



Sanbolic® Melio™

(Melio 3.5)

Feature Comparison Guide



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About Sanbolic®

Sanbolic® develops innovative software that augments existing application, server and storage infrastructures to alleviate the unintended consequences of virtualization.

About Sanbolic Melio™

Sanbolic **Melio™** is a comprehensive product suite comprised of advanced software components that work together to share storage, simplify data and storage management, and enhance the performance, scalability and availability of enterprise workloads in virtual datacenters and private cloud deployments.

At the core of Melio is an advanced, 64-bit symmetrical cluster file system called "**Melio FS™**" that allows multiple Windows® servers to share concurrent read-and-write access to one or more partitions or Logical Unit Numbers (LUNs) on SAN (block-based) storage.

To help organizations realize all the benefits afforded by the active/active disk access provided by Melio FS, the following software components are also available:

Melio Volume Manager: Host-based cluster volume manager that simplifies and centralizes management of Melio shared volumes by virtualizing and aggregating physical disk resources provisioned on SAN (block-based) storage.

Snapper™: An easy-to-use GUI-based management utility that allows users to invoke and manage VSS-based snapshots of Melio shared volumes from a single console.

SILM™: Information Life Cycle manager that allows users to create policies to automatically copy or move individual files, groups of files, entire volume contents or snapshots of Melio shared volumes from one volume to another for quick and seamless data backup and recovery.

FilerScaler™: Application that simplifies and centralizes management of file shares hosted by multiple Windows servers throughout an entire IT enterprise and enables high availability and seamless scale-out of Windows file-serving infrastructures.

AppCluster™: Application clustering software that provides SQL database consolidation, high availability, load-balancing and intelligent assignment across physical and/or virtual SQL Servers. Unlike other HA options for SQL, which are limited in functionality as a result of the constraints associated with active/passive disk access, AppCluster is able to significantly enhance SQL Server solutions by leveraging the active/active disk access provided by Melio FS.

When implemented together, the software components described above provide flexible, scalable, highly available shared storage, centralized data and storage management, reliable data protection and active/active application clustering.

Melio is available in several editions, each of which is designed to address the current and future needs of organizations looking to transform their SAN storage into solutions for their virtual datacenters and private clouds.

For more information regarding the Melio software and how it can benefit your organization, please visit Sanbolic's website at www.sanbolic.com or contact a Sanbolic sales representative at sales@sanbolic.com.

Melio Editions

Melio Private Cloud™

Provides a high performance, highly available, highly scalable and easy-to-manage shared storage platform for solutions built on Microsoft® Hyper-V™ server virtualization. Allows an unlimited number of Hyper-V host systems to share concurrent read-and-write access to one or more volumes containing virtual machine files.

Melio Private Cloud provides storage management capabilities including software-based RAID 1 for enhanced storage resiliency, DR and live storage/data migration, centralized configuration and management of logical volumes, dynamic volume expansion, quality of service and other advanced features. Reliable data protection is provided via cluster-wide VSS-based snapshots, which can be used with back-up software from popular products such as Microsoft® DPM™ and Symantec® Backup Exec™, along with automated data movement based on user-defined policies.

Melio Enterprise™

Provides a high performance, highly available, highly scalable and easy-to-manage shared storage platform for enterprise workloads (i.e., virtualization, file serving, web hosting, SQL Server). Allows an unlimited number of physical and/or virtual Windows® servers to share concurrent read-and-write access to one or more volumes containing application/user data.

Melio Enterprise provides storage management capabilities including software-based RAID 1 for enhanced storage resiliency, DR and live storage/data migration, centralized configuration and management of logical volumes, dynamic volume expansion, quality of service and other advanced features. Enhances application performance, scalability and availability via clustering of enterprise workloads such as Microsoft® SQL Server™, SharePoint™, file services, web hosting, etc. Reliable data protection is provided via cluster-wide VSS-based snapshots, which can be used with back-up software from popular products such as Microsoft® DPM™ and Symantec® Backup Exec™, along with automated data movement based on user-defined policies.

Melio VDI™

Provides a high performance, highly available and easy to manage shared storage platform for Citrix® XenDesktop® and XenApp™. Allows two Citrix® Provisioning Services™ servers (physical or virtual) to share concurrent read-and-write access to one or more volumes (PVS data stores) containing XenDesktop and/or XenApp image files (vDisks) on SAN storage.

