Breakaway Information Group

BIG-Flash

Xsigo Systems

Accelerating Verari Blades for Virtual Machines

Breakaway Information Group Market Analysis

Executive Summary

Xsigo Systems has packaged its market changing I/O acceleration technology for blade systems. With is first go-to-market partner, Verari Systems, its offering customers a super-dense, "green"-ready server blade platform that allows customers' to streamline virtual machine deployment and operations to include virtualizing even I/O intensive applications that, until now, demanded their own distinct, non-standard hardware systems.

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The News

Xsigo Systems has announced the maturation and growing foot-print of its marketing changing I/O virtualization and acceleration solution. Xsigo initially released a hardware/software combination, the VP780 I/O Director, that enhanced the I/O performance of virtual machines running on discrete servers connected to networked storage arrays. Xsigo has contoured its offering, tailoring it for use within the blade server environment. The company's first "go-to-market" partner is Verari Systems. Together, Xsigo and Verari are delivering a robust, "green"-ready server blade solution of unmatched density, performance and operational fluidity for the virtualized server environment. Density, as it applies to the Xsigo/Verari system, speaks to both the number of virtual machine instances the platform supports and the number of network connections available. Verari's ease of management and Xsigo's I/O acceleration capabilities are show-cased in this much needed solution.

The Analysis

As is well known, the foot print for server virtualization technologies seems to know no bounds. However, appearances can be deceiving. As many organizations have learned through the "school of hard knocks", the implementation of virtual machine technologies while addressing a number of technical and operational problems also introduces a few unanticipated challenges as well. The premier challenge virtualization exposes is the critical nature of I/O, or more plainly the exchange of vital data packets between virtualized servers and storage targets and applications. Furthermore, rigid I/O pathway demands in the non-Xsigo enabled infrastructure limits application or virtual machine portability which can crimp an organization's energy and operational efficiency objectives.

The problem sets introduced by most server virtualization technologies demand more explanation. The first problem, raw I/O performance, can be crippling. It is also challenge that can be counter-intuitive to grasp especially for organizations that have deployed LAN-based virtualization such VLANs, virtual NICs and IP-VPNs. LAN virtualization is implemented against protocols and transport technologies that were designed to accommodate variable latency and packet loss as well as out-of-order transmission/receiving. IP over Ethernet provides end-users with a variety of "built-in" redundancies and latency controlling mechanism that mask these protocols' "chattiness" and penchant for transmission oddities. These characteristics are what make Ethernet and IP great, in the majority of cases, for local-, campus and wide-area networking.

Storage protocols are different.

Whether an organization is using SCSI or Fibre Channel for storage connectivity, chattiness and packet drops are very bad news. Most storage networking gear is built to provide sorting, acceleration and queuing of I/O frames between target and requestor. Enterprise-class organizations will, today, most likely have experience networks for "block" storage. Even a growing number of mid-sized organizations and "SMBs" (Small & Medium Businesses) have deployed networks for block storage, being databases and e-mail server particularly. The wide-spread availability of server virtualization has been facilitated by the maturation and simplification of affordable storage networking solutions. However, the resilience of networked storage may lead systems and/or application administrators to expect that virtualized I/O and virtualized LAN interfaces to perform with equal reliability.

They do not.

I raise these issues to make this point. Storage traffic is distinctly different than LAN/WAN traffic. Because of the latency, ordering and frame loss prohibitions, I/O is hard to manage in a shared resource environment. It's even more difficult, if not impractical in an environment rich with virtualized servers. Furthermore, the performance and reliability demands of I/O operations can limit, to greater or lesser degrees, an organization's ability to maximize the ROI and TCO of a physical to virtual server conversion. Certainly, some economies of scale and operational efficiency will be gained, but I/O intensive or I/O "chatty" applications such as databases and/or e-mail systems will need to remain on legacy, non-virtualized servers. Xsigo's I/O virtualization solution targets and resolves this especially tricky and vital aspect of shared resource maximization and management.

In addition to resource optimization, Xsigo allows end-using organizations to overcome a number of architecturally challenging obstacles when implementing fail-over, redundancy and reuse schemes for the virtual server environment. As its stands today, virtual servers (stand-alone machines or blade systems) are normally

connect to storage devices via a Fibre Channel SAN (Storage Area Network). SANs themselves provide a variety of virtualization features such as Zoning, port sharing and other capabilities. However, the entire scheme is dependent upon the logical and physical linking of "world-wide names", port names server-based initiators associated with Host Bus Adapters (HBA) and logical volumes. In the case of fail-over, the HBA driver must distinguish the point of failure within this chain of dependencies and, in concert with other mechanisms, redirect I/O operations to the fail-over target, port and/or volume. To accomplish these steps in an environment that based on virtualized servers, system and storage administrators must deploy specialized hardware or software that can leverage capabilities in Fibre Channel switches on their "n-ports."

And this is just for the rare instance of fail-over.

Organizations that seek to maximize their use of application instances on newly virtualized hardware resources will find that virtualization vendors' tools only go so far in facilitating variable, demand-based use of virtualized resources. Put another way, end-users may have to forego the expectation that a virtualized server platform will allow flexible, demand-based instantiation of applications accessing data volumes on shared resources. In the end, organizations may have to dedicate a server system or systems (even blade servers) to specific workloads, benefiting from a consolidated physical footprint but realizing none of the demand-based resource "tunability" that virtualization promises.

Xsigo's I/O solution, bundled with Verari's server blades, overcomes this complex problem elegantly.

Xsigo's solution virtualizes I/O at the virtual machine level, above the hardware. Its integrated software allows the I/O pathway to be redirected as the system demands, not as limited by rigid I/O path and network-based dependencies. Xsigo's solutions undoes the need to over-engineer SAN fabrics for fail-over and dynamic workload management. As such, an organization of any size and IT skill can convert the maximum number of physical servers and application processes to a densely configured virtualized blade system. The Xsigo enabled Verari blade server can accommodate previously untenable workload mixes due to Xsigo's I/O acceleration and delivery guarantees as well as the utility-like flexibility of dynamic resource scheduling, sharing and workload portability.

The Takeaways

- The Xsigo enabled Verari blade system accommodates unmatched density, energy efficiency and workload mixing on a common, shared resource.
- The Xsigo/Verari solution minimizes SAN complexity which improves operational simplicity and leads to improved TCO and ROI.
- Xsigo enables the virtualization and reliable operation of applications previously immune to being virtualized.
- Significant energy gains are realized by organizations that convert the maximum number of physical servers to virtual machines on a common resource such as the Xsigo-enable Verari blade system.
- Long term operational gains are realized faster as SLAs, rules and policies are easier to implement and enforce.
- Virtualizing I/O reduces cable sprawl and other wiring-based configuration errors.