RHV 4.3 Features and Roadmap

Enterprise virtualization in a containerized world

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Red Hat

WHAT DOES RED HAT DO?

Red Hat

THE 3 PILLARS OF OUR BUSINESS

OPEN HYBRID CLOUD

HYBRID CLOUD INFRASTRUCTURE
Infrastructure software across the 4 footprints, with RHEL at the very core.
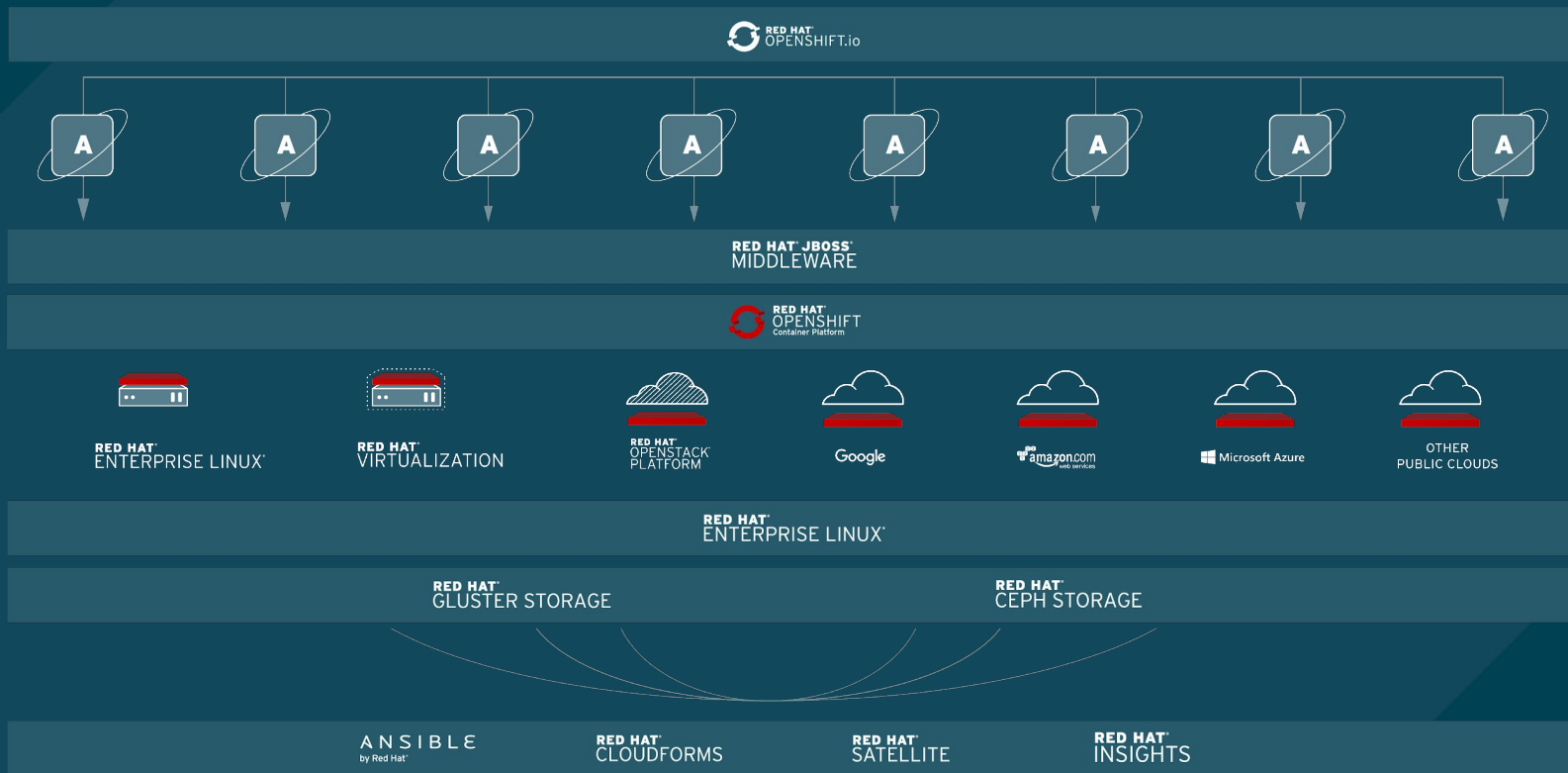
CLOUD-NATIVE APP PLATFORMS
Software to rapidly & efficiently develop & deploy apps across hybrid cloud.

