

S H A R E

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Mainframe Tape Without Tapes – Users Share Their Perspectives

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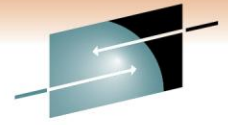
Tim Demonbreum

Systems Programmer

Ingram Entertainment, Inc.

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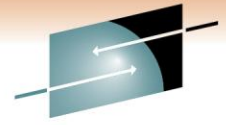


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Agenda

- What is Mainframe Tape?
- Why Physical Tape?
- Panel Discussion
- Additional Q&A

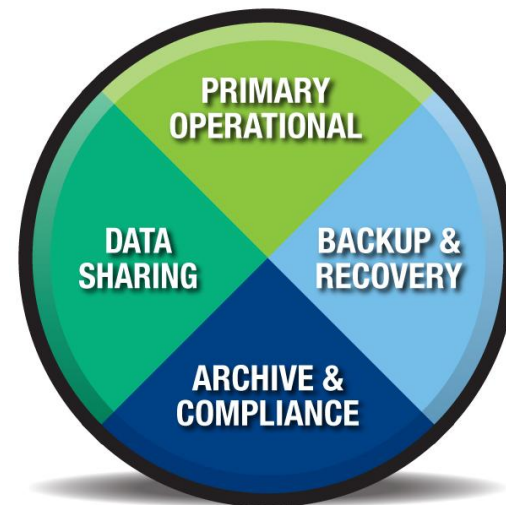
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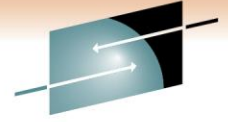


What is Mainframe Tape?

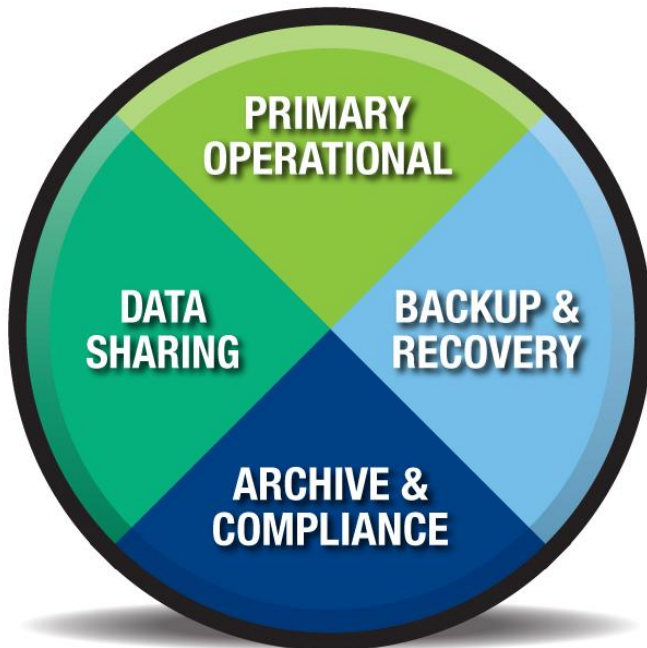
- The traditional storage pyramid presents tape at or near the broad spectrum at the base
 - Tape Drives?
 - Tape Libraries?
 - Tape Media?
 - Virtual Tape Systems?
- What criteria and conclusions?
 - Cost? TCO?
 - Workflow? ILM?
 - Performance?

- Mainframe Storage World takes a customer usage perspective
- The Four Major areas for Mainframe Tape usage



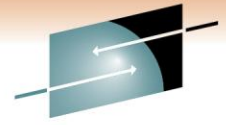


What is Mainframe Tape?

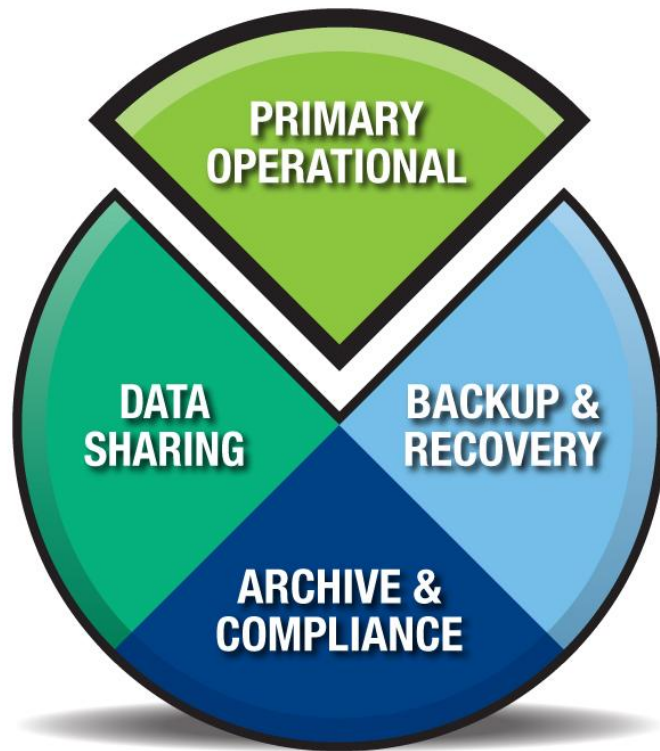


The Mainframe Storage World

- Primary copies of data
- Backup and Recovery
- Archiving and Compliance
- Sharing data internally and externally

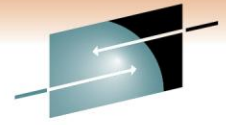


Why physical tape?

