# IBM PowerVC
# (Virtualization Center) for Private Cloud


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**Welcome to Lyon, France**
**and the 2026 Common Europe Congress**

**Bienvenue à Lyon, en France,**

**et au Congrès de Common Europe 2026**

# Software

PowerVC

Power Virtualization and Cloud Management
- ✓Increase IT productivity and agility
- ✓Manage Private Cloud without complexity

PowerSC

Security and Compliance
- ✓Protect Virtual Workloads
- ✓Maintain and Demonstrate Compliance

PowerHA

Resiliency without Downtime
- ✓ Roadmap to continuous availability
- ✓ High availability systems and scaling

PowerVM

Virtualization without Limits
- ✓ Drive over 90% utilization
- ✓ Dynamically scale per demand


- ✓ **Superior cloud economics**
- ✓ **Open Innovation Platform**

AIX - The Future of UNIX

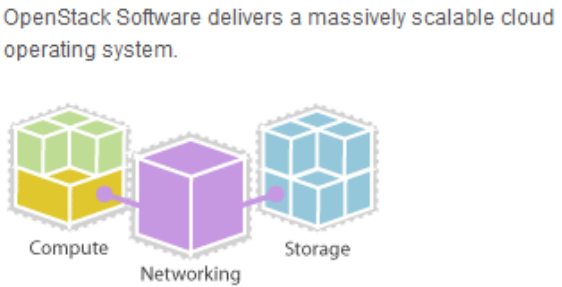
Total Integration with i

Scalable Linux ready

# PowerVC is built on the Openstack community foundation

- ✓ Provides an **Open alternative** to proprietary cloud stacks
- ✓ Protects clients **current investment** with simple path to new technology
- ✓ **Open APIs** provides great flexibility and agility

openstack™
CLOUD SOFTWARE

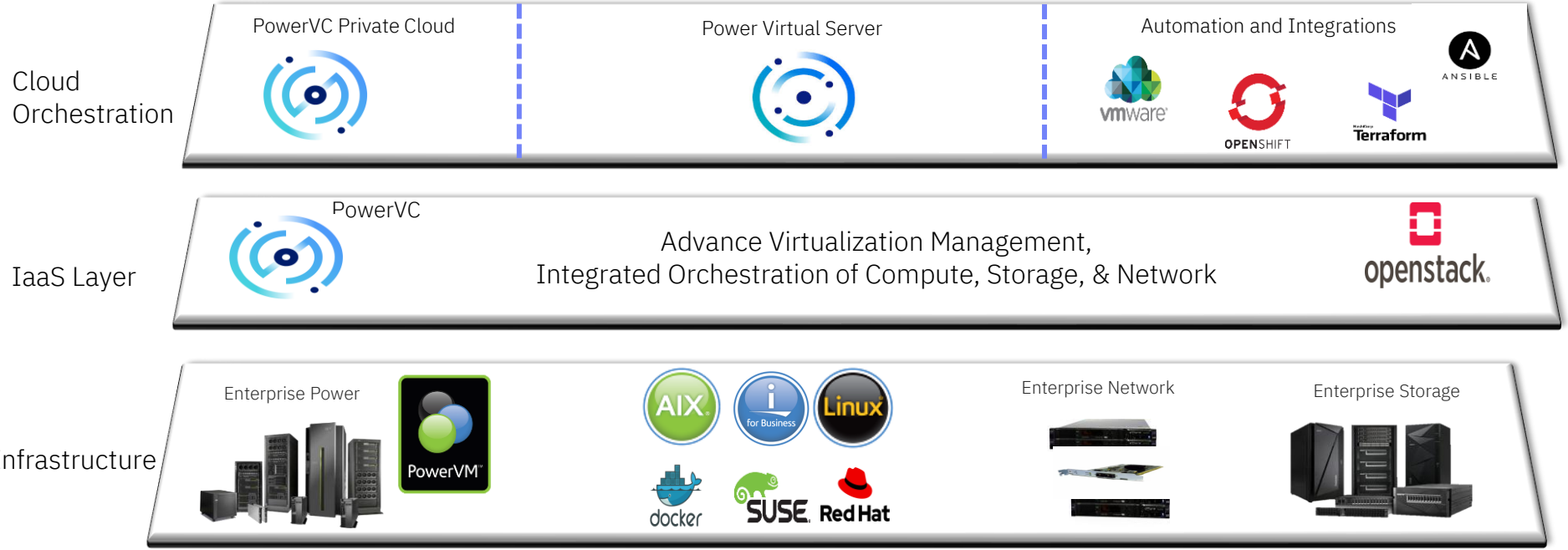


# PowerVC - Integration point for Power Hybrid Cloud Strategy

**IBM PowerVC for Private Cloud**
- Self Service Portal
- Simplification of environments
- Expand Storage ecosystem

**IBM PowerVS Public/Private Cloud**
- Strategic Foundation
- Public cloud infrastructure capabilities
- Scaling and resiliency improvements

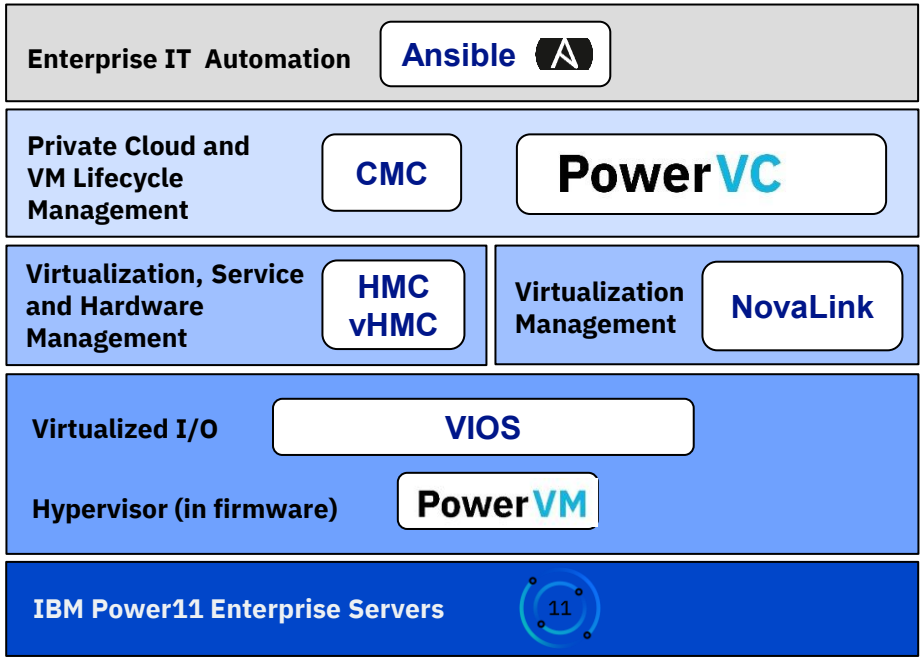
**Ecosystem**
- Upward Integration: Other cloud orchestrators
- Industry standard automation tools
- REST APIs



# PowerVC in the virtualization stack

With the generational shift to POWER11 technology, the entire virtualization/cloud stack has been refreshed

- **Hypervisor:** PowerVM 4.1.1
- **Virtualized I/O:** VIOS 4.1.1
- **Hardware Management:** HMC/vHMC V11R1M1110
- **Private Cloud Management: PowerVC 2.3.1**



# What Can PowerVC do for you ?

*“A simple tool to quickly roll out LPARs/Virtual Machines on Power Systems”*

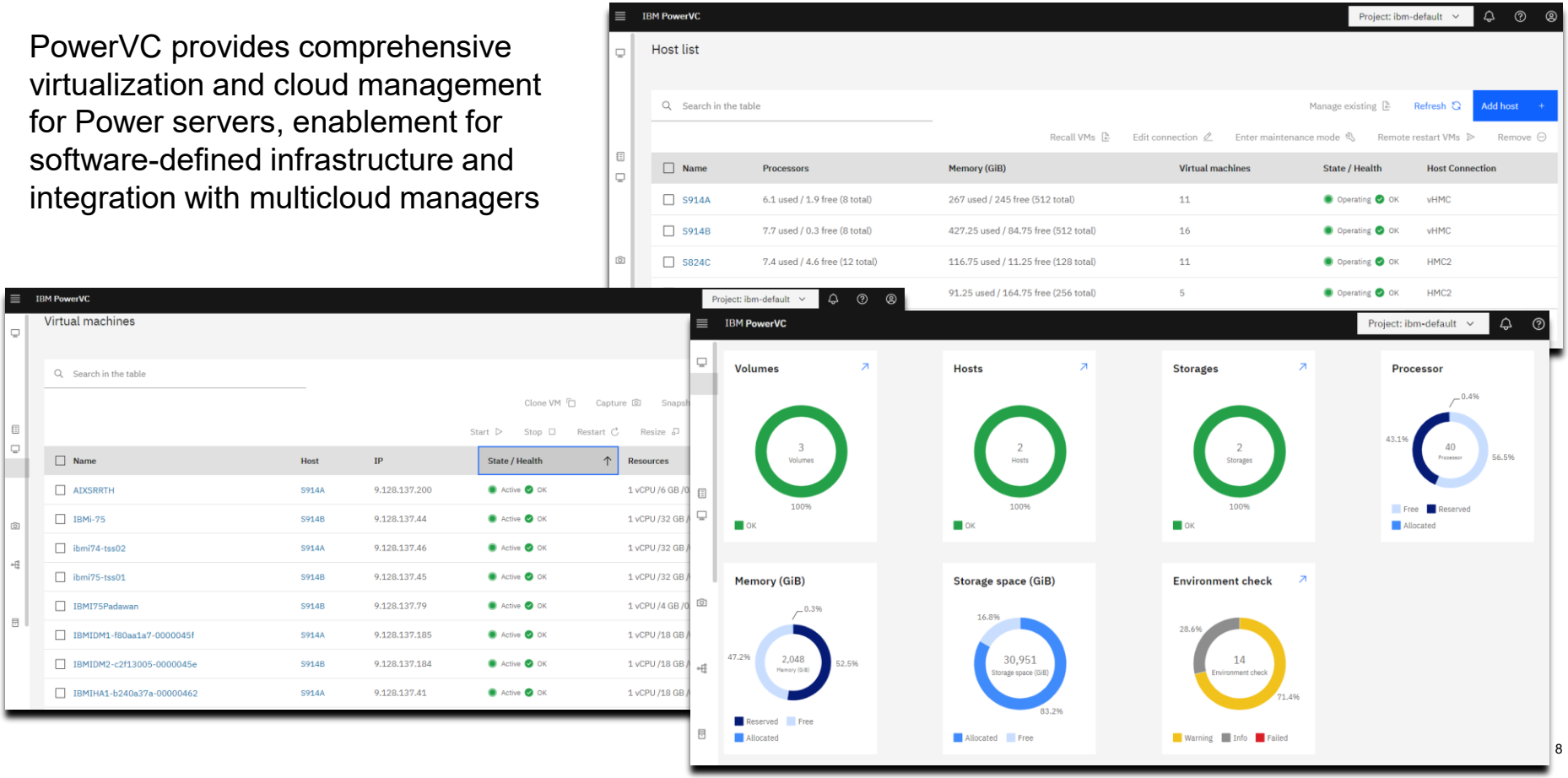
- Easily clone, copy and relocate Power Systems virtual machines
  - Improve virtual machine consistency through replication
  - Policy-based placement of new and relocated virtual machines
  - Complete virtual machine management: Storage, Compute, Network

