Hybrid Cloud Backup and Restore Optimization Ransomware Risk Reduction with StorSafe VTL
Common Benelux, Tilburg

FalconStor StorSafe VTL for Power
**Guy.Berlo@FalconStor.com**

FALCONSTOR   **IBM**

Protecting your data with virtual tape is the last line of defense

Manage you risk:

- War, Political changes, Merger/Acquisition
- Externalisation of Services
- Cyber Insurance cost
- Compliance requirements, Copy in Country for tax reason
- Meet DORA requirements
- Protection against Ransomware
- External threats, corrupting your backup application, insider threats
- Human Factor of loading the wrong tape
- Hardware failure drive, tape, library, no more spare parts…
- Externalisation costs for physical tape storage

Complement or Replace Backup to Tape
StorSafe VTL supports existing tape processes

IBM i/AIX → Magnetic Tape

StorSafe VTL

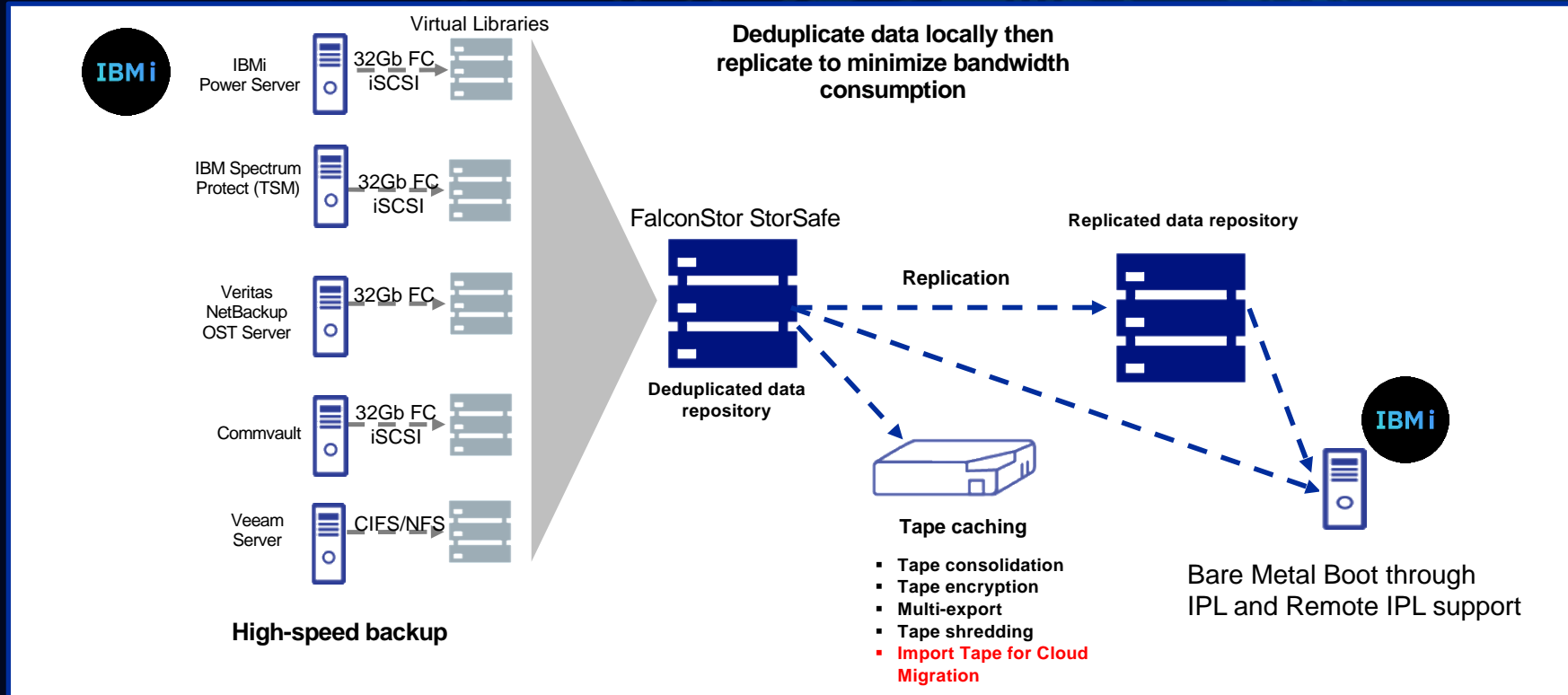IBM i/AIX → StorSafe VTL

Virtual Tapes
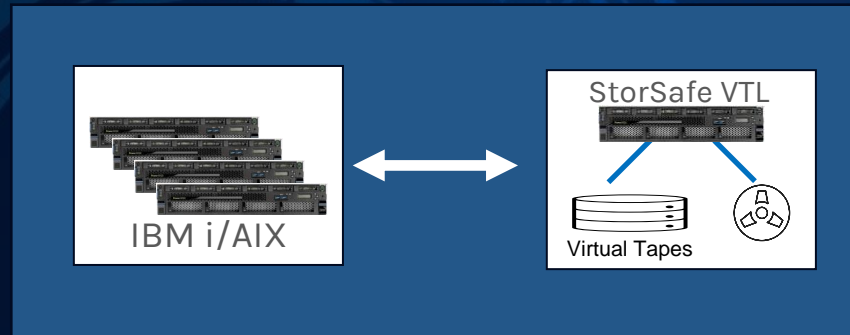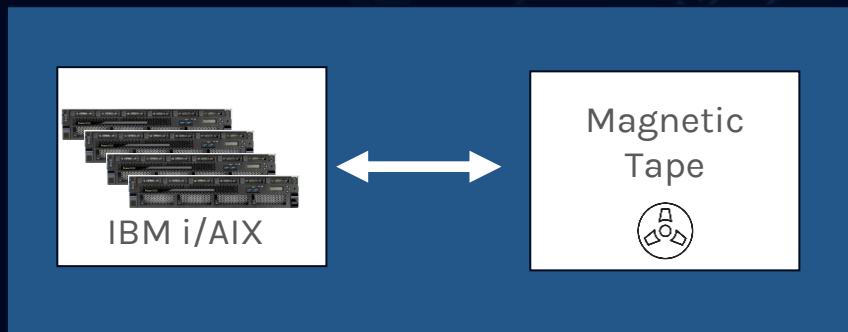
Possible issues include:
- On-prem backups and restores are too slow
- "Forklift upgrades" of backup appliances are cumbersome
- Physical tapes and manual procedures are overwhelming

