Power Systems Virtual Server - Deep Dive

Workshop 3. + 24. April 2025

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Agenda Tag 1

SVA
Power VS
Education

10:00 – 12:00	**IBM Power Virtual Server Deep Dive**	Martin Weidauer
	Kaffeepause	
12:15 – 13:00	**Schwerpunkte Nezwerk & Migration**	Martin Weidauer
	Mittagspause	
14:00 – 14:30	**Verdienstmöglichkeiten für SVA?**	Birgit Röhm
14:30 – 16:00	**Use Cases, DR, Fragen & Antworten**	Martin Weidauer / Alle
	Kaffeepause	
16:15 – 17:00	**IBM Cloud / Power VS Demo**	Martin Weidauer
ab 18:30	**Gemeinsames Abendessen im Echterdinger Brauhaus**	Alle

Agenda Tag 2

SVA
Power VS
Education

09:00 – 11:00	**SAP Automation auf Power VS** Deployable Architecture	Suraj Bharadwaj
	Kaffeepause	
11:15 – 13:45	**Power VS HandsOn Übungen**	Alle
	Mittagspause nach eigenem Ermessen	
14:00 – 16:00	**Kostenbetrachtung am Beispiel Archivsystem**	Martin Weidauer / Alle
	Workshop Ende	

IBM Cloud is optimized for the complex and evolving needs of enterprise and regulated industries

Resilient Cloud Platform

A cloud foundation focused on resiliency demanded by mid and back-office processes and workloads

Security

Meeting advanced security needs through a confidential compute portfolio and a broad ecosystem

Compliance and Controls

Compliance and controls built into a hybrid multi-cloud architecture

High Performance, Mission Critical Workloads

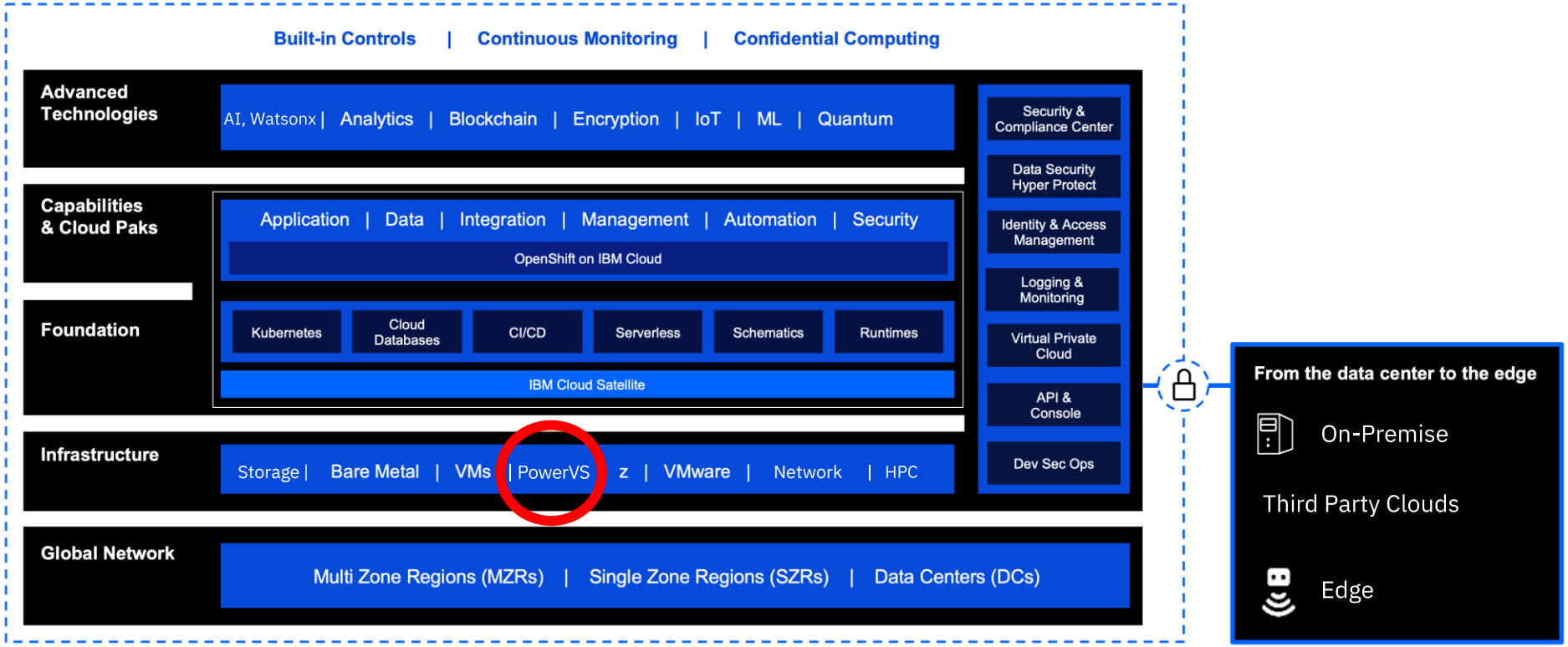
Providing x86, Power, Z and Quantum to meet performance needs of the applications and data that serve your business processes

IBM Cloud: Cloud without compromise

Reduce risk. Innovate anywhere.

Extend Enterprise	Performance Intensive	Regulated Industries	Modernize with OpenShift
VMware, SAP, PowerVS	*HPC, AI-Enabled Infrastructure*	*Trade Finance, Payments, Core Banking, Swift*	*RedHat OpenShift, Data, Security, Observability, DevOps*

Resiliency, Performance, Security, Compliance, Total Cost of Ownership



200+ Cloud native services
https://cloud.ibm.com/catalog

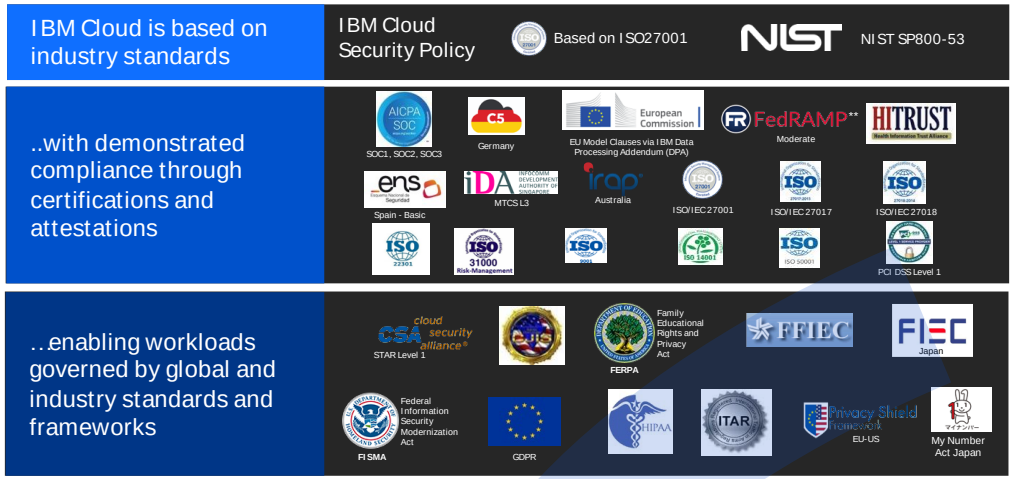
Hybrid, multicloud
Multicloud Manager, Control Framework

Innovate where you want
Designed for portability

IBM Cloud:
https://cloud.ibm.com/login
IBM Cloud Website:
https://www.ibm.com/cloud

- Enables clients to optimize investment across their IT estate
- Accelerates innovation and mitigates 3rd and 4th party risk in even the most regulated industries
- Drives outcomes, securely and with speed
- Unlocks agile development with options to ramp quickly and pay for only what is consumed

IBM Cloud Compliance, Data Protection & Data Security



IBM Cloud Compliance “Homework”
https://www.ibm.com/cloud/compliance

ISO 27001, ISO 27017, ISO 27018, ISO 27701,
PCI-DSS for Payment Card Industry - as Service Provider,
SOC1 Type 1, SOC1 Type 2
...

IBM Cloud “USPs”:

- Only provider in the Cloud industry with **KYOK (Keep-Your Own Key) encryption**
- **Single-Tenant HSM solution** under the control of customer (no access by IBM as Cloud provider)
- Only cloud provider with **technical assurance** to prevent access to data by cloud provider
- **Continuous validation** and documentation of **workload compliance** based on > 500 coded controls (Financial Services Cloud) for regulatory requirements managed via **Security Compliance Center (SCC)**
- **Contractual assurance** that no data will be transferred to US authorities

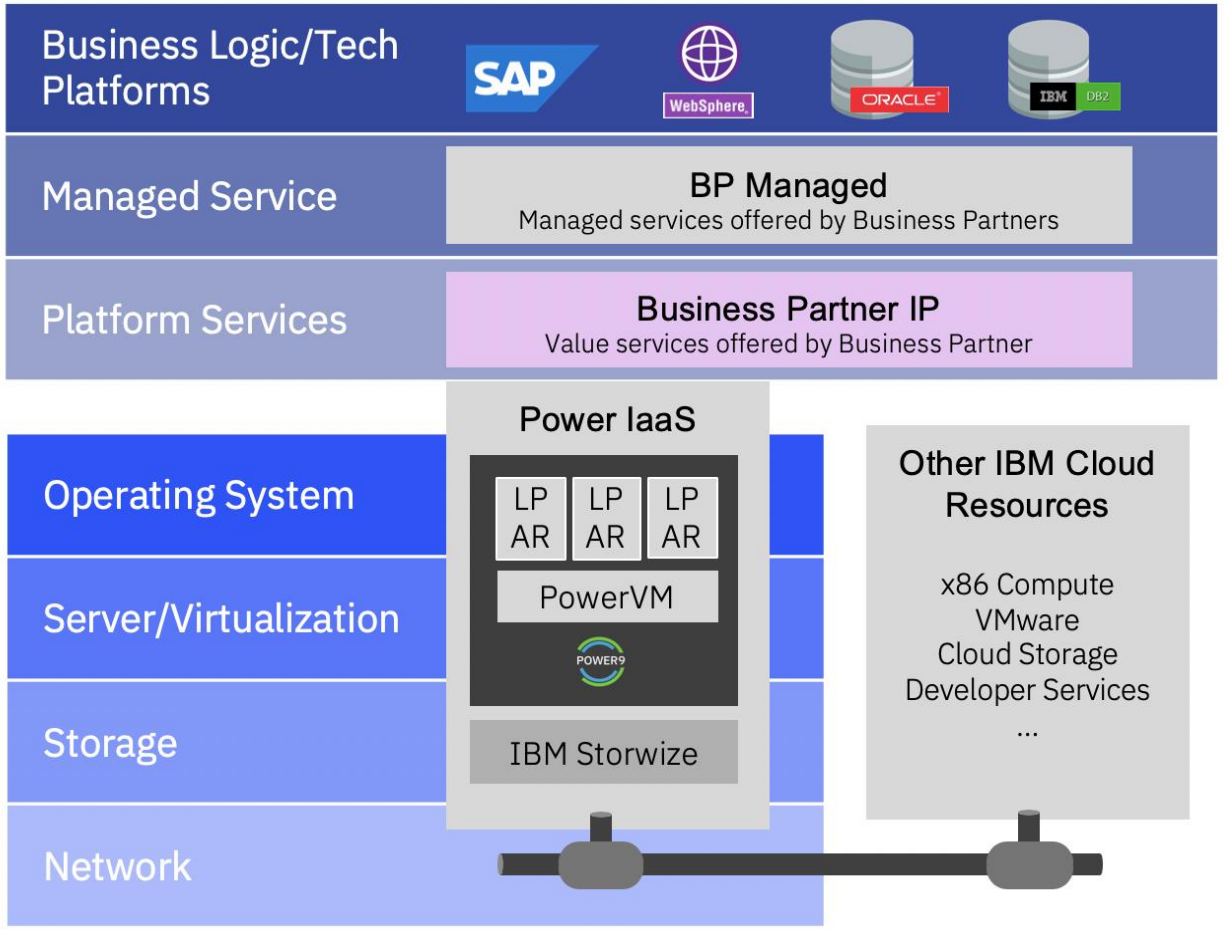
European Banking Authority (EBA) compliance brief:
https://www.ibm.com/downloads/cas/KRGNBGBD

IBM Power Virtual Server – at a glance

Differentiated Capabilities

- Full Enterprise Stack
- Superior Resiliency, Performance and Security
- Supported by Oracle
  Certified by SAP
  Enabled by IBM i ISVs
- Flexible and Cost-Effective Consumption
- 22 WW Data Centers (more coming)

Broad ISV support and certification

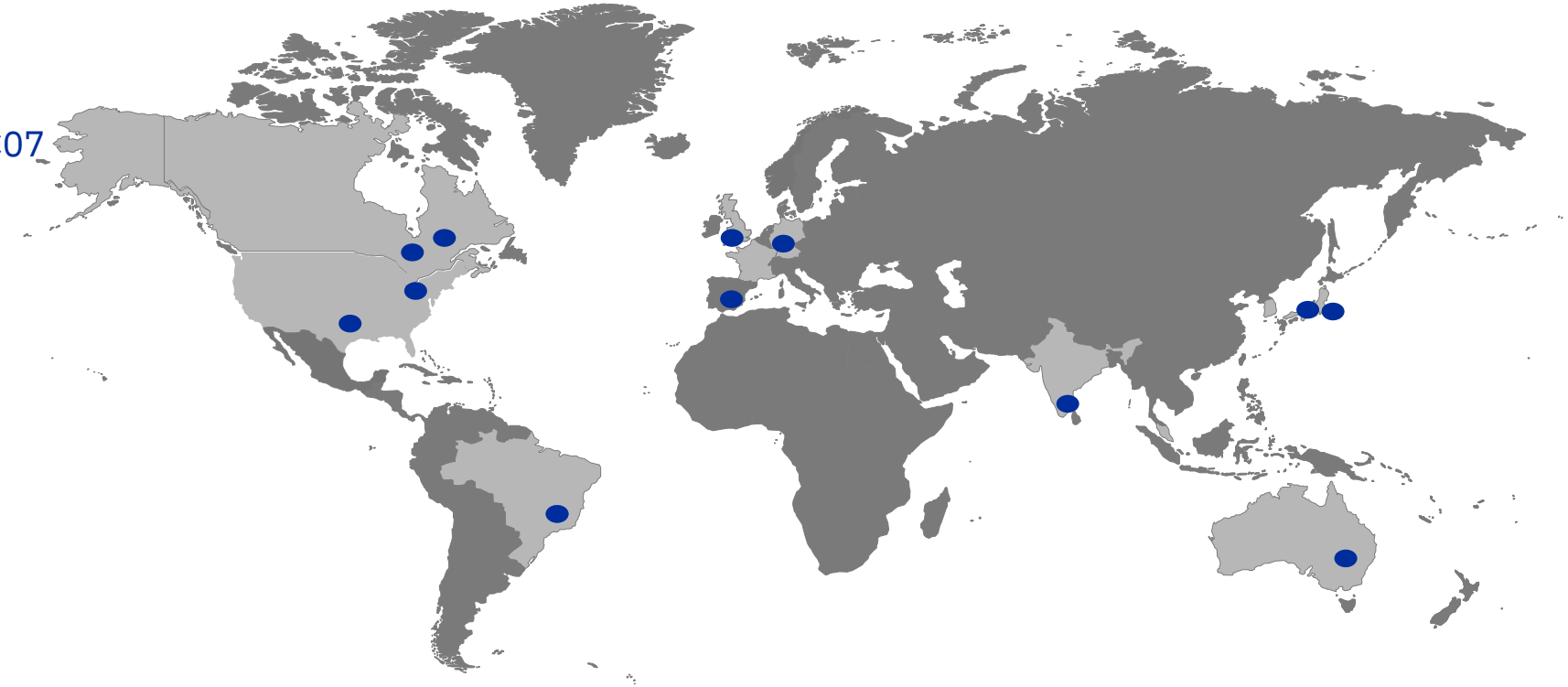


IBM Power Systems - Power Virtual Server

Worldwide deployment locations*

22 Data Centers

In 9 countries (*more coming*)



Americas
- Dallas – DAL10, DAL12, DAL13, DAL14
- Washington DC – WDC04, WDC06, WDC07
- Toronto
- Montreal
- Sao Paulo – SAO01, SAO04

EMEA
- **Frankfurt – FRA01, FRA02**
- London – LON04, LON06
- **Madrid – MAD02, MAD04**

APAC
- Sydney – SYD04, SYD05
- Osaka
- Tokyo
- Chennai

List of Current Datacenters

*** NOTE**: IBM Power Systems Virtual Servers are physically located in IBM cloud data centers with their own dedicated infrastructure.

IBM Power Systems Virtual Server Popular Use Cases

Data Center Strategy Optimization

Business expansion and worldwide growth

Frictionless migration. Architecture aligned with certified stack.

Grow quickly. Accelerate time to value. Geographic expansion.

Maintain ISV certifications and support.

Multisite implementation with Production, HA, DR and Dev/test environment

Business Continuity Planning

Reliable failover solutions

Backup, HA, DR

Reduce Capex

Flexible DR capacity

Reduce capacity planning complexity and capacity headroom

Modernize

Modernize process and evaluate cloud feasibility

Increase business agility

Modernize - connected with 200+ IBM Cloud® Services

Cloud integrated API that easily integrates to existing tooling

Shift from buying max capacity to provision on-demand

Start with Dev/Test environment

Improve operational cost

Operational Excellence and Cost Optimization

Ease of technology upgrade. Supported software.

Pay-as-you-go billing. Capex to Opex.

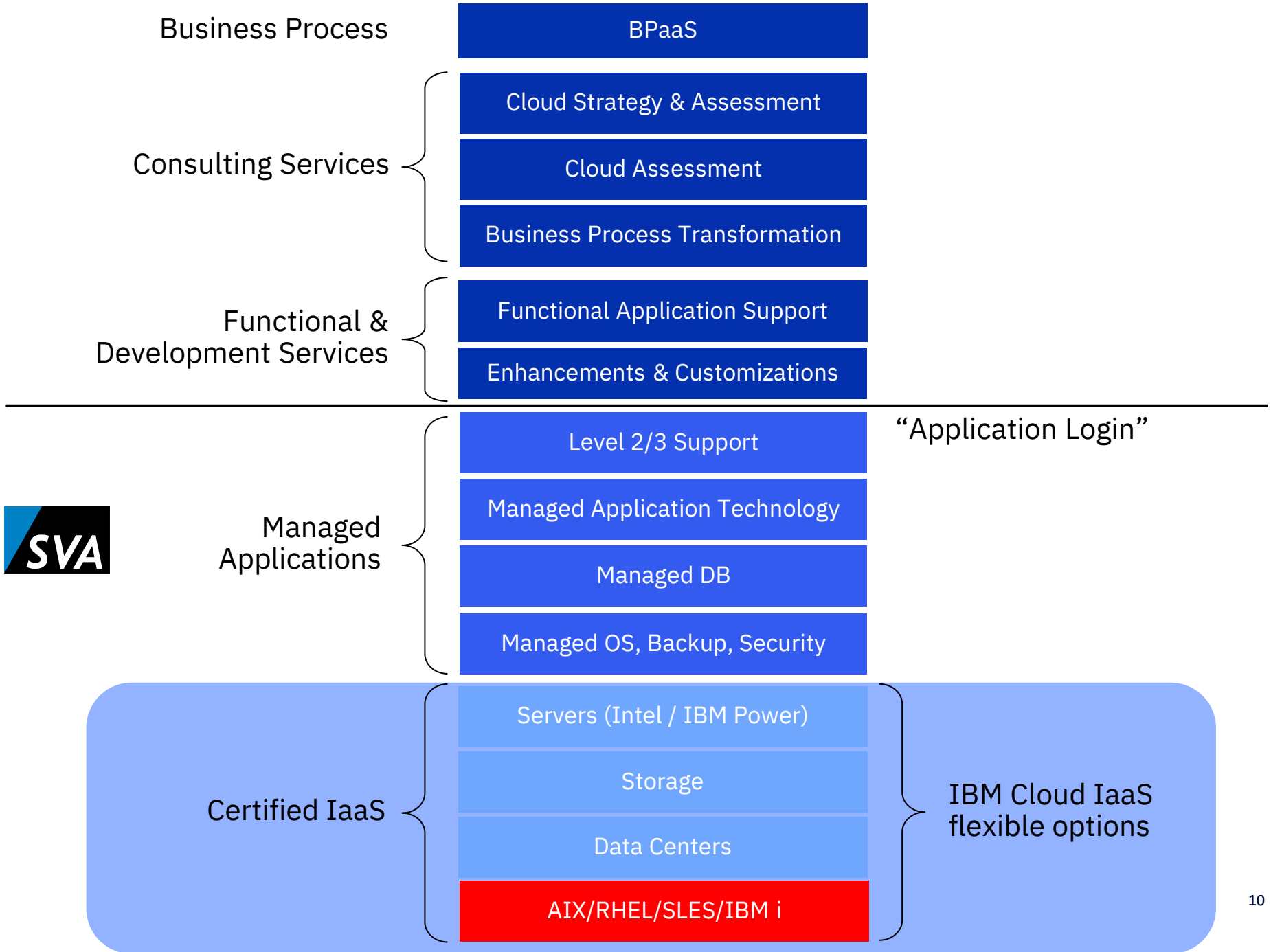
Align specialized skilled resources with key business objectives

Improve service and response time, off hours coverage

Customers often are looking for managed solutions

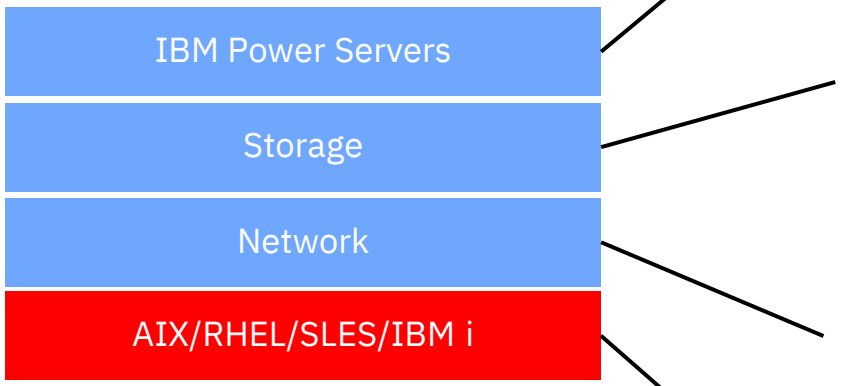
Power Systems Virtual Server provides IaaS. Managed Services on top of IaaS is a typical requirement.

IBM Consulting and IBM Business Partners provide Managed Services for Power Systems Virtual Server.