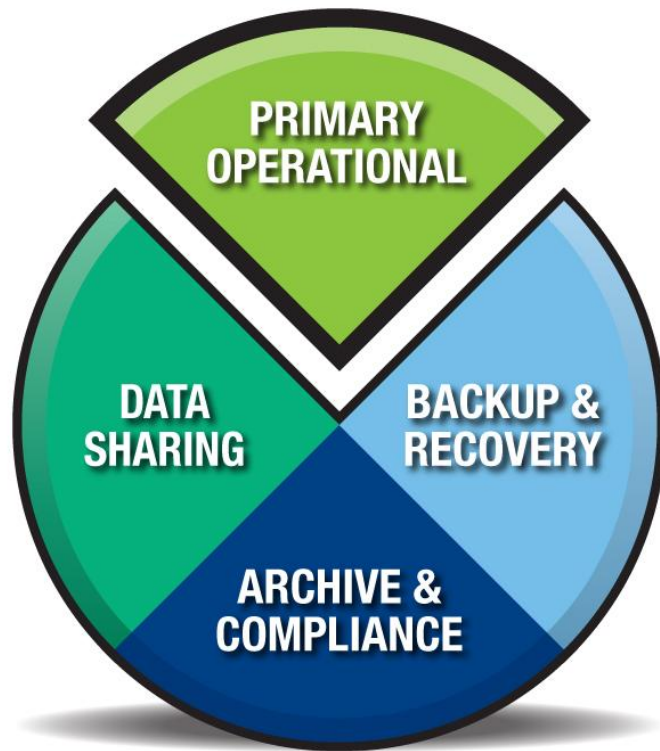


Most mainframe virtual tape products address this usage environment

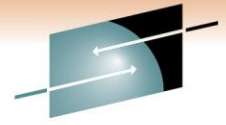
- Applications want disk-based response and performance with host tape management
- Tape drives designed and used like disk drives – 100% duty cycles with fast seek
- Virtual tape products eliminate media capacity waste



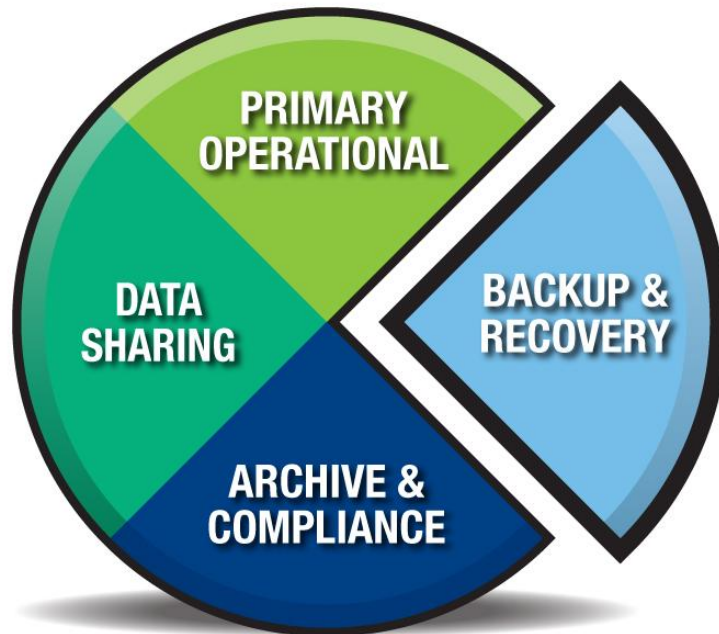
Why physical tape?



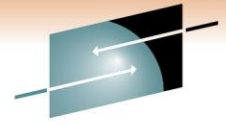
- For active data disk storage media is the naturally better fit than physical tape media
- What is the driving factor for physical tape media usage?
 - Portability?
 - Cost?
 - Power?
 - Performance?
 - Simplicity?
- For active data each goal can be served better without requiring physical tape media creation



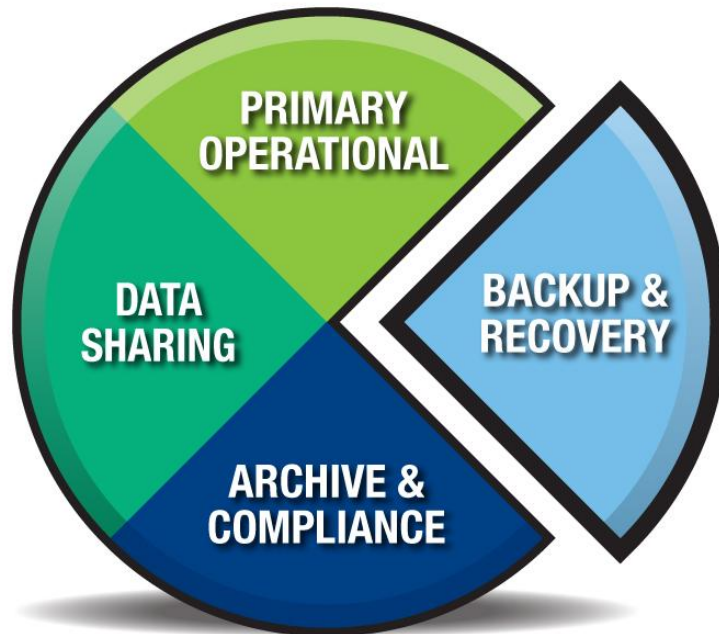
Why physical tape?



