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RHEV Best Practices and Advanced Use

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Audience

- Technical Rating: 3/5
- High level, some detail
- Implementers, Architects

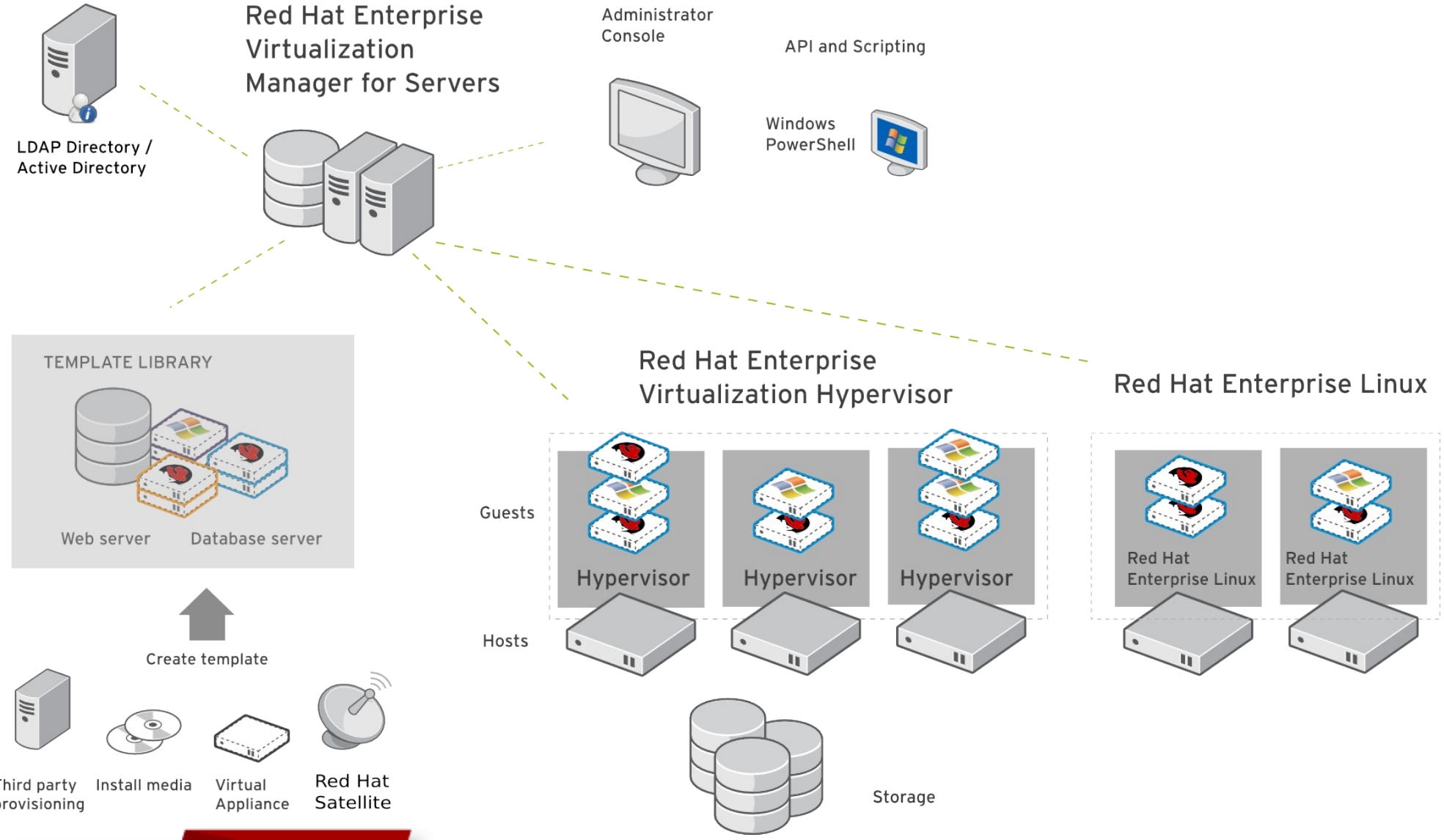
Agenda

- RHEV Overview
- Installation Pre-requisites
- Best Practices
- Virtual Machine Provisioning
- High Availability of RHEV-M
- Advanced Use
- Troubleshooting
- Upgrading
- Customer Use Cases

