



**RED HAT ENTERPRISE
VIRTUALIZATION
SCALING UP LOW LATENCY,
VIRTUALIZATION, AND LINUX FOR
WALL STREET OPERATIONS**

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RED HAT ENTERPRISE VIRTUALIZATION

Enterprise grade, centralized management and hypervisor for server and desktop virtualization

Industry leading performance, scalability and security infrastructure

Ecosystem of thousands of hardware and software vendors

50–70% lower cost compared to other solutions



ADVANCED LINUX HYPERVISOR TECHNOLOGY

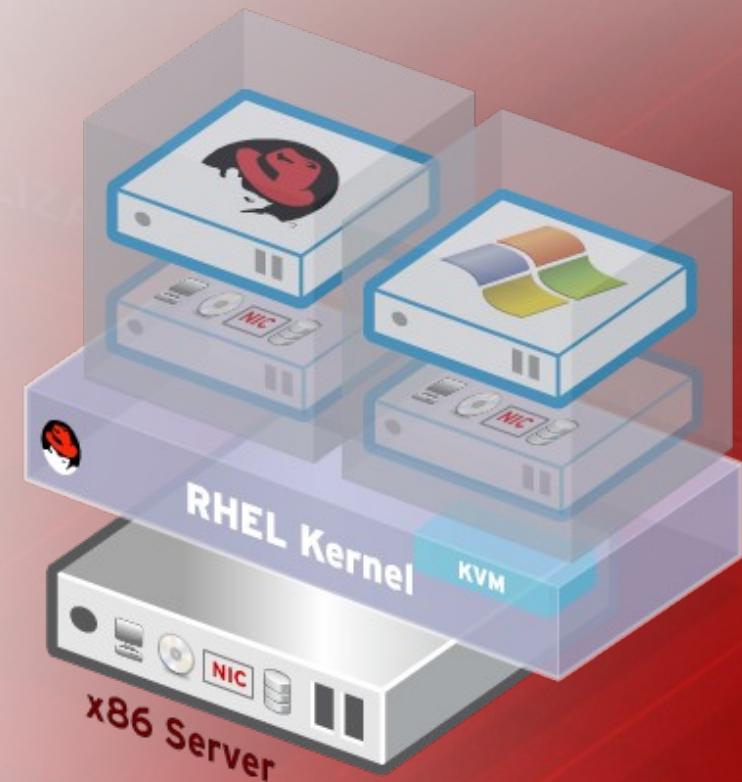
Leverages KVM (Kernel-based Virtual Machine) technology – integrated with the Linux kernel

Host scalability: 192 cores, 1 TB RAM. Guest scalability: 16 vCPU, 256 GB RAM

Advanced capabilities: memory page sharing, SR-IOV, VT-D, SELinux based security policy

Supports unmodified Linux and Windows virtual machines

Performance: Commonly 85%-95% of bare metal



BENEFITS OF LINUX KVM MODEL

Leverages Linux – no need to re-invent the wheel

- Built on trusted, stable enterprise grade platform
- Scheduler, memory management, hardware support etc.
- Ease of management – use same tools for managing physical servers and hypervisors

