

RED HAT
SUMMIT

Red Hat Virtualization

Status Overview and Roadmap

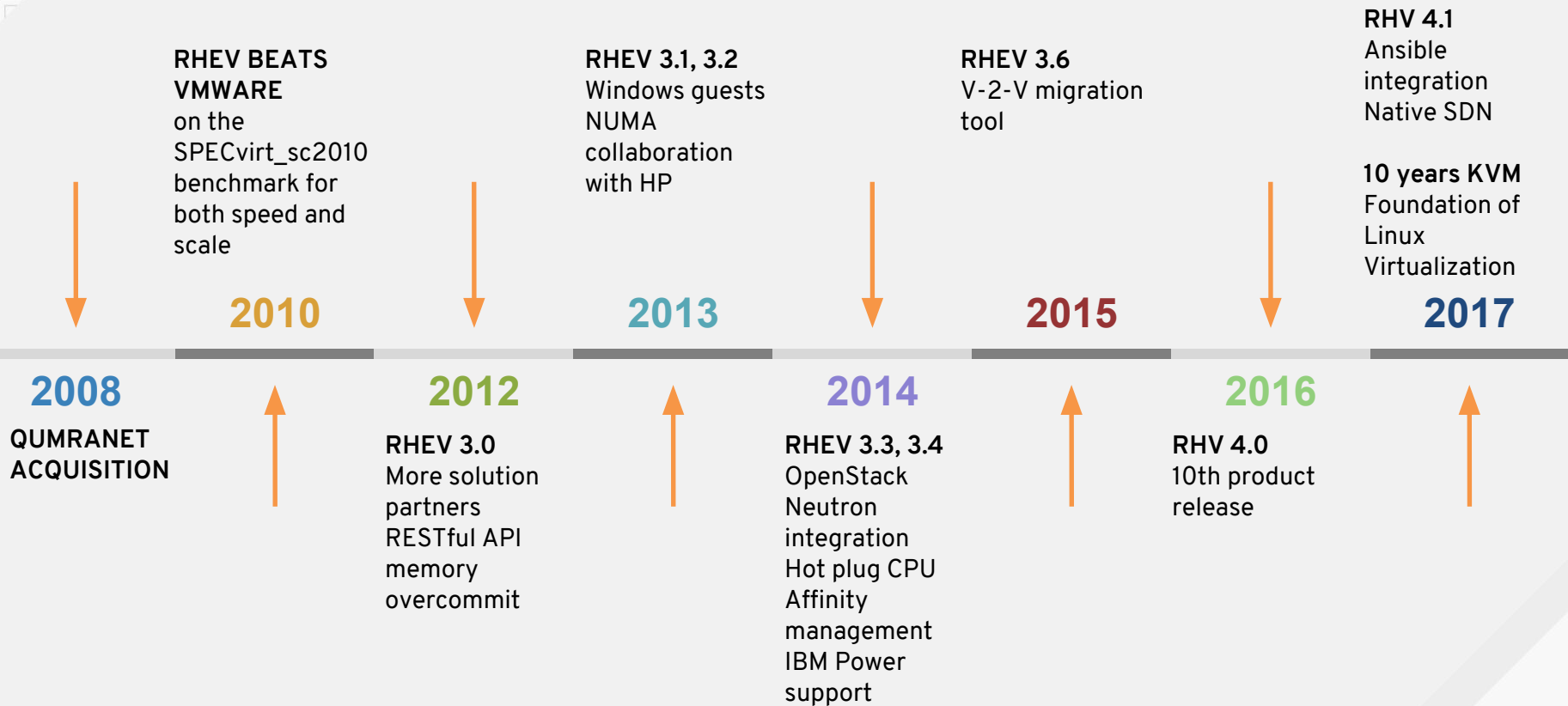
Yaniv Dary
Senior Technical Product Manager, Red Hat

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Senior Technical Product Manager, Red Hat

