



***Using Melio Clustered File System to Enable Dynamic State Migration for Microsoft Virtual Server 2005 R2 across Physical Hosts, and Simplify Data Management***

SANBOLIC WHITE PAPER



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## Overview

Virtual Server 2005 R2 provides a cost effective virtualization platform that runs most major x86 operating systems in a guest environment, and is supported by Microsoft as a host for Windows Server operating systems and Windows Server System applications. Virtual Server is typically used to consolidate infrastructure, to increase utilization and productivity, to simplify disaster recovery and planning, to consolidate and re-host legacy applications, and to automate and consolidate software test and development environments.

Because the Virtual Server state is contained within a .VHD file residing on the physical server's storage, it can be copied to another physical server, allowing Virtual Server state to be migrated to improve server utilization or for server maintenance. However, copying a large .VHD file across the network can be a time consuming process, and in the interim the application running on the Virtual Server is unavailable.

Sanbolic's software enables Virtual Server state to be migrated across physical hosts in approximately 30 seconds, and also allows large storage volumes residing on iSCSI storage to be immediately available to a Virtual Server machine running on any physical host. This greatly increases the flexibility of Virtual Server 2005 R2 as applications can be dynamically migrated in response to changes in load, or to maintain availability when hardware maintenance is required. For example, a payroll program could be quickly migrated from a small 2-way server to a larger 4-way server at month end, while allowing the larger server to be available for other critical applications for the rest of the month.

### **State Migration Using Sanbolic's Melio Clustered File System**

Melio FS is a clustered file system that is designed specifically for Windows Server and workstation platforms that enables multiple servers to have concurrent read and write access to data on block storage. The shared data can reside on any Fibre Channel or iSCSI storage array. Melio FS can also utilize the iSCSI target on Storage Systems based on Microsoft's new release of Windows Storage Server 2003 R2. LaScala is a clustered volume manager that allows multiple storage arrays to be aggregated into a single storage pool, and centrally manages the configuration and assignment of volumes utilizing Windows ACL's and Active Directory.

Melio FS is a fully featured 64 bit clustered journaling file system which supports Windows Server technologies including Active Directory, Microsoft Security (ACL's), MPIO, DFS, Microsoft Clustering Services, and native cache management, among others. Using Melio FS and Sanbolic's LaScala Volume Manager, Windows Servers running as guest OS's using Virtual Server can be clustered using Microsoft Clustering Services. Melio FS supports file system sizes up to 18 million terabytes, so there is no practical limit on its scalability. Melio FS also supports multi-layer check disk, which along with journaling, provides important tools for maintaining data integrity in large storage environments.

Using Sanbolic software and shared SAN storage, a Virtual Hard Disk file and XML configuration file for Virtual Server 2005 instances can reside on shared block storage and be simultaneously available to multiple physical host servers. Although Virtual Server 2005 embeds locking that prevents the same instance from running on multiple physical machines at the same time, the shared access to the file allows machine state to be quickly migrated across servers. The user simply has to save state for the Virtual Server 2005 instance on one machine, and restore it on a second machine. The total time required is approximately 30 seconds for a 2 gigabyte virtual server image, since there is no need to migrate the .VHD or .VMC files. The migration time is driven entirely by the save state /restore state function of the Virtual Server since both hosts have concurrent access to the files.

Because multiple Virtual Server 2005 R2 images can be stored on a shared volume, Sanbolic's software also simplifies provisioning of new virtual servers, and provides more efficient backup by allowing Virtual Server data and configuration files to be backed up from the central shared SAN volume.



## Summary

Virtual Server 2005 R2 is an important tool for consolidating servers and improving hardware utilization. Sanbolic's products are designed specifically for Microsoft Windows SAN environments, provide a familiar and easy to use experience for Windows administrators, and extend the capability of Virtual Server 2005 R2 installations.

Deploying Virtual Server 2005 R2 using SAN storage and Melio clustered file system provides both high performance and improved flexibility. In addition to rapidly migrating Virtual Server state across physical host servers, Sanbolic software allows Virtual Server images to be stored on a common shared SAN volume, simplifying deployment and backup. LaScala allows SAN volumes to be dynamically expanded and allows volume access rights to large storage volumes to be assigned or reassigned remotely using the familiar Windows ACL security screen. Together, Melio FS and LaScala enable a very flexible architecture for assigning SAN storage resources across virtual and physical servers in response to dynamic computing needs.

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