



Using Sanbolic's Clustered File System with Hyper-V 2008 R2 and System Center Virtual Machine Manager 2008 R2

High Performance Shared Storage for Hyper-V 2008 R2 and SCVMM 2008 R2

- Sanbolic's Melio FS and LaScala provide a high performance shared LUN for Hyper-V hosts, and can also provide shared application data LUN for Hyper-V virtual machines.
- Melio FS and LaScala are now compatible with Hyper-V 2008, Hyper-V 2008 R2, and SCVMM 2008 R2. Using any industry standard SAN storage, Melio and LaScala can be used to provide a shared LUN to all Hyper-V hosts, which supports zero-interruption Live Migration of virtual machines across Hyper-V 2008 R2 hosts. Melio can be used even when virtual machines are running high I/O workloads.
- Melio is a fully featured enterprise clustered file system, and has no dependence on NTFS. It provides Hyper-V 2008 R2 Live Migration deployments with several storage performance, scalability, and features advantages when compared with VMware's VMFS.
- Melio installs easily with a next-next-next installer. Hyper-V clustering will recognize Melio as an active-active storage resource and configure it appropriately. There is no change required in how virtual machines are configured and managed from within SCVMM 2008 R2.



Sanbolic and Hyper-V Virtualization Solutions

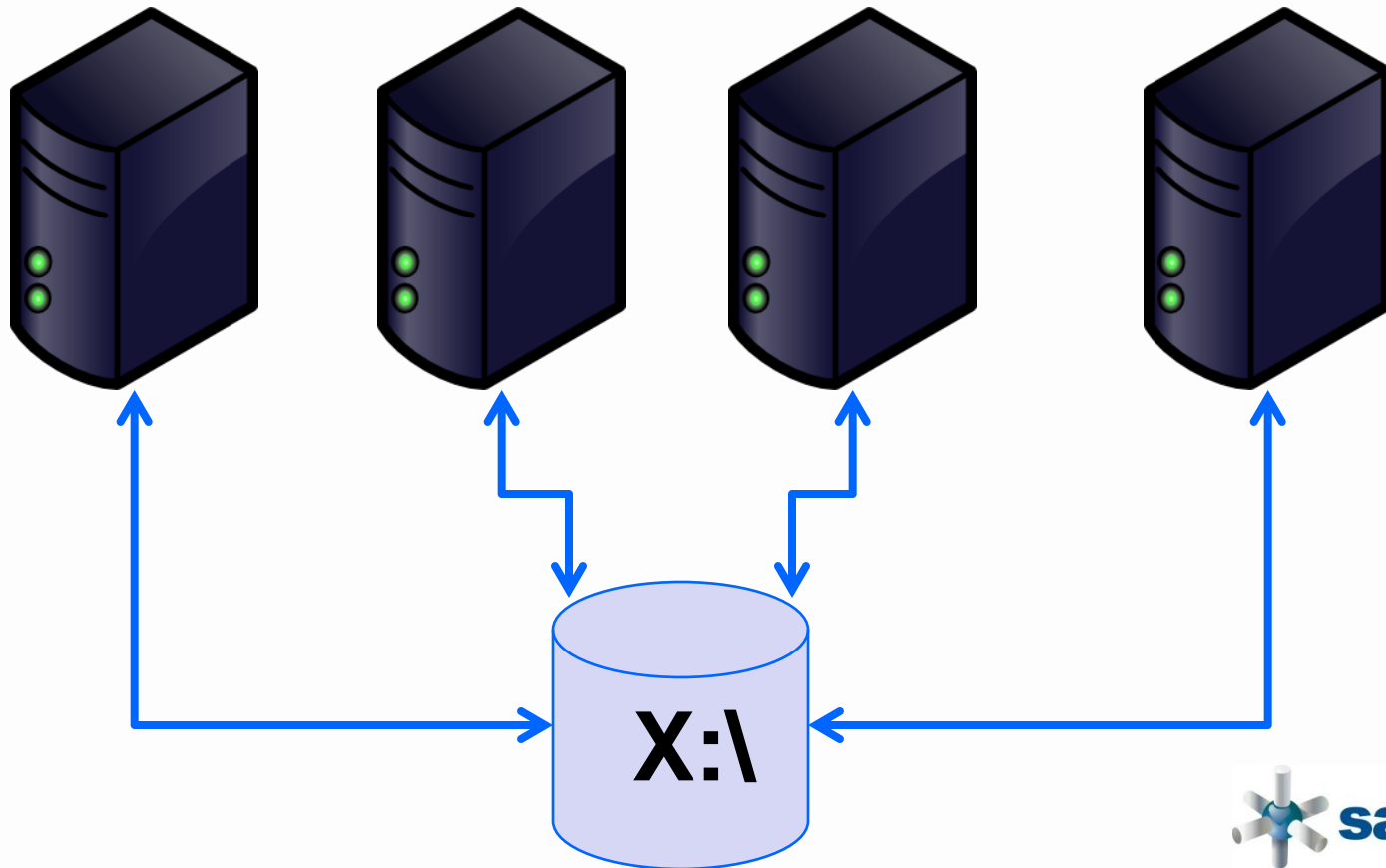
Lower cost and improved storage management vs. VMWare