- Quick and easy installation to get you up and running quickly
  - One button verification of stack integration and operational environment
  - Simplify operations by not having to logon to HMC, VIOS, or storage to provision virtual machines

- Build a Private Cloud with PowerVC + Upward integration to cloud managers for private cloud management
  - Build on OpenStack APIs for automation and extensibility
  - Integration with Ansible, SAP Lama, Terraform, vRealize

# PowerVC - Power virtualization and Cloud UI

PowerVC provides comprehensive virtualization and cloud management for Power servers, enablement for software-defined infrastructure and integration with multicloud managers



# PowerVC - Key Features 1/2

## Simple User Interface

- Intuitive and appealing
- Tuned for Power Systems
- Fast install

## Image Management

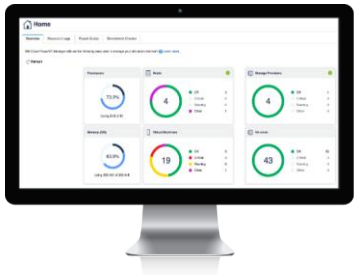
- Easily capture images and deploy VMs
- Import and Export of Images

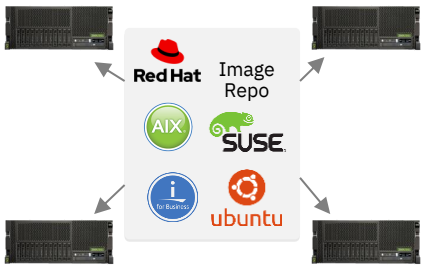
## Easy and Reliable Live Migration and

- Seamless live migration capabilities
- One-click user experience
- Planned and Unplanned Maintenance

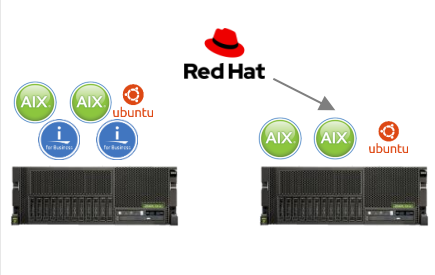
## Optimized Scheduling

- Places the workloads on the “best” host
- Dynamic optimized workloads balancing (DRO)





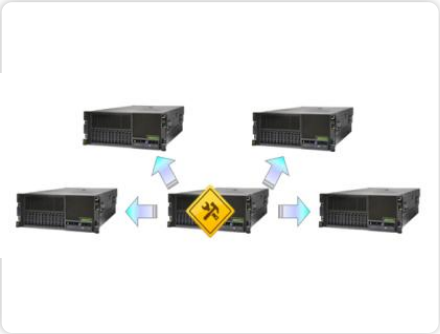




# PowerVC - Key Features 2/2

## One-Click system evacuation

- Auto-relocate VMs to other hosts
- Planned maintenance made easy !



## Automated Virtual Machine Restart

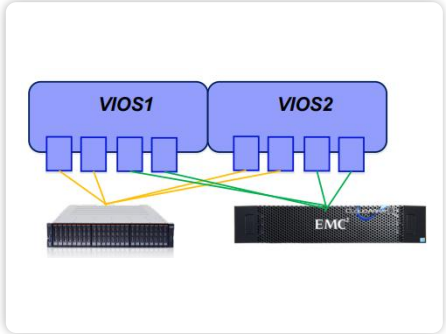
- Auto-detect failed hosts and restart VMs
- Works for AIX, Linux and IBM i

## Colocation rules (Affinity and Anti-Affinity)

- Constraints on where VMs can be placed
- Great for ensuring availability and performance


## Storage isolation

- Specify which ports / VIOSes talk to storage devices

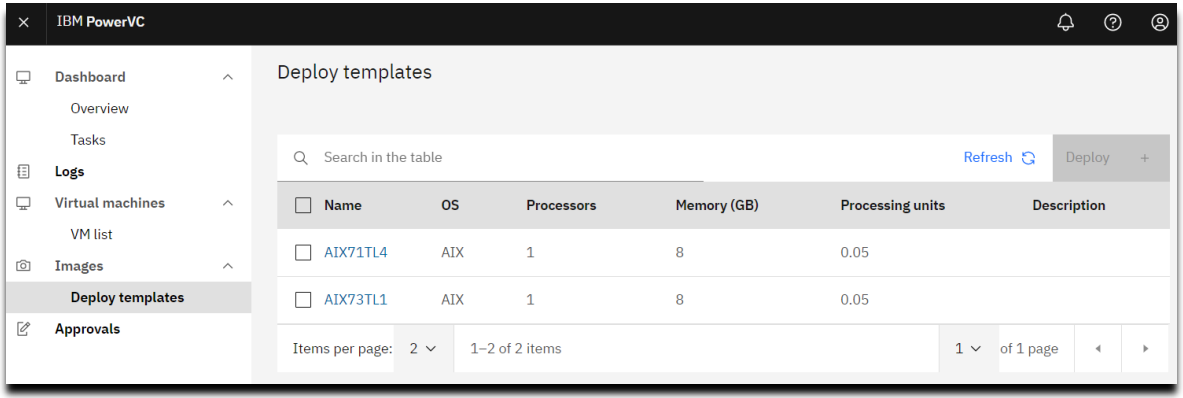


# PowerVC - Self-service cloud user experience

Cloud PowerVC Manager provides a simplified user experience for developers or other Power private cloud users requiring self-service VM provisioning and management

The PowerVC self-service portal provides cloud users with capabilities that include:

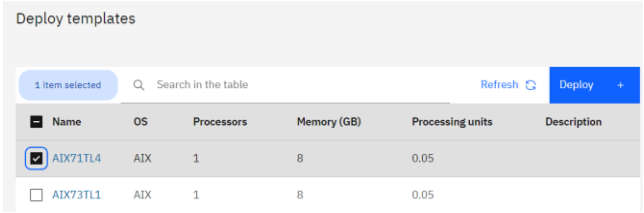
- One-click deploy templates
- Approvals and expirations
- Role-based access control
  - Cloud administrator
  - Cloud user
- Project-based resource isolation (multi-tenancy)
- Metering and e-mail notifications



# PowerVC - Self-service portal capabilities

## Self-service model

- Portal for cloud users to request VMs and capacity directly

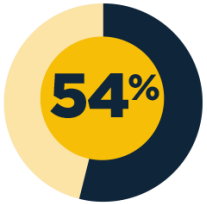



## VM expiration and limits

- Automated VM shut off (and eventually delete) for expired VMs
- Ensures VMs continue to be validated by owners over time

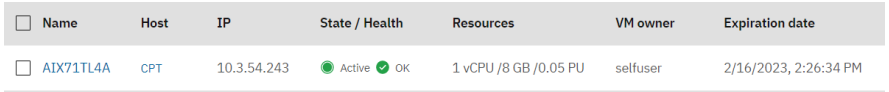
## Project quotas

- Limit capacity allocated to each project
- Project administrators can approve VM extensions and user requests without the need for a sys admin




## Capacity overview

- Understand how capacity is being used within the project



# PowerVC for Private Cloud : Cloud Admin and User View

"I have so much more time now that users can provision their own VMs!"

