

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
- Questions

Why Cloud Storage?

- Common Concerns and Questions
 - 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?

- Reasons Customers Prefer Cloud Storage
 - 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
 - Geographic Flexibility

Traditional Physical Tape

Vaulting and Recall

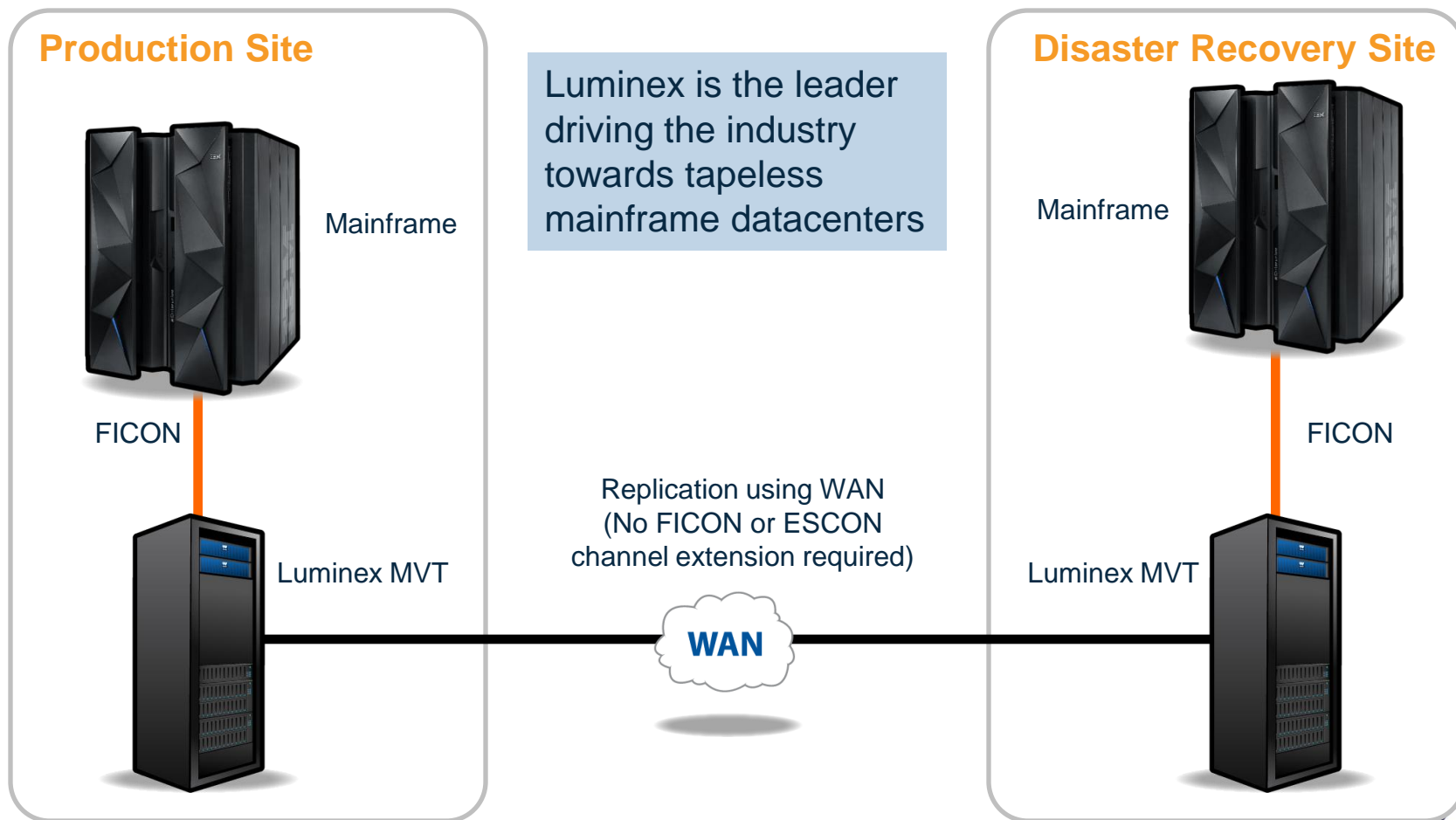
Production Site



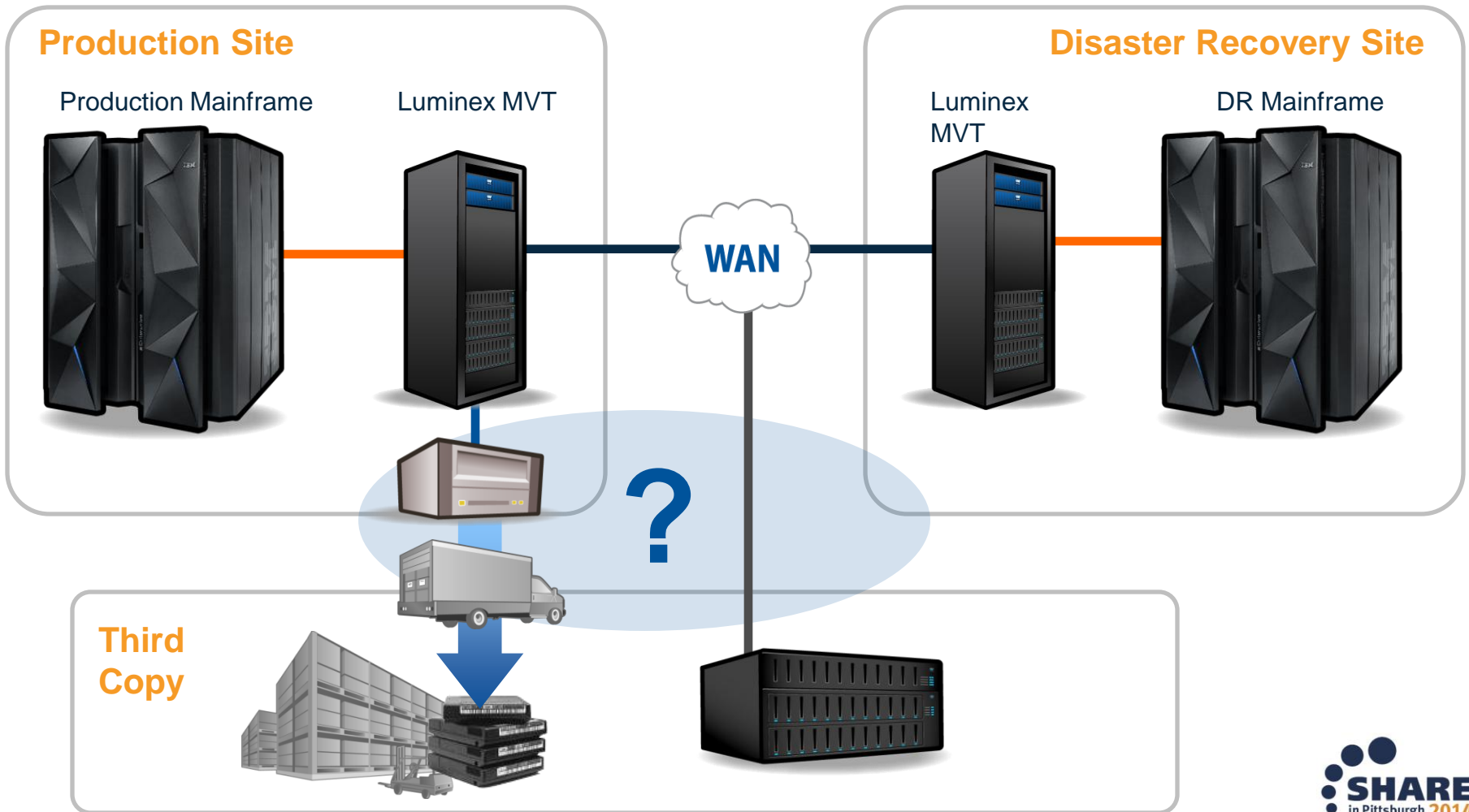
The traditional process of creating tapes to send offsite to a secure offsite vault or disaster recovery site



Data Centers and Disaster Recovery without Physical Tape