Advanced features

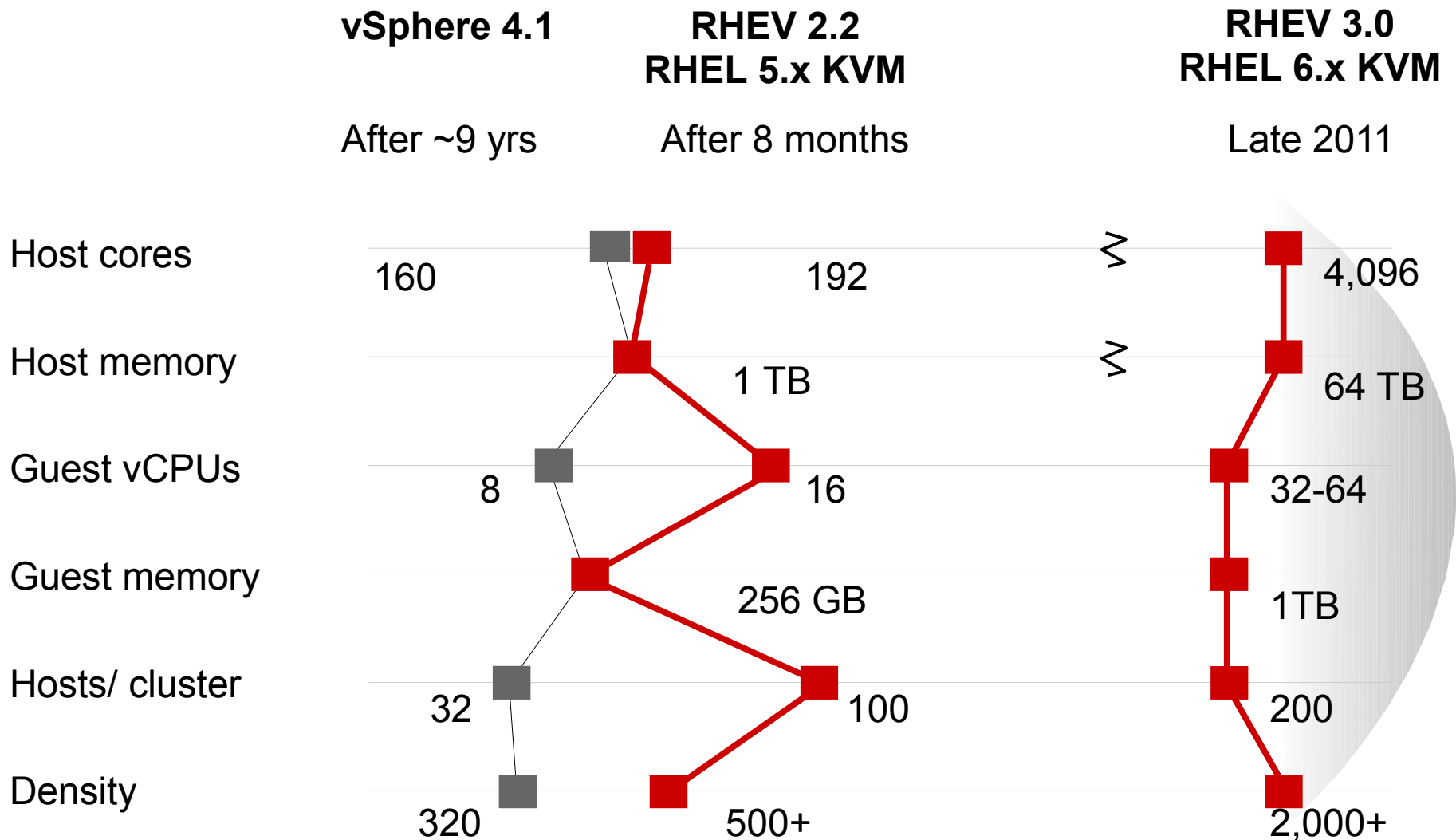
- Inherit scalability, NUMA support, power management, hot-plug etc. from Linux – others have to develop from scratch
- SELinux security, advanced scheduler, RAS support etc.

Hybrid-mode operation

- Run regular Linux applications side-by-side with Virtual Machines on the same server – much higher degree of hardware efficiency

