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**Power Virtual Server:
Deep Dive and Demo**

Sales Enablement

- Power Virtual Server
- Use Cases
- Enablement (Promo)

Offering Roadmap

- Overview
- Compliance

Technical Overview

- Topology
- Options for use cases
- Demo

Backup

- Resources
- Lab Services

Power Virtual Server Solution

IBM Offering

Offering Name:

IBM Power Systems Virtual Server

Offering Description:

A user can purchase an AIX or IBM i Power VM-based Virtual Machine-as-a-Service on IBM Cloud. IBM manages up to OS deployment and the client self-manages the OS and up. Our users can purchase the offering through Cloud consumption-based pricing plans available through IBM Cloud Catalog.

MVP Offering:

Systems: S922, E880, E980

Compute: 0.25-153 cores (15 for S922, 153 for E880/980),
Dedicated or Shared option (capped or uncapped)

Memory: 8-64 GB per core

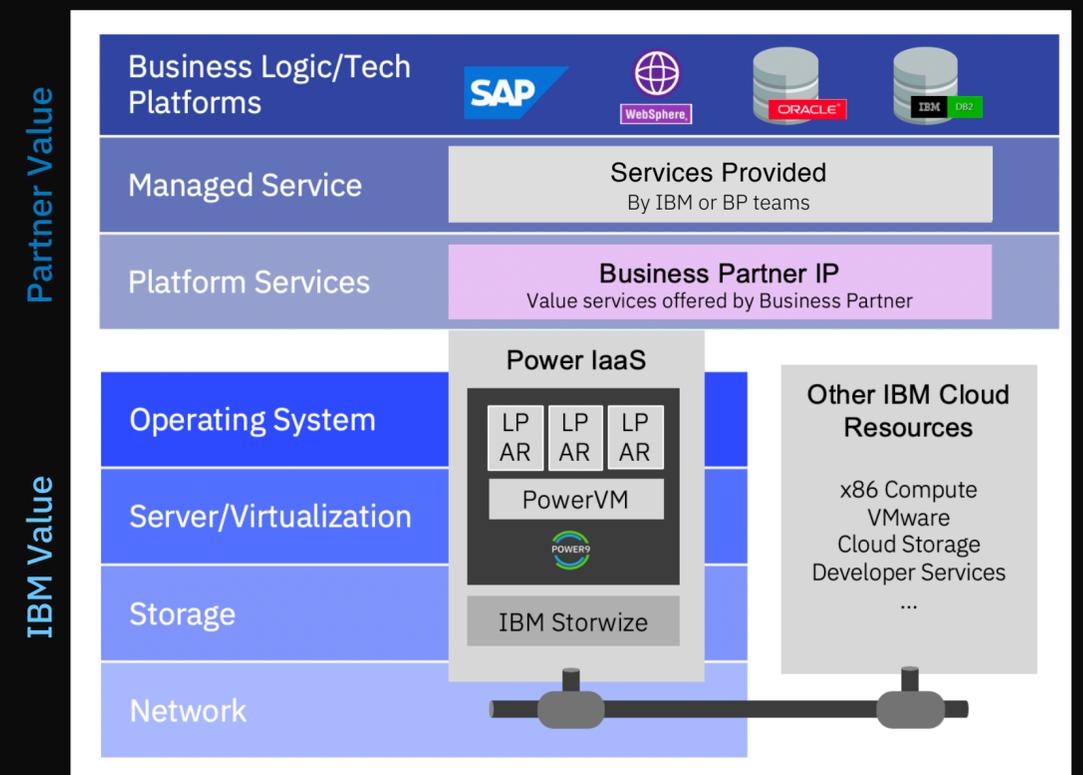
Storage Type: Type : Tier 3 (SSD) or Tier 1 (NVMe)

Storage Quantity 10 GB minimum / 2 TB maximum per disk, 10 GB increments

Network: Public and/or Private IP

OS: AIX / IBM i / Linux

Data Centers: DAL, WDC, FRA, LON, TOR



Multi-tenant, self managed, Power compute as-a-service in IBM Cloud with consumption-based OPEX pricing

Clients

AIX/ IBM i

Current Customers

Use Case:

Wants to upgrade or expand their options to deploy on-premise and off premise.

Client Need:

- Disaster Recovery as a service
- Dev test environments
- Partially **move IT infrastructure** to the cloud
- Justify the capital cost to refresh especially as the boxes get more powerful to only use half a box

MSPs/CSPs

Managed Service Provider/ Cloud Service Provider

Use Case:

Wants this to **offer the service** to their customers.

Client Need:

- Be able to service their customers that want a cloud option and it gives them the ability to provide different or new services
- Looking to get out of the game of buying and hosting their own data centers, it leads to better economic model.

ISVs

Independent Software Vendors

Use Case:

Wants to **host and create** a SaaS offering.

Client Needs:

- An **infrastructure to take to their SaaS to customers quickly** without needing to deploy infrastructure
- **Taking advantage of the GEO footprint** that they get from the Cloud
- Looking to **leverage IBM cloud to expand** into additional markets
- **Reduce or distinguish development costs** by removing the physical infrastructure costs

Use Cases

IBM Cloud is more than X86,

IBM Cloud now has POWER SYSTEMS

Problem Statement:

CIOs and IT managers that use AIX and IBM i environments love the performance and reliability of their Power Systems Infrastructure

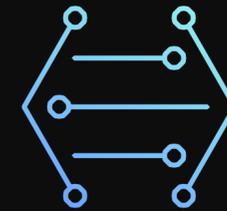
But that infrastructure requires a big commitment on-prem which makes them less flexible than they'd like to be.

What that means to you:

IBM Cloud gives clients the ability to quickly and easily spin up Power Systems resources in the Public Cloud.

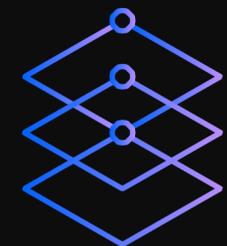
Clients that are looking to be more flexible with their environments can use this option to leverage the cloud for compute.

Meet client's goals and grow signings!



