

Sanbolic software allows users to create a shared-data **SAN** storage pool using any industry-standard storage and server hardware. **Sanbolic** allows data on **SAN** storage to be managed centrally and simultaneously shared among servers, providing storage flexibility and data availability.



Melio FS is an advanced clustered file system with byte range locking that enables high performance concurrent read/write access to data on SAN storage from multiple physical or virtual servers. Shared access to data enables high availability, horizontal scaling of applications, clustered processing, and greatly simplified storage provisioning and management. Embedded reporting on storage I/O and transaction performance facilitates optimization of storage intensive workloads. Melio includes distributed snapshot capability that allows snapshots to be created from any server in the storage cluster. The file system also incorporates quality of service assignment to allow prioritization of specific workloads in storage bandwidth-constrained environments.



Kayo FS provides shared access to a **SAN** volume from multiple physical host servers and is designed specifically to provide a cost-effective shared **LUN** solution for **Hyper-V** and **VMware Server**. **Kayo** simplifies storage management in virtual environments by allowing all **Hyper-V** or **VMware Server** virtual machine files to be stored on a single shared **LUN**, while allowing virtual machines to be moved independently among physical host servers.



LaScala is a shared clustered volume manager that allows multiple storage arrays to be aggregated into a single data pool, and centrally manages the configuration and assignment of logical volumes. All servers can see the entire storage environment. Windows Active Directory and volume-level ACLs are supported, so assignment of host access to specific shared volumes is easily accomplished with native security tools. In conjunction with a shared file system like Melio FS, LaScala provides very high performance shared access to files on volumes striped across large numbers of disks on multiple controllers.



SILM is a standalone software product that automatically moves or copies files or volumes based on customer defined policies. As an example, an administrator could establish policies to copy any files created or modified in the past 4 hours to a backup volume, and to move any files not accessed in 30 days to secondary storage. SILM has universal connectivity support, allowing users to deploy it in mixed storage environments utilizing DAS, NAS, and SAN storage. It can invoke an industry standard VSS provider, and copy data from the snapshot. Policies can be created using the intuitive interface or using SILM's scripting capability. SILM supports both Microsoft and Sanbolic file systems.

Sanbolic's software installs easily on Windows servers and can be used with any Fibre Channel or iSCSI storage hardware. It transparently supports Microsoft Windows data center technologies including Active Directory, Windows Security (ACLs), Distributed File System, Network Load Balancing, iSCSI Initiator, MPIIO, Native Windows Cache Manager, and Microsoft Failover Clustering. Sanbolic software supports Windows Server 2003 R2, Windows Server 2008, and Windows Server 2008 R2..

Sanbolic Virtualization Solutions

Microsoft Windows 2008 Hyper-V and Windows 2008 Hyper-V R2

Sanbolic Melio FS and LaScala volume manager provides a high performance, scalable single LUN storage solution that supports Live Migration on Windows Server 2008 Hyper-V R2 and Quick Migration on Windows 2008 Hyper-V. Melio FS provides advanced enterprise file system features, including essentially unlimited volume sizes, storage I/O reporting and per-VM quality of service management, and can support up to several hundred nodes in a storage cluster. Customers will not need to change their storage configuration when upgrading from Hyper-V to Hyper-V R2.

In small Hyper-V environments, Kayo FS can be used to provide a shared LUN, providing a very cost effective solution to simplifying Hyper-V storage configuration for quick and live migration.

Sanbolic Melio FS and LaScala can also be used to provide concurrent shared access to application data on a shared LUN from multiple Hyper-V guest servers. Shared access is maintained even if the guest servers are migrated among hosts. Shared access to application data from guest servers can provide improved application availability, since multiple application servers have access to a single copy of the data. Shared access to application data on the SAN can also enable scale-out of applications like web serving or file serving. For example, if a data center has a virtual web server accessing active content on a SAN volume, web serving capacity can be easily increased in response to a traffic spike by adding additional virtual web servers accessing the content on the shared SAN volume. There is no need to provision additional storage volumes and replicate data.

Citrix® Provisioning Server™

Citrix Provisioning Server virtualizes the workload of a datacenter server or the desktop – operating system, applications and configuration – and streams the workload on-demand to the desktop or the physical or virtual servers from the network. Melio FS and LaScala enable high availability for Citrix Provisioning Server by providing a shared LUN accessible to multiple Provisioning Servers, where VHD files and the configuration database is stored. This allows failover and load balancing among Provisioning Servers. Melio FS and LaScala can be used to provide HA functionality for Citrix PVS whether deployed on physical servers, on Xen Server guests, on Hyper-V guest servers, or on ESX guest servers.

VMware ESX

VMware has a proprietary file system, VMFS, to provide shared access to the SAN storage LUN for the virtual machines files when using Live Migration. However, VMFS cannot be used to provide concurrent shared access to application data on a SAN LUN from the guest servers. Melio FS and LaScala can be used to provide shared access to application data from ESX guest servers. Similar to the solution described for Hyper-V above, this provides new options for application availability since there are multiple paths into the application data. It also enables shared-data scale out virtual machine clusters with applications like file serving or web serving, and improves performance of nested applications.

VMware Server

VMware Server is often used in smaller VMware deployments. It does not support Live Migration, and cannot be used with VMFS to provide a shared SAN LUN for virtual machine files. Kayo FS is a cost-effective solution to provide VMFS-like functionality for VMware Server. By storing all virtual machine files on a shared LUN accessible to all host servers, Kayo FS provides VMware Server users a solution for providing simple and fast migration of guest machines across hosts.

Evaluation software is available at www.sanbolic.com

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