

CA's Cloud Storage for System z

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Is the Data on Your Tape Really Secure??



The Industry: Cloud Storage

- Forrester- calculates up to a 74% savings from using cloud for file storage as opposed to on-premise storage.
- Gartner- 80% of CIO's believe the mainframe is the essential to their cloud infrastructure
- IDC- 2013 will see widespread adoption of Amazon Glacier with support from cloud gateway vendors, ISVs, and cloud service providers. Leading use cases will be disaster recovery, backup, and fixed content long-term retention.

*File Storage in the Cloud is Cheaper than In-House, August 2011

*Gartner Data Center Conference Presentation, 2012

*IDC "Worldwide Storage 2013 Top 10 Predictions"

CA's Cloud Storage for System z

- CA Technologies has united System z (mainframe) and cloud.
- Partnership with Amazon and Riverbed Technologies
- Helps customers reduce cost, improve storage operations and speed delivery of applications on System z.
- CA Cloud Storage for System z
 - When used with Amazon Web Services (AWS) and Riverbed Technologies, CA Cloud Storage for System z enables customers to back up data processed by System z to AWS and helps shrink data center storage costs to pennies per gigabyte.
 - Help reduce dependency on storage hardware by up to 60%.
 - Improves disaster recovery posture and response time for data recall.
 - Gives customers choice when it comes to how they back up data processed on System z – cloud, tape or disk.

The Storage Challenge

Steady demand for storage for decades

New devices and media constantly added

Storage acquisition process complex, lengthy

Mandate: reduce storage, management costs

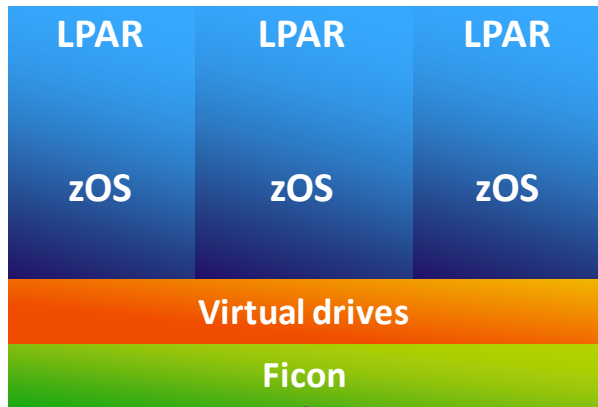
Flexible, scalable storage solutions needed

Innovative, reliable storage capabilities desired

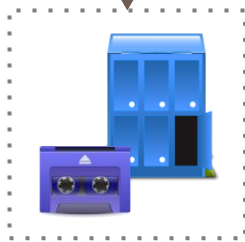
Cloud Capacity-on-Demand perfect for System z

Store, protect, archive, and recover System z data

A Traditional Storage Configuration



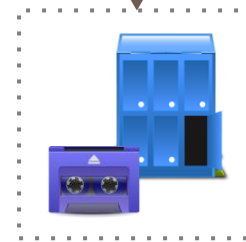
W
A
N



**Tape Library
PRIMARY**



**3390 DASD Subsystem
Volser Ranges
VV0000-VV4999**



**Tape Library
DUPLEX**



**3390 DASD Subsystem (Mirror)
Volser Ranges
VV0000-VV4999**

CA Cloud Storage for System z Enabling Partnerships

Partner



Enabling Capability

- Public cloud computing platform
 - Amazon S3: Simple Storage Service)
 - Amazon Glacier: Online file storage
 - NASDAQ: AMZN (FY12 Rev: \$61B)
-



