

## Your business faces various threats

Natural Threats



Geo-political Threats



Human Threats



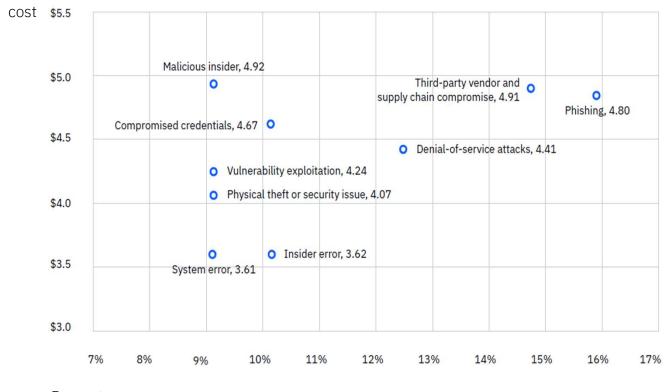
# Average cost and percentage of data breaches

#### USD 4.44 million

The global average breach cost dropped to USD 4.44 million, a 9% decrease. Faster identification and containment of breaches
The global average would have been lower were

have been lower were it not for the United States, Higher regulatory fines and higher detection and escalation costs in the United States contributed to this surge.

Get the 2025 report

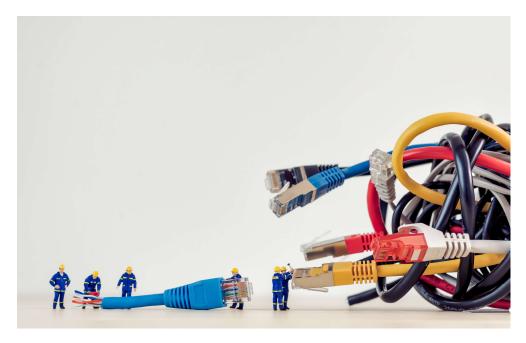


Percentage

**USD** millions

# Cost of downtime How much money does a customer's business lose per minute of unavailability?

- Unplanned outages bring applications down and generate a lot of distress among the IT staff, impacting productivity significantly
- In addition to unplanned outages and security exposures, customers must consider planned outages



"ITIC's 11th annual [average] Hourly Cost of Downtime Survey data indicates that 97% of large enterprises with more than 1000 employees say that on average, a single hour of downtime per year costs their company over \$100,000. Even more significantly: four in 10 enterprises -41% - indicate that hourly downtime costs their firms \$1 million to over \$5 million."

"In a worst case scenario the monetary losses to the organization can reach and even exceed millions per minute. Among SMBs with 20 to 100 employees, 57% of companies said an hour of downtime cost their companies up to \$100,000 an Hour\*\*"

## Real example



#### Nigel Griffiths • 1st

Advanced Technology Advocate IBM Power Systems: 40 years o...

How bad is Internet hacking?

I have a #AIX VM directly on the Internet (using #PowerVS) with its IP Address in a YouTube video on the #nmonchart service to upload #nmon files for graph generation via the returned .html web page file, find it here:

https://lnkd.in/eM93tHZx

It has been used a few 100 times now.

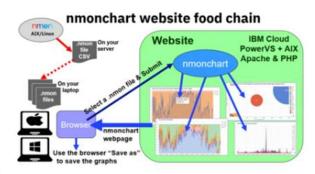
It is a website just for fun, not very public & not important!!!

That is ~7330 hack attempts per day.

AIX on the Internet with the IP address in a YouTube video description about the free nmon file graphing website.

#### HACKING SO FAR:

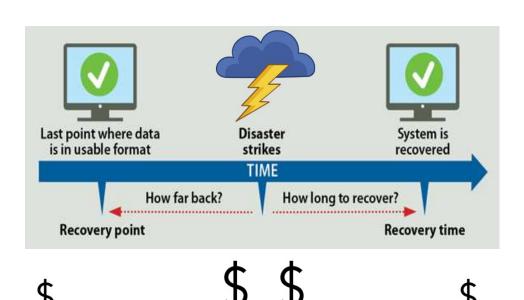
100 Uptime days733,076 Hacking attemptsFrom 9346 unique addresses





All reported in /etc/failedlogin file
Well done, IBM PowerVS & default AIX security
Default AIX 7.3 password rules are large & complex

# How close to "Anytime" or "All the time" do you need?





- Recovery Point Objective (RPO)
  - How much time are you willing to let pass between your last good data and your next good data?



- Recovery Time Objective (RTO)
  - How long are you willing to accept your application cannot do its work?

The closer to real time, the higher the cost of the solution will be

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# Add cloud to your business continuity strategy for added protection

On premises → On premises



#### Location:

- Technology closet
- CFO's home
- Iron Mountain
- Redundant tape drives
- High risk
- Slow recovery time
- Vulnerable

