

Boost and Simplify Your Cloud Infrastructure with Red Hat Enterprise Virtualization and Mellanox End-to-End Interconnect Solutions



For IT service providers, making a decision about the best way to build their private or public clouds is not an easy one. A critical element in any cloud solution stems from concerns over complexity, performance, and scalability.

Red Hat Enterprise Virtualization combined with Mellanox's server and storage interconnect solution offers enterprises pretested and modular platform on which to base large scale virtualization initiatives and internal/private cloud deployments.

Scalability

With virtualization scalability being a question of how well your hypervisor host performs under higher consolidation loads of increasing VM density, Red Hat Enterprise Virtualization (RHEV) Kernel-based Virtual Machine (KVM)-based hypervisor has proven to be the industry leader for performance and scalability among virtualization platforms. Higher VM density translates into a greater consolidation ratio and lower capital and operational costs, meaning fewer physical servers are needed to support the same virtualized infrastructure. And RHEV can support these higher densities due to the efficiency of the KVM hypervisor combined with advanced features as memory optimization, transparent huge pages, SR/IOV and CPU Pinning and NUMA support. Another key element in the ability to scale cloud infrastructure is to centralize the network infrastructure, maintenance and monitoring, and automate the user processes to minimize administrator work and potential errors. Mellanox Unified Fabric Manager™ (UFM™) addresses and automate the complete fabric life-cycle: policy based monitoring, and event correlation. UFM™ also automate maintenance tasks such as switch & NIC firmware/software upgrades, central device, network, and application level monitoring.

KEY MELLANOX ADVANTAGES

HIGHEST I/O PERFORMANCE

Up to 40 Gigabit Ethernet or FDR 56Gb/s InfiniBand interconnect speed enabling more Virtual Machines (VMs) per server while supporting the required performance for each VM

LOWEST CAPEX & OPEX CLOUD INTERCONNECT

Mellanox 10GbE and 40GbE solution reduces the interconnect cost by up to 72% and the entire cloud cost is reduced by up to 73%. The Cloud CAPEX with Mellanox 10GbE and 40GbE can go as nearly as 4X Lower versus the closest 10GbE based Cloud competitor.

ACCELERATING STORAGE ACCESS

Delivers parallel storage access to eliminate the storage bottleneck using VSA Software.

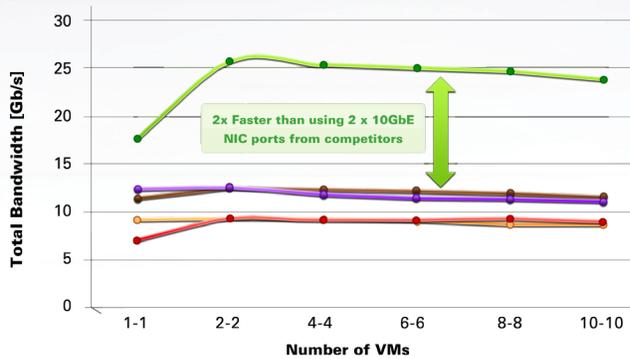
Unified Fabric Manager™ (UFM™)

Provides simple, automated management and monitoring of all storage traffic and I/O provisioning

Performance

Another virtualization element of concern is performance. Converting your underutilized, overbuilt systems to VMs should not compromise their performance. In fact, performance on a VM can exceed that of a physical machine through optimization. Plus, the overhead of virtualization is decreasing as RHEV technology excels at handling I/O-intensive workloads, such as guest environments that run database and CPU-intensive applications. Red Hat Enterprise Virtualization (KVM)-based hypervisor workloads take full advantage of virtualization-enhanced, multi-core CPU technology. Adding Mellanox 40GbE or FDR 56Gb/s InfiniBand Cloud interconnect solutions with RDMA capabilities to accelerate Hypervisor traffic such as storage access, VM migration, data and VM replication,

pushes the task of moving data from node-to-node to the Mellanox hardware. This yields much faster performance, lower latency/access-time, and lower CPU/hypervisor overhead, enabling leading performance for even the highest computing workloads.