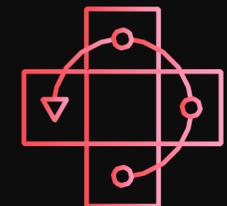
Test AIX and IBM i in the Public Cloud

A separate but secure sandbox environment for Power Systems users to test their own AIX or IBM i workloads, try out new OS versions operating systems or the latest hardware available.



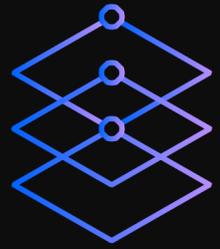
Run enterprise Power workloads in the Cloud

AIX and IBM i applications are no longer restricted to on-premise. Help clients build out a hybrid cloud environment with the ability to host their AIX and IBM i apps in the public Cloud.



Disaster Recovery without double commitment

Currently, AIX and IBM i clients need to build out their own datacenter to ensure DR. Now, with the Cloud, they get those options at a more affordable cost.



Run enterprise Power workloads in the Cloud

Company: A global leader in the design, manufacture and distribution of branded home improvement and building products.

Challenge: Clients are not willing to spend money to upgrade applications or infrastructure due to recession. Needed a way to continue operating and upgrading outdated equipment.

Market: Industrial

Solution components: IBM i, IBM Power Systems Virtual Server on IBM Cloud

Benefits

OPEX vs CAPEX

Flexible bundled solution that includes x86 and Power

No need to purchase their own datacenter as they move to the cloud

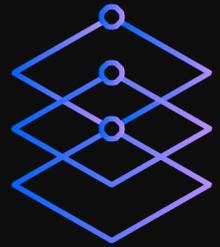
Agility of a public cloud within a controlled and secure environment of a private cloud

Risk mitigation

Solution description

49 P9 Cores and 2TB memory IBM VS

Connectivity into x86 content on IBM Cloud



Run SAP workloads in the Power Cloud

Company: The client provides equipment and services across a range of industries including research, semiconductors and industrial.

Challenge: IBM have supported them in the running of their SAP environment for over 10 years. They have always run their SAP on IBM Power Systems and had no desire to move. In addition there was a need to address some capacity issues plus prepare for S4HANA

Market: Global equipment and services

Solution components: AIX, SAP, IBM Power Systems Virtual Server on IBM Cloud

Benefits

OPEX vs CAPEX

Client had no desire to move away from Power

Enterprise Power Architecture running as a service in the Cloud makes migration of existing Power workloads easier.

SAP HANA is ran as part of their landscape along with periphery x86 systems, offering all these platforms on IBM Cloud was a competition beater.

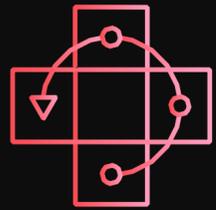
Solution description

14 LPARs across 2 sites

S922 / E980 / AIX 7.1

88 Cores total

2000 GB RAM



Disaster Recovery without double commitment

Company: American furniture store chain

Challenge: To mitigate natural disaster risk, the client wanted to move to a cloud first strategy and maintain a platform that they could trust with minimal risk. Two locations also give them the ability to have a cloud disaster recovery strategy. They will begin their cloud journey setting up DR infrastructure in the IBM Cloud then leverage that site when migrating their production DC later.

Market: Distribution

Solution components: AIX, IBM Power Systems Virtual Server on IBM Cloud

Benefits

OPEX vs CAPEX

Agility of a public cloud within a controlled and secure environment of a private cloud

Risk Mitigation

Disaster Recovery

Scale – starting with AIX then adding more enterprise systems (eg IBM i)

Solution description

Deploy DR in the cloud and expand to production

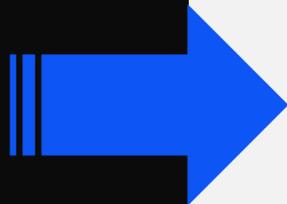
34 LPARs on IBM Virtual Server

AIX followed by IBM i

Connectivity into x86 content on IBM Cloud

Key Wins and Successes

- Major Manufacturing Company
- Major Furniture Company
- Leading European Tool & Equipment Manufacturer
- Leading Fine Food Company



Reasons Power VS won

- Flexibility, ease of doing business
- Achieve SLA Enterprise Level Data Center
- “Enterprise class” compared to Intel
- Trusted, rock-solid performance of IBM Power Systems
- Ease-of-use and demonstration of the IBM Cloud Portal
- Performance of SAP and Oracle on POWER
- Ability to migrate their technology at their own pace
- IBM’s ability to offer solutions that encompassed a complex multi-platform (POWER, x86 and/or IBM Z) environment
- Early discussions/meetings with offering management and developers at Think
- Cross-selling within IBM, GTS, Cloud and Systems
- Multiple locations

**Contracts closed in 4Q of 2019*

Competition

Power Cloud Comparison- Google Cloud

Customer Need	Google Cloud Power IaaS	IBM Power VS on IBM Cloud	Why does it matter to you?
IBM i Support	Coming Roadmap (2H20)	Yes	IBM i is critical in many markets, especially retail, banking, supply chain
WW Availability	No A single US DC Second US DC added in 2H20	Yes us-east, us-south, Toronto, EU (FRA) Available TODAY 2H20: London, AP	Geo-diverse DR Latency to on-prem Data residency
Enterprise Scale	<16 core VMs Roadmap: (1H) Scale up (E950) to 64 core and 8TB Max and AIX only	Yes Completely custom VMs up to 160 cores and 16TB memory (E980)	(DB2, HANA, Oracle) The only cloud option for hyper scale-up
Buy only what's needed	Yes Custom plan available upon req. (bill prorated to the day)	Yes Purchase precise capacity required (by core, memory and storage), metered by the <u>hour</u>	Win on cost and meet the client need
SAP Certification	No closed plan to pursue certification	Offer Managed Application (GTS) SAP <u>today</u> SAP certification approved	Existing client base and platform competitive advantages on SAP
Power Expertise and Innovation	IBM created available on GCP Marketplace	IBM invented and actively develops Power	Decades of Power experience Proprietary knowledge of internals Stack ownership from chip to OS
End to end services	Selective joint partners, IBM Services, and SI	End to end services for planning, migration, and management through the application stack on all platforms	We win leveraging IBM's decades of enterprise service experience