MANAGEMENT & AUTOMATION
Software can simplify management & automation of hybrid cloud environments.

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RED HAT SOLUTIONS

RED HAT® OPENSHIFT.io

RED HAT® JBOSS®
MIDDLEWARE

RED HAT®
OPENSHIFT
Container Platform

RED HAT®
ENTERPRISE LINUX®

RED HAT®
VIRTUALIZATION

RED HAT®
OPENSTACK®
PLATFORM

Google

amazon.com
web services

Microsoft Azure

OTHER
PUBLIC CLOUDS

RED HAT®
ENTERPRISE LINUX®

RED HAT®
GLUSTER STORAGE

RED HAT®
CEPH STORAGE

ANSIBLE
by Red Hat®

RED HAT®
CLOUDFORMS

RED HAT®
SATELLITE

RED HAT®
INSIGHTS

4

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A (BRIEF) HISTORY OF RED HAT VIRTUALIZATION

FROM THEN, TO NOW

RED HAT ENTERPRISE VIRTUALIZATION BEATS VMWARE
on the SPECvirt_sc2010 benchmark on both speed and scale

RED HAT ENTERPRISE VIRTUALIZATION 3.1, 3.2
Windows guests
NUMA collaboration with HP

RED HAT ENTERPRISE VIRTUALIZATION 3.6
V2V migration tool

RED HAT VIRTUALIZATION 4.1
Ansible integration
Native SDN

RED HAT VIRTUALIZATION 4.3
RHEL 8 Guests
OSP 13/14 SDN
CNV 1.2
Tech preview w/OCP 3.11

2010

2013

2015

2017

2019

2009
QUMRANET ACQUISITION

2012
RED HAT ENTERPRISE VIRTUALIZATION 3.0
More solution partners
RESTful API
Memory overcommit

2014
RED HAT ENTERPRISE VIRTUALIZATION 3.3, 3.4
OpenStack Neutron integration
Hot Plug CPU Affinity management
IBM Power support

2016
RED HAT VIRTUALIZATION 4.0
10th product release

2018
RED HAT VIRTUALIZATION 4.2
Native DR
New metrics store
New UI
Cisco ACI
Container-native Virtualization 1.0

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KERNEL-BASED VIRTUAL MACHINE (KVM)

- KVM is a part of the Red Hat Enterprise Linux kernel
- QEMU uses KVM to execute virtual machines
- `libvirt` provides a management abstraction layer that homogenizes capabilities and simplifies the creation, consumption, and management of KVM-based virtual machines
- **Red Hat Virtualization, Red Hat OpenStack Platform, and Container-native virtualization all leverage KVM, QEMU, and `libvirt`**
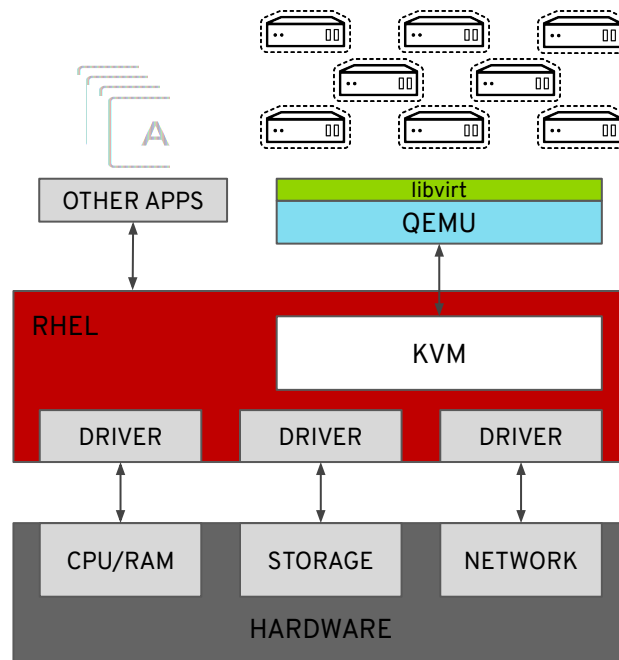
RED HAT VIRTUALIZATION

DEMO

RED HAT VIRTUALIZATION OVERVIEW

Web browser
Administrator portal

REST API/
Python SDK/Java SDK

Web browser
User portal

Directory service
• Active directory
• IPA
• Red Hat Directory Server
• IBM Tivoli Directory Server