On premises → Cloud



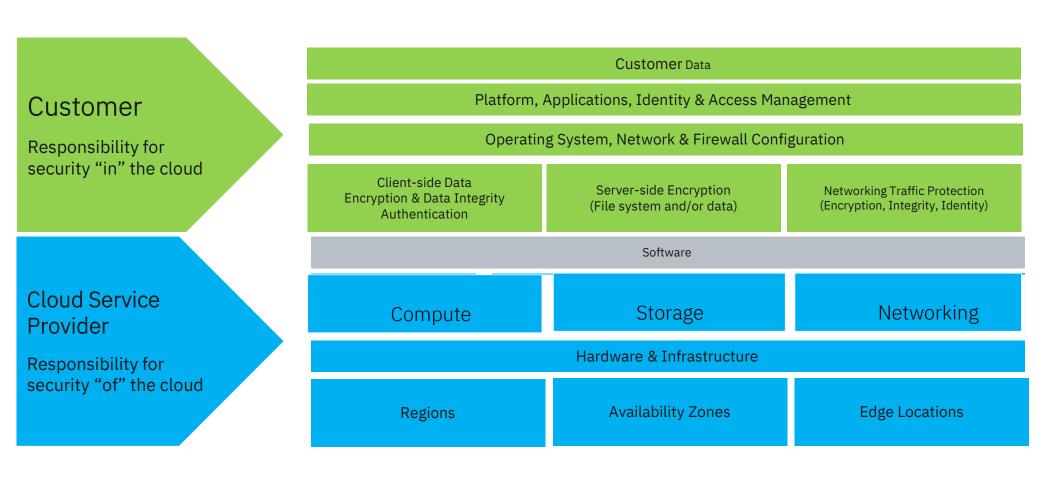
#### Location:

- Cloud
- off premise

- Digital
- Resilient
- Available
- Fast recovery time

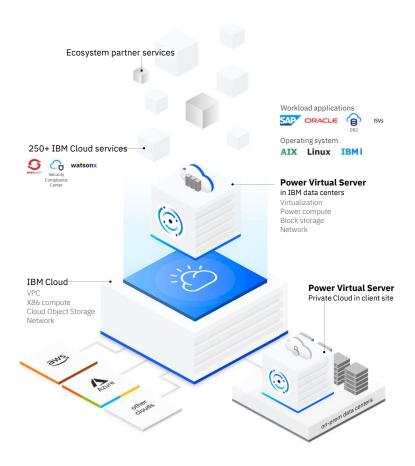
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# Security in the public cloud is a shared responsibility



### IBM is investing in Power Virtual Server to create the world's best landing zone for IBM Power workloads

- 1. Extending the Power platform with a seamless hybrid experience
- 2. Provides comprehensive compliance and rich business continuity options
- 3. Strong and growing Ecosystem



Built on the foundation of reliability, availability, security, scalability of the IBM Power platform

# Four patterns Power customers use to accelerate impact with hybrid cloud

850+ production clients 22 datacenters worldwide



**Strengthen business resiliency** of your on-premises
IBM Power with PowerVS
backup and warm DR



Accelerate application modernization and jumpstart validation of Power11 with development/test on PowerVS



**Optimize datacenter** with workload placement on premises, or with public or private cloud



Accelerate adoption of RISE with SAP utilizing PowerVS, the fastest and least disruptive path to transform your business

## IBM Power Virtual Server in 2025

Significant Features Announced:

- ✓ Power11 simultaneous launch in PowerVS
- ✓ Dynamic flexibility for all IBM i software licensing tiers
- ✓ New release of Migrate While Active
- ✓ Share processor pool optimization

IBM Power Virtual Server now elevated with the introduction of Power11

# Power11 day one availability in PowerVS

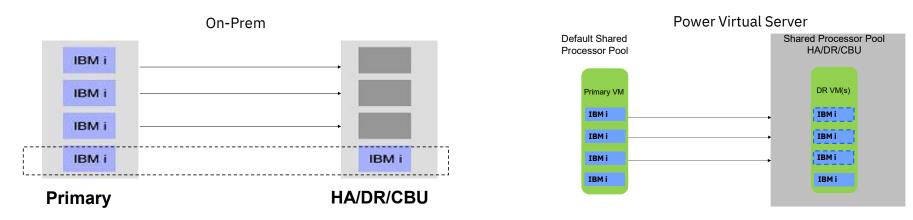


#### All IBM i Software Tiers Now Available in IBM Power Virtual Server (PowerVS)

- PowerVS has been expanded to support the full range of IBM i software tiers P05, P10, P20, and P30 on both Power10 and Power11 systems. Based on recently added Virtual Serial Number (VSN) capabilities, clients can select and be billed based on their specific core and memory needs, and flexibly scale between tiers, independent of physical hardware.
  - This offers more flexible IBM i licensing by offering new IBM i price-points
  - It will also provide benefit for clients with ISVs that license by software tier by offering more options
- PowerVS options for IBM i
  - S1x22 will allow P05, P10 and P20 software tiers
  - E1x80 will allow P10, P20 and P30 software tiers
- Pre-requisites
  - IBM i 7.3 (Power10) or 7.4 (Power11) or later
  - Virtual Serial Number (VSN)
  - Power10 or Power11 server

