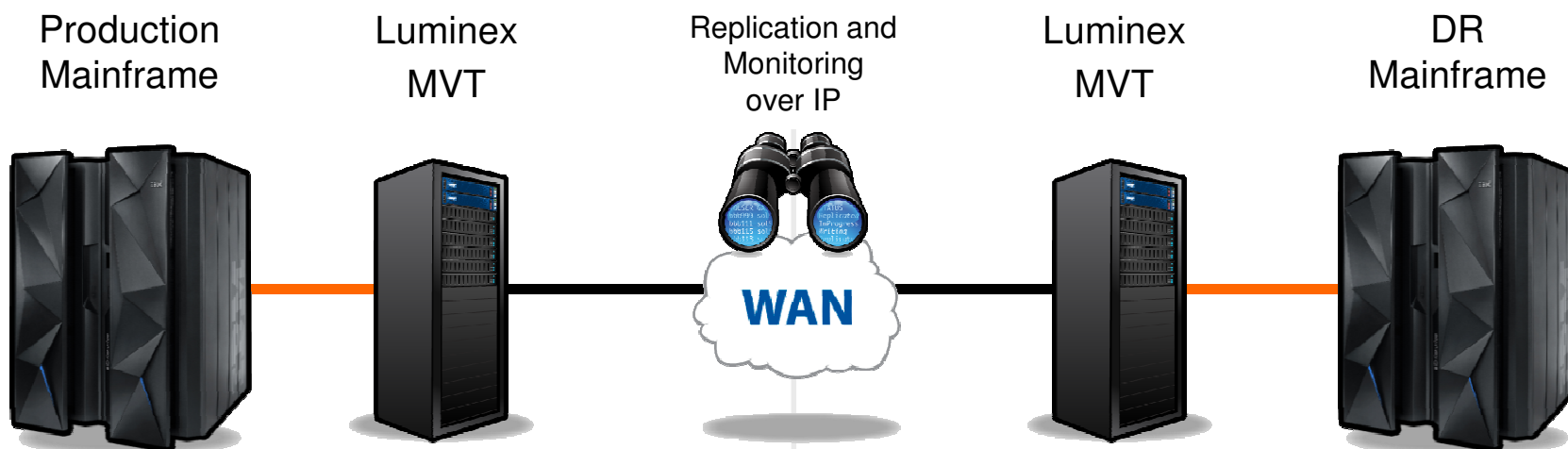
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Luminex Replication for MVT

- Control unit-based replication engine

- Asynchronous

- Flexible policies for number of copies and locations

  - One-to-Many

  - Cascading

- Vaulting to the Cloud

- Advanced DR functionality included

  - RepMon replication monitoring and auditing

  - Push Button DR

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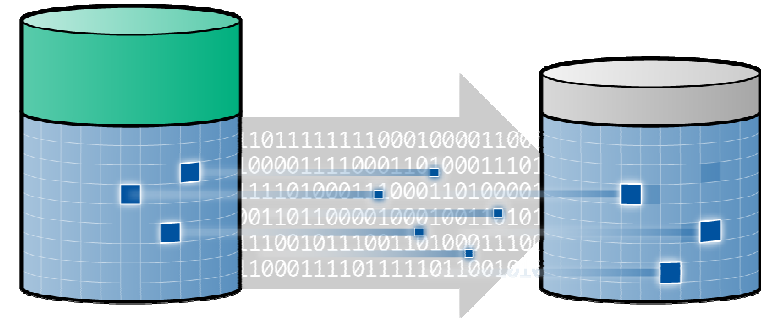
RepMon: Replication Monitor

Provides **real-time status monitoring and logging** of virtual tape data writes and replication to a remote disaster recovery site at the VOLSER level

- Identifies Write and Replication Status of Mainframe Tape VOLSERs

- Identifies if virtual tape data at DR is still consistent with the primary datacenter