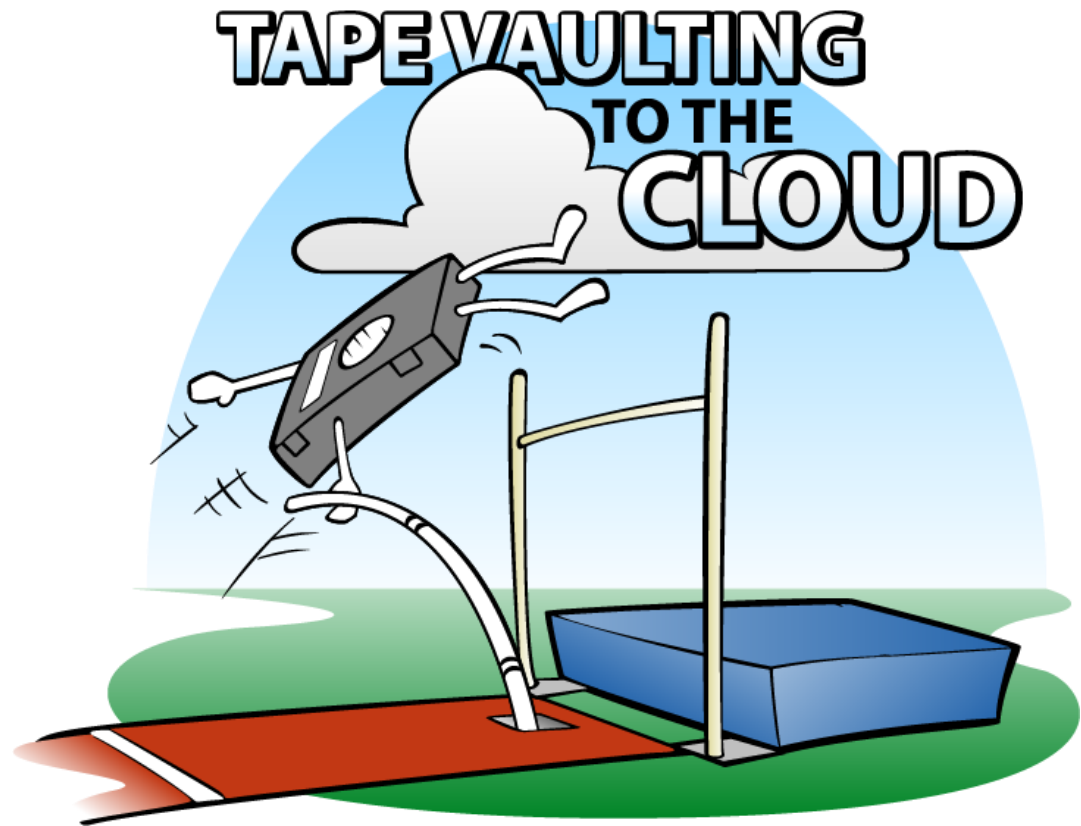


3rd Site Tape Archive



“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



Trends and Directions

Security and Encryption

- Increased Customer Focus on Mainframe Data Security
 - Data-At-Rest and Data-in-Flight
- Inline data encryption options with key management
 - Luminex – CGX-based or KMIP appliance
 - EMC – RSA
 - IBM and Oracle for physical tape media only
- Drive-based encryption does not protect against logical access or in-flight during replication
- Security requires encrypting data at its earliest point of creation and decrypting closest to when/where it is used