Benefits include:
- On-prem backups and restores are faster
- Continued use of physical tape if desired
- Easier offsite storage and access
- Replicate to cloud for ransomware protection
- Enables migration to IBM PowerVS

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Supports Power Host Recovery on Premise, MSP and Cloud
StorSafe VTL supports IPL and Remote IPL

IBM i

Virtual Libraries

IBMi Power Server — 32Gb FC iSCSI

IBM Spectrum Protect (TSM) — 32Gb FC iSCSI

Veritas NetBackup OST Server — 32Gb FC

Commvault — 32Gb FC iSCSI

Veeam Server — CIFS/NFS

High-speed backup

Deduplicate data locally then replicate to minimize bandwidth consumption

FalconStor StorSafe

Deduplicated data repository

Replication

Replicated data repository

Tape caching

- Tape consolidation
- Tape encryption
- Multi-export
- Tape shredding
- **Import Tape for Cloud Migration**

IBM i

Bare Metal Boot through IPL and Remote IPL support

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IBM and FalconStor Together

Partnership Delivering a Certified Solution

Patented and Award-winning Technology

Hundreds of Happy Customers

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IBM

The Power of VTLs
StorSafe VTL Optimizes Data Protection

Patented Deduplication

95% reduction in data to backup

- Reduce storage costs
- Meet backup window

B a c k u p   s i z e

without StorSafe VTL

with StorSafe VTL

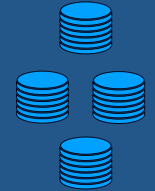## IBM Solution On-Prem to Cloud

Only IBM certified solution to backup PowerVS

- Multi-OS support Incl IBM i
- Cloud Migration
- Data Protection
- Disaster Recovery
- Long-term Retention
- Ransomware Protection

PowerVS + StorSafe VTL
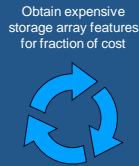
IBM i/AIX/Linux

Scalable

From 1TB to xPBs

- Financial flexibility
- Pay-as-you-grow
- Address unstoppable data growth

Cost-effective & Non-disruptive

Recycle, reuse, repurpose, maintain

Obtain expensive storage array features for fraction of cost

- Use any storage array, anywhere in its lifecycle
- Keep existing enterprise backup app/physical tape
- Complement HA

Encryption Options

Keep data safe

- At rest: Reduce business impact while keeping data safe
- In flight: Leave no mission-critical data exposed

Tape Consolidation

Rethink long-term storage

- Reduce IT costs
- Reduce storage requirements
- Meet long-term/ governance requirements

COS

Six Use Cases for Hybrid Cloud Backup and Restore Optimization
FalconStor StorSafe VTL for Power and PowerVS

IBM PowerVS

PowerVS + StorSafe VTL

IBM Power + IBM i/AIX/Linux + StorSafe VTL

1. On-premises Backup Optimization
Enhance existing on-premises backup and set up DR

2. Hybrid Cloud Backup
Backup on-prem, deduplicate, and send a copy to PowerVS

3. Migrate From On-premises to PowerVS
Migrate workloads and legacy tapes to IBM PowerVS

4. PowerVS Resident Backup
Backup and Restore for PowerVS-resident IBM i, AIX, and Linux workloads
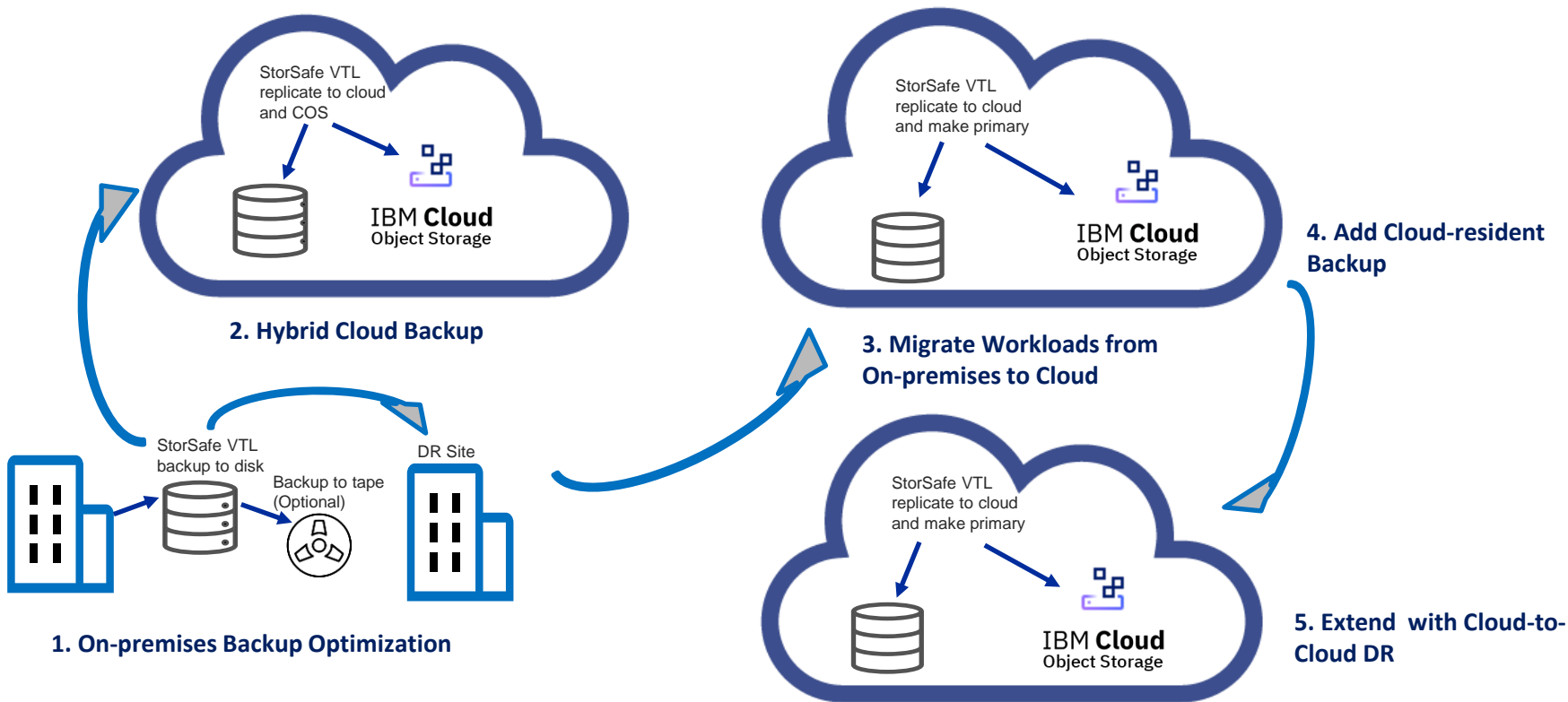
5. PowerVS Disaster Recovery
Replicate workloads in PowerVS to another cloud location for recovery in the event of disaster

