Red Hat Virtualization
THE NEXT GENERATION OF IT OPTIMIZATION

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BALANCING INNOVATION, IT OPTIMIZATION
MOST CUSTOMERS NEED VIRTUALIZATION AND CLOUD

VIRTUALIZATION

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big stateful VM</td>
<td></td>
</tr>
<tr>
<td>1 Application &lt;-&gt; 1-3 VMs</td>
<td></td>
</tr>
<tr>
<td>VM lifecycle in years</td>
<td></td>
</tr>
<tr>
<td>Increased demand -&gt; Scale up</td>
<td></td>
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<tr>
<td>High availability (HA) at the infrastructure layer</td>
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CLOUD

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<tbody>
<tr>
<td>Small stateless instance</td>
<td></td>
</tr>
<tr>
<td>1 Application &lt;-&gt; many instances</td>
<td></td>
</tr>
<tr>
<td>Instance lifecycle in hours to months</td>
<td></td>
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<tr>
<td>Increased demand -&gt; Scale out</td>
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Modern application portfolios span virtual and cloud deployments.
RED HAT VIRTUALIZATION OVERVIEW

RED HAT VIRTUALIZATION

Centralized management for the KVM hypervisor, as well as compute, network, and storage resources

Enterprise features to support business-critical applications

Cross-portfolio integration, APIs, and software development kits (SDKs) to enable automation

Red Hat Virtualization is built on Red Hat Enterprise Linux + KVM

RED HAT ENTERPRISE LINUX + KVM

Basic virtualization

No enterprise virtualization management features or APIs

Limited number of VMs allowed
OPEN SOURCE PROJECT TO SUPPORTABLE PRODUCT

RED HAT ENTERPRISE LINUX
RED HAT VIRTUALIZATION
RED HAT OPENSTACK PLATFORM
RED HAT ENTERPRISE LINUX ATOMIC HOST
RED HAT STORAGE
RED HAT SATELLITE

1,000,000+ PROJECTS

#RedHatOSD
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
V-2-V migration tool

RED HAT ENTERPRISE VIRTUALIZATION 3.0, 3.1, 3.2
More solution partners
RESTful API
Memory overcommit

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

RED HAT ENTERPRISE VIRTUALIZATION 3.6, 4.0
V-2-V migration tool

RED HAT ENTERPRISE VIRTUALIZATION 4.0
10th product release

RED HAT ENTERPRISE VIRTUALIZATION 4.1
Ansible integration
Native SDN

RED HAT ENTERPRISE VIRTUALIZATION 4.2
Native DR
New metrics
Updated UI
Cisco ACI
Hundreds of new features across Red Hat Enterprise Linux, KVM, oVIRT.

Bug Fixes and Feature Requests since 4.1.0:

- 1,850 BZs closed
- 350 features (RFEs) delivered
MAJOR THEMES

- Ease of use
- Ease of automation
- Tighter integration with Red Hat Portfolio
MANAGEMENT INTERFACES

**RED HAT VIRTUALIZATION MANAGER**
- Designed for large scale (500+ hosts and 5,000+ VMs)
- REST API to integrate with Red Hat portfolio, third-party applications, backup and recovery software
- Can be integrated with existing infrastructure—active directory, Red Hat CloudForms®, OpenStack, etc.

**COCKPIT**
- Included as part of Red Hat Virtualization Host image
- Used to configure networking, storage, tuning, subscriptions, and other aspects of the virtualization host
- Can be used to deploy Red Hat Virtualization in high availability
NEW USER INTERFACE

Get to important information faster, learn fewer tools, streamline operations

WHICH USE CASES?

- PERFORMANCE SENSITIVE
- DEV AND TEST ENVIRONMENTS
- HYBRID AND MULTIHYPERVISOR
- TECH WORKSTATIONS
- SERVER CONSOLIDATION

● Same PatternFly library as Red Hat portfolio
● At-a-glance, drill downs of the entire environment
● Easy, intuitive navigation
● Reduces learning curve
● Faster
NEW USER INTERFACE
Save your location as bookmark

Hyperlinks everywhere
IMPROVED EASE OF USE

Spend less time on tasks and more time for initiatives

Self-hosted engine
- Simplified installation wizard

WHICH USE CASES?
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#RedHatOSD
NATIVE DISASTER RECOVERY

Business continuity without vendor lock-in

- Active/active cluster allows virtual machines to migrate to secondary site if primary site is unavailable.
- Integration with a specific storage vendor is not required.
- Failover and failback is automated with Red Hat Ansible Automation.
- Supports Block and file based storage.