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



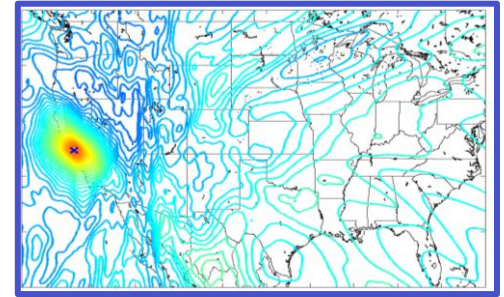
Something
you know



Something
you have



Something
you are



Somewhere
You Are

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

**Luminex When/Where solutions deliver stronger security
AND improved convenience**

Unique Value Derived from Iridium

1. Worldwide Coverage

No local infrastructure required

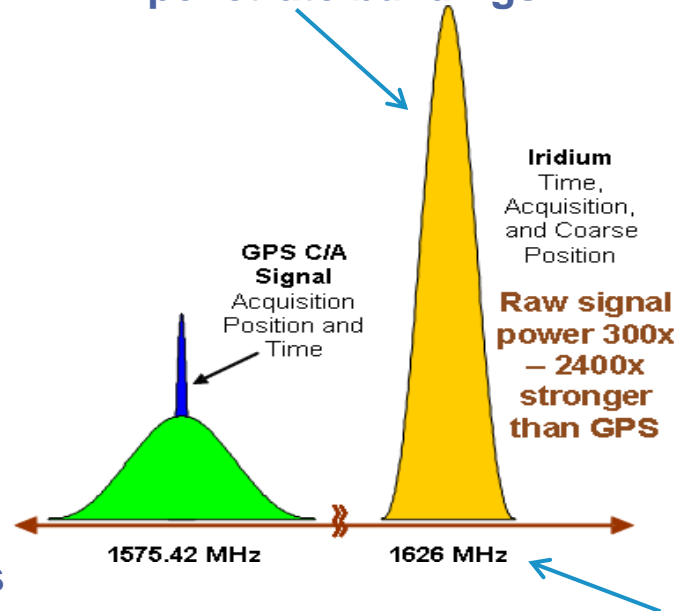


2. Custom Signals

Provide *secure* time and location capabilities

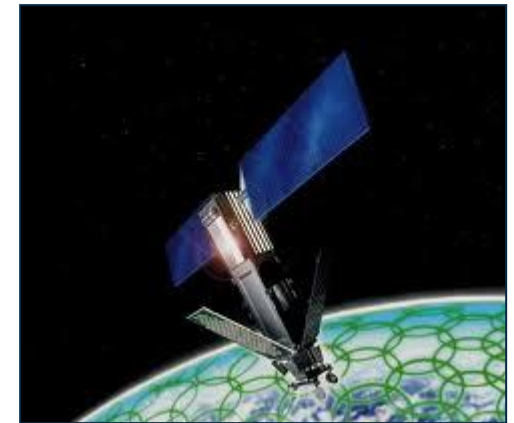
3. High Power Broadcasts

Unlike GPS, Signals penetrate buildings



5. Focused Spot Beams

Key feature for proving user location and time



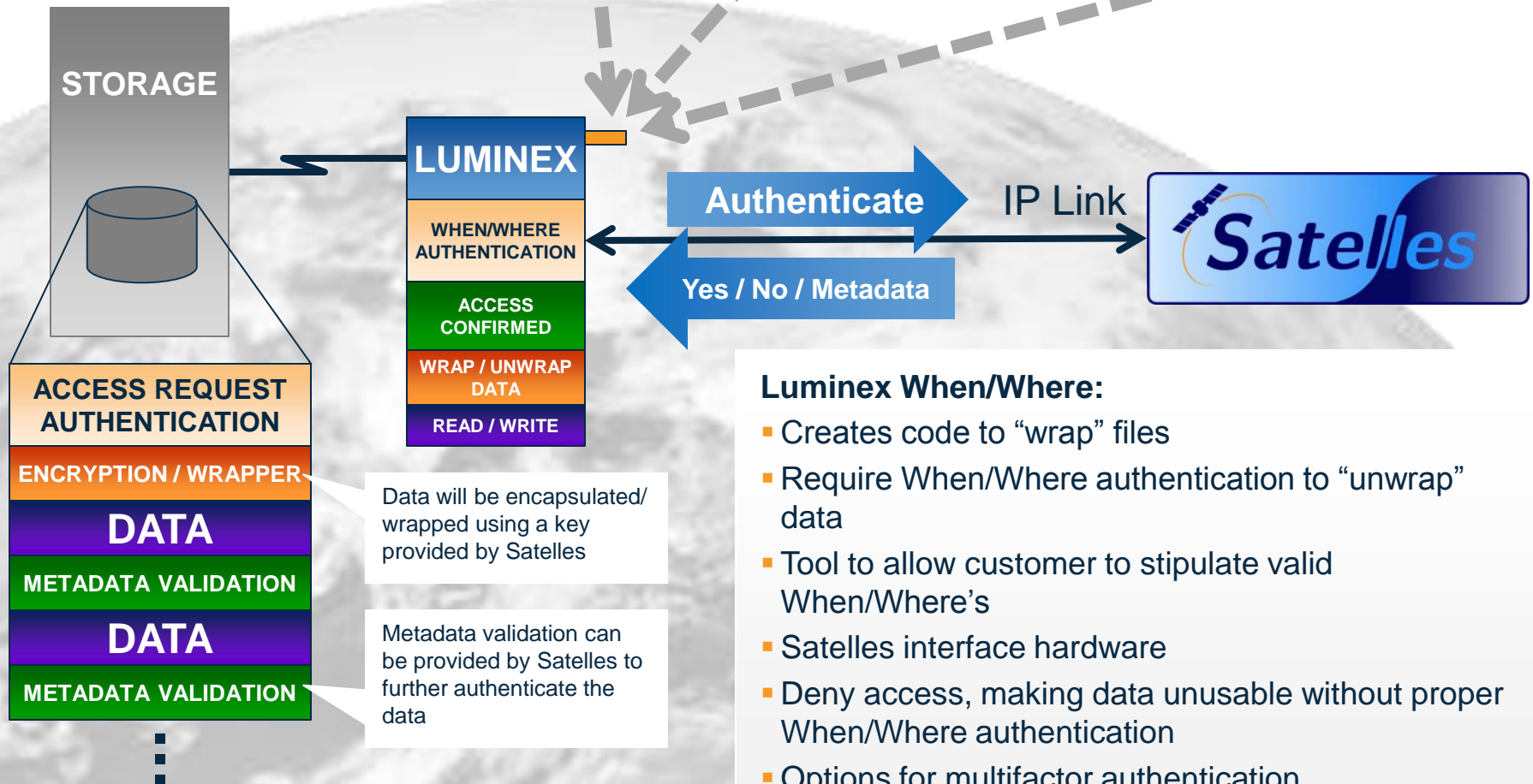
4. Close to GPS Band

Hardware is based on standard GPS chipsets

**The Iridium constellation is a deployed asset.
No other signal provides this key combination of features**

LUMINEX

When/Where



Luminex When/Where:

- Creates code to “wrap” files
- Require When/Where authentication to “unwrap” data