6. AI Data Mover
Provide historical enterprise data in deep archives to train proprietary enterprise AI models

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Five Use Cases for Backup and Restore Optimization
FalconStor StorSafe VTL for Power and PowerVS

StorSafe VTL replicate to cloud and COS

IBM **Cloud**
Object Storage

2. Hybrid Cloud Backup

StorSafe VTL replicate to cloud and make primary

IBM **Cloud**
Object Storage

4. Add Cloud-resident Backup

3. Migrate Workloads from On-premises to Cloud

StorSafe VTL backup to disk

Backup to tape (Optional)

DR Site

1. On-premises Backup Optimization

StorSafe VTL replicate to cloud and make primary

IBM **Cloud**
Object Storage

5. Extend with Cloud-to-Cloud DR

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1.B Third Copy in the Cloud, provide 3 way recovery IBMi, AIX, Linux Replication A-B-C, C-A, C-B, B-A Workload may run in any location
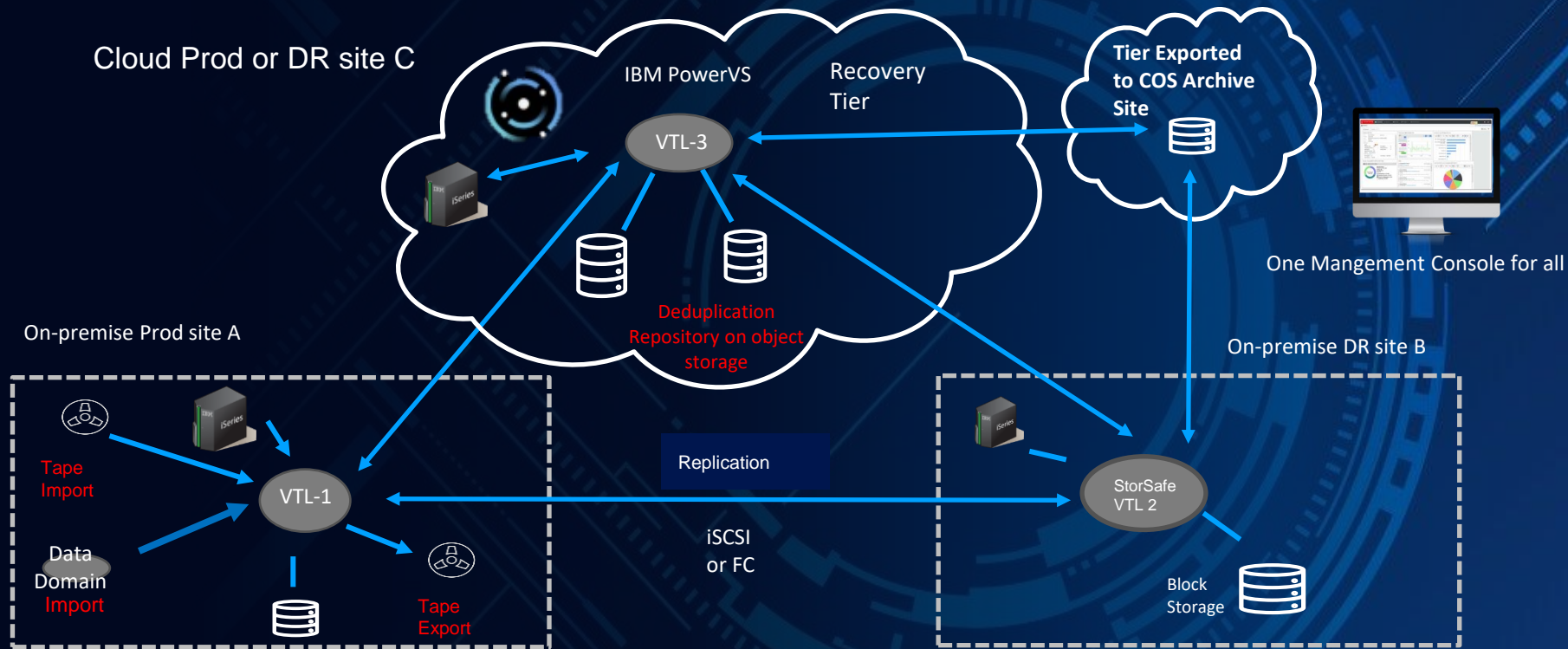
Use Cases Backup and Restore Optimization with FalconStor StorSafe VTL and COS
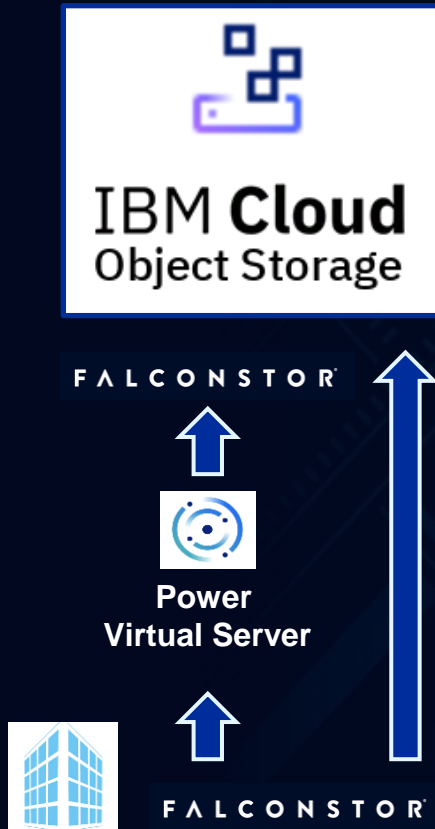
- Secure Offsite Retention (with storage-layer immutability)
  - Retention, Immutability and Expiration at the underlying object storage level, natively managed via API by FalconStor policies
  - Long-term retention, archive, and regulatory compliance and escrow holding of your backups
  - Ransomware protection, context-based restrictions and firewall
  - Export virtual tapes from on-premises or cloud to immutable COS
  - Digital Tape Restore-anywhere
  - Provides auditing, observability and rules for managing security and compliance of your data.