IBM Power Systems Virtual Server resource consumption

General:
- Managed IaaS
- All redundant setup
- 2 DCs per Region
- SLA 99,95-99,99%



- Consumption of Power LPARs, CPU, RAM, S922/E980, S1022/E1050/E1080
- live partition mobility included
- remote restart included
- Dedicated Hosts
- Shared Processor Pools

- No HW access e.g. to HMC/NovaLink, PowerVC

- Consumption of Block Storage
- All Flash Storage
- Snapshots, Clones
- 3, 10, 25 IOPS/GB or fixed 5000IOPS

- No HW access e.g. to SVC
- VIOs managed by IBM

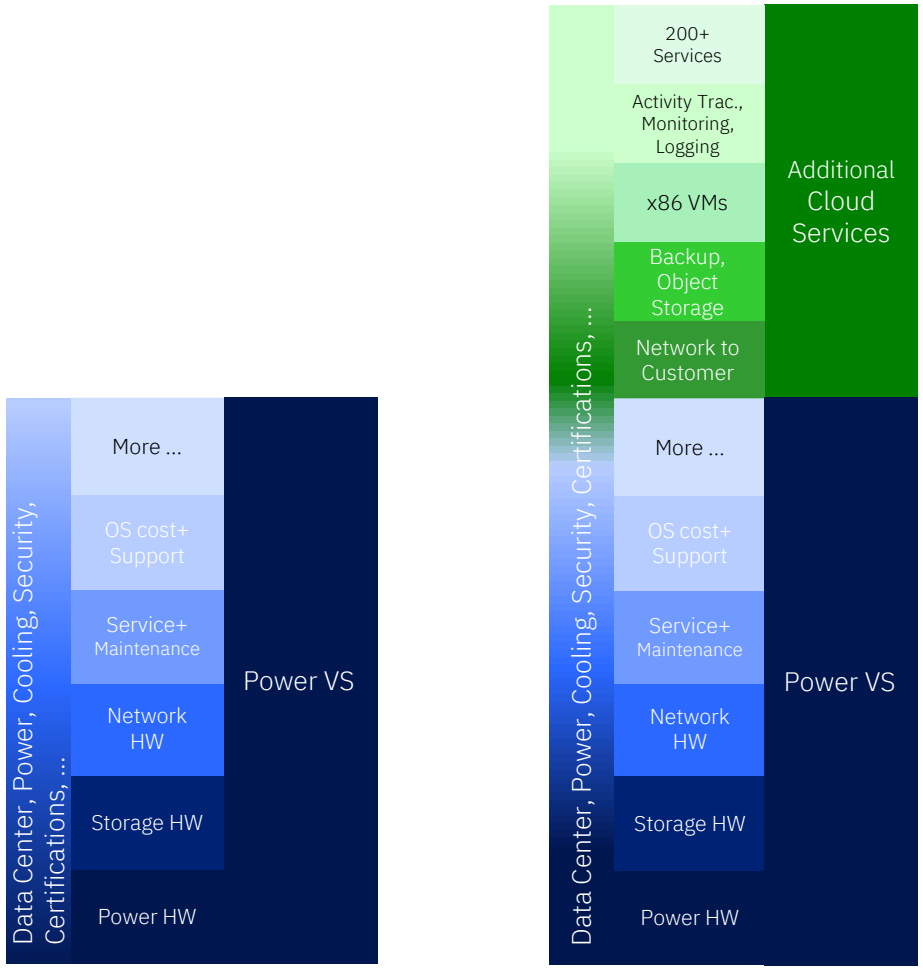
- Consumption of Subnets
- ByoIP

- No HW access
- VLANs managed by IBM

- Standard Image Catalog
- Custom Images
- Image import / export

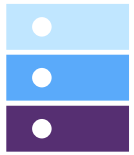
Enterprise Architecture	❖ Identical architecture with enterprise Power Systems on-premises architecture from microprocessors, firmware, PowerVM, PowerVC and dual VIOS.
Highly flexible, usage-based billing	❖ **PowerVS is highly flexible and scalable, automation via API, CLI, Terraform allows highly flexible deployment and usage** ❖ **Usage based pricing, billed by the hour, committed usage discounts on all resources independent of LPAR profiles or selected Power System (S or E)**

IBM Power Virtual Server – More than just hardware hosting



IBM Cloud infrastructure offerings for SAP provide the most options and configurations of any cloud provider

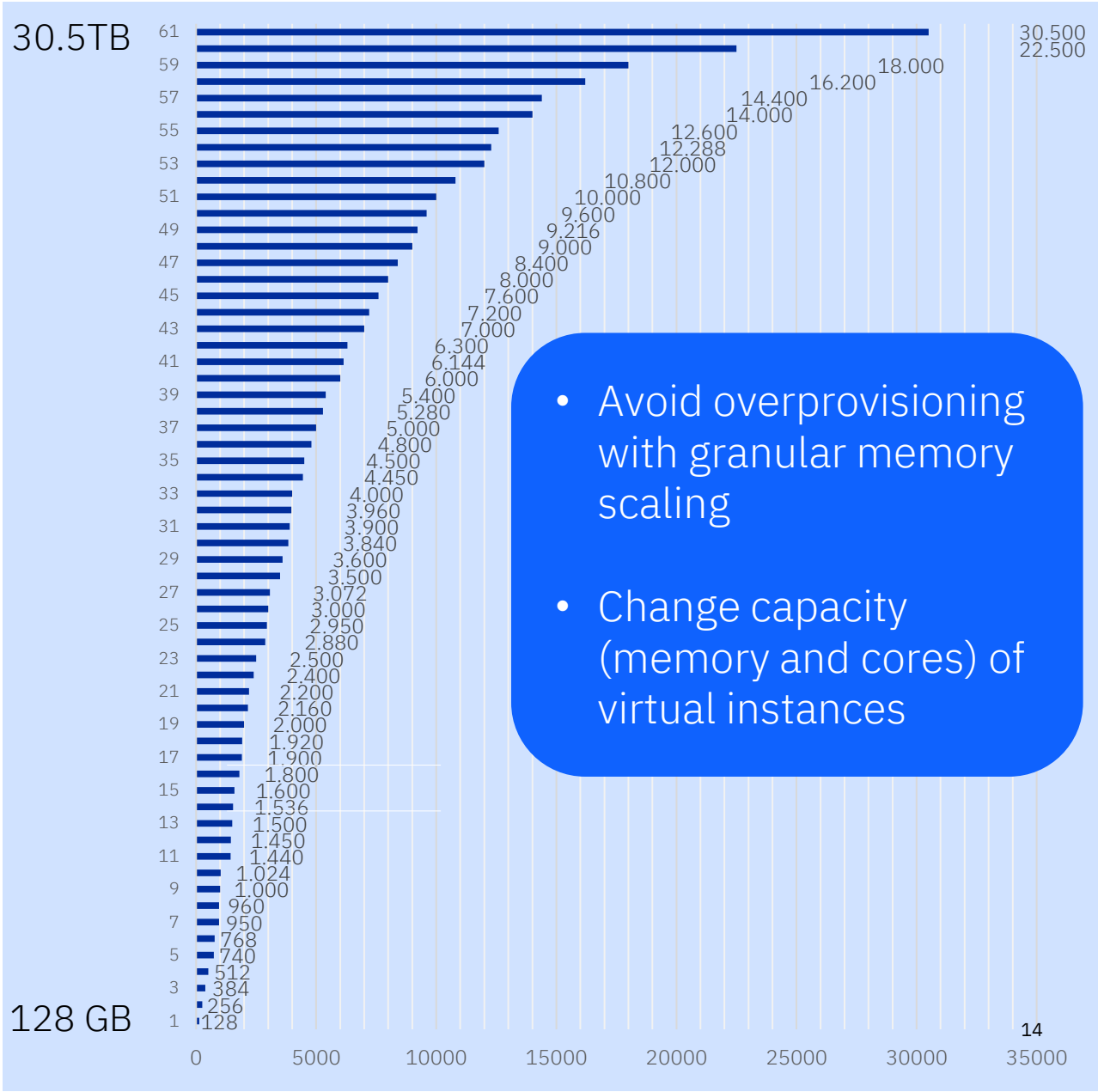
https://cloud.ibm.com/wes-ui/sap



Intel Bare Metal		Private Virtual Data Center	Virtual Machine	
IBM Cloud Bare Metal server, certified for SAP	**IBM Cloud Bare Metal server, certified for SAP with Intel Optane DC Persistent Memory**	**IBM Cloud for VMware Solutions, certified for SAP**	**IBM Cloud Virtual Server Instance certified for SAP**	**IBM Power Virtual Server for IBM Cloud, certified for SAP**
Secure single-tenant	Secure single-tenant	Secure single-tenant	Secure multi-tenant	Secure multi-tenant
Rent the full machine	Rent the full machine	Rent the full machine	Rent VM on hypervisor	Rent VM on hypervisor
Maximum performance for large and intensive mission critical workloads	Maximum performance for large and intensive mission critical workloads	Optimised performance with high agility, resiliency, and elastic compute costs	Full elastic compute for scalable workloads	Enterprise security, maximum performance and stability on IBM POWER9,10
Designed for high-performance SAP production environments	Designed for high-performance SAP Production environments with ultra-high memory	Designed to enable flexible delivery during SAP project implementations	Designed for elasticity and cost optimization of low to high performance SAP workloads	Designed for ultra-high performance SAP production environments with ultra-high memory
550.670 SAPS benchmark	**550.670 SAPS** benchmark	**495.603 SAPS** benchmark	**215.570 SAPS** benchmark	**1.573.370 SAPS P10** **907.820 SAPS P9** benchmark

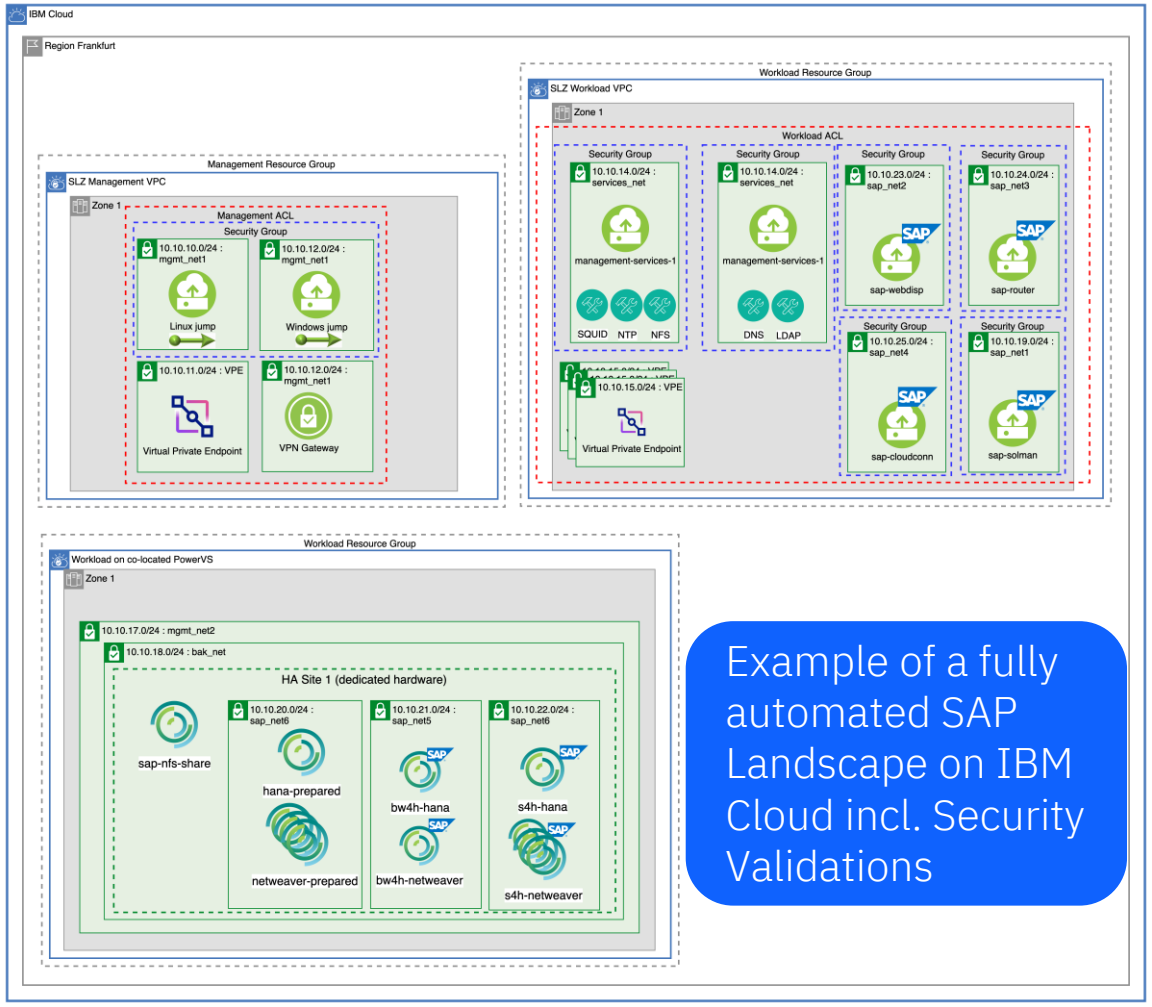
Advantages of IBM Power Systems Virtual Server for SAP

- IBM Cloud provides the only SAP-certified IaaS environment on IBM Power
- Change capacity (memory and cores) of virtual instances as needed or by applying a different certified profile for S4/HANA instances
- Scale vertically without overprovisioning in granular increments of 61++ certified instances from 128GB to 30.5TB RAM
- World record SAPS performance benchmark for IaaS environment
- Cloud built on industry's most reliable and secure SAP-certified server
- SAP platform with highest availability
- SAP platform with least security incidents
- Fully managed by IBM, allowing to benefit from IBM Power without requiring deep skills



Automation of SAP Landscapes incl. Infrastructure Patterns automated with Terraform and Ansible

- Automation of SAP Landscapes is a focus area across IBM and RedHat
- It’s a joint effort across IBM Cloud, IBM Consulting and RedHat organizations
- IBM Cloud provides and maintains Architecture Patterns incl. Terraform and Ansible Automation to deploy complete SAP Landscapes
- Regulatory requirements (FS Cloud validated Architectures) and controls (Security Compliance Center) are leveraged
- SAP S/4HANA or SAP BW/4HANA fully automated Deployable Architecture



Example of a fully automated SAP Landscape on IBM Cloud incl. Security Validations

Part II – Details

2. Deep Dive

Power Systems Virtual Server – Capabilities and Limitations

	Capabilities	Limits	AddOns
Compute (v12)	• Consumption of LPARs and/or Dedicated Hosts • Shared uncapped, shared capped, dedicated cores • Virtual Server Pinning (none, hard, soft) • Server Placement Groups Affinity/Anti-Affinity • LPM and Remote Restart within data center are included • CPU cores configurable in 0,25 steps • fractional Cores rounded up to next integer (0,25 > 1,0 Cores) • Shared Processor Pools (SPP) using Capped & Shared Cores • Fix ratio of 1 EC : 1 VP for LPARs outside SPPs and in P9 SPPs • Ratio of up to 1 EC : 3 VP in P10 SPPs for LPARS with up to 2 Cores • Flat RAM price inside SPPs	• No access to HMC/NovaLink • Max 4 Cores in IBM i LPARs on scale-out hosts; P10 licensing • More Cores for IBM i on scale-up hosts; P30 licensing • S922: max 15 Cores / LPAR • S922: max 976GB RAM / LPAR • E980: max 143 Cores / LPAR • E980: max 22,5TB RAM / LPAR • S1022: max 33 Cores / LPAR • S1022: max 1986GB RAM / LPAR • E1050: rolling out • E1080: max 171 Cores / LPAR • E1080: max 32TB RAM / LPAR • Availability/capacity differs between data centers • One default SPP per Workspace; up to 63 custom SPPs per Workspace • SPPs tied to host/system type • Default SPP: min. 0,25 Core, fix 1:1 ECtoVP, no weights • Dedicated Host SPP: flexible ECtoVP ratio up to 1:20 • P9 phase out targeted mid 2028	• x86 VMs in IBM Cloud VPC and Classic

Compute Comparison

Key Takeaways

Power10 delivers Significant IBM i and AIX performance improvement

Model	S822		S922		S1022
CORES	8		15		33
CPW SIZES CORES	4		4		4
CPW FOR SYSTEM	49,960		68,000		104,700
RELATIVE AIX PERFORMANCE (Core) (RPERF – SMT8)	17.8	**+44%** → Increase To P10	21.32	**+20%** → Increase	25.60
RELATIVE IBM i PERFORMANCE (CPW/Core)	12,490	**+110%** → Increase To P10	17,000	**+54%** → Increase	26,175
MEMORY AVAILABLE FOR USE	976GB		976GB		1986GB
RPERF	ST – 60.9 SMT2 – 88.4 SMT4 – 114.8 SMT8 – 122.9		ST – 144.2 SMT2 – 245.2 SMT4 – 338.4 SMT8 – 426.4		ST – 324.1 SMT2 – 602.4 SMT4 – 798.4 SMT8 – 1024.1

Compute Comparison

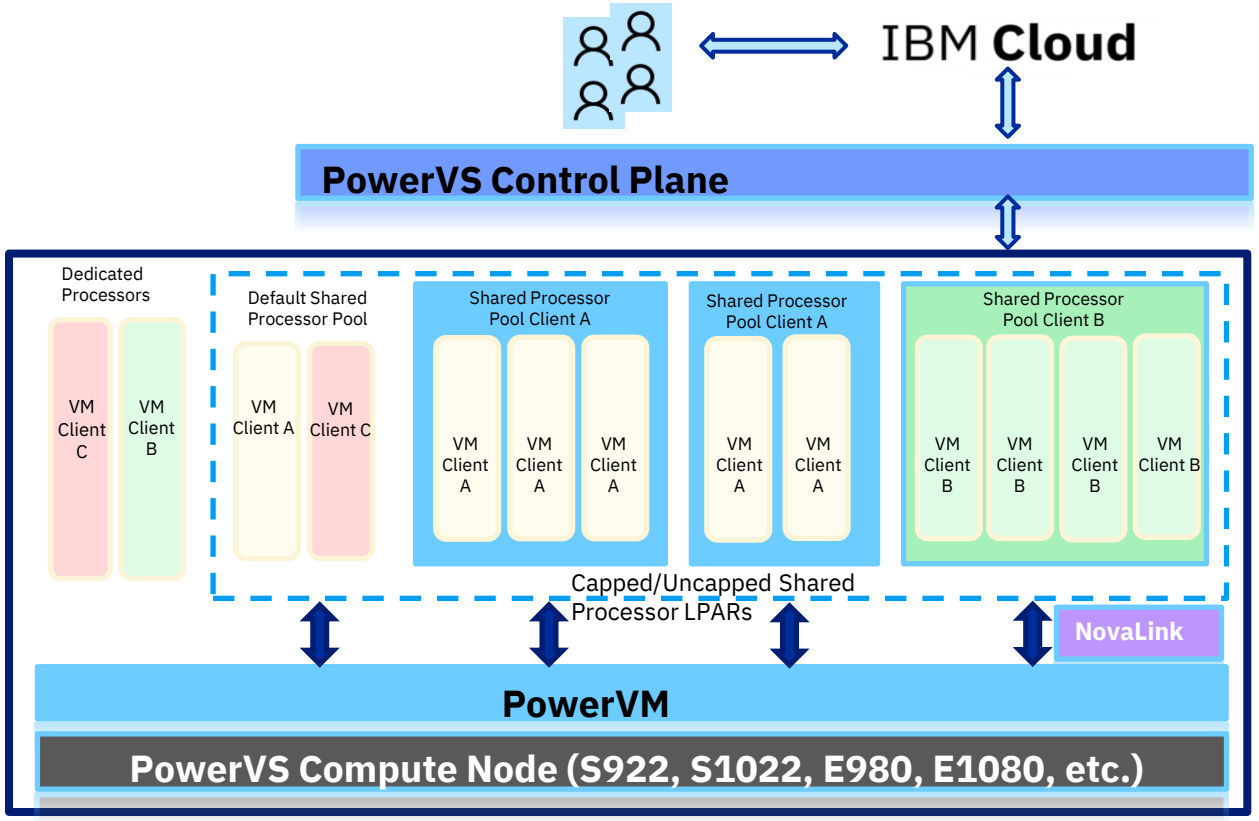
Key Takeaways

Power10 delivers Significant IBM i and AIX performance improvement

Model	E880		E980		E1080
CORES	72		143		171
CPW SIZES CORES	40		40		48
CPW FOR SYSTEM	43,608		243,900		450,400
RELATIVE AIX PERFORMANCE (Core) (RPERF – SMT8)	20.16	**+74%** → Increase To P10	27.45	**+28%** → Increase	35.01
RELATIVE IBM i PERFORMANCE (CPW/Core)	10,902	**+116%** → Increase To P10	13,171	**+79%** → Increase	23,520
MEMORY AVAILABLE FOR USE	16800GB		24496GB		32672GB
RPERF	ST – 799.6 SMT2 – 1159.3 SMT4 – 1507.1 SMT8 – 1612.6		ST –1,486.0 SMT2 – 2,526.1 SMT4 – 3486.0 SMT8 – 4,392.4		ST – 1888.7 SMT2 – 3707.4 SMT4 – 5261.8 SMT8 – 6722.3

Shared Processor Pools (SPP)

- A reserved pool of processor capacity that is shared between a group of virtual server instances
- Allows more control over the processor capacity that can be used by a virtual server
- Optimizes processor utilization between virtual servers in the pool
- Provides improved TCO for Production and DR work loads
- Available in PowerVS Public and PowerVS Private



Shared Processor Pools – Use Cases and Benefits

License Optimization

Separate Session

Reduced the number of licenses needed for applications that are licensed by the core

Capacity Reservation

Reserve cores and memory for later use at a lower TCO

Business Continuity

Reduce DR Infrastructure by being able to scale cores dynamically

DR for IBM i

PowerHA ROHA – for AIX

DRA – (future)

Shared Processor Pools – Enhancements 2024/2025

Optimized SPP Cost (March 2025):

- Only **pay** for the **cores reserved** in the Shared Processor Pool; **VM cores** are **not charged**
- VMs deployed into a SPP with a **core-to-memory ratio > 1 core : 64 GB** are **priced at standard rates** versus high-memory usage rates

Release Notes: https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-release-notes#March-2025

Improved Entitled-to-Virtual Cores Ratio (2024)

- Leverage multiple VPs per EC to reduce SW licensing costs
- Allows for a **1:3 EC to VP ratio** for VMs in Shared Process **Pool with 2 or fewer cores on Power10** instead of the normal 1:1 ratio
- Ratio for PowerVS Private Cloud is 1:20

Power Virtual Server : https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-manage-SPP
Power Virtual Server Private Cloud: https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-pricing-private-cloud

Shared Processor Pools Metering Optimization - CPU

AIX

Sample Data

Data Center / Machine Type	Cores	Type	Mem	Price	Total
DAL12 / S1022 (main pool) BYOL	6	C	0	$954.83	$954.83
VM 1 within pool (AIX)	2	S	64	$826.66	$1,781.49
VM 2 within pool (AIX)	2	S	32	$548.38	$2,329.87
VM 3 within pool (AIX)	2	S	128	$1,383.24	$3,713.11

