



Virtualization is Only as Good as the Quality of Your Storage

You're Risking Your VMware Investment, And Here's Why

Key Benefits

- Only NetApp SolidFire is able to combine SIOC with storage-enforced QoS to ensure predictable performance to each VM
- Consolidate multiple performance-sensitive applications onto a single infrastructure
- Dynamic performance allocation to datastores eliminates the need to over-provision storage, allowing you to deploy more VMs
- Adjust VM SIOC settings on the fly and NetApp SolidFire QoS is automatically adjusted to match, eliminating storage administrator intervention and preventing stranded performance (IOPS)
- On-demand scale-out without interruption or downtime
- A complete REST-based API automates every aspect of the storage system in addition to your VM automation

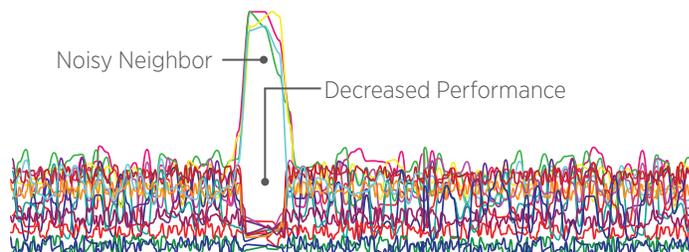
The Lurking Problem Undermining Your VMware Investment

As an IT Executive, you depend on a substantial VMware investment to consolidate your server resources and extract real gains—faster application deployment, an increase in performance and availability, and operations automation. But you may not be aware of a problem that hinders VMware's ability to squeeze as much efficiency as it can from your compute environment: the storage connected to it.

Virtualization is only as good as the performance quality of your storage, and when storage isn't optimized for a virtualized environment, your storage and virtualization admins feel more pain, your energy consumption costs rise, and your footprint sprawls. There is much more to be gained with your VMware investment from the storage side of your compute solution.

How Does Storage Performance Affect Virtualization?

In cloud deployments, performance is negatively affected when one cloud tenant wipes out everyone else's applications by monopolizing available system resources for itself. It's known as the "noisy neighbor" problem.



If noisy neighbors can take down a data center and all of your business applications, how solid is your VMware investment? Enterprises need predictable performance for business critical applications, and they get it in the form of storage Quality of Service.

VMware Users Need NetApp SolidFire

Today, enterprises deploying VMware environments at scale struggle to manage the performance of multiple workloads and storage sprawl. Service providers are offering VMware-based infrastructure and are managing rapid growth and unpredictable workloads.

These data centers need agile, policy-based storage to match their VMware implementation. NetApp SolidFire was built specifically to solve the biggest problem in enterprise storage: delivering high performance to multiple applications from a multi-tenant infrastructure.

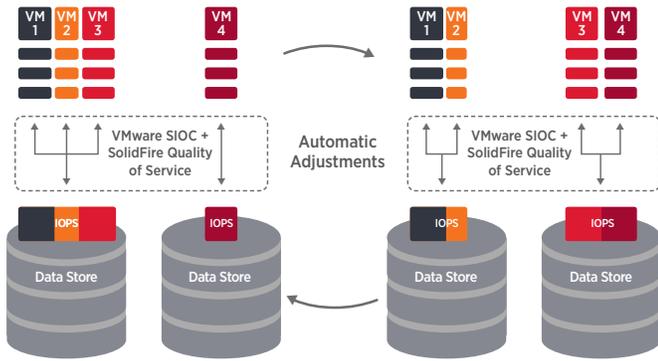


Figure 1) Native Interaction of Dynamic QoS and VMware SIOC

NetApp SolidFire delivers predictable storage performance to all of the applications on your VMware infrastructure—a major enhancement compared to existing traditional VM-to-storage integrations.

VMware recently shifted focus from server virtualization/consolidation to the Software Defined Data Center (SDDC). VMware views the SDDC as the ideal architecture for private, public and hybrid clouds, extending the virtualization concept to incorporate cloud concepts like complete infrastructure abstraction, resource pooling and automation.

VMware’s vision—to drive increased VM awareness and management granularity at the storage system layer—aligns with NetApp SolidFire’s vision of Quality of Service (QoS) architecture as the foundation for a holistic enterprise storage solution. The ability to manage and provision storage policies within the virtual infrastructure, that are then enforced down to each virtual disk in the NetApp SolidFire storage system, is a streamlined approach unlike any you can get from legacy or other all-flash storage vendors.

The NetApp SolidFire Advantage: Guaranteed Performance End-to-End

Only NetApp SolidFire integrates with VMware’s Storage I/O Control (SIOC) to ensure system-wide, end-to-end, guaranteed performance to every virtual machine. SIOC provides per-VM rate limiting at the hypervisor level. When coupled with NetApp SolidFire’s unique guaranteed Quality of Service, performance is ensured end-to-end. By integrating with SIOC, NetApp SolidFire dynamically allocates and manages minimum, maximum and burst performance on the storage system based on per VM SIOC requirements in an integrated workflow.

With automated orchestration, each virtual machine’s SIOC settings can be adjusted on the fly, and NetApp SolidFire’s QoS will automatically adjust the volume IOPS allocation to match, eliminating storage administrator intervention and reducing operating costs.

In short, what VMware does to virtualize compute resources, NetApp SolidFire does to virtualize performance separately from capacity, giving IT managers unprecedented storage control. And what’s more: NetApp SolidFire is the only storage—legacy or all-flash—to integrate with VMware’s Storage I/O Control (SIOC).

Storage is at the heart of the data center.

Virtualization is only as good as the performance quality of your storage. Guarantee storage performance to every VMware virtual machine with NetApp SolidFire.

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