



# Red Hat Enterprise Virtualizáció

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# Agenda

ULX introduction

Virtualization Benefits Brief

Red Hat Enterprise Linux 5.{0-3} Virtualization

Red Hat Enterprise Linux 5.4+ Virtualization

The Linux Kernel – Scalability, Security, Performance

Managing your Virtualization Infrastructure

Red Hat Enterprise Virtualization

# About ULX Open Source Consulting & Distribution

Enterprise Open Source business since 1999

Red Hat exclusive distributor

Full delivery of products and services for Hungary

Training / Examination Centre for Red Hat & JBoss

Government framework agreement (KSZF) for Red Hat

Enterprise-class solutions for the Red Hat ecosystem

# Benefits of Virtualization

Consolidation

Increased utilization

Power/Cooling Savings (Green IT)

Leverage new technologies (FCoE, 10G)

Rapid provisioning

Manage risks and minimize costs

Extend legacy software lifecycle

Dynamic software fault tolerance

Hardware fault tolerance through live migration



# Xen Virtualization

Red Hat Enterprise Linux 5 includes Integrated virtualization

Xen Hypervisor

- Included in 5.0

- Fully Supported during product lifetime

  - Until at least 2014 (later with Mission Critical program)

- Using Xen 3.1.2 (with selected backports)

- Available for x86, x86\_64 and IA64

Red Hat Enterprise Linux Advanced Platform

- Includes GFS Cluster file system and Red Hat Cluster Suite

- Unlimited virtualized guests



# Red Hat Enterprise Linux 5.4+ Virtualization

# Kernel Virtual Machine

## KVM Hypervisor

Added in RHEL 5.4

Included in bare metal kernel

Hypervisor available for x86\_64 only (guests can be mixed)

Requires Intel VT-x (VMX) or AMD AMD-V (SVM)

Support for RHEL {3-5} guests, other Linux distros

Support for Microsoft Windows Servers guests (Windows Server 2003, 2008), and Windows XP, Windows Vista

Paravirtualized drivers for network and disk (WHQL certified)

Microsoft SVVP Certification

Xen will continue to be shipped and supported in RHEL 5.4+  
(2014)