- Available now—simplify the transition from 2008 to 2008 R2
 - Customer can install cost effective Kayo FS with Hyper 2008 today, scale out to dozens of host nodes with a license key upgrade, and move to Hyper 2008 R2 without reinstalling storage volumes
- Next-Next-Next installer, simple to configure and manage
- Provides full performance of SAN storage to all host nodes. Provides integrated performance monitoring tools and quality of service assignment on a per VM basis
 - Identify and manage storage bottlenecks,
- No limit to scalability
 - Melio has no limit to directory, volume, or file sizes Host clusters can include several hundred servers
- Simplify data movement for VM configuration
 - Shared volume can be presented as a network share to all servers. All host servers in the storage cluster have direct block access to the shared volume for all data types, such as ISO images
- Can provide snapshots of the entire cluster, of individual Hyper-V virtual machines, and of application data volumes to improves option for Hyper-V business continuity architectures



Why *Netlio*_{fs}?

- Enables multiple physical or virtual servers to share a single volume and file system with concurrent read and write access to files over FC or iSCSI



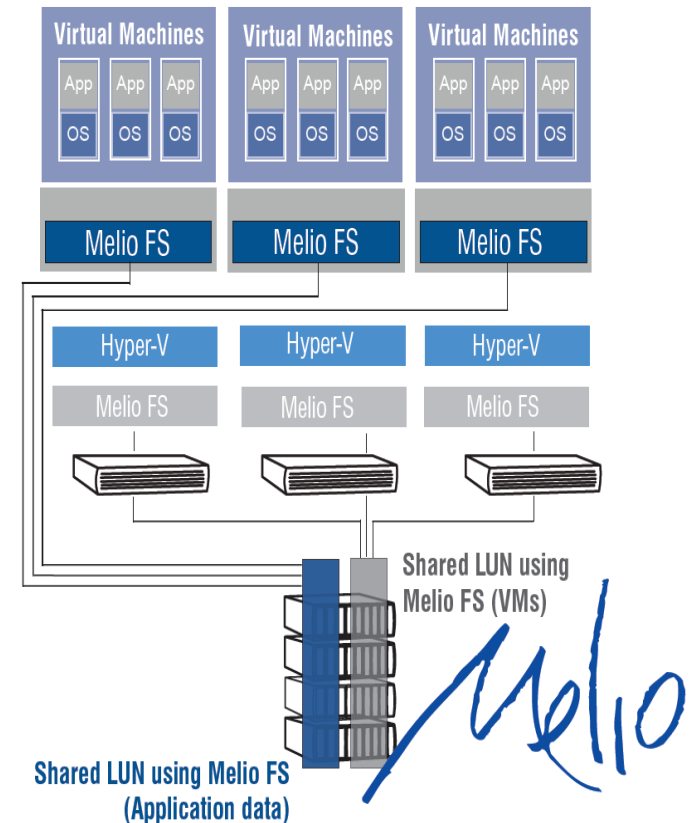
Sanbolic Software Provide Centrally Managed Shared LUN Storage access for Hyper-V Host AND Guest Servers

- LaScala Volume Manager allows logical volumes on shared SAN LUNs to be centrally configured and assigned to any **host** or **virtual** server running Windows

- When installed on Hyper-V **host** servers, all host servers have shared access to a single storage LUN for VM images

- Quick Migration (Hyper-V 20008) and Live Migration (Hyper-V 2008 R2) are supported since all hosts have active-active access to the VM images

- When installed on Hyper-V **guest** servers, application data on SAN volumes can be centrally assigned to the guest server, will be available to the guest automatically after guest migration across hosts, and can be shared by multiple guest servers simultaneously



