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RHEV Best Practices and Advanced Use

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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
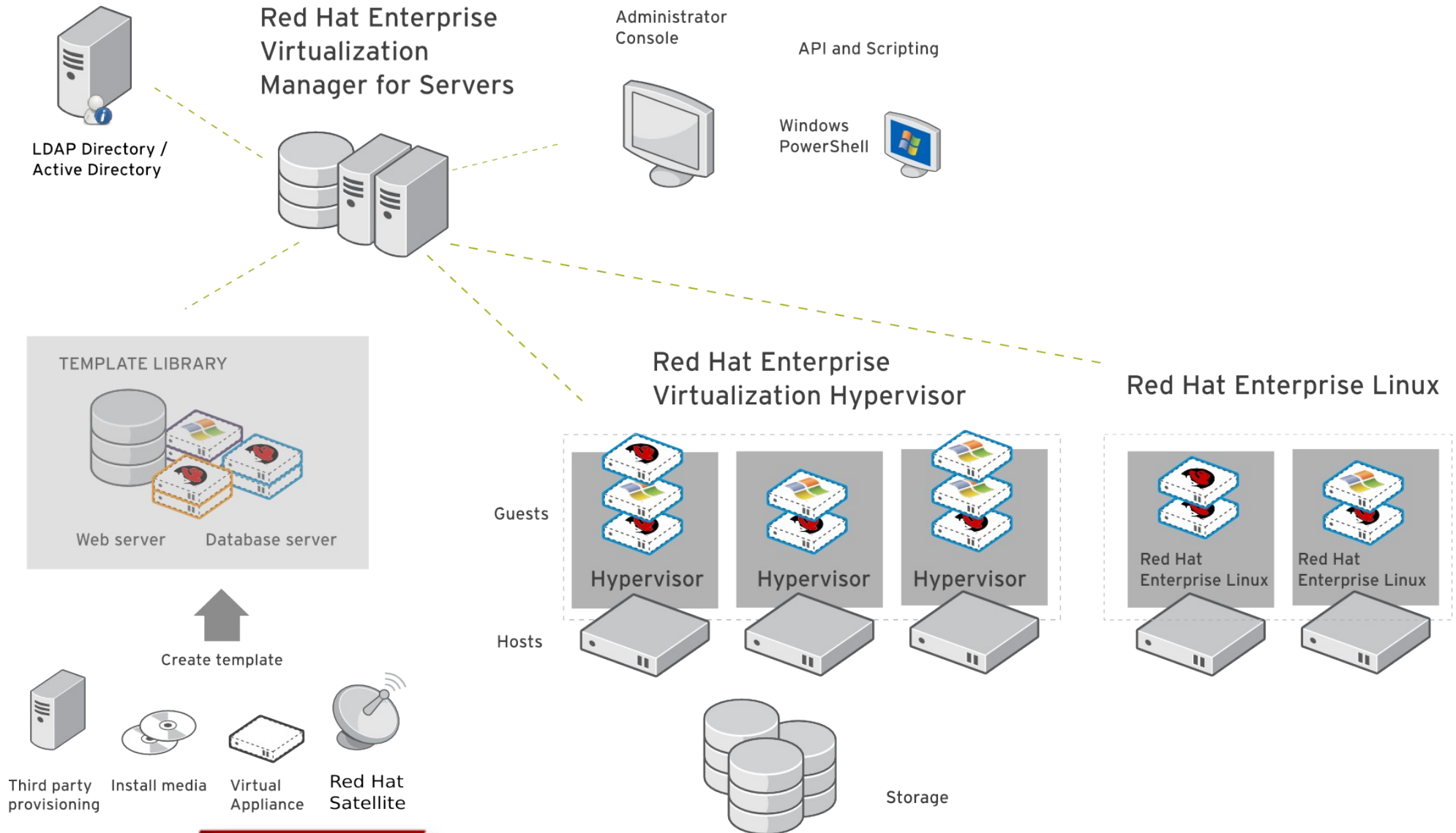
  - Red Hat Enterprise Linux 5 with KVM

Red Hat Enterprise Virtualization for Servers

Red Hat Enterprise Virtualization Manager for Servers

LDAP Directory / Active Directory

Administrator Console

API and Scripting

Windows PowerShell

TEMPLATE LIBRARY

Web server   Database server

Create template

Third party provisioning   Install media   Virtual Appliance   Red Hat Satellite

Red Hat Enterprise Virtualization Hypervisor

Red Hat Enterprise Linux

Guests

Hypervisor   Hypervisor   Hypervisor

Red Hat Enterprise Linux   Red Hat Enterprise Linux

Hosts

Storage

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
- Provision RHEV-H with kernel parameters

Network

- Bonding

- VLANs

- DOC-26977, DOC-22959

- Network Ports

  - Host: ICMP, 22, 5634, 6166, 49152, 49216, 54321, 5534 – 6166, ports for fencing