- Migrate From On-Premises to PowerVS and COS
  - Migrate workloads and legacy tapes from on-premises

- Cloud Resident Backup
  - Backup and restore from PowerVS-resident workloads to COS

- Cloud Resident Disaster Recovery
  - Replicate workloads to a second data center COS for recovery in the event of disaster

StorSafe VTL Security

StorSafe VTL Multiple Layers of Security Defense

Data Tampering, Modifying, Destroying

- Tape Export to Immutable IBM Cloud Object Storage (COS) Vault: Immutable COS buckets
- Offsite/Cloud multi-DC replica with AES256 Encryption for Data-in-Transit protection

Data Privacy

- Immutable COS vault: COS's AES256 Encryption.
- StorSafe Tape export : AES256 Encryption with Customer Supplied Keys.
- Repository Data-at-Rest: AES256 Encryption
- Tape Shredding to DoD 5220.22-M ECE

Unauthorized Access

- IBM Cloud Object Storage: HMAC access keys
- User: Embedded Linux DoD security profile for strong username and strong passwords, Multi-Factor Authentication, IAM certificates in Clouds
- Network: Restricted network ports

On-going Security Threats

- Security Patches at least once a quarter to address CVEs

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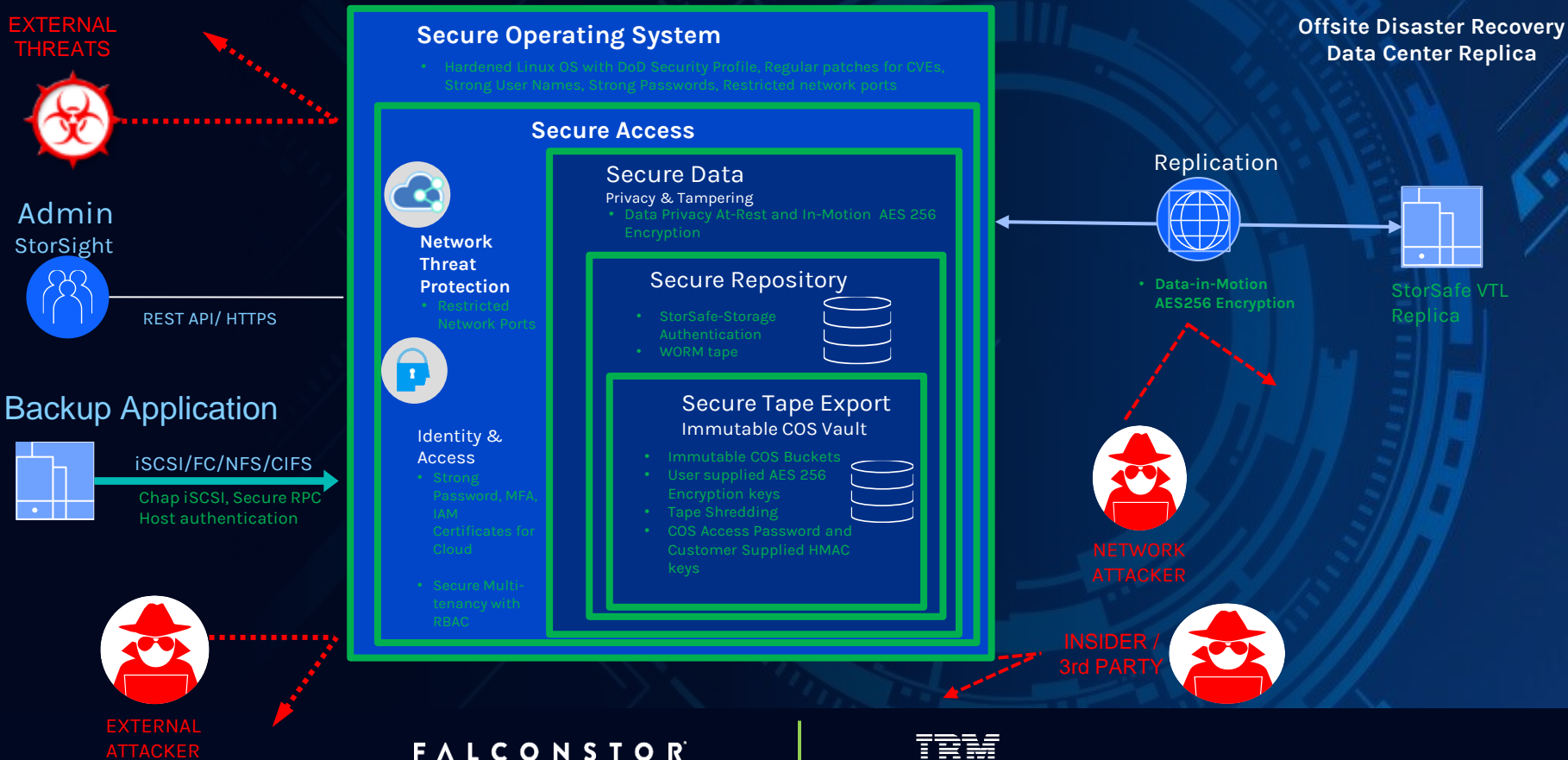
StorSafe VTL Security Against Internal and External Threat Cases