Red Hat Enterprise Virtualization Overview

- Manager
  - RHEV Manager for Servers
  - RHEV for Desktops add-on
- Hypervisor
  - RHEV-H
  - Red Hat Enterprise Linux 5 with KVM

Red Hat Enterprise Virtualization for Servers



Installation Pre-requisites

- RHEV-M
  - Microsoft Windows Server 2008
  - Internet Information Services (IIS)
  - .NET Framework 3.5 SP1 with Family Update
  - Windows PowerShell 2.0
- RHEV-H or RHEL 5.5+ KVM
  - 64-bit CPU with virtualization extensions enabled
  - Enough disk space for the largest ISO or RAM (kdump)

Best Practices

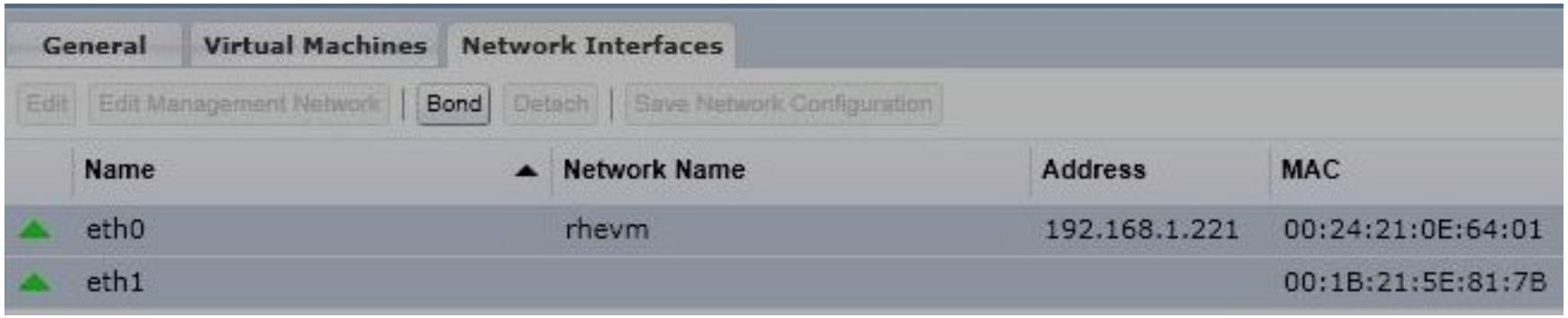
- Hypervisor
- Network
- Storage
- Fencing
- Windows
- General

Hypervisor

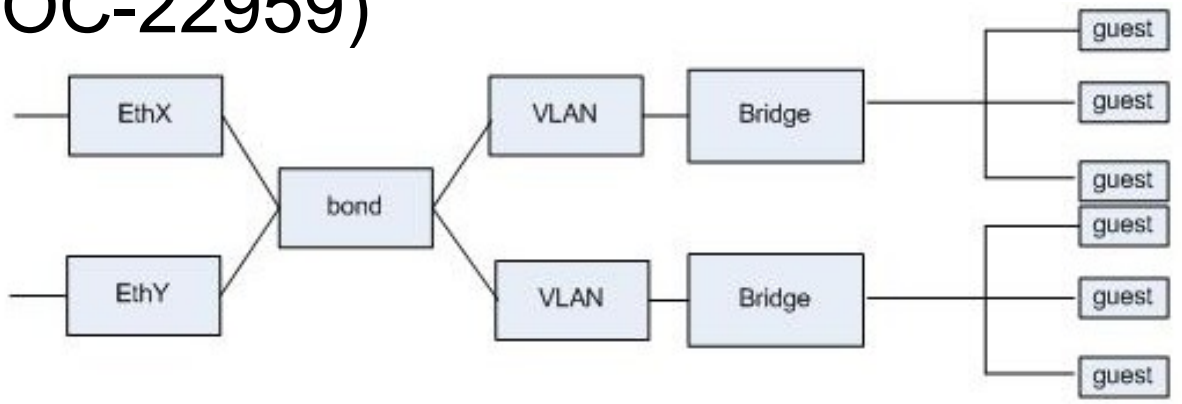
- Choosing a Hypervisor:
  - RHEV-H (Slim, single purpose, no RHEL expertise needed, included in cost of RHEV)
  - RHEL (General purpose, tunable, configurable, install additional software/drivers – even unsupported)
- Connecting Hypervisor to RHEV-M:
  - Add RHEV-H from console
  - Add RHEL from RHEV-M, after channel assignment
- Register RHEV-H with RHN
- Provision RHEV-H with kernel parameters