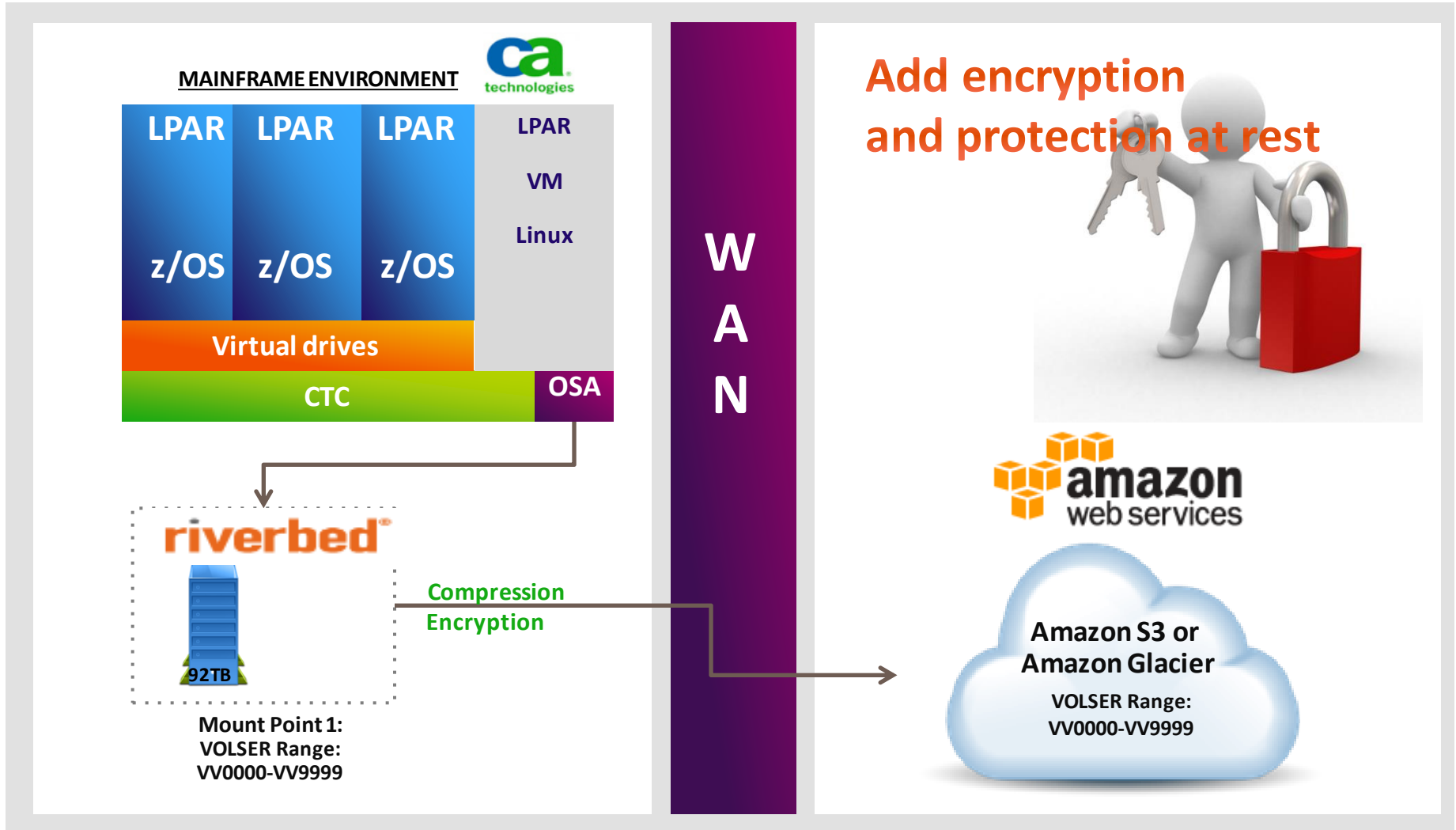
- Storage appliance provider
 - Whitewater HW Appliance
 - Whitewater SW Appliance
 - NASDAQ: RVBD (FY12 Rev: \$837M)
-



- Tape virtualization software
- Cloud enabling Software
- Gateway to open systems from system z
- Patent-pending technology

Solution Overview:

