



RealTime IT News

**KVM vs. Xen vs. VMware. Is it a Hypervisor War?**

By Sean Michael Kerner

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For years, Xen and VMware have been the virtualization technologies of choice for open source operating systems vendors. With Red Hat's acquisition of [Qumranet](#) yesterday and its competing Kernel-based Virtual Machine (KVM) open source hypervisor the winds of change may be blowing, or not.

While Red Hat is now betting at least \$107 million that KVM is the future of virtualization, other vendors in the open source virtualization space aren't so sure.

Red Hat executives claim that it's not a hypervisor war, and that they are now engaged in a battle with only one other vendor that has an end to end platform, namely Microsoft. Among those that participate in the open source virtualization market, Citrix, Sun, Novell, VMware and Oracle all have a stake and few agree with Red Hat's vision.

Simon Crosby, the CTO of Citrix's virtualization and management division in particular has some harsh views on Red Hat's virtualization market positioning. In his view, Red Hat is an OS vendor and their direct competitors are other OS vendors like Novell and Oracle on the Linux side and Microsoft on the Windows side.

"They do not compete in the market for bare-metal or general purpose virtualization systems and certainly have nothing to do with the broader application delivery space. Crosby told *InternetNews.com*. "Their only interest is getting some level of virtualization built into the Linux OS so that Red Hat Linux is not at an even further disadvantage to Microsoft once Hyper-V begins shipping as part of Windows Server."

Crosby argued that it is Citrix's belief that the majority of the market will want bare-metal virtualization systems like XenServer and VMware ESX with some segments wanting virtualization built into the Windows OS through Hyper-V.

Crosby did acknowledge that Red Hat has been a useful contributor in the Xen.org project and that Xen is an integral part of Red Hat Enterprise Linux (RHEL) version 5. Red Hat has already publicly stated that it will continue to support Xen as part of RHEL.

However Red Hat has argued that KVM can offer certain management and performance gains over Xen, which is also something that Crosby takes issue with.

"KVM benchmarking is extremely selective," Crosby commented. "Where it does benefit in performance, it does so by sacrificing what we view as fundamental security concerns for enterprise virtualization deployments. Xen's deep separation of trust domains costs a bit in performance but provides the hard-line separation required for any secure deployment of virtualization."

Crosby argued that in general KVM is only as secure as the Linux host OS which is where the weaknesses may lie.

"We believe that the KVM / Linux model for virtualization is insecure at a fundamental level," Crosby claimed. "And any performance gains that Red Hat claims will be due to the inclusion in the Linux kernel of eminently attackable code."

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**Novell supports KVM, to a point**

Red Hat isn't the only Linux vendor backing KVM though, Novell is also a contributor to the KVM project and KVM is already part of openSUSE. Novell spokesperson Ian Bruce noted that Novell will continue to work with the Linux kernel and KVM community, and provide maintenance for the open source KVM community project. That said, Novell does have some concerns.

"We see KVM as an interesting developing technology," Bruce told *InternetNews.com*. "However, today KVM is still in the first stage of development and does not yet provide the same scalability, security, availability as well as the interoperability of the Xen hypervisor. KVM has not gone through the enterprise enablement and enterprise testing necessary to provide a support statement from Novell."

Bruce also noted that KVM relies on strong CPU performance with very limited support for para-virtualization. As such Bruce argued that it is difficult to achieve top performance in a KVM virtualized environment without powerful hardware underneath. Conversely in his view, Xen offers strong support for para-virtualization for modified Windows guests and modified Linux guests to achieve near-native performance.

**Sun has a different take**

Beyond just Novell and Red Hat, Xen is also a strategic technology for [Oracle](#) as well as Sun. Oracle was unavailable for comment about the impact that KVM may have on its business.

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Sun, however, isn't concerned. Vijay Sarathy, senior director of marketing, Sun xVM told *InternetNews.com* that KVM is only relevant to Linux.

"Sun's virtualization strategy is more heterogeneous and Xen's architecture is more suited to that end," Sarathy explained. "For example, with our xVM Server, a type 1 hypervisor, we have been able to integrate the Xen hypervisor with OpenSolaris in dom0 to enable Windows, Linux and Solaris guests to take advantage of the combined benefits."

Red Hat's KVM will also eventually compete against offerings from VMware as well. Red Hat and VMware are also partners, which is something that is not expected to change by VMware as a result of Red Hat's acquisition of Qumranet.

Dan Chu, vice president of emerging products and markets at VMware, told *InternetNews.com* that VMware has actually also worked with KVM on virtual machine disk formats and will continue to do so. However, Chu argues that the underlying operating system is not the key to hypervisor market success.

"Customers have been clear that they want an optimized thin virtualization layer that supports all of their environments, regardless of OS or application vendor," Chu said. "As opposed to having silos for each operating system or having a hypervisor that is built on a general purpose OS that has to be taken down every time they patch the operating system. Having a bare metal hypervisor like ESX which is optimized for all the major operating systems and application environments is what the market wants."