Network

- Bond all NICs



- VLAN tagging (DOC-22959)



Network Ports

- If Windows firewall is enabled, ports need to be opened
- RHEV-M: ICMP, 80/443, 8006-8009, netconsole port
- Host: ICMP, 22, 5634, 6166, 49152, 49216, 54321, 5534 – 6166, ports for fencing

```
@echo off
set PORTS=80,443,25285,54321,22,8006,8007,8008,8009

for /D %%p in (%PORTS%) do (
     echo Doing: netsh firewall add portopening protocol = TCP port = %%p name = RHEVM%%p
     netsh firewall add portopening protocol = TCP port = %%p name = RHEVM%%p
)
echo Doing: netsh firewall set icmpsetting 8 enable
netsh firewall set icmpsetting 8 enable
echo Configuration complete.  Press a key to view the configuration state.
pause >NUL
netsh firewall show state
```


Storage

- ISO domains
  - Can be shared across datacenters
  - NFS tuning (async)
  - Vdsm:kvm (36:36) for ISOs – use set-GID for kvm
- Preallocate disks for maximum performance
- Renaming Domain Name (DOC-21996)
- VirtIO for Windows VMs (DOC-24866)
- iSCSI tuning (Jumbo Frames)

Fencing

- Highly Recommended for Cluster sanity
- Required for Highly Available VMs
- Test with at least two hosts, regular maintenance
- Update RHEV-M if device settings change
- Fence Support Matrix: DOC-30003
- Fence Devices and Agents: DOC-30004
- If fence device not listed try IPMI
  - Requires IPMI v1.5+, IPMI over LAN

Windows

- Use clean Windows install for RHEV-M
  - Avoid installation issues with fresh install
  - Re-using systems that used IIS may lead to issues
  - Co-locate only with required agents
  - Virtualize for flexibility, abstraction
  - Do not run on overcommitted server or slow storage
- Active Directory may be used, but is not required
- MS DHCP/RIS/WDS gPXE image (DOC-23649)