Note: Monthly USD prices shown

Shared Storage Pools (before changes)

- Create the pool using capped cores
- Billed monthly on data center, machine type, total cores
- Billed for the VM within the pool when created in addition to main pool

Shared Processor Pools Metering Optimization - RAM

AIX

Sample Data

Data Center / Machine Type	Cores	Type	Mem	Price	Total
DAL12 / s1022 (main pool) BYOL	6	SPP	0	$954.83	$954.83
VM 1 within pool (AIX)	2 (no charge)	S	64	$614.54	$1569.37
VM 2 within pool (AIX)	2 (no charge)	S	32	$336.26	$1905.63
VM 3 within pool (AIX)	2 (no charge)	S	128	$1,171.12	$3076.75 vs $3713.11

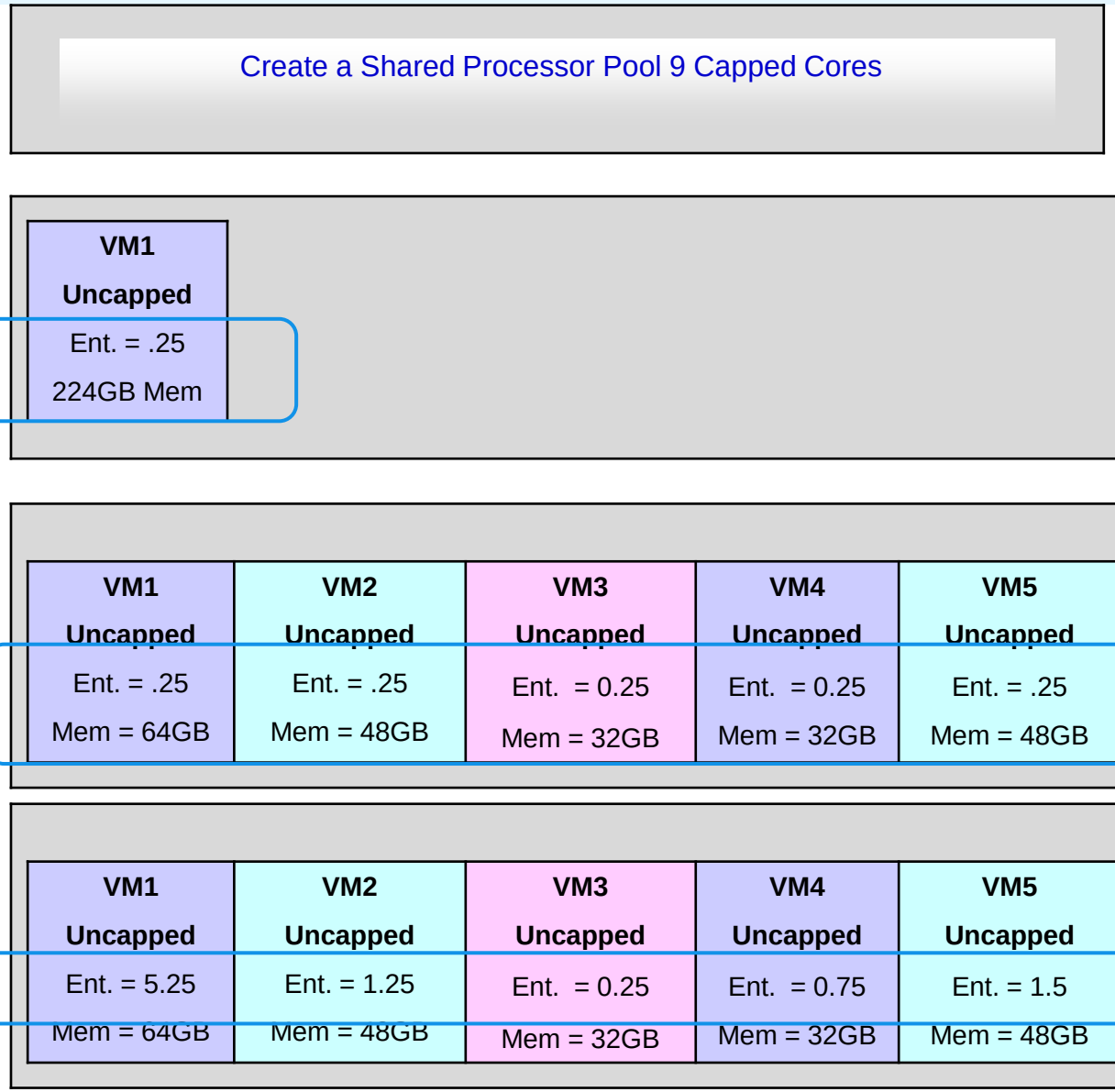
Note: Monthly USD prices shown

Metering Optimizations

- Leverage new “SPP” Part number with CRN (still capped core)
- Do not bill for VM cores configured within the pool
- Eliminate high-memory premium memory configured in pool

No High-use memory pricing

Capacity Reservation with Shared Processor Pools



Create a pool with 9 capped cores (BYOL)

Pool is billed for cores, server type, datacenter

To reserve memory, create and activate a VM with minimal cores, and total memory that will be needed

Billed for pool + standard memory and OS licenses for activated core (.25) - Note: no high-use memory charge

To reserve VMs – create VMs with desired mem, and lowest core

Billed for pool, memory and activated OS core licenses

Burst up to max cores and VPs when needed up to size of pool

Billed for pool, memory and activated OS core licenses

Additional memory can be added based on availability of the system

Power Systems Virtual Server – Capabilities and Limitations

	Capabilities	Limits	AddOns
Storage (v12)	• 32GB SAN infrastructure using IBM Flash System 9xxx (NPIV) • Consumption on Volume level • 1GB-512TB Volumes, 1GB increments • 3 (~~SSD~~), 10, 25 (~~NVMe~~) IOPS/GB • 5000 IOPS fix • Mix and match different tiers (Tier 3 for boot/system disks , other Tiers for data disks) • The storage Tier of a volume can be changed online • VIOS included in hourly price of LPAR/Volume • Sharable Volumes • Snapshots • Clones • Storage Pool Affinity/Anti-affinity • GRS: Global Replication Service = async storage replication between defined DR pairs (Frankfurt-Madrid) • Volume encryption with provider keys by default, ByoK & KyoK optional	• No access to storage HW, VIOS • No storage replication between two data centers in one Region (e.g. eu-de-1 and eu-de-2) (Exception LON04 & LON06) • All volumes in a snap or clone must be from the same storage pool • Snaps cannot be accessed by other LPARs: only restored to primary LPAR • 5000 IOPS limited to 200GB volumes • Minimum 1GB per volume • Maximum 512TB per volume in the Portal (CLI allows for larger volumes) • More than 127 volumes per LPAR must be enabled at LPAR creation time, can not be changed later • GRS: Storage Tier can not be changed online; replication must be stopped and re-created	• Global Replication Service (GRS) • VM Recovery Manager (VMRM) • Backup as a Service (Cobalt Iron) • Virtual Tape Library (Falcon Stor) • Cloud Object Storage (COS) • Hyper Protect Crypto Services (HPCS) or Key Protect for AIX and Linux • Software replication solutions (GLVM, Mimix, Bus4i, DB2HA/DR, Oracle RAC, HANA System Replication, ... • ...

Power Systems Virtual Server – Capabilities and Limitations

	Capabilities	Limits	AddOns
Operating Systems (v12)	• AIX, RHEL, SLES, IBM i (latest version information) • OS license and maintenance included in hourly price (BYOL option for RHEL & SLES only) • IBM i LPPs included in hourly price • IBM i 7.2, 7.3 extended support fee included in hourly price • Movable i process to reduce IBM i subscription cost by transferring perpetual licenses (IBM i MOL) • Optional client supplied subscription/ByoL for Linux • IBM managed Image Library • Custom images in private library • OVA Image import/export • Boot volume included in LPAR hourly price	• Every Workspace has its own Image Library (import/export via COS to move images)	• Cloud Object Storage for Image import/export • Run a NIM server to leverage mksysb for OS deployment

Power Systems Virtual Server – Capabilities and Limitations

	Capabilities	Limits	AddOns
Access (v12)	• Web GUI • Remote Console via Browser • CLI • API • Terraform provider • IP Networking	• WebGUI, API, CLI are accessible via public endpoints, access can be limited using context-based restrictions e.g. network zones	• Ansible Roles • Schematics (Multiuser, managed Terraform service)

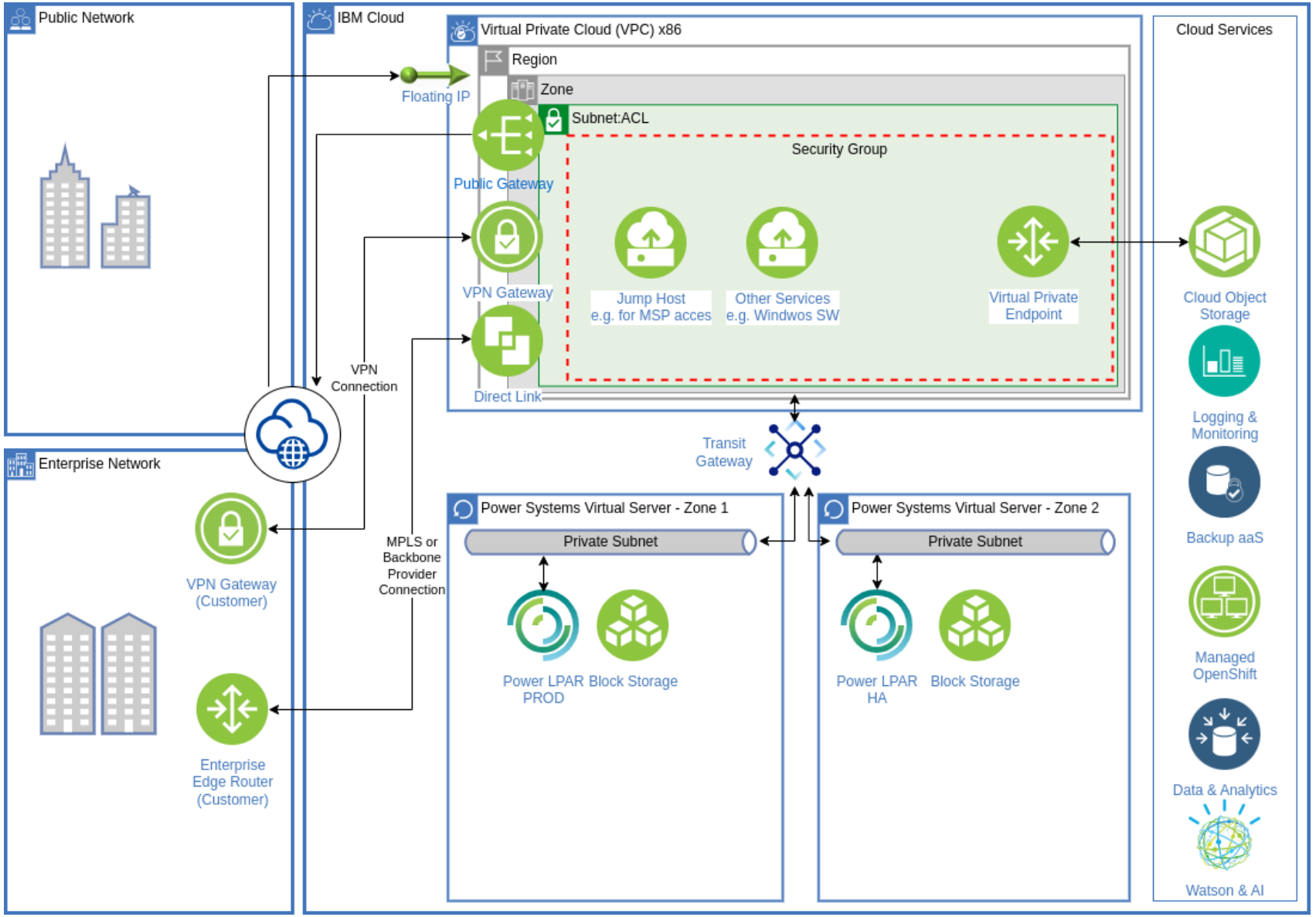
Part II – Details

3. Network & Migration

Power Systems Virtual Server – Capabilities and Limitations

	Capabilities	Limits	AddOns
Network (v12)	• Private Subnets and/or Public NAT IP address (one option required) • ByoIP for private subnets (optional) • Reserving IP addresses • Old (few DCs left): Cloud Connections: Up to 10Gbps Cloud Connections to second Power VS datacenter and other IBM Cloud services (optional) • New (default): Power Edge Router (PER) 400Gbps shared connectivity to IBM Cloud Backbone • PER can be connected to any TGW, can be local or remote • PER direct access to IBM Cloud private Endpoints, shared 10Gbps • VIOS included in hourly price • Use VPNaaS from VPC + Configure Prefix for Power VS (PowerVS VPNaaS deprecated since 06/24) • P9: 25Gbps NICs • P10: 100Gbps NICs • Virtual Ethernet/SEA (~80%+ performance gain with AIX 7.3 TL3) • ACLs and Security Groups (NIC level)	• No access to Network HW, VIOS • VLANs managed by IBM • Old PowerVS VPNaaS without SLA deprecated (06/24 • No vNIC/SRIOV option • 07/24 End of service notice for Cloud Connections in PER enabled DCs by 06/2025	• Transit Gateway (local/remote) • VPNaaS via VPC • Network separation via TGW & VPC ACL/Security Groups • Firewalls • Direct Link • DNS • VPC Load Balancers • Internet Connection Services • …

Power Systems Virtual Server – Typical Networking Options



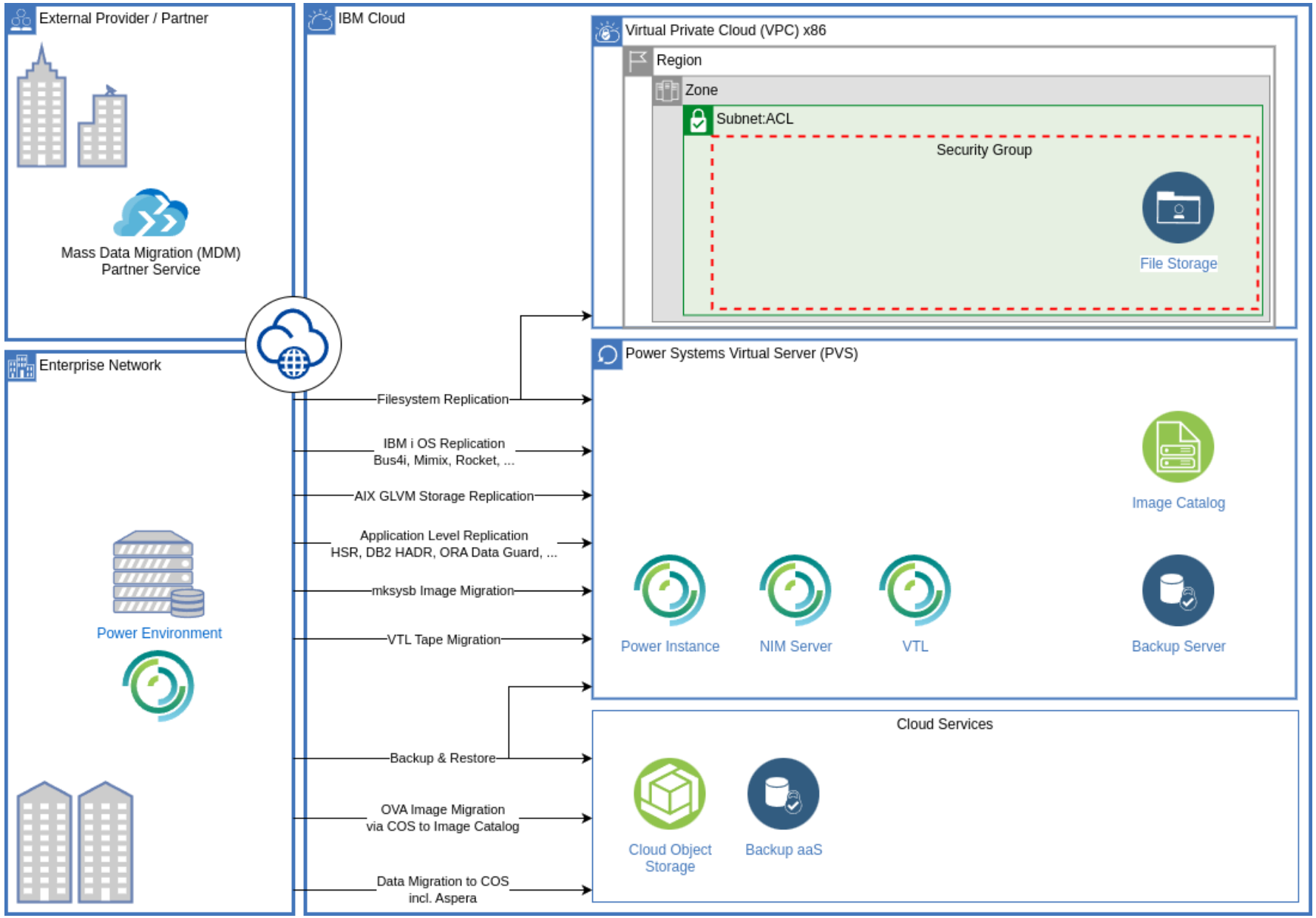
Native Network Options:

- Public (NAT) IP
- Private Subnet (ByoIP)
- Power Edge Router
- Access to Cloud Services

Extended Options:

- Transit Gateway
- Direct Link
- Connection to 2nd Power VS data center
- VPC Connectivity
  - Jump or proxy virtual and dedicated hosts
  - Firewalls
  - Virtual Private Endpoints
  - VPNaaS with SLA
- Classic x86 Connection (not shown on chart)
  - Firewalls
  - x86 Bare Metal
- …

Power Systems Virtual Server – Migration Options

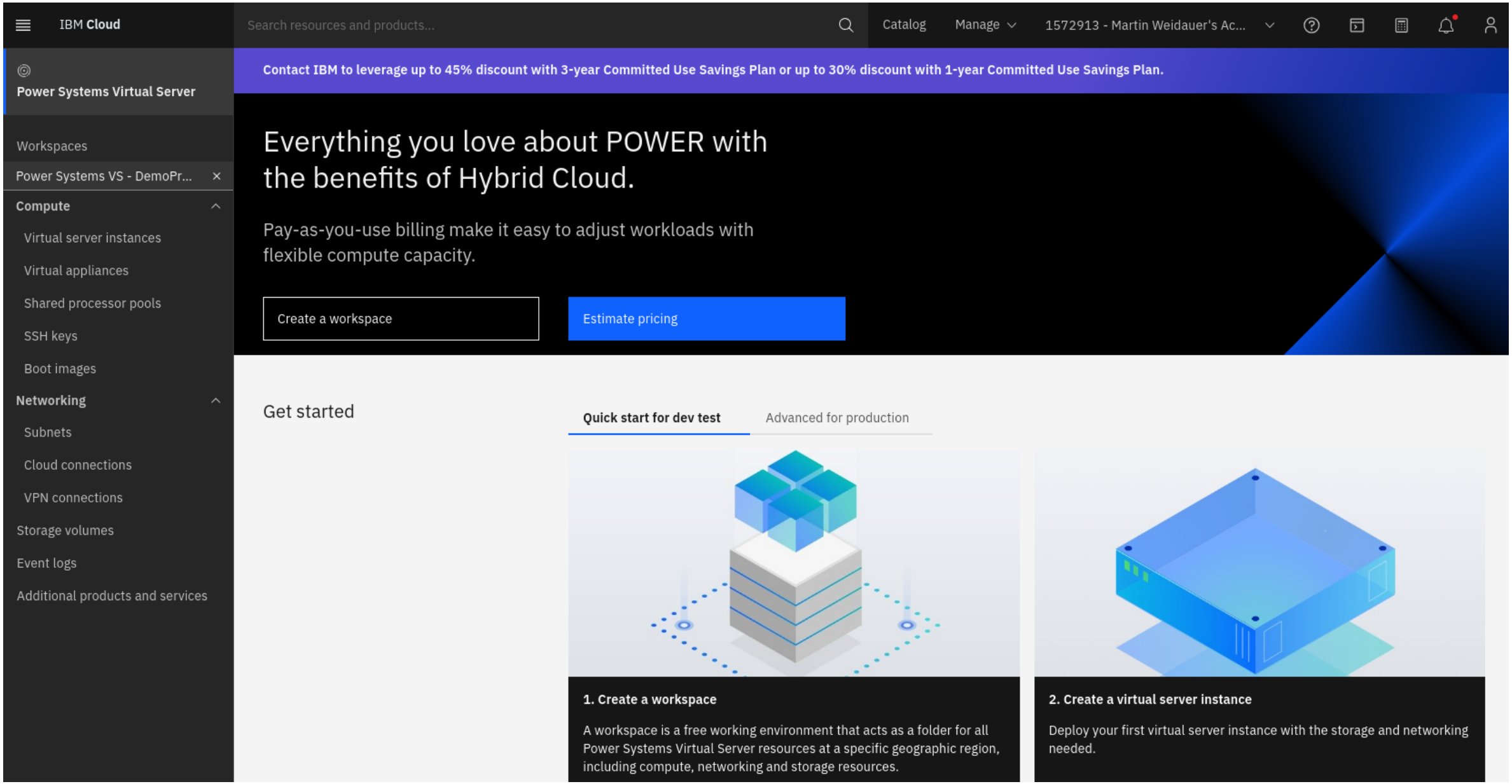


- Filesystem Replication
- IBM i OS Replication
  Bus4i, Mimix, Rocket, ...
- AIX GLVM Storage Replication
- Application Level Replication
  HSR, DB2 HADR, ORA Data Guard, ...
- mksysb Image Migration
- VTL Tape Migration
- Backup & Restore
- OVA Image Migration
- Data Migration to COS incl. Aspera

Part II – Details

1. Demo

Power Systems Virtual Server – Demo



Thank you

Part IV – Additional Details

Shared Processor Pools (SPP)

Shared Processor Pools – License Optimization

- Many software providers charge based on the number of processors
- Reduce license cost by only licensing the cores configured in the pool
- Leverage EC:VP ratio on Power10 for increased virtual processor capacity for virtual servers

Oracle SW licensing cost optimization example

AIX

Without SPP

VM1	VM2	VM3	VM4	VM5
Capped	**Capped**	**Capped**	**Capped**	**Capped**
AIX 7.3	AIX 7.3	AIX 7.3	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
VP = 6	VP = 2	VP = 1	VP = 1	VP = 2

- Provision 5 VMs with 12 fixed cores
- 12 Oracle licenses required

With SPP

VM1	VM2	VM3	VM4	VM5
Uncapped	**Uncapped**	**Uncapped**	**Uncapped**	**Uncapped**
AIX 7.3	AIX 7.3	AIX 7.3	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
Ent. = 5.25	Ent. = 1.25	Ent. = 0.25	Ent. = 0.75	Ent. = 1.5
VP = 6	VP = 2,3	VP = 1,2,3	VP = 1,2,3	VP = 2,3
SPP Reserved: 9 capped cores				