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#RedHatOSD
NATIVE SOFTWARE DEFINED NETWORK (SDN)

PROVIDES NATIVE, ISOLATED NETWORKING FOR VIRTUALIZED WORKLOADS

- Neutron compatible API for OVN
- Mix and match host networking connectivity and isolated networks
- Full control of network, subnets, ports and routing
- Integrated with CloudForms, Cloud network management and OpenStack

WHICH USE CASES?

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#RedHatOSD
CISCO ACI INTEGRATION

Integrated and automated SDN and distributed security policies

WHICH USE CASES?

- PERFORMANCE SENSITIVE
- HYBRID AND MULTIHYPERVISOR
- TECH WORKSTATIONS
- SERVER CONSOLIDATION
- DEV AND TEST ENVIRONMENTS

- Scalable network virtualization
- Distributed security policies
- Micro-segmentation
- Ability to automate Cisco ACI with Red Hat Virtualization using Red Hat Ansible Automation

Hear more about it @ “Running RHV Integrated w/ Cisco ACI SDN” - Room 2020 on Thursday 5/10, 2:00 - 2:20 PM
METRICS AND LOGGING

Real-time reporting and visualization for improved business efficiency

INTEGRATION W/OPENSSHIFT METRICS STORE

- Elasticsearch — a search and analytics engine with a REST/http interface
- Fluentd — Data collector and shipper that unifies the metrics and logs data
- Kibana — Visualize trends in real time, slice and dice the data from Elasticsearch dynamically
- Collectd — Simple and powerful daemon that gathers metrics from various sources

WHICH USE CASES?

- PERFORMANCE
- SENSITIVE
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#RedHatOSD
HIGH-PERFORMANCE VM TYPE

Streamline consistent tuning process for virtualization administrators

- Enable passthrough of host CPU to the VM
- Enable input/output (I/O) threads, num of I/O threads = 1
- Set the I/O and emulator threads pinning topology
- Disable non-critical devices (sounds, USB, balloon)
- Define as headless (no graphics device)

WHICH USE CASES?

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#RedHatOSD
DISK AND VM UPLOAD/DOWNLOAD IMPROVEMENTS

Storage deployment flexibility for virtualization architects

- Download snapshots, not just disks
- Faster uploads via direct uploads to hosts
- Efficient upload with sparse support
- VM import and export as Open Virtualization Appliance (OVA) files
- Upload ISO disk images to data domain - no need for a dedicated, NFS-based, ISO domain anymore!

WHICH USE CASES?

- PERFORMANCE SENSITIVE
- DEV AND TEST ENVIRONMENTS
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- TECH WORKSTATIONS
- SERVER CONSOLIDATION

#RedHatOSD
➢ Upload ISO images from the Admin portal UI
➢ To any storage domain type, file or block!
➢ See progress report
SUPPORT FOR CEPH STORAGE via iSCSI

Storage deployment flexibility for virtualization architects

- Red Hat Ceph® Storage iSCSI target tested and certified
- Use as a storage domain for virtual machines
- Enables consistent hybrid cloud deployments on RHV and Red Hat OpenStack Platform

WHICH USE CASES?

- PERFORMANCE
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#RedHatOSD
RHEL 7.5 SUPPORT

Support the latest RHEL release and its features, inc.:

- Latest CPUs and machine-type support.
- VDO for dedup and compression (integrated in RHHI)
- Kernel address space layout randomization (KASLR)

Hear more about RHHI and VDO @ “Red Hat Hyperconverged Infrastructure: Your open hyperconverged solution” - Room 2003 on Tuesday 5/8 from 4:30 PM
VIRTUAL GRAPHICS PROCESSING UNIT

vGPU powered technical workstation support for AI, big data, rich graphics

- NVIDIA (GRID and Quadro vDWS)—maintainer of mediated device framework (mdev)
- Intel (GVT-G)—driver development and reviewer for mdev
- Support for Linux and Windows

Target markets:
- Oil and gas
- Energy
- Sciences and education
- Manufacturing and engineering
- Animation
- Gaming

WHICH USE CASES?

#RedHatOSD
## RED HAT ANSIBLE AUTOMATION

<table>
<thead>
<tr>
<th>Affinity groups</th>
<th>NICs</th>
</tr>
</thead>
<tbody>
<tr>
<td>labels</td>
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<tr>
<td>clusters</td>
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<tr>
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<td>host networks</td>
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<td>storage domains</td>
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<tr>
<td>host storage</td>
<td>templates</td>
</tr>
<tr>
<td>hosts</td>
<td>VM pools</td>
</tr>
<tr>
<td>MAC pools</td>
<td>VMs…</td>
</tr>
<tr>
<td>networks</td>
<td></td>
</tr>
</tbody>
</table>

For all available objects in RHV exists a Ansible Module.
name: Create a template from qcow
hosts: localhost

vars:
  engine_url: https://rhvm-engine.example.com/ovirt-engine/api
  engine_user: admin@internal
  engine_password: 123456
  engine_cafile: /etc/pki/ovirt-engine/ca.pem
  qcow_url: https://images-repo.example.com/images/myvm.qcow2
  template_cluster: production
  template_name: rhel7_template
  template_memory: 4GiB
  template_cpu: 2
  template_disk_size: 10GiB
  template_disk_storage: mydata

roles:
  - oVirt.image-template
‘UpShift’ - platform for hosting containerized workloads.