# RHEL 5.4 Virtualization

Support for advanced hardware features for both Xen and KVM

- VT-d/IOMMU for secure PCI Pass-through

- SR-IOV for PCI device sharing

- Hardware assisted virtualization

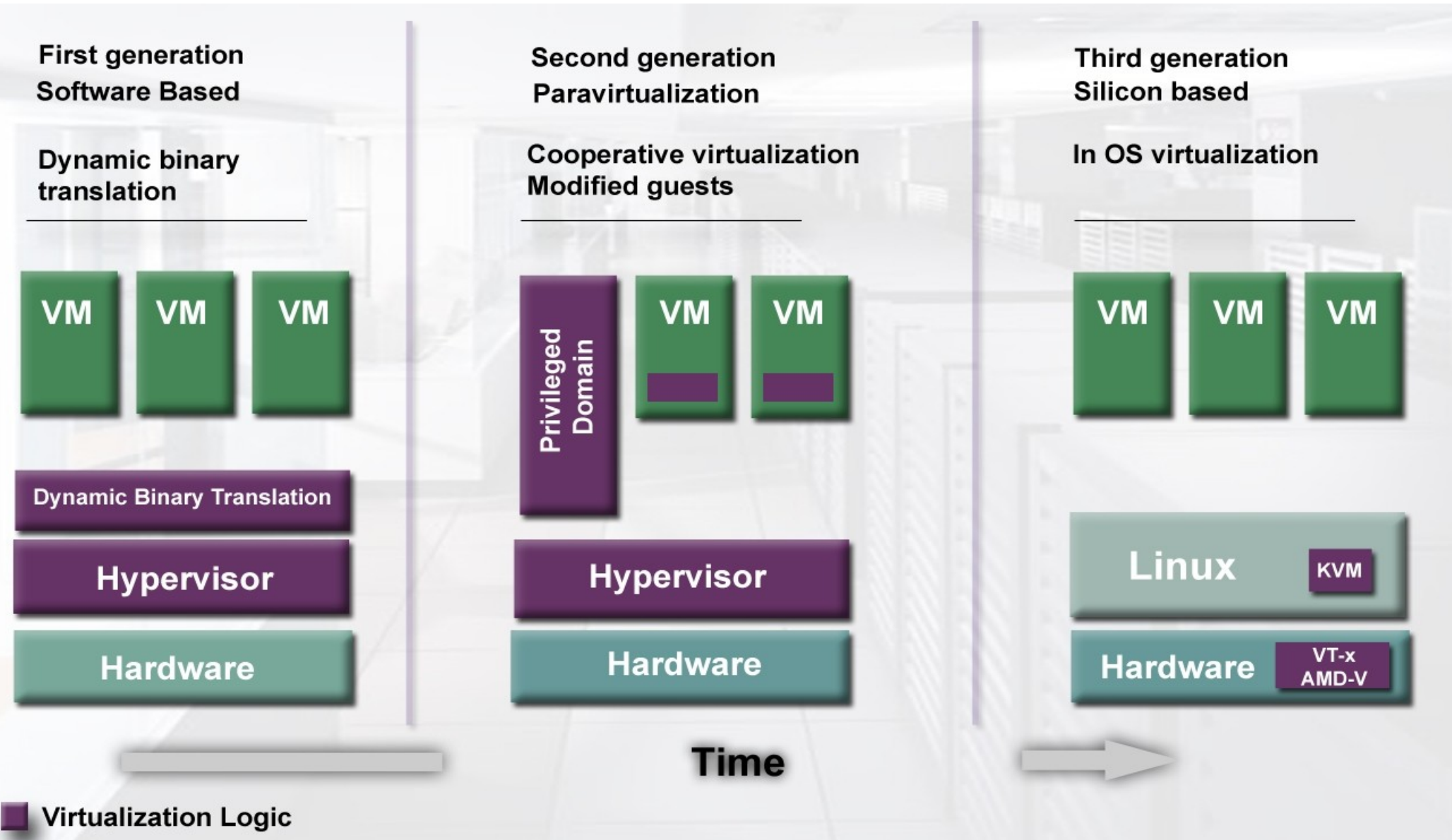
Performance and scalability out-of-the-box

Management compatibility via libvirt

Virt-tools allow transparent transition

Tools to transition from Xen to KVM (para or HVM)

# Evolution of x86 Virtualization



# Virtualization with the Linux Kernel

All certifications immediately apply

Performance tuning done as normal kernel process

Offload work to hardware

NUMA, huge pages, Kernel Shared Memory, CPU scheduling, power management, SELinux, etc.

256 cores, 1TB RAM

Xen makes sense for some workloads (hardware without virtualization extensions)

Xen always needs specialized knowledge to code to

KVM is just another process

# Red Hat Enterprise Virtualization Manager

ENTERPRISE VIRTUALIZATION

Logged in user: rhevadmin | Sign out | Configure | About

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Data Centers Clusters Hosts Storage Virtual Machines Pools Templates Users

New Edit Remove

New Server New Desktop Edit Remove Run Once [▶] [⏸] [⏹] [🖥] Migrate Make Template Custom Actions Assign tags

Name	Cluster	Host	IP Address	Memory	CPU	Network	Display	Status
RHEL-53	Default			0%	0%	0%		Down
Window-2003	Default	station	.1	11%	0%	1%	VNC	Up
Windows-XP	Default			0%	0%	0%		Down

- New
- Edit
- Remove
- Run
- Suspend
- Shut down
- Stop
- Migrate
- Make Template
- Run Once
- Console: VNC
- Change CD

General Network Interfaces Virtual Disks Snapshots Ap

Create Preview Commit Undo

June, 2009

Su	Mo	Tu	We	Th	Fr	Sa	Time	Description	Disks	Installed Applications
31	1	2	3	4	5	6	11:41 AM	Snapshot-01	1	
7	8	9	10	11	12	13				
14	15	16	17	18	19	20				
21	22	23	24	25	26	27				
28	29	30	1	2	3	4				
5	6	7	8	9	10	11				