Storage domain

Web service	Web app	Web app

Backend

RED HAT ENTERPRISE LINUX

RED HAT VIRTUALIZATION MANAGER

PostgreSQL

Console access

VDSM

libvirt

x86_64

PPC

SPICE or VNC

RED HAT VIRTUALIZATION HYPERVISOR

— Internal web service

— HTTPS

— SSH / SSL

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Welcome to

RED HAT VIRTUALIZATION   Version 4.3.1.1-0.1.el7

Portals

Administration Portal
VM Portal

Downloads

Console Client
Resources
CA Certificate

Support

Getting Support
RHV Discussions
Knowledge Base

U.S. English

Documentation

Release Notes
Product Guide [PDF]
Release Notes [PDF]
Technical Notes [PDF]
Package Manifest [PDF]
Planning
Planning and Prerequisites Guide [PDF]
Installation
Installation Guide [PDF]
Self-Hosted Engine Guide [PDF]
Metrics Store Installation Guide [PDF]
Upgrade Guide [PDF]

- Primary management interface for RHV
  - Ability to create, manage, and control configuration of physical (hosts, storage), logical (datacenter, cluster, etc.), and virtual machine resources
- User interfaces
  - Administrator portal for managing RHV resources
  - Virtual machine portal for non-administrators
  - REST API for automation and integration
    - Multiple SDKs available (Python, Java, Ruby)