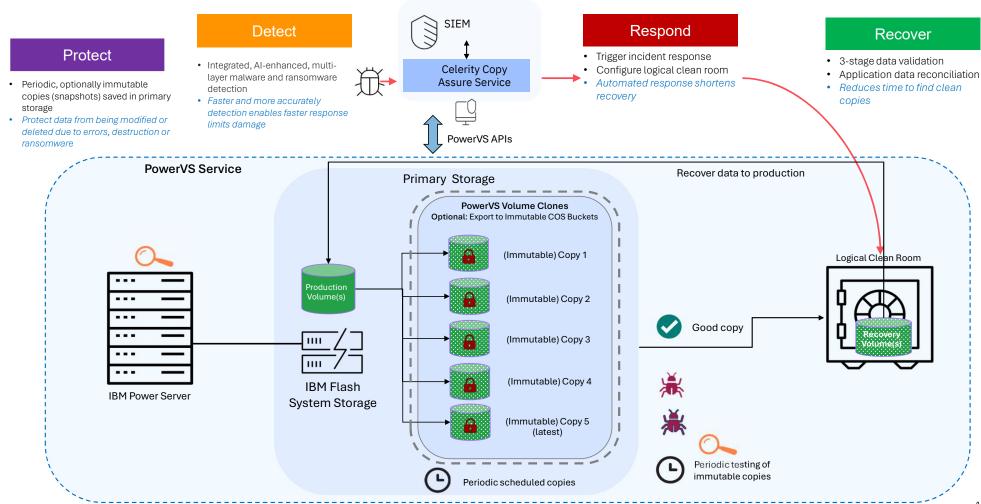
Tier	Core	Memory
P05	Up to 1	Up to 64 GB
P10	Up to 4	Up to 1 TB
P20	Up to 12	Up to 1 TB
P30	Up to MAX	Up to MAX

#### IBM Power Virtual Server HA/DR IBM i Licensing



- Desire; provide a way for a customer to assure/reserve hardware resources such as cores and memory like they would with the on-prem CBU (Capacity Backup Unit) offering for HA/DR operations, and help optimize IBM i OS licensing
- Use a Power Virtual Server Shared Processor Pool (SPP) to optimize "DR side" OS licenses
  - Customer creates a shared processor pool with cores = X
    - ...where X = the maximum number of cores that the partition(s) will potentially need
    - This step effectively ensures the customer has access to the cores whenever they're needed for any VM in the pool
  - To achieve the benefit of "optimized DR pricing," customer deploys a VM(s) in the SPP with a small amount of entitled capacity (e.g., 0.25 cores) and whatever memory/storage they need
    - Customer will NOT be charged for the cores since they're already paying for the cores as part of the SPP creation
    - Customer will only pay for 0.25 cores of IBM i OS license charges
    - Customer will be charged for the memory BAU
  - When a HA/DR event occurs, customer can resize the VM(s) up to the appropriate number of cores they need and will pay for the appropriate IBM i OS's BAU e.g., if they scale up to 4 cores, they'll pay for 4 cores of OS licenses

## IBM Power Cyber Vault for PowerVS



# Strengthen Business Resiliency

80%

Lower Costs for reliable disaster recovery<sup>1</sup>



#### Common Pain Points:

- Ineffective on-premises business continuity strategies
- High cost of maintaining secondary data center infrastructure footprint for disaster recovery
- Regulatory changes demanding maintaining data in at least 3 different physical sites

#### Power Virtual Server provides:

# Flexible tools/options for back-up to cloud

Leverage PowerVS as a target for on-premises back-up

# Cloud object storage

Leverage cloud object storage for most cost-effective storage with options for immutability

# Minimally size DR in cloud and burst up when needed

Reserve capacity with shared processor pools; define 'skinny' VSIs for DR until needed

# Tiered block storage

Leverage smart storage tiers to lower TCO for block storage volumes attached to DR VSIs





**Proximity** 

European Food Manufacturer

<sup>&</sup>lt;sup>1</sup> Proximity Story







Why Business
Continuity & Data
Resiliency in Power
Virtual Server?

# Optimize DR Infrastructure Costs

- Reduce DR Infrastructure by being able to scale cores and memory dynamically
- Guarantee capacity with Shared Processor Pools
- Switch between storage tiers dynamically
- Avoid cost duplicate infrastructure on-premises

# Leverage Enterprise Backups & Replication Solutions

- Access an ecosystem of backup solutions
- Leverage cloud replication services like GRS & VM Recovery Manager
- Bring your clients' proprietary & 3<sup>rd</sup> party tools to Power Virtual Server.

#### Low-Cost Archival

- Options for Low-cost Cloud
   Object Storage and Smart Tiering
- KYOK capabilities with FIPS 140-2 Level 4 Encryption

# Power Virtual Server: Built-in Resiliency & High Availability

# TIM Plantage of Markon of Contage Supplier of Markon The Contage Supplier of Markon o

IBM Power Virtual Server

#### Control plane Resiliency

- Built-in HA within a single zone with Multiple Service Brokers per zone (3 SB per zone)
- Zones are >8 miles
   apart, so there is
   business continuity (BC)
   protection with the
   multiple zones within a
   region

#### Data plane Resiliency

- Default VM HA: VMs will restart on other systems when a system fails (Simplified Remote Restart)
- For maintenance window: Live Partition Mobility(LPM)
- Redundant
   Infrastructure: Storage
   Controllers, Compute,
   VIOS, Switches, etc.

#### Native Copy Capabilities

- IBM i and AIX offers native copy solutions:
  - Image Capture (capture VM and store locally or export to COS)
  - Snapshot via API (ideal for rollback)
  - Volume Clones \*\*\*

Part of a Full System Flash Copy (FSFC) process\*\*\*\*\*

#### Getting backup data to the cloud

# IBM Power Virtual Server IBM i Solutions

If you need backup and restore options, you can count on IBM and Power Virtual Server to meet your requirements.
Regardless if your strategy is Cloud or Hybrid Cloud, IBM has solutions available.

- · Manual saves to virtual tape and FTP
- BRMS/ICC for <=2TB</li>
  - New lower-cost subscription options for BRMS and ICC
- Cobalt Iron
- FalconStor VTL
- · IBM PowerHA geographic mirrioring

or

• ISV logical replication solutions

#### Manual saves to virtual tape and FTP

#### IBM Power Virtual Server



For backup and restore without needing to purchase additional products (and for smaller customers requiring 2TB or less), you can utilize native IBM i tools as a backup to cloud solution.