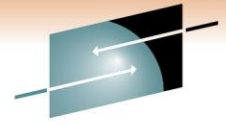
- Stand-alone and direct-attach library-based tape drives are commonly used
- Host-based backup software is able to fill physical media and stream large volumes quickly.
 - Large volume support not typical with traditional tape-dependent virtual tape systems
- Portability is a primary value with native mainframe format tapes



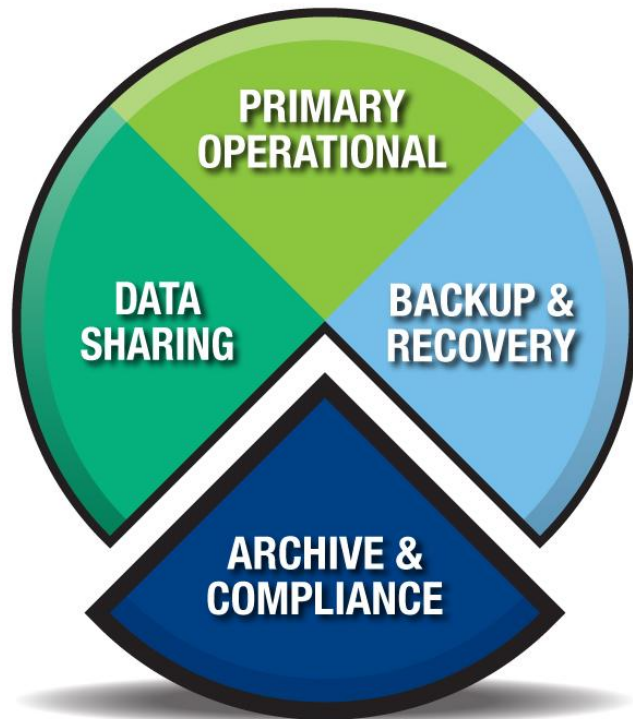
Why physical tape?



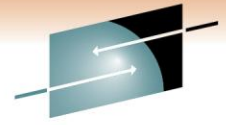
- Shipping unencrypted tapes has become a liability
- Open-systems infrastructure has demonstrated the viability of replicating backup data to remote recovery sites – especially with data deduplication
- Sharing network infrastructure with open-systems is viable (no channel extension) and simplifies enterprise IT operations
- RPO and RTO improved with disk-based replication vs. shipping tapes daily
- Local recovery is immediate



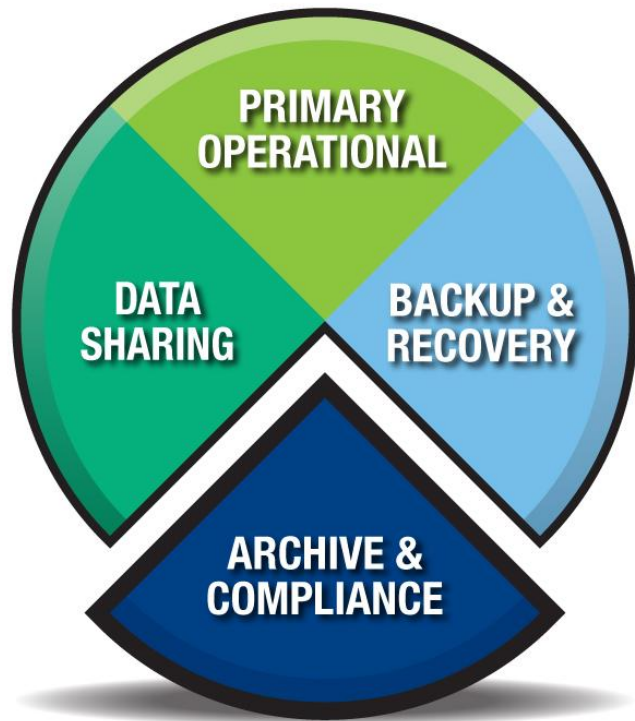
Why physical tape?



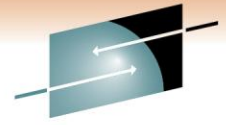
- Host archiving applications like HSM and OAM typically use direct-attached library based tape drives
 - Applications are intelligently designed to fill large physical tape media
- Shelf-based tape media is also common and viable



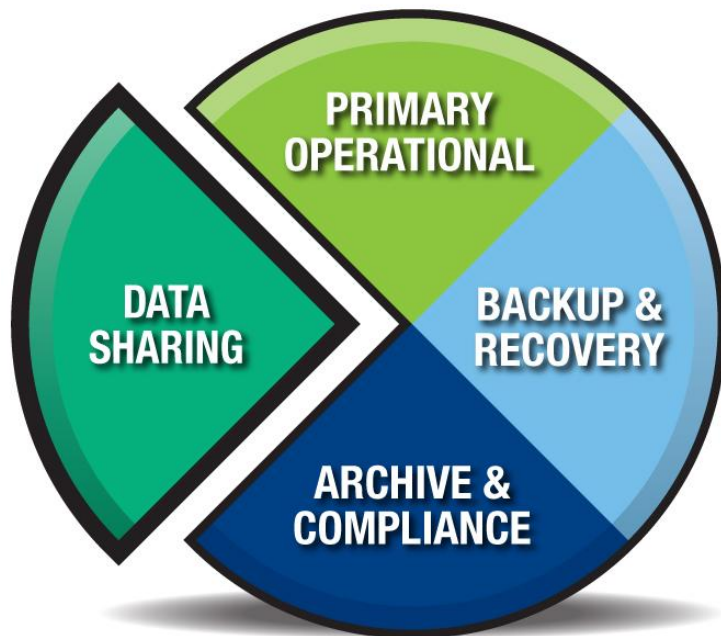
Why physical tape?



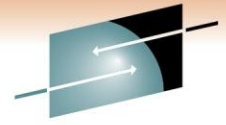
- The business need to access archive data quickly (internet response times) is growing
- Compliance requirements have generated an industry of capable disk-based archiving products
- A primary concern is long-term recoverability, which make industry standards more valuable than proprietary media solutions
- An evaluation of performance and TCO may yield surprising results for your environment, especially when leveraging the benefits of data deduplication