- Provides visual and audit capabilities to confirm when backups reach DR
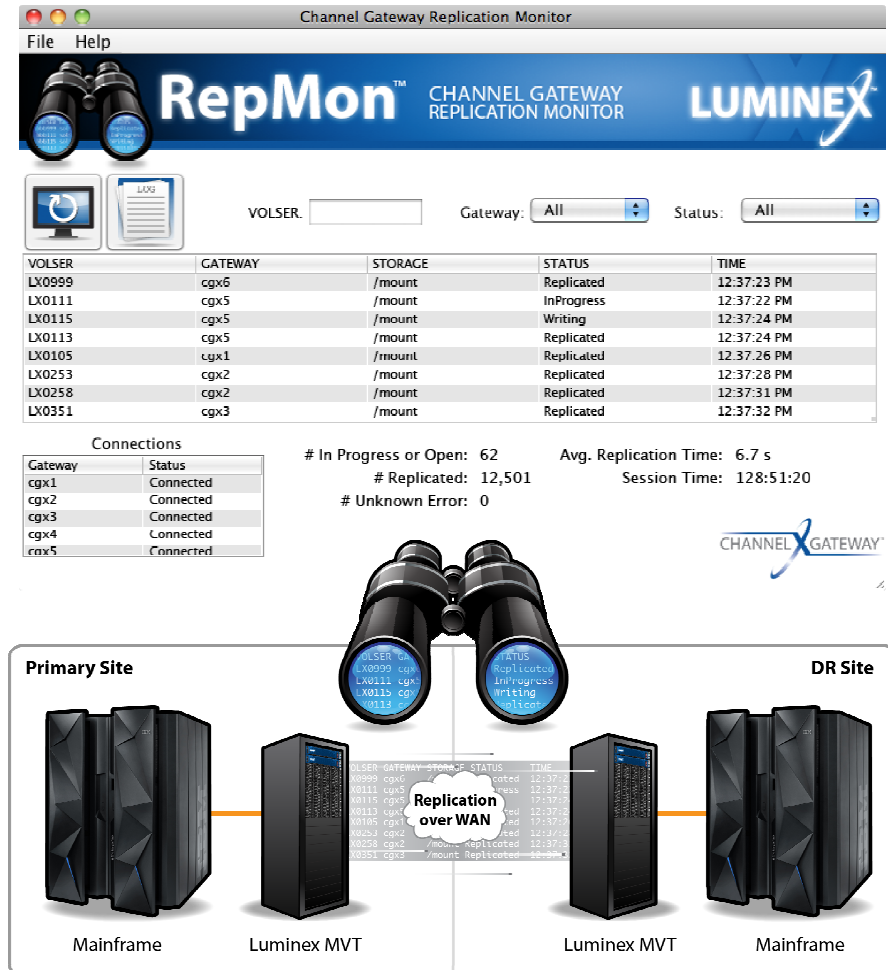
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Push Button DR Testing
Replication During DR Testing

Site A

Site B

1 | **Primary**

Secondary | **2**

Tape Data

Tape Data

DR Test Data

Read/Write Testing

Replication to Secondary Site or DR Site continues uninterrupted
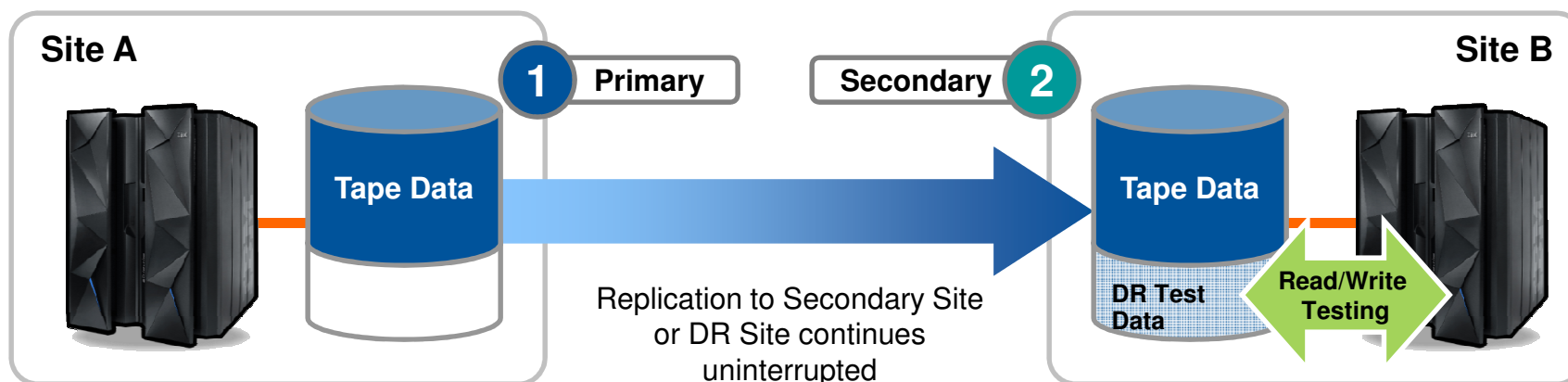
Prepares DR environment for read/write testing; original Tape Data remains untouched