## Cloud Admins

**Configure and manage:**
- ❑ Deploy templates
- ❑ Policies (VM age, etc.)
- ❑ Approvals and expirations
- ❑ Multi-tenant metering data



**IBM Cloud PowerVC Manager: Self-Service Portal**

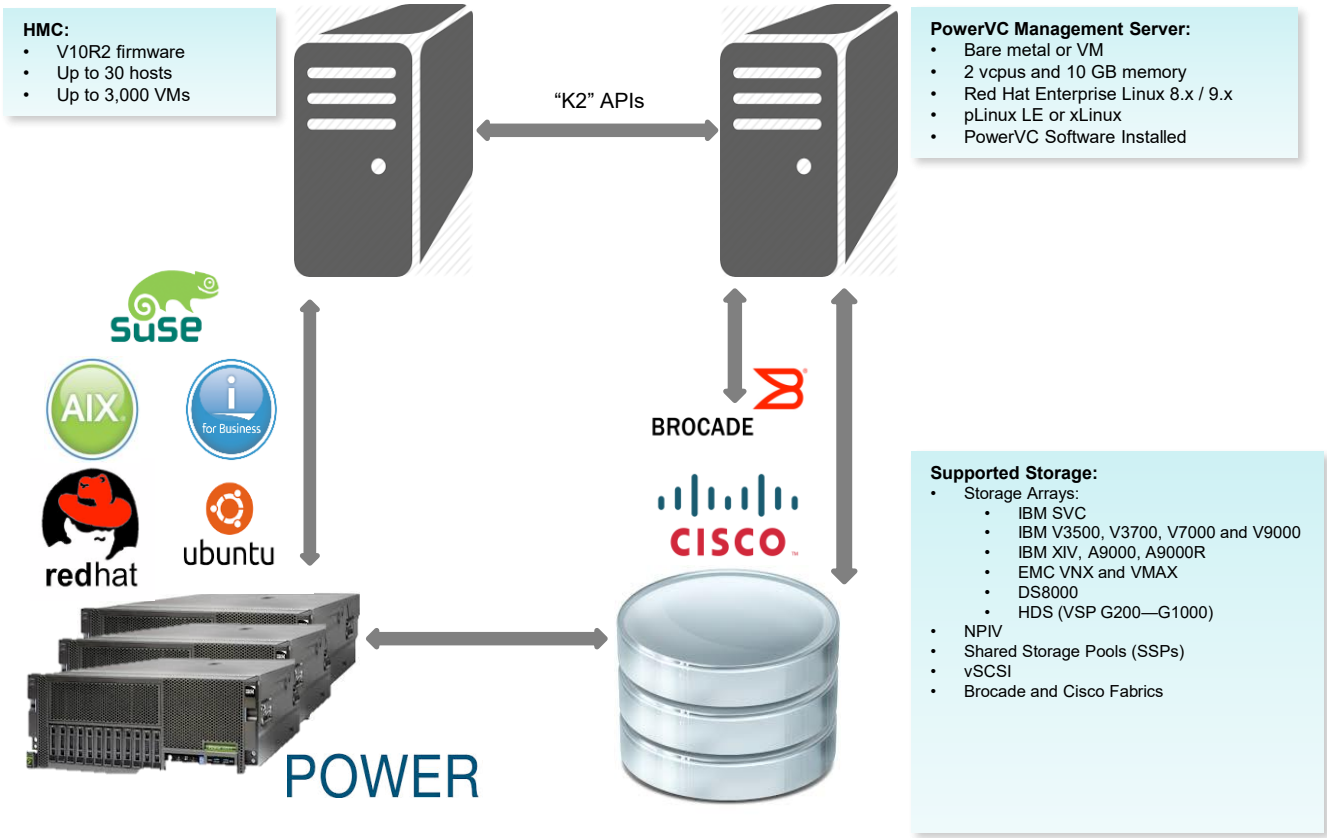
- All PowerVC Operations
- Deploy Template Management
- Approval Requests
- Deploy VMs
- Policies
- Request Expiration Extension

"Deploying VMs for my application development is so fast and easy!"

## Cloud Users

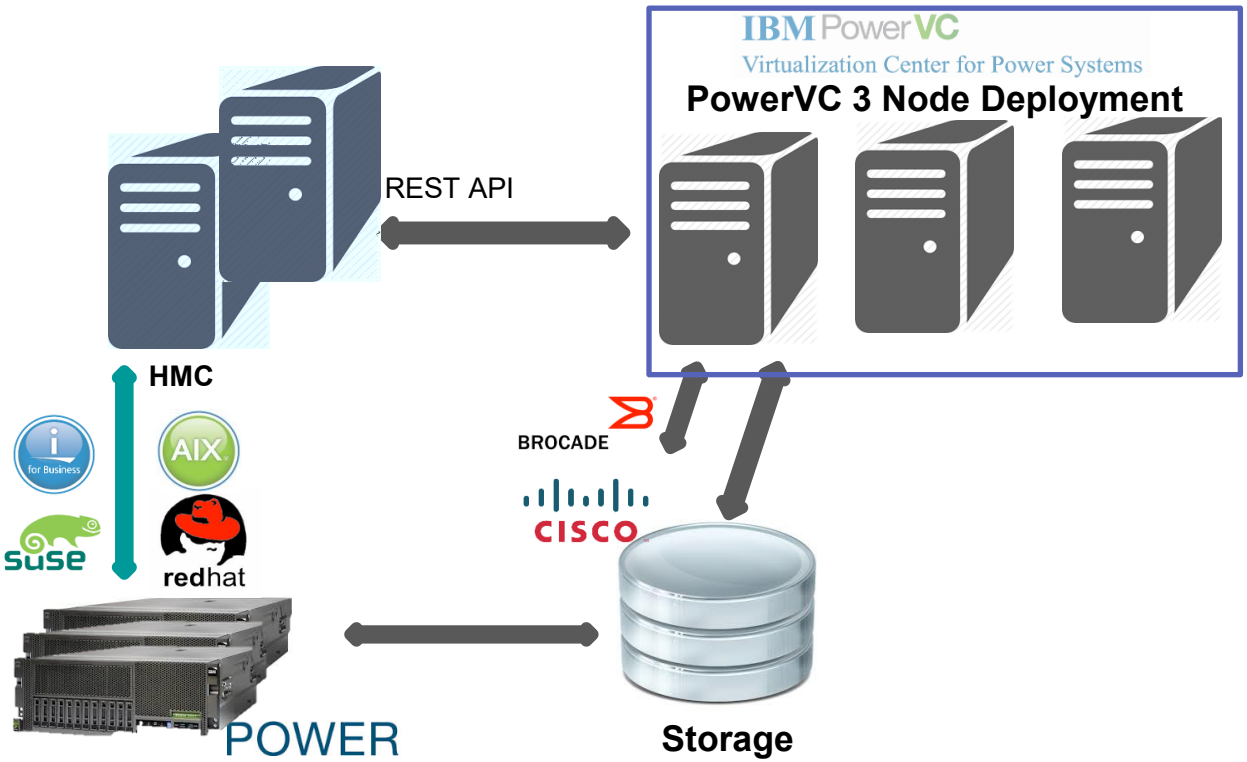
**Use the self-service portal to:**
- ❑ One-click request for VM deployments
- ❑ Request VM expiration extensions
- ❑ View their own metering data

# PowerVC - Architecture for PowerVM (HMC) single-node



# PowerVC - Architecture for PowerVM (HMC) multi-node

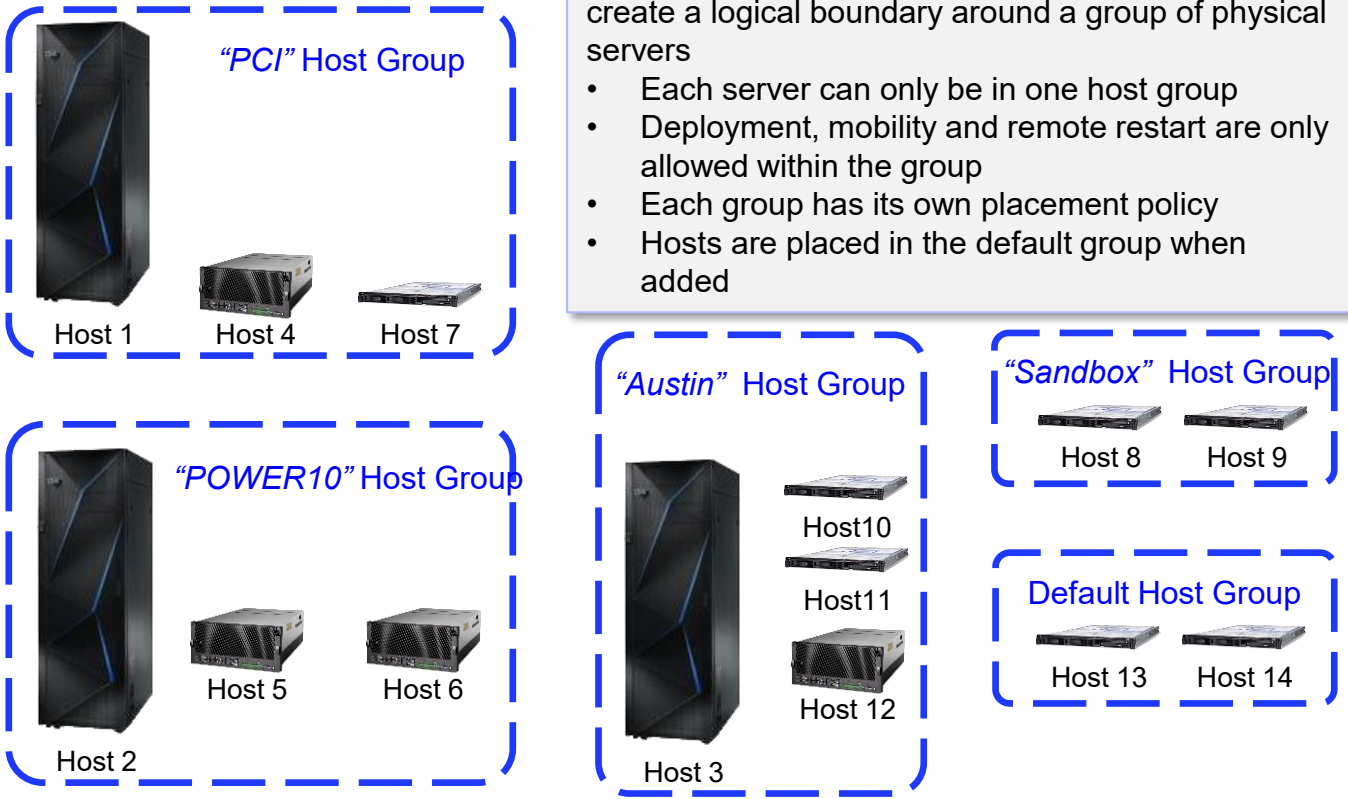
- If you are managing your hosts through HMC
  - A maximum of 30 hosts are supported in single-node PowerVC.
  - A maximum of 45 HMC-managed hosts are supported with multi-node (3 Nodes, 15 on each hosts with active-passive HA).
  - Each Compute service running within PowerVC cluster will have active-passive configuration under Pacemaker.
  - Optionally Compute service can be added to Compute plane hosts as scaling is required.