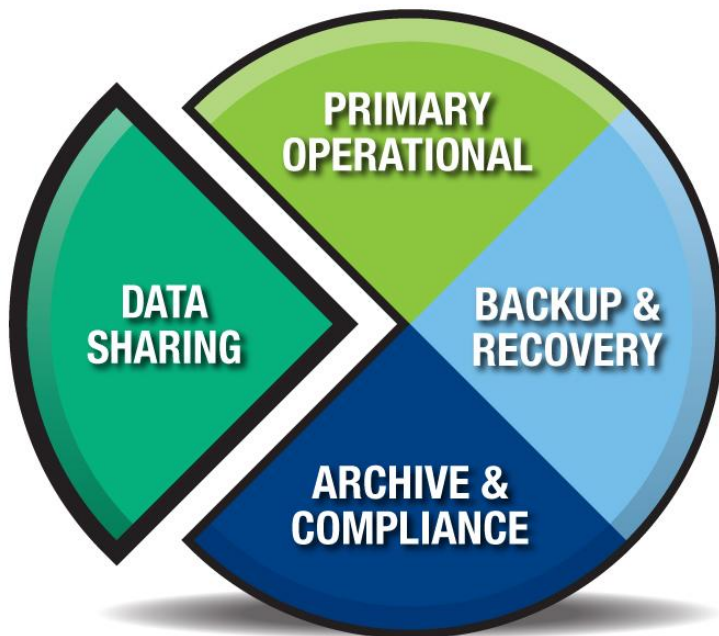
Why physical tape?



- Physical tape is often a common distribution media for sharing mainframe data to other internal hosts or to external customers and partners
- Multi-vendor common 36-track media formats are now quite old but are still being used
- FTP has taken over much of the external data distribution so that unencrypted physical tapes don't need to leave the datacenter



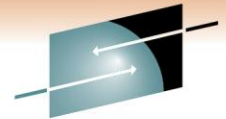
Why physical tape?



- Share datasets in-place between mainframes and open-systems networks and applications!
- Transfer data natively and efficiently using disk-based virtual tape for open systems access! Save CPU cycles compared to FTP by using channel-based transfers

Market Choices and Status

- Installed base of mainframe tape is primarily IBM and Oracle/Sun/StorageTek
- Leading virtual tape products (Sun VSM and IBM TS7740) primarily depend on physical tape
- There are several choices in mainframe disk-based virtual tape without physical tapes
 - Luminex Channel Gateway (with deduplication since 2006)
 - EMC/Bustech. EMC DLm announced Feb 2008
 - IBM TS7720 announced Fall 2008
 - Sun VSM disk-based announced Spring 2009
 - IBM TS7680 with deduplication announced February 2010
 - CA-Vtape



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Market Choices and Status

How do I choose between them?

- Customer Proven
- Replication Management
- Optimized Deduplication
- Scalability
 - Enterprise Capability
 - Entry-level options

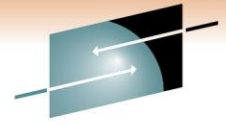


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Market Choices and Status

Where can I use the Channel Gateway?

- Improve disaster recovery RPO and RTO by replicating backups
- Improve performance for active and batch tape data
- Archive applications like hsm and OAM to benefit from virtualization and disk-based performance for recalls
- Simplify infrastructure and operations by creating common processes with open-systems
- Every datacenter that couldn't justify the cost to virtualize with traditional choices
- In VSE or to share infrastructure in multiple OS environments

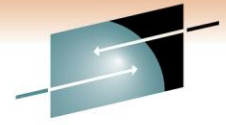


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Mainframe Tape without Tapes

- The benefits can't be ignored
- Today's Modern choices can't be dismissed
- Save \$, improve performance, reduce risk, improve RPO and RTO, and simplify infrastructure
- Your peers, large and small, have successfully reduced and eliminated physical mainframe tape already!
- The question has now shifted for every tape media created:

Why?



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Dealer Services

End User Experience

Greg Saccomanno

Systems Programmer

Wells Fargo Dealer Services





Dealer Services

About Wells Fargo Dealer Services

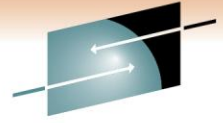


- One of the nation's largest auto dealer finance companies:
 - Headquartered in Irvine, CA
 - Regional offices serving 47 states
 - Servicing over 11,000 auto dealers



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Our Previous Environment

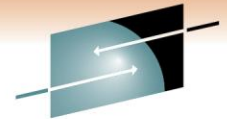


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- zSeries mainframe and 3590 tape drives
- Mainframe software – zOS, Batch, HSM/ML2 & DFdss
- Open systems software – ArcSight



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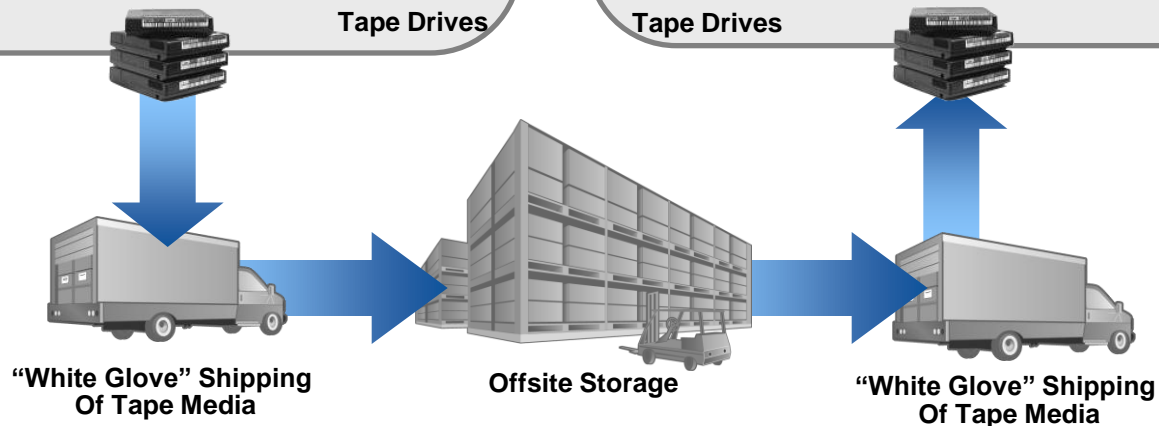
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Our Previous Configuration