- Tool to allow customer to stipulate valid When/Where’s
- Satelles interface hardware
- Deny access, making data unusable without proper When/Where authentication
- Options for multifactor authentication

Mainframe Tape Performance Characteristics

LOCAL SITE

- Fast Read/Write Critical
- Frequent Activity



LOCAL SITE

- Fast Write Critical
- Read Speed Not Critical
- Frequent Activity

REMOTE SITE

- Fast Read during DR event/test 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

Category	Capacity (GB)	Current Volumes	% of Total	Cumulative % of Total
5+ Years	117,655.34	69,929.00	8.47%	8.47%
3+ Years - 5 Years	179,092.39	64,788.00	12.89%	21.35%
1+Years - 3 Years	260,912.72	94,375.00	18.77%	40.13%
181 Days - 1 Year	227,960.98	84,509.00	16.40%	56.53%
91-180 Days	153,766.02	57,078.00	11.06%	67.60%
61-90 Days	65,719.32	24,592.00	4.73%	72.32%
31-60 Days	61,356.24	20,044.00	4.41%	76.74%
0-30 Days	323,259.88	140,785.00	23.26%	100.00%
Summary:	1,389,722.89	556,100.00	100.00%	100.00%

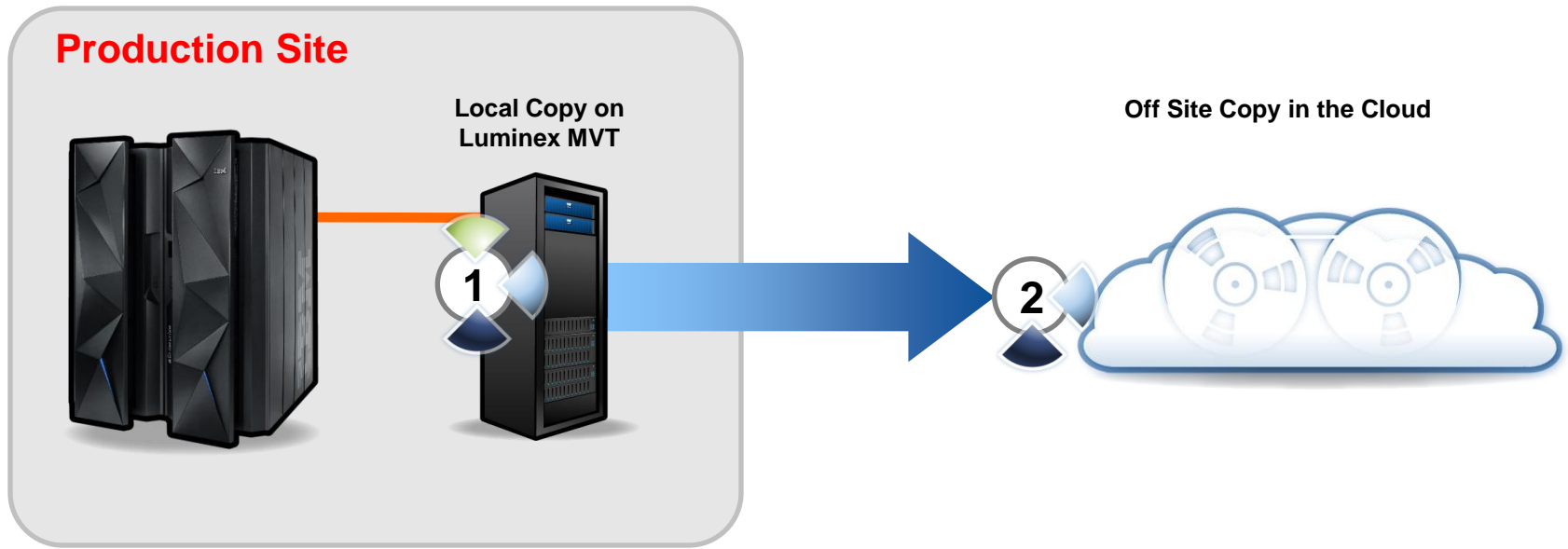
- ~68% of Tape data is more than 90 days old

