



- **Optimize your Microsoft Hyper-V environment to achieve maximum ROI**
- **Improve existing storage performance by up to 3x**
- **Decrease storage capacity consumption by up to 90%**
- **Reduce provisioning times by 10x with optimized snapshot/cloning technology**
- **Increase VM density by 50% or more on your existing infrastructure**

"Virsto lets me get a lot more out of the hardware that I've already paid for, and translates directly into an ability to support more clients out of a given infrastructure investment."

*Scott Urofsky, CTO
System Solutions, Inc.*



Server virtualization technology offers a number of benefits to organizations looking to increase the agility of their information technology (IT) infrastructure, including the ability to quickly provision new computing resources to adapt to evolving business conditions, increase resource utilization to get more out of existing deployments, and better stay within budget constraints through reduced power, cooling, floor space, management, and maintenance costs. Generally, virtual machines (VMs) are managed very similarly to physical machines, although there are areas where VMs perform differently. Storage is one of those areas.

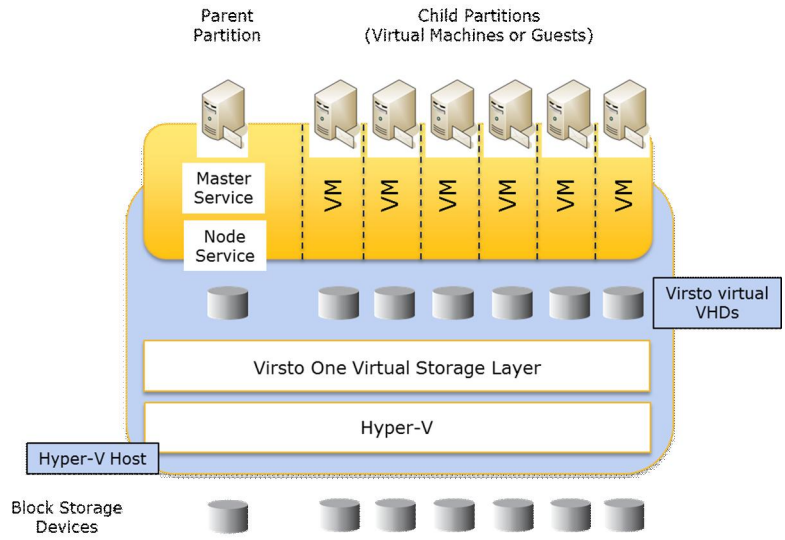
The "VM I/O blender" problem is a common issue that limits storage performance in hypervisor-based environments. In any VM environment, storage performance often suffers as more VMs are added to a physical host. This is because disk I/O workloads in virtualized environments are typically random, have a higher proportion of smaller request sizes, and are more write intensive. As data is written to disk, this very randomized workload results in extremely inefficient use of the underlying disk hardware, driving higher write latencies and in general slowing things down as much as two orders of magnitude. In order to bring performance back up to par, administrators are generally forced to purchase significant additional storage capacity – often at the very high \$/GB prices driven by SAN-based storage.

Unexpectedly high storage capacity consumption has left many administrators needing to add storage they cannot afford. Whether this storage bloat has been driven by chasing after performance or by the need to work with large numbers of snapshots and/or clones, the fact is that administrators need to be able to work with storage in virtual environments much more efficiently than they do today.

With conventional snapshot technologies, provisioning can add hours to administrative tasks – even days in larger shops – increasing operations costs and reducing IT responsiveness.

COST-EFFECTIVELY DELIVER ON THE FULL PROMISE OF SERVER VIRTUALIZATION TECHNOLOGY

Virsto One is a software-based hypervisor plug-in that works with any heterogeneous, block-based storage and provides up to a 3x I/O performance improvement using existing storage, up to a 90% reduction in storage capacity consumption, and instant snapshot/clone operations while consuming zero additional storage. With this solution, you will increase the VM density that your current infrastructure can support, significantly lower storage costs, reduce provisioning times by 10x or more, and outperform any native hypervisor-based solutions. Targeted for



Virsto's innovative virtual storage architecture works transparently in Hyper-V environments while providing significant performance, capacity utilization, and management advantages.

use in all types of server virtualization infrastructure, Virsto One is equally appropriate for end user companies as well as cloud and service providers.

In addition to its performance and space-saving benefits, Virsto One offers optimized snapshot and cloning technology that can cut provisioning, data protection, and other operations requiring copy creation from hours to seconds while at the same time significantly reducing storage consumption.

Virsto One is targeted for use in server virtualization environments based on Microsoft Hyper-V R2. Managed through a Microsoft Management Console (MMC) snap-in, Virsto One preserves Microsoft's familiar management semantics and can be used with all the major Microsoft Hyper-V products and tools, including Windows Server 2008 R2, MPIO, VSS, Windows Server Failover Clusters, PowerShell/WMI and other relevant System Center technology including SCOM, SCCM, VMM, and DPM. In use, Virsto One is completely transparent to Hyper-V and any applications and supports any guest operating systems and devices supported by Hyper-V R2.

VIRSTO ONE ARCHITECTURE

Virsto One installs in the parent partition of each Hyper-V Host, setting up two services - a "Master Service" and a "Node Service" - that cooperate together to create a virtual storage layer managed by Virsto. Native Hyper-V volumes are imported to Virsto "virtual" VHDs which can then be mounted on VMs like standard Hyper-V VHDs.

Through this layer Virsto One introduces a very scalable architecture that effectively decouples I/O performance from any dependence on the seek times of underlying physical disk. The resulting performance gains resolve the "VM I/O blender" problem, often providing customers with up to 3x the performance using the same underlying storage infrastructure.

This architecture offers other valuable features as well. Virsto's advanced snapshot and cloning technology enables new VHDs to be provisioned instantly regardless of their size without requiring any additional storage capacity. This capability alone can save hours of provisioning time, and possibly days in larger environments. All snapshots and clones made with Virsto's technology are thin-provisioned yet offer higher performance than that offered by native Hyper-V fixed disks. Virsto supports an unlimited number of clones, and clone performance is in no way impacted by how many clones are created and/or retained.

Virsto's "virtual" VHDs support the same types of high availability features that Microsoft clustered shared volumes (CSVs) do but they are thin-provisioned and provide high performance. Just like with standard Virsto "virtual" VHDs, snapshots and clones of these shared volumes can be created instantly without consuming any additional storage capacity.

Taken together, these features allow customers to significantly increase VM density on any given infrastructure, thereby saving significant cost.

If you'd like to get more out of your Hyper-V environment, let's talk.