Production Site in Irvine, CA



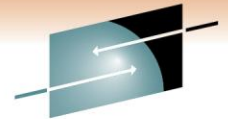
DR Site - Out of State





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Our Challenges & Goals



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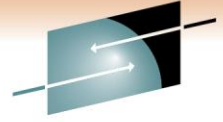
- Protecting sensitive tape data was our #1 priority (Upgrade tape data security)
- Physical tape limited our options for improving the RPO & RTO
- We needed to upgrade our aging tape products
- We wanted to reduce/eliminate physical tape
- Sharing virtual tape storage between mainframes & open systems was preferred

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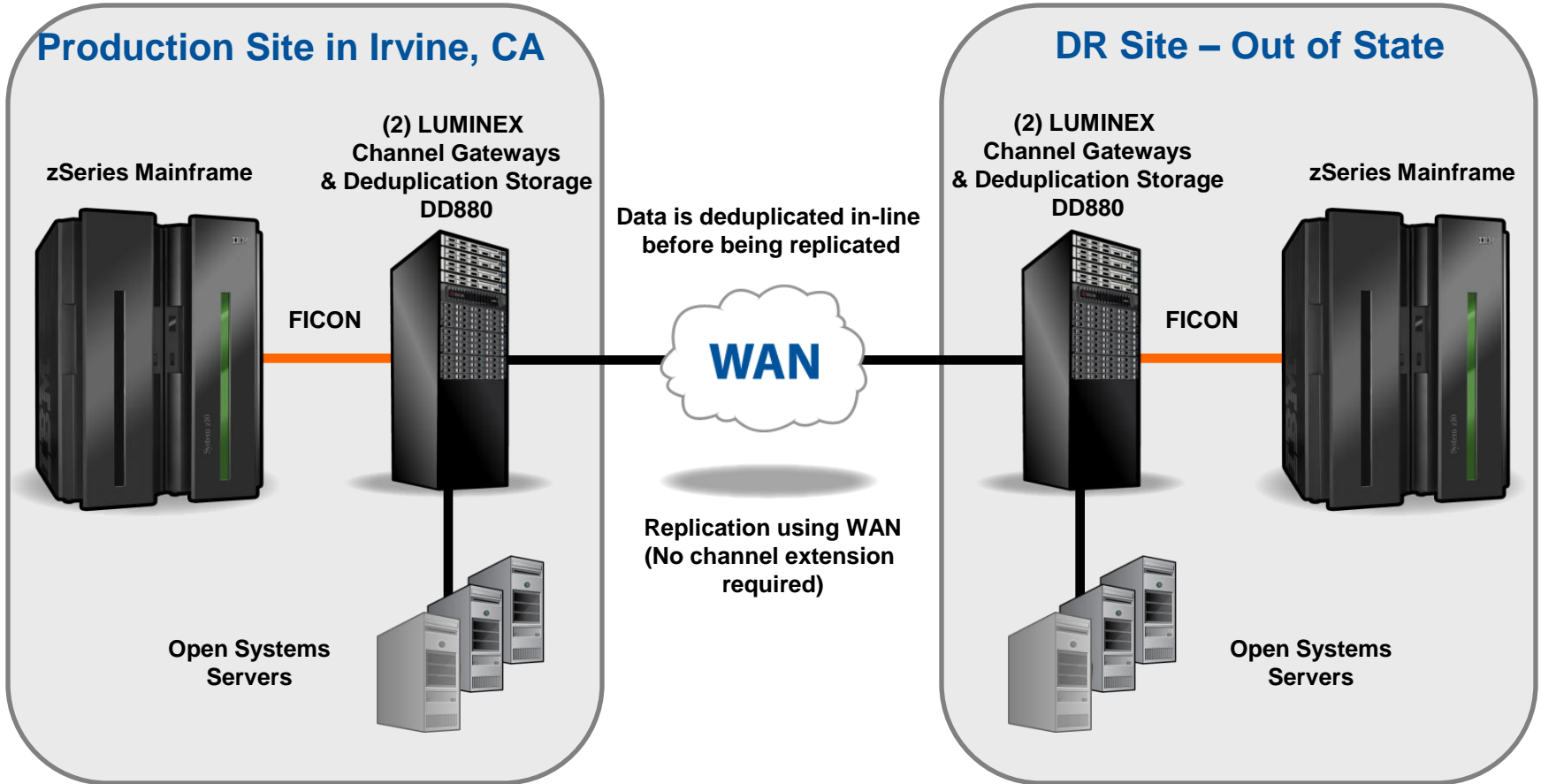


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Our New Environment



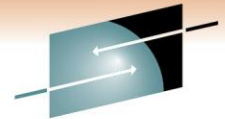
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Our New Environment



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Replication Monitor
Management interface for local and remote status of mainframe tapes being written and replicated

Virtual Status Replication Monitor

File Help

LUMINEX
ENLIGHTENED | STORAGE™

MODERN MAINFRAME VIRTUAL TAPE

Volser: Host: Status:

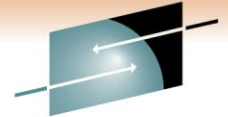
Volser	Channel	Storage	Status	Time
fds222	cg100	/ddmnt	Close	2:19:45 PM 2010.07.09
iou888	cg100	/backup/here	Close	2:19:42 PM 2010.07.09
abc123	cg100	/ddmnt2	Query	2:20:33 PM 2010.07.09
lol555	cg100	/ddmnt	Close	2:19:42 PM 2010.07.09
oih879	cg100	/ddmnt	Close	2:19:42 PM 2010.07.09
dsi840	cg100	/ddmnt	Close	2:19:42 PM 2010.07.09
lsi395	cg100	/ddmnt	Write	2:19:42 PM 2010.07.09
tru989	cg100	/backup/here	Close	2:19:42 PM 2010.07.09
lil333	cg100	/ddmntsd/sfdsael/fesdd	Close	2:19:42 PM 2010.07.09
afk543	cg100	/backup/here	Query	2:19:42 PM 2010.07.09
lki000	cg100	/dfa/go/here	Close	2:19:42 PM 2010.07.09
pop111	cg100	/ddmnt2	Close	2:19:43 PM 2010.07.09


Avg. Replication Time: 5.67 s Number currently open: 12
Replicated: 9 Session Time: 1:31

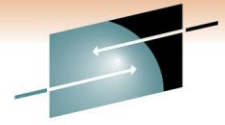
CHANNEL X GATEWAY™

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How Did We Do?