Understand Your Data

Tape Analysis by Age Report

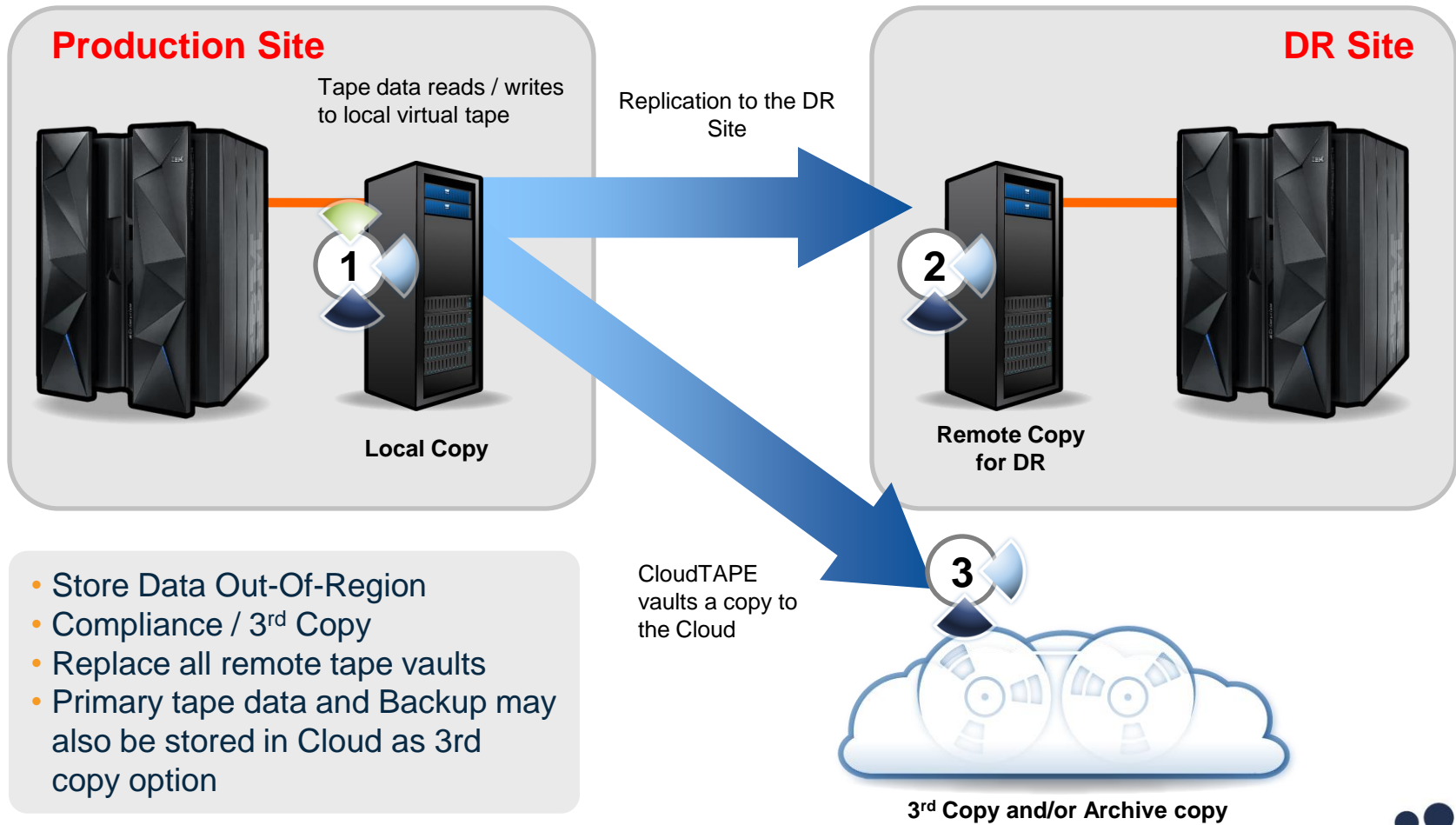
Category	Capacity (GB)	Current Volumes	% of Total	Cumulative % of Total
5+ Years	611,116.17	39,465.00	41.09%	41.09%
3+ Years - 5 Years	304,034.82	10,697.00	20.44%	61.53%
1+Years - 3 Years	437,680.34	41,195.00	29.43%	90.95%
181 Days - 1 Year	40,843.12	6,671.00	2.75%	93.70%
91-180 Days	38,887.56	10,059.00	2.61%	96.31%
61-90 Days	9,564.28	3,242.00	0.64%	96.96%
31-60 Days	11,030.01	3,815.00	0.74%	97.70%
0-30 Days	34,238.84	13,431.00	2.30%	100.00%
Summary:	1,487,395.13	128,575.00	100.00%	100.00%