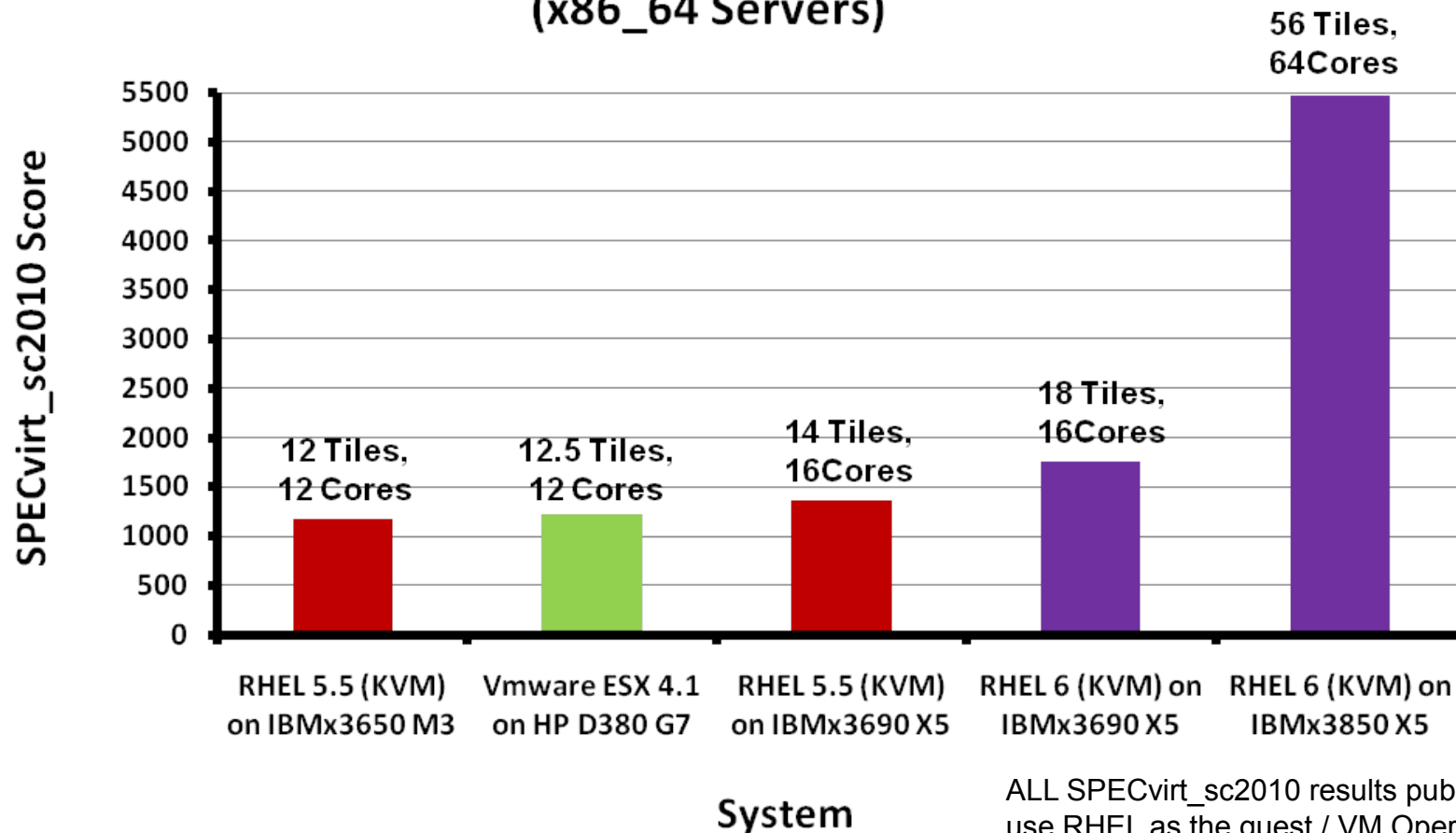


RED HAT ENTERPRISE VIRTUALIZATION SCALING LINUX AND VIRTUALIZATION



REAL WORLD RED HAT ENTERPRISE VIRTUALIZATION PERFORMANCE

SPECvirt_sc2010 Results (x86_64 Servers)



ALL SPECvirt_sc2010 results published to date use RHEL as the guest / VM Operating System! RHEL 6/RHEV 3 shows 29% better SPECvirt performance than RHEL 5/RHEV 2 on the same hardware!