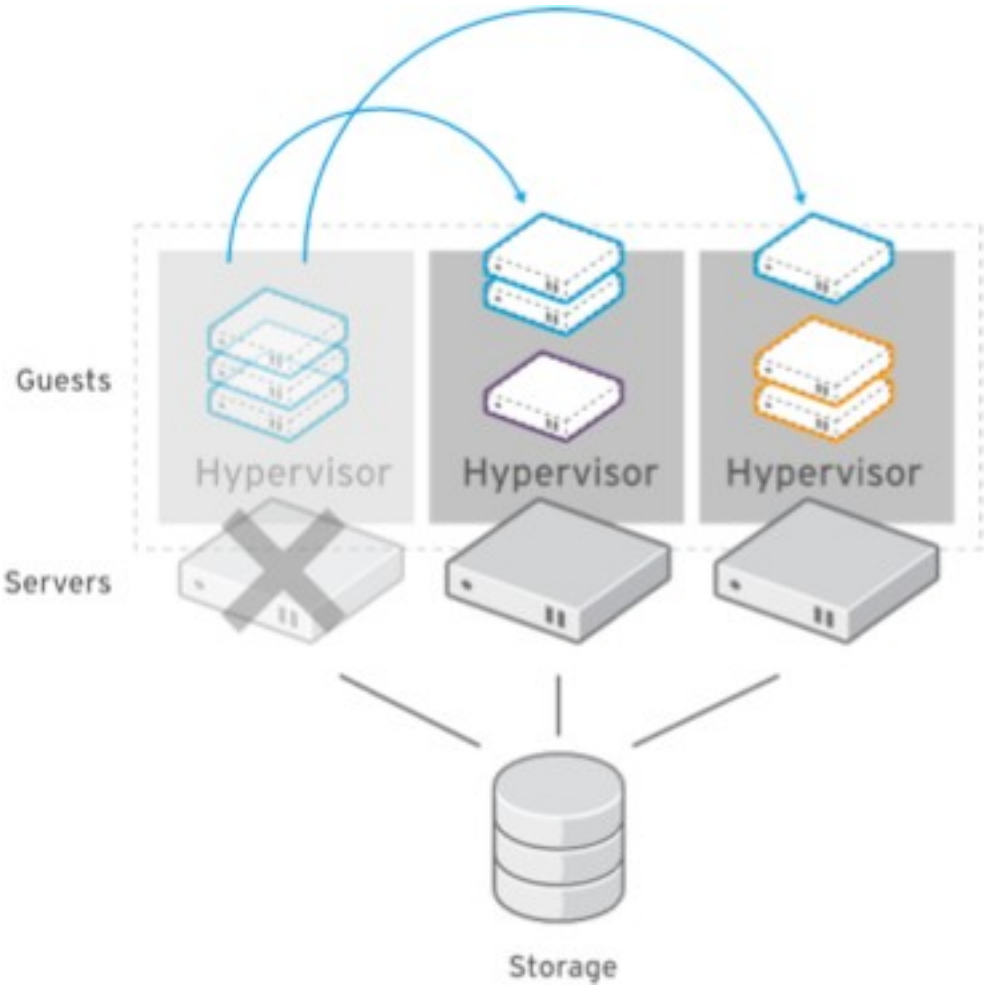
General

- KSM – secure memory page sharing
- Assign User Roles (Users -> Configure -> Role)
- Script common tasks/reports
- Limit desktop and server VMs to certain hosts
- Use FQDN from certificate when accessing RHEV-M

Virtual Machine Provisioning

- PXE boot from RHN Satellite
- PXE boot Windows from RHEL
- Templates, snapsnots
- Stateless booting
- If only using PXE, ISO domain not required

High Availability of VMs



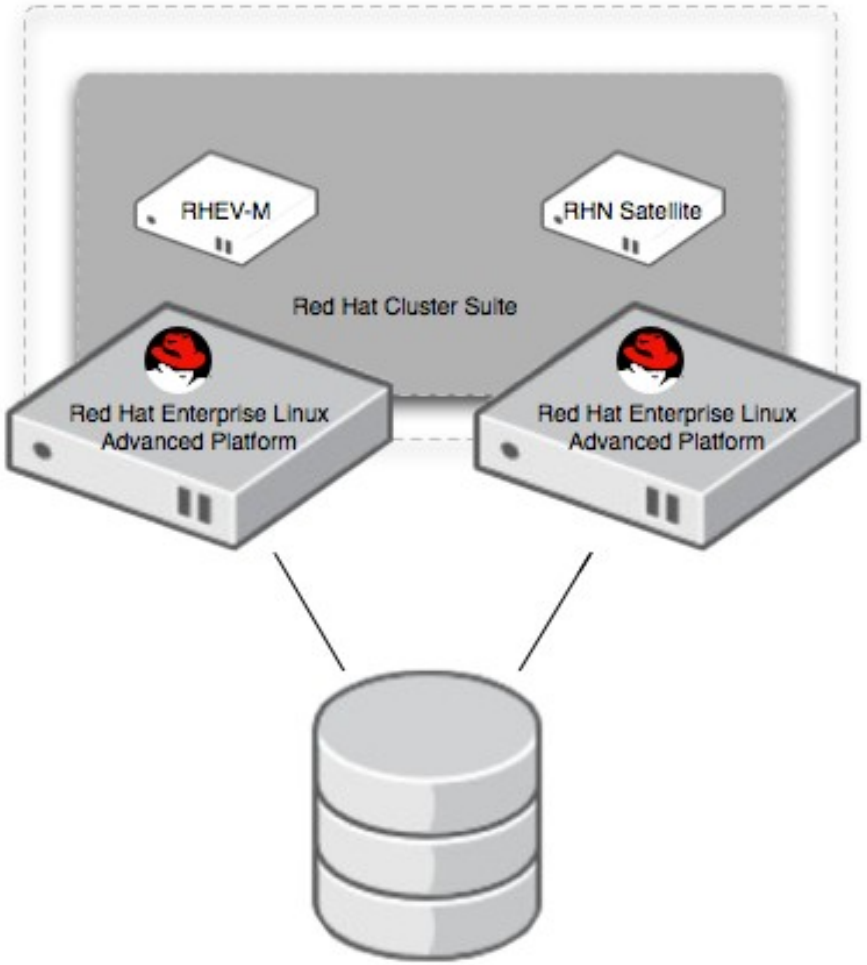
- Highly available infrastructure
- Continually monitor host systems and VMs
- Automatically restart VMs in case of host failure
  - Restarts on another host in cluster
  - No user intervention
- Use Live Migration to fail-back when host is back up