Off Site Copy

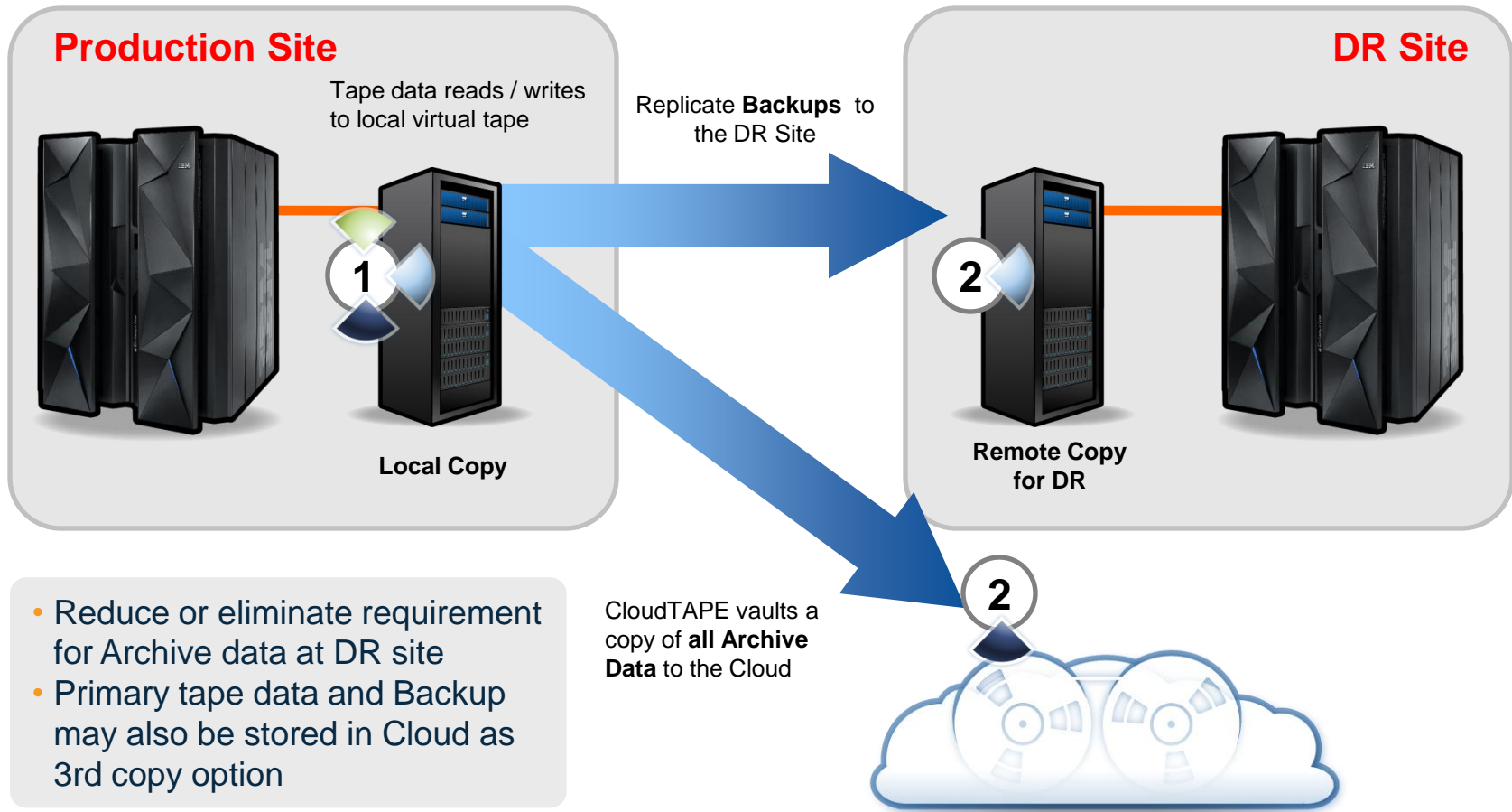


- Provide remote storage and redundancy without the cost and overhead of a dedicated DR or bunker site