History

# Red Hat Enterprise Virtualization Hypervisor

## Scalability

Host: 96 cores, 1 TB RAM

Guest: 16vCPU, 64 GB RAM

## Industry Standards

Trusted RHEL kernel + KVM

High performance VirtIO drivers

Libvirt management interface

## Advanced Features

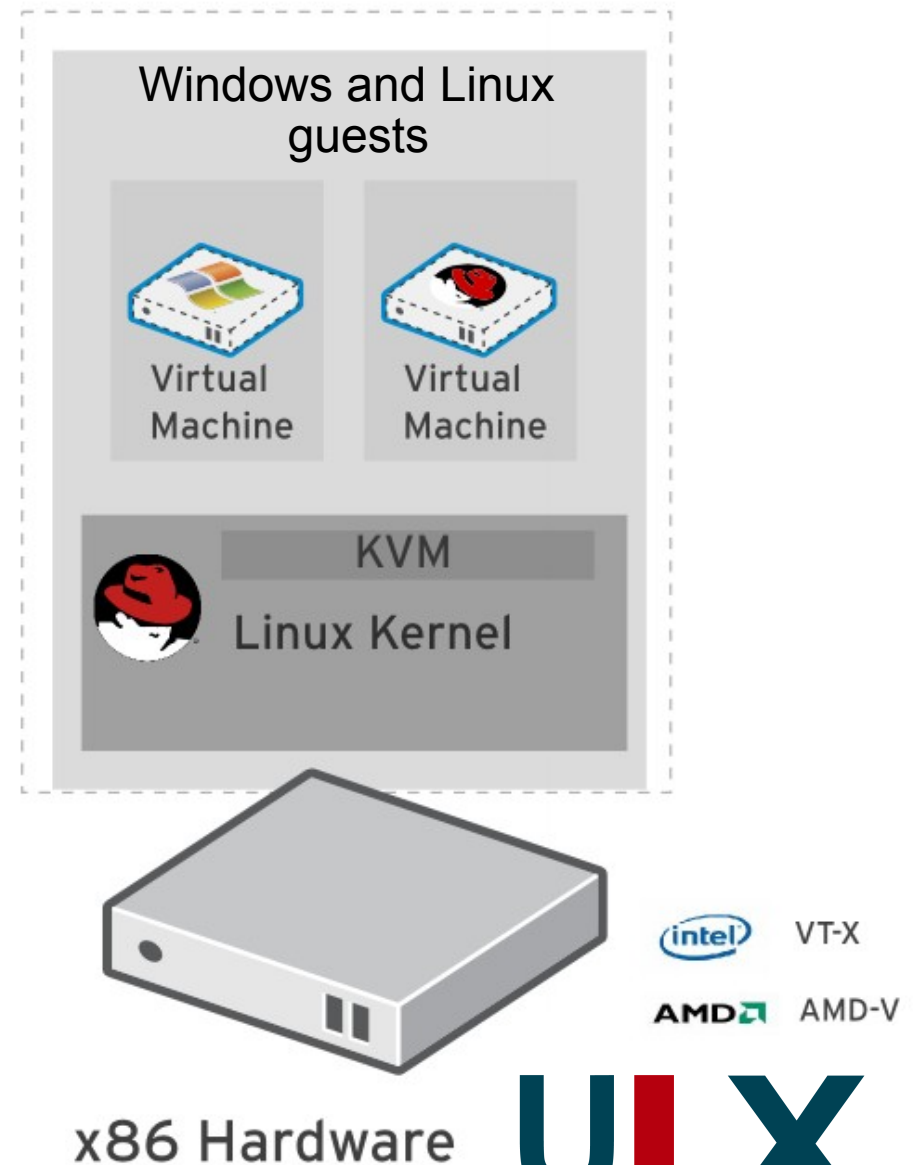