ADMINISTRATOR DASHBOARD
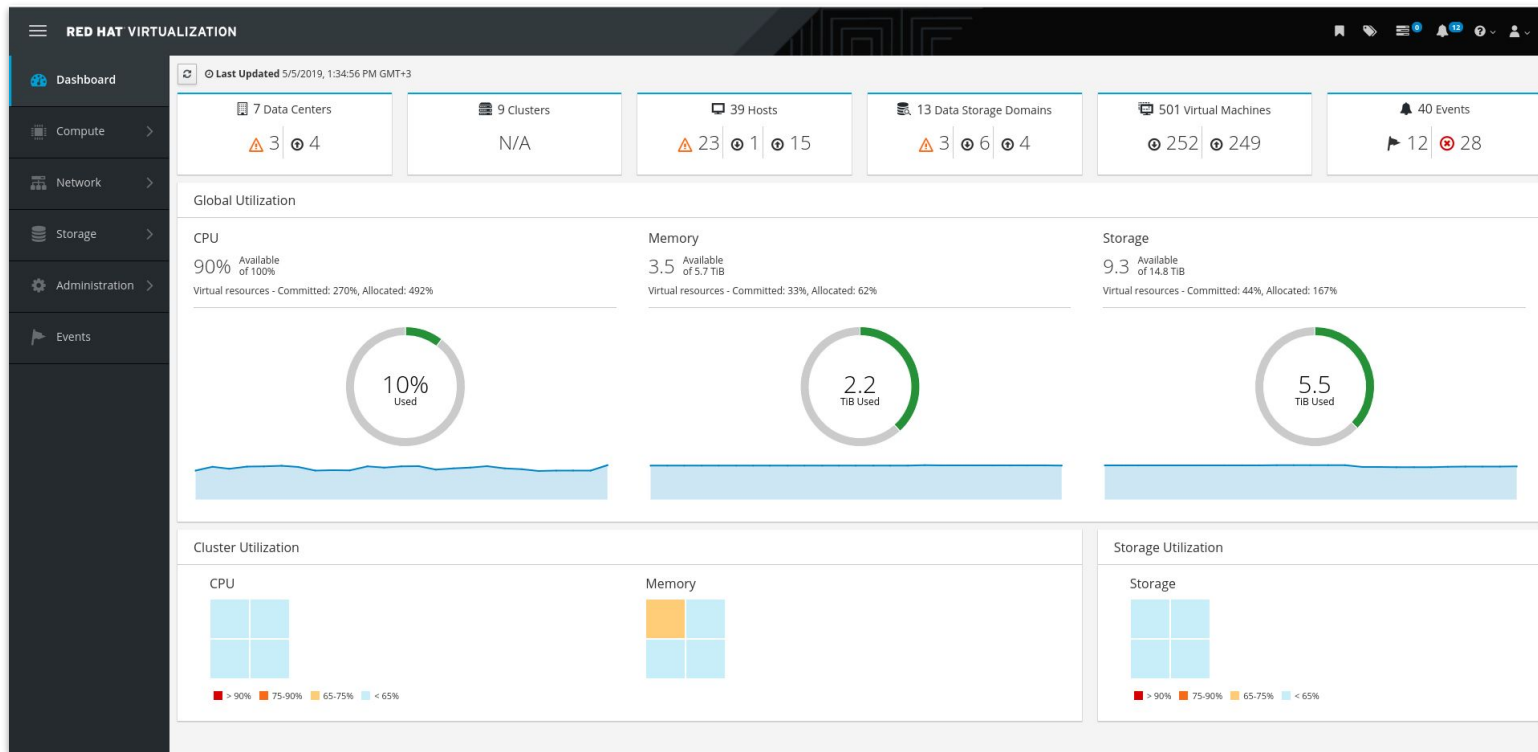
HYPERVISORS

- 2 different hypervisor "models"
  - Appliance: Red Hat Virtualization - Host (RHV-H)
  - Traditional OS: Red Hat Enterprise Linux (RHEL) w/RHV packages
- Both result in the same capabilities!
  - RHV-H has a smaller footprint, having only what's needed to be a hypervisor
- Configuration and management are both handled the same by RHV-M
  - Updates/upgrades, power management, etc. all equivalent
  - Logical entities (e.g., networks and storage) are created and managed the same
- Do you want/need to customize the hypervisor OS layout and/or package set **extensively**?
  - Yes - RHEL
  - No - RHV-H

HYPERVISOR ARCHITECTURE
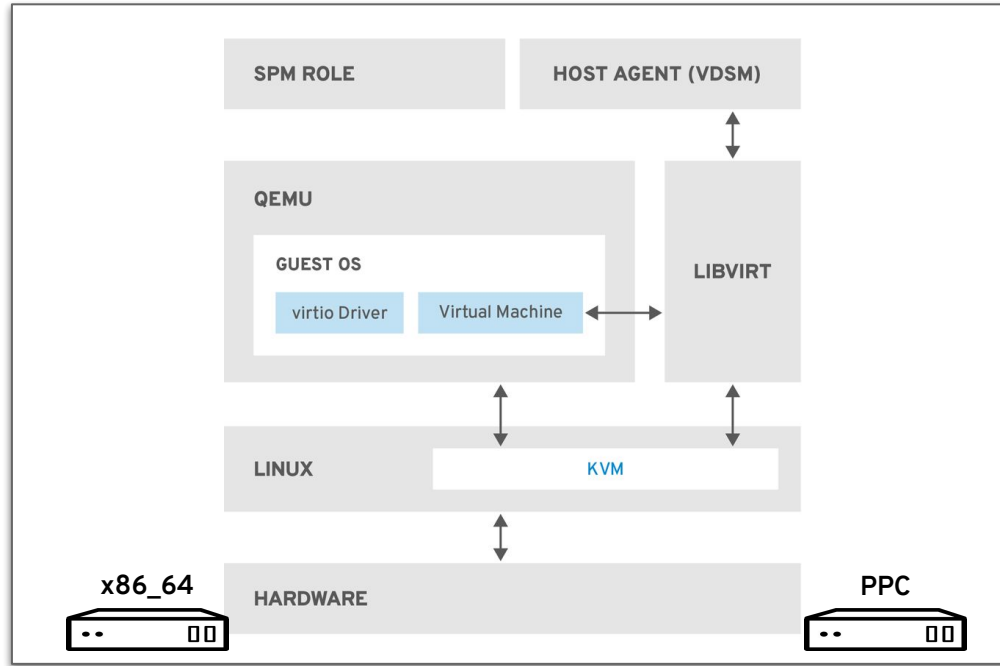
PHYSICAL AND LOGICAL RESOURCES

- A datacenter has 1 or more clusters
- Clusters are composed of 1 or more hosts
- VMs are hosted by the clusters and can be migrated to any host in the cluster
- All hosts in the *cluster* must access the same physical networks
- All hosts in the *datacenter* must have access to the same shared storage