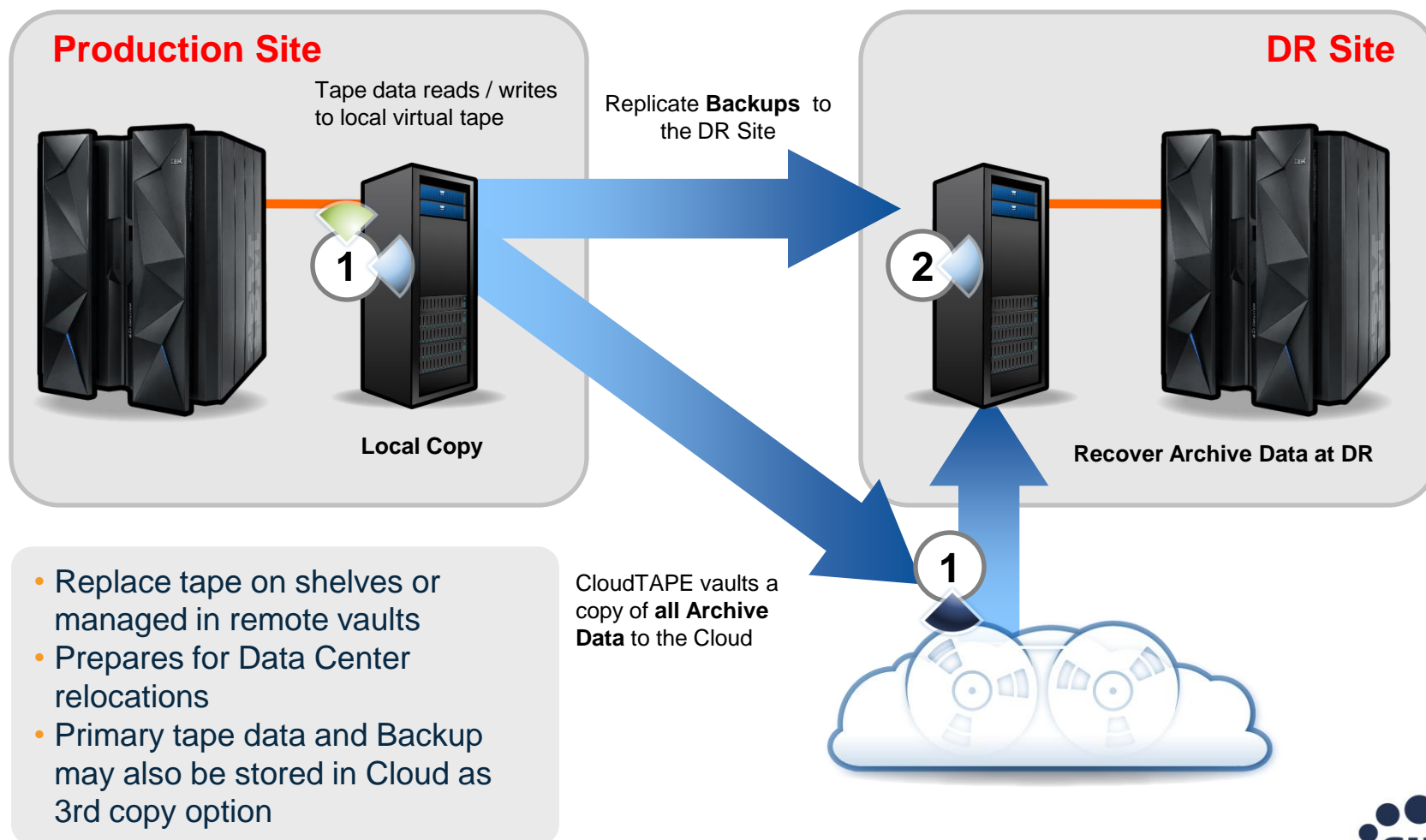
3rd Copy and/or Archive



2nd Copy, Archive Data not stored at DR

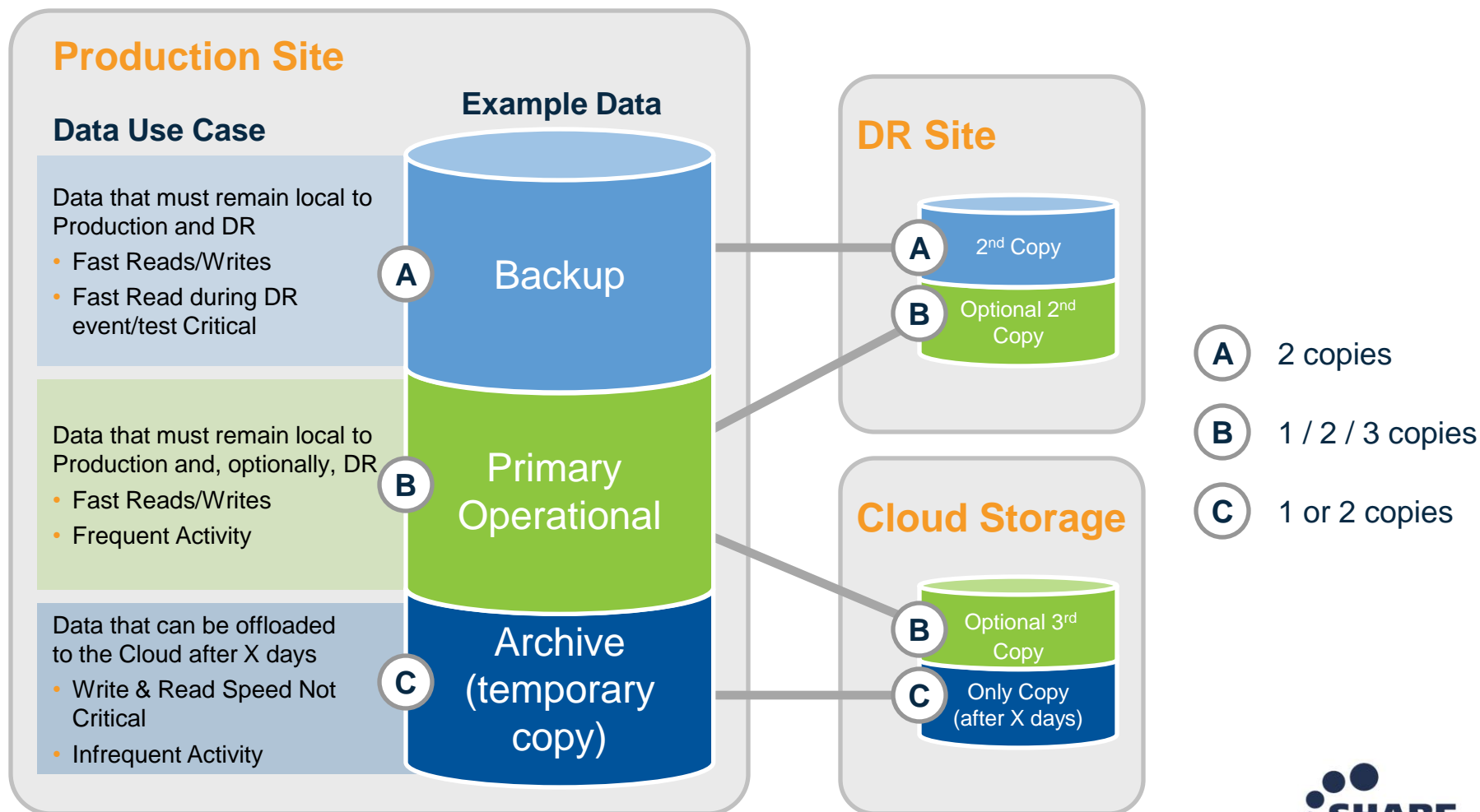


Offsite / Compliance / Deep Archive Stored Only in Cloud



How it Works

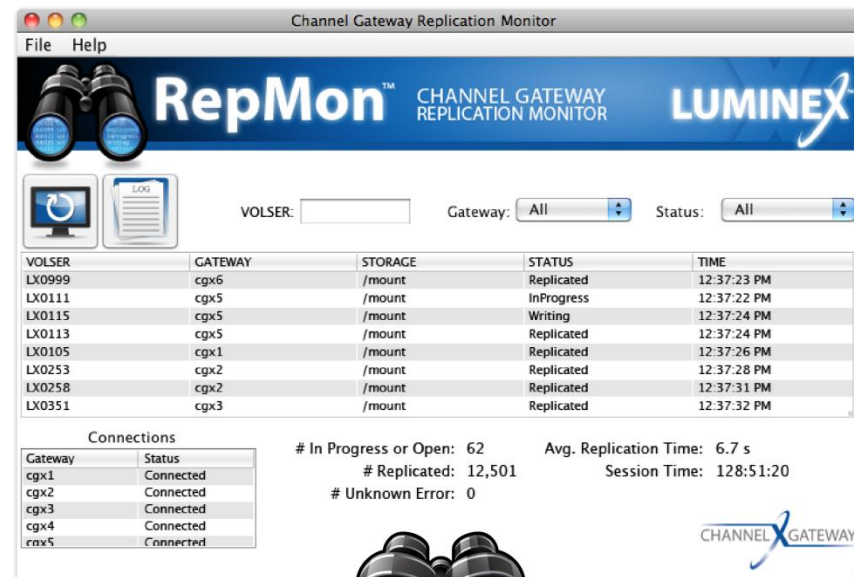
CloudTAPE Intelligent Storage Management