- Create Shared Process Pool with 9 capped cores
- Provision 5 VMs with 9 cores entitled capacity
- 12 virtual processors with 1:1 EC:VP
- 18 virtual processors with 1:3 EC:VP (up to 50% savings)
- 9 Oracle licenses Required

Oracle Licensing Optimization Benefits

- Enable hybrid cloud environment to run off-premise Oracle workloads
- Reduce the number of SW license by putting a limit on the number of processors an uncapped partition can use
- **Meets Oracle's support and hard partitioning requirements**
- Fully certified stack w/ PowerVM, AIX, IBM i, SAN-based storage, network adapters
- Full support for Oracle database, RAC, Fusion middleware, applications
- Option to add and license only 1 incremental core at a time to a SPP

Oracle Production Example (S1022)

AIX

S1022 without SPP

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
VM1	6.00		C	64	AIX	$1,768.78	6	
VM2	2.00		C	48	AIX	$856.28	2	
VM3	1.00		C	32	AIX	$508.15	1	
VM4	1.00		C	32	AIX	$508.15	1	
VM5	2.00		C	48	AIX	$856.28	2	
Total PVS	12.00	0		224		$4,497.65	12	
					with Discount	$2,473.71	$5,225.00	
						Total	$7,698.71	

As-is without SPP

- 12 cores used
- 12 Oracle licenses needed

S1022 with SPP (current pricing)

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
Pool	9		C	0	BYOL	$1,432.24	9	
VM1	5.25	6	S	64	AIX	$1,349.04		
VM2	1.25	2	S	48	AIX	$648.85		
VM3	0.25	1	S	32	AIX	$433.80		
VM4	0.75	1	S	32	AIX	$421.31		
VM5	1.5	2	S	48	AIX	$682.61		
Total PVS	9.00	12		224		$4,967.86		
					with Discount	$2,732.32	$3,918.75	10%
						Total	$6,651.07	

As-is with SPP (without optimizations)

- 9 cores used and licensed for Oracle
- VM price is 10% higher than without SPP
- 33% Oracle license savings (9 cores licensed)

with SPP and core and memory metering optimization

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
Pool	9		SPP	0	BYOL	$1,432.24	9	
VM1	5.25	6	SPC	64	AIX	$792.21		
VM2	1.25	2	SPC	48	AIX	$516.27		
VM3	0.25	1	SPC	32	AIX	$327.26		
VM4	0.75	1	SPC	32	AIX	$341.77		
VM5	1.5	2	SPC	48	AIX	$523.52		
Total PVS	9.00	12		224		$3,933.27		
					with Discount	$2,163.30	$3,918.75	-13%
						Total	$6,082.05	

SPP = Shared Processor Pool SPC = Shared Processor Core

NEW – with SPP pricing optimizations

- **13% improvement** on PowerVS pricing
- 33% Oracle license savings (9 cores licensed for 12 VPs)
- Up to 50% Oracle license savings with 1:3 EC:VP ratio (9 cores licensed for 18 VPs)

Note: Monthly USD prices shown

Shared Processor Pools – Capacity Reservation Use Case

- Reserve core capacity using Shared Processor Pools for later use
- Do not need to activate virtual servers until ready
- Reserve memory – as low as the minimum amount that will be needed
- Activate virtual servers and burst up when needed

Shared Processor Pools – Business Contunuity Use Case

IBM i “CBU-Like” DR

Summary of Hybrid and Inside Cloud Backup Options

Based on customer save/restore or HA/DR RPO/RTO requirements, there are multiple solutions that could be considered.

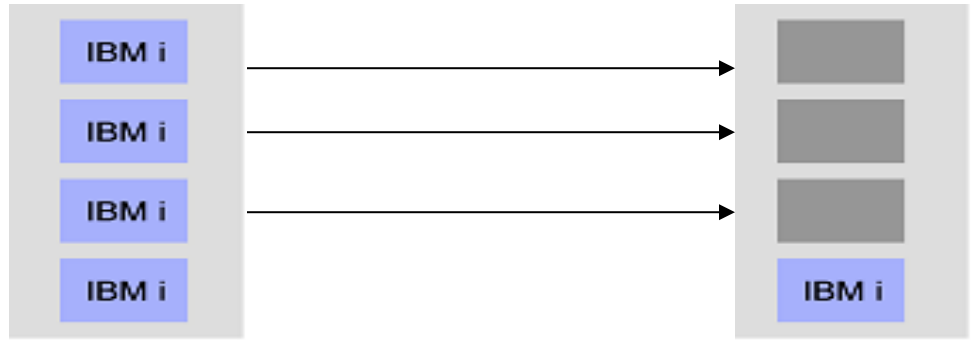
- **Backup to cloud or within cloud using manual and automated options**
- The IBM Backup Recovery and Media Services (BRMS, 5770-BR1 or BR2) and IBM Cloud Storage Solutions (5733-ICC) IBM i LPPs can be used to save local first and then move to cloud storage. Well known software products and affordable (approximately $1600 USD a year for a customer with 1 TB of data) using new subscription term licensing. Once data is in IBM Cloud, a customer could create a Power Virtual Server instance and restore using the data in IBM Cloud.

- **Virtual Tape Library (VTL)**
- There are many vendor solutions available on-prem. IBM has a partnership with FalconStor where a software appliance can be ordered through the IBM Cloud catalog, or a hardware appliance is also available. IBM offers the FalconStor VTL for customers running in IBM Power Virtual Server, and an on-premise customer with FalconStor (or from DSI) can replicate or send deduplicated data to a VTL in Power Virtual Server. This could be used as a cloud backup or for migration to Power Virtual Server. Once data is in Power Virtual Server, when needed a customer could quickly create an instance and restore using the data in Power Virtual Server.

- **IBM PowerHA**
- PowerHA can provide high availability, business continuity and disaster recovery for IBM i and AIX. PowerHA geographic mirroring can be used to setup a HA/DR backup site in Power Virtual Server, or within Power Virtual Server.

- **ISV replication solutions**
- There are many options such as from IBM i logical replication vendors that can replicate data between systems and from on-premise to Power Virtual Server.

IBM Power Capacity Backup Edition (CBU for i) Overview



One core is the minimum permanent entitlement required; however any production workload requires permanently licenses (for example replication workload)

- The CBU offering is used in high availability and disaster recovery deployments (on-premise)
- Offering enables customers to move workload between boxes without fully redundant OS entitlements
- Two-year temporary keys eliminate redundancy for eligible LPPs
- CBU designation available only upon purchase of a new box and must be registered to a qualified primary.
- If a CBU is no longer affiliated with the original registering customer, it is not recognized as a CBU.
- Registration process: client agrees to terms and conditions, CBU registration is validated, shipment is approved
- CBU agreement requires that both the primary and CBU are owned by the same enterprise.

Power Virtual Server HA/DR IBM I Licensing using SPP

IBM i

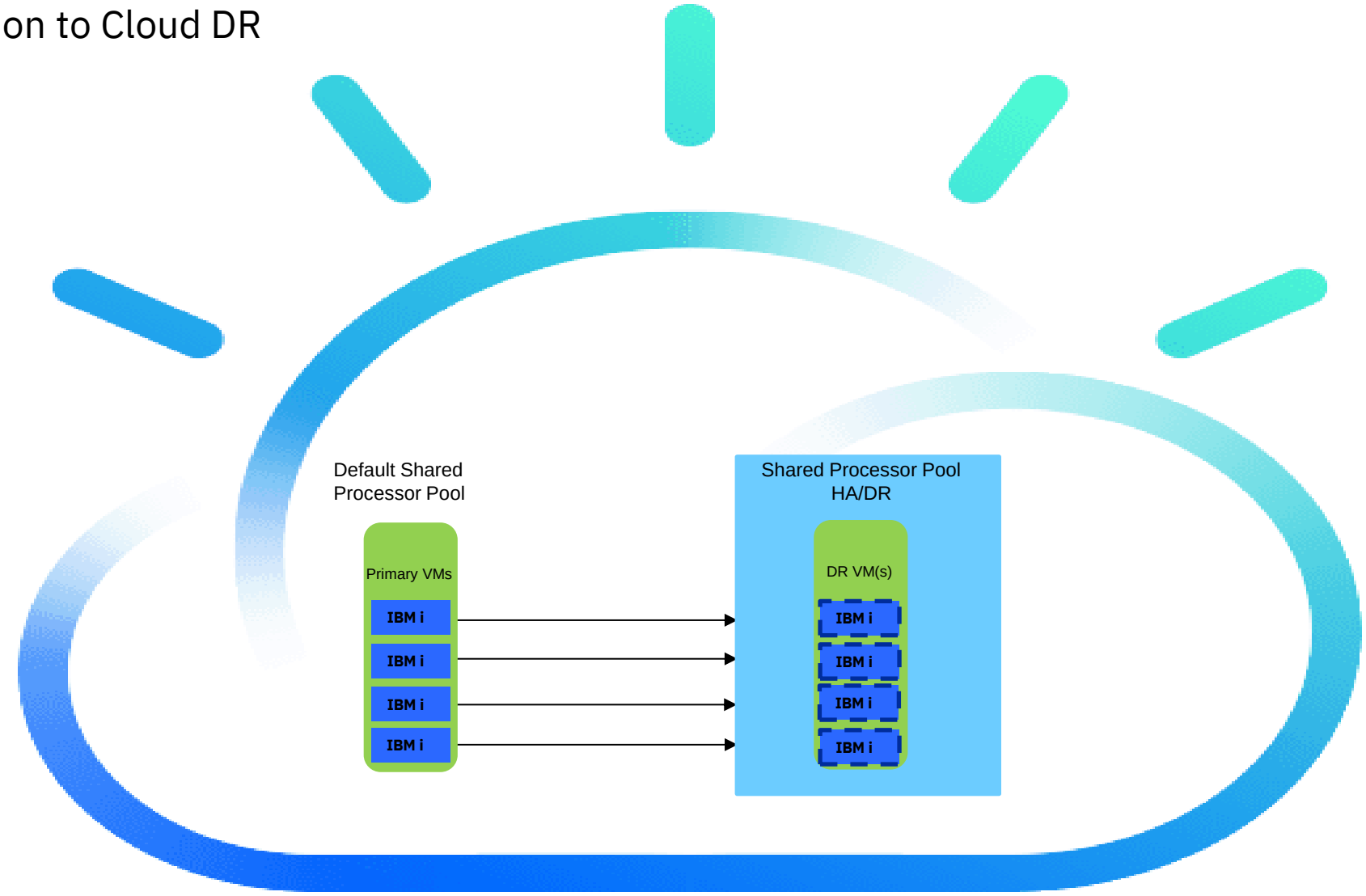
- SPP provides a way for a customer to assure/reserve hardware resources such as cores and memory like they would with the on-prem CBU (Capacity Backup Unit) offering for HA/DR operations, and can help optimize IBM i OS licensing

- Using a Power Virtual Server 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

Power Virtual Server HA/DR IBM i Licensing using SPP

IBM i

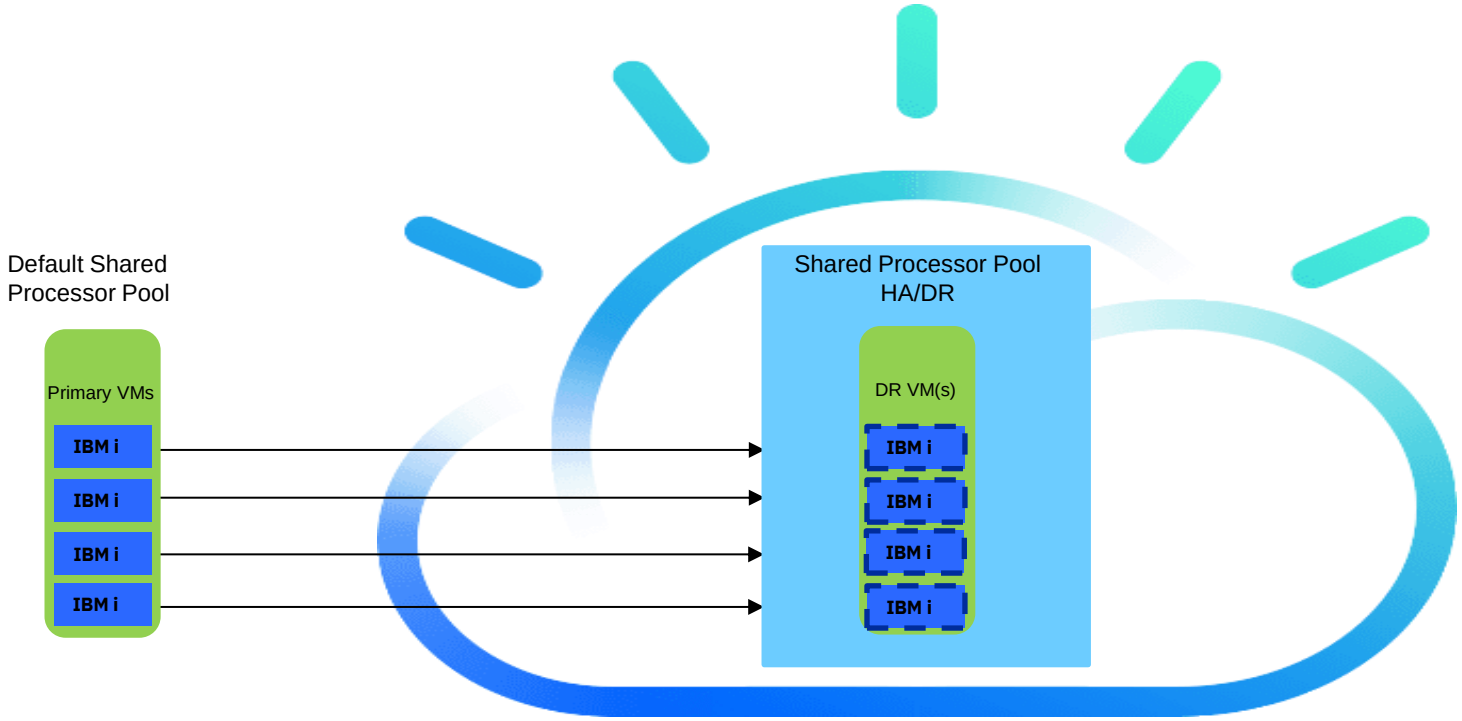
Cloud production to Cloud DR



Power Virtual Server HA/DR IBM i Licensing using SPP

IBM i

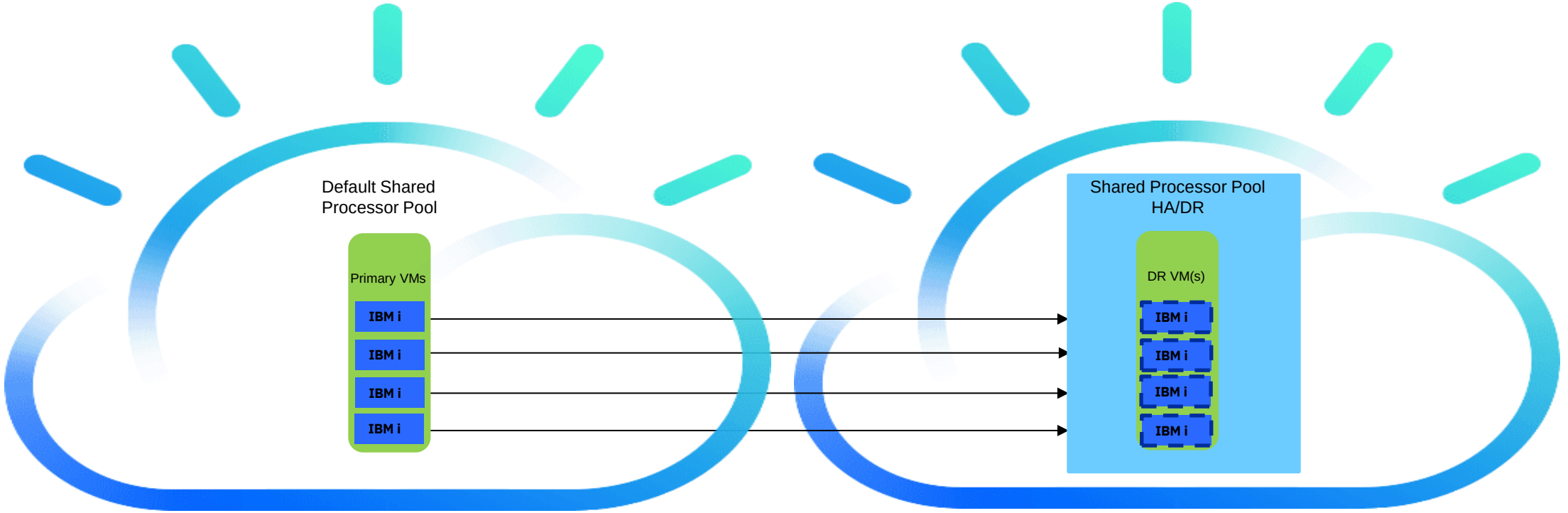
On-premise production to Cloud DR



Power Virtual Server HA/DR IBM i Licensing using SPP

IBM i

PowerVS Private Cloud production to Cloud DR



Power Virtual Server HA/DR IBM i Licensing using SPP

IBM i

S1022 without SPP					
	Cores/EC	Type	Mem	OS	Total
VM1	4.00	S	64	IBM i	$5,464.31
VM2	2.00	S	48	IBM i	$2,892.17
VM3	1.00	S	32	IBM i	$1,526.09
VM4	1.00	S	32	IBM i	$1,526.09
VM5	2.00	S	48	IBM i	$2,892.17
Total PVS	10.00		224		$14,300.84
				with Discount	$7,865.46

Production environment without SPP

- 5 VMs, 10 total cores

with SPP and core and memory metering optimization						
	Cores/EC	Type	Mem	OS	Total	% change
Pool	10	SPP	0	BYOL	$1,591.38	
VM1	0.25	SPC	64	IBM i	$915.02	
VM2	0.25	SPC	48	IBM i	$755.02	
VM3	0.25	SPC	32	IBM i	$595.02	
VM4	0.25	SPC	32	IBM i	$595.02	
VM5	0.25	SPC	48	IBM i	$755.02	
Total PVS	1.25		224		$5,206.46	
				with Discount	$2,863.55	-64%

SPP = Shared Processor Pool **SPC = Shared Processor Core** Note: Monthly USD prices shown

DR environment with SPP

- Reserve the 10 cores and memory for the VMs, but run the VMs as low as 0.25 cores each which saves on IBM i licensing
- Now no extra charge for high memory because of low core/high memory ratio
- For planned DR events, modify/increase SPP cores as appropriate and modify/decrease production

Note: Consider using Power9 servers for a more cost-effective SPP DR solution

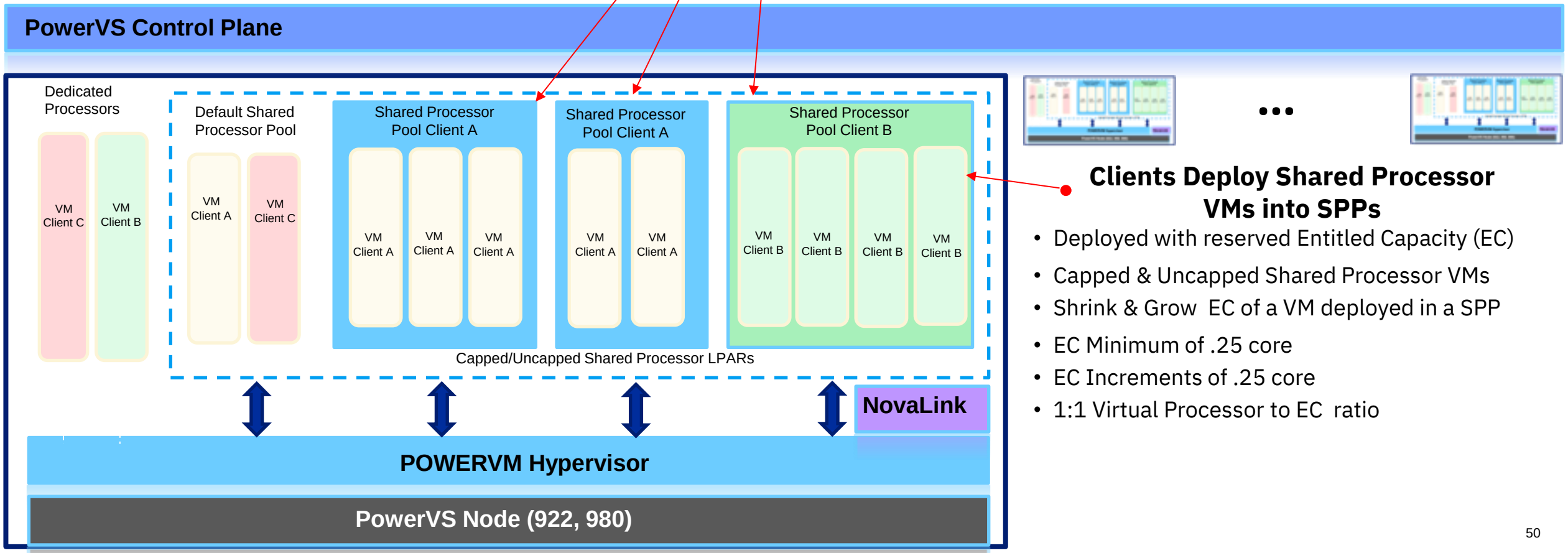
PowerVS Shared Processor Pools (SPPs) Overview

Support for Multiple SPPs delivers Key Client Value

- Reduced Oracle S/W licensing costs by optimizing & limiting processor core usage
- Reserved Capacity for Shared Processor-based workloads, supporting key use cases such as cost optimized DR
- Pool-based deployment and resource control for simpler workload management
- Supported through PowerVS API, CLI and UI

Client Created, Owned, Utilized, Visible SPPs

- Created with reserved capacity at a single core granularities with no oversubscription of capacity across SPPs
- Can have multiples SPPs per client Workspace
- Shrink & grow an SPP at a single core granularities
- Affinity control to support client use cases such as HA
- SPPs and related VMs can be moved by PowerVS Operations
- Client SPPs co-exist with Default (System Level) SPPs



Clients Deploy Shared Processor VMs into SPPs

- Deployed with reserved Entitled Capacity (EC)
- Capped & Uncapped Shared Processor VMs
- Shrink & Grow EC of a VM deployed in a SPP
- EC Minimum of .25 core
- EC Increments of .25 core
- 1:1 Virtual Processor to EC ratio

Shared Processor Pools in Multi-Tenant Cloud Environment

Historical Background pre 2025

SPP, like many features in PowerVS is optimized for a multi-tenant c
environment. This is true for all compute, storage and network to create a stable environment with predictable performance.