Resources for Sellers

Seismic Sales Play	Channel Enablement Material	SMARTER (Your Learning)	Offering Documentation	WinRoom Slack channel
<p>Expertise level Introductory</p> <p>Links http://ibm.biz/sell-power</p>	<p>Expertise level Introductory - Intermediary</p> <p>Links https://ibm.box.com/s/pbm4g18eapoygbmf2l3ysrtuxgyyc09b</p>	<p>Expertise level Introductory - Intermediary</p> <p>Links IBMer https://smarter-sellers.yourlearning.ibm.com/#/systems/course/4089/details</p> <p>BP https://www.onlinedigitalllearning.com/course/view.php?id=5889</p>	<p>Expertise level Introductory - expert</p> <p>Links https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-getting-started</p>	<p>Expertise level Intermediate - Expert</p> <p>Links #winroom_power_iaas</p>

20 for 2 Program

Designed to drive IBM Cloud utilization across all four plays, primarily targeted at new IBM Cloud clients in existing IBM integrated and Industry accounts.

Approval criteria are weighted towards more qualified 2H opportunities, especially those with exceptional ROI and a detailed success plan.

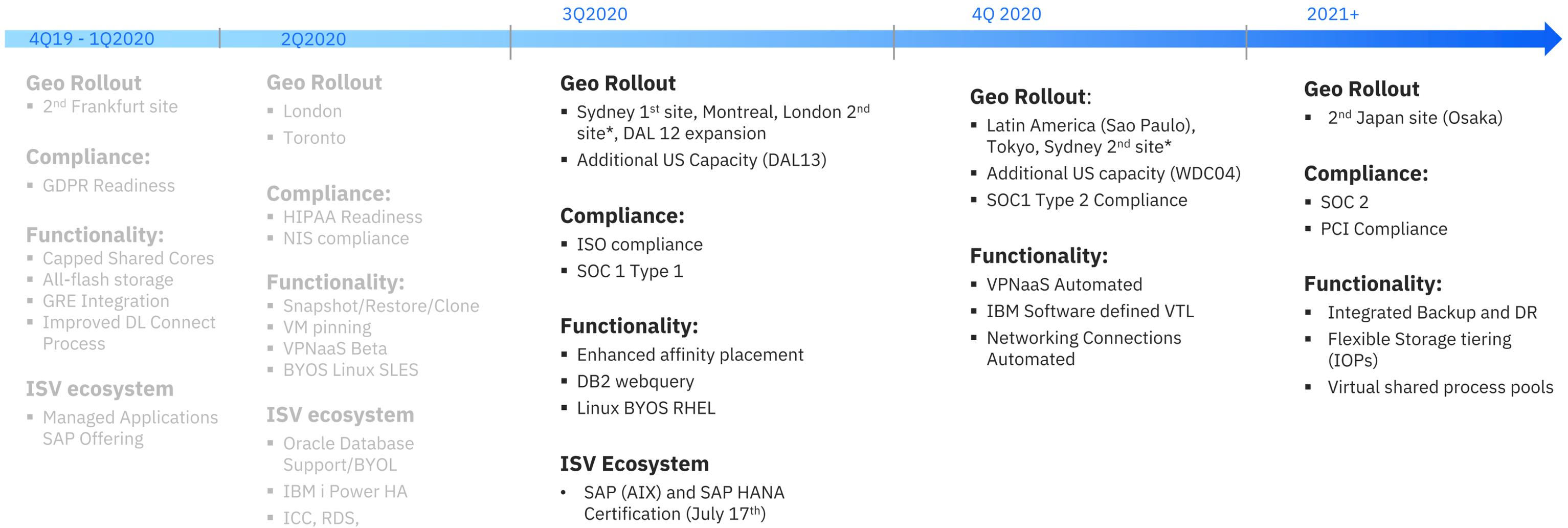
Roadmap

Power VS Roadmap

Last updated: July 22

Key Capabilities in 2020

- SAP (AIX) And SAP HANA
- Improved and simplified network connectivity
- Key Compliance certifications
- Continued Worldwide geo expansion and capacity management