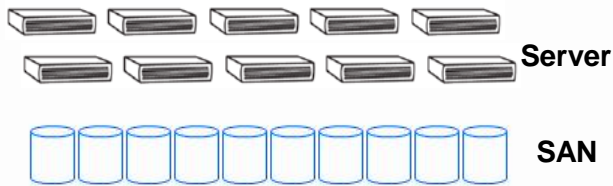
Virtual Data Center Storage Deployment Issues

- Storage typically represents a larger investment than virtualization software
- Host access to virtual machine files is a key determinant of performance
 - Melio provides integrated performance monitoring and QoS management at the VM level
- Using iSCSI storage for application data on virtual machines decouples data from virtual machines and can provide improved scalability, availability, and flexibility.
 - Melio and LaScala provide central provisioning, shared access, and automatic migration of iSCSI data volumes for guest servers
- Larger host clusters are becoming important in cloud environments both in service providers and enterprise accounts
 - Melio is designed to support clusters of more than 200 Hosts



Why Sanbolic in a Virtual Data Center?

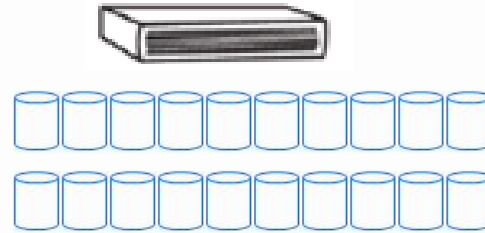
Physical Data Center



- 10 Physical Servers to Manage

- 10 SAN application data LUNs to manage

Virtual Data Center



- 10 Physical servers consolidated to 1

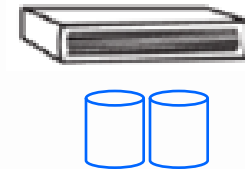
- 10 SAN application data LUNs to manage

- 10 Hyper-V virtual machine LUNs to Manage

- Application data LUNs may need to be manually moved after VM migration

- Storage volumes for VMs may need to be administered locally

Virtual Data Center with Sanbolic



- 10 Physical servers consolidated to 1

- 1 Shared SAN LUN for SAN application data

- 1 Shared SAN LUN for Hyper-V virtual machines

- Application data volumes automatically available to VMs after VM migration

- Storage volumes for VMs can be administered centrally



Sanbolic Melio and LaScala FS

Extend Dynamic IT to the Storage Layer

- Central configuration and assignment of SAN volume structure and shared access to application data for Hyper-V virtual machines running Windows 2003, Windows 2008, and Windows 2008 R2
 - Melio and LaScala Support shared SAN storage access for physical hosts and for virtual machines.
 - Uses Windows ACLs and Active Directory for assigning volume access
- SAN application data for virtual Windows servers remain available when a machine is migrated using quick or live migration
- Provides a common storage platform for all Hyper-V host servers, all physical Windows Servers, and for application data volumes for ESX or Xen guest Servers running Windows 2003, 2008, or 2008 R2
 - Facilitates the migration of applications onto Hyper-V
- Shared access to application data on a SAN provides dynamic application scale-out, improved availability, and improved performance for multi-layer apps



Products



- 64 bit symmetrical clustered journaling file system
 - Enables multiple servers to share a single file system
 - Concurrent read and write access to files over FC or iSCSI



- Designed specifically to provide a cost-effective shared LUN solution for Hyper-V



- Symmetrical clustered transactional volume manager
 - Efficiently aggregates a storage pool spanning multiple heterogeneous storage arrays.
 - Provides centralized management of volume structure for multiple servers



- Policy-based management software for provisioning and scheduling data copy, migration, and backup
 - Policies based on file type, creation date, date last accessed, and other attributes
 - Incorporates VSS which is compatible with most third party backup tools.



Product Installation and Scalability

- Installs on each SAN-connected server or workstation
 - Less than 5 megabyte footprint
 - Next Next Next installer
- Requires shared access to iSCSI or Fibre Channel storage and a private TCP/IP connection between servers for lock traffic
- 64 bit architecture
 - Volumes and file system are dynamically expandable
- Designed to support 100s of nodes in a single cluster.
 - Block object pass-through enhances scalability for virtualization host clusters



Free Evaluation Software is Available for Windows 2008 R2 Beta Program

www.sanbolic.com



Contact

customer alias

support@sanbolic.com

Microsoft alias

demo@sanbolic.com