Melio VDI simplifies vDisk management and maintenance, enables vDisk high availability and allows XenDesktop/XenApp POCs to be set up quickly and with lower upfront storage cost. Facilitates rapid and seamless migration from POC to production and offers reliable data protection via cluster-wide VSS-based snapshots and automated data movement based on user-defined policies.

Melio Feature Support

This section describes all the features available in Melio, followed by a chart comparing the features included in each edition of Melio.

Feature definitions:

Cluster size

The number of nodes that can access a single LUN formatted with Melio FS.

Storage size

The total amount of storage shared by all the nodes participating in a cluster.

File System size

Refers to the architecture of the file system (i.e., 32bit, 64bit).

File Types

The types of files that can be written to/read from the file system.

Distributed File System (DFS)

Available in Microsoft Windows server-based operating systems, DFS, or Distributed File System, allows administrators to group shared folders residing on remote computers and present them to users as a virtual tree of folders known as a “namespace.” The benefits of a namespace include increased data availability, load-balancing and simplified data migration.

Network File System (NFS)

NFS, or Network File System, is a file system developed originally for UNIX and Linux operating systems that allows files to be shared transparently between servers, desktops, workstations, etc. Using NFS, a file system or a portion of a file system located on a remote computer can be mounted on a local computer, allowing a user of the local computer to view, update, and save files stored on the remote computer as if they were on the local system.

Microsoft Cluster Server (MSCS) / Windows Failover Clustering

MSCS™ (Windows Server 2003™) and Windows Failover Clustering (Windows Server 2008™) are services designed to enhance application availability by enabling application failover amongst Windows servers participating in a MSCS or Windows Failover Cluster.

Network Load Balancing (NLB)

NLB™, or Network Load Balancing™, is the name of the application load-balancing software available in Microsoft Windows server-based operating systems. Using NLB, client connections can be distributed across multiple servers, improving scalability and high availability for TCP/IP-based services and applications.

Access Control Lists (ACLs)

ACLs are policies designed to restrict access to a volume, directory, or file. Configured within Active Directory and deployed across the enterprise network, ACLs ensure that only specific nodes can access volumes, directories, or files.

Reporting

Windows native reporting tools or third-party vendor reporting tools used to record access to volumes for various purposes (i.e., auditing).

File System Resize

File System Resize denotes the ability to modify (expand) the size of the file system dynamically (without the need to restart disk management services or reboot servers).

Volume Expansion

Volume Expansion allows administrators to dynamically extend the size of a volume without having to restart disk management services or reboot servers. With this feature, administrators can overcome free space limitations by adding disk space to a volume when needed or desired.

Network Sharing

Refers to the sharing of files among interconnected computers. NFS is used to share files amongst computers running UNIX or Linux and CIFS, or Common Internet File System, is used to share files amongst computers running Windows.

Hypervisor support

The ability to provide shared storage for Microsoft Hyper-V host machines.

Virtual Machine support

The ability to provide shared storage for Windows guest servers hosted by Microsoft Hyper-V, VMware® ESX™ (vSphere™), or Citrix XenServer™ hypervisors.

Remote Management

Software that allows administrators to create, expand and manage storage volumes remotely from a central console.

Quality of Service (QoS)

Quality of Service (QoS) refers to various techniques used to prioritize access to storage based on the total amount of available throughput. Instead of relying on normal “best effort” mechanisms, Melio FS allows administrators to assign various levels of priority to specific processes, files and/or directories regarding their access to a volume with respect to throughput. Melio QoS employs a point based system ranging from 1 (lowest priority) to 1000 (highest priority), which is configurable via the Melio Configuration utility or the CLI.

Extended Attribute (EA)

EA, or Extended Attribute, is a file system feature that allows users to associate computer files with metadata not interpreted by the file system.

Open by File ID

File ID is a 64bit reference number for a file. This number is assigned by and specific to a particular file system. An application can use a file_id to open the corresponding file.

Max directory levels

The maximum depth of nested folders or directories supported.

Mount Points

Originally found in UNIX and older minicomputer operating systems, mount points were developed to simplify storage management. A physical location in the directory structure on which the root directory of a volume is grafted, or mounted, mount points are persistent directories that point to disk volumes. In Windows OS, mount points resolve to the root directory of a particular volume.

Cluster Affinity

Cluster Affinity allows a specific cluster node (or group of cluster nodes) to keep the connection to a shared volume after it has lost communications with the remaining cluster nodes.

Application Data Clustering

The ability to have multiple servers host concurrent instances of an application (i.e., SQL, Microsoft SharePoint™, etc.) to enable application load-balancing and high availability.

