

10 Ways Virtual I/O Enhances Storage Management

Virtual I/O delivers a new approach to network and storage connectivity. By replacing fixed resources (host bus adapter cards, NICs, and cabling) with simple-to-manage virtual resources (virtual HBAs and NICs), virtual I/O provides benefits such as:

- Accelerates common storage management tasks
- Reduces the disruption caused by change.
- Enables remote management to reduce trips to the data center
- Delivers a consistent user experience with configurable quality of service

FC SAN, NAS, and iSCSI connectivity can now be provided to all servers from one platform, consolidating the view of the environment. This paper illustrates a few specific examples of how virtual I/O streamlines management.

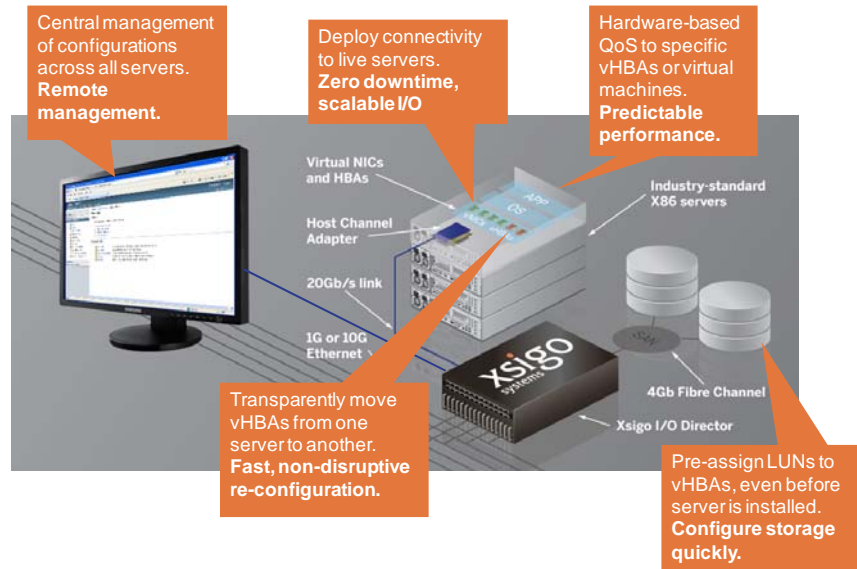
1) Pre-configure FC LUNs to accelerate storage provisioning:

When LUNs are mapped to specific HBAs, all changes that involve the server need to be coordinated between the server and storage managers.

For example, when a server is installed, an application re-located, or a card replaced, these managers need to coordinate the mapping process.

With Xsigo, storage can be mapped to *virtual*/HBAs, a process that can be completed independent of the server itself.

If, for example, 20 servers are planned for installation, storage can be mapped to all vHBAs at one time. As the 20 servers are installed, the pre-created HBAs can be allocated to them. The storage manager is only involved only at the start of the process. After that, the server manager can work independently. If any of the servers fails, the virtual HBAs can be moved to a new server. Without changing any mappings, the LUNs are moved from one server to another, saving time for the storage manager.



2) Reduce SAN re-mapping: Several events can trigger the need to re-map networks, including equipment failures, upgrades, or re-distribution of applications. With virtual I/O, these tasks become far simpler. WWNs are persistent and portable among servers, so no storage remapping is required, saving time.

Event	Traditional I/O Remedy	Virtual I/O Remedy	Benefit
Server failure	Install new server. If server has new HBAs, remap storage	Migrate virtual HBAs to new server. The new server takes on the complete I/O identity of the old one.	No SAN remapping. Fast switchover. Can migrate all I/O resources for complete server switchover in minutes.
Application Migration	Move application. Re-map storage to new HBAs.	Migrate virtual HBAs to new server	No SAN remapping. Application has immediate access to data.
HBA failure	Install new HBA with new WWN. Remap storage.	Install new card. WWN stays the same.	No SAN remapping.