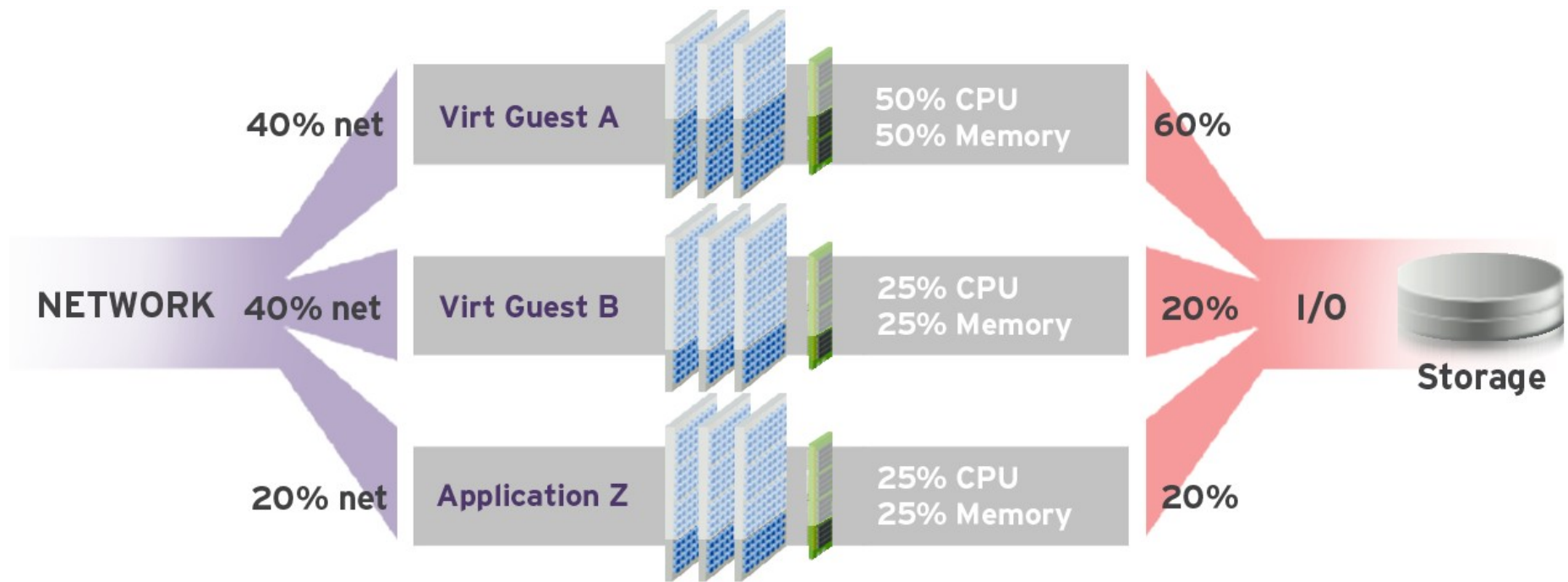
"SPECvirt_sc2010 Benchmark Results " December 2010



CONTROL GROUPS (RHEL6/RHEV3)

Ability to manage large system resources effectively

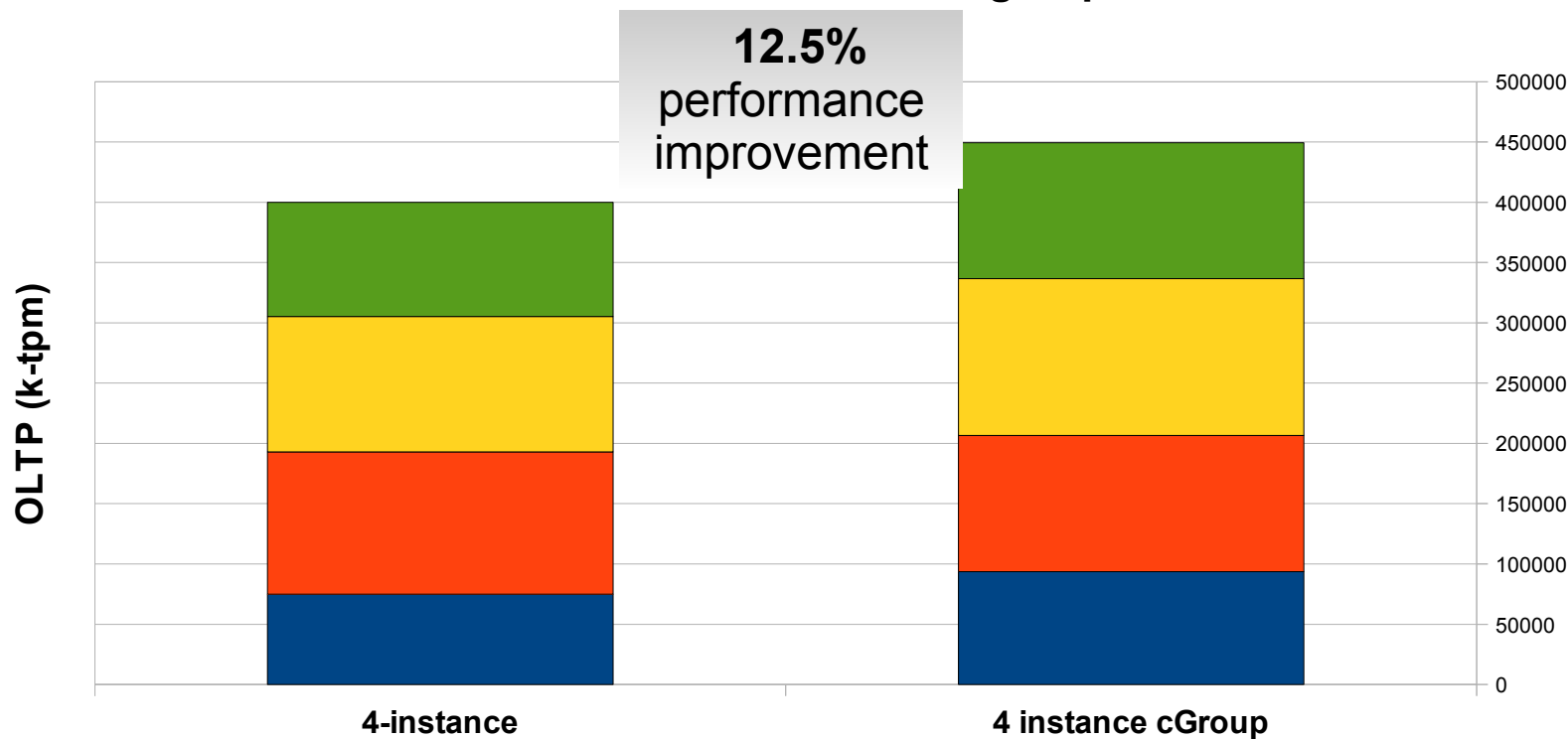
- Control Group (Cgroups) for CPU/Memory/Network/Disk
- Benefit: guarantee Quality of Service & dynamic resource allocation
- Ideal for managing any multi-application environment