# PowerVC - Host Groups

***Host Groups*** allow the PowerVC administrator to create a logical boundary around a group of physical servers

- Each server can only be in one host group
- Deployment, mobility and remote restart are only allowed within the group
- Each group has its own placement policy
- Hosts are placed in the default group when added



# PowerVC - One Click System Evacuation

*Provides easy, graceful way to prepare for maintenance*

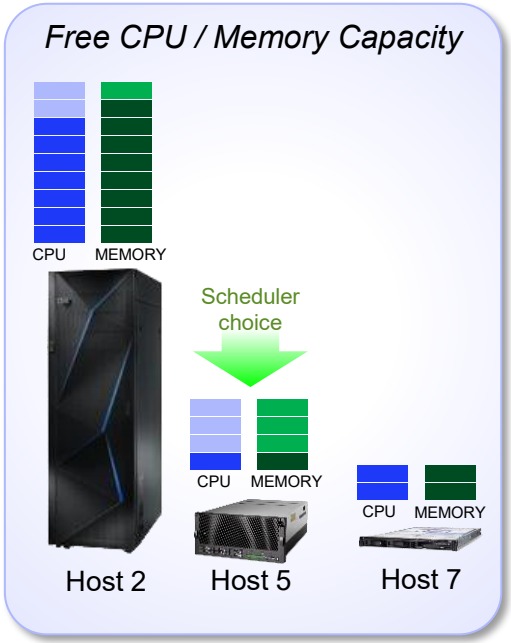
- Automatically relocate all virtual machines to other machines
  - Use the PowerVC scheduler to determine the target host or manually select the destination host
  - Clears the system of virtual machines without excessive administrator work
- Alternatively, fence off the physical host to prevent new virtual machines from being deployed or moved to that host
  - Option to allow administrators greater control of relocation operation

# PowerVC - Placement Policies

| | Policy Description | Initial Placement | |
|---|---|---|---|
| **Packing** | ▪ Pack workload on fewest physical servers<br>▪ Maximizes usable capacity, reduces fragmentation, reduce energy consumption | ✓ |  |
| **Striping** | ▪ Spread workload across as many physical servers as possible<br>▪ Reduce impact of host failures, higher application performance | ✓ |  |
| **CPU Balance** | ▪ Place VMs on the hosts with the least allocated CPU<br>▪ Higher application performance | ✓ |  |
| **Memory Balance** | ▪ Place VMs on the hosts with the most available memory<br>▪ Improve application performance | ✓ |  |
| **Affinity** | ▪ Affinity specifies that VMs should be placed on the same host or few hosts<br>▪ Useful for collocating VMs on the same host(s) | ✓ |  |
| **Anti-Affinity** | ▪ Do not place VMs on same host<br>▪ Useful for ensuring VMs are not collocated<br>▪ Availability cluster support (e.g. PowerHA)<br>▪ Higher application performance | ✓ |  |

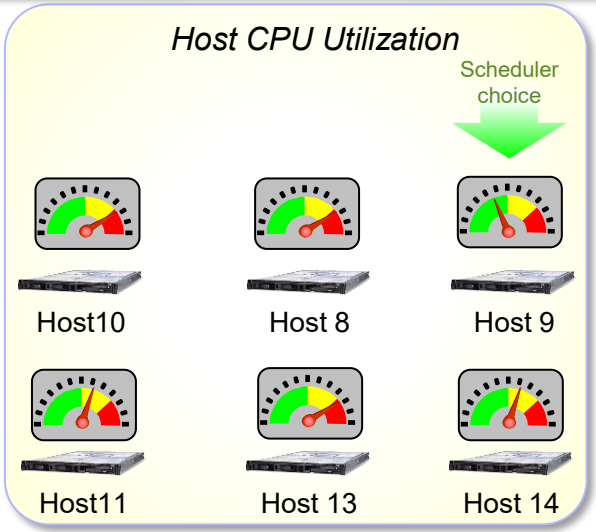
# PowerVC - Advanced Placement

*Scheduler support VM placement based on CPU & Memory capacity and CPU Utilization*




*The PowerVC scheduler takes the capacity of servers into account to determine which host to deploy or relocate VMs to. Hosts with the greatest free CPU or memory allocation becomes the target of the next VM.*

*The scheduler can also take host CPU utilization into account when scheduling VMs*



# PowerVC - VM Collocation Affinity and Anti-affinity

VM with no affinity requirements – can go anywhere within the host group

VMs with affinity – must be placed on the same host

VMs with anti-affinity – cannot be placed on the same host

Host 1 Host 2 Host 3

***Affinity and Anti-affinity*** provide control over which VMs can be placed on the same host

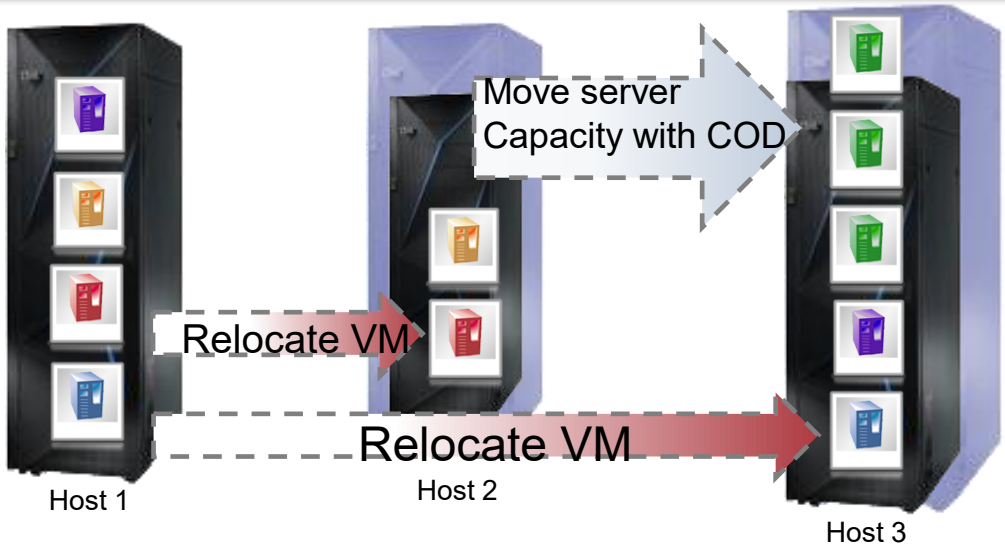
- VMs with Affinity must be deployed to the same host
- VMs with Anti-Affinity must not be placed on the same physical host

# PowerVC - Dynamic Resource Optimizer

*Policy-based automation to balance workloads*

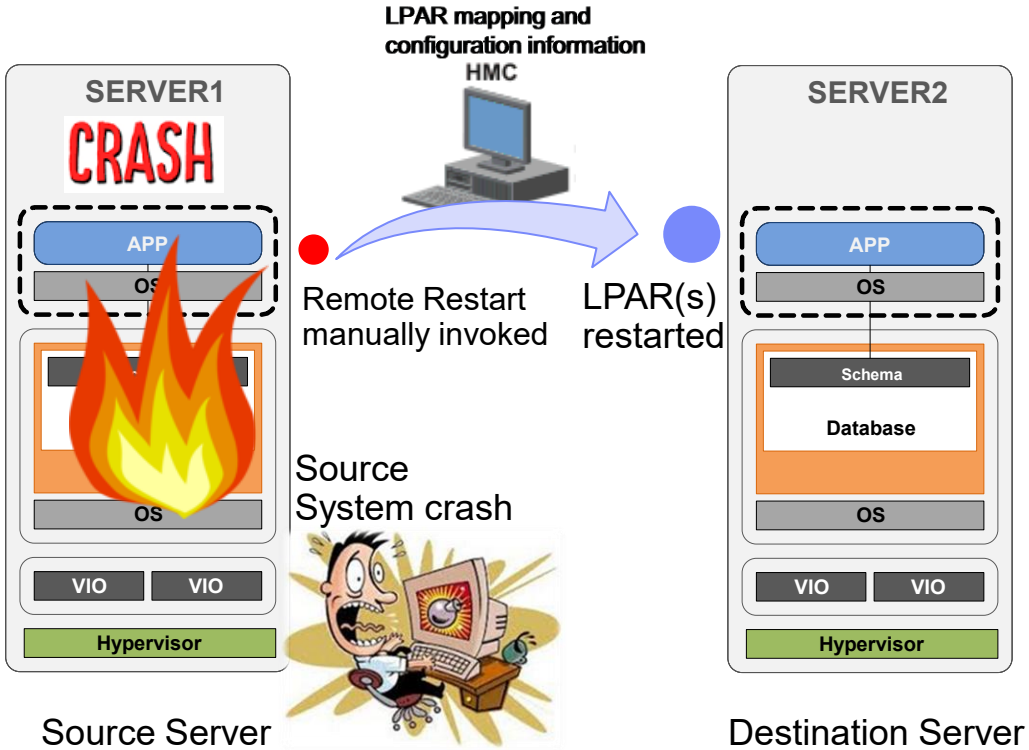
**PowerVC Dynamic Resource Optimizer** allows for automated rebalancing of workloads between servers

- Server workload can be automatically balanced two ways:
  - Relocating Virtual Machines between servers
  - Moving processor capacity between servers using Enterprise Capacity on Demand
- Works with AIX, IBM i or Linux VMs for Compute Resources
- Works with AIX or Linux VMs for Memory resource balancing
- Option to balance on Compute or Memory resources.