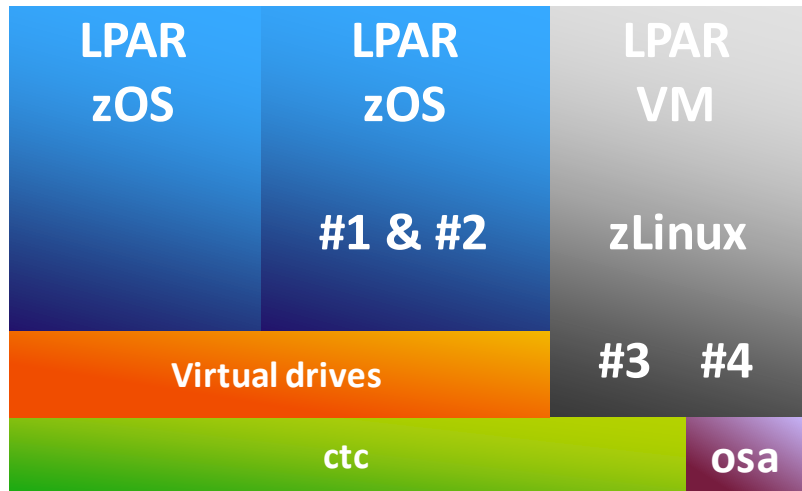
CA Cloud Storage for System z



Add encryption and protection at rest



How CA Cloud Storage for z Works



NFS Appliance



**Mount Point 1:
VOLSER Range:
VV0000-VV9999**

1. Tape writes are intercepted and data is virtualized
2. TCPIP is used to connect between z/OS and Linux. The Linux listener accepts the connection and forks a new process to do the work on behalf of the virtual drive.
3. IO are intercepted and the data is moved to 4MB Buffer.
4. CTC pipe is used to transfer data to Linux on z
5. Linux on z writes to any NFS/NAS hardware system

The NFS appliances are leveraged for high performing data deduplication and compression algorithms

Why do I Need Linux on z?

- Objective is for the solution to use as little general processor as possible
 - Utilize zIIP when available
 - Utilize IFL when available
 - If specialty engines are not available then general processors are used
- Why not go directly from z/OS to NFS?
 - The z/OS NFS Client adds 20x CPU which is not zIIP eligible
- Ok, then why not use x86 Linux instead of Linux on z?
 - IFL provides unparalleled performance. We know there will be a general CPU increase, although not as costly as with z/OS NFS Client.

CA's Cloud Storage for System z



January 17, 2014



Whitewater Delivers the Benefits of Cloud Storage

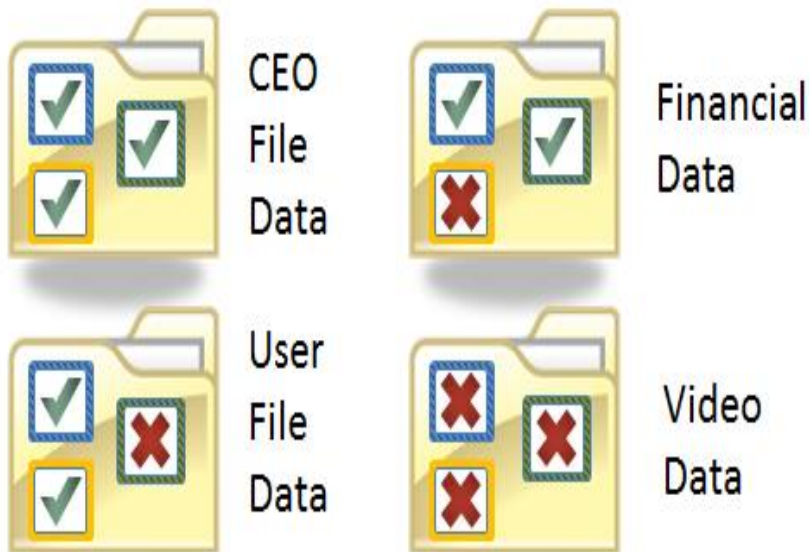
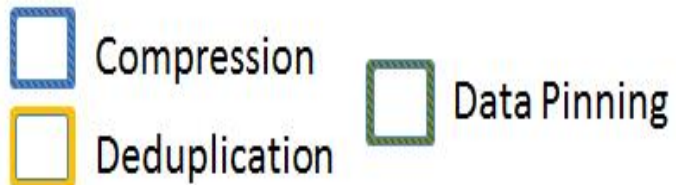