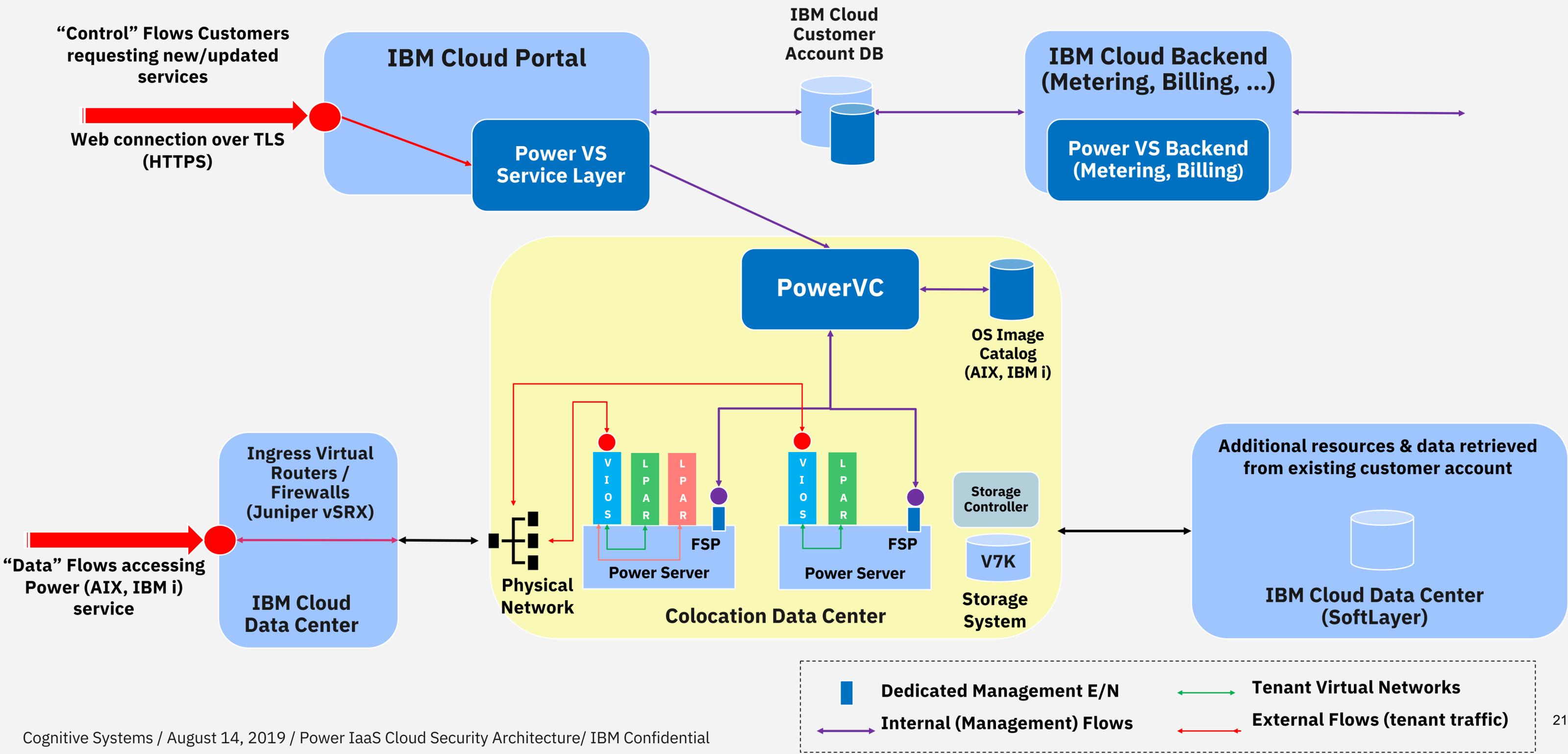


*Site TBD due to Coronavirus impact

*Dates are subject to change

Power Virtual Server Topology

Logical Service Topology (Simplified) w. Major Components and Data Flows



Migration and Backup

MDM: Mass Data Migration



IBM Cloud Mass Data Migration is a physical data transfer service that accelerates the secure movement of terabytes to petabytes of data to the IBM Cloud using rugged, portable storage devices with 120 TB of usable capacity.

- **IBM Cloud supported physical media migration option**

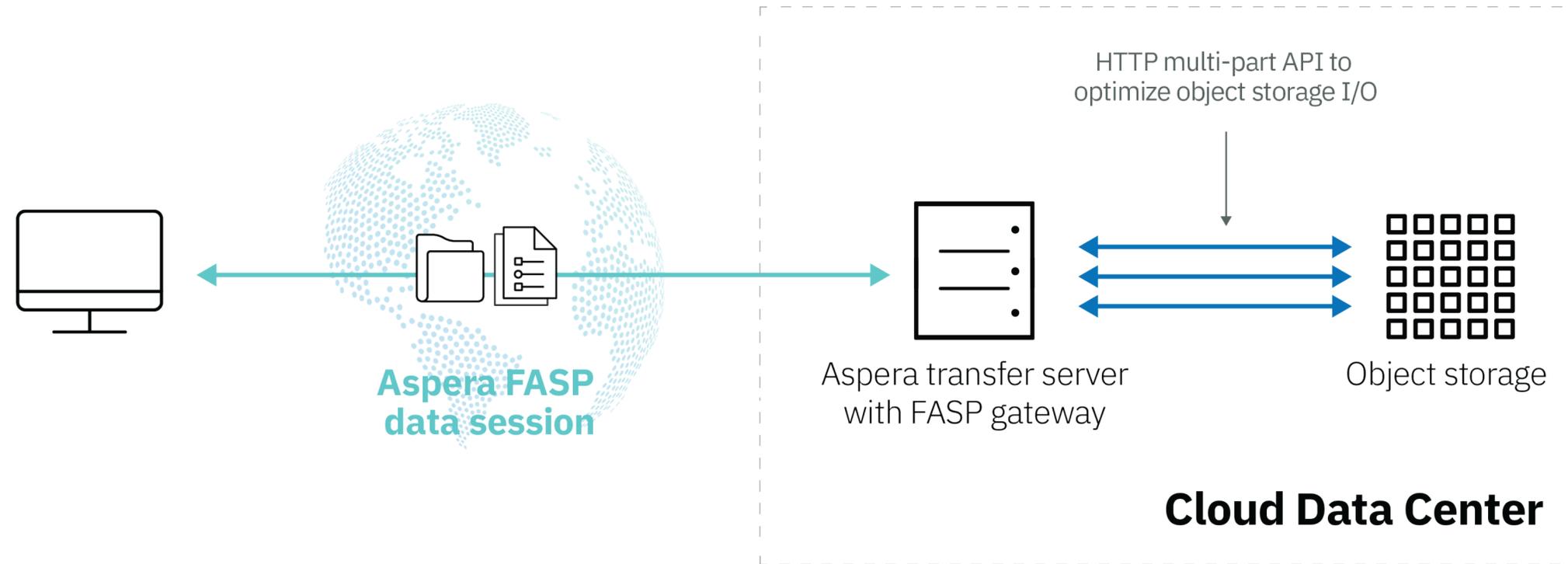
- <https://www.ibm.com/cloud/mass-data-migration/faq>

- **Process:**

- Use IBM Cloud account to request for the device (10 Gbps network RJ45 & SFP+ port)
 - MDM support Network File System (NFS) and Server Message Block (SMB) protocols
 - Once approved device/s shipped to customer (first 10 days free, additional days can be added for a price)
 - Customer connects the device to their network (sets the IP address if necessary)
 - Mount the device (NFS mount) in eg: AIX
 - Copy all the files needed to be migrated
 - Send back the device to IBM
 - Data is pushed to customer's IBM Cloud Object Storage
 - Data transfer to COS is free
 - However COS space charges apply

US costs

- \$375 per device (10 days)
- \$30 per calendar day (beyond first 10 days)



- The Solution
- Full client-side read/write of object storage
- Synchronous transfer from client to object storage
- FASP transfer speeds end-to-end
- Real-time optimization of chunk size for HTTP threads
- Up to 3.5Gbps over a single session (varies per cloud & instance type)
- Has achieved 100TB per 24 hours