Attribute	PowerVS without SPP	PowerVS SPP GA1	Power On-Prem SPP
Minimum Entitled Capacity (EC)	0.25	0.25	0.05
Minimum Incremental Increase in EC	0.25	0.25	0.01
Virtual Processor-to-Entitled Capacity (VPtoEC) Ratio *(rounded up to nearest integer)*	1.0	1.0	20*
VM Weights	Equal	Equal	0-255

* Best practice is 1.6 but much higher values are accepted in a controlled shared single-tenant environment.

Oracle S/W licensing cost optimization

Historical Background pre 2025

Shared Processor Pools (SPPs):

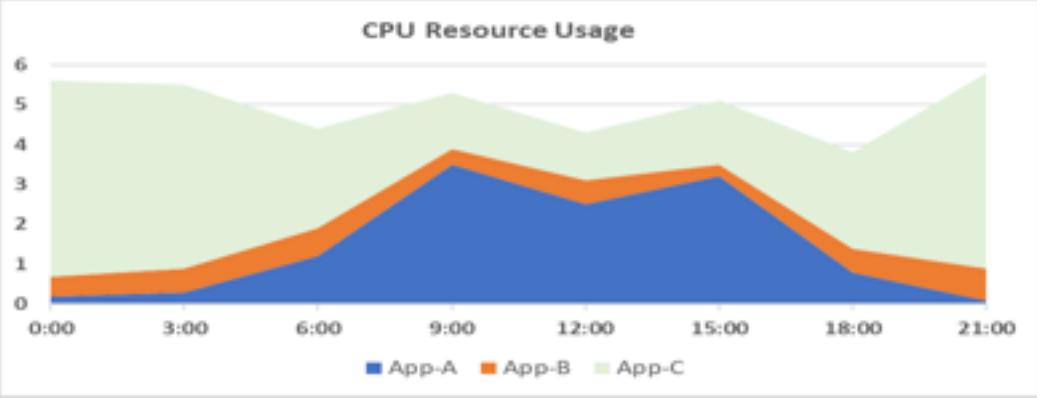
Can reduce the number of software licenses by putting a limit on the number of processors an uncapped partition can use

Option to add and license to only 1 incremental core at a time to a PowerVS SPP

VM1	VM2	VM3	VM4
Linux	**AIX**	**IBM i**	**Linux**
Ent. = 2	Ent. = 1.25	Ent = 1.5	Ent = .25
VP = 2	VP = 2	VP= 2	VP = 1

VM5	VM6	VM7	VM8	VM9
Uncapped	**Uncapped**	**Uncapped**	**Capped**	**Uncapped**
AIX 7.1	AIX 7.3	AIX 7.1	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
Ent. = 5.25	Ent. = 1.25	Ent. = 0.25	Ent. = 0.75	Ent. = 1.5
VP = 6	VP = 2	VP = 1	VP = 1	VP = 2

SPP #1
Reserved Cap:9 processors



	Oracle License w/ SPP	Without SPP	License Saving
SPP #1: Oracle DB cores to license	9	12	3

Shared Processor Pools in Multi-tenant Cloud Environment

Historical Background pre 2025

Several Aspects of the PowerVS SPPs Implementation are driven by the Multi-tent Cloud Nature of PowerVS

- Apply to SPPs related-aspects whether they are Default SPPs or Client-Created SPPs

Minimum Entitled Capacity

- The Minimum Entitled Capacity for a PowerVS VM is .25 core due (see bullet below for why)
- Historical PowerVS is set to limit the # of VMs allowed on a single PowerVS node or overall in a single PowerVS environment
- PowerVM supports a lower minimum of .05 core, which is of benefit for some client use cases
- Reducing the PowerVS minimum below .25 core would require a redesign of the PowerVS storage environment plus additional PowerVS scalability work to handle the additional VMs that would be possible through a smaller minimum

Virtual Processor-to-Entitled Capacity (VPtoEC) Ratio

- VPtoEC ratio defines the number of Virtual Processors (VP), rounded up to an integer, created by the PowerVM hypervisor for a Virtual Machine (VM) as a ratio to the VM's Entitled Capacity (EC)
  - i.e., 4:1 ratio (20:1 is the PowerVM max) for a VM with 2 cores of EC would result in PowerVM creating & using 8 VPs in scheduling the VMs work
- Some workloads, like Oracle, benefit from further enhanced resource utilization & licensing cost optimization through higher ratios & more VPs
- Large numbers of VPs compared to the number of physical cores causes contention for physical cores & can affect QoS for all VMs on a node
- PowerVS limits VPtoEC ratio to 1:1 to limit the number VPs on a node and prevent QoS/performance issues across clients
- Exploring future plans with PowerVM team to support higher VPtoEC ratios with PowerVS without noticeable QoS/performance impacts

Weights

- PowerVM allows clients to assign "weights" to VMs which it uses to prioritize assignment of excess core capacity to Uncapped SPP VMs
- Weights have a scope of a single PowerVM instance (single server node)
- Weights are not virtualized in anyway by PowerVM, and not supported in the context of PowerVS Shared Processor Pools

SPP Oracle S/W licensing cost optimization

Historical Background pre 2025

Shared Processor Pools (SPPs):

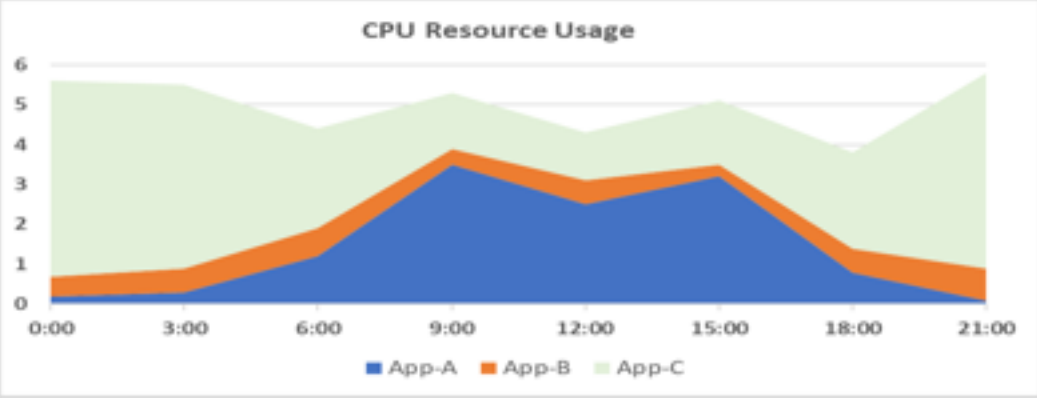
Can reduce the number of software licenses by putting a limit on the number of processors an uncapped partition can use

Option to add and license to only 1 incremental core at a time to a PowerVS SPP

VM5	VM6	VM7	VM8	VM9
Uncapped	**Uncapped**	**Uncapped**	**Capped**	**Uncapped**
AIX 7.1	AIX 7.3	AIX 7.1	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
Ent. = 5.25 VP = 6	Ent. = 1.25 VP = 2	Ent. = 0.25 VP = 1	Ent. = 0.75 VP = 1	Ent. = 1.5 VP = 2

VM1	VM2	VM3	VM4
Linux	**AIX**	**IBM i**	**Linux**
Ent. = 2 VP = 2	Ent. = 1.25 VP = 2	Ent = 1.5 VP= 2	Ent = .25 VP = 1

SPP #1
Reserved Cap:9 processors

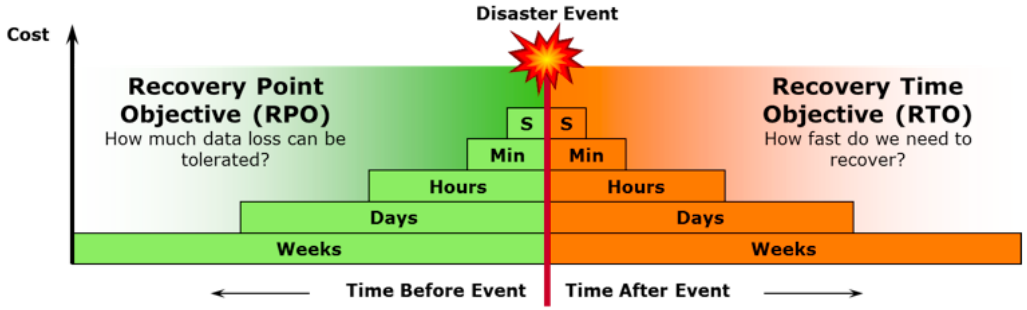


	Oracle License w/ SPP	Without SPP	License Saving
SPP #1: Oracle DB cores to license	9	12	3

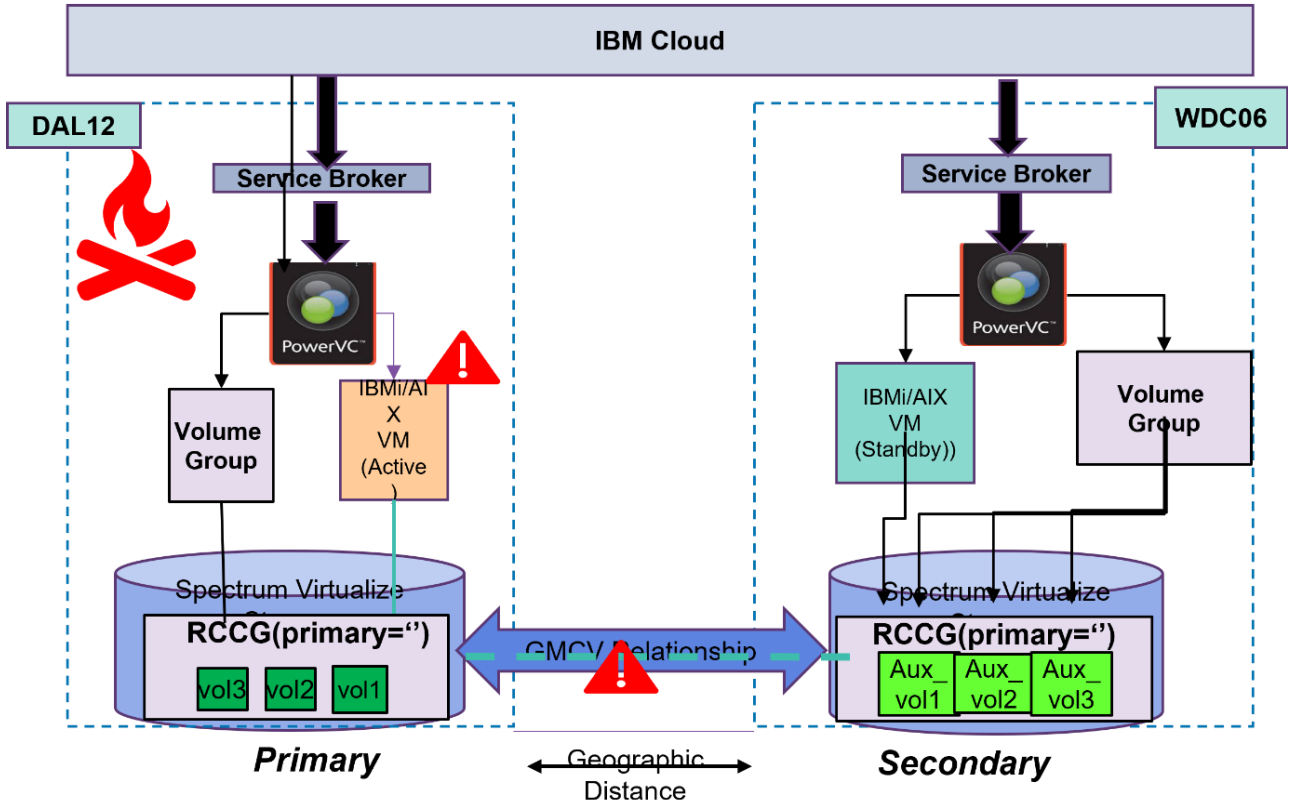
Global Replication Service (GRS)

Global Replication Services (GRS) on PowerVS enables mission critical workload entirely on PowerVS

Cloud to Cloud asynchronous storage replication improves resiliency and lowers cost of DR solution



- Storage level replication - simpler recovery procedure.
- Changes synchronized every 500secs. RPO < 15 mins
- Improved RTO - automation determines additional time
- Meet client ask - consistent with on-prem method.
- Lower cost – Do not need 3rd party logical replication software licenses. Simpler effort to failover/failback.
- Does not add compute load like replication software
- User friendly toolkits and services available from Technology Expert Labs – Systems.



IBM Cloud Monitoring – Power VS Platform Metrics

What is Observability?

*Software **tools** and **practices** to effectively aggregate, correlate **and analyse data** to effectively **monitor, troubleshoot and debug infrastructure**, applications, and IBM Cloud services to **meet customer expectations**, SLAs, compliance requirements and other business needs.*

IBM Log Analysis

Logs

Time-stamped entries that document the occurrence of an event from an application or service

IBM Cloud Activity Tracker

Activity Events

A security-relevant occurrence which may have changed the security posture of a cloud environment

IBM Cloud Monitoring

Metrics

Time-Series based values derived from system or application performance

Traces

Data representing the entire journey of request or action through a distributed system

How Does IBM Cloud Monitoring Work?

Collect

Accurate and sable collection of observability data from systems and IBM Cloud services.

Route

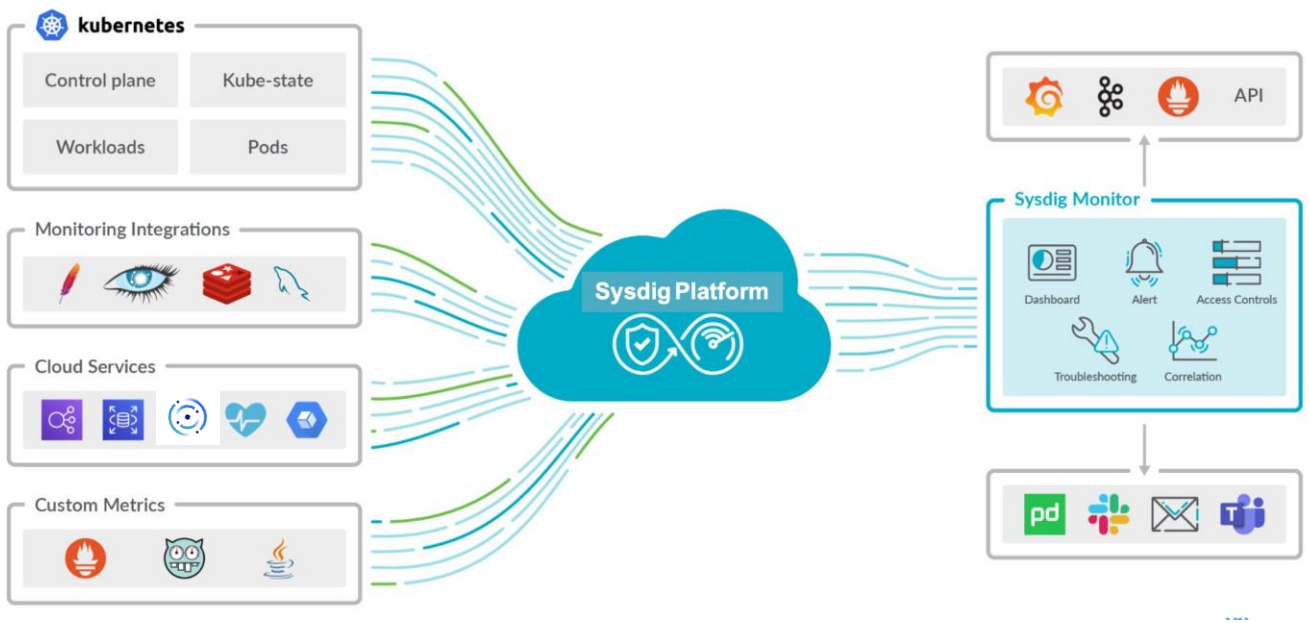
Empowering customers with control, transparency, and where data is stored.

Store

Flexible and saleable destinations to meet compliance, security and business needs.

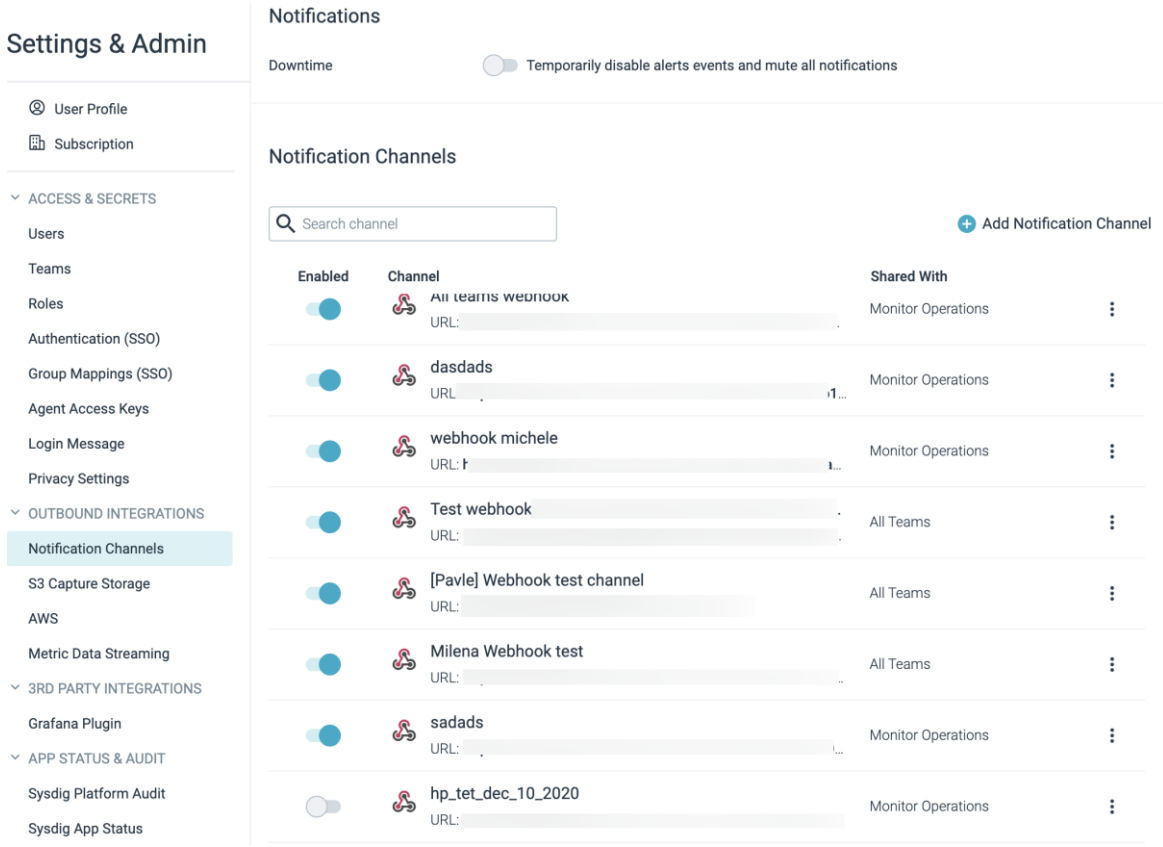
Analyze

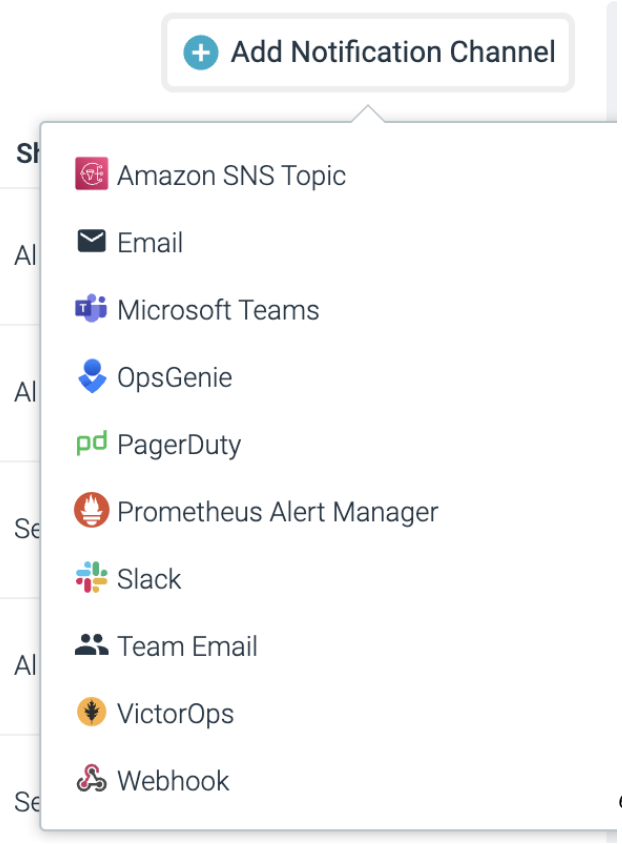
Choose from a unified Observability view by IBM Cloud and Sysdig.



IBM Cloud Monitoring Notification Channels

- Alerts are used in IBM Cloud Monitoring when Event thresholds have been created
- Alerts can be sent over a variety of supported notification channels
- Simply select Settings for any menu panel on the PowerVS monitoring dashboard and select Notifications Channels
- More information here





Monitoring for Power Systems Virtual Server

Entails monitoring of PowerVC metrics with IBM Cloud Monitoring dashboards that are operated by Sysdig in partnership with IBM.

Supported metrics include CPU utilization of the VM, Memory utilization of the VM, incoming and outgoing network bytes per network interface/mac address, and total disk read and write bytes to the storage adapter.