CGROUPS IMPROVE PERFORMANCE

Resource Management with cgroups reduces application or VM contention and improves throughput

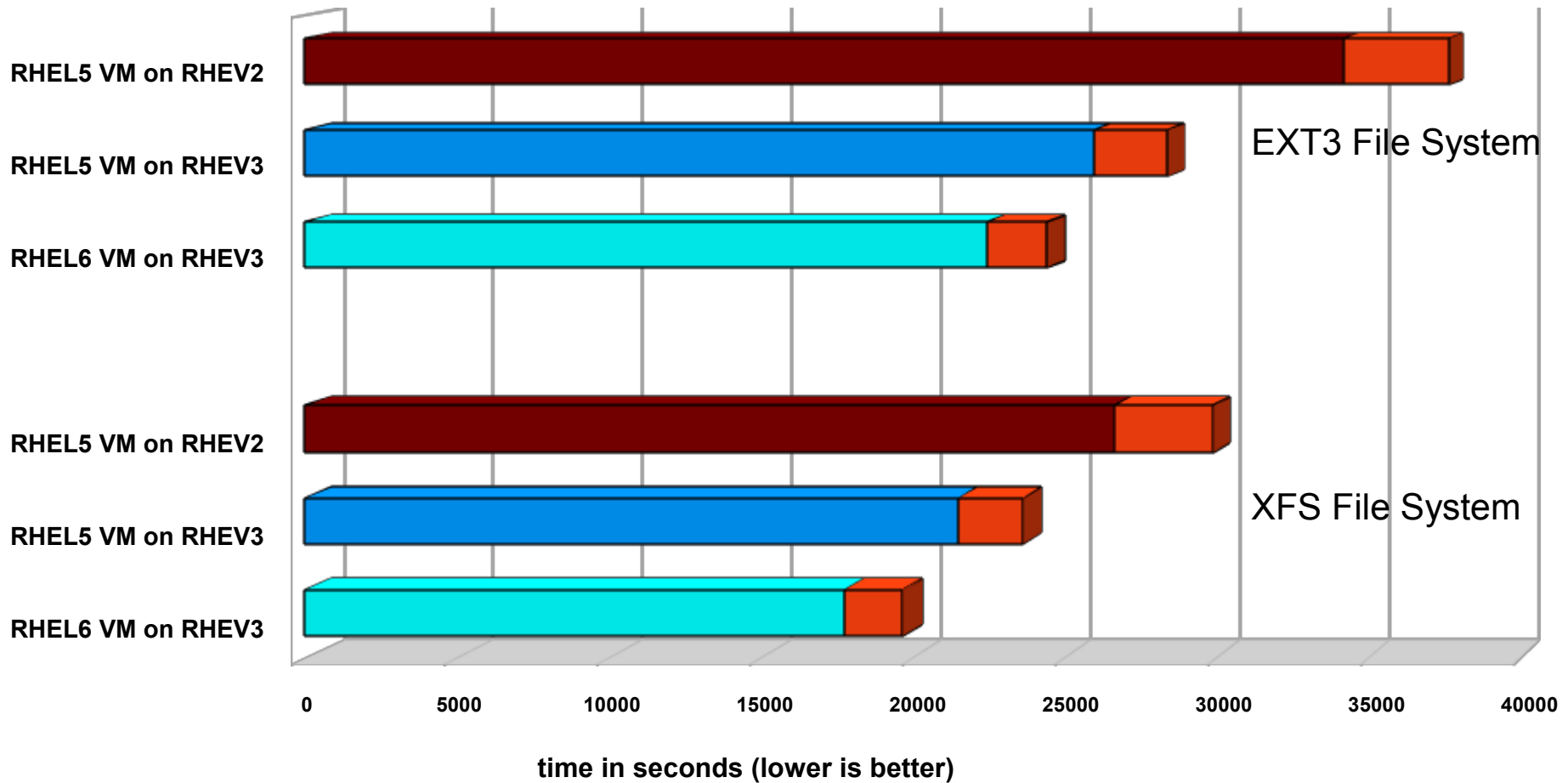
RHEL6 Database Perf w/ Cgroups



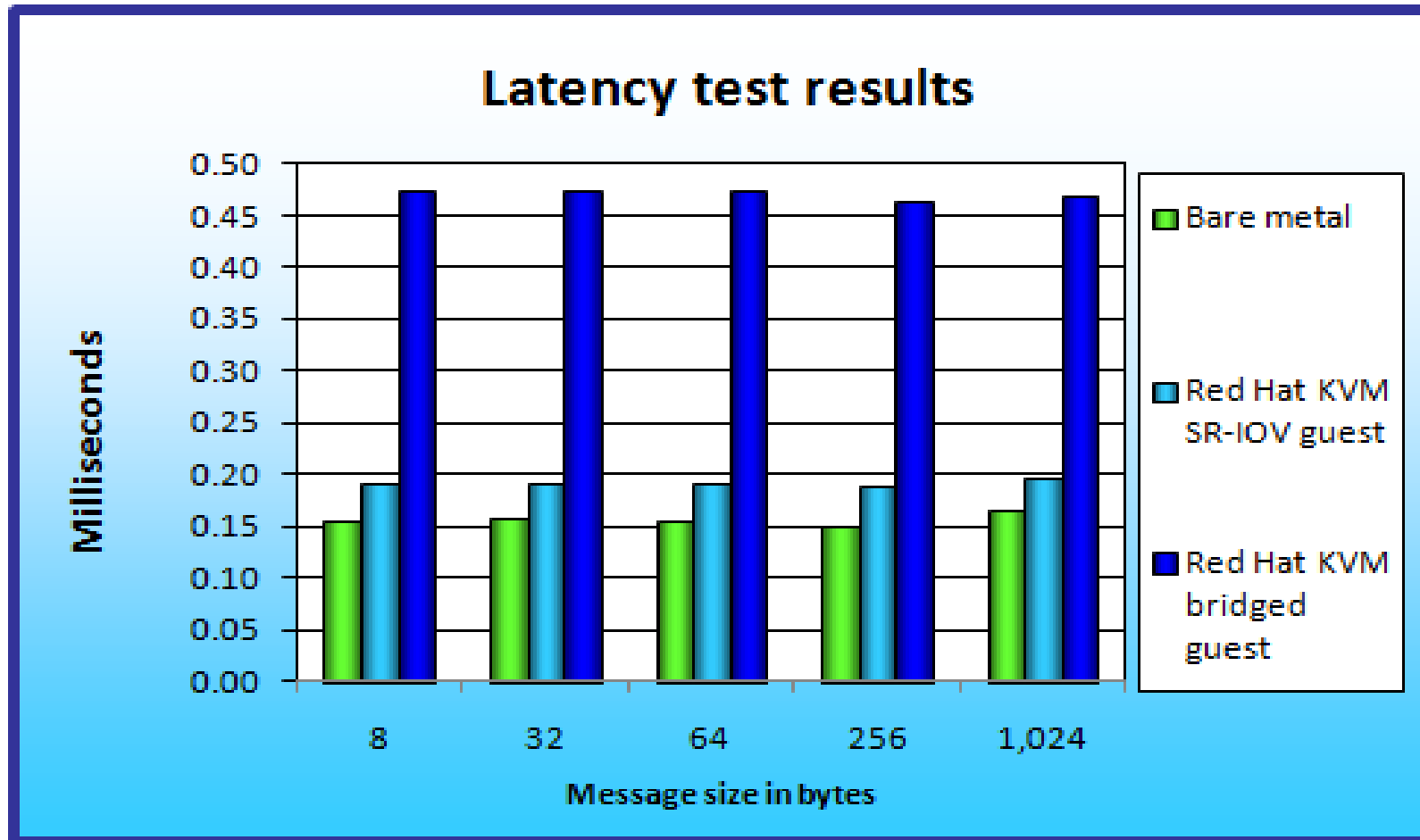
RHEL6 + RHEV3 CUMULATIVE BOOST IN PERFORMANCE

SAS multi-stream workload in KVM guest
Intel Nahelem 8core, 48GB, 2FC
Guest (8x44GB virtio, nocache)

■ SAS-systime
■ TOTAL-SAStime (HOSTS: red=R5 blue=R6)



LATENCY REDUCTION THROUGH ADVANCED TECHNOLOGIES SUCH AS SR-IOV

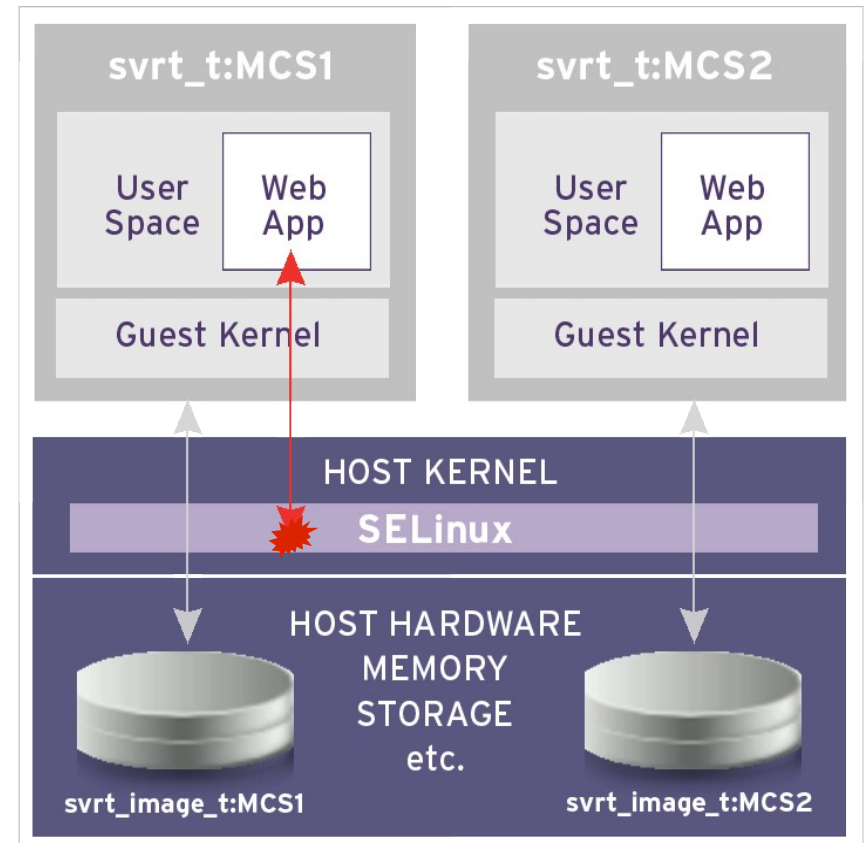


SR-IOV performance advantage: Red Hat Enterprise Linux 6
Principled Technologies



SELINUX AND SVIRT SECURITY

- ***Applying security labels to individual guest virtual machines and their resources***
 - Guest Isolation achieved with SELinux Mandatory Access Controls (MAC)
 - Protect against untrusted Guest VM
 - Protect against Host misconfiguration
 - Prevents unauthorized access of Guests/Host
 - Builds on existing, proven security mechanisms & controls





THANK YOU!

**For more information, please visit
<http://www.redhat.com/rhev/>**

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