



*Unified Storage for Virtual and Cloud-based Solutions*

# Enhancing Windows™ Workloads on VMware® vSphere™ with Sanbolic's® Melio Unified Storage Platform™

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White Paper

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January 2011



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## Introduction

As today's market leader in server virtualization, VMware's vSphere (ESX™ 4.x) has become the standard virtualization platform for IT enterprises. Organizations using vSphere have realized the numerous benefits afforded by virtualizing their servers, including more efficient use of physical server resources, lower costs associated with power and cooling, and greater system agility via live migration of servers. Now if only there was a way for these organizations to take advantage of their virtual platforms to simplify data management and extend the capabilities of the applications driving their business operations, they would really be in a position to optimize both the efficiency and effectiveness of their enterprise environments.

This paper explains how Sanbolic's **Melio Unified Storage Platform** enhances the performance, scalability, availability and manageability of today's leading enterprise applications that run on Windows™ guest servers hosted by VMware vSphere.

## About Sanbolic

As a leading developer of software for shared storage and enhanced management of virtual and cloud-based solutions, Sanbolic helps organizations achieve greater returns on their investments in enterprise applications and solutions by extending the benefits of virtualization to the storage layer.

## About Sanbolic's Melio Unified Storage Platform

Sanbolic's **Melio Unified Storage Platform** is a comprehensive storage solution designed to simplify the management and improve the operational efficiency of enterprise environments. Comprised of several advanced software components that work collectively to achieve these goals, the **Melio Unified Storage Platform**, or **Melio**, enables the following:

- \* Data consolidation
- \* Data protection
- \* Enhanced storage utilization
- \* Application clustering
- \* Simplified data and storage management
- \* Scalable and highly available storage

At the core of Melio is an advanced, 64-bit, symmetrical cluster file system called "**Melio FS™**" that allows multiple Windows™ servers (physical and virtual) to share concurrent read-and-write access to logical volumes on block-based storage. With its 64-bit architecture, volumes as large as 18 million TBs can be shared amongst multiple servers, offering the capacity to support years of exponential data growth.

Melio's symmetrical locking architecture ensures that each server participating in a "Melio cluster" has equal access rights to one or more volumes for both read and write purposes; this avoids single points of failure and facilitates scale-out limited only by the capabilities of the applications themselves.



Compatible with all industry-standard server and SAN storage hardware, Melio allows application data to be consolidated onto a single shared volume, enabling applications supporting concurrent instances to work in tandem to process more tasks in a shorter period of time. In addition, Melio shared volumes can be created from LUNs provisioned on different storage arrays, enhancing I/O performance to help organizations achieve even greater levels of productivity from the applications driving their business operations.

## Why use Melio with vSphere

Server virtualization provides several key benefits, including enhanced server efficiency, flexibility and availability. For organizations deploying this technology using VMware vSphere, these benefits may be achieved via vMotion™ -- the migration of virtual servers between host systems without downtime. To enable this functionality, virtual machines are stored on volumes formatted with VMware's shared file system VMFS™, which is accessible by multiple hosts simultaneously. And while VMFS serves its purpose well, its use is restricted to storing virtual machine files only; thus, it cannot be used to provide virtual machines with concurrent access to application data to improve application performance, scalability and availability.

In order for virtual machines, or guests, to access application data on block-based storage, a separate LUN must be provisioned and assigned to each guest, making storage management complex, cumbersome and time-consuming.

Using Melio, an all-purpose cluster file system, multiple Windows guest servers can share read-and-write access to application data stored on a Melio-formatted LUN that is maintained as guest servers move between vSphere host systems.

By consolidating application data onto a single Melio volume that is accessible by multiple guests via iSCSI, storage resources are more efficiently and cost-effectively utilized. At the same time, multi-tier applications or applications supporting concurrent instances (i.e., file servers, FTP, IIS™, Citrix® Provisioning Services™, etc.) are able to realize significant improvements in performance, scalability and availability.

In addition, the combination of Sanbolic and VMware technologies offers organizations a dual-stack approach for improving system fault tolerance:

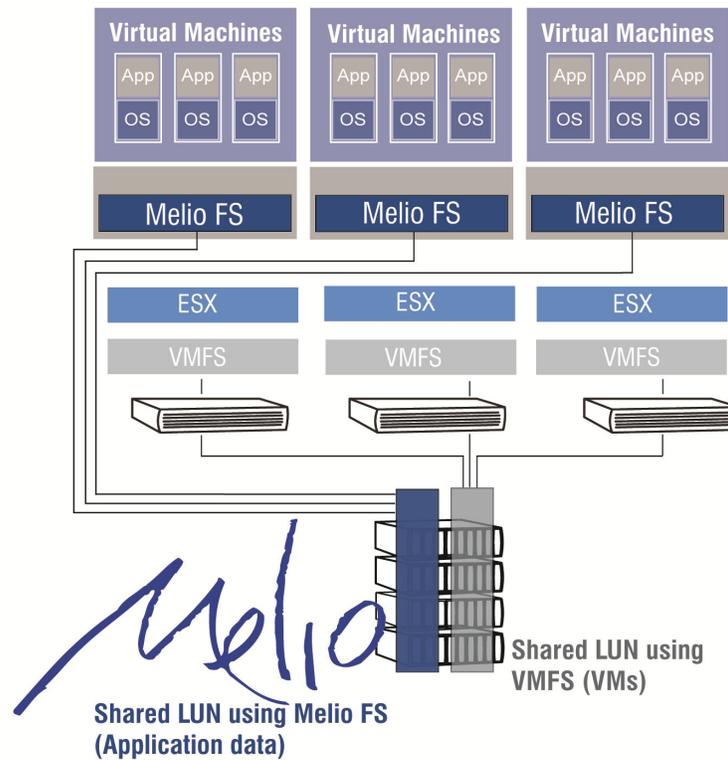
1. HA for guest servers by storing VM files on a shared volume formatted with VMFS.

*If vSphere host resources fail or if a host fails, guest servers can be automatically moved to another host to avoid system downtime.*

2. HA for applications running on guest servers by storing application data on a shared volume formatted with Melio FS.

*If a service, network connection or disk access within a guest server fails, applications running on other guest servers can continue to process requests to ensure there are no disruptions in user productivity.*

The following illustration depicts a sample virtual server environment comprised of VMware vSphere and Sanbolic's Melio Unified Storage Platform.



Additional benefits:

- Seamless infrastructure scale-out – As an “all-purpose” cluster file system, Melio FS employs an advanced, multi-layer locking mechanism that allows an infrastructure to scale quickly and easily by adding more servers and/or storage resources dynamically without disrupting user productivity.
- Simplified data management – By consolidating all application data onto a single shared volume, data management is greatly simplified.
- Enhanced storage management – Melio shared volumes can be created, managed and expanded from any server participating in the cluster using a centralized management console. Once a volume has been provisioned, all information about the volume is immediately and automatically disseminated to every server in the cluster. The result -- no storage management task is ever repeated.
- Reliable data protection – VSS-based snapshots of Melio shared volumes can be taken at various points in time and retrieved quickly and easily for data backup and recovery purposes.



## Conclusion

Using Sanbolic's *Melio Unified Storage Platform* with VMware vSphere allows organizations to improve the performance, scalability, availability and manageability of applications running on Windows guest servers. At the same time, advanced features such as vMotion ensure high availability of virtual machines.

The combination of Sanbolic and VMware technologies creates a highly fault-tolerant solution for organizations migrating their servers and applications from a physical environment to a virtual environment, offering them the greatest return on their investments in server virtualization.

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