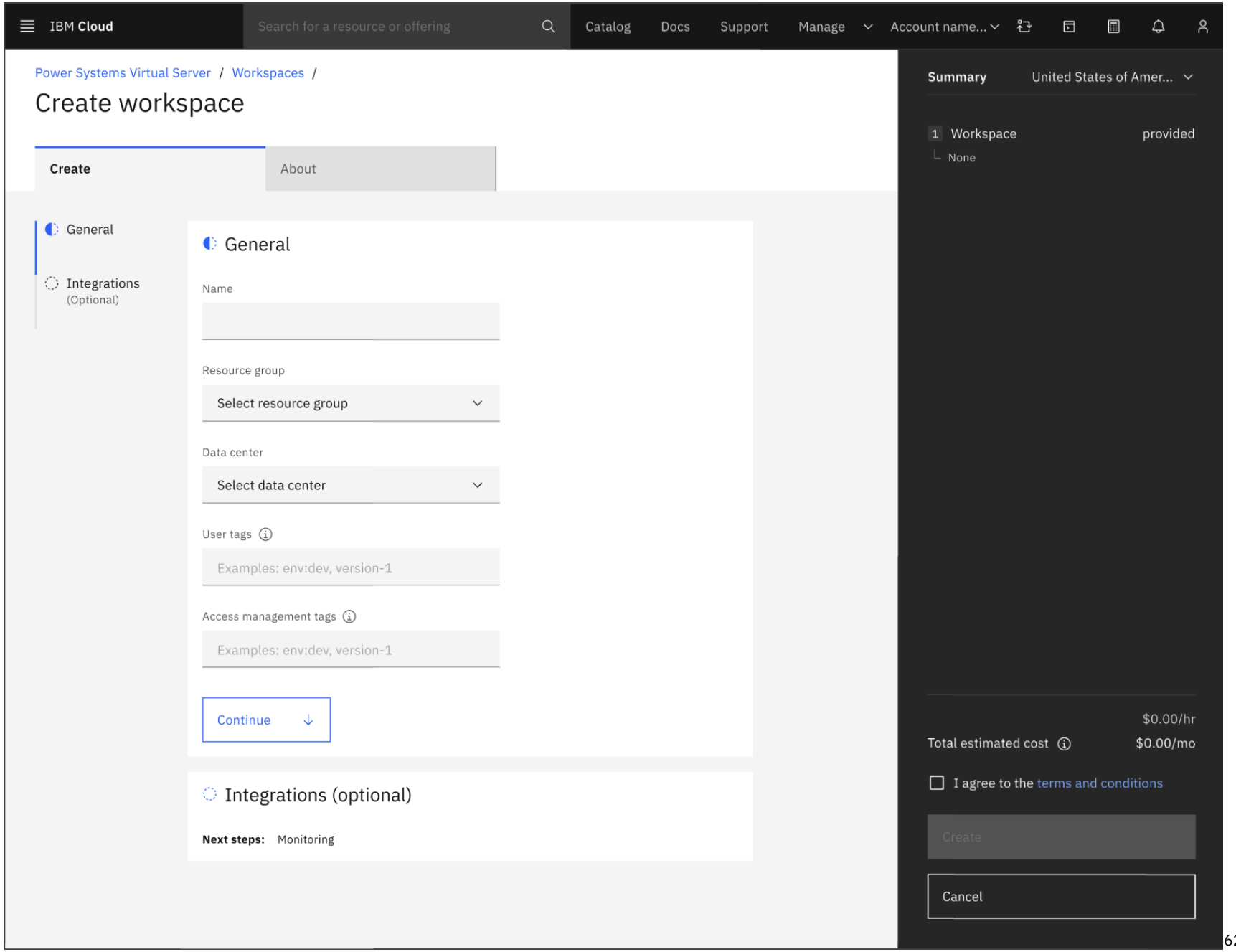
Platform metrics are available to gauge the health of the PowerVS instance with visibility of errors and warnings after successful deployment of PowerVS and are retained for 1 year for historical trend analysis.

The main components of the Sysdig Dashboard UI include widgets, time navigation, and panels which support time series, histogram, number graphs, table, text and top split views providing utmost flexibility to slice and dice data as needed.

As of November 2023 platform metrics for PowerVS are available in WDC06, SYD05, WDC04, DAL13, FRA04, FRA05, LON04, LON06, MAD02, SAO01, TOK04 with a plan to roll out WW.

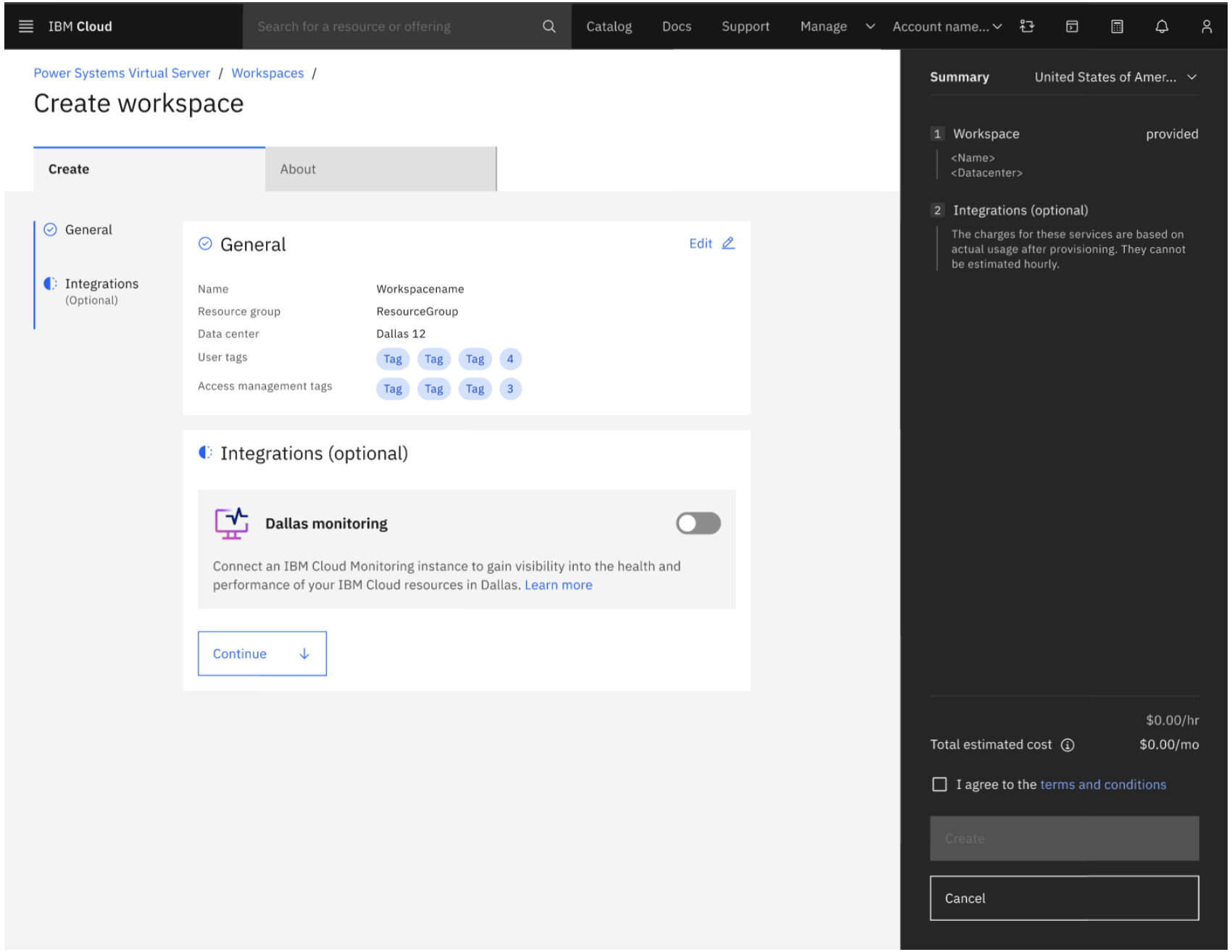
UX Views

Create New Workspace



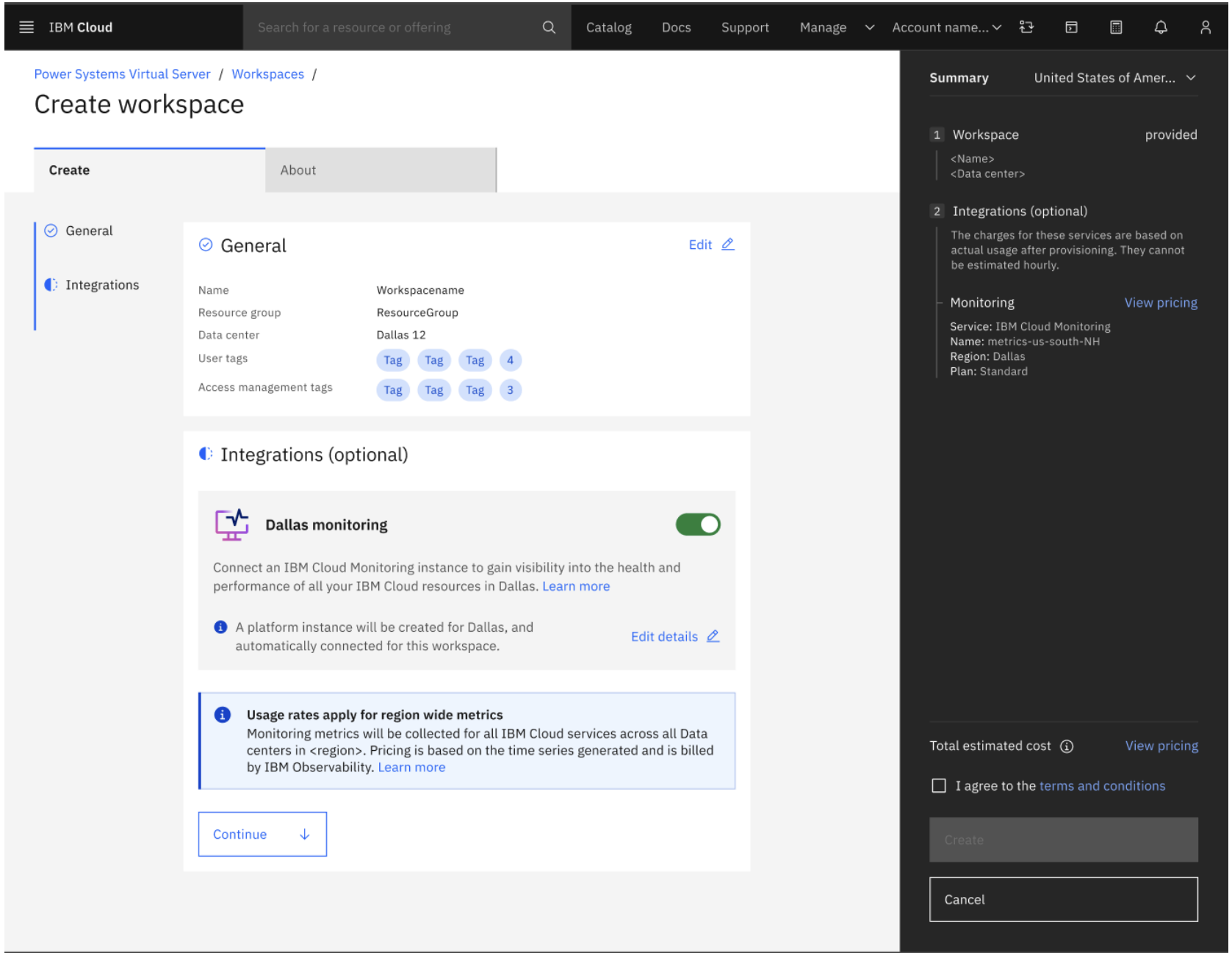
UX Views

Enable Monitoring Integration for Workspace



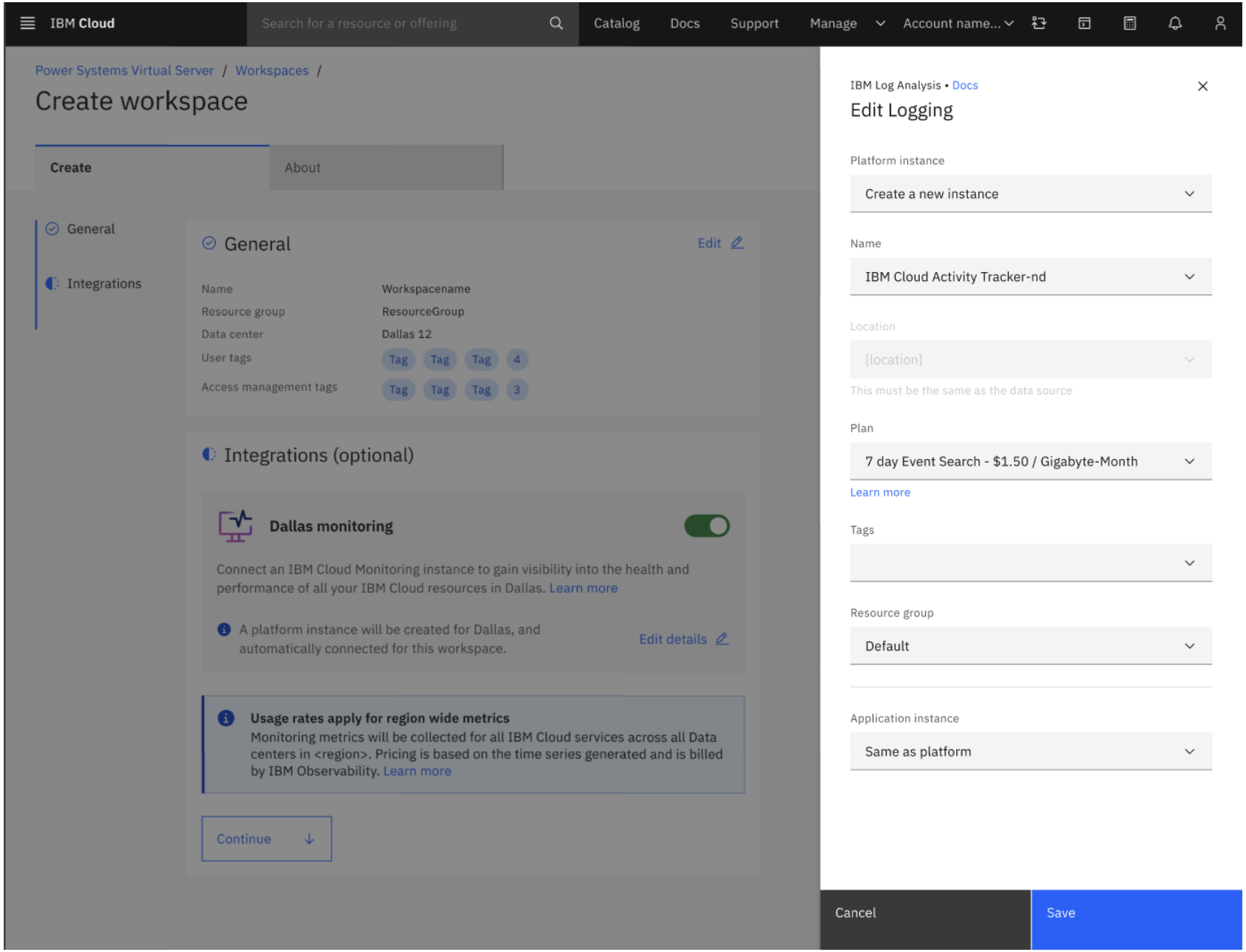
UX Views

Create an IBM Cloud Monitoring Instance with Platform Metrics Enabled



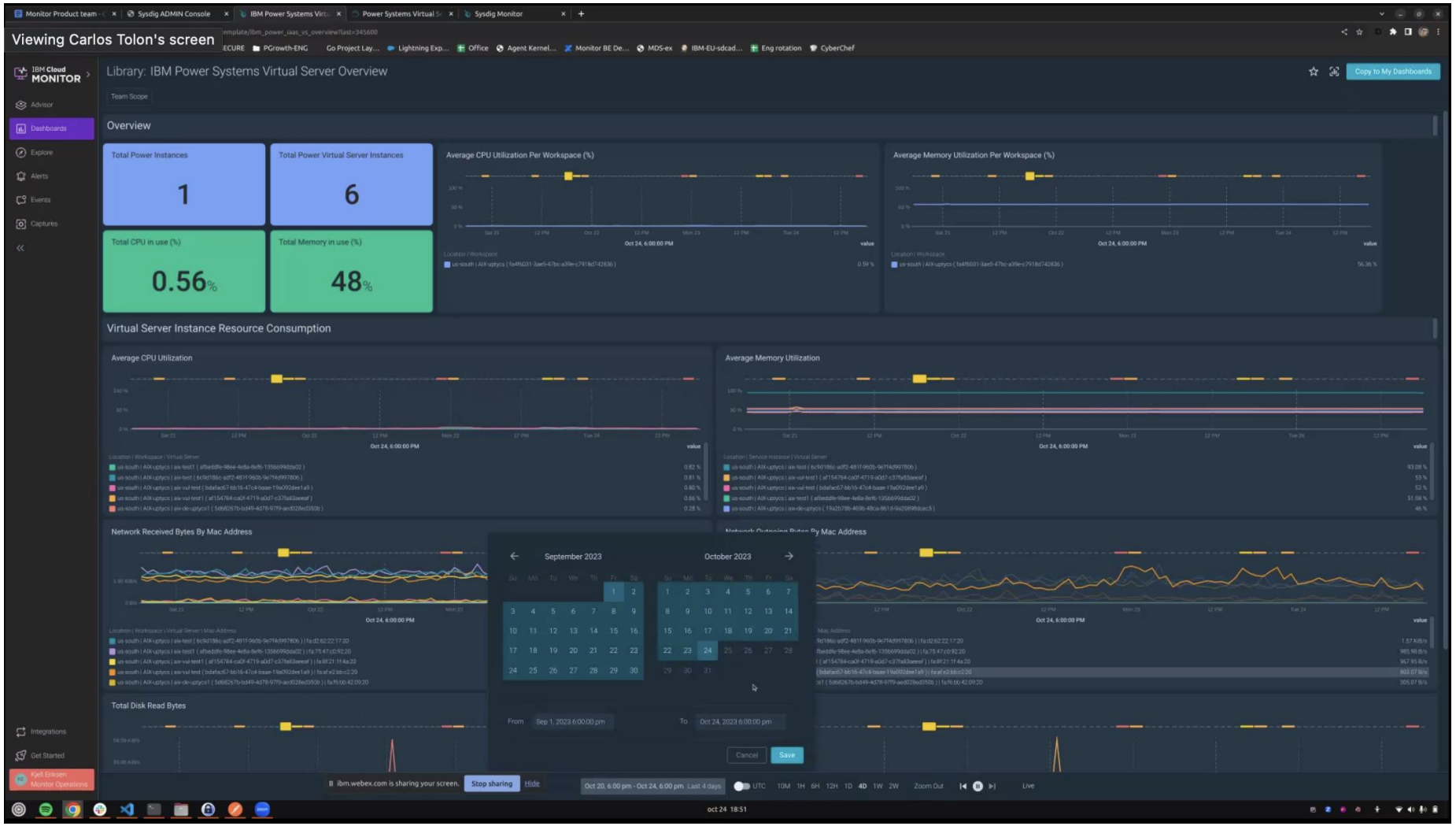
UX Views

View Plans and Pricing for IBM Cloud Monitoring Instance



UX Views

Launch out to the Power Virtual Server monitoring dashboard



Automation für PowerVS und SAP auf PowerVS

Backup as a Service
Compass by Cobalt Iron

What is the Offering?

Secure Automated Backup with Compass®

By Cobalt Iron®

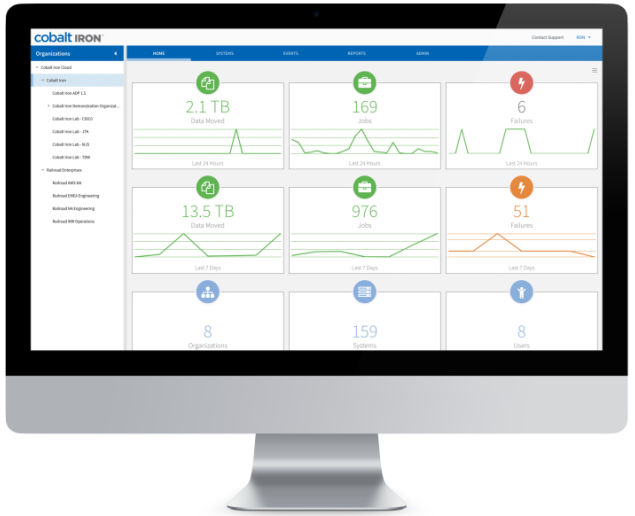
Simple, secure, automated backup and restore to protect your PowerVS workloads leveraging IBM Storage Protect

Compass protects a variety of platforms, applications, and data classes

Why Compass for PowerVS?

- Industry leading end-to-end cyber security protection for backup landscape
- Complete backup solution leveraging IBM Storage Protect that modernizes the enterprise approach to backup and recovery for PowerVS
- Delivered as a cloud SaaS service from IBM Cloud
- Operational excellence and simplicity with analytics-driven automation
- Unified management and simple and elegant user experience
- Zero Access® architecture and infrastructure

Compass IBM Cloud



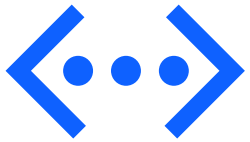
What Problems Does Compass Solve for PowerVS Customers?

Lengthy and complex deployment of multiple solutions to backup diverse workloads

Challenging and difficult backup infrastructure, systems, storage, policies, configuration, and more…

Multiple administrators, training requirement, complex skills, and subject matter expertise for success

PowerVS Workloads



Backup and Restore

User Experience

Consumable in minutes, a single unified solution to protect all PowerVS workloads: AIX, Linux, SAP HANA, Oracle, DB2

Analytics-driven automation, complete multi-tenancy, hands-free operations, with alerting, reporting, and insights for an instant-on enterprise-class backup

Simple and intuitive user interface, quicker to setup, native application integration. Easy to restore.

Compass Security in Every Deployment

Security Capabilities	Included
Automated, periodic encryption key rotation and TLS certificate management/rotation	☑
Backup data deletion by retention policy only	☑
Comprehensive data governance with defensible auditing of all backup operations	☑
Data validation integrity checks at data ingest and recovery at both block and object/file level	☑
In-flight, to-storage, and at-rest encryption for all customer data	☑
Two copies, automatically-managed	☑
Robust authentication including multi-factor authentication and IBM Cloud SSO	☑
Software automated backup operations, administration, visibility, and management	☑

Pay for What you Use

Do-it-Yourself:

Costly and complex infrastructure management and operations

Data Protection Operations
- Event Failure Resolution
- Capacity Management
- Security Management

Data Protection Infrastructure
- Compute
- Storage
- Operating System
- Security
- Patching and Upgrades

Data Protection Software
- Software Maintenance
- Performance Monitoring
- Operational Tuning

VS

Cloud Backup via SaaS:

Simple and quick infrastructure provisioning and automated Backup-as-a-Service

- One Click Consumption
- Simple Agent Installation
- Fully Managed Backup-as-a-Service

$0.069 USD / GB / Copy/ Month*

*Proposed pricing

Cobalt Iron

Secure Automated Backup with Compass®

Solution Overview and Value Proposition

A single, unified, Backup-as-a-Service offering to backup and restore PowerVS workloads.