3) Get a predictable user experience: Xsigo lets you maintain a consistent user experience with quality of service management. Each virtual HBA can be configured with individual QoS parameters. Performance also benefits from the scalable nature of virtual I/O. With conventional HBAs, bottlenecks may occur due to the limitations of I/O queues. Xsigo eliminates this bottleneck with by creating multiple virtual HBAs that then provide multiple I/O queues.

With virtualized servers, the limitations of I/O queues become especially apparent when large numbers of virtual machines are deployed. Xsigo eliminates this bottleneck by creating multiple virtual HBAs with multiple I/O queues.

4) Get scalable I/O for blades:

Most blade systems have physical constraints that limit the number of I/O connections per blade.

With virtual I/O, storage resources can be deployed as needed, up to 64 virtual NICs and 32 virtual HBAs per blade.

5) Accelerate backup: When backup jobs run overtime and extend into work hours, users complain about degraded system performance.

One cause of overtime backups is network congestion. When data does not flow quickly to the tape library, the tape runs inefficiently, lengthening the job.

With virtual I/O, a dedicated network can be configured that delivers up to 20Gb of bandwidth to the backup job whenever needed. The backup job is accelerated and gets done on time.

6) Enhance iSCSI and NAS performance with dedicated networks: Accelerate Ethernet storage by configuring dedicated networks for storage. With virtual I/O, resources can be deployed to all servers and new networks can be created within the virtual I/O infrastructure. iSCSI or NAS storage can access 20Gb of bandwidth when needed, without connecting 10G networks to every server.

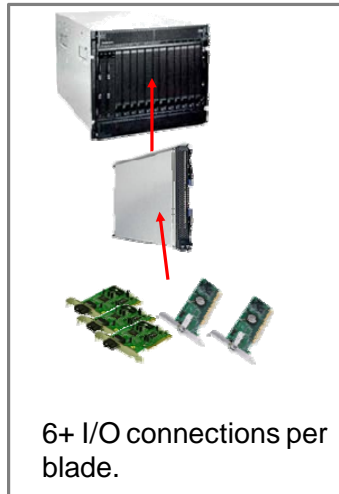
7) Ensure consistent user experience from virtual machines: Server virtualization boosts utilization, but can create I/O bottlenecks. With virtual I/O, you can ensure a consistent user experience by controlling QoS per storage resource. Because you have the flexibility to deploy multiple virtual HBAs to a single server, you can dedicate storage interconnects with specific virtual machines and thereby control bandwidth to the VM.

8) Get I/O isolation in virtualized servers: VMware recommends dedicating I/O resources to critical VMs. Virtual I/O resources act exactly as physical cards. When you dedicate a virtual HBA to a VM, you gain the same isolation as if you had dedicated a physical HBA.

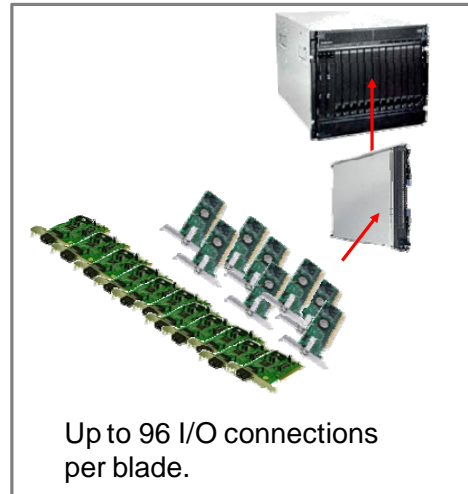
9) Less need for open zoning: For some users, VMotion may violate storage management policies because of the requirement for open zoning. With Xsigo, I/O can be migrated with the VM, allowing the application to move from one server to another without I/O restrictions and without the need for open zoning.

10) Reduce costs: With traditional I/O, a single port HBA may cost \$700. With Xsigo, adding a virtual HBA costs a fraction of that, reducing the cost of deploying SAN connectivity. And unlike traditional I/O, a virtual HBA can be deployed on-the-fly, and migrated among servers to accommodate changing requirements.

Before



After



About Xsigo Systems

Xsigo is the technology leader in data center I/O virtualization, a solution that dramatically reduces operational expense by changing the way that servers are connected to networks and storage.



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