High Availability of RHEV-M

- What happens if RHEV-M system fails:
  - No new management is possible (create new VMs, etc)
  - All existing VMs continue to run
- Keep RHEV-M Highly Available:
  - RHEV-M can be virtualized as any other workload
  - RHEL 5.5 AP KVM Virtualization and RHCS
  - Other Methods (not supported)
    - Other cluster services using external database
    - Active/Passive failover

High Availability of RHEV-M with RHEL 5.5 AP

- Configure Red Hat Cluster Suite (Advanced Platform)
- Install Windows as a VM (use VirtIO drivers)
- Configure VM as an HA service
- Test Live Migrations and failover

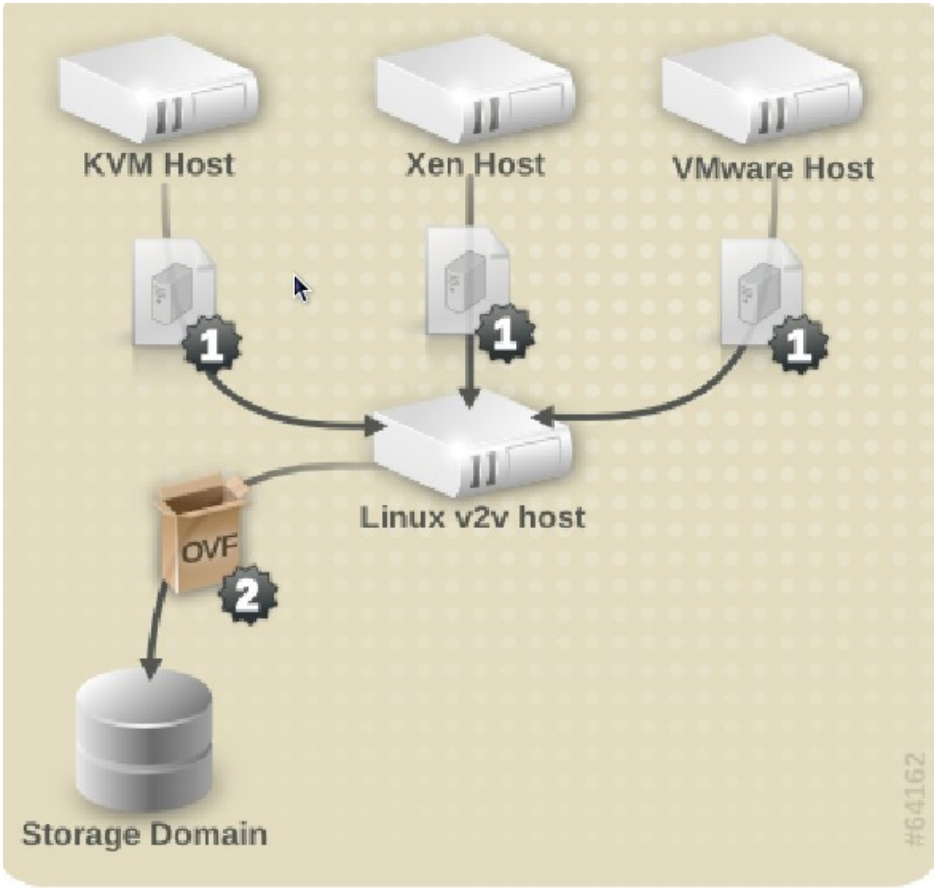


Advanced Use

- Importing and Exporting VMs
- API scripting
  - Powershell today
  - RESTful for portability
- Search Bar Filtering/Bookmarks/tags
- Integrating with RHN Satellite
- Integrating with MRG