<https://www.ibm.com/cloud/aspera>

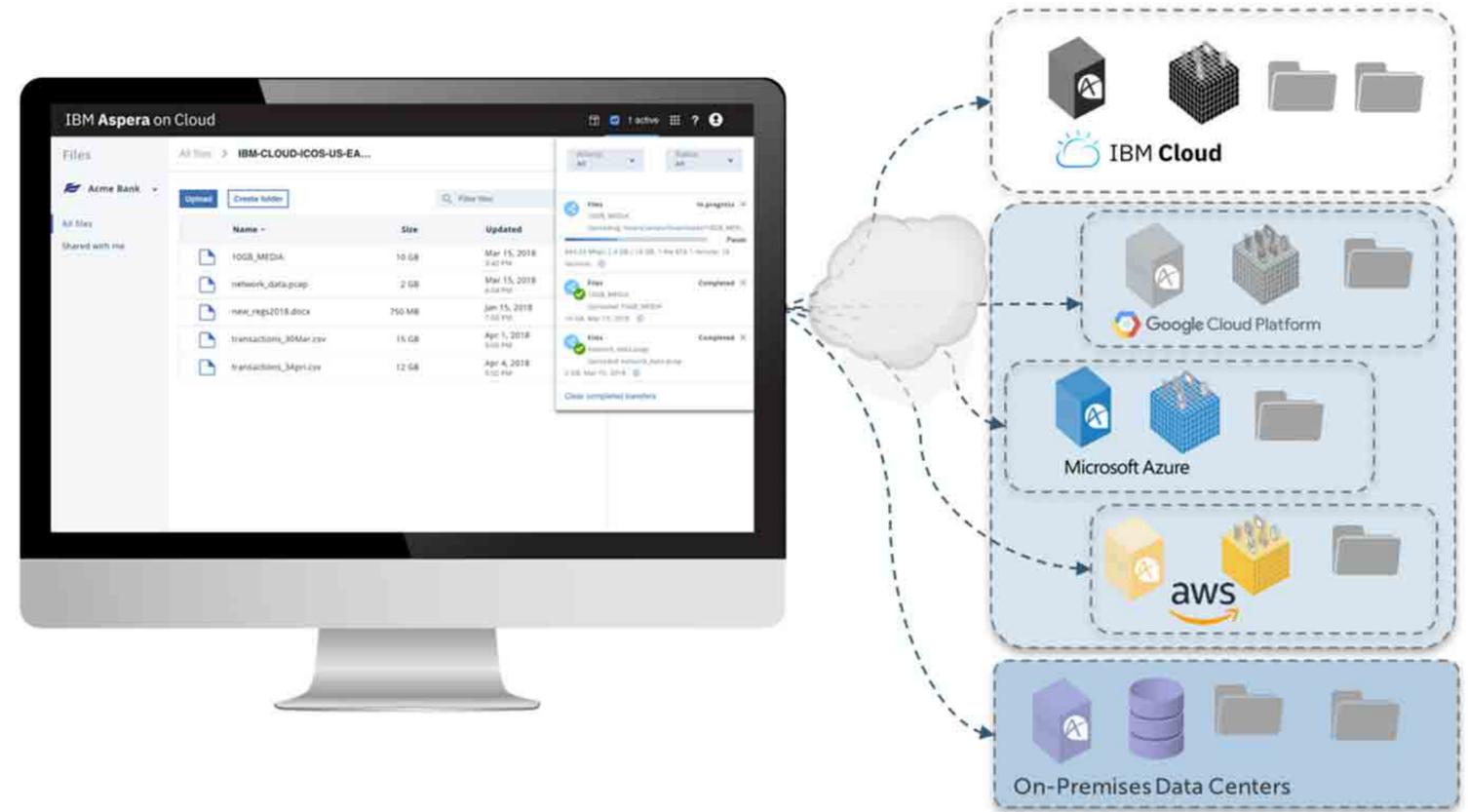
<https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=KUW12449USEN>

Aspera to Cloud

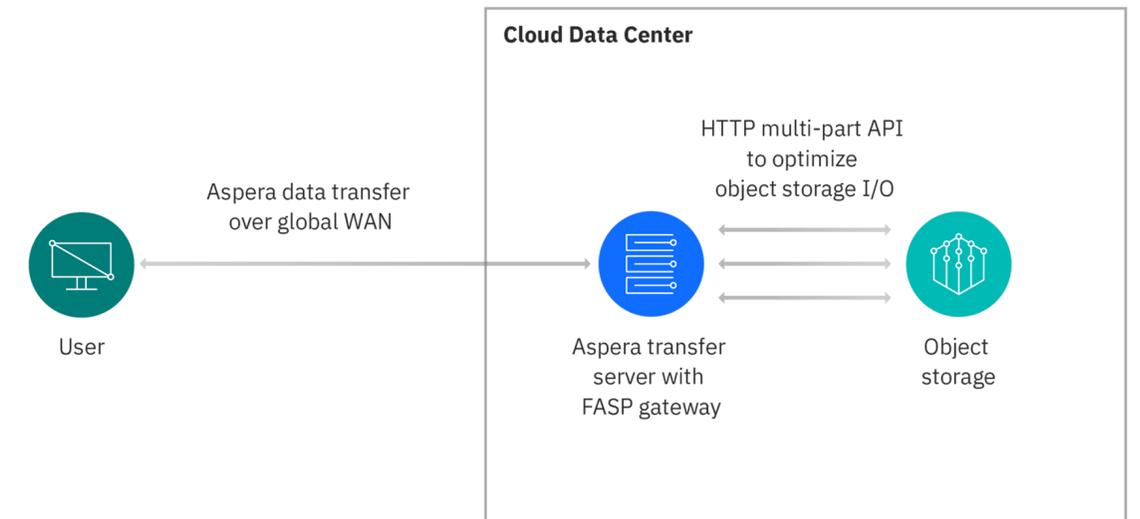
<https://www.ibm.com/downloads/cas/AWOQXB8G>

Power 7 based Aspera test results

<https://developer.ibm.com/recipes/tutorials/high-speed-data-transfer-with-ibm-aspera-on-ibm-power/>