#### IBM i solution:

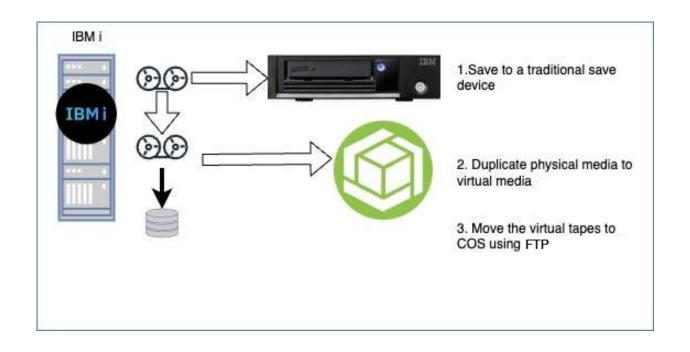
- Manual saves to virtual tape and FTP
  - Use native IBM i SAVxxx commands/save menus to save to virtual tape and use FTP to get the save data off the system
  - The Backup Recovery and Media Services (BRMS, 5770-BR1 or BR2) and Cloud Storage Solutions (5733-ICC) LPPs are available to purchase for a more automated solution

Saving to virtual tape and FTPing off-premises could be in addition to an on-premise tape backup.

This gets data into Cloud Object Storage (COS) which then can be brought back on-premise as needed. Cloud Object Storage is available in the IBM Cloud Catalog.

Can create a Power Virtual Server Instance (VSI) and restore with the data in COS

# Use Native IBM i Tools



#### BRMS/ICC

#### IBM Power Virtual Server



For backup and restore requiring 2TB or less, you can rely on BRMS when combined with ICC as your more automated backup to cloud solution.

#### IBM i solution:

#### BRMS/ICC for <=2TB</li>

- The Backup Recovery and Media Services (BRMS, 5770-BR1 or BR2) and Cloud Storage Solutions (5733-ICC) LPPs are available to purchase as non-expiring or 90-day/1/2/3/4/5-year subscription term options
- The new 90-day subscription term options are ideal for migration to Power Virtual Server
- BRMS/ICC also available in the IBM i Temporary License (5733-ITL) monthly offering
- For customers in Power Virtual Server, BRMS is included with the IBM i license, then just add ICC

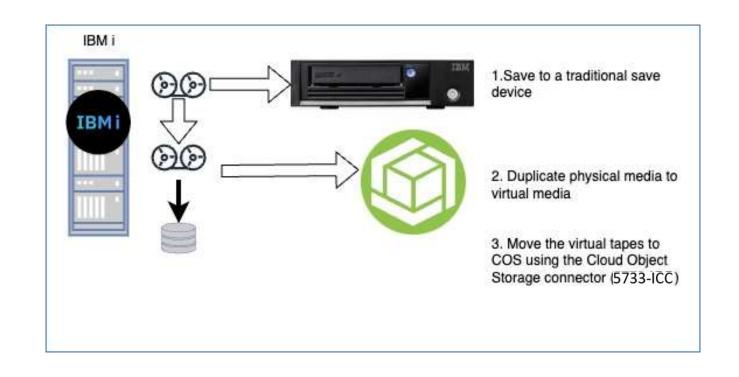
Install/configure BRMS and ICC for an on-premises to cloud backup solution. This could be in addition to an on-premise tape backup.

This gets data into Cloud Object Storage (COS) which then can be brought back on-premise as needed. Cloud Object Storage is available in the IBM Cloud Catalog.

Optionally you can create a Power Virtual Server Instance (VSI) and restore with the data in COS

# Use ICC to create additional off-premises copies

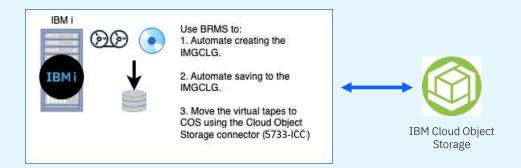
- BRMS automatically duplicates tapes to IBM Cloud Object Storage (COS)
- Use Retention
   Policies and Object
   Locks to create an
   immutable copy
- Capable of restoring in Power Virtual Server as a clean room as part of a cyber resiliency strategy



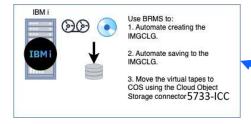
## BRMS with ICC

- Backup Recovery and Media Services (BRMS, 5770-BR1 or BR2) and Cloud Storage Solutions (5733-ICC) LPPs
- Additional storage required to save local first
  - Compression is now supported which saves ~50% of the local storage requirements

- Backup process is not finished until the data is moved off the box
- Partition/storage size is limited, to fit the process in the backup window
  - Compression can be utilized to reduce network transfer time
- Full System restore requires a network install server

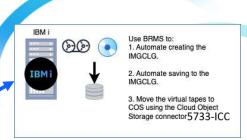


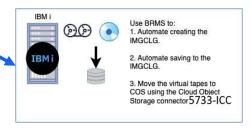
## BRMS with ICC





- Multiple servers can save to the same COS region
- Restore the server to a different location from COS