CGX CHANNEL GATEWAY X
ADMIN GUI

172.17.16.33/modules/support/site_methods.php?cg=1

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CGA2 | CGA1

Home

Operator

- Status monitor
- View scratch pool
- View volume
- Storage pool
- Knowledge Base
- Replication Monitor

User

Site Methods

Option: ✓ Status   Go
- Promote Secondary
- Force Promote
- Start DR
- Stop DR
- Pause Replication
- Resume Replication
- Show Detailed Info
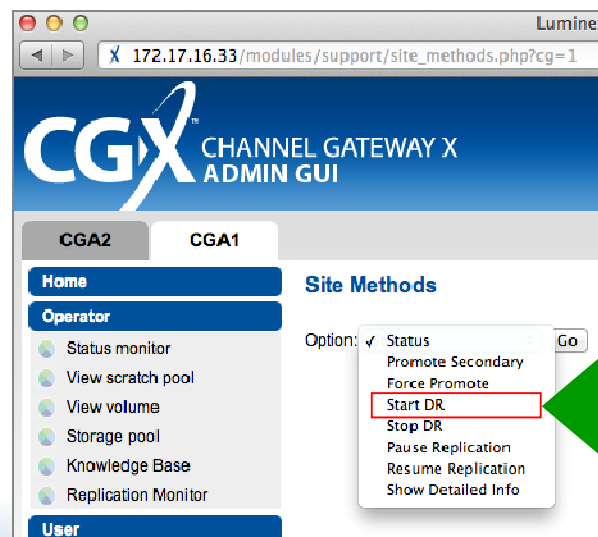
Start DR

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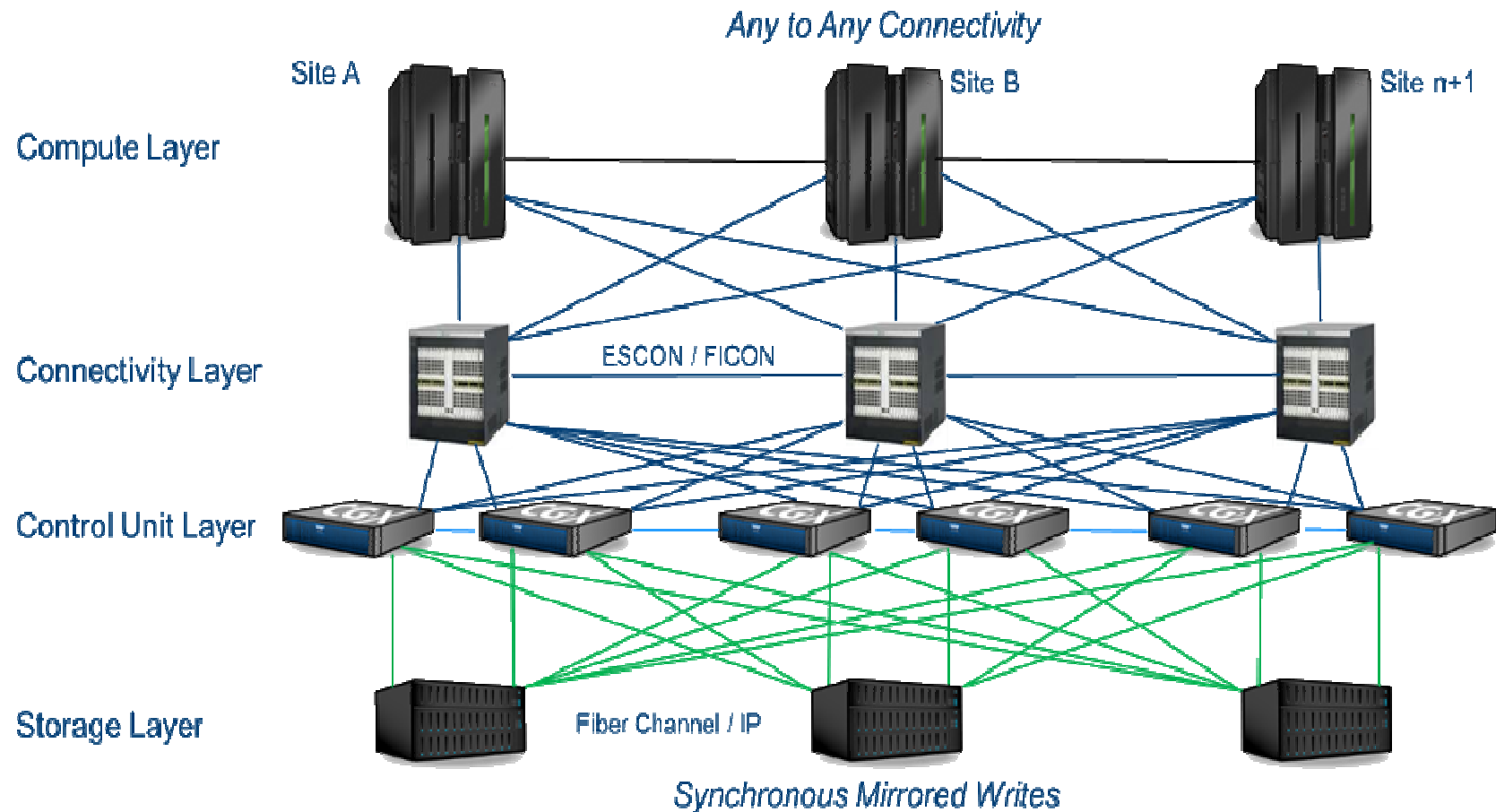# Push Button DR demo video