Whitewater is a purpose built storage appliance, optimized for data protection and archiving, that seamlessly integrates cloud storage into your infrastructure to deliver instant recovery, end to end security, and the industry's most cost-effective storage for backup and archive data

Whitewater appliances enable organizations to:

- Reduce storage costs by up to 80%*
- Achieve instant data recovery while reducing risk*
- Seamlessly integrate with leading backup and archiving applications*
- Slow storage growth by archiving data to the cloud*

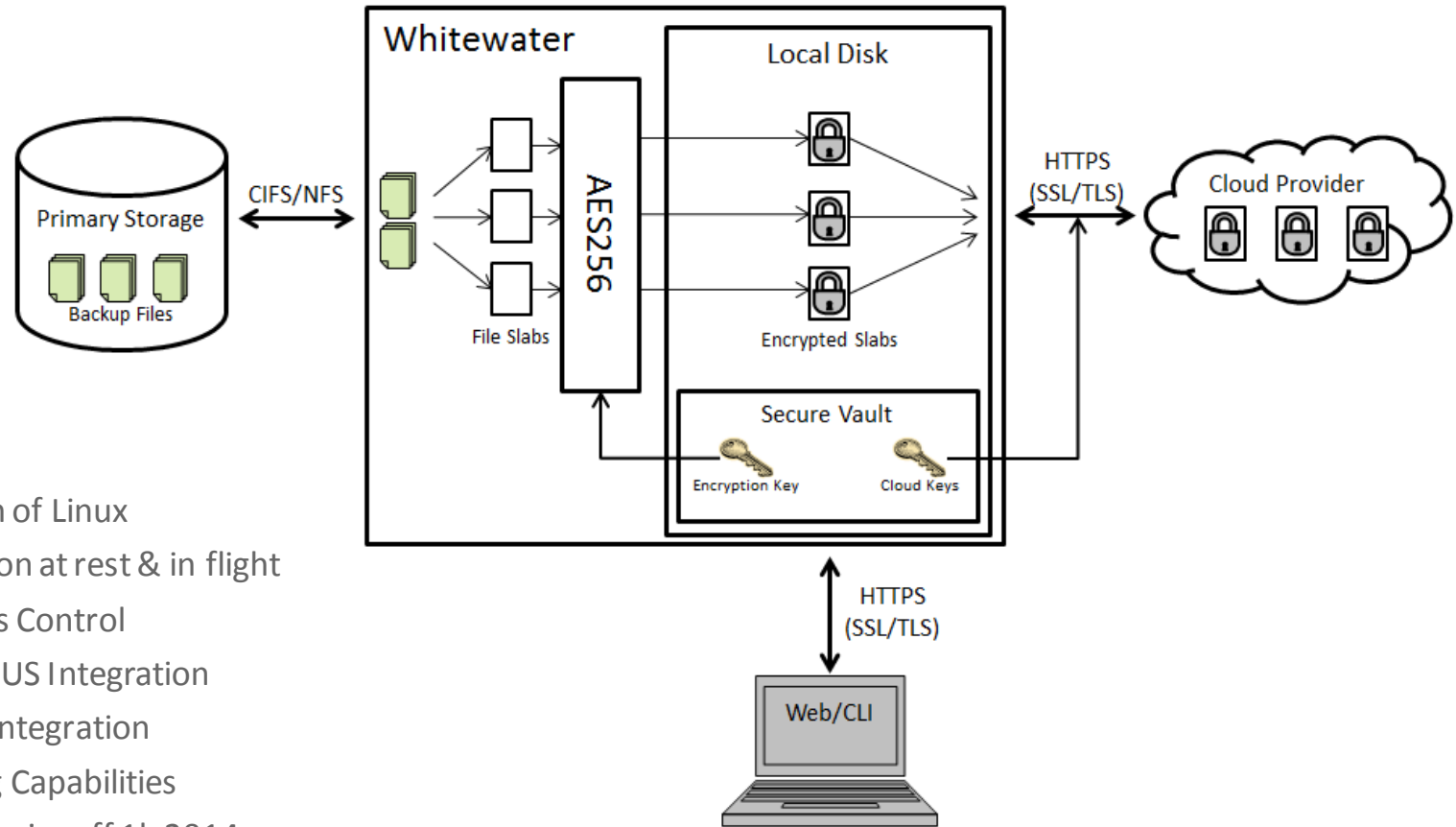
Data Management



Compression, deduplication, data pinning and early eviction can be selectively applied for each share to tune performance and provide unmatched control and flexibility:

- Deduplication – disable for encrypted data
- Compression – disable for optimized file types like video/images
- Share Pinning – guarantee selected data sets are always instantly accessible
- Early Eviction – prioritize data sets stored within the local cache
- Eliminate processing to meet regulatory requirements limiting data format changes

Whitewater Security



- Hardened Version of Linux
- AES-256 Encryption at rest & in flight
- Role Based Access Control
- TACACS and RADIUS Integration
- Active Directory Integration
- Extensive Logging Capabilities
- FIPS 140-2 Level 1 signoff 1h 2014

CA's Cloud Storage for System z



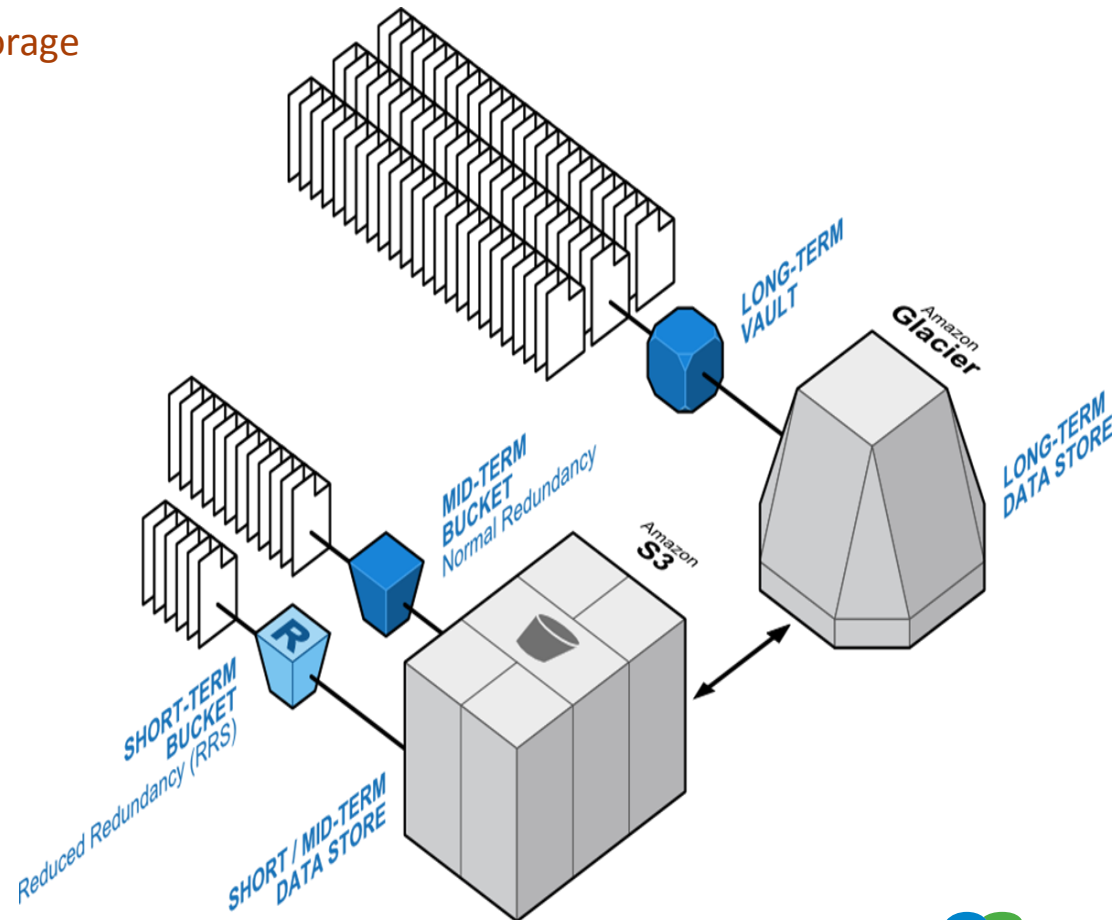
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AWS Storage: Amazon S3 and Amazon Glacier