  - RHEV-M: ICMP, 80/443, 8006-8009, netconsole port

Storage

- ISO domains can be shared across datacenters

- Preallocate disks for maximum performance

- Renaming Domain Name (DOC-21996)

- VirtIO for Windows VMs (DOC-24866)

- NFS tuning (ISO domain)

- iSCSI tuning (Jumbo Frames)

- Vdsm:kvm (36:36) for ISOs – use set-GID for kvm

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
  - Certificate/security issues
  - Co-locate only with required agents
  - 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

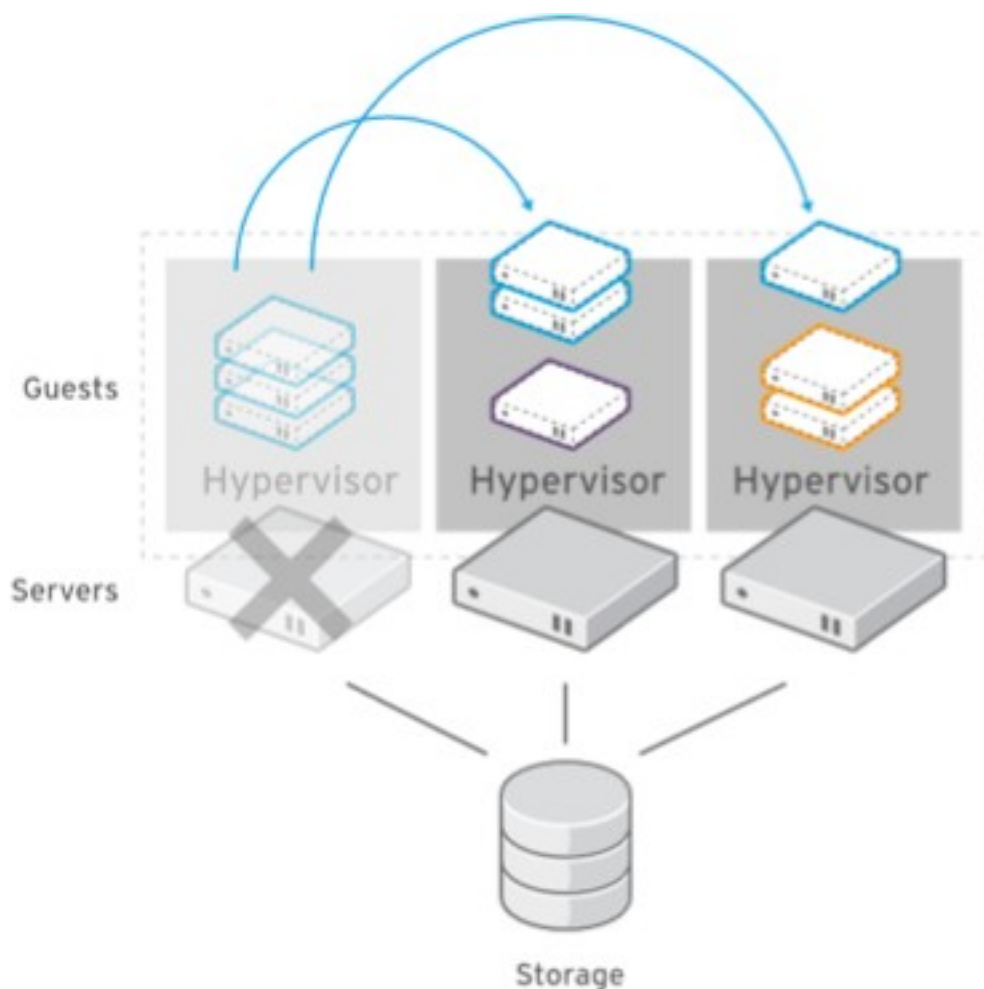- Use FQDN from certificate when accessing RHEV-M

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

Guests

Hypervisor   Hypervisor   Hypervisor

Servers

Storage

High Availability of RHEV-M

- RHEL 5.5 AP KVM Virtualization and RHCS
  - Configure Red Hat Cluster Suite (Advanced Platform)
  - Install Windows as a VM (use VirtIO drivers)
  - Configure VM as an HA service
  - Test Live Migrations
  - Failover testing
- Other Methods (not supported)
  - Other cluster services using external database
  - Active/Passive failover

Advanced Use

- API scripting

- Virt-v2v:

    - VMware ESX

    - Xen (libvirt managed)

    - KVM (libvirt managed)

- Search Bar Filtering/Bookmarks/tags

- Integrating with RHN Satellite

- Integrating with MRG

Troubleshooting

- Log collector on RHEV-M

- sosreport on each RHEL system

- DNS resolution

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 uprade

- 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

- Windows 2008 64-bit required for new installs
- Windows 2003 32-bit upgraded is supported

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

etisalat

In Development

- Java Backend

- Java Manager

- More client support

- More scaling

- REST/SOAP API

More Information

- kbase.redhat.com (enter DOC-*)

- redhat.com/rhev

- redhat.com/consulting

    - RHEV Quickstart

    - Strategic Migration Planning Guide

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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