Datacenter

Cluster 1

VMs

Logical networks

Hosts

Physical network

Cluster 2

Shared storage resources
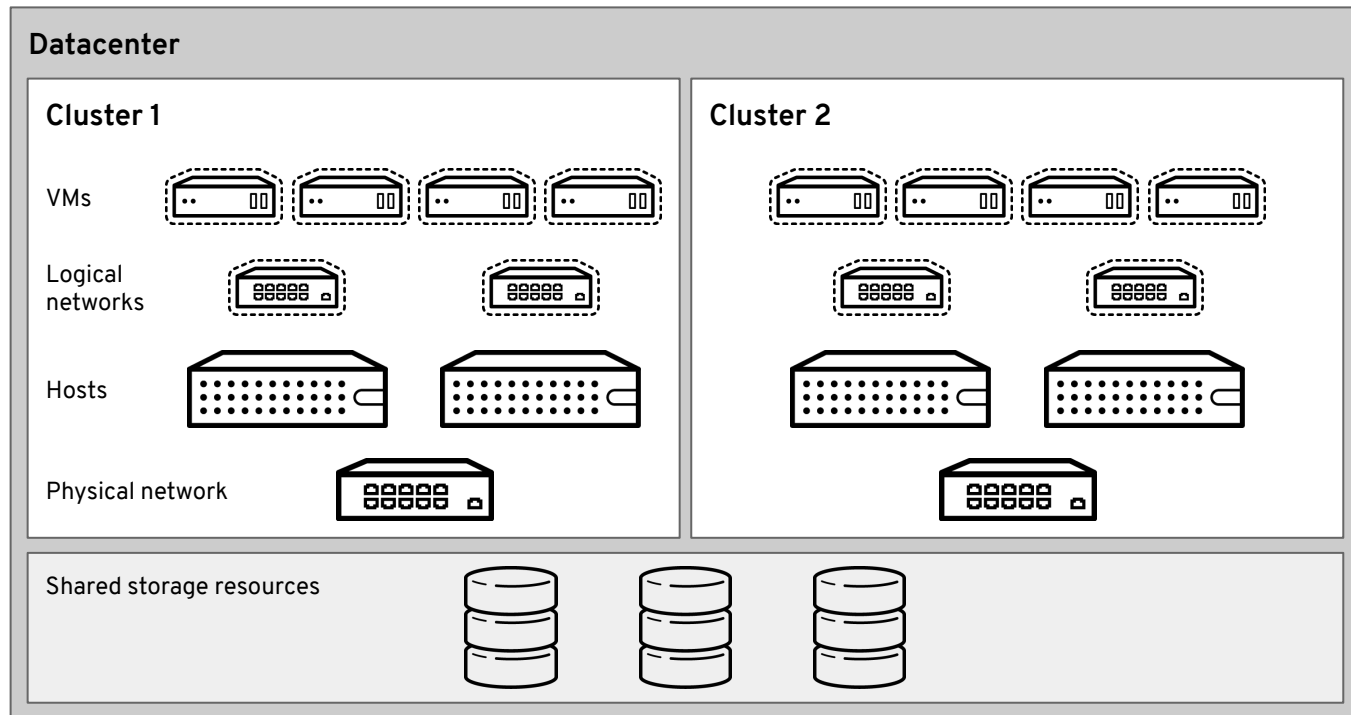
RED HAT VIRTUALIZATION 4.3 THEMES

Ensure RHV has **Happy Customers** by caring for RFEs, Automation and UX

Red Hat Virtualization is a stable, reliable, and trusted platform for enterprise virtualization

Infrastructure migration solution(s) ready to host workloads migrated to Red Hat's portfolio

- **Delivered 80** requests for enhancement (RFEs)
- More than **240** customer bugs fixed
- **1,588** Bugzilla bugs fixed
- **Several integrations in tech preview**

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RED HAT VIRTUALIZATION 4.3

Enhancements

- Red Hat Enterprise Linux 8 guest support
- Red Hat OpenStack Platform 10, 13, and 14 SDN integration
- IBM POWER9 CPU architecture
- Upgrade Manager GUI

Fixes and Changes

- Ansible 2.7 and expanded roles
  - infra
  - hosted-engine-setup
  - engine-setup
  - shutdown-env
- RHV-H - pVLAN, OpenSCAP
- VMs - Live migration w/ pinning, Windows Server Failover Cluster
- Removal of 1-gen Spectre CPUs

Improvements

- Scale
  - 384 vCPUs
  - 4TB RAM p/ VM
  - 5000 VMs
  - 500+ hosts
  - 70 storage domains