Threat Cases	Security Features	Security Mechanisms
Rogue Administrator attempting to modify, delete, view or encrypt backup data for Ransomware attack	Tapes exported to Immutable IBM Cloud Object Storage (COS) Vault.	COS immutability protection against tampering. Data cannot be modified or deleted by anyone, including authorized Admins and Super Users until expiration date.
Disaster Recovery. Insider destroys data center or VTL	Offsite Replica. StorSafe recoverable from exported immutable tapes	StorSafe VTL replication for offsite Disaster Recovery.
Unauthorized bad actor trying to view user data on disk or in COS- data privacy	Encryption At-Rest and Encryption In-flight	AES 256 Encryption of backup data in-flight and at-rest, Customer supplied key
Unauthorized bad actor trying to access StorSafe's Cloud Object Storage	StorSafe VTL user authentication to COS	StorSafe uses COS provided HMAC keys for authentication
Tenant attempts to access, view or manipulate another tenant's data	Secure Multi-tenancy	ACL based separation of tenant resource ownership
Stolen encryption key or authentication keys	Immutable COS buckets and tapes cannot be deleted even by an authenticated admin	COS Immutable retention policies can be extended but not shortened or deleted.
Impersonating of administrator	StorSafe Identity Validation	2 Factor Authentication, IAM in Cloud for user authentication, RBAC
External Network Attack against StorSafe VTL	Embedded Hardened Linux OS Security	Embedded Linux with DoD Security Profile and locked down ports
External Backup or Host System Admin- Accidental or Intentional Deletion of tapes	WORM tapes managed by Backup Admin	WORM virtual tapes enforced by StorSafte

Internal Bad Actors

External Cyber Attack

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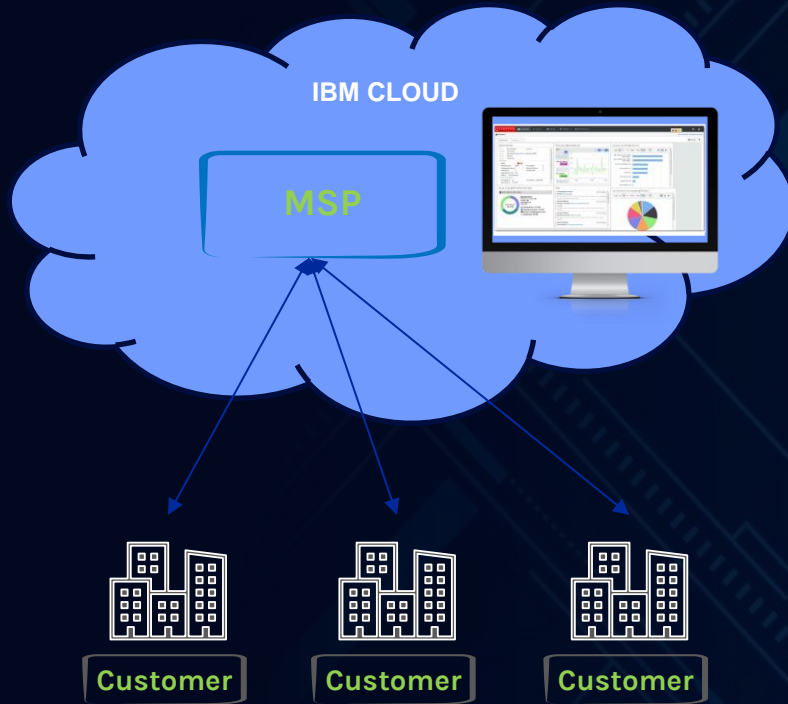
StorSight Management Console

- Central orchestration layer for management of on-premises, hybrid
  cloud and multicloud environments

  - Advanced console across all StorSafe sites on-premises and clouds (PowerVS, AWS, Azure, GCP)