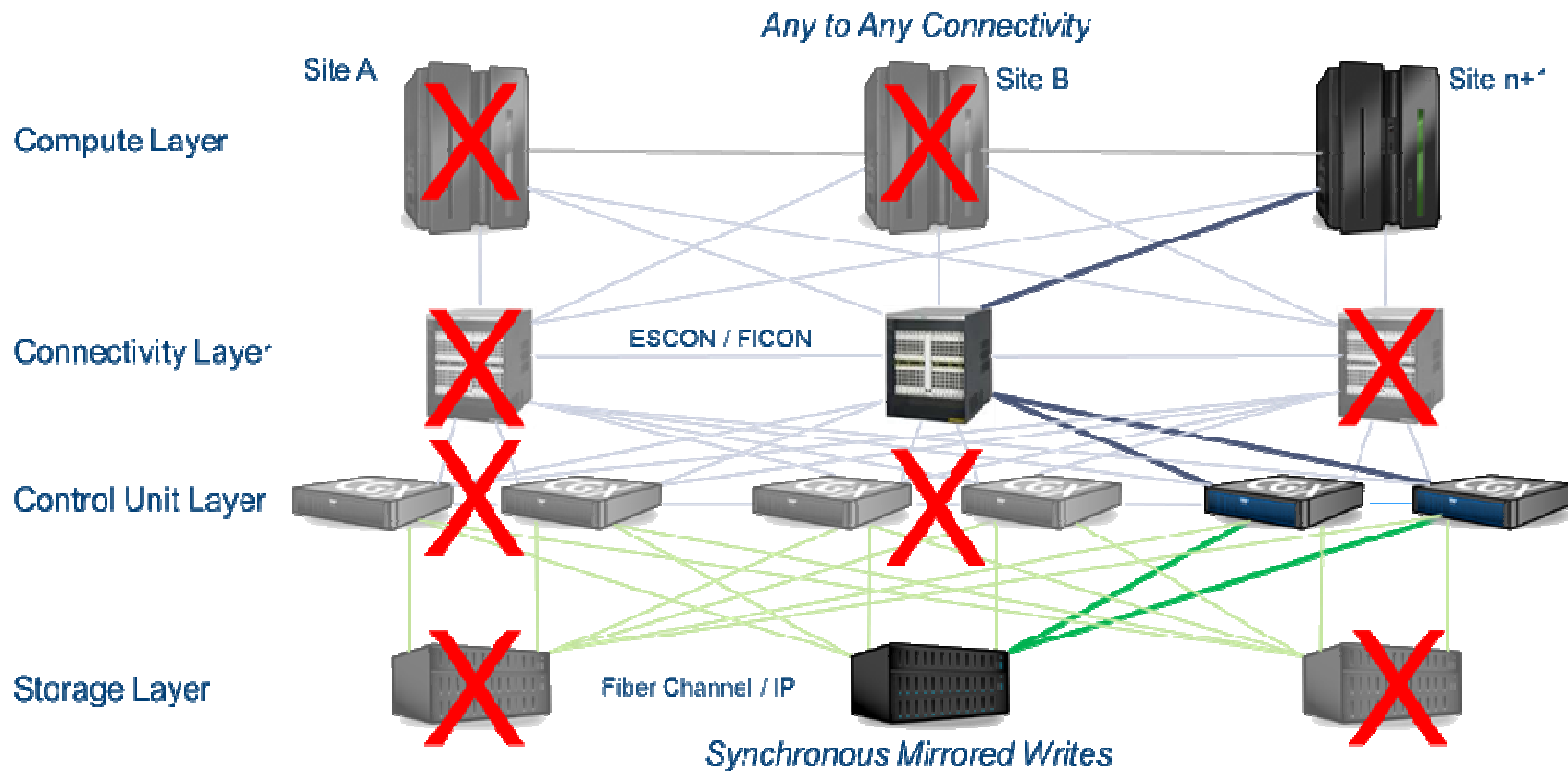# Synchronous Tape Matrix (STM)