May 2017

RED HAT® VIRTUALIZATION 4.1

HISTORY OF RED HAT VIRTUALIZATION



THE DATA CENTER IS MOVING FORWARD

PRESSURE FROM CUSTOMERS & COMPETITORS TO MODERNIZE



NEXT-GENERATION ARCHITECTURE

New ways of developing,
delivering, and integrating
applications



CLOUD-NATIVE PLATFORMS

Modernize existing and
build new cloud-based
infrastructure



DEVOPS & CULTURAL CHANGES

A more agile process
across both IT and the
business functions

BALANCING INNOVATION AND OPTIMIZATION

MOST CUSTOMERS NEED BOTH VIRTUALIZATION AND CLOUD

VIRTUALIZATION

Big stateful VM

1 Application -> 1-3 VMs

VM lifecycle in years

Increased demand
-> Scale up

High availability
(HA) at the
infrastructure layer



MODE 1



MODE 2

CLOUD

Small stateless
instance

1 Application ->
many instances

Instance lifecycle in
hours to months

Increased demand
-> Scale out

High availability
(HA) at the
application layer

BALANCING INNOVATION AND OPTIMIZATION

RED HAT VIRTUALIZATION FOCUS



Optimize the IT
you have



Integrate apps, data,
and processes



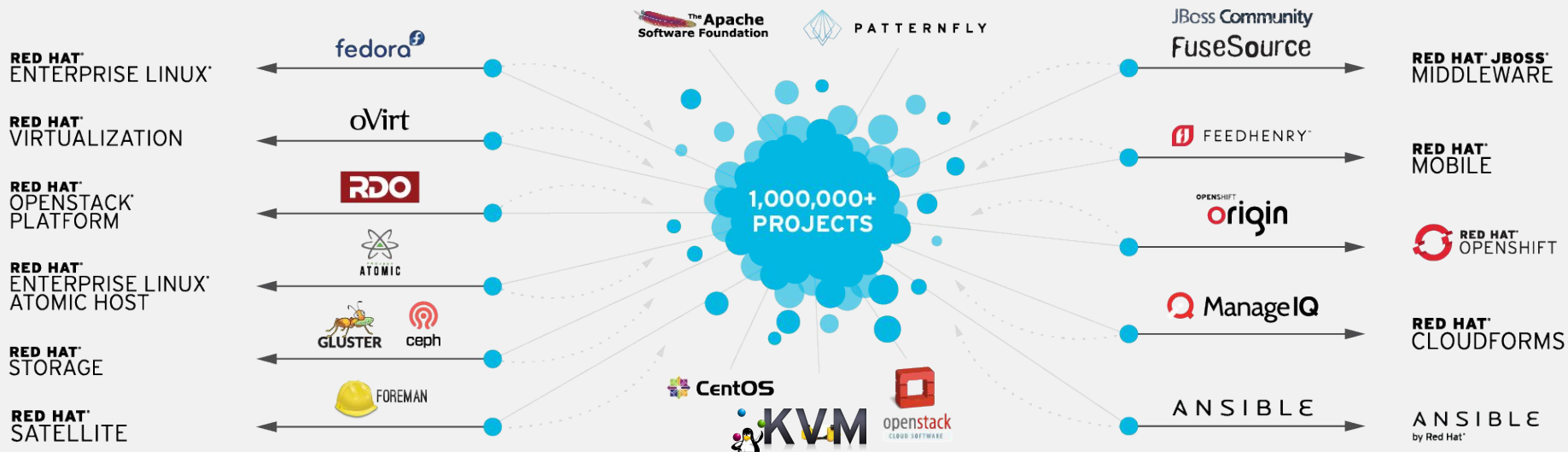
Add and manage
cloud infrastructure



Build more modern
applications

Leverage and integrate existing investments in order to enable future technology

RED HAT VIRTUALIZATION DEVELOPMENT MODEL



IT OPTIMIZATION AND CLOUD INTEGRATION

OPEN HYBRID CLOUD CHALLENGES

Vendor Lock-In

Dependence on a
specific vendor

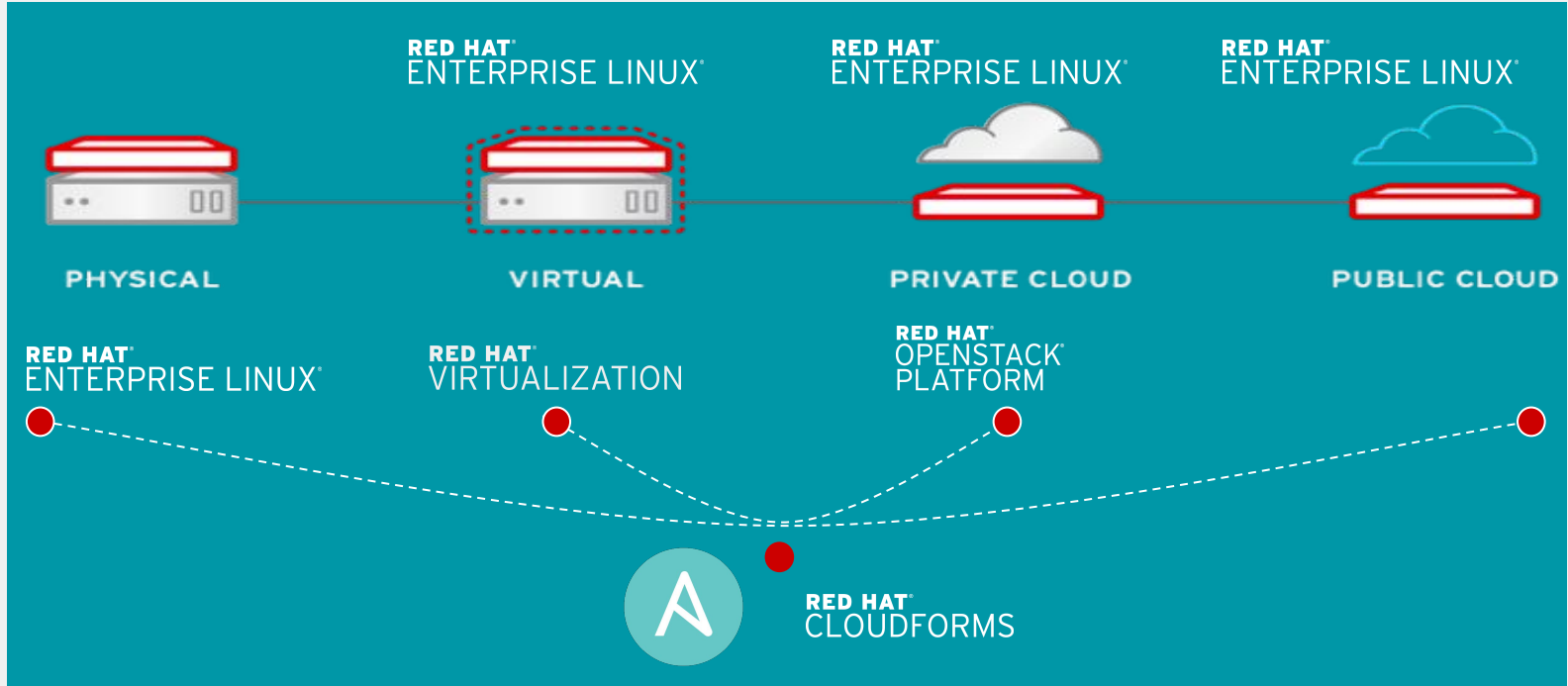
Cost of Change

Financial, Process,
Personnel

Solving the
Puzzle

Determining how
disparate parts
fit together

RED HAT'S VISION: OPEN HYBRID CLOUD

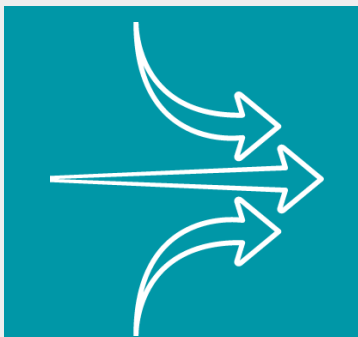


RED HAT VIRTUALIZATION ANSIBLE STRATEGY



Enable

Manage the virtualization infrastructure in an automated manner