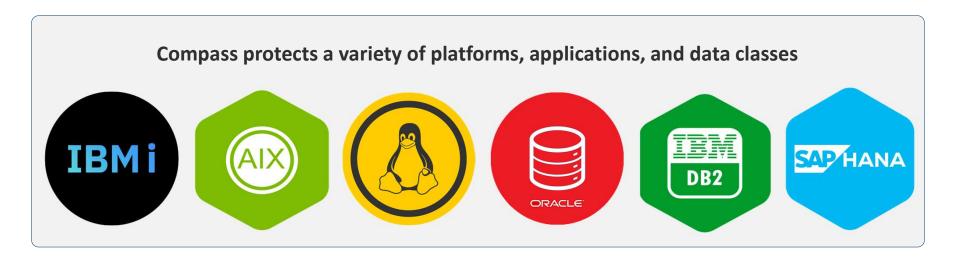
# **Cobalt Iron**



## Delivering Protection: Customer Workloads Compass Secures

Solution listing in IBM Cloud Marketplace:

# Secure Automated Backup with Compass® By Cobalt Iron®



## What is Compass for Power Virtual Server?

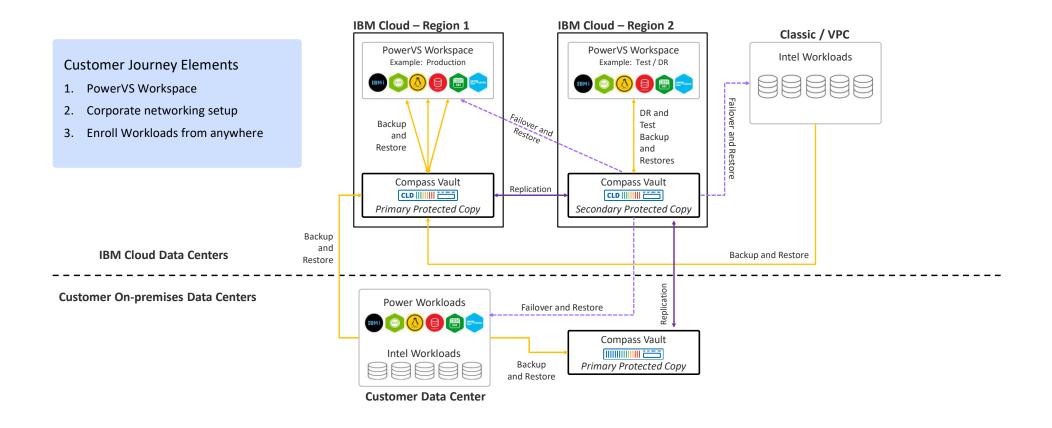
- Complete backup solution leveraging IBM Storage Protect to backup and recover Power Virtual Servers
- Industry leading end-to-end cyber security protection for backup landscape
- Extensive automation delivers simplicity and consistency through analytics
- Single web dashboard to manage hybrid enterprise data protection both in-cloud and on-premises



Shared priced \$/GB per month - stored utilization after deduplication & compression

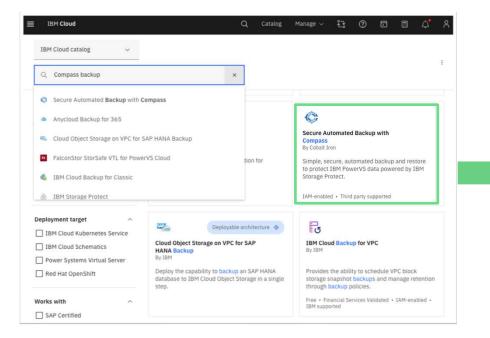
## Hybrid Backup: Flexible Options and Patterns

#### PowerVS and Non-PowerVS Platforms



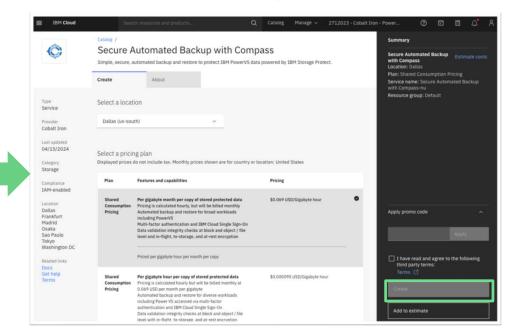
# Ready, Set, Compass for PowerVS: Find in the IBM Cloud Catalog

**STEP 1:** Search and Select "Secure Automated Backup with Compass"



STEP 2: Complete Details and Press "Create"

Button to Build Required Resources



## Compass Tape Gateway – VTL Feature

In-Cloud and On-Premises Data Protection for IBM i

- Enterprise data protection solution delivered in a SaaS model on certified platforms
- Modernization of physical and virtual tape environments
- Transparent integration of virtual tape data into data center, remote sites, and cloud
- Multi-tenant support for VTL workloads on a Compass Vault

- Integrated management of VTL operations
- Proactively managed, monitored, and maintained environment by Compass analytics
- RESTful API for log posting to Compass
- Options for tape volume migration

# **FalconStor**



#### FalconStor StorSafe Benefits Fast, Integrated, Secure, Scalable

# Fast, Integrated, Secure, and Scalable

- 100% compatible with any open systems and backup software
- Highly efficient deduplication technology can reduce the size of backups by up to 95%, significantly reducing storage costs
- Scalability from just a single VM to several servers
- Up to 10X faster backups and restores vs. leading backup-to-disk appliances with up to 40TB/hour performance
- Offsite protection built-in to transmit a copy of each backup offsite