  - Manages all StorSafe Servers & Licenses

- Flexible to run on any x86 server on-premises or the cloud

  - Real-time visibility into status, health, and integrity

  - Provides Smart rules, analytics, reports, and forecasts

- Management as a Service for MSPs or enterprises with multiple organization

Reports

- Inventory
- Capacity Management
- Performance Monitoring
- Service Status

- Server Load
- Trends (predictive)
- Top N Components
- Custom Trends

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Secure Multi-tenancy

- Enables easy chargeback capabilities
- Provides role-based administration
- Leverages FalconStor StorSight®
  - Centralized management of all StorSafe servers & licenses
  - Real-time visibility into status, health, and integrity
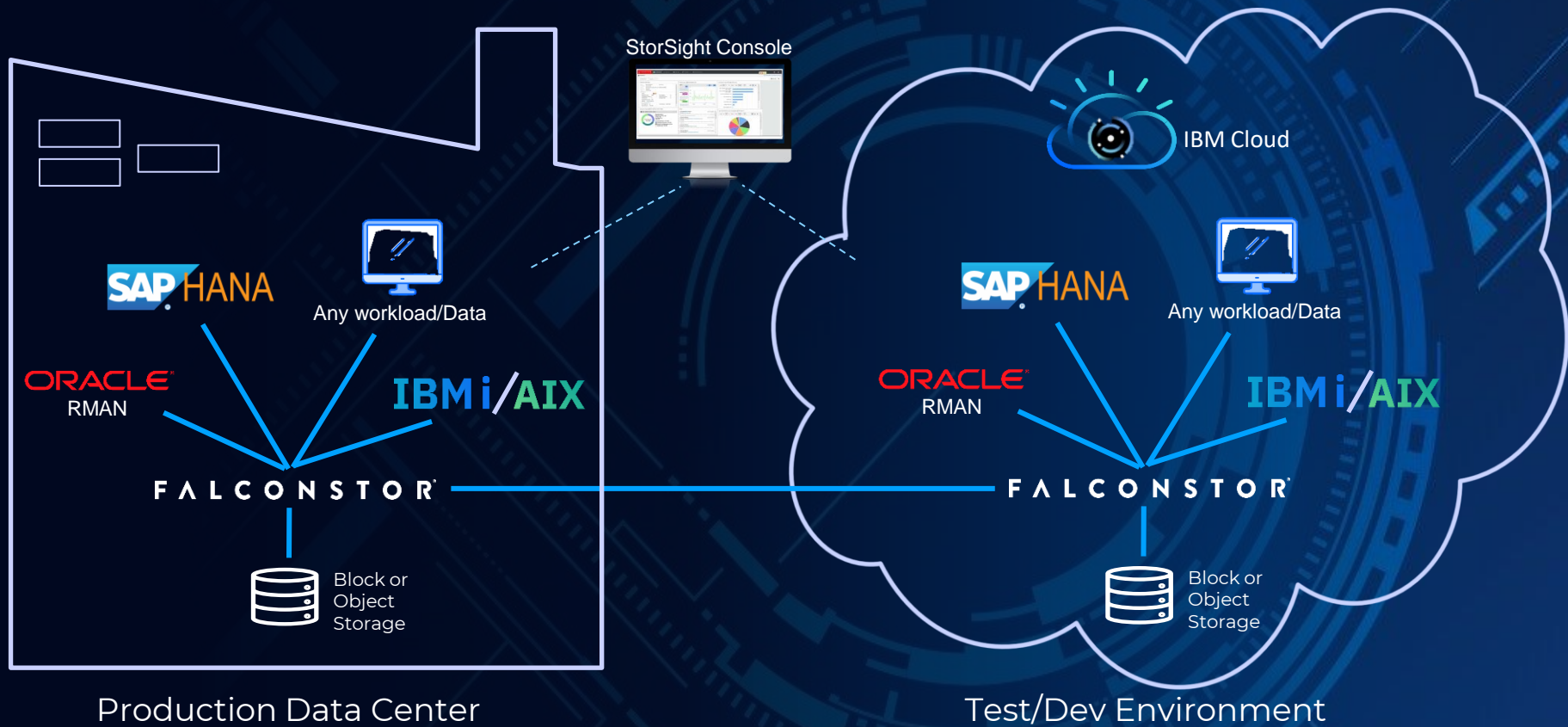 - Provides Smart Rules, analytics, reports and forecasts

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NAS NFS Support for the Cloud
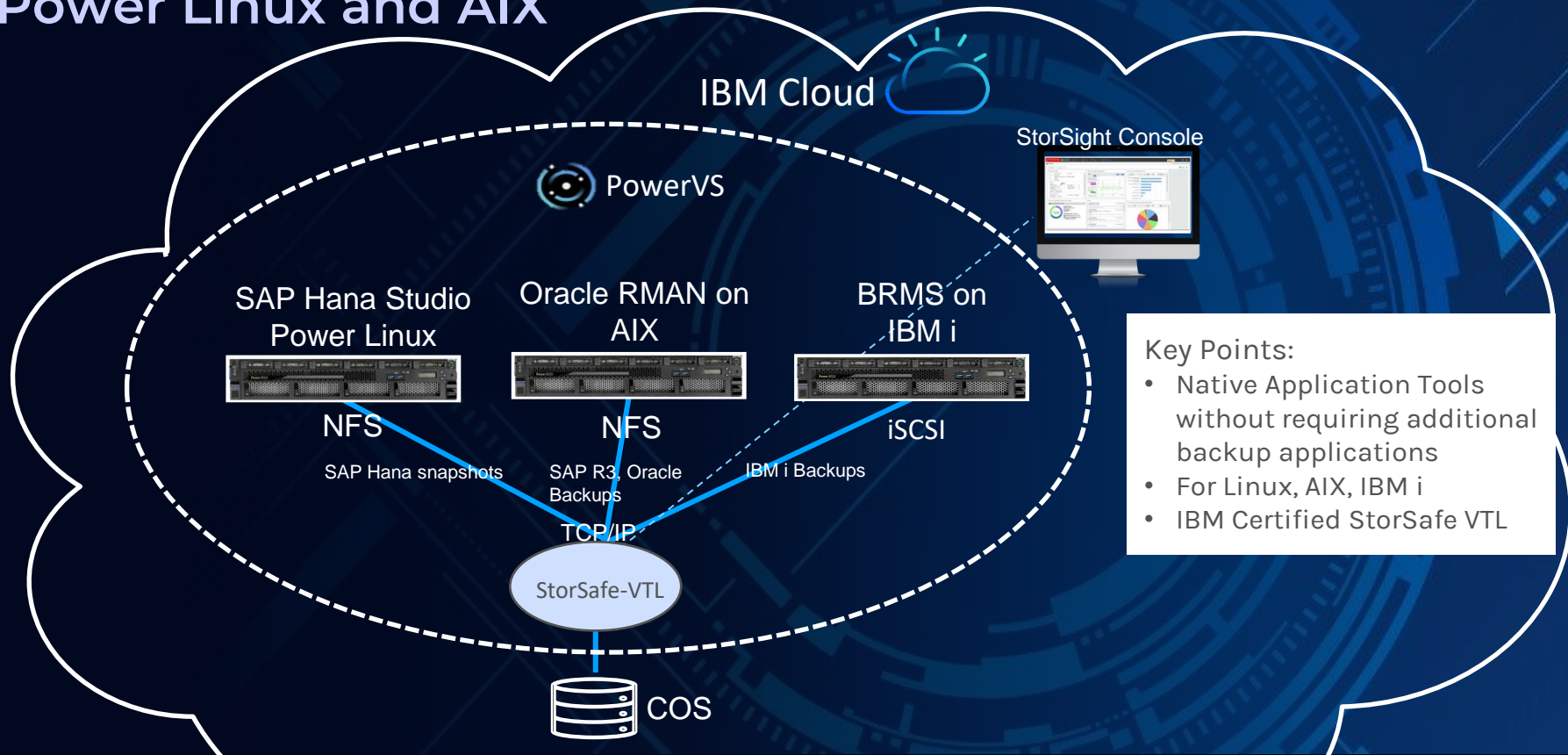## Providing customer choice: Meeting customers where they are