Volume Snapshot Service (VSS)

A feature introduced with Windows Server 2003 and included in all current releases of Microsoft Windows that allows backup copies or snapshots of a file or folder on a specific volume to be taken at a specific point in time. Operating at the block-level, VSS allows for the creation of consistent backups of a volume, ensuring that the contents of a volume remain unchanged as a backup is being created. VSS functions in such a way as to avoid problems with file locking. By creating a read-only copy of the volume, backup programs are able to access every file without interfering with other programs writing to those same files.

SCSI Reservations

Used to ensure exclusive access to disk resources when multiple host machines are accessing the same (shared) storage resource(s). Employed when metadata changes are made to prevent multiple hosts from writing concurrently to the metadata, which could result in data corruption.

RAID1/RAID10 (Mirroring)

Enhanced storage resiliency and availability via automatic synchronous or asynchronous mirroring of data between pairs of physical partitions on block-based storage.

Soft-SAN™

A flexible, highly-available, easy-to-manage shared storage platform comprised of industry-standard servers running Windows® Server 2008™ and/or Windows Server 2008 R2™ that work together to host one or more logical storage volumes whose data is made highly available via software-based RAID1 (mirroring).

Live Storage/Data Migration

Enables dynamic migration of storage volumes/data from one storage array to another while I/O operations are conducted against the volume being migrated.

Hard links

File system representations of a file with multiple paths referencing a single file on a volume. Changes to a file are immediately visible to all applications accessing the file through the hard links that reference it.

Quotas

An operating system feature that allows administrators to limit the amount of disk space that can be allocated to a particular user(s) and/or group(s).

Writeable Snapshots

Snapshots mounted for read-write access. Often used for testing purposes. For example, an administrator can take a snapshot, mount it writeable and perform any necessary testing using the snapshot. Once testing has completed, the administrator can delete the snapshot or convert it into the volume, thus replacing the original volume.

Pass-through I/O

Used with Microsoft's Hyper-V server virtualization platform, Pass-through I/O allows data to be written to storage by virtual machines without requiring that all other Hyper-V hosts participating in the Windows Failover Cluster be notified that the data was written; reducing overhead and improving system performance.

Copy-on-Write Snapshots

Snapshots designed to protect old data by copying it to a separate location (snapshot space) prior to new data overwriting it. Until another snapshot is taken, all subsequent writes to the same location overwrite the new data without affecting the old data.

Melio Feature Comparison Chart

Note: All editions of Melio include Melio FS and Melio Volume Manager.

Feature	Melio Private Cloud	Melio Enterprise	Melio VDI
AppCluster	NO	YES	NO
FilerScaler	NO	YES	NO
SILM	YES	YES	YES
Cluster size (Nodes)	Unlimited	Unlimited	2
Storage size (TB)	Unlimited	Unlimited	Unlimited
File System size	64 bit	64 bit	64 bit
File Types	Limited ¹	All	All
DFS	NO	YES	NO
NFS	NO	YES	NO
MSCS/Failover Clustering	YES	YES	NO
NLB	NO	YES	NO
ACL	YES	YES	NO
File System Resize	YES	YES	NO
Volume Expansion	YES	YES	NO
Network Sharing	YES	YES	NO
Hypervisor support	YES	YES	NO
Virtual Machine support	NO	YES	YES
Remote Management	YES	YES	NO
Quality of Service	YES	YES	NO
EA	YES	YES	NO
Open by File ID	YES	YES	NO
Max directory levels	Unlimited	Unlimited	Unlimited
Mount Points	NO	YES	NO
Cluster Affinity	YES	YES	NO
Application Data Clustering	NO	YES	YES
VSS	YES	YES	YES
SCSI Reservations	YES	YES	NO
RAID 1/RAID 10 (Mirroring)	YES	YES	YES
Soft-SAN™	YES	YES	YES
Live Storage/Data Migration	YES	YES	YES
Hard links	NO	YES	NO
Quotas	NO	YES	NO
Writeable Snapshots	YES	YES	NO
Pass-through I/O	YES	YES	NO
Snapshots (Copy on Write)	YES	YES	YES

Notes:

¹ Limited to storing Hyper-V virtual machine files (i.e., bin, exp, vhd, vsv, xml) only.

References

For more information regarding Sanbolic, Inc. and its innovative Melio software, please visit www.sanbolic.com or contact sales at sales@sanbolic.com.

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