#### Customers Interested in...

- Modernization for optimum performance of on-prem backup and recovery processes; moving to hybrid cloud
- Migration of workloads or tape to PowerVS with fast backups and recovery for IBM i/AIX/Linux environments
- Addition of hybrid or cloud-native DR site that adds protection from Ransomware, including immutable retention that cannot be defeated by an admin or bad actor
- Support of IBM and industry-leading backup tools, applications and methods (BRMS, TSM/SP, Veeam, CommVault, ROBOT/SAVE, LXI MMS, SAVLIB, Oracle RMAN, SAP HANA, and media policies)
- Improving backup efficiencies and reducing storage costs with deduplication and advanced compression and low-cost IBM Cloud Object Storage
- Automation of backup and recovery processes to eliminate user disruption

### StorSafe Multiple Layers of Security Defense

#### Data Tampering, Modifying, Destroying

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



#### **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

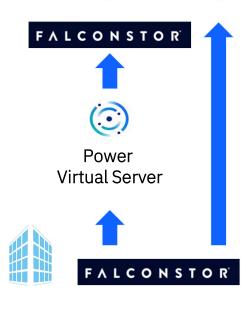
# FalconStor available in IBM Cloud Catalog



#### **Use Cases**

#### Data Protection and Migration for IBM i/AIX/Linux & PowerVS/PowerVS Private Cloud





- On-premises Backup Optimization
  - Improve existing on-premises backup with state-of-the-art deduplication
- Hybrid Cloud Backup
  - Long-term retention, archive, and regulatory compliance
  - Ransomware protection
  - Export virtual tapes from on-premises or cloud to immutable COS
- 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

### On-Premises Backup Optimization



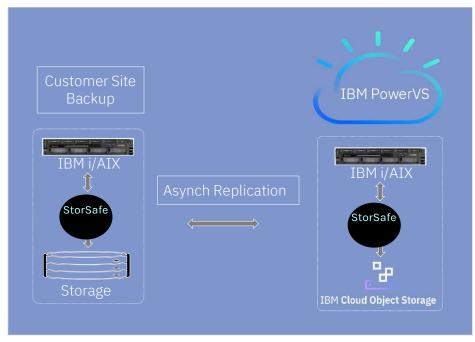
#### **PROCESS**

IBM i / AIX / Linux workloads on Power backed up via StorSafe

Ensure cost-effective, fast, and reliable backups and restores for all Power workloads

- Complementary with existing backup software
- Storage reduction up to 95% with global patented deduplication
- Utilizes any brand of server, internal disks, or external block or object storage
- 3-2-1 offsite protection with replication to IBM PowerVS, an MSP's cloud, Azure, AWS, or GCP
- Backups on-premises at up to 40TB per hour
- Immutable Object Storage with IBM COS for ransomware protection

### Hybrid Cloud Backup



#### **PROCESS**

Copy deduplicated on-premises IBM i, AIX or Linux backups to IBM CLoud for long-term retention, archive, regulatory compliance, ransomware or disaster recovery

Leverage the cloud for long-term archival or disaster recovery with secondary backup to PowerVS

- Replicate on-premises backups to PowerVS for archive or DR
- Deduplicate data prior to replication for substantial storage savings
- Single-pane-of-glass management across onpremises and cloud
- Complementary to existing leading backup software and current tape processes

#### DR and HA Applications

## IBM Power Virtual Server

## PowerHA Solutions

**;** ₩ ÷

If you need Disaster Recovery or High Availability options, you can count on IBM and Power Virtual Server to meet your requirements. Regardless if your strategy is Cloud or Hybrid Cloud, IBM has PowerHA solution available.

### IBM i solution:

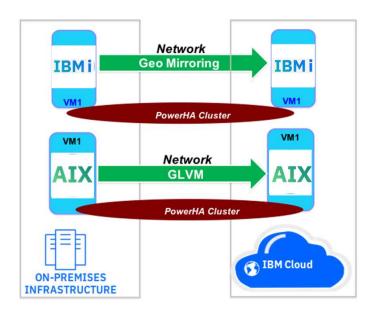
- · IBM PowerHA geographic mirroring
  - For customers with existing HA/DR solutions such as IBM PowerHA geo mirror and ISV logical replication solutions, Power Virtual Server can be setup as a target
  - For customers in Power Virtual Server, PowerHA is a selectable option