StorSafe VTL provides the Power of Choice:

1) **Simplicity, Cost, Efficiency: StorSafe VTL NFS** provides the complete data protection solution for Oracle, SAP Hana and other apps which can use NFS or CIFS on AIX, Power Linux and IBM i
   - Administrators use the native application tools, including Oracle RMAN, SAP Hana Studio and BRMS
   - StorSafe VTL is a single product providing rich data protection management including offsite replication, Disaster Recovery, Immutable Storage for Ransomware protection, Deduplicated storage
   - Tape integration for Enterprise compliance

2) **Optimizing Enterprise Backup Solutions** like Veeam, Spectrum Protect and all leading Backup Applications
   - Industry leading dedupe storage efficiency offloaded from Backup Application Servers
   - Replication for Disaster Recovery
   - Immutable storage for Ransomware protection

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PowerVS and StorSafe VTL Create Your Test/Dev Platform

StorSight Console

IBM Cloud

SAP HANA
Any workload/Data
ORACLE
RMAN
IBM i/AIX
FALCONSTOR
Block or Object Storage

SAP HANA
Any workload/Data
ORACLE
RMAN
IBM i/AIX
FALCONSTOR
Block or Object Storage

Production Data Center

Test/Dev Environment

4 Ways to Use FREE FalconStor Hybrid Cloud StorSafe Licenses

1 — Test Data Domain (or other VTL) data migration to StorSafe on-premises and 2nd copy data storage in PowerVS

2 — Test SAP-Hana or Oracle data protection with StorSafe NFS on-premises and 2nd copy data storage in PowerVS *(no separate backup application needed)*

3 — Test importing physical tapes from any tape library to StorSafe on-premises and store 2nd copy in PowerVS

4 — Use StorSafe NFS or VTL as data mover for Test – Dev with PowerVS

SPECIAL FALCONSTOR OFFER COMBINED WITH POWERVS2000

POWERVS2000
Try IBM Power Virtual Server For Free

New IBM Power Virtual Server (PowerVS) clients who deploy PowerVS Quickstart receive $2,000 Cloud credits, allowing them to try PowerVS for up to three months at no cost.

IBM Power Virtual Server is an IBM infrastructure as a service offering that enables businesses to expand their on-premises environments to the cloud. The offering modernizes hybrid cloud infrastructures and enables efficient workload management across both cloud and on-premises environments. With Power Virtual Server, businesses reduce the capex required with on-premises infrastructure resulting in cost savings and operational efficiency.

PowerVS Quickstart

Provides pre-configured virtual server instances, available in the IBM Cloud Catalog represented as t-shirt sizes, for all operating systems supported by PowerVS in eligible datacenters.

- Automated deployment of virtual servers
- Easily provision in less than 20 minutes
- Various preconfigured options available
- Guided Tour available to help get started

$2,000 credits

- Free trial offer leveraging self-service onboarding
- Includes initial setup of client to site VPN connectivity
- Up to three months at no cost based on XS t-shirts. Duration of credit varies based on t-shirt sizes.
- Credits expire after 90 days

Why IBM Power Virtual Server

Migrate to hybrid cloud: Seamlessly move and manage your workloads across cloud and on-premises environments.

Grow at your own pace: Extend workloads and take advantage of pay-as-you-use billing to manage costs.

Run mission-critical workloads: Work on nonproduction tasks and production environments simultaneously. Use VMs to help resolve issues faster.

SPECIAL FALCONSTOR LICENSE OFFER*

FREE FalconStor Hybrid Cloud StorSafe licenses (on-premises and PowerVS) for 90 days

FREE Hybrid Cloud StorSafe "Get Started" services

FREE Hybrid Cloud StorSafe on-line training

FalconStor Free Licenses - Limitations
- ✓ *New FalconStor customers only*
- ✓ *Free FalconStor StorSafe licenses must be used in Hybrid Cloud mode (e.g., on-premises and PowerVS)*
- ✓ *Free FalconStor StorSafe licenses not to be used for workload migration to PowerVS*
- ✓ *Free FalconStor StorSafe licenses must be ordered via IBM Cloud Catalog*

Order StorSafe VTL for Power and/or PowerVS
Directly from the IBM Cloud Catalog

Log in to IBM **Cloud**

Don't have an account? Create an account

FS'

FalconStor StorSafe VTL for Power On-Premises

By **FalconStor** Software

Decrease your on-premise backup storage capacity by up to 90%, while improving your existing backup solution performance.

IAM-enabled • Third party supported

FS'

FalconStor StorSafe VTL for PowerVS Cloud

By **FalconStor** Software

Reduce your monthly PowerVS backup storage cost by up to 90%, while improving your existing backup solution performance.