Memory Page sharing

SELinux for high security and isolation

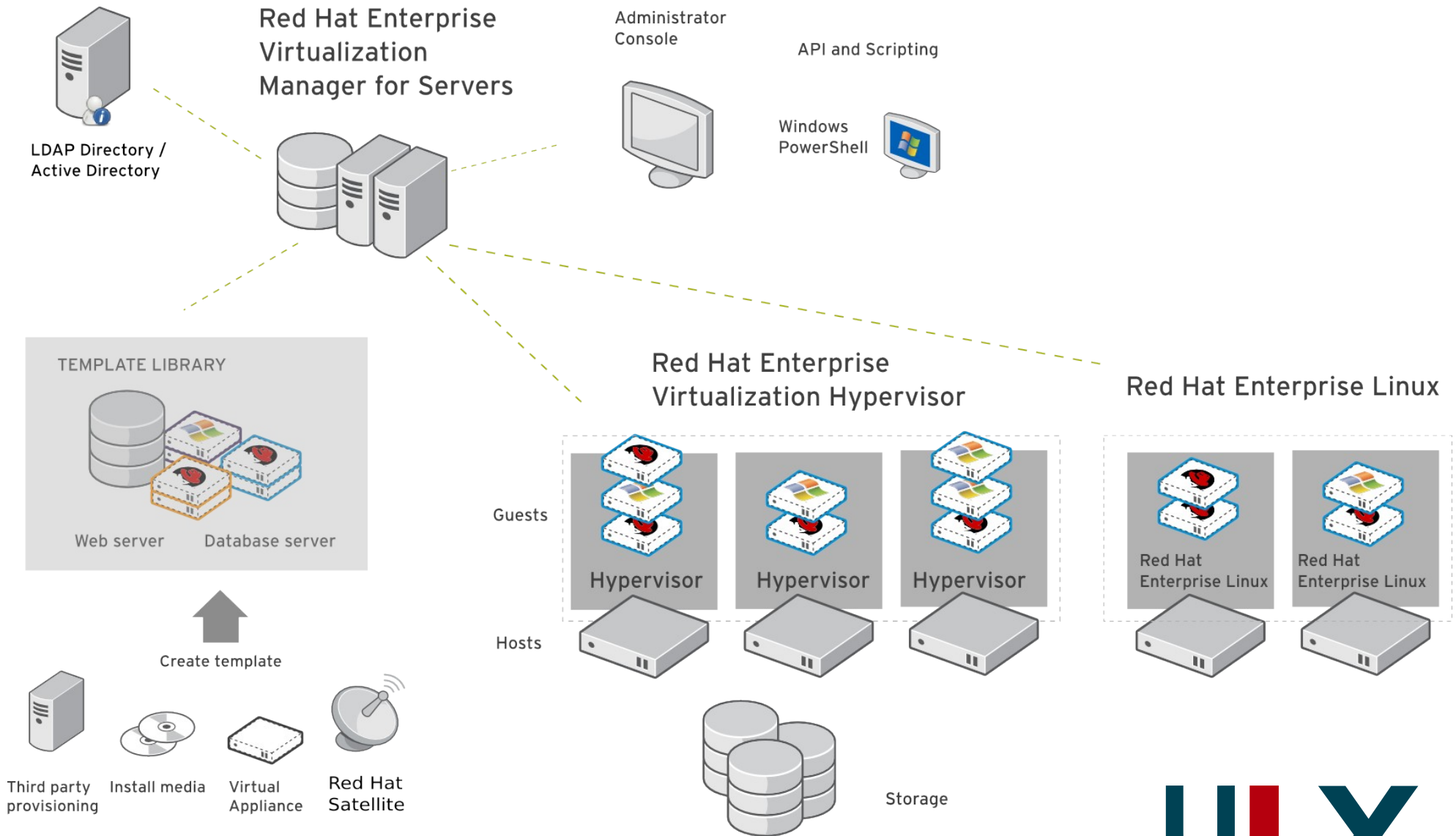
Live migration

Snapshots

Thin provisioning



# Red Hat Enterprise Virtualization - Servers



# Red Hat Enterprise Virtualization - Desktops