Deliver

Seamlessly create, deploy and manage VMs on top of RHV



Empower

Leverage existing Ansible eco-system

ANSIBLE 2.3 INTEGRATION - RHV 4.1

Providing the building blocks

- Ansible modules for infrastructure configuration and management
- Tiered applications deployment using dynamic inventory
- Community supported Ansible Roles
- “Common API” to integrate with different entities in the datacenter like storage and networking



ANSIBLE LAB AT RED HAT SUMMIT

Hands on Lab

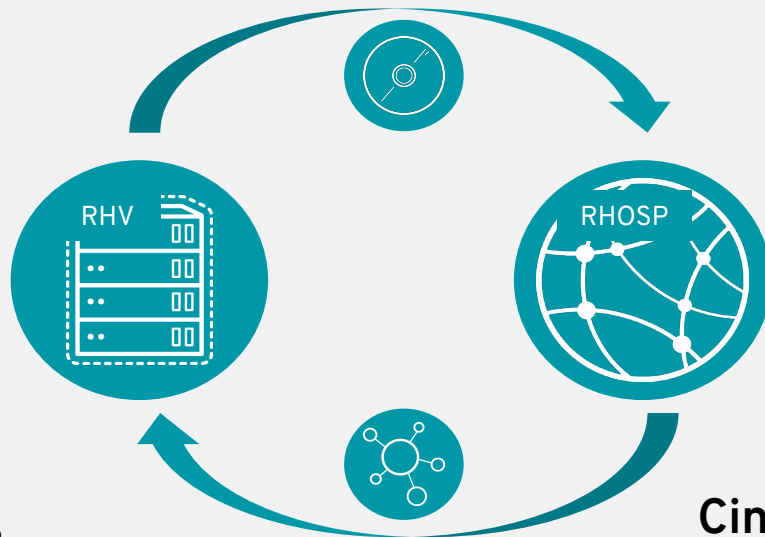
“Automate Red Hat Virtualization Infrastructure using Ansible”

Instructor led

Wednesday, May 3, 1:00 PM - 3:00 PM –
Room 254A



OPENSTACK SERVICES INTEGRATION



Neutron

- Support for OSP 8/9/10.
- Assign Neutron OVS ml2 native networks to RHV virtual machines.
- Use director and composable roles to manage the Neutron agent on the RHV hosts.

Glance

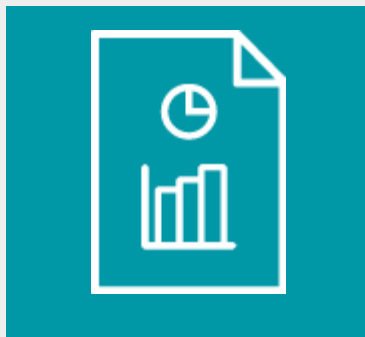
Use, export, and share templates and images.

Cinder (tech preview)

- Allows manage disks on OpenStack Cinder.
- Leverages storage offloading for improved VM provisioning performance.

CLOUDFORMS 4.5 USER STORIES

Reporting



OOB reporting
tool

Ordering Portal



Ability to manage
services available
for users

VMware V2V



Seamlessly
migrate workloads
from VMware

IT AUTOMATION AND MANAGEMENT

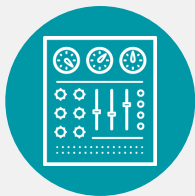
Subject to change

Playbooks as a Service

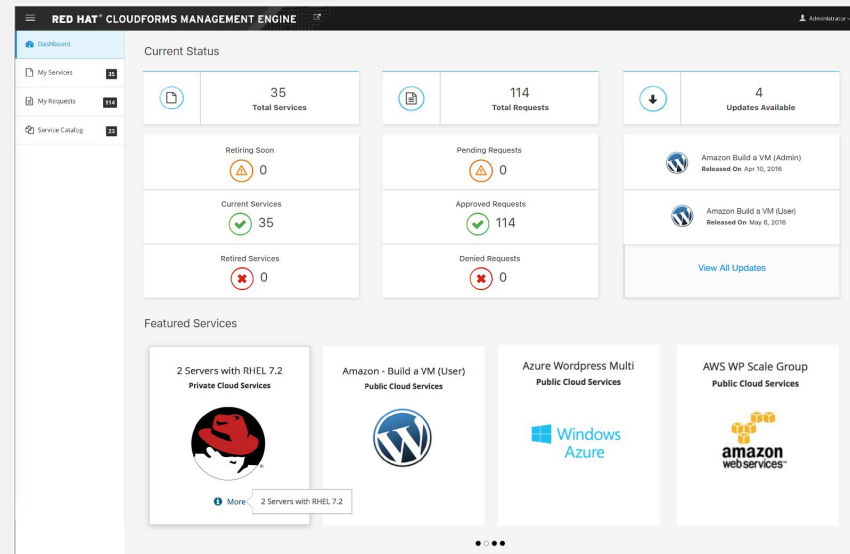


- Order, Modify & Retire
- nTier Applications
- Compute, Storage, Networking
- Configuration Management

Ansible Playbook based Policies



- Event->Condition->Playbook
- Alert->Playbook
- Custom RHV functionality extensions
- OOB playbooks (advanced functionality)