Direct to Cloud technology



- **Built in support**

- *UI/CLI/REST interfaces to capture/deploy VMs*
 - capture running VM image and push to COS
 - rootvg, rootvg+some or all data disks

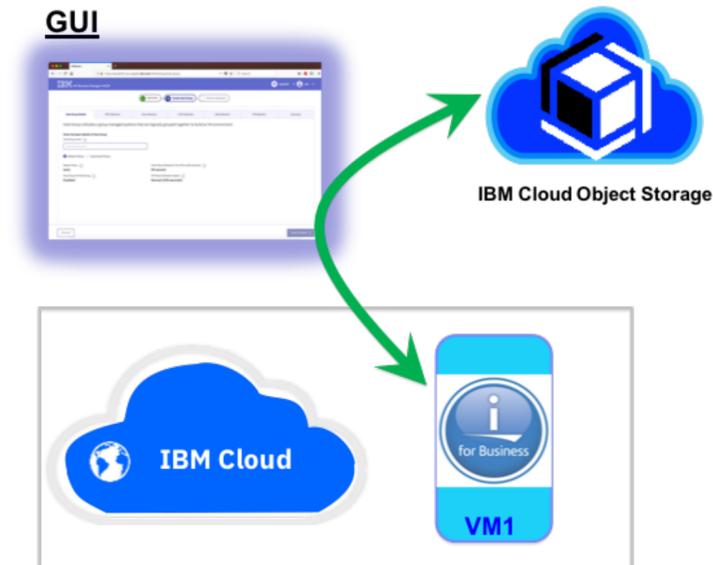


Fig 1: backup/deploy disks or entire VM image to COS

- **Customer installed**

- *Spectrum Protect for AIX (TSM):*
 - Granular backup/restore capability (file, file system)
- *Veeam for AIX*
- *BRMS for IBM i*

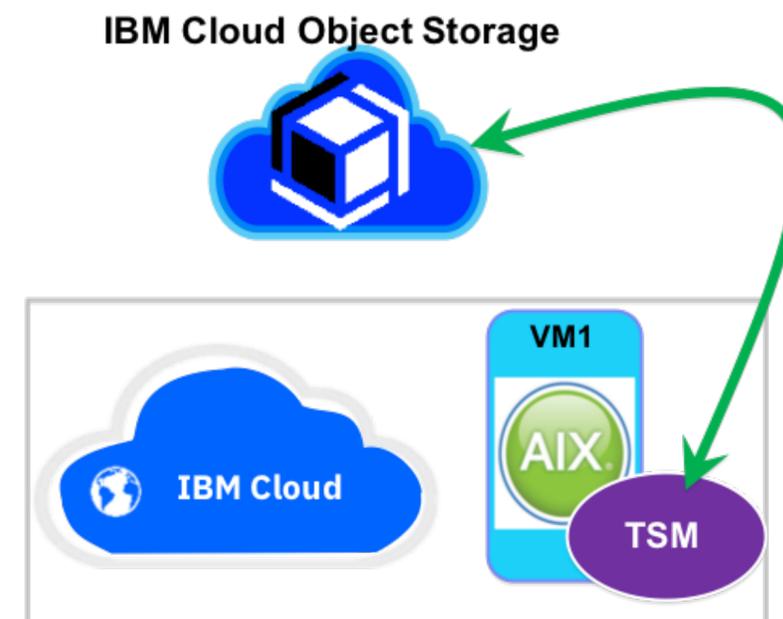
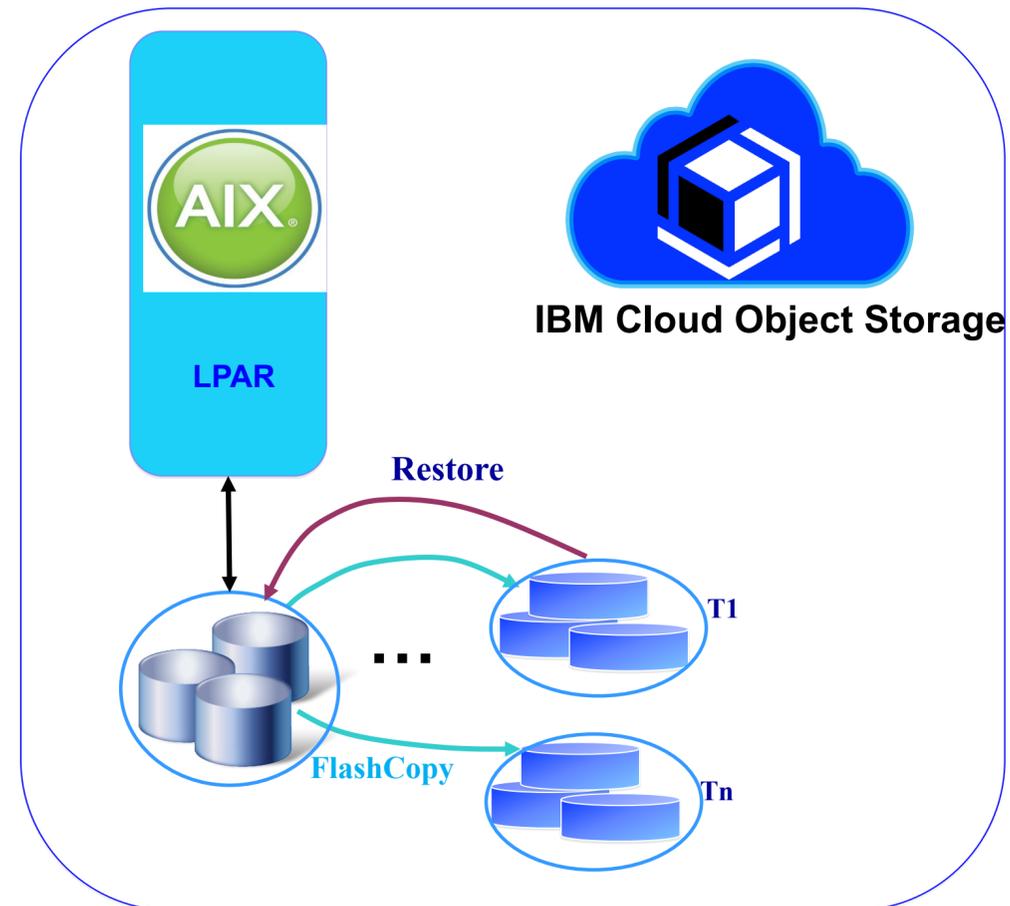


