Melio 4™

Release Notes

December 2011

www.sanbolic.com

Copyright and Disclaimer

The information in this documentation was prepared by Sanbolic, Inc. with reasonable care and is believed to be accurate. However, Sanbolic, Inc. shall not assume responsibility for losses or damages resulting from any omissions, inaccuracies, or errors contained herein. Sanbolic, Inc. may make improvements or changes in this documentation or in the product and programs described in this documentation, at any time and without notice and as it sees fit. This publication describes the state of this product at the time of its publication, and may not reflect the product at all times in the future.

SANBOLIC, INC. MAKES NO WARRANTY EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTIES, OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THESE MATERIALS AND MAKES SUCH MATERIALS AVAILABLE SOLELY ON AN "AS-IS" BASIS.

IN NO EVENT SHALL SANBOLIC, INC. BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE PURCHASE OR USE OF THESE MATERIALS.

The End-User Software License Agreement, which is included with the software program and this manual, specifies the permitted and prohibited uses of the software program.

Please read the terms and conditions of the End-User Software License Agreement prior to using the software program.

About Sanbolic®

Sanbolic, Inc. offers 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 user-defined 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 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 shared (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 currently 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 our website at www.sanbolic.com or contact a Sanbolic sales representative at sales@sanbolic.com.

About these Release Notes

These release notes provide information pertaining to the latest version of Sanbolic Melio software – Melio 4:

- Fixed issues included in Melio 4
- Fixed issues included in previous releases of Melio
- New features/enhancements included in Melio 4
- New features/enhancements included in previous releases of Melio
- Additional notes

Technical Support

Customers requiring technical support for Melio can contact Sanbolic Technical Support by phone at 1-617-833-4242 or via email at support@sanbolic.com.

Fixed issues included in Melio 4

The following issues have been fixed in Melio 4:

- Significantly reduced no buffering and paging IOs latency.
- Improved delete file latency (possible delays of up to 2 seconds).
- Improved CIFS performance when BATCH or EXCLUSIVE oplocks are used.
- Improved latency of large cached writes (more than 256KB).
- Executing query directory with large result buffers could delay parallel FS activity.
- Executing FSCTL_FIND_FILES_BY_SID with large buffer could delay parallel FS activity.
- Improved close file latency.
- Volume IOs are shaped by the volume manager QoS only during mirror synchronization.
- Additional minor performance improvements.
- Granted BATCH oplock stalled SL_FAIL_IMMEDIATELY byte range requests issued from the BATCH oplock owner.
- Overwrite/supersede of file containing named streams with opened handles to some of the named streams did not remove the named streams that have no opened handles.
- Query directory could return two subsequent entries with same modified time, when only the first file/dir was modified recently.
- FILE_ATTRIBUTE_TEMPORARY is now tracked individually for each file directory and named stream (previously was shared between named streams and their corresponding file or directory).
- FILE_NOTIFY_CHANGE_SECURITY will no longer be issued when security is changed through named stream.
- Upon FSCTL_DISMOUNT_VOLUME Melio FS closes opened handles, ensuring the following:

    * files with set delete on close but still open are deleted.
    * access times are properly updated on disk.

- CreateHardLink could fail with STATUS_ACCESS_DENIED.
- Changing FILE_ATTRIBUTE_NOT_CONTENT_INDEXED through a named stream of a directory could fail to propagate properly to newly created directory children.
- Replace existing rename when the target exists and is replaced:

    * wont' issue FILE_ACTION_REMOVED and FILE_ACTION_ADDED directory change notification for the target path.

    * issues FILE_ACTION_REMOVED for the source move path. (Previously it issued FILE_ACTION_RENAMED_OLD_NAME.)

- Enabled FSRM Access Based Enumeration on Melio FS.
- Mirror synchronization could erroneously be skipped.
- Crash could occur upon computer shutdown/reboot when Melio FS formatted volume is mounted on HA volume.
- When the volume is about to reach its capacity an active snapshot could result in lost delayed write data (i.e. data written in cache without corresponding disk storage being allocated).
- File copy from Melio FS backed CIFS share to the same share could fail with STATUS_UNSUCCESSFUL.
- Crash occurring when a handle having granted byte range locks is closed immediately after asynchronous no buffering write completion. Occurs only when "Per Process Tweak"."Ordered Asynchronous NO_BUFFERING IO`s" is explicitly set to 0.
- Parallel byte range lock grant and cancel could hang. (Very rare.)
- A file with multiple hard links might get deleted while still having an active memory mapping.
- The size of a full-sized basic partition on a newly managed disk varied depending on the number of computers having access to the disk.
- When a volume or a managed disk disappears, Melio could hang in some cleanup code and when the volume/disk reappears it won't be accessible.
- Inconsistent usage of SCSI-3 reservations prevented access to MPIO disks.
- Successful disk eject was prevented by Melio Volume Manager.
- QoS balancing was imprecise.
- The handle used for hardlink creation returned new hardlink name instead of the name used for hardlink open.
- Rare crash when a handle is closed immediately after asynchronous no buffering write completion. Occurs only when Per Process Tweak "Ordered Asynchronous NO_BUFFERING IO`s" is explicitly set to 0.
- Crash could occur if multiple small (less than 4096 bytes) sequential asynchronous FILE_NO_BUFFERING IOs are issued in parallel using a single handle.
- Mirror could be enabled before all necessary locks were imposed.
- Deleting named stream on a file with multiple hardlinks could be executed before all named stream handles opened on other machines were closed.

Fixed issues included in previous releases of Melio

The following issues were fixed in previous releases of Melio:

- Various file system deadlocks.
- Unable to start programs (.exe) stored on a Melio FS volume.
- Failure to open path containing reparse point which is not in the last name.
- A reparse point cannot be opened by file id without specifying FILE_OPEN_REPARSE_POINT.
- Deletion of file upon last named stream handle close issued directory change notification FILE_ACTION_REMOVED for the named stream instead of the file.
- Deleted hard links could not be removed until all handles to the file on the same machine were closed.
- Automatic snapshot deletion not working properly since Windows 2008.
- Unable to "unmanage" a Melio disk from Melio Volume Manager.
- Melio FS volume reformat could hang.
- Label change on disk/partition could hang.
- Conflicting byte range locks could hang.
- Disk space not properly reclaimed.
- Erroneous "Disk full" message could be returned even with enough available free space.
- Unable to create Fixed VHDs greater than 10GB with Citrix® Provisioning Services™ 5.x.
- Crash may occur when opening reparse point ending with trailing backslash.
- Mirror IO could hang.
- File mappings usage could cause system hang.
- Simultaneous usage of multiple hard links pointing to the same file could cause system hang.
- Rare crash when a handle is closed immediately after asynchronous no buffering write completion.
- Quota tracking may be incorrect.
- Snapshots could result in volume corruption.
- Using writable snapshots could cause system hang.
- Deleting snapshots could cause storage leaks.
- QoS usage could cause deadlock during volume dismount.
- Melio FS Repair tool erroneously deleted the reparse index causing volume reparse point enumeration API to miss all current reparse points.
- Melio FS Repair could crash after failed volume extend.
- Melio FS Repair could delete valid file extended attributes.
- Changing security during Melio FS Repair could render the associated files/directories inaccessible.
- Melio FS Repair sometimes failed to fix the file system completely requiring a subsequent Repair run.

- Melio FS Configuration UI: Attempt to modify cluster times failed with "Generic WMI Error".
- Melio FS Configuration