HYBRID CLOUD ENABLEMENT ROADMAP

Subject to change

CloudForms 4.2
Snapshot management
Live migration

2017-01



2017-04



RHV 4.1/Ansible 2.3
oVirt Ansible modules

CloudForms 4.5
Integrated V2V
OSP 11 Certification

~2017-05



~2017- Summer



CloudForms 5.x
Admin Story- Day 1 ops
Advanced VM
Management
Cross RHV operations

RHV 4.2
OSP 12 Certification

~2018-
winter



HYPERCONVERGED INFRASTRUCTURE

HYPERCONVERGED INFRASTRUCTURE

REMOTE OFFICE / BRANCH OFFICE INFRASTRUCTURE

Subject to change

ROBO Focused



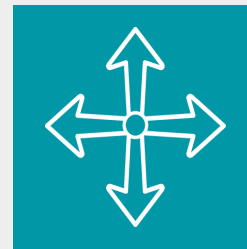
Improve business operations; ease of deployment and operations

Hyperconverged



Consolidate and improve operational efficiencies

Scalable SDI



3, 6, or 9-node pods
Self-Hosted Manager

HYPERCONVERGED INFRASTRUCTURE

Subject to change

VM

VM

VM

VM

VM

EASILY VIRTUALIZE WORKLOADS ACROSS INTEGRATED COMPUTE AND STORAGE

RHV+RHGS

RHV+RHGS

RHV+RHGS

MANAGE COMPUTE AND STORAGE FROM THE SAME INTERFACE

HYPERCONVERGED INFRASTRUCTURE ROADMAP

Subject to change

RHV 4.1.z

- 12 node PODs
- Single node POD
- Scale by less than 3 nodes

2017-Fall

2017-
Summer

RHV 4.1.z

- Red Hat Hyperconverged Infrastructure ROBO GA availability

2018- Winter

RHV 4.2

- Central management
- HCI for datacenter virtualization
- SDN default networking

MISSION CRITICAL VIRTUALIZATION & PERFORMANCE

MISSION CRITICAL WORKLOADS

Performance and Resilience



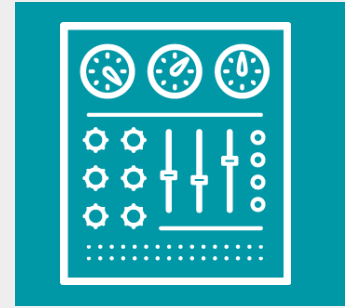
Unmatched performance & high availability across x86 and IBM's Power architectures.

Long Workload Lifecycles

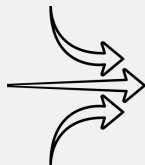
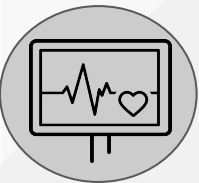


Scale Up/Down & migrate workload without downtime

Monitoring and Alerting Capabilities

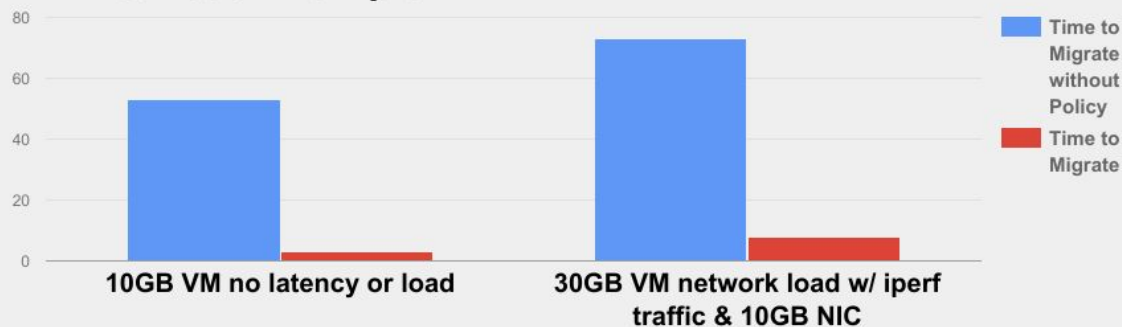


Ensure SLA, pinpoint bottlenecks & perform real-time monitoring



ADVANCED POLICIES FOR LIVE MIGRATION

VM & Load Example

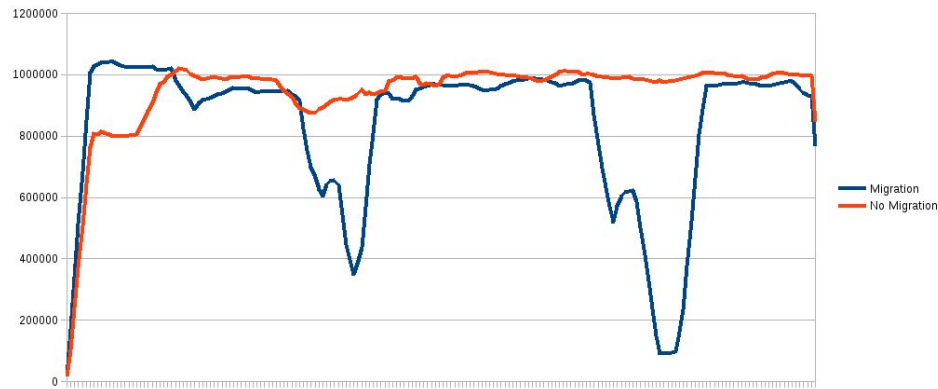


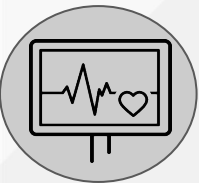
Migration 1 (10 minutes in the run)

02:10.00

Migration 2 (23 minutes in the run)