Fig 2: Backup/Restore objects from OS (files, file system etc)

Power Cloud: Fast backup/restore using storage snapshots

Requirement to host critical workloads in IBM Cloud Power environment

- **Backup and restore large database disks quickly**
 - *Avoid network data flows*
- **2020: Cloud APIs to snapshot/clone/restore disks**
- **Use Cases**
 - *Save disk state before Oracle upgrade. If upgrade causes issues, roll back to saved copy*
 - *Capture entire VM image as backup periodically (Disaster Recovery)*



Currently entire running VM can be snapped as an OVA image and pushed to COS

Disaster Recovery

Default Resiliency

- Redundant infrastructure
 - Redundant network and SAN fabric provide failure tolerance
- Planned maintenance through LPM (non-disruptive)
 - Example: firmware upgrade
- Basic HA (default)
 - Automated remote restart of VMs when host failure detected

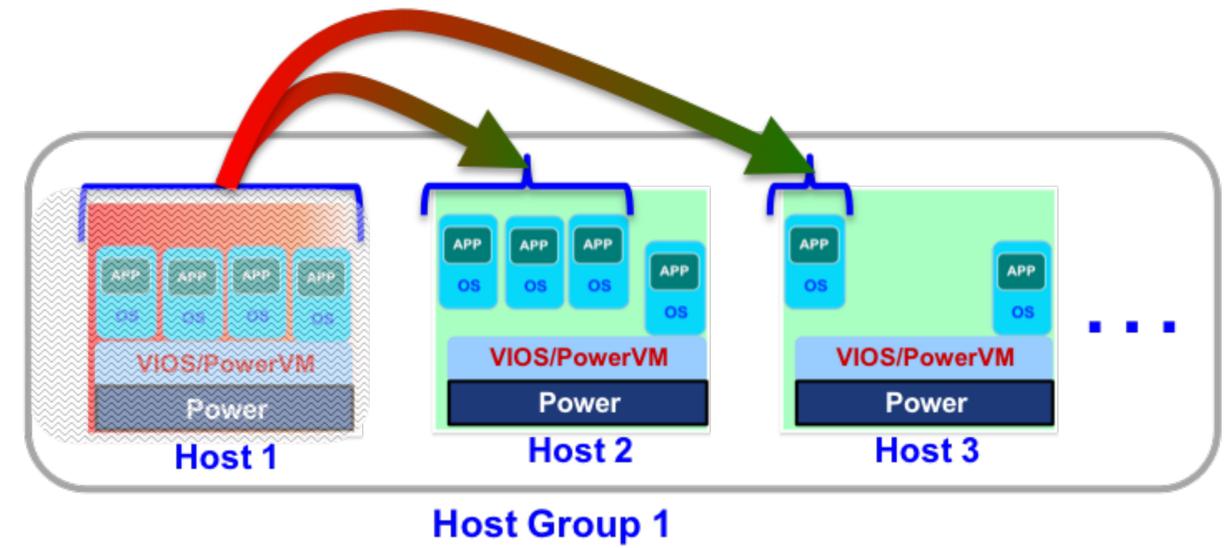


Fig 1: Restart HA for Host Failures

Power Cloud: Current Disaster Recovery options

Disaster Recovery

- *OS based data mirroring*
 - PowerHA SystemMirror for AIX EE with GLVM
 - PowerHA SystemMirror for IBM I EE with GeoMirroring
- *Database replication*
 - AIX
 - Oracle Dataguard
 - Oracle Goldengate
 - DB2 HADR
 - EPIC: Cache Replication
- *Logical_Replication*
 - IBM i
 - RoboHA
 - iCluster
 - Maxava
 - MIMIX