- **Continuous Availability**

  - Resilient architecture instantly and automatically adjusts to multiple failures without interruption

  - Data is always available for I/O

  - No downtime from failover or restore processes

- **No idle components to buy**

  - All components contribute to day-to-day operations, not just during failure events

- **Easy to implement**

  - No host scripts or policies required

- **Scalable**

  - No limitations for throughput, capacity or degrees of redundancy

- **Modular design ensures investment protection**

- **Supports dissimilar storage systems and compression/deduplication technologies**

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Any to Any Connectivity

Site A · Site B · Site n+1

Compute Layer · Connectivity Layer · ESCON / FICON · Control Unit Layer · Storage Layer · Fiber Channel / IP · Synchronous Mirrored Writes

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Any to Any Connectivity

CGSafe
Control Unit Based Encryption and Security

Features

- Encryption & key management at the control unit level

- Eliminate costly encryption solutions based on mainframe MSUs

- AES 256-bit encryption using GCM

- Compression, encryption, and authentication in a single pass

- Optionally integrates with existing encryption and key management infrastructure

Benefits

- Avoid risk of lost or stolen tapes

- Protection from other data security issues

- Integrates into existing key management infrastructure for a single-point-of-management

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No TMS? No Problem!
Features for Manual Tape Operations

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- Browser-based GUI

- Manually load/unload virtual tape volumes on any available device

- Add/modify volume attributes

  - Add notes to create a virtual "sticky note"

  - Toggle a volume between "write" and "write-protect" mode

- Statistical information on individual virtual tape VOLSERs

  - Volume label and metadata information

    - i.e. storage pool, size, last access time, compression ratio, dsn, scratch status, user notes

- Audit logs for replication status

- Four levels of functionality for different users

  - Admin, Operator, User, Support

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CloudTAPE: Tape Vaulting to the Cloud

Production Site

Luminex MVT

Production
Mainframe

FICON

No Cloud

**sCloud
100% Local
100% Cloud**

**pCloud
0 – 100% Local
Managed Cache
100% Cloud**

DR Site

DR
Mainframe

FICON

Luminex MVT

Who
- ✓ **Amazon AWS**
- ✓ **IBM Softlayer**
- ✓ **Microsoft Azure**
- ✓ **Others**