03:45.00





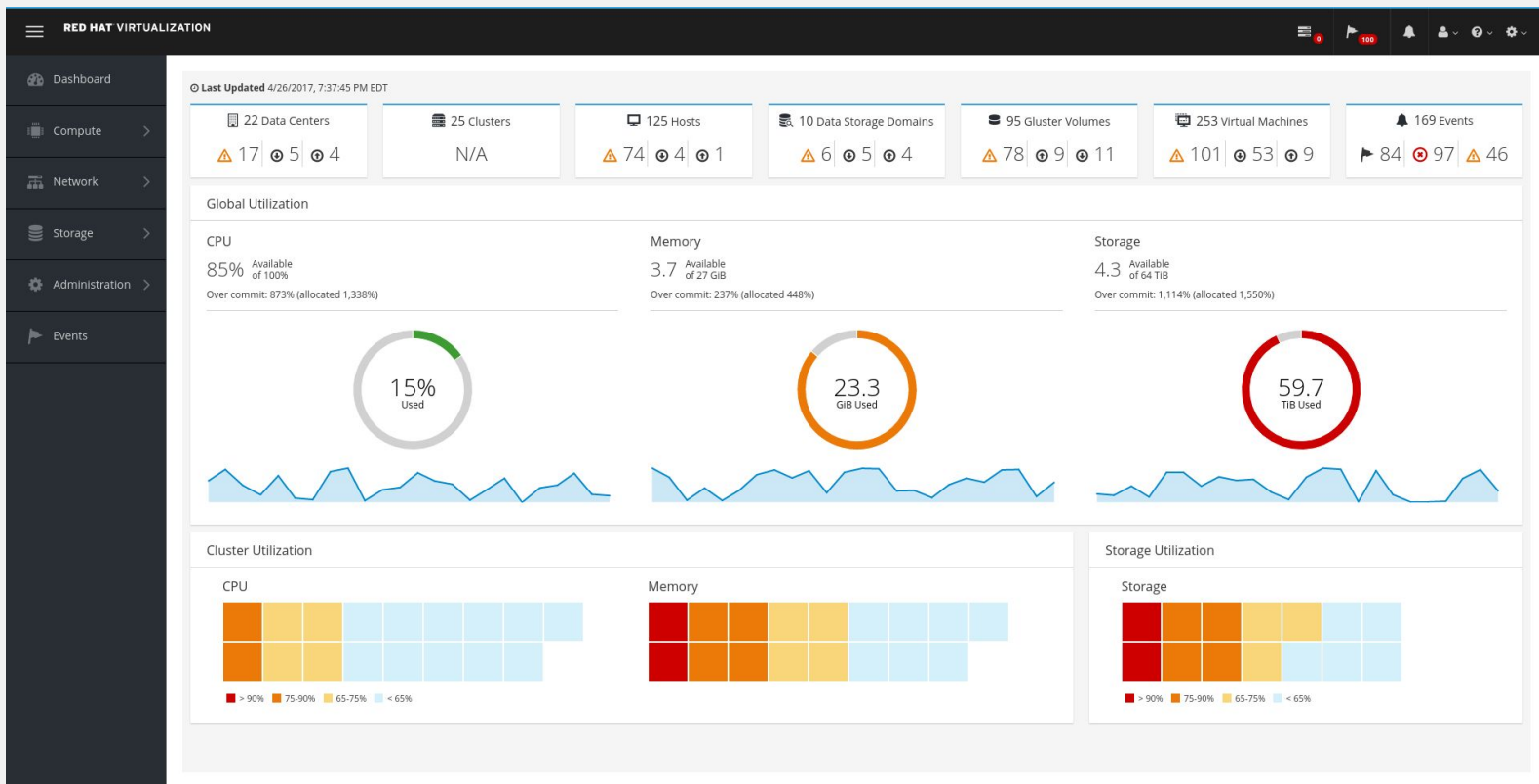
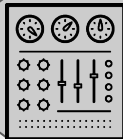
VIRTUAL WORKLOAD SCALE UP/DOWN

| Resource | Hot Plug | Hot Unplug |
|---------------------------|----------|------------|
| <i>CPU</i> | ✓ | ✓ * |
| <i>Memory</i> | ✓ | ✗ ** |
| <i>Disks</i> | ✓ | ✓ |
| <i>Network Interfaces</i> | ✓ | ✓ |