- IPv6 support
- New metrics deployment
  - OCP 3.11 based
  - Scale OUT

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IPv6 in RHV 4.3
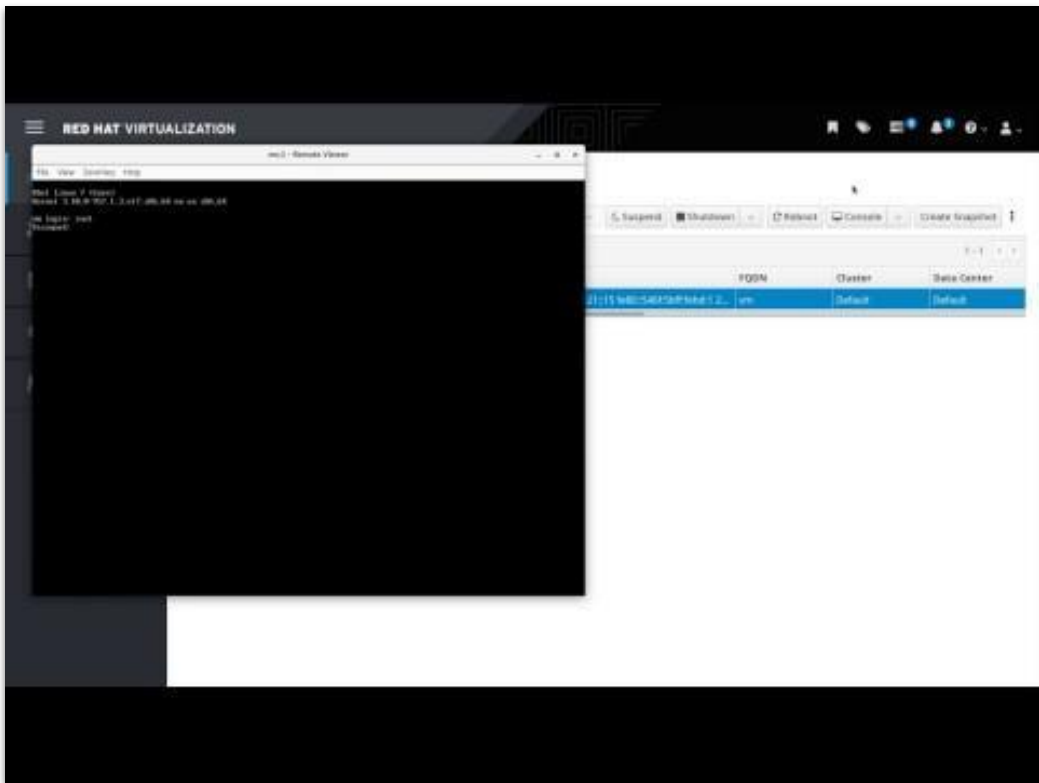
WHAT'S NEXT?

- RHEL 8
  - Full hypervisor support
- Network
  - Cluster support for Open vSwitch
- Storage
  - Storage offload and integration via CinderLib
  - Live Storage Migration Progress Indicator
- Backup
  - Changed block tracking for virtual machines

WHAT'S NEXT?

- RHV-M
  - HTML5 console (noVNC) and UX improvements for VM portal
  - Nested virtualization
  - Import Debian and Ubuntu VMs from VMware and Xen
- Red Hat Insights integration!