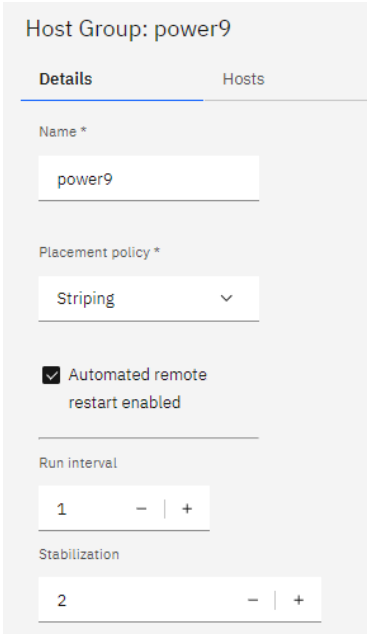
# PowerVC - Virtual Machine Remote Restart concept

Provides crash recovery option by allowing partitions to be restarted on another server.
Preserves Partition's resource configuration. Unlike Partition Mobility, the partition(s) are restarted. Live Partition Mobility cannot be used because source server is down



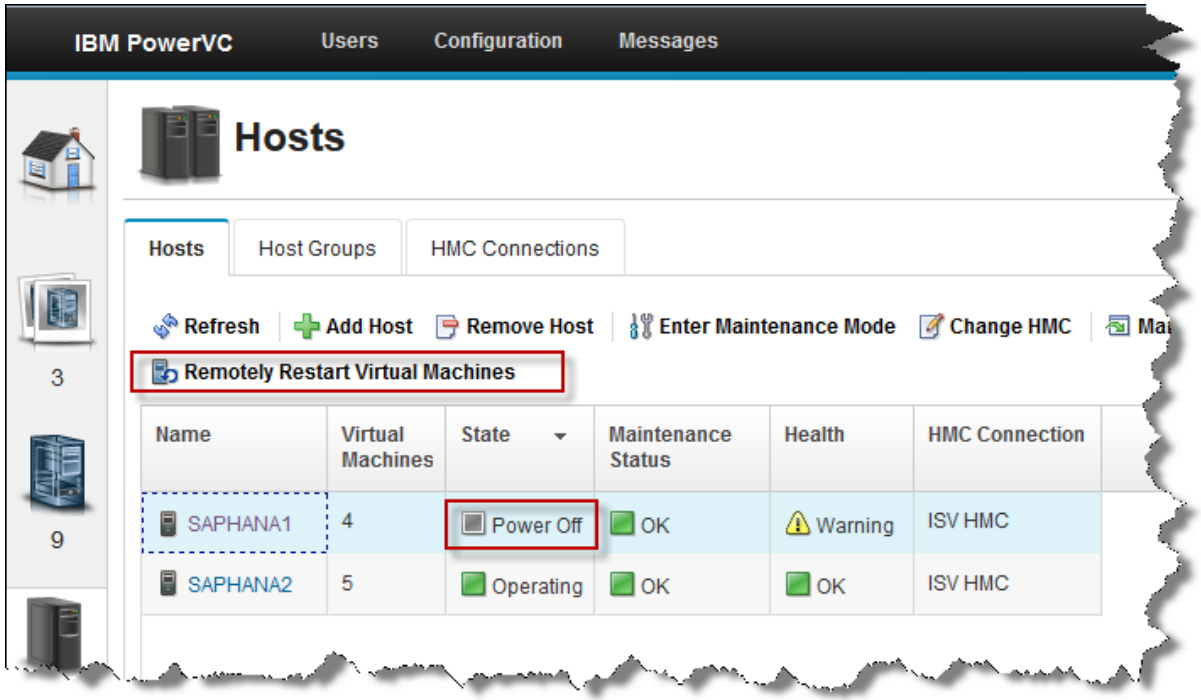
# PowerVC - Automated Virtual Machine Remote Restart

- ✓ **Automatically detect host failure and rebuild VMs on healthy hosts**
  - Can be enabled/disabled at host group, host and VM level
  - VMs are placed based on the host group's placement policy
  - Supported on PowerVM (NovaLink and HMC)
  - Works on AIX, Linux and IBM i VMs; requires Power 8

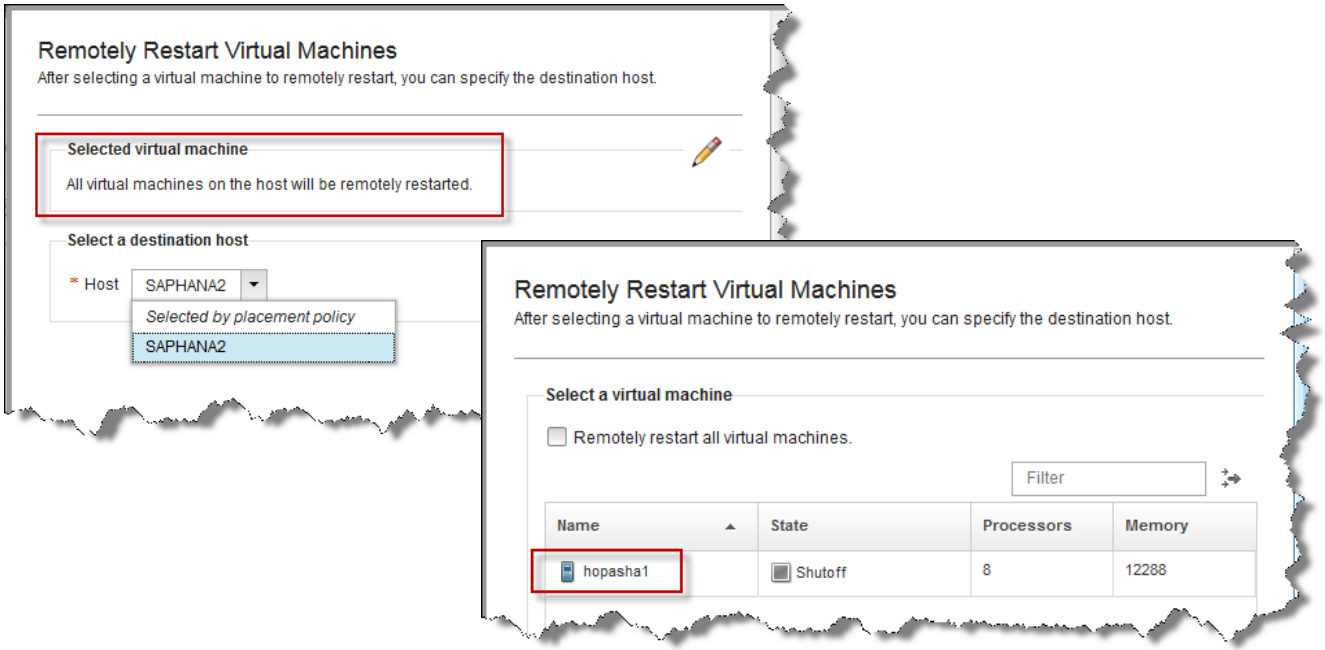
# PowerVC - User Initiated Remote Restart

Option Remotely Restart Virtual Machines only available when server state is not Operating



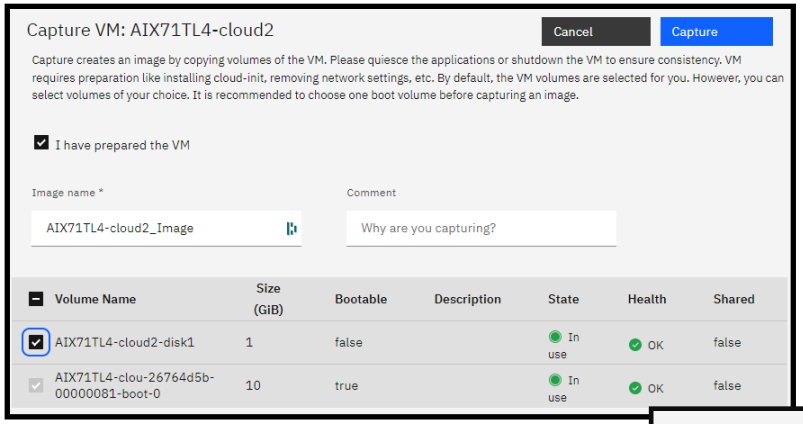
# PowerVC - User Initiated Remote Restart

- Select one or more Virtual machines or all of them
- Placement Policy



# PowerVC - Multi-disk capture and deployment

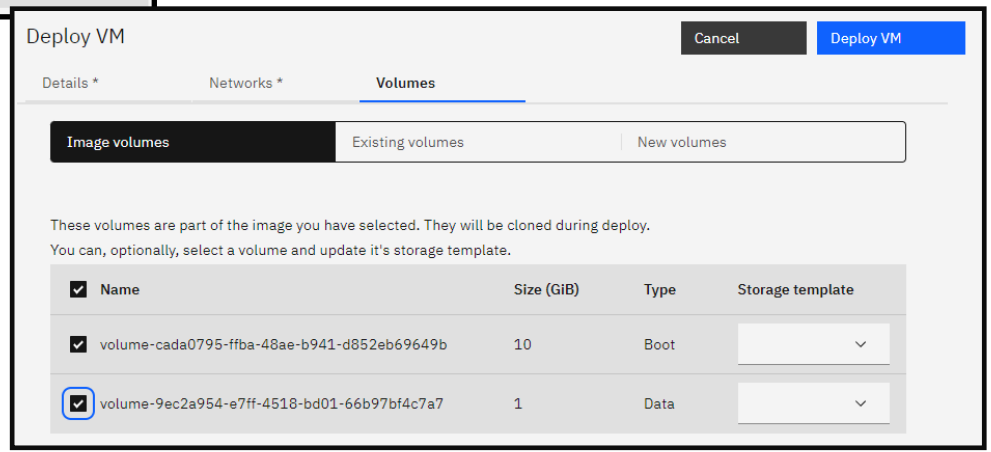
*Capture*




**Multi-disk capture and deployment** allows capture and deployment of boot and data volumes

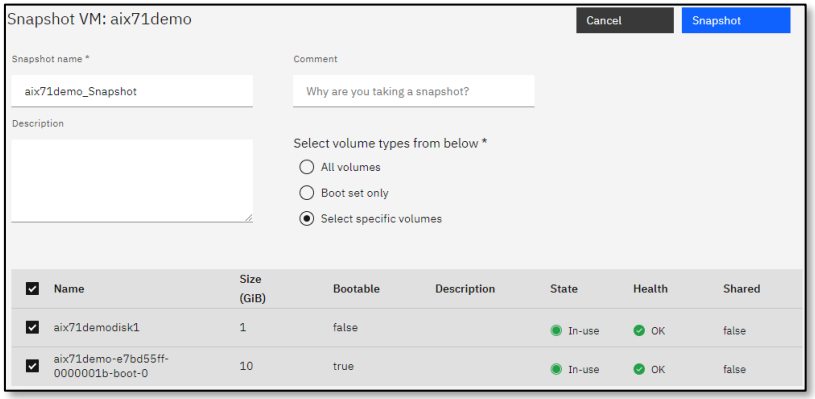
- Works with AIX, IBM i or Linux VMs
- Boot and data volumes can be captured separately and combined and deployed together
- Disk volumes do not have to be on the same device
- Mirrored boot volumes are captured and deployed
- Up to 64 volumes supported