With IBM Storage Protect, Compass protects a variety of PowerVS platforms, applications, and data classes including AIX, Linux, Oracle on AIX, DB2 on AIX, and SAP HANA on Linux

Target Clients

- Industries: Enterprises: Financial, Insurance, Healthcare, Manufacturing, Oil & Gas, Pharmaceuticals, Retail

- Geographies: NA, SA, Europe, APAC

- Buyers: CTO, VP Infrastructure, VP Datacenter

Contact

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nkgronset@cobaltiron.com

- IBM: Mingzhi Christensen
mingzhi@us.ibm.com

- Website: www.cobaltiron.com
- Videos:
https://www.cobaltiron.com/resources/videos/

Competitive Differentiators

The Compass offering provides unique security and operational features:

- SaaS data protection for PowerVS
- 2 copies, no ingress or egress charges
- Unified, exception-based management
- Reporting and insights
- Centralized policy management
- Complete governance
- Encryption in-transit, to-storage, at-rest
- Role-based access control management

Client Pain Points

- Complex backup and infrastructure management
- Multiple solutions to protect PowerVS workloads
- Challenging backup operations and reporting

Expected Outcomes / KPIs

- Managed, SaaS delivery – hands free operations
- Secure, quickly-deployed data protection
- Policy-based, centralized management

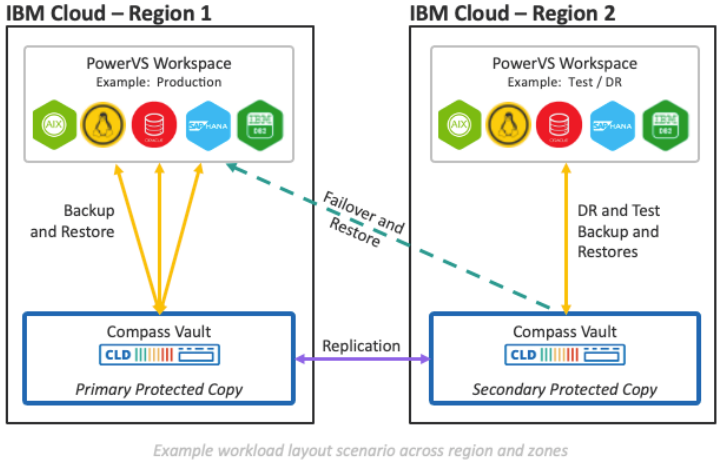
Client References

IBM Office of the CIO uses Compass to backup over 14 PBs of data

Co-sell / Up-sell

Co-Sell: IBM COS and PowerVS
Up-Sell: Compass for On-Prem and or to migrate to PowerVS

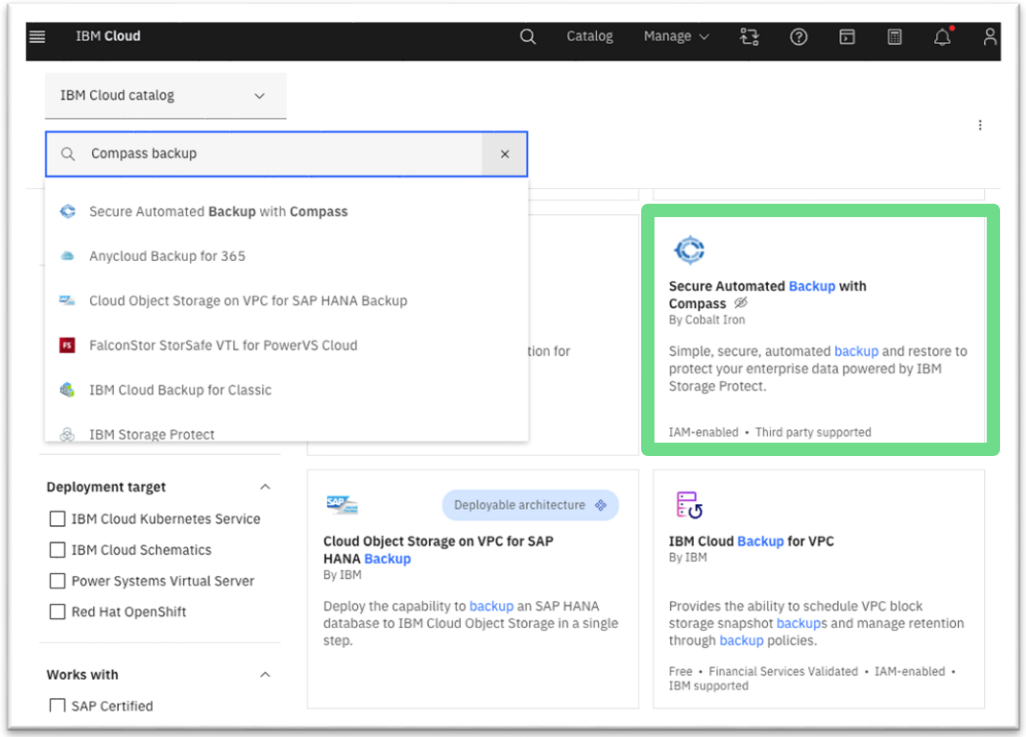
Architecture Picture



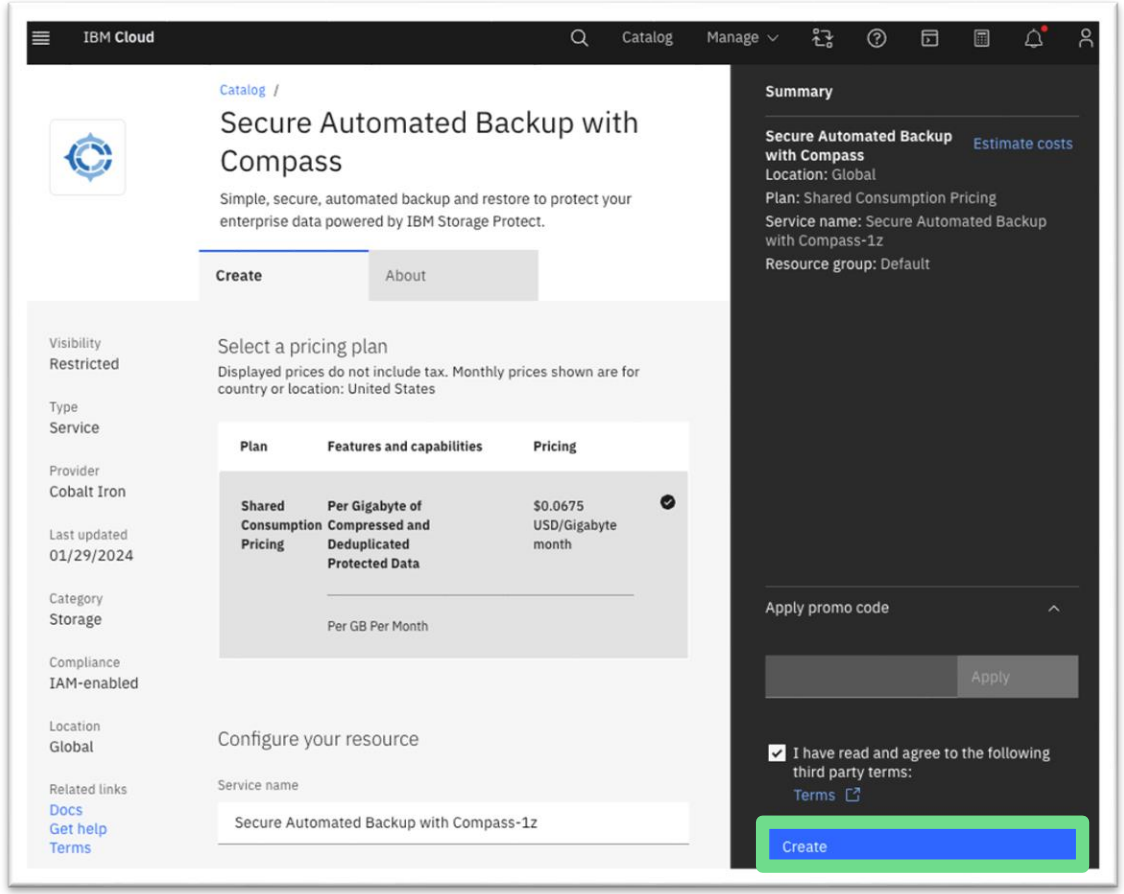
Example workload layout scenario across region and zones

Ordering and Setup

Customer Resources and Environment Setup in **Minutes**



Search and Select
Secure Automated Backup with Compass

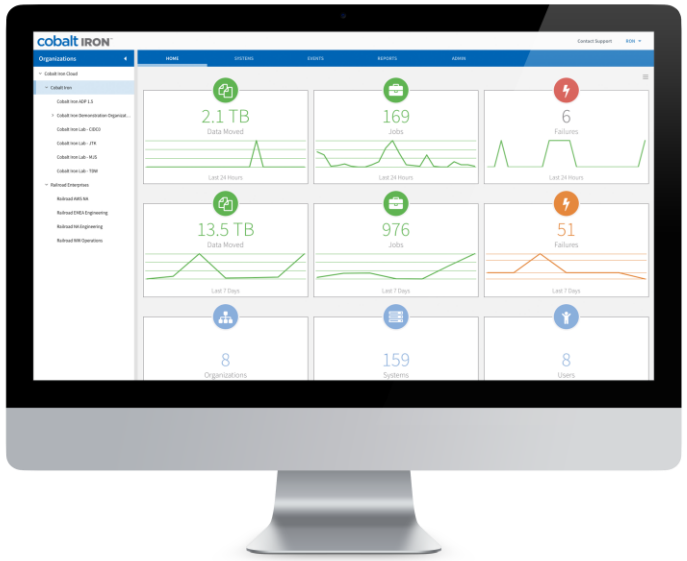


Complete Details and Press “Create” Button
to Build Required Resources

Customer Experience: Service and Native Client Integration

Service-side

- Easy to use
- Eliminate backup complexity
- Global consistency
- Self-service without training



PowerVS-side

- No training classes needed
- Data protection via client installation
- In-Cloud or On-Premises

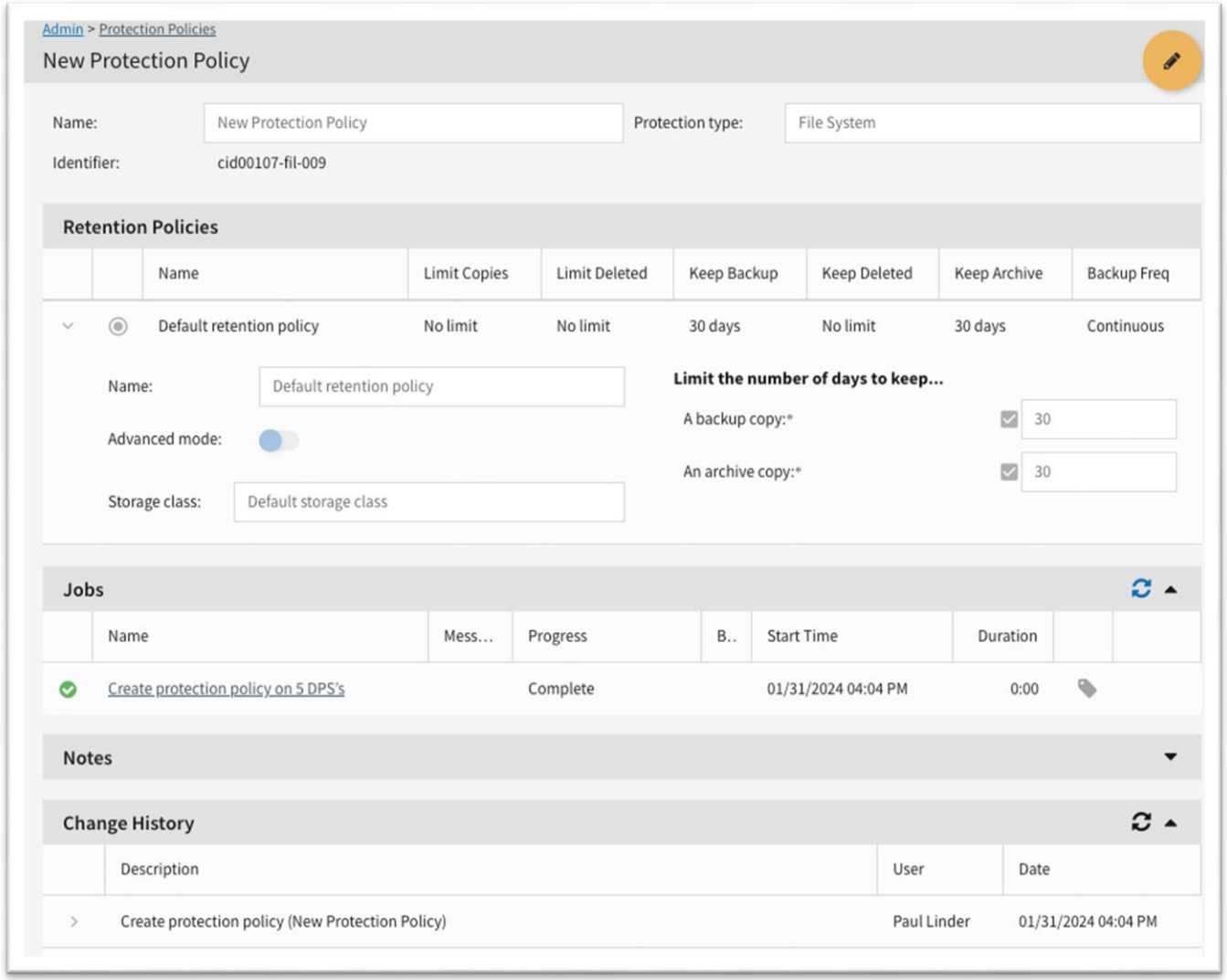
- AIX & Linux
  - Integrated, command-line full services
- Oracle
  - Full RMAN integration & features
  - Standard DBA activities & management
- DB2
  - Full DB2 integration & features
  - Standard DBA activities & management
- SAP HANA
  - Full BACKINT integration & features
  - Standard SAP Studio activities & management

What is the User Experience for PowerVS Customers?

Compass Commander is a web user interface that delivers business insights for the backup and restore landscape.

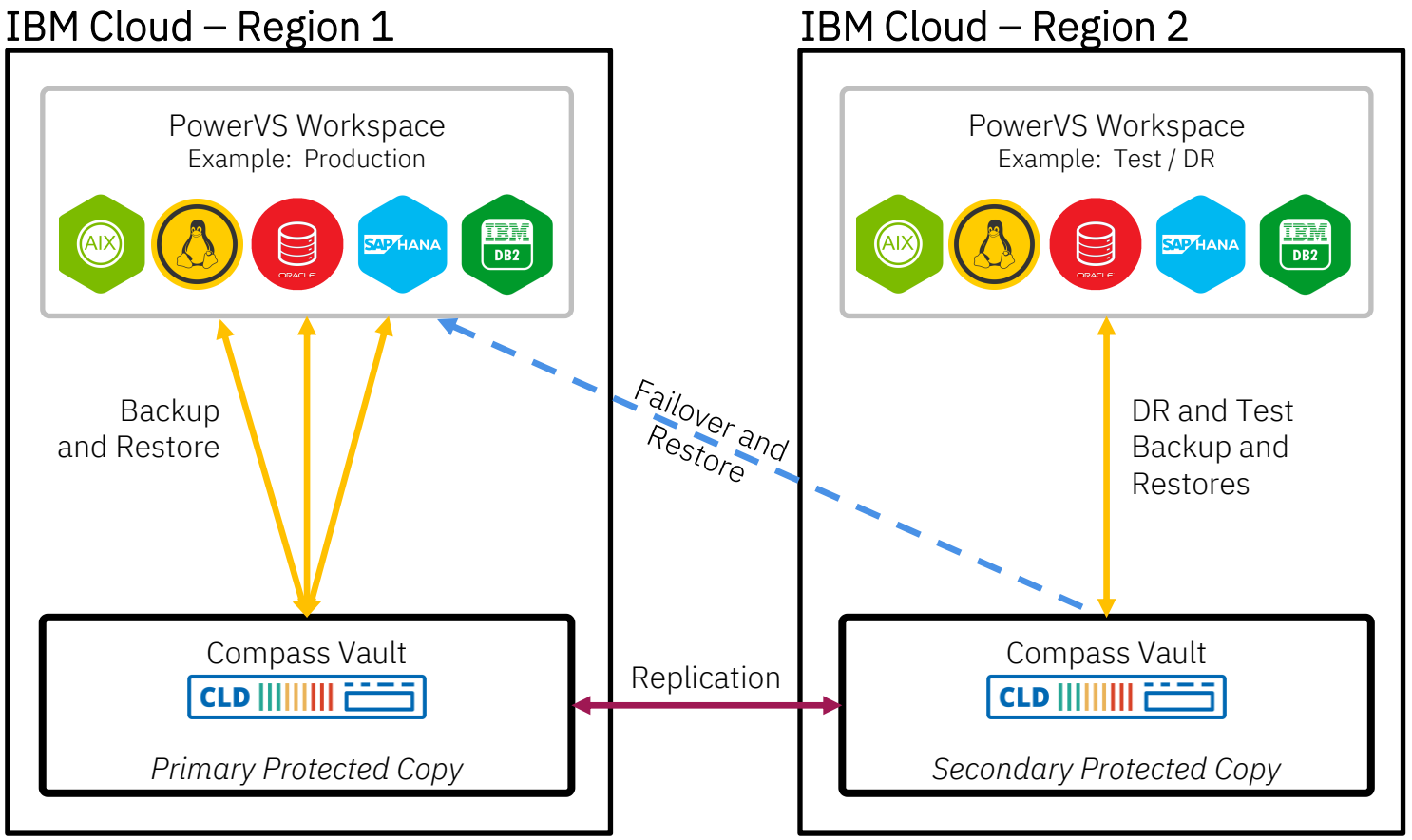
Commander feature set includes:

- Complete protection for PowerVS workloads
- Cyber protection and analytics-driven automation
- Unified, exception-based management
- Reporting and insights



PowerVS – Data Protection and Resilience

Reference Architecture



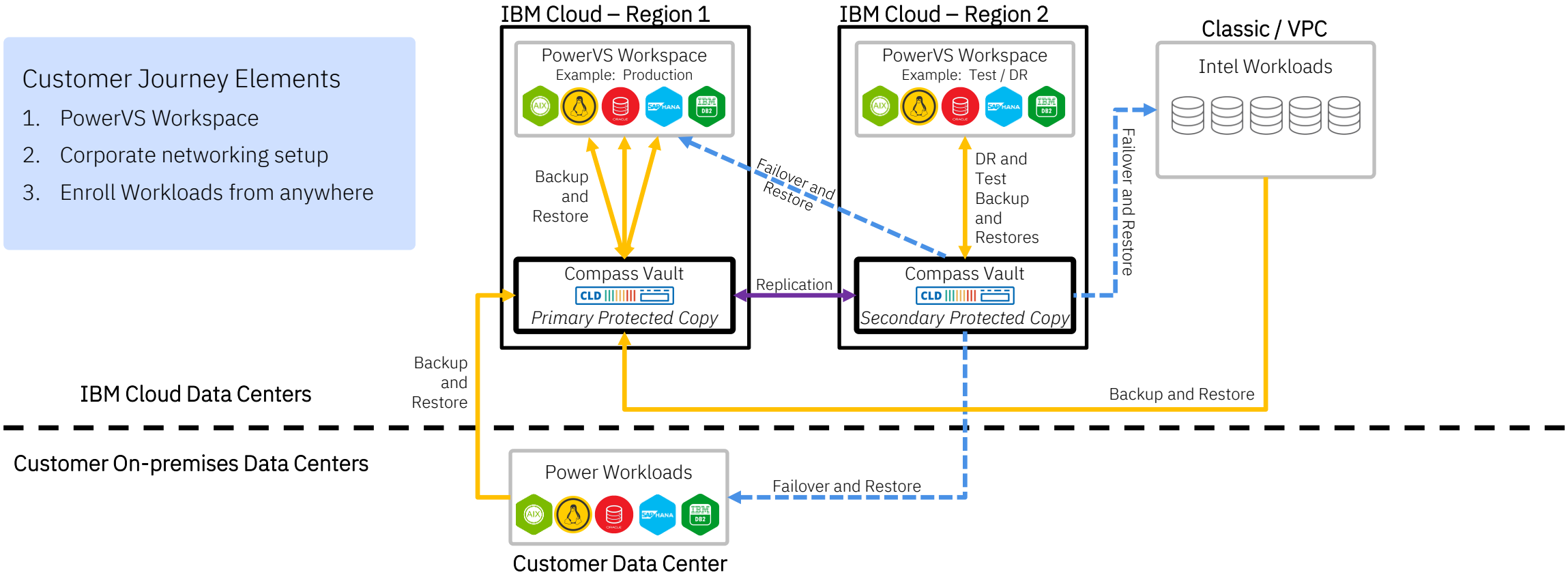
Example workload layout scenario across region and zones

Hybrid Backup Options and Patterns

PowerVS and Non-PowerVS Platforms

Customer Journey Elements

1. PowerVS Workspace
2. Corporate networking setup
3. Enroll Workloads from anywhere



Example Solution Sizing: 35 TB Environment

Customer Systems & Application Information

Workloads & Data Volumes

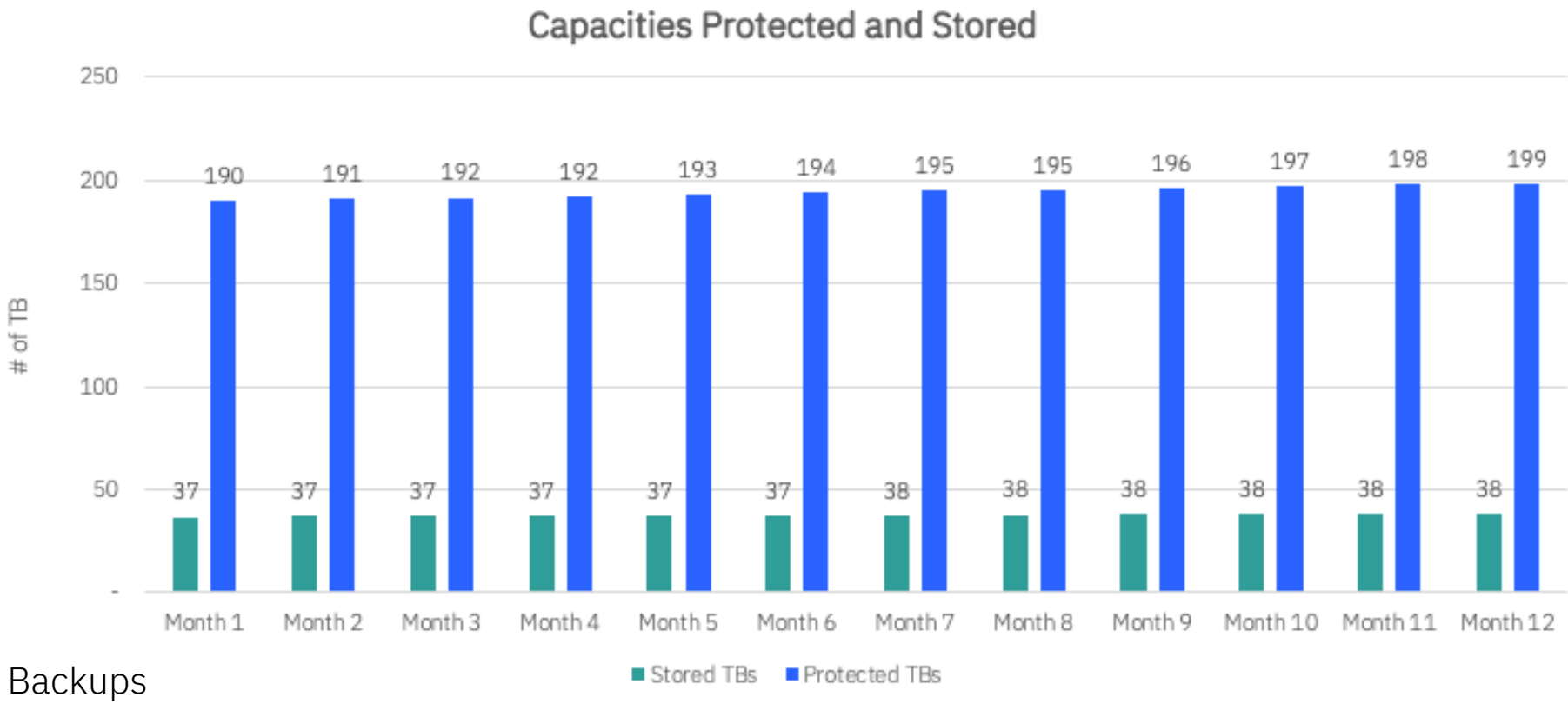
- 35 TB of Total Source Data
- 28 TB of Oracle Databases from 7 Systems
- 7 TB of Unstructured Data from 12 Systems