- 
- ✓ We achieved our goals!
 - ✓ Replication of tape data to the DR site is completed 5 hours before tapes would be picked up for shipment from the production site
 - ✓ Tape data protection and security has been upgraded
 - ✓ We've reduced/eliminated internal tape use!
 - ✓ Physical tape drives only kept for reading tapes provided by partners or vendors
 - ✓ We're using existing, spare network bandwidth for remote replication
 - ✓ Tape recalls are nearly as fast as ML1 disk
 - ✓ Batch job times have been reduced by up to 50%
 - ✓ REPMON enables us to monitor & verify that each tape volser has been successfully replicated to the DR site



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End User Experience

Mike Soursby

Manager, Data Center Services

Kawasaki Motors Corporation

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About Kawasaki Motors Corp., U.S.A.



- Kawasaki Motors Corp., U.S.A.(KMC) is a leading provider of sport bikes, cruises, rugged ATV, utility vehicles and watercraft products:
 - Headquartered in Irvine, CA
 - 40 IT employees
 - 420 employees and more than 1500 dealers

Our Challenges & Goals

- 
- ❑ The 3494 tape library with 3590 drives was at its limit & required an upgrade
 - ❑ The tape library upgrade would have required an add'l frame & we didn't have the add'l computer room space
 - ❑ The maintenance cost for the tape system was too high
 - ❑ We wanted to eliminate physical tape use for the mainframe & open systems
 - ❑ We required simplicity in tape operations & ease of use
 - ❑ Off-site recovery plan improvements were required



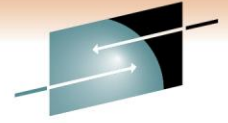
Our Previous Environment



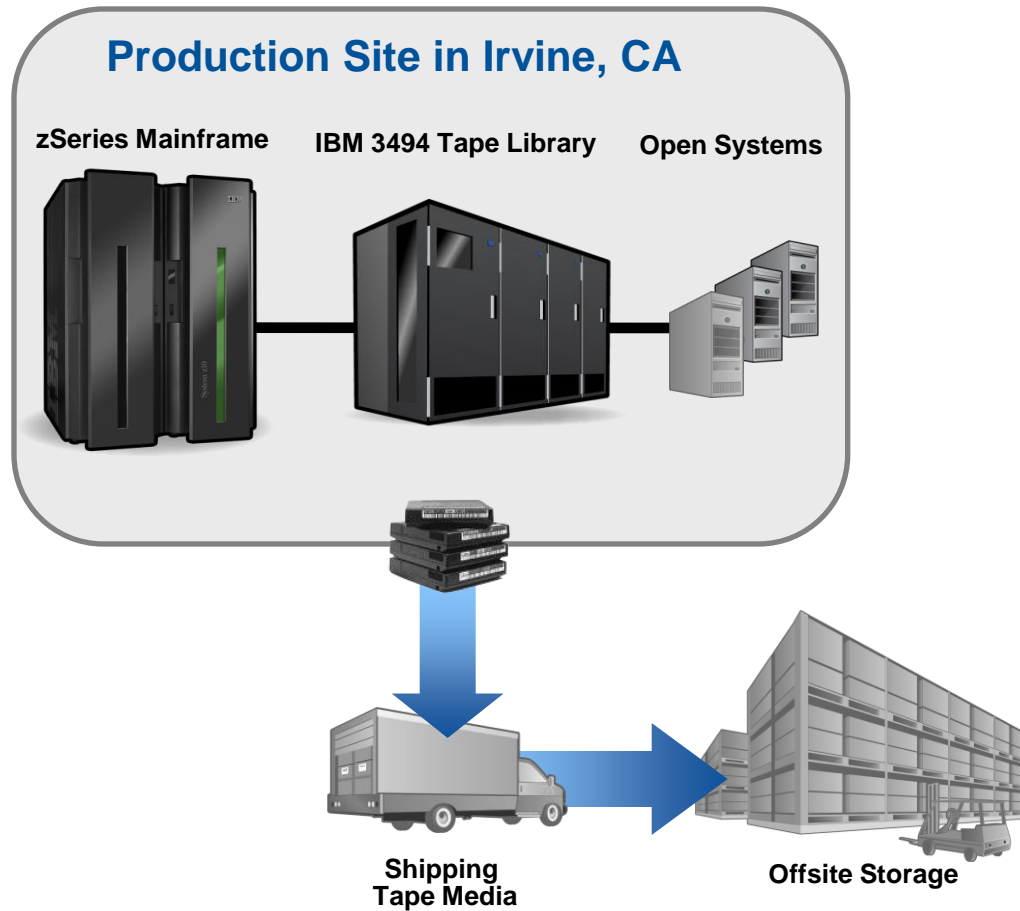
- zSeries mainframe, IBM, 3494 tape library, (16)3590 drives shared across mainframe & open systems
- Mainframe software – zOS, FDR ABR for backup
- Open systems backup software – TSM