* New in RHV 4.1

** Planned for RHV 4.2

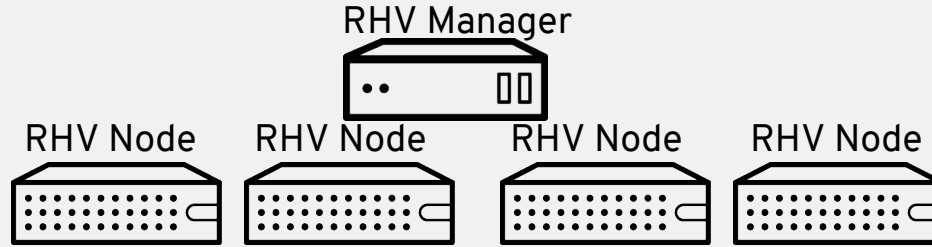
SYSTEM LEVEL DASHBOARD



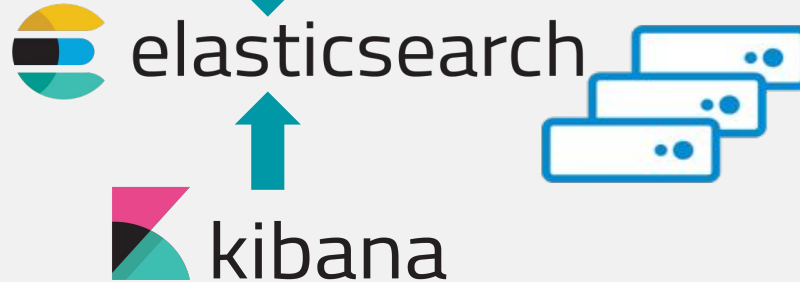
METRICS STORE - METRICS FUTURE

Subject to change

RED HAT
VIRTUALIZATION



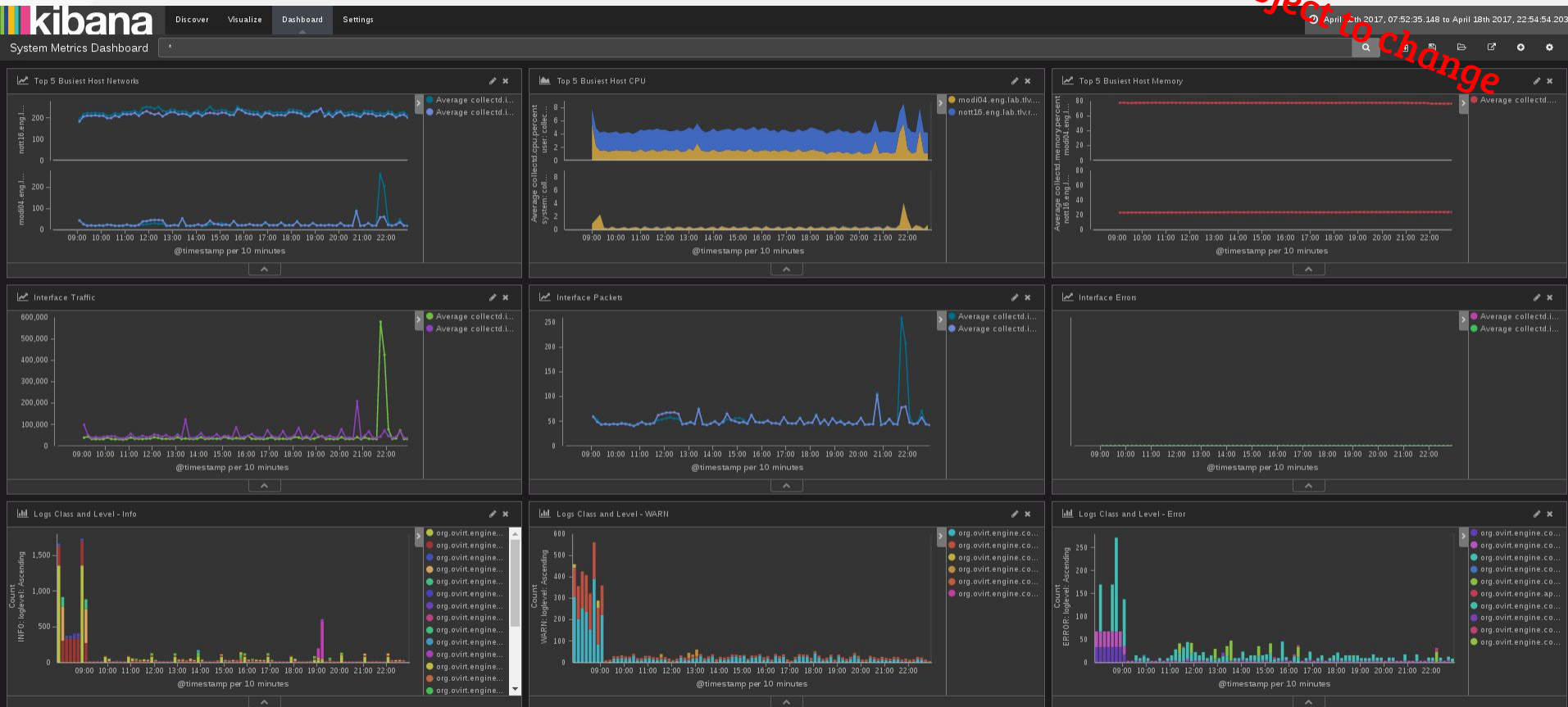

Metrics Store




OPENSIFT

REAL TIME GLIMPSE INTO THE INFRASTRUCTURE

Subject to change



RHV METRICS - LIGHTNING TALK

Lightning Talk

**“Red Hat Virtualization Analytics -
Transitioning to Metrics Store”**

Wednesday, May 3, 11:30 AM - 12:15 PM
Room 101

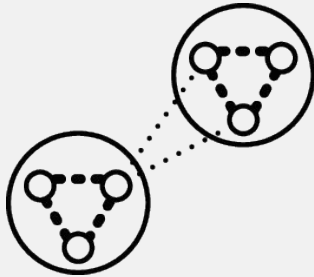




DISASTER RECOVERY

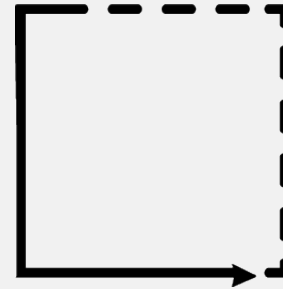
Subject to change

Native DR solution for stretched clusters and site to site recovery



Active-Active Stretched Clusters

- End to end support.
- High availability via VM storage locking (RHV 4.1).