Change & Growth Rates

- 2% Daily Change Rate
- 5% Annual Growth

Retention Policies

- 14 Days of Retention, 4 Weekly Backups
- 30 Day Retention for Unstructured



PowerVS Migration

PowerVS – Migration Acceleration

Accelerating the process to onboard workloads

Pain Point: From deploying a VM on PowerVS till actual production ready is difficult and time consuming
Objective: Migrate 10TB data in less than 5 days

AIX Migration:

- Simplified the process of onboarding to PowerVS by creating a step by step easy to follow script for moving the base OS – via **MKSYSB** Link
- Streamlined migration guide for Oracle workload (coming)

IBM i Migration

- Introduced backup compression support in Backup, Recovery and Media Services (BRMS) LPP
  - Smaller data size can improve transmission time
- Enabled easier to consume license options for IBM i backup/migration tools
  - 90-day and 1/2/3/4/5-year subscription term license options for BRMS and Cloud Storage Solutions (ICC) LPPs Link
- Streamlined migration guide for IBM i

Acceleration migration with Aspera

- **Transfer & access solution** powered by Aspera for accelerating data transfer into Power VS for build & migrate.
- Suitable for all OS types - **direct or NFS based approach** for transfer & access.
- Move data at **highest speed regardless of size, distance, or network conditions.**
- Easy to follow instruction guide

Accelerated network transfer for Power VS Migration - V1.1.pdf

What's New for 2024 – Migration to PowerVS

Accelerating the process to onboard workloads

Architecture: Migration with Storage Protect (AIX) next slide

Back-up and Restore operating system image and data

Simplify the process of backing up source AIX and/or IBM i system images on-premises and restoring them on PowerVS

Customer Outcomes:

- **IBM i system images 30% to 80%** smaller reducing amount of local storage required for backup and less data to transfer to cloud
- Cost effective and easier access to tools for IBM i
- Easy to follow prescriptive documentation

Deliverables:

- ✓ Introduced backup compression support in IBM i and BRMS
- ✓ Enabled easier to consume license options for IBM i tools:
  - ✓ Added ICC tool to IBM i ITL license bundle enabling easy to consume term license for migration
  - ✓ Added ala carte temporary license options for BRMS and ICC
- ✓ Streamlined migration guide for IBM i
- ✓ Streamlined migration process for AIX using mksysb

Transfer data to PowerVS on IBM Cloud

Reduce the time to configure network and speed data transfer

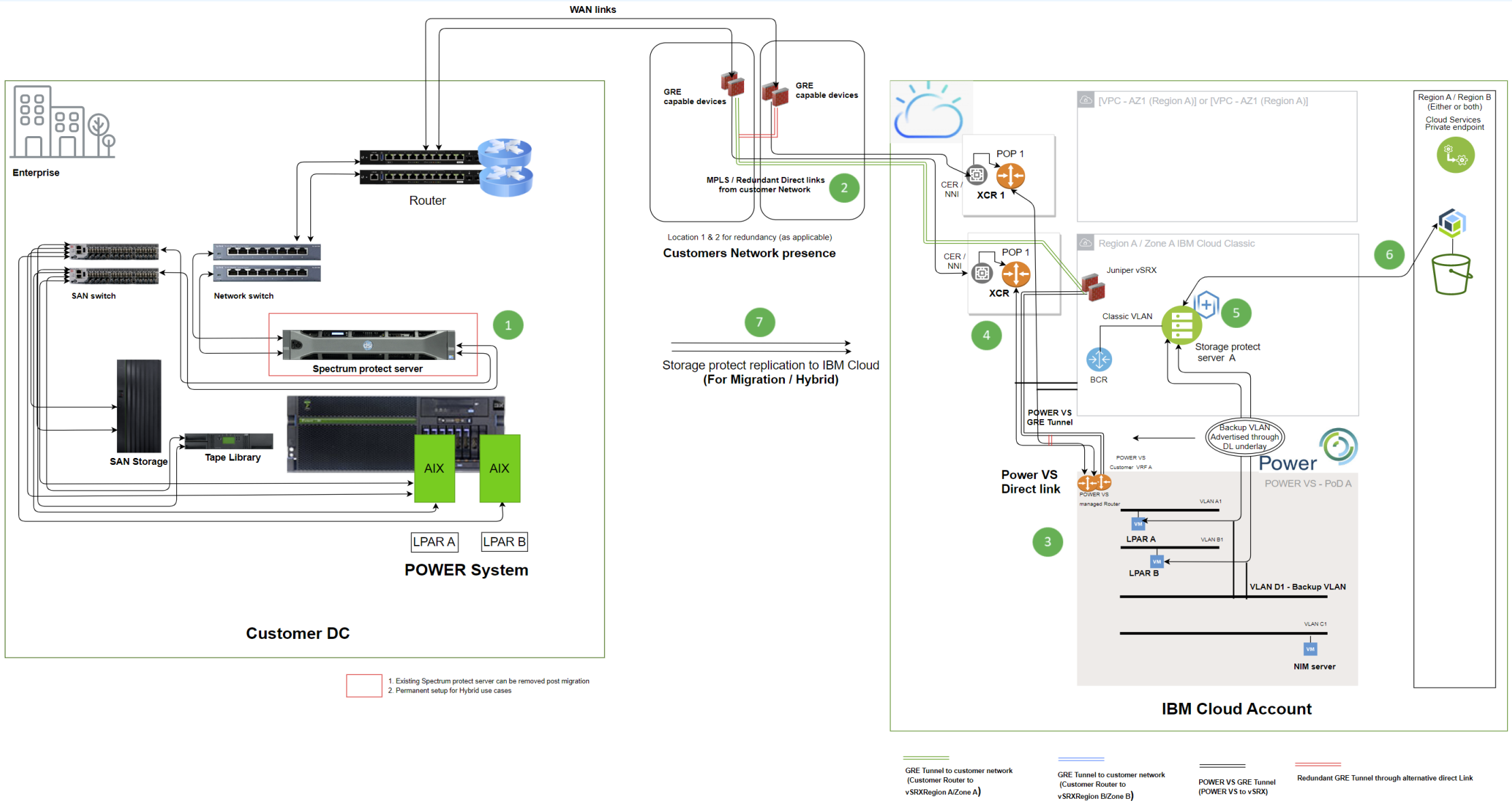
Customer Outcomes:

- Automated configuration for VPN connectivity
- 10x improvement in Mbps for on-premises to cloud
- Reduced data migration time AIX and IBM i

Deliverables:

- ✓ Delivered network automation support for IBM i and AIX
- ✓ Improved performance of TCP data transmission

Architecture: Migration with Storage Protect (AIX)



Change the game – Migrate fast: Aspera

Accelerated transfer solution for migration into Power VS powered by Aspera

Speed matters

Faster transfer = Faster build & migrate + Better migration experience & faster time to value / better TCO

What's it?

- **Transfer & access solution** powered by Aspera for accelerating data transfer into Power VS for build & migrate.
- Aspera helps move data at **highest speed regardless of size, distance, or network conditions.**
- Suitable for all OS types - **direct or NFS based approach** for transfer & access.

Why? – Typical challenges

- TCP-based transfers are slow with **distance and packet loss**, causing migration delays.
- Overall migration **time overrun** due to inefficient transfer throughput, delaying subsequent build & cutover.
- **Logs accumulation** on-prem due to post backup data transfer & resulting build delays.

Outcome that matters

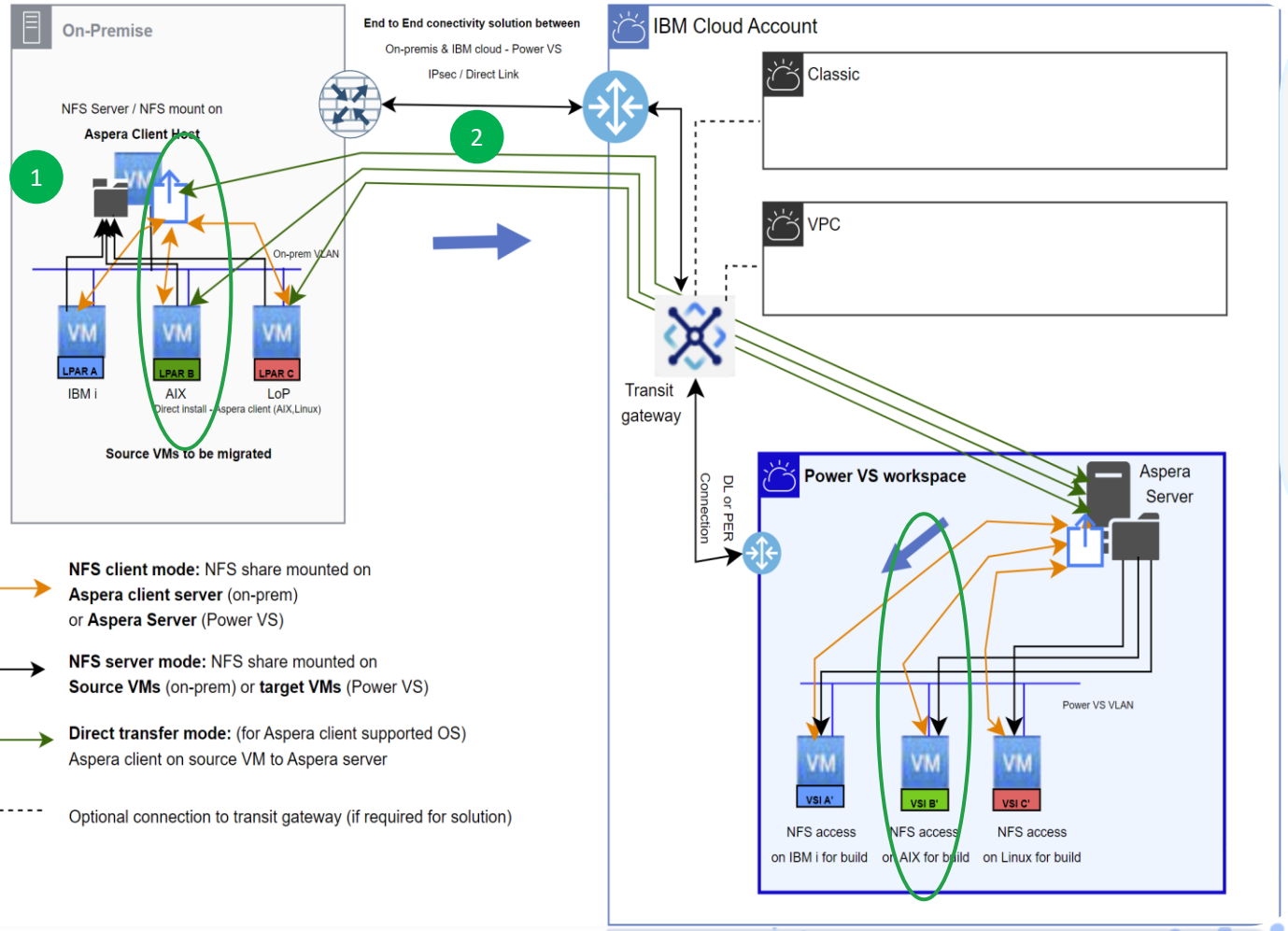
- **Fastest data transfer solution** that performs well regardless of network conditions.
- **Significant time saving** expected as complexity and size of the migration data is larger.
- **Sample results:**
  Cut down time taken from days to hours or weeks to days.

Size	Traditional	Aspera
10 TB	~ 21 days +	~ 3 days
15 TB	~ 31.5 days +	~ 4.5 days
50 TB	~ 105 days +	~15 days

* modelled estimations based on test results
(~44 Mbps for traditional ~ 310 Mbps Aspera)

Architecture: Aspera

Speed matters



1. **Client's on-prem DC:**
   - Aspera client deployed to AIX or Linux.
   - or via NFS on Linux host (any OS).

2. **Connectivity:**
   - Establish interconnectivity via Direct Link or IPSec.
   -- PER or Direct link into Power VS

3. **Power VS workspace:** Hosting Aspera HSTS
   - Perform OS / application backup for migration.
   - Transfer from on-prem to Power VS.
   - Perform OS build / app data restoration.

Resources:

1. Easy to follow solution guide

Accelerated network transfer for Power VS Migration - V1.1.pdf

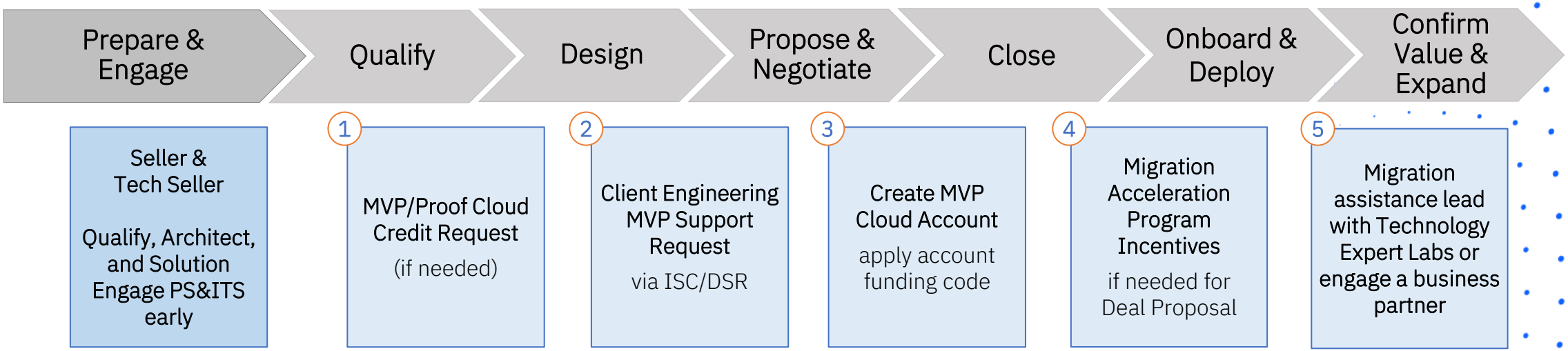
2. Automated deployment – coming soon

CLI - example:

```
root@aspera-aix /home/aspera# ascp 50GB.dat root@192.168.102.170:/root/aspera/50GBastransfer.dat
Password:
50GB.dat                                                    100%   50GB  250Mb/s    21:31
Completed: 52428800K bytes transferred in 1291 seconds
```

IBM PowerVS
Migration acceleration engagement process

The PowerVS Center of Excellence (CoE) team will manage requests coming through the engagement process steps 1-4



[How to engage PS&ITS]

[Create a new MVP Promotion request]

[Request MVP Client Engineering deal support through ISC]

[Create a POC Cloud account]

[Utilize Incentives as needed]

[*Partner with Technology Expert Labs]

IBM Technology Expert Labs (TEL)

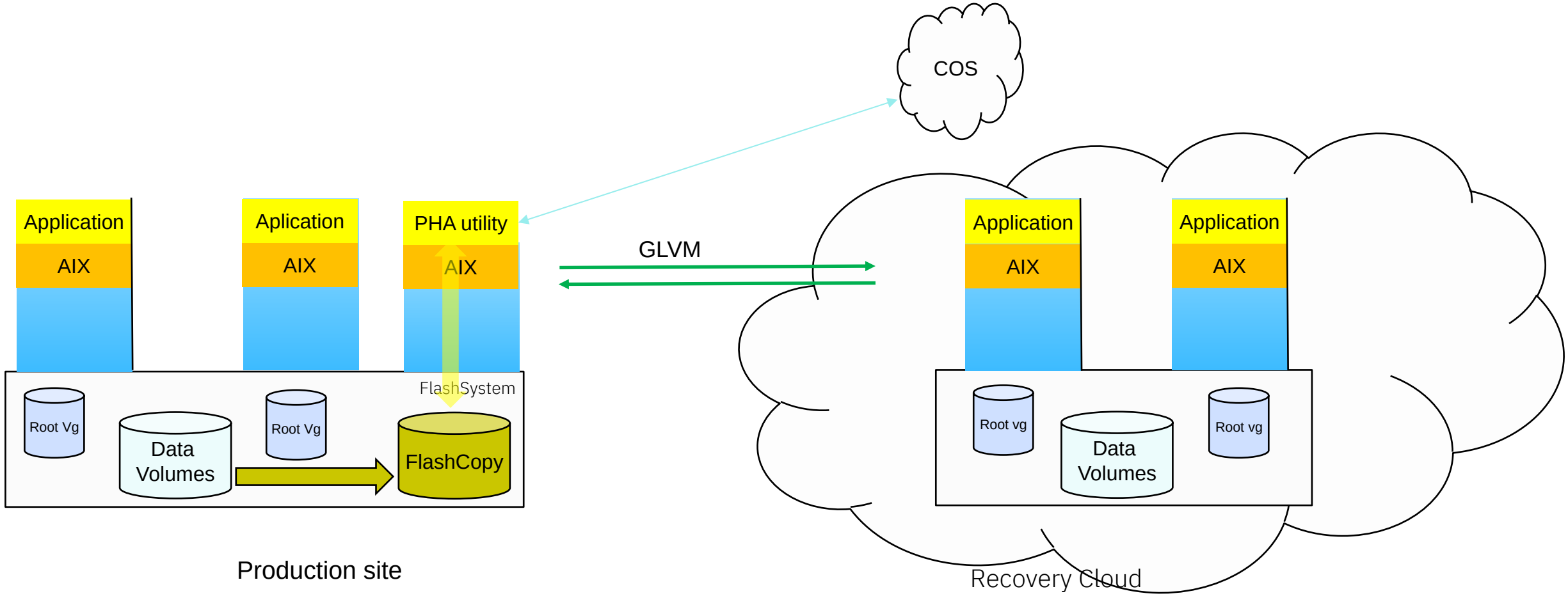
- [Migrate Workloads to IBM Power Virtual Server]
- [Build SAP HANA Starter edition on IBM Power]
- [Build IBM Storage Protect for Power Virtual Server]

* NOTE: Client can purchase migration services from IBM Technology Expert Labs or certified IBM Business Partner

IBM Internal and Business Partner Use Only

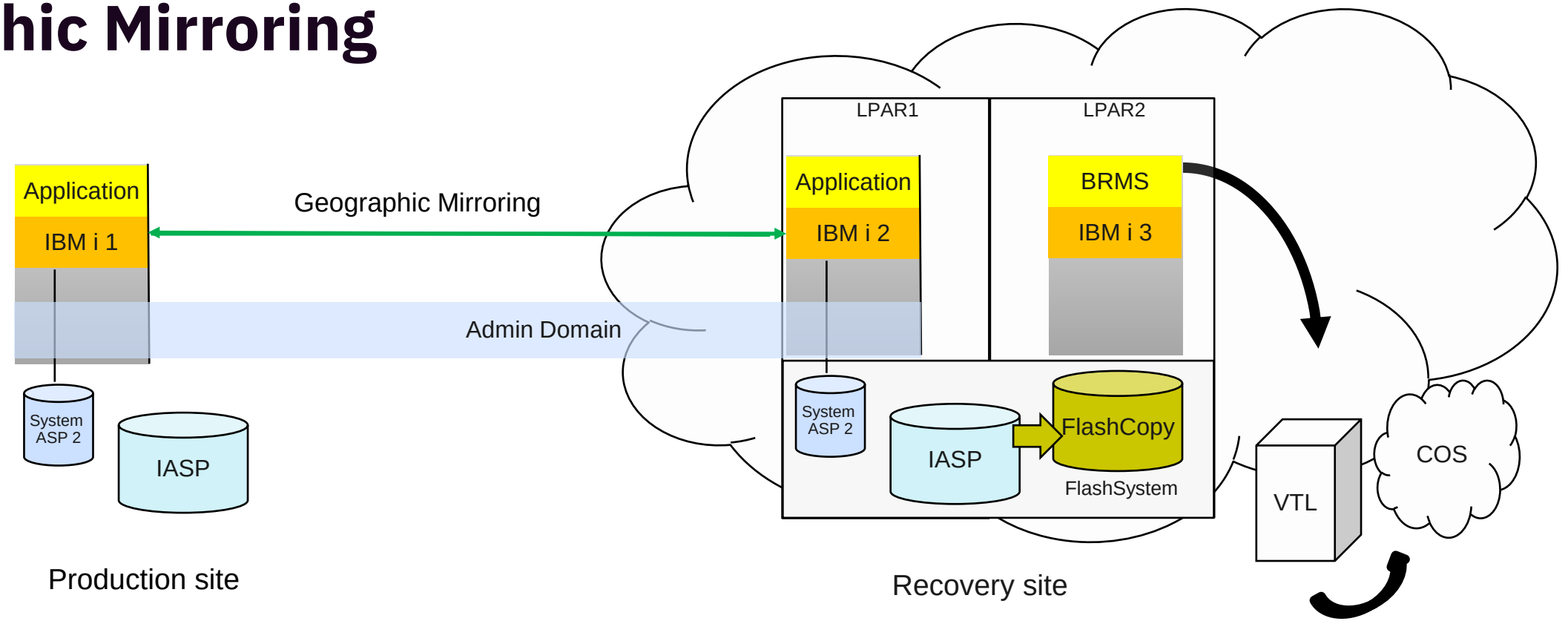
PowerVS Disaster Recovery

Cloud DR example: PowerHA AIX Hybrid Cloud



- PowerHA AIX enables an economical highly automated hybrid cloud DR solution (or Cloud to Cloud)
- GLVM, which is AIX LVM mirroring over IP keeps production/secondary production data in sync
- FlashCopy clones are saved to COS via PowerHA utility

PowerHA SystemMirror for IBM i on prem to cloud via Geographic Mirroring



[Simple HA/DR with PowerHA for IBM i in Cloud]

- PowerHA i enables an economical highly automated hybrid cloud DR solution (or Cloud to Cloud)
- Geomirroring, which is iBM i mirroring over IP keeps production/secondary production data in sync
- With 7.4 TR6 and 7.5 compression for sync/resync will speed up synchronization, hardware acceleration with P10
- FlashCopy in cloud creates clones via volume clone, save to COS via either ICC or VTL [geomirroring and flashcopy]