Disaster Recovery

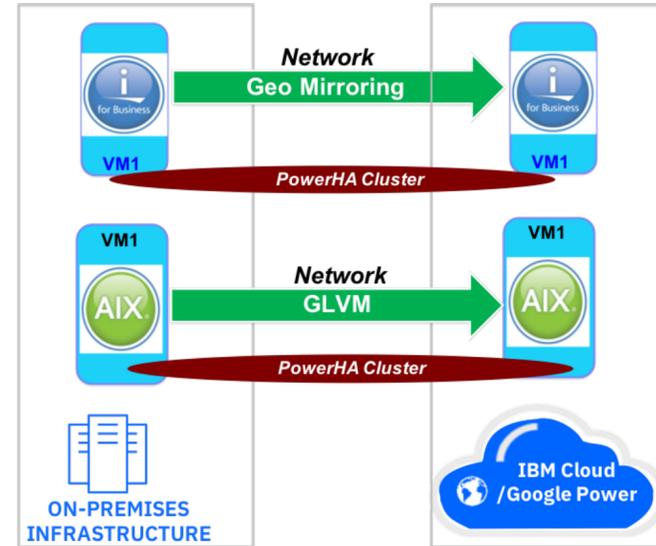


Fig 1: Private to Public Cloud: DR solution

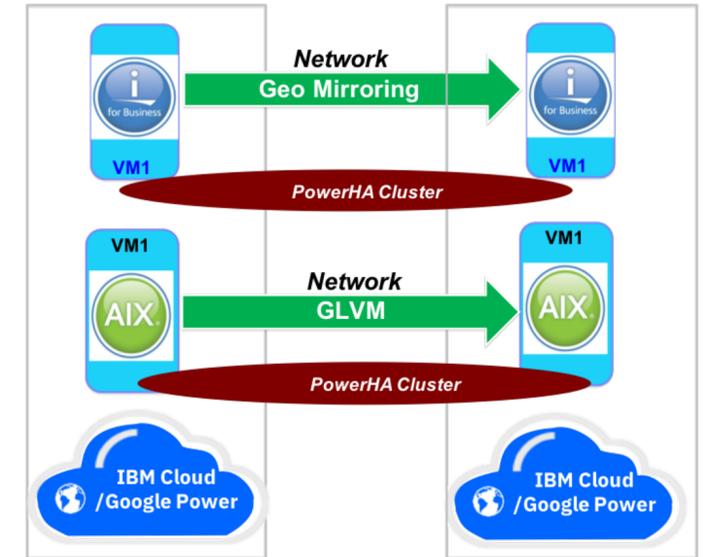
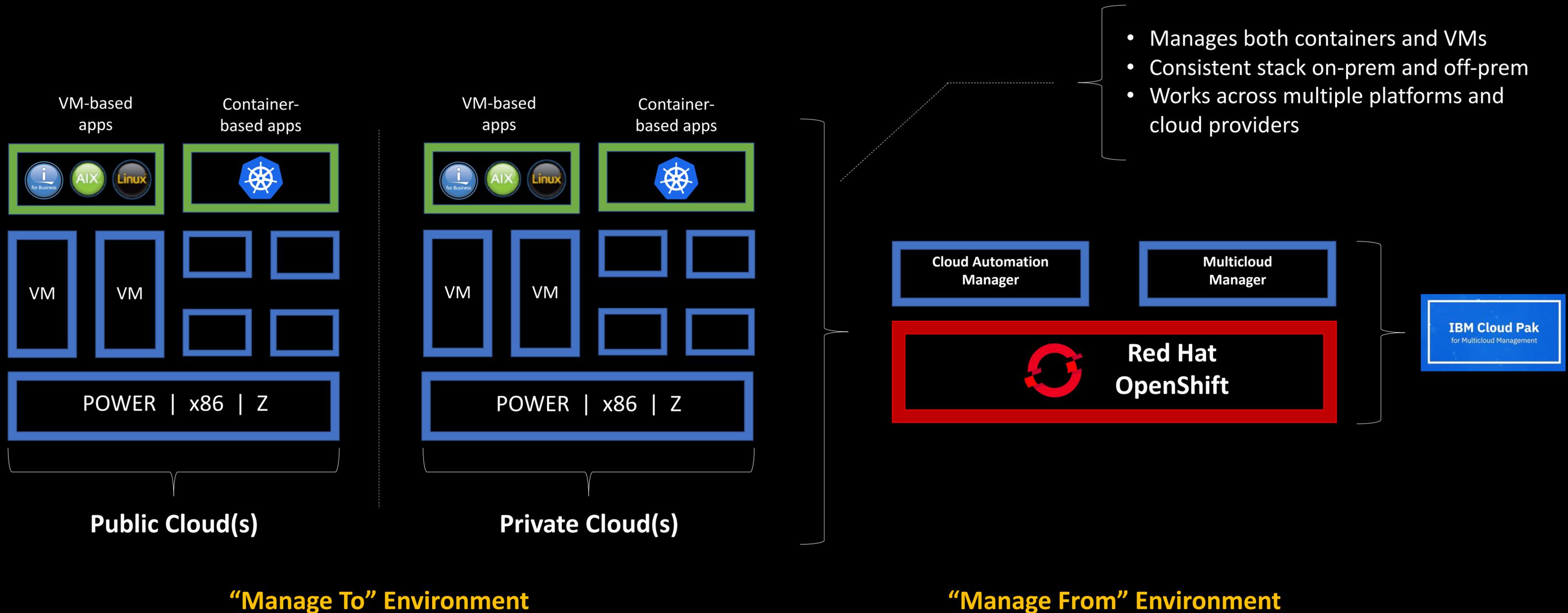


Fig 2: Public to Public Cloud: DR solution

MODERNIZED HYBRID MULTICLOUD ARCHITECTURE:

IBM + RED HAT



Check out the white paper:
<https://www.ibm.com/downloads/cas/G4DO3DJE>

Thank you

IBM

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Top Assets

Full Offering Details (Seismic): <https://ibm.biz/sell-power>

Cloud Sales Play Information: <https://ibm.biz/power-play>

Progressing the deal: <https://w3.ibm.com/w3publisher/hybrid-multicloud-solutions-on-power/deal-progression>

Competitive Compare

https://w3-connections.ibm.com/blogs/2a09e372-a583-4e27-8a9c-baa74bc0204d/entry/Power-servers-competitive?lang=en_us



Lab Services

Power Virtual Server Migration in IBM Cloud

Overview

This service will assist you with migrating your on-premise Power workloads to Power Virtual Server (PowerVS) in IBM Cloud. It will include **planning** for and **moving** Power workloads to the cloud, as well as configuring key areas such as **networking** and **backups**.

Power to Cloud Rewards

Target Audience

- Clients running AIX and IBM i considering public cloud for some of their workloads.

Why Use This Service?

- Are you considering Power in the cloud or a pay-as-you-go consumption model for Power?
- Are looking for the flexibility of a hybrid cloud model for AIX or IBM i?
- Are you struggling to find AIX or IBM i skills for on-premise workload management?

Benefits

- Successful migration of Power workloads to IBM Cloud using best practices.
- The flexibility of the pay as you go model coupled with the proven reliability of Power Systems.

Service Provided

- Perform required **planning**, including requirements and use cases.
- Perform **migration** of AIX or IBM i VMs (LPARs) to IBM Cloud
- Configure basic **networking** for Power workloads in the cloud.
- Implement a **backup** strategy.
- Demonstrate deployment of new Power workloads.
- Demonstrate management of CPU, memory and disk resources.

Duration

- This service is estimated at 80 hours.

Power to Cloud points required

- 10,000.
- Service also available through other Lab Services funding options.

Deliverables

- Up to two (2) client AIX or IBM i LPARs/VMs up and running in IBM Cloud with basic networking in the OS and backups configured.
- Additional LPARs/VMs can be migrated with follow-on billable services.
- This service does not include any Lab Services toolkits or assets.
- HA/DR configuration is not part of this service, but is available through other Power to Cloud options or billable services.
- Skills transfer on administering AIX or IBM i in the cloud as part of engagement.
- Power Virtual Server engagement summary.

Contacts

- Contact us at ibmsls@us.ibm.com or your local Lab Services team