Server Images • Power Systems Virtual Server • Third party supported

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Search for "FalconStor" to find the VTL for Power On-Premises and the VTL for PowerVS Cloud tiles

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MSPs -Switching from Data Domain to StorSafe VTL

MSPs value StorSafe VTL's easy management, multi-tenancy, and integration with IBM Power Virtual Server. IBM i, AIX, and Linux workloads are all supported.

Managed Service Providers ACMI (France), Shibuya (Sweden) and others all migrate customers to StorSafe VTL from Data Domain

Business Challenge

Data Domain is expensive to maintain and customers need more flexibility when considering future options for leveraging PowerVS.

Consideration

Data Domain systems end-of-life, requiring a contract renewal or replacement.

Solution and Results

MSPs select StorSafe VTL to migrate customers from aged-out Data Domain appliances, for better performance, integration with IBM Power, and true multi-tenancy management of their customer accounts.

This also enables customers to replicate to PowerVS for hybrid cloud deployment for backup and DR.

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Tupperware

Journey to the Cloud with IBM solutions powered by FalconStor

Business Challenge
Maintain and protect Power (IBM i) running critical Tupperware manufacturing and back-office applications

Consideration
Close on-prem data centers and move to PowerVS

Solution and Results
After migration to PowerVS, backups and restores unsuccessful until **FalconStor StorSafe VTL for PowerVS** introduced.

"(StorSafe) VTL is much more robust. BRMS + ICC is good for small systems, not big LPARs or complex environments. It can take up to 8 hours to restore a 1KB object to your system (with ICC) versus 30 minutes with VTL."

Joerg Thomann, IBM Cloud Architect

"If you need to save fast or restore fast, you need (StorSafe) VTL."

Stephen Moossajee, Global Sr Manager, Tupperware

FALCONSTOR | IBM

IBM i Backups in PowerVS

Business Challenge
Major multinational insurance and financial services firm needed to close two European data centers.

Consideration
14 IBM i LPARs running core insurance applications and back-office systems critical to the client.

Solution and Results
Ricoh IT Services Division migrated all 14 LPARs to PowerVS, then brought in FalconStor StorSafe VTL to enable BRMS to handle the large backups in PowerVS. FalconStor reduced the COS storage needed while increasing performance, and easily handled the current 30TB which they plan to grow to 50TB.

Customer's Next Project
Migrate 7 years of old physical tapes to PowerVS using StorSafe VTL.

"When we have an opportunity for a hosted Power Systems environment or a managed services Power cloud environment, the IBM Cloud with StorSafe VTL is a good option."

Nicholas Mattera
Vice President, Ricoh IT Services

RICOH

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IBM

Kosei Securities:
Lifting and Shifting to the Cloud

Business Challenge
Move critical IBM i workloads from on-premises to Power Virtual Server with no disruption and backup in PVS.

Consideration
Maintain current processes as much as possible to ease transition.

Solution and Results
Adoption of StorSafe VTL for backup in PowerVS simplified move to the cloud with consistent tape processes.

"We were able to keep all the same processes for backup that we had on premises by utilizing FalconStor StorSafe VTL. This made the transition to Power Virtual Server much simpler and easier for us."

Nobuaki Gondoh
System Solutions Group Manager
Kosei Securities

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Major UK Telco

Disaster Recovery for On-Premises IBMi Workloads

Business Challenge

Refresh and modernize backup and recovery operations of critical IBM i environments.

Consideration

Increasing performance and options for recovery.

Solution and Results

StorSafe VTL in both data centers on Power10 systems, each with a 570TB deduplication repository. Active replication between sites delivers easy and fast recovery in the event of a disaster.

Customer was able to reduce their 320TB physical tape and 80TB Dell Data Domain system with StorSafe and IBM Power systems. StorSafe solution led to $650K of IBM Power10 plus flash storage.

Future plans including importing legacy tapes and cloud adoption.

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UK Subsidiary of Global Leader for Investment Operation Technology

World's largest independent hedge fund and private equity administrator and fund transfer agency

Migration and Modernization of Data Centers While Switching MSPs

Business Challenge

Migrating from existing hosting provider to new for two data centers hosting critical IBM i workloads, while modernizing away from physical tape libraries.

Consideration

Maintaining SLAs for critical applications during transition from one MSP to the next.

Solution and Results

Data Domain competed but physical appliances were considered too limiting.

StorSafe VTL is installed in both data centers with new IBM Flash Arrays, and each is replicating to the other, as well as the old and new MSPs. Bare metal recovery for all Power10 hosts and LPARs, along with replacing all physical libraries.

StorSafe solution led to 52K$ in server sales and 100K$ of IBM flash storage.

Future plans include importing legacy tapes and cloud adoption.

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Multi-national Insurance Company

Power with AIX and Spectrum Protect Backup to PowerVS

Business Challenge
Improve enterprise resiliency by backing up critical workloads from on-premises Power Systems running AIX and Spectrum Protect to the cloud.

Solution and Results
Using Spectrum Protect Media Server with agents on AIX, StorSafe VTL was added to provide data protection to PowerVS. Deployment was simple and deduplication ratio resulted in a huge reduction in cloud storage and associated costs.

*"This client was able to realize a **15:1 deduplication ratio** for their AIX environment, and leverage PowerVS for off-site data protection and disaster recovery. The client was very satisfied with the ease of implementation and overall economic benefit of the solution."*

Abdul Hashmi
Vice President, Customer Success
FalconStor

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Contacts and Resources: Ask for a Sizing and Demo!

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	Jacques.Wandels@falconstor.com
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Deployment Guide	Deployment Guide
FalconStor Information	www.falconstor.com
PVS Sizing Calculator	www.falconstor.com/ibm-calculator login: IBM2024
Sizing Help	ibmsizing@falconstor.com
Certification Matrix	www.falconstor.com/support/certification-matrix/

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