*Deploy*

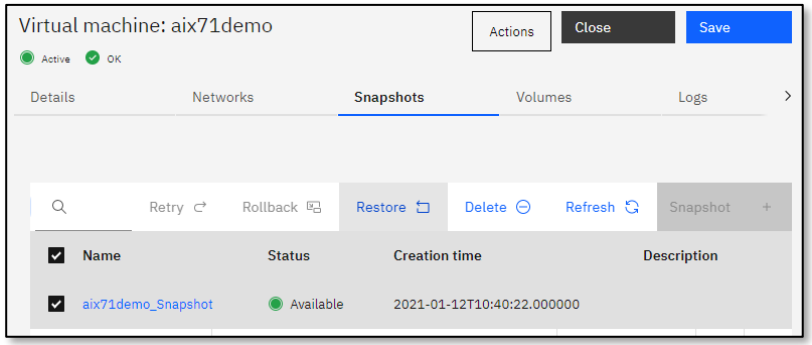


# PowerVC – Virtual machine snapshot and restore

You can create a snapshot with all the volumes attached to the virtual machine or select specific volumes.

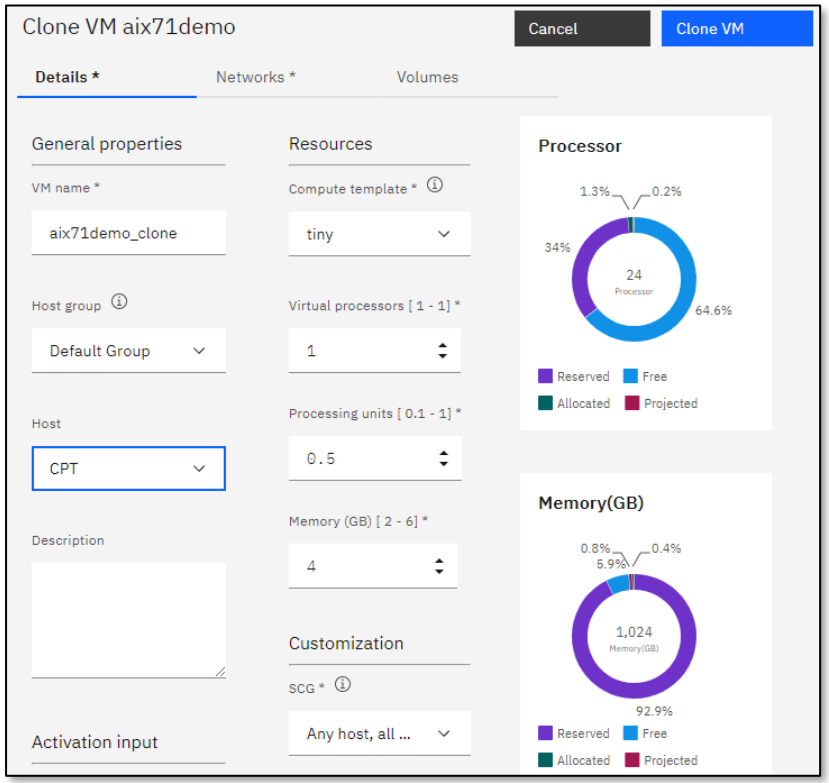



You can restore your VM from snapshot



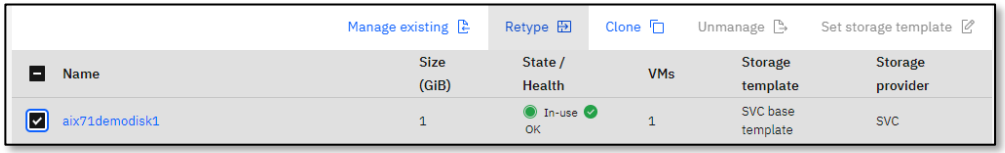
# PowerVC – Clone Virtual machine

You can clone a virtual machine to create a new one with specific volumes.

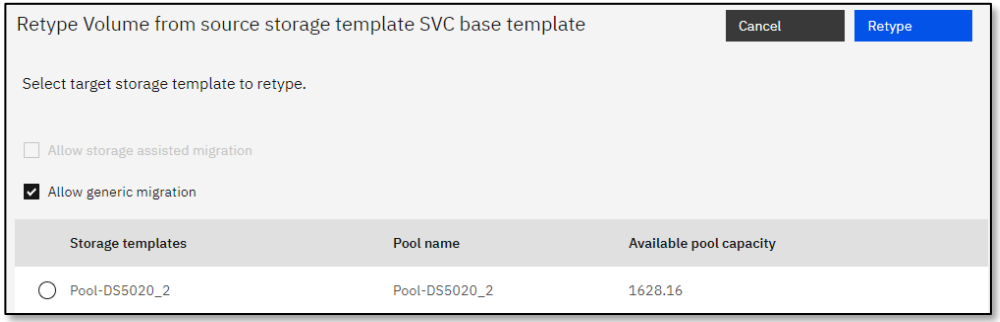


# PowerVC – Retype

You can change the current storage template of a volume to a target storage template.



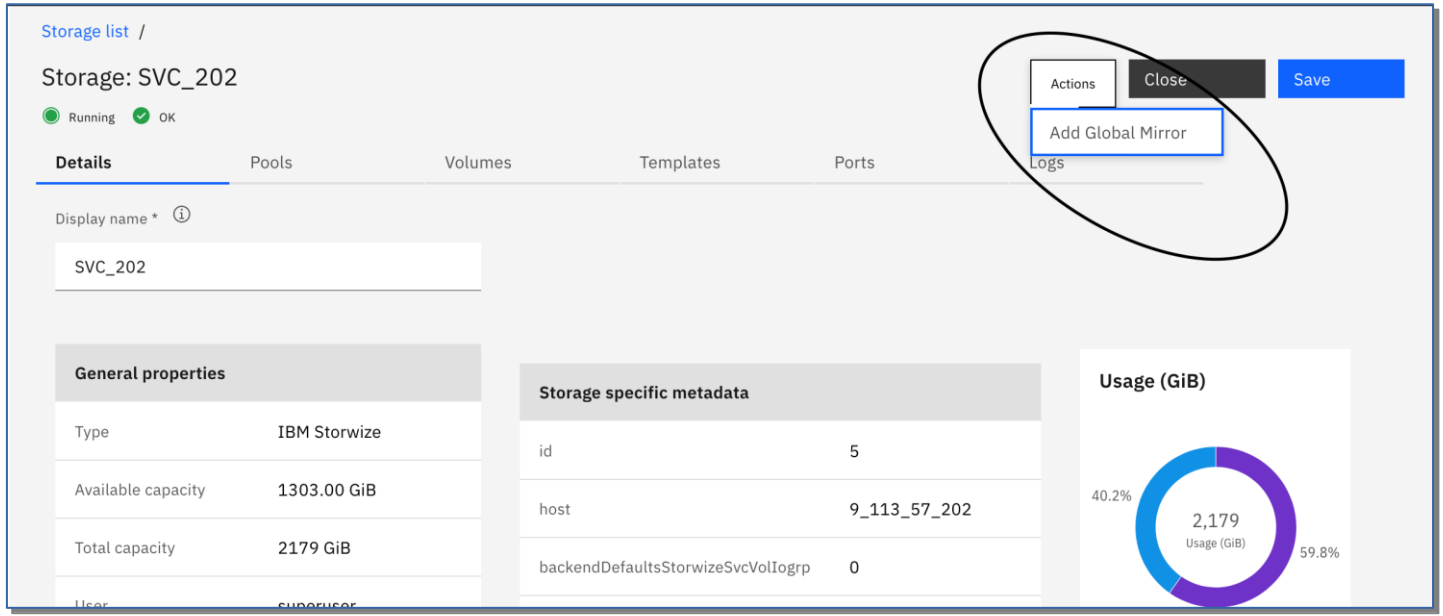

You can also choose to migrate the volume to another pool specified in the target template.