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#### DR and HA Applications

### IBM Power Virtual Server

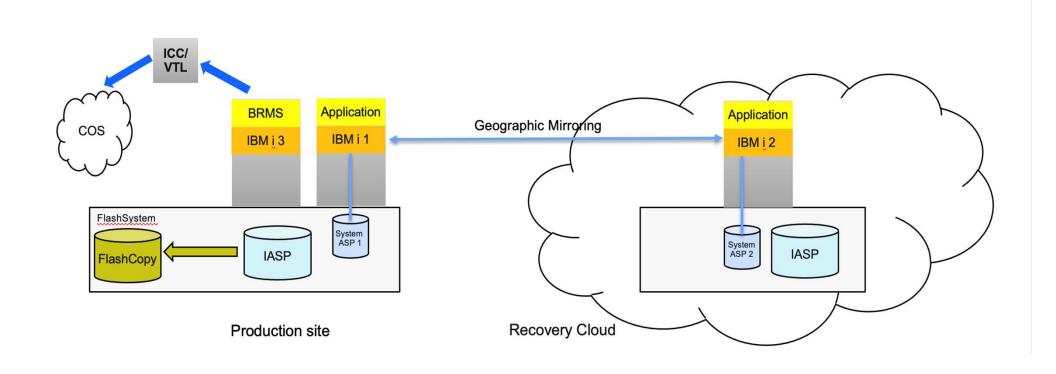
### IBM i solution



#### • IBM PowerHA Geographic mirroring – OS-based data-mirroring

- IBM® PowerHA® technology provides high availability, business continuity and disaster recovery. Enables you to deploy an DR solution with one integrated configuration, robust performance with a simplified user interface.
- Customer can use OS capabilities to setup DR backup site in Power public cloud using PowerHA
- PowerHA-geomirroring allows for OS to OS mirroring across distance
- For migrations to Power Virtual Server, BUS4i is available in the IBM Cloud Catalog
- For customers in Power Virtual Server, PowerHA is a selectable option

# IBM PowerHA Geo Mirroring



#### DR and HA Applications

## IBM Power Virtual Server

### PowerHA Solutions

**;** ₩ ÷

If you need Disaster Recovery or High Availability options, you can count on IBM and Power Virtual Server to meet your requirements. Regardless if your strategy is Cloud or Hybrid Cloud, IBM has in the cloud third-party solutions available.

### IBM i solution:

- ISV logical replication solutions
  - In the IBM Cloud Catalog Rocket iCluster is available as a third-party solution
  - For migrations to Power Virtual Server, BUS4i is available in the IBM Cloud Catalog



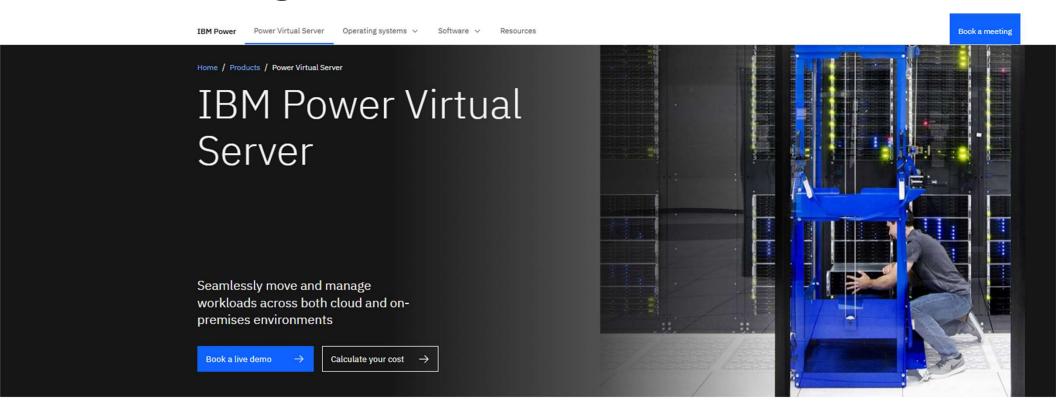


### Power Virtual Server Compliance Certifications – Current + Roadmap

Compliance Profile	Comments
GDPR	Followed IBM corporate GDPR privacy and risk assessment processes
CCPA (California Privacy Law)	Followed IBM corporate CCPA assessment processes
NIS	Followed IBM corporate NIS assessment processes
LGPD (Brazil Privacy Law)	Followed IBM corporate assessment process
ISO 27001, 27017, 27018	First received on 9/1/2020; recertified in 2021, 2022, 2023 and 2024 (see Certificate)
SOC 1 Type II	First obtained on 12/2020; last report received on <u>December 2024 (link)</u> .
PCI-DSS	PCI Attestation of Compliance (AOC) first received in 4Q 2022 Revalidated under new PCI-DSS v4 specification in 4Q 2024 (link).
SOC 2 Type II	Latest report received on <u>December 2024 (link)</u> .
HIPAA Readiness	Assessed against all HIPAA controls by IBM HPO – service declared "HIPAA Ready" (February 2024) (link).
IBM Cloud for Financial Services	Completed validation against IBM FS Cloud Compliance Controls (May 2024) ( <u>link</u> ).
CSA (Cloud Security Alliance)	CSA STAR certified (link).
IRAP (Australia)	Report obtained June 2024. Some exceptions in Sydney Data Center Physical Controls noted, will be addressed by migrating from collocated data centers to IBM Cloud managed data center that meet IRAP requirements.
HITRUST	Certification by HITRUST Alliance obtained in <u>December 2024</u>
ISMAP (Japan)	Certification obtained on June 30, 2025, See IBM Cloud compliance <u>link</u> and <u>ISMAP Website</u> (listing is in Japanese)
Protected B (Canada)	End of 2025 (Subject to change)
ENS High (Spain)	End of 2025 (Subject to change)
FedRAMP	FedRAMP Moderate ~2027-2028 (Subject to change) Implementation of FedRamp moderate controls expected to be completed by IBM Cloud and PowerVS in 2026 and authorization expected to be obtained in 2027-2028, assuming an ~18-month review process.