Collapse All   Remediate with Ansible

∨ Stability >CPUs not supported in RHV 4.3 or higher version

☐ Impact   ☰ Likelihood   ☐ Total Risk   │ ☐ Risk Of Change

◎ Detected Issues

Detected Cluster running with deprecated CPU in RHV 4.3 or higher version
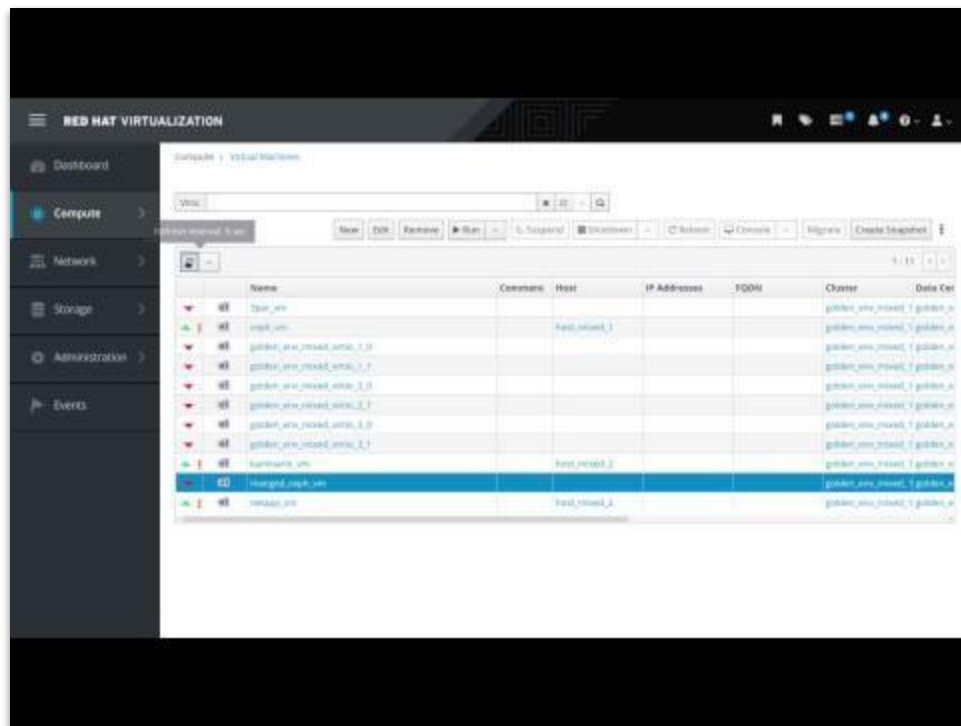
- Cluster: Default, CPU: Intel Conroe Family
- Cluster: test, CPU: Intel Conroe Family

👍 Steps to resolve

Red Hat recommends that you change to another CPU family prior to upgrading the Cluster

For more information about RHV, read RHV documentation

Managed Block Storage

Partner motivation and interest is being driven by customers moving away from VMware to Red Hat

Strategic

Storage/DR

Networking

OEM/HW Certifications

If it runs on RHEL, it runs on RHV

- RHV + DR solution is #1 competitive gap
  - RHV 4.4 enables partners with CBT, incremental backup (targeted for RHEL 8.1)
- Partner self-certification is proving successful
- IMS partner requirement enablement is baked into RHV roadmap and release plans

THE FUTURE OF VIRTUALIZATION

TODAY AND TOMORROW

- Red Hat Virtualization
  - Today - enterprise virtualization workloads for traditional applications or any application which needs resiliency from the infrastructure
  - Tomorrow - continued reliability, scalability, and incremental improvements in capabilities to meet the needs of enterprise virtual machines
  - RHV is the mature, trusted platform for tier 1 application virtualization!
- Container-native Virtualization
  - Today - Tech preview (based on KubeVirt), cloud native applications which rely on virtualization components and/or which are transitioning from virtual machines to containers where a single platform is desired
  - Tomorrow - Evolution and improvement of features and capabilities to decrease the function gap between traditional and container-native virtualization
  - Tech preview, as a part of OpenShift 3.11, enabling you to test and experiment with container semantics for virtual machines

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RHV VS CNV?

- Each targets different use cases
  - RHV = traditional virtualization for "mode 1" applications, providing robust, resilient infrastructure for traditional applications
  - CNV = VMs deployed and managed as containers, simplifying the transition of existing applications from conventional virtualization to containers
- Different maturity stages
- Different availability timelines
- It's all KVM!
- Both share the same vision

RHV and CNV don't compete, they complement each other!

OPENSHIFT 4 PROVIDER ROADMAP

	Installer Provisioned Infrastructure (IPI)	User Provisioned Infrastructure (UPI)
OPENSHIFT by Red Hat **Developer Preview**	amazon web services	—
OPENSHIFT by Red Hat **4.1**	amazon web services	amazon web services · VMware vSphere · Baremetal
OPENSHIFT by Red Hat **4.2**	Microsoft Azure · RED HAT OPENSTACK PLATFORM · Google Cloud Platform · Baremetal On RHHI**	—
OPENSHIFT by Red Hat **4.3** *(tentative)*	Alibaba Cloud · IBM Cloud · RED HAT VIRTUALIZATION	Microsoft Azure · Google Cloud Platform · RED HAT OPENSTACK PLATFORM

*** On qualified hardware stack*

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QUESTIONS?

THANK YOU

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twitter.com/RedHat

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