Our Previous Environment



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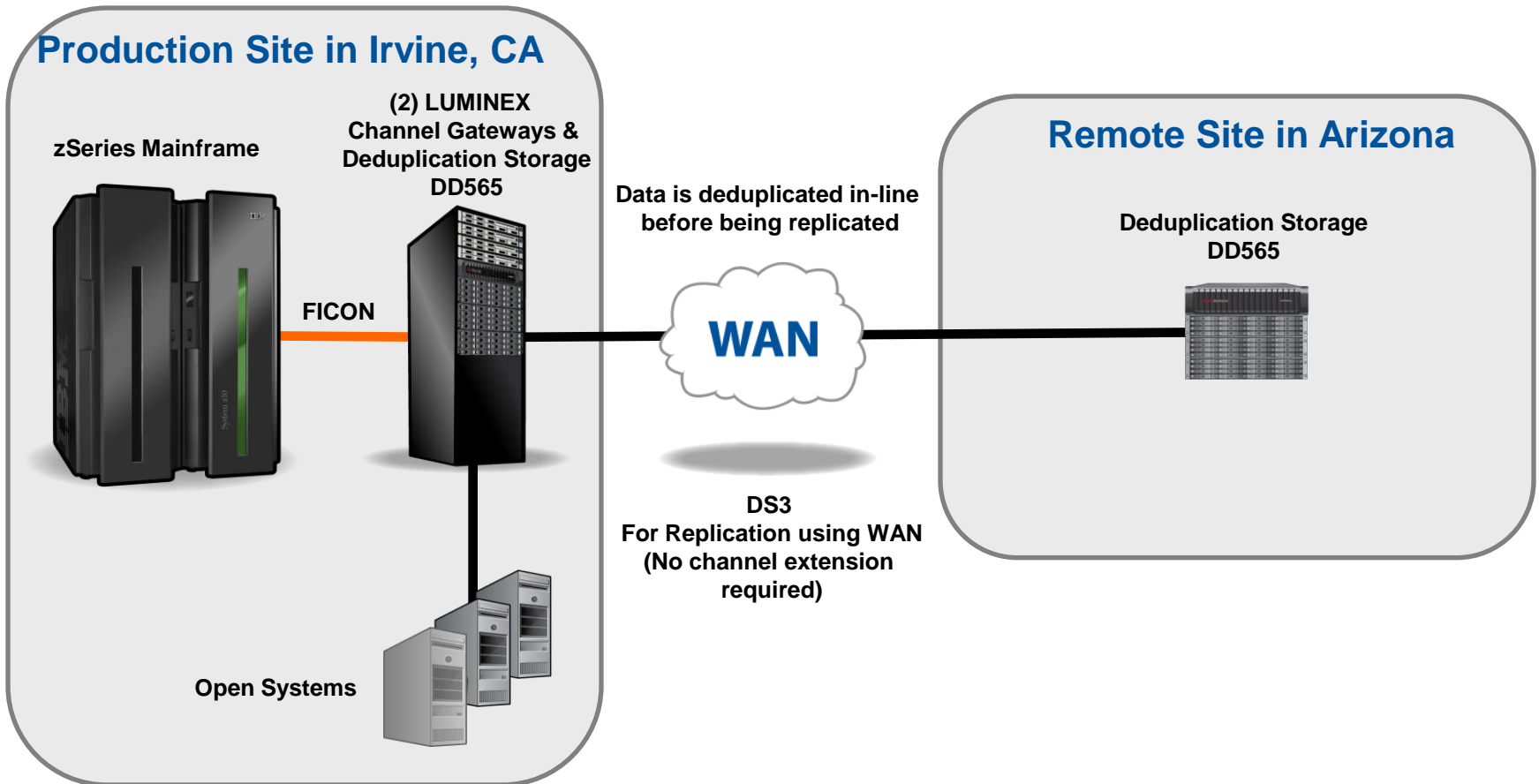
Deduplication Performance




			DEDUPLICATION RATE	STORAGE REDUCTION
Currently Used (GB):	Pre	81,208.6	12.8x	92.2%
	Post	6,324.1		
Last 7 Days:	Pre	9,535.3	25.0x	96.0%
	Post	381.4		
Last 24 Hours:	Pre	1,377.8	30.4x	96.7%
	Post	45.3		

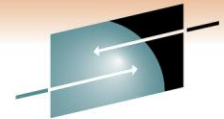


Disaster Recovery Configuration



How Did We Do?

- 
- ✓ We achieved our goals!
 - ✓ 100% tapeless
 - ✓ Reclaimed floor space – we moved the entire computer room into the tape room with VM Ware virtualization
 - ✓ Easy off-site recovery – virtual tape data is immediate available
 - ✓ Easier to upgrade
 - ✓ Easier to use on a daily basis and virtual tape storage (deduplication storage) is shared between the mainframe and open systems



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End User Experience

Tim Demonbreum

Systems Programmer

Ingram Entertainment, Inc.





About Ingram Entertainment



- A leading national distributor of home entertainment products:
 - Headquartered in La Vergne, TN
 - 15 locations across the U.S.
 - Servicing over 10,000 retail accounts

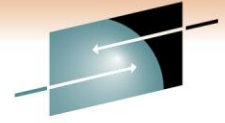


Our Previous Environment



- zSeries mainframe, IBM VTS, 3494 tape library, 3490 & 3590 drives
- Mainframe software – zOS, batch & DFDSS
- Distributed Systems – MS Exchange & SQL servers
- Open systems backup software – CA ARCserve