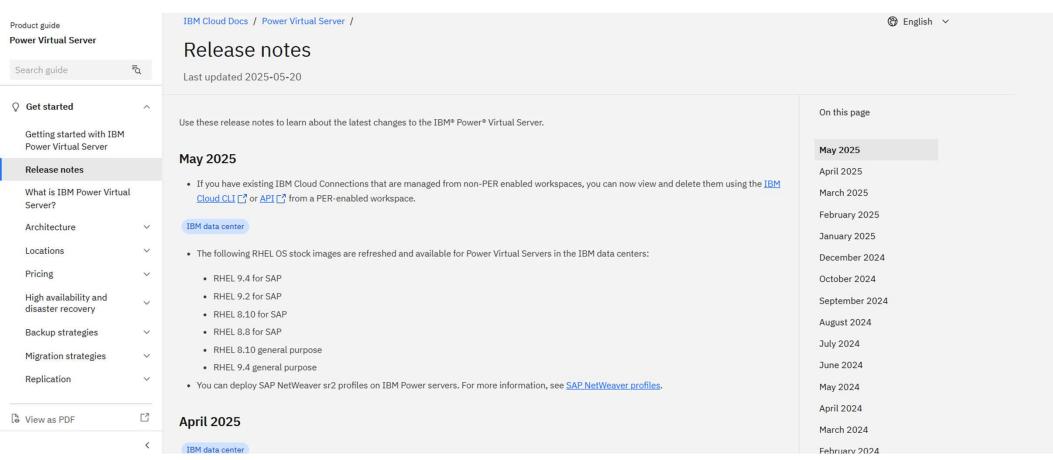
Roadmap

# **Product Page**





## More info



https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-release-notes

### 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 allows businesses to extend their onpremises environments to the cloud, modernizing hybrid cloud infrastructures and improving workload management. It reduces capital expenditure, leading to cost savings and operational efficiency, while providing an easy path to move SAP, Oracle, and IBM i workloads to the cloud for a seamless hybrid cloud strategy.

### 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 with 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.
- Supports 2nd & 3rd Generation processors
- Credits expire after 90 days

#### Why IBM Power Virtual Server



Grow at your own pace:

Extend workloads and take
advantage of pay-as-youuse billing to manage costs.

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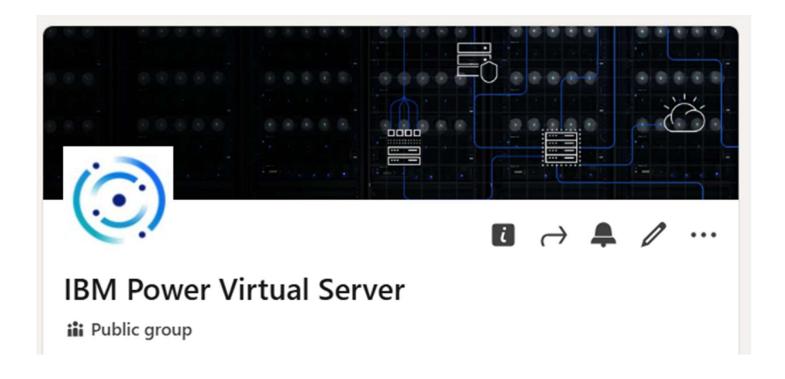
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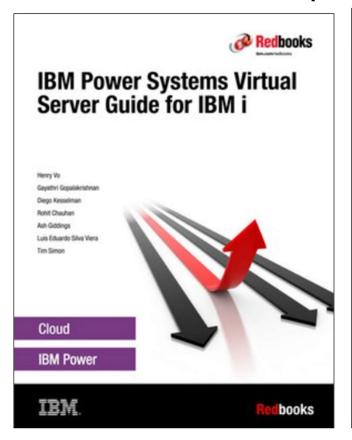
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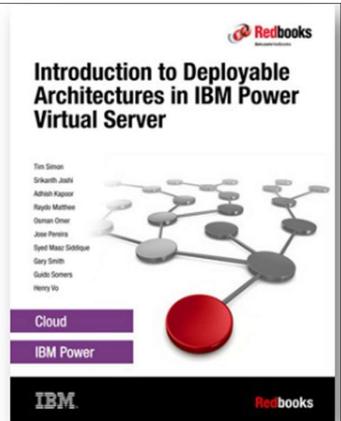
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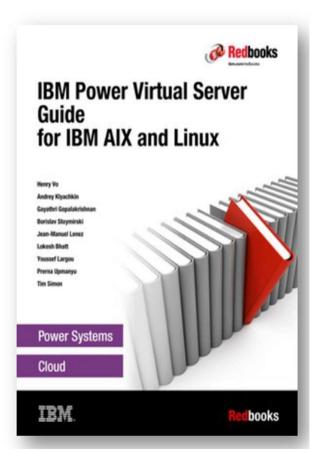


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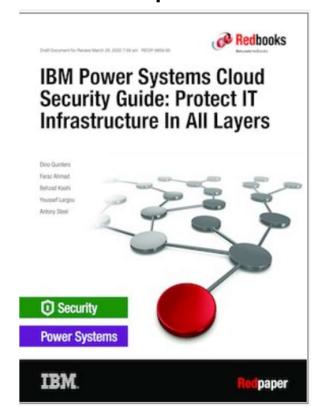


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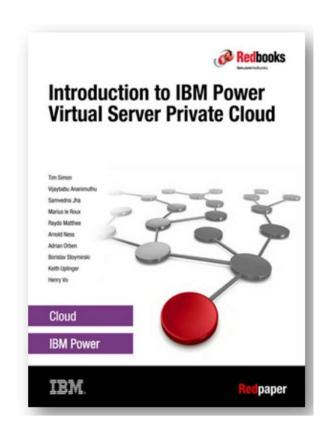
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## Contact info



Tonny\_bastiaans@nl.ibm.com



0031651380133



www.linkedin.com/in/tonny-bastiaans