Using **RHV** as IAAS, hosting both **RHOSP Undercloud** and **OpenShift** masters on VMs.
RHHI-1.5

- Deduplication and compression support with VDO
- Cockpit
  - Scale using the user interface
  - Manage your storage and virtual machines
- Admin portal
  - Convert virtualization hosts
  - Configure disaster recovery with failover and failback
  - Upgrade using the user interface
- Deploy on a single node

WHICH USE CASES?

RHV-4.2.7

- Support of private VLAN by mean of filter for VNIC profiles (NWFILTER), `clean-traffic- gateway`
- Guest Time Synchronization.
- qemu-img out of order writing. Importing, moving or copying large disks to preallocated storage, can be up to 6 times faster.
- KVM Sparseness is now supported to preserve original VM image size during import (thin provisioning).
HIGHLIGHTS BEYOND RHV 4.2

- Storage and DR
  - Cinder Integration
  - Incremental Backup
- Multi-Arch Support
  - Power 9, z Systems (TBD), ARM
- Infrastructure Migration Support
  - CloudForms / IMS
- Portfolio Enablement
  - OpenStack Control Plane on RHV
- Support for hybrid, cloud-native application deployments and workloads
  - Service-based shared components (networking, storage, Glance...)
  - Kubevirt as part of OpenShift/CNV/RHV.Next

WHICH USE CASES?

PERFORMANCE SENSITIVE
DEV AND TEST ENVIRONMENTS
HYBRID AND MULTIHYPERVISOR
TECH WORKSTATIONS
SERVER CONSOLIDATION

#RedHatOSD
GRAZIE PER L’ATTENZIONE

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IMS
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#RedHatOSD
INFRASTRUCTURE MIGRATION SOLUTION

DISCOVERY AND ASSESSMENT OF YOUR MIGRATION
INFRASTRUCTURE MIGRATION SOLUTION
SETTING UP A RHV ENVIRONMENT SIZED FOR YOUR MIGRATION
INFRASTRUCTURE MIGRATION SOLUTION

INSTALL CLOUDFORMS AND CONFIGURE BOTH PROVIDERS

CloudForms

vSphere  

RHV  

network 100  
network 200  
network 300
INFRASTRUCTURE MIGRATION SOLUTION
SETUP MULTIPLE CONVERSION HOSTS

vSphere

CloudForms

RHV

Conversion Host

Conversion Host

vddk

vddk
INFRASTRUCTURE MIGRATION SOLUTION

USE THE INFRASTRUCTURE MAPPING WIZARD TO MAP BOTH SOLUTIONS

- Clusters
- Datastore
- Networks

CloudForms

vSphere

- Clusters
- Datastore
- Networks

Infraestructure Mapping #1

RHV

- Clusters
- Datastore
- Networks
INFRASTRUCTURE MIGRATION SOLUTION

CREATE YOUR MIGRATION PLAN ATTACHED TO AN INFRASTRUCTURE MAPPING

INFRASTRUCTURE MAPPING #1

vSphere

CloudForms

RHV
INFRASTRUCTURE MIGRATION SOLUTION

LAUNCH YOUR MIGRATION

vSphere

CloudForms

RHV

Migration plan

INFRASRUCTURE MAPPING #1

Conversion Host

INFRASTRUCTURE MIGRATION SOLUTION

DB
App0
App1
Reduce costs by 40-50% in infrastructure by dependence on VMware

Increase investment in VMware, stay with traditional apps

Savings invested to develop cloud-native applications running on any footprint

Traditional Applications

Cloud-native applications

Red Hat Virtualization, Red Hat OpenStack® Platform, vSphere

AWS, Azure, GCP

Red Hat OpenShift®

Traditional Applications

Red Hat CloudForms + Red Hat Ansible® Automation

vSphere

Red Hat Virtualization

Traditional Applications

AWS, Azure, GCP

Red Hat Virtualization, Red Hat OpenStack® Platform, vSphere

AWS

vSphere

Traditional Apps

vRealize

#RedHatOSD
Grazie per l’attenzione

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