Site to site Failover of Different Managers

Single click offline tool

MISSION CRITICAL VIRTUALIZATION & PERFORMANCE ROADMAP

Subject to change

RHV 4.1 GA

- HA via storage
- Postcopy/SR-IOV migration support
- Improved scale up/down options

2017-04

RHV 4.2 GA

- Native disaster recovery
- Improved backup API
- Metrics and logging framework support

2018- winter

2017-
Summer

RHV 4.1.z

- Tech preview metrics and logging framework

Future

RHV 4.X

- Low latency computing
- Alerting response management

DEV/TEST INFRASTRUCTURE

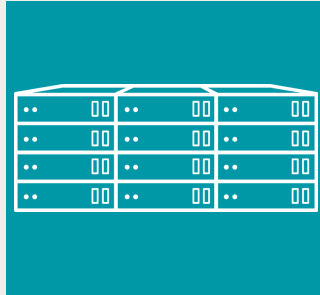
DEV/TEST ENVIRONMENTS

Simple & inexpensive virtualization platform



- Infrastructure **deployment** in **matter of hours**
- No additional licensing fees on advanced features

Maximizes physical infrastructure utilization



- Supports both **Linux** and **Windows** workloads
- Improved virtual workload **density** per hypervisor

Automation friendly



- Utilizing **RESTful API**
- **Python, Java** and **Ruby** software development kits
- **Ansible** modules and roles

STORAGE SCALE & PERFORMANCE



Storage subsystem scalability

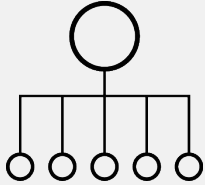
- Number of virtual disks supported by the storage domain is increased from 250 to 1000



VM virtual disk maintenance tasks

- Speed up the removal of snapshots when the VM is not running.
- Improve VM storage deletion performance and thin provision efficiency (discard support).
- Trim VM disk size (virt-sparsify).

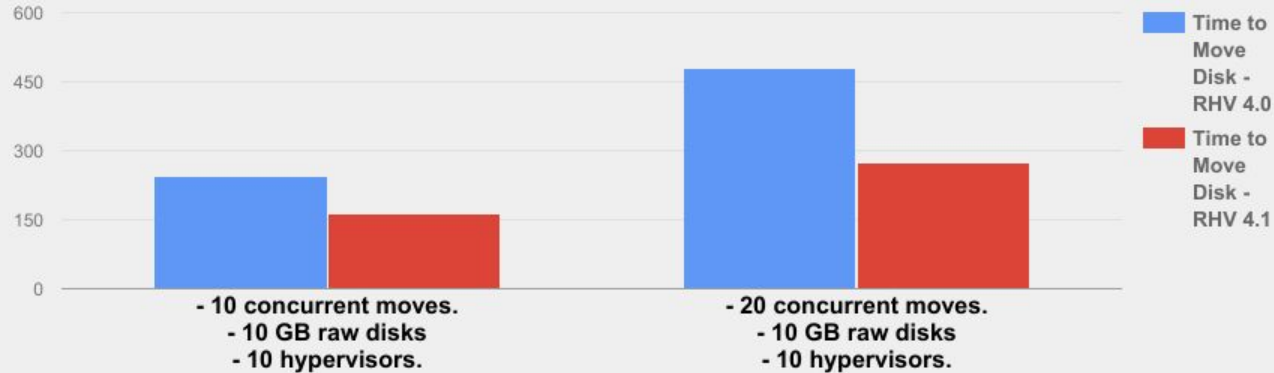
STORAGE SCALE & PERFORMANCE

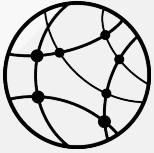


Storage subsystem performance

- Distribution of data operations across all hosts
- Reduced resources consumption.
- An average improvement of 38%.

Scale Load Example (seconds)

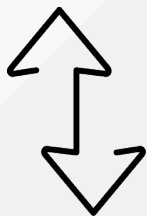




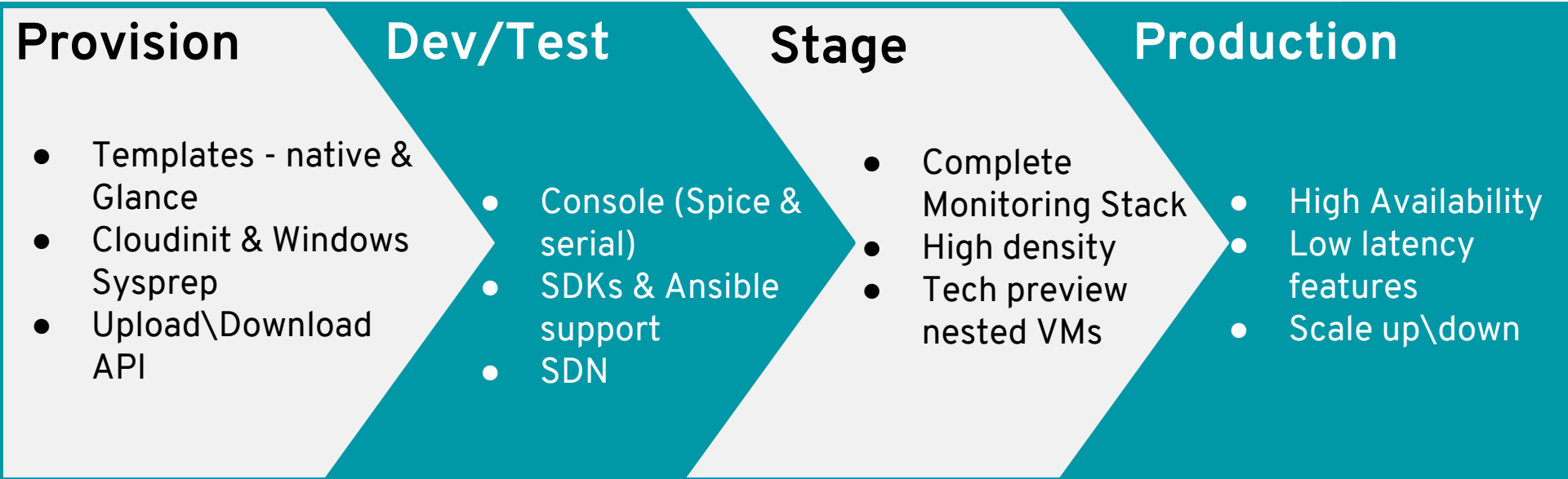
NATIVE SOFTWARE DEFINED NETWORKING

- **Native SDN support via Open Virtual Network for Open vSwitch (Tech preview in RHV 4.1)**
 - Exposes a **Neutron-like API**, enabling customers to reuse Neutron's existing automation with **minimal changes**.
 - Enables **overlay networking and subnet management** in RHV.
- **Extend SDN functionality coverage (RHV 4.2)**
 - Focus on complete **security groups** and **routing** support.
 - Addition of user interface in administration.