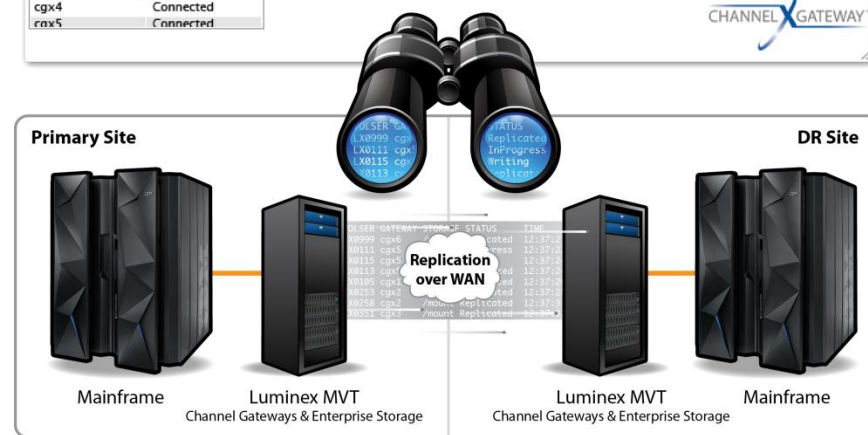
CloudTAPE Replication & Vaulting

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



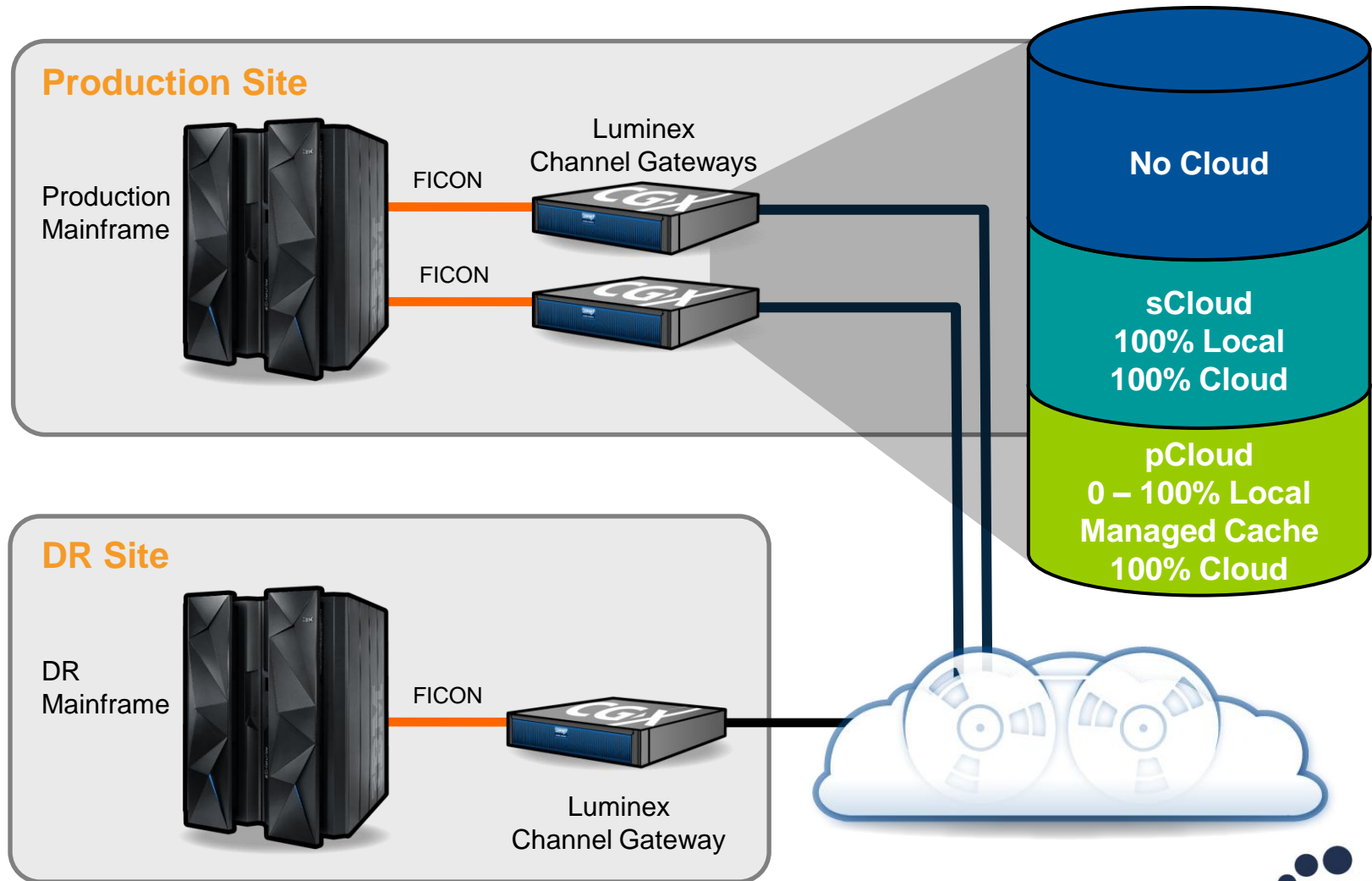
- Provides visual and audit capabilities to confirm when tapes are “in the cloud”
- Satisfy legal and audit concerns
- No chain of custody issues



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



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

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