Our Previous Environment

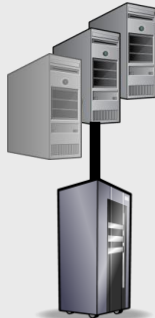


Production Site in La Vergne, TN

zSeries Mainframe

IBM VTS

Open Systems



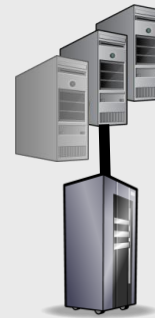
Tape Library

Third Party DR Site

Open Systems

IBM VTS

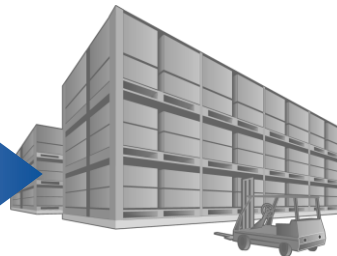
zSeries Mainframe



Tape Library



Shipping
Tape Media




Offsite Storage

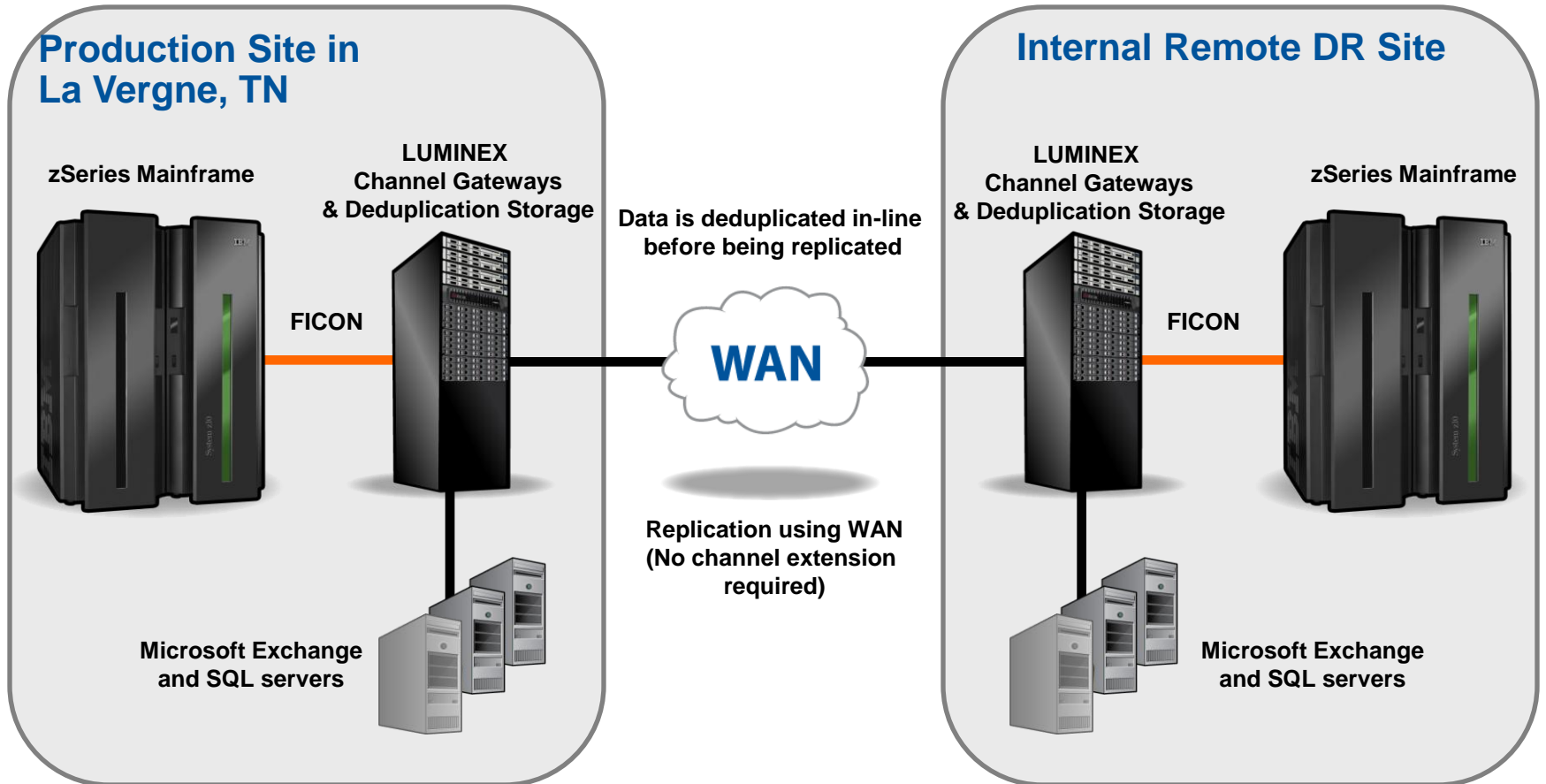
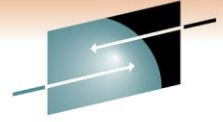


Shipping
Tape Media

Our Challenges & Goals

- 
- Replace the aging tape infrastructure
 - Eliminate frequent physical tape failures
 - Reduce the cost of maintenance, media, shipping and storage
 - The physical tape backup & recovery product was inadequate
 - Implement a self managed DR plan
 - Reduce/eliminate 3rd Party DR site cost \$\$\$
 - Eliminate tape media, shipping & tape storage requirements
 - Reduce network bandwidth requirements for remote replication of tape data
 - Improve, unify & simplify the DR Plan

New Environment






Deduplication Performance



			DEDUPLICATION RATE	STORAGE REDUCTION
Currently Used (GB):	Pre	16,646.9	10.1x	90.1%
	Post	1,653.9		
Last 7 Days:	Pre	7,398.2	21.5x	95.4%
	Post	344.0		
Last 24 Hours:	Pre	764.4	22.5x	95.6%
	Post	33.9		

How Did We Do?

- 
- ✓ We achieved our goals!
 - ✓ Business benefits and results:
 - ✓ 90%+ reduction in storage & network requirements
 - ✓ By achieving up to 20X deduplication rates
 - ✓ Eliminated tape use!
 - ✓ Reclaimed substantial IT floor space
 - ✓ Reduced cost
 - ✓ Implemented an internally managed DR site
 - ✓ Established a common, simplified DR plan
 - ✓ For mainframe & distributed systems