

STORAGE SWITZERLAND BRIEFING REPORT

VIRTENSYS' SHARED, DIRECT-ATTACHED PCIe ARCHITECTURE HELPS RESOLVE VMWARE STORAGE ISSUES



Eric Slack, Senior Analyst

[Virtensys](#) originally entered the nascent I/O Virtualization market with a line of appliances that used PCIe to connect servers and share Fibre Channel and Ethernet network interface cards. The primary value proposition of this product was to simplify the networking infrastructure and provide a more flexible, lower cost alternative to traditional Top of Rack switch topologies.

Recently, Virtensys refocused efforts on providing a high speed and high performance PCIe sharing infrastructure using their existing hardware virtualization engine. In addition to I/O resources, this solution can share internal storage, on SATA/SAS drives, traditional SSDs or PCIe-based SSD cards, with PCIe connected host servers. The typical use case for this solution is to consolidate and share formerly host-based PCIe SSD cards with other servers connected to the Virtensys appliance.

In dynamic environments, like server virtualization, this can result in significantly higher utilization of SSD resources, while improving flexibility and management. It can also provide a larger consolidated pool of storage than could otherwise be realized given the limited number of PCIe slots available in most servers. Finally, a shared PCIe

appliance can provide the high availability architecture that's missing with PCIe cards dedicated to a single server.

The VIO-4010 virtualization appliance is a 2U chassis that connects up to 16 servers to internal storage or externally connected networking resources. Currently, the unit supports up to 8 SATA hard drives or SAS SLC NAND solid-state storage devices and four industry standard I/O adaptors for 10GbE NICs or 6Gbps SAS/SATA RAID controllers.

Each host server installs a PCIe card to connect to the Virtensys chassis and uses native device drivers within the OS or hypervisor - no additional software required. It leverages the Virtensys hardware virtualization engine to provide a "shared, direct attached" storage solution, connecting each server to its own virtual RAID controller and eliminating storage and networking requirements within each host. This architecture also consolidates these resources allowing host servers access to the entire resource pool of up to 2M IOPS per appliance.

In a virtualized server environment SSD storage can be presented as a set of logical devices or vLUNs (virtualized LUNs), which can be subdivided between VMs or across connected hosts. Virtensys' appliance doesn't require SR-IOV cards and can leverage off-the-shelf PCIe adapters, with or without SR-IOV functionality. At the core of their architecture is a high speed MR-IOV compliant PCIe switch fabric. vLUNs presented from this appliance can be used for high performance data stores, as a boot partition or in support of VMware's vSphere5 "Host Cache" feature. A vCenter plugin allows right-click provisioning and simplified management.

Virtensys recently announced a partnership with Micron, as the VIO-4010 supports up to eight Micron P300 high performance, enterprise SSD drives in 100GB and 200GB configurations. Also announced was a new chassis with four Micron P320 PCIe SSD cards and the same complement of external networking or storage connectivity. This new chassis would connect hosts to a pool of very

high speed SSD capacity in the same shared, direct-attached PCIe architecture. Fibre Channel and 10GbE are on the roadmap for this new appliance as well.

Storage Swiss Take

Server virtualization is breaking traditional storage architectures as users try to keep up with the IOPS requirements of a dynamic pool of VMs. PCIe SSDs are a popular solution but dedicating these high value resources to individual host servers can be expensive as these host-based cards are dedicated to one server. Virtensys' ability to virtualize solid state storage and I/O resources with a single PCIe connection could prove to be an excellent solution and confirm the wisdom of their "shared, direct attached" architecture.

About Storage Switzerland

Storage Switzerland is an analyst firm focused on the virtualization and storage marketplaces. For more information please visit our web site: <http://www.storage-switzerland.com>

Copyright © 2011 Storage Switzerland, Inc. - All rights reserved