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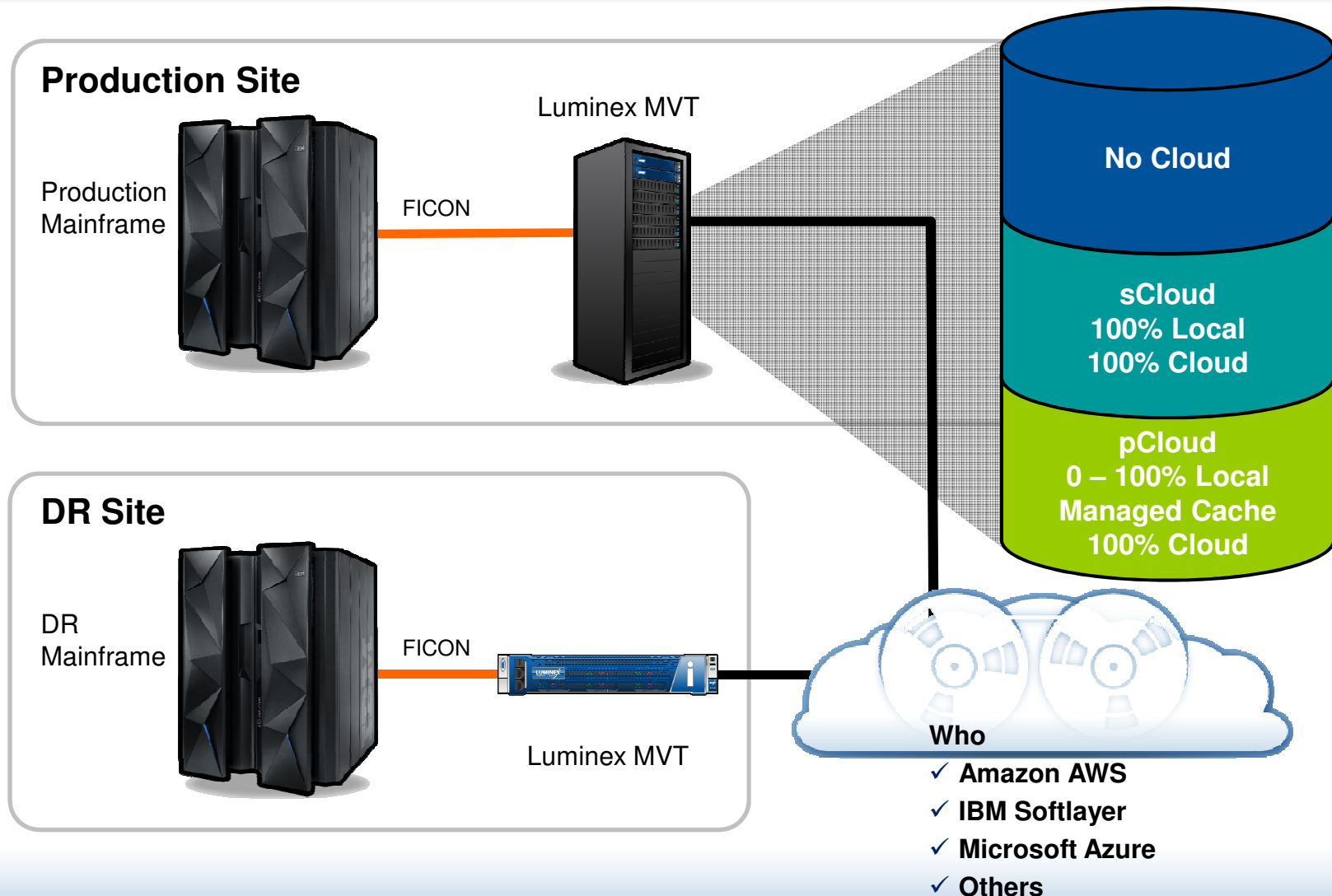
MVT Vault for Mainframe Data Protection

- **A better alternative to physical tape vaults, including:**

  - Compact, 2U (3.5") Form Factor

  - Unprecedented Price Point

  - RAID Disk Storage

  - Remote Replication & Replication Monitoring at the VOLSER level

  - Inventory Auditing

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MVT Vault Series Use Cases

- **3rd Offsite Copy**

  - For customers who already have virtual tape at production & DR sites

  - To meet out-of-region, SLA or other requirements

- **2nd Offsite Copy**

  - For customers who don't currently have a DR site

- **Recovery Center Model**

  - DR On Demand and testing at ADRCs

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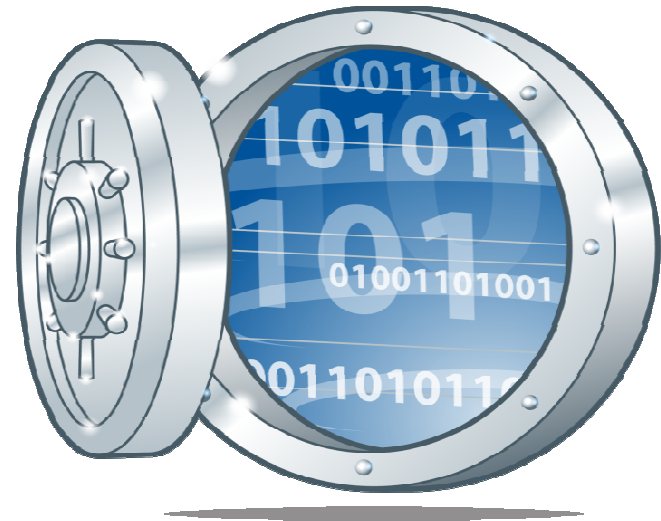
Worldwide Support and Installation Services

- High level expertise applied early, operations restored sooner

- Remote or on-site installation services worldwide

- Immediate HW/SW assistance – 7x24x365

- Channel Gateways include remote access capability

- On-site hardware break/fix assistance within 4 hours

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Thank You!

For questions and to get more information, please contact:

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