Object Lifecycle Management: Amazon S3 → Amazon Glacier

- Highly scalable, reliable, geo-diverse storage
- Designed for 99.999999999% durability
- Data lifecycle policies automate tiering
- \$0.01 per GB for Amazon Glacier costs
- Authentication mechanisms keep data secure
- Seamlessly move data from Amazon S3 → Amazon Glacier



What are Our Customers Saying?

I want to try this out as soon as possible

Very Compelling

I definitely see a use for this with my tape workloads

Innovative

The Future is Now for System z and Cloud!

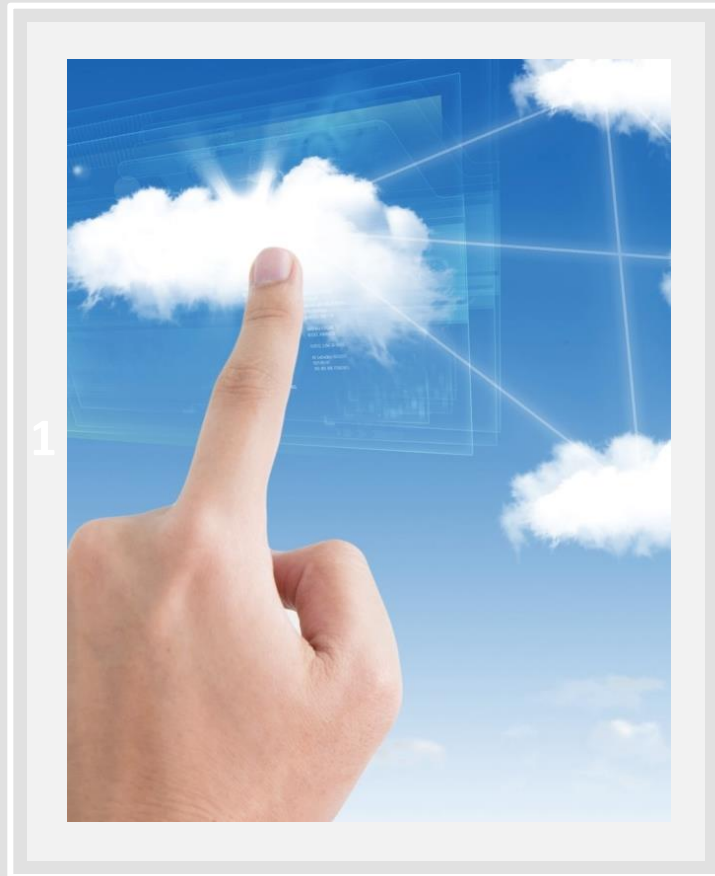
Perfect! for System z Backup and Archive

What are the Costs?



All in!
Pennies Per GB per Month

Summary



Innovation delivered!

A Cloud-enabled
enterprise storage
solution that reduces
cost, protects data
and is easier to
manage

For More Information please contact...

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Services, and IT Staffing & IT Project Management