Configuration:
 ConnectX®-3 40GbE vs 10GbE NICs from 2 leading vendors TCP iPerf benchmark

- Mellanox 40GbE
- Vendor A - 2 x 10GbE
- Vendor A - 1 x 10GbE
- Vendor B - 2 x 10GbE
- Vendor B - 1 x 10GbE

KEY RED HAT ENTERPRISE VIRTUALIZATION ADVANTAGES

SCALABILITY & PERFORMANCE

RHEV outperforms and out-scales any of the other market competitors. Proven by independent benchmark studies, the KVM hypervisor holds the current benchmark records for 2, 4, and 8 socket servers.

SIGNIFICANT COST ADVANTAGE

Open source based and offered through a subscription model, the pricing of RHEV can be up to 1/10th the cost of proprietary solutions. There are no complicated product editions or costly add-ons. All features and components are included in one simplified subscription offering.

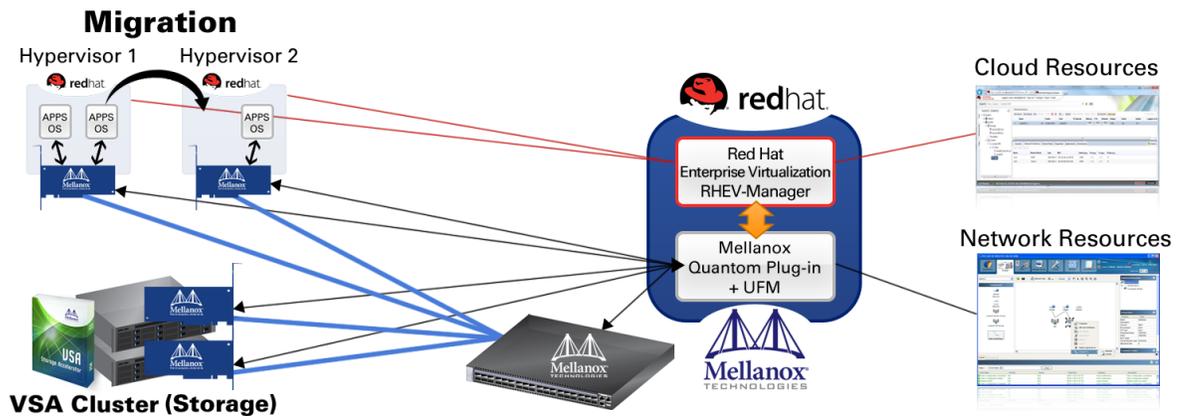
SECURITY

RHEV provides unmatched, military-grade security with the hardened, kernel-level SELinux and sVirt security technology to ensure isolation between virtual machines and between each machine and the RHEV Hypervisor.

Security and I/O Isolation

VMs require the same amount of security as a physical machine. VMs require all the same security precautions, patches, and due diligence one applies to physical machines. In addition, the hypervisor must also have guaranteed traffic for its own management, storage, and VM migration traffic. If certain amount of I/O traffic cannot be guaranteed for the hypervisor's use, the system can malfunction, or worse, fail. That is why many users don't take their chances and just install multiple adapters for different traffic classes. However this drives much higher costs, as it also would require multiple switches, and cables, and complexity.

Mellanox ConnectX® adapters and Mellanox SwitchX® based switches provide a high degree of traffic isolation in hardware, allowing true fabric convergence without compromising service quality and without consuming additional CPU cycles for I/O processing. Mellanox's solution provides end-to-end traffic and congestion isolation for fabric partitions, and granular control of allocated fabric resources.



350 Oakmead Parkway, Suite 100, Sunnyvale, CA 94085
 Tel: 408-970-3400 • Fax: 408-970-3403
www.mellanox.com