# PowerVC - Registering global mirror with Storwize

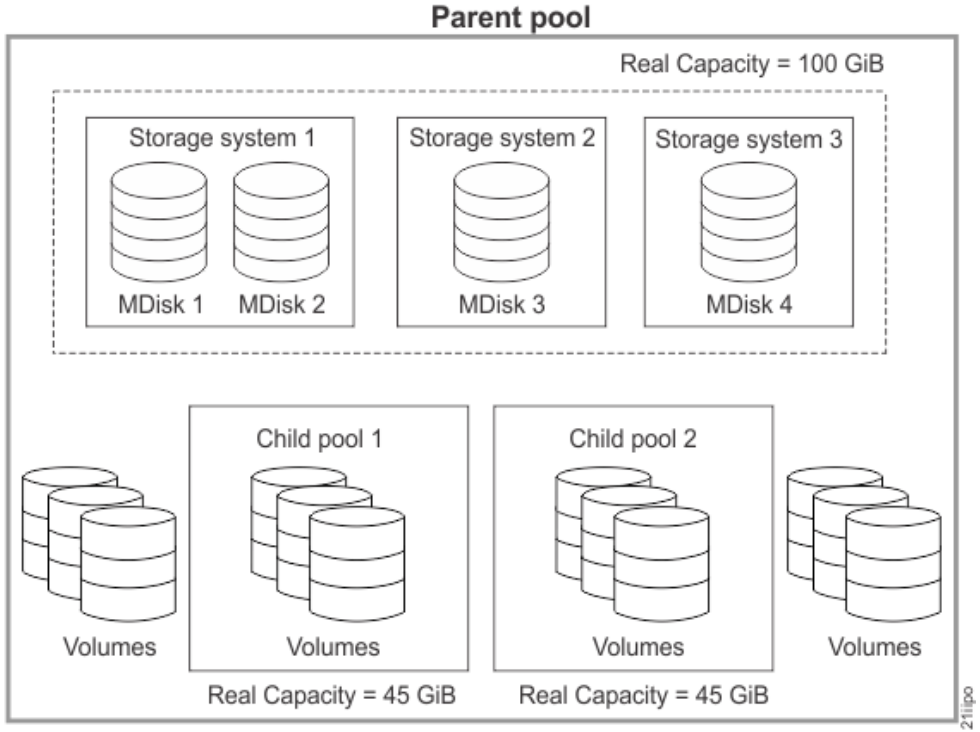
→ You can use the global mirror functionality of IBM® Storwize® for volume replication with PowerVC

→ When you create a volume using the global mirror storage template - the volume will be available in the primary storage and replicated on the secondary storage. → Once the volume is in a consistent synchronized state - the remote copy relationship is considered as stable.



# PowerVC - Storage Child Pools

→ Instead of being created directly from MDisks, child pools are created from existing capacity that is allocated to a parent pool. Child pools are similar to parent pools with similar properties and can be used for volume copy operation.



# PowerVC - Zone naming

→ You can see the zone that has been created by PowerVC when deploying a VM

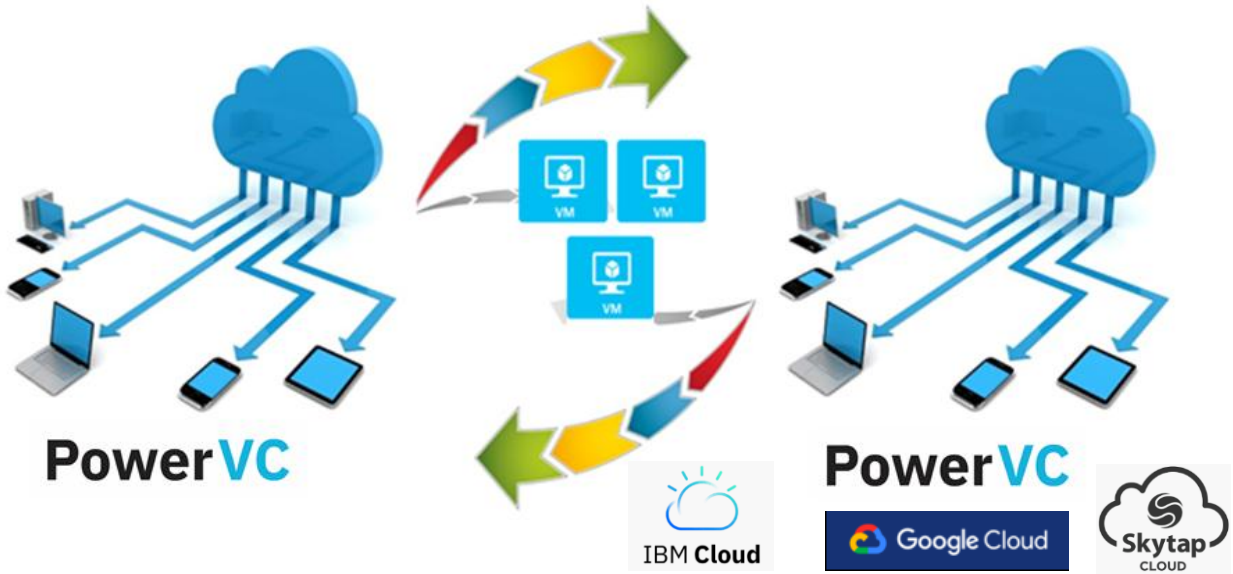
```
# powervc-fabric-mgr zone-show --instance_id ba3ecb9b-b211-4451-8d45-90069048fa8f
"powervc_th07ibmi75_ba3ecb9b_000_c050760caa350050c050760caa350051": [
        "50:05:07:68:12:16:9d:7b",
        "50:05:07:68:12:16:9d:7d",
        "c0:50:76:0c:aa:35:00:50",
        "c0:50:76:0c:aa:35:00:51"
"powervc_th07ibmi75_ba3ecb9b_000_c050760caa350052c050760caa350053": [
        "50:05:07:68:12:15:9d:7b",
        "50:05:07:68:12:15:9d:7d",
        "c0:50:76:0c:aa:35:00:52",
        "c0:50:76:0c:aa:35:00:53"
```

→ You can specify a template for the zoning name. The zone-name-template can be a combination of these keys: 'vm_name', 'storage_hostname', 'storage_display_name', 'intiatior_wwpn', 'target_wwpns', or your custom string.

```
# powervc-config storage fc-zone zone-name-template -t 'pvc_%(vm_name).10s' --restart
Configuration has been successfully set, zone_name_template = pvc_%(vm_name).10s
Restart of cinder services requested.
```

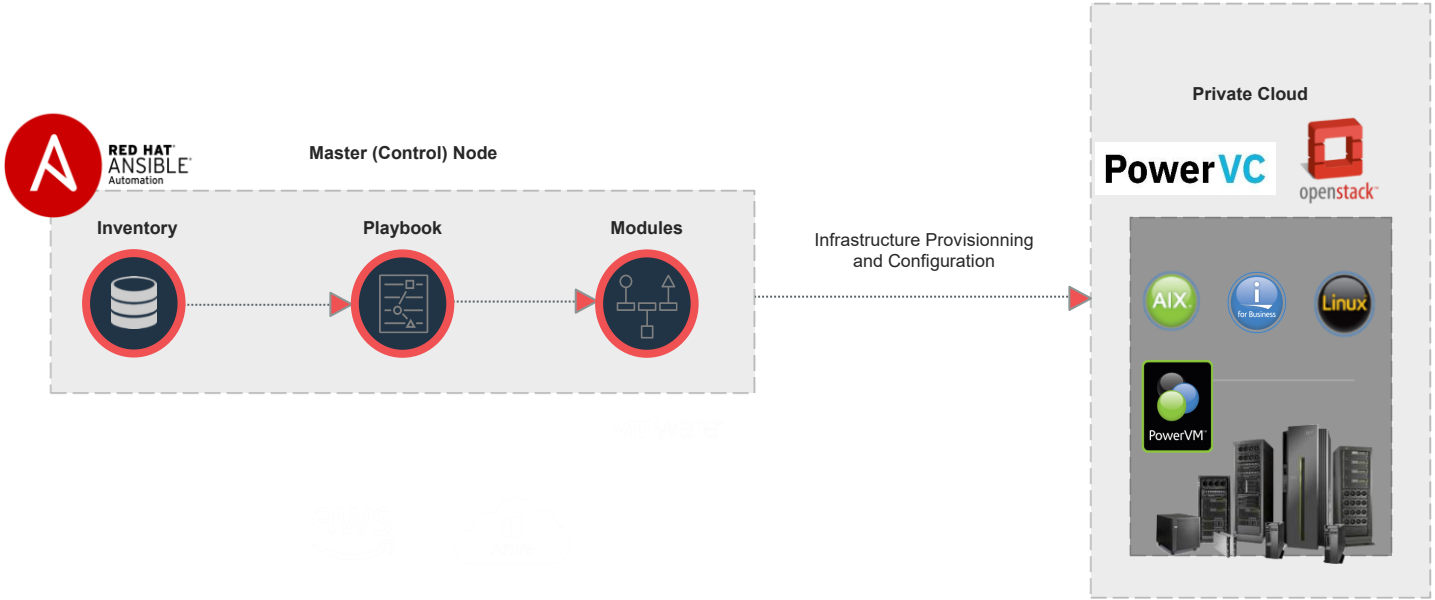
# PowerVC - Import/export VMs for cloud mobility

- *Move any VM between clouds or data centers as needed, for seamless hybrid cloud agility*



# PowerVC Automated Storage & Server Provisioning via REST-API

– For example, automate provisioning of IBM Power compute servers in response to growing resource demands from other endpoints that Ansible is managing



# How to deploy a VM in PowerVC with Ansible ?

- As PowerVC is based on OpenStack, you can use the freely available OpenStack modules included with Ansible.
  - The os_image_info module will retrieve the image information
  - The os_flavor_info module will retrieve flavor information
  - The os_networks_info module will retrieve network information
  - The os_server module will provision a new virtual machine (VM)
  - The os_volume module will provision a new volume
  - The os_server_volume module will attach a volume to a VM

- Tutorial : Automating PowerVC using Ansible
  - https://developer.ibm.com/components/ibm-power/tutorials/automating-powervc-using-ansible/