Subject to change



DEVELOPMENT WORKFLOWS



DEV\TEST FEATURES ROADMAP

Subject to change

RHV 4.1 GA

- Disk maintenance improvements
 - Native SDN (tech preview)
- Disk image upload\download

2017-04

RHV 4.X

- ISO upload\download
- Improved storage performance (XCopy\SDS)

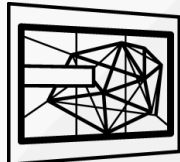
Future

2018-
Summer

RHV 4.2

- VM upload and download (template sharing)
 - Native SDN support and GUI
- Self Service focus RHV/CF 5.0

VIRTUAL TECHNICAL WORKSTATIONS



VIRTUAL TECHNICAL WORKSTATION

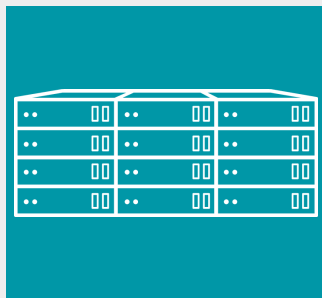
Subject to change

Reduce costs for technical workstations



- **No dedicated hardware** per technical workstation
- **Centralized Management** and deployment

Maximizes physical infrastructure utilization

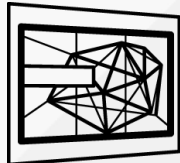


- Supports both **Linux** and **Windows** workloads
- **Carve single GPU** across several virtual technical workstations

Fast deployment and self-service



- **Resource Management** allowing hardware planning
- **Fast deployment** process for new workloads including **self-service**



VIRTUAL TECHNICAL WORKSTATION

Subject to change

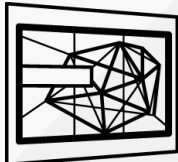
vGPU Partners

- NVIDIA (GRID)
- Intel (GVT-G)

Target Markets

- Oil & Gas
- Energy
- Animation
- Sciences & Education
- Manufacturing & Engineering





vGPU ENABLEMENT ROADMAP

Subject to change

RHEL 7.4 GA

- vGPU kernel enablement
- RHV 4.1 vGPU Tech Preview using hooks

Late Summer 2017

RHV 4.2 GA

- full vGPU support
(Display via 3rd party)

Late Winter 2018

End of 2017

oVirt 4.2 GA

- vGPU Support

Summer 2018

RHEL 7.5 GA

- SPICE for vGPU
Full remote display support



THANK YOU



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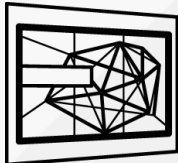


youtube.com/user/RedHatVideos

The logo for Red Hat Summit, featuring the words "RED HAT" in a smaller font above "SUMMIT" in a larger font, both in white, set against a white speech bubble shape.

**RED HAT
SUMMIT**

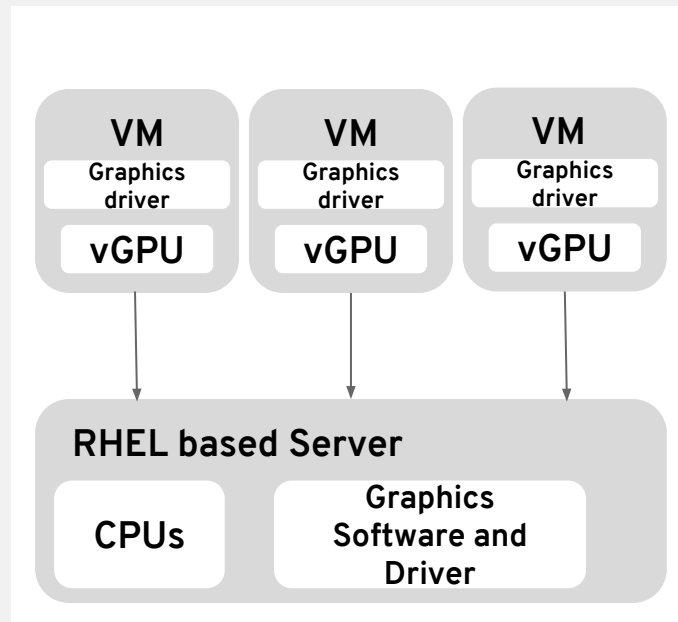
**LEARN. NETWORK.
EXPERIENCE
OPEN SOURCE.**



vGPU OVERVIEW

Subject to change

- **vGPUs** are enabled through the Mediated Device (**mdev**) Linux kernel framework (similar to VF in SR-IOV)
- Each vGPU (mdev) is created on the **RHV host**, using resources of the parent device, such as Tesla
- Parent devices support multiple vGPUs for **VDI** or **GPGPU** workloads



CLOUDFORMS 5.x USER STORIES

Subject to change

Admin Story



Ability to configure and manage RHV datacenter to operational level.

Advanced VM Management

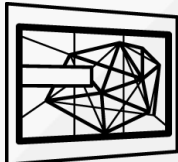


Edit VM functionality as it is in RHV today, including SLA features (Numa, Affinity, QOS)

Cross RHV operations



Disaster recovery, templates and image syncing



vGPU ENABLEMENT ROADMAP

Subject to change