Importing and Exporting VMs

- Virt-v2v converts from:
  - VMware ESX
  - Xen (libvirt managed)
  - KVM (libvirt managed)
- Converted into OVF and placed in Export domain
- Imported from RHEV-M
- RHEL VMs today
- Windows VMs soon



Troubleshooting

- Log collector on RHEV-M
- RHEV-H support menu
- sosreport on each RHEL system
- DNS resolution on everything

Upgrading to RHEV 2.2

- Update to Powershell 2.0
- Backup RHEV database (just in case)
- Update RHEV-M
- At least one host must be up for live upgrade
- For each host:
  - Maintenance mode
  - Upgrade RHEV-H/ Re-install RHEL
  - Switch from compatibility mode when all hosts done
- Upgrade RHEV-Tools

Upgrading – Additional Notes

- Upgrades will be more streamlined in the future
- Hosts can be upgraded via USB/ISO/PXE too
- Windows 2008 64-bit required for new installs
- Windows 2003 32-bit upgraded is supported

In Development

- Java Backend
- Java Manager
- More client support
- More scaling
- REST/SOAP API
- https://fedorahosted.org/rhevm-api/

Customer Use Cases

Customer Use Cases

- IBM (Development Test Cloud)

- Voddler (video streaming)

- NTT Communications

- Euronet

- Etisalat

Customer Use Cases

- IBM – Smart Business Development and Test Cloud
  - RHEV Hypervisor deployed extensively
  - SELinux Security is critical
  - Uniform, ease of management is important
  - IBM-customized tools integrated with hypervisor

Customer Use Cases

- Voddler
  - Streaming Media Services
  - Full RHEV Deployment
  - Serves millions of videos per year
  - Stability, Security, Scalability, Cost-effective

Customer Use Cases

- NTT Communications
  - Cloud Computing and Hosting Services
  - Full RHEV deployment
  - KVM POC lead RHEV adoption
  - Scalability, Reliability, Performance

Customer Use Cases

- Euronet
  - Payment Services – Business Critical Functions
  - Full RHEV Deployment
  - Migrated Microsoft Windows Server workloads to RHEV running in RHEL VM's
  - Power and Hardware Savings
  - Lowered Maintenance Costs

Customer Use Cases

- Etisalat
  - Primary Infrastructure Applications
  - Full RHEV Deployment
  - Mix of RHEL and Windows Server VM's
  - Adopted RHEV virtualization due to rapid growth
  - RHEV supplied technology to support on-demand scalability

More Information

- kbase: access.redhat.com/kb (enter DOC-*)
- redhat.com/rhev
- redhat.com/consulting
  - RHEV Quickstart
  - Strategic Migration Planning Guide
- redhat.com/training
  - RH318

Related Red Hat Summit Sessions

Session	Track	Date	Time
Clustered Application Services & Filesystems with Red Hat Enterprise Linux 6	Decoding the Code	Wed Jun 23	3:10 pm - 4:10 pm
V2V Moving VMware & Xen Virtual Machines to Red Hat Enterprise Virtualization / KVM	Decoding the Code	Thu Jun 24	10:20 am - 11:20 am
Cutting Costs with Red Hat Enterprise Virtualization	Open Source for IT Leaders	Thu Jun 24	11:30 am - 12:30 pm
Virtualizing Windows & Linux Desktops Using Red Hat Enterprise Virtualization for Desktops	What's New	Thu Jun 24	2 - 3 pm
Red Hat/Microsoft Virtualization Collaboration and Running Red Hat Enterprise Linux on Microsoft Hyper-V	What's New	Fri Jun 25	9:45 am - 10:45 am

References

- redhat.com/docs
  - Red Hat Enterprise Virtualization
    - Deployment, Installation,
    - Administration, API Guides
  - Red Hat Cluster Sutie/Red Hat GFS
    - Red Hat Cluster Suite Overview
    - Configuring and Managing a Red Hat Cluster
  - Red Hat Network Satellite
    - Installation, Reference, Client Configuration, API Guides

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