# Deploy a VM on PowerVC

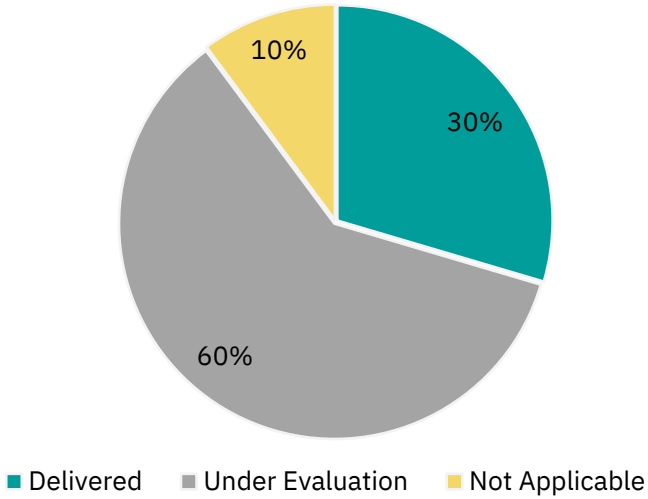
- Run this playbook to deploy a new VM **my-new-vm** with the image id **86c82681-9dff-419f-a138-a6af2704f94c** that correspond to **AIX71TL4** image

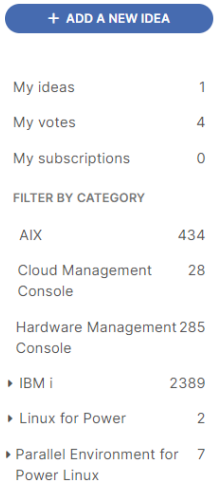
```
- name: Create a new VM instance
    os_server:
      state: present
      name: my-new-vm
      image: 86c82681-9dff-419f-a138-a6af2704f94c
      flavor: 6c15cce7-0fe2-4c19-a575-bda0027acede
      key_name: ansible-ssh-key
      nics:
        - net-name: VL354
```

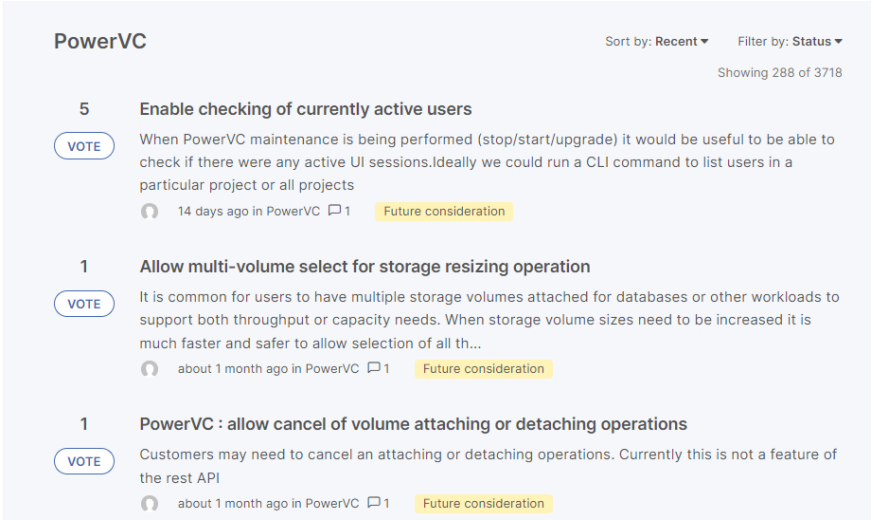
# PowerVC Driving simplicity with Customer Feedback RFE/Ideas

- PowerVC uses client feedback programs to ensure ease of use and time to value, you can submit your enhancements requests using the IBM unified Ideas Portal

Total RFES = 541




https://ibm-power-systems.ideas.ibm.com/?project=PVC

*"It's pretty awesome that you added a SAN that quickly."*

*"This is simple [design], but not simple stuff [function]."*

*"PowerVC is so easy I could have an intern do this for me."*
*David Jackson, Network Administrator*

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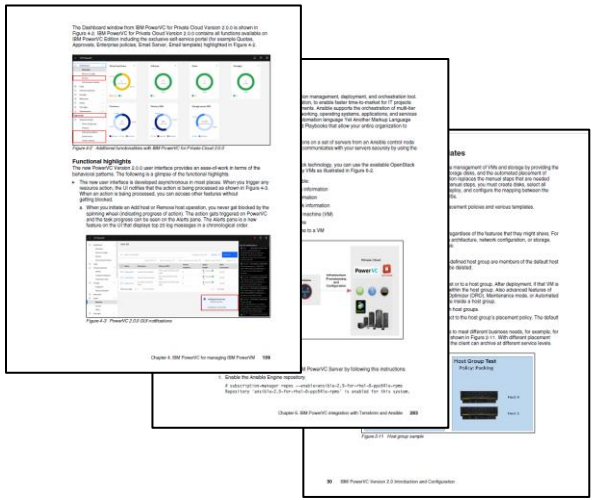
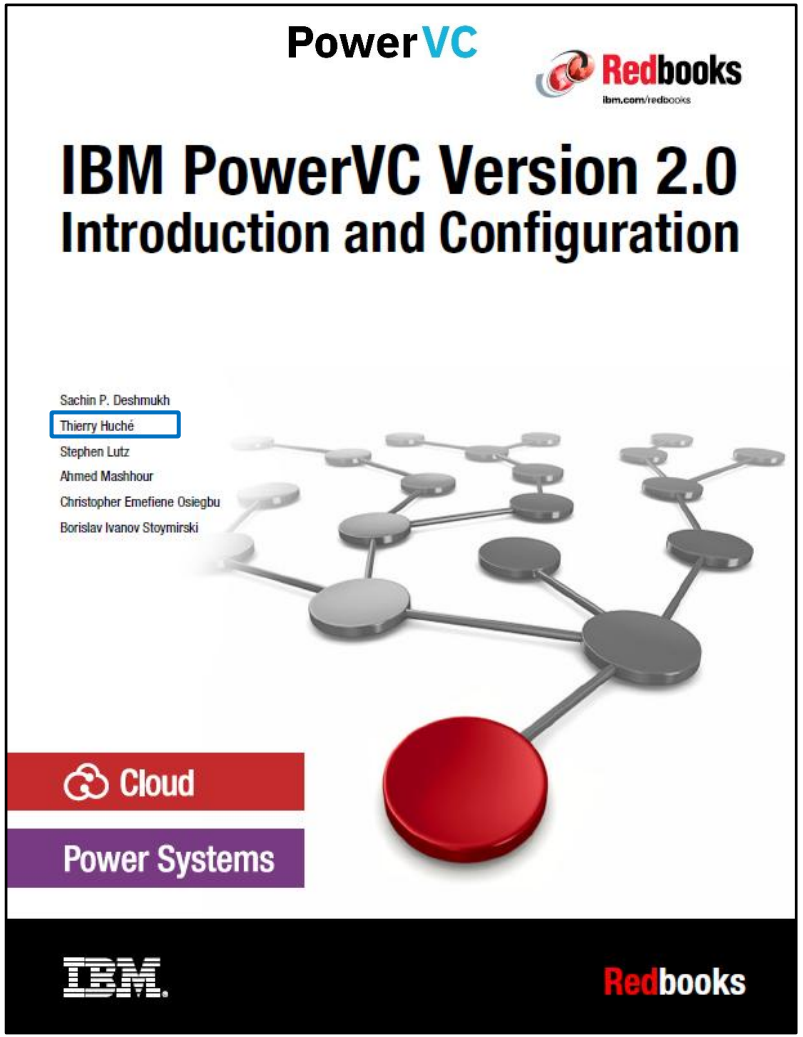
# PowerVC 2.0 Redbook



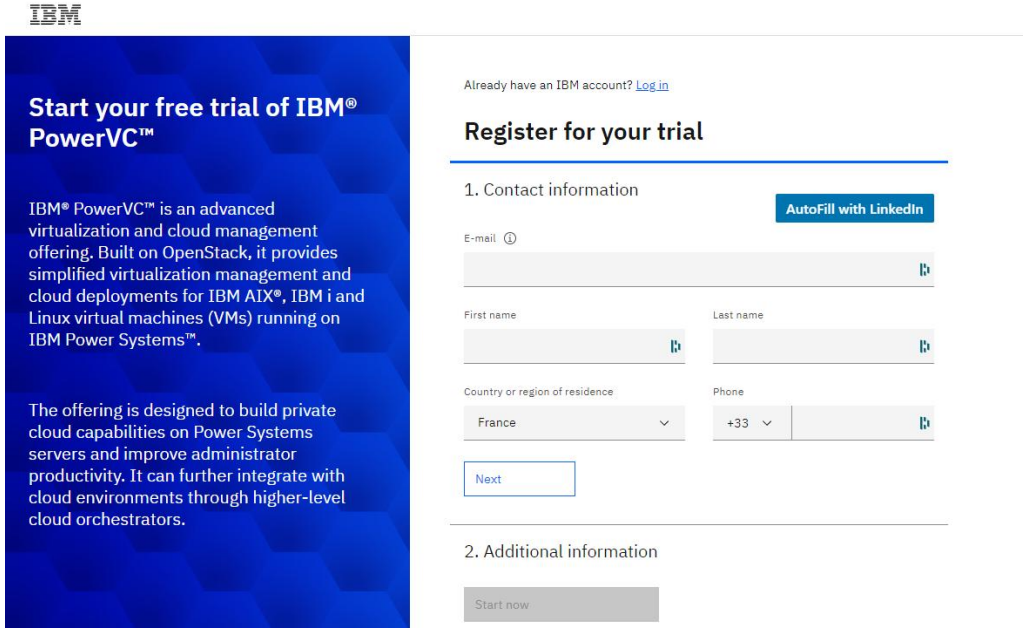
ISBN-10: 0738459739
ISBN-13: 9780738459738
IBM Form #: SG24-8477-00 (368 pages)

https://www.redbooks.ibm.com/abstracts/sg248477.html?Open



# Try PowerVC *for Free*

- Clients can try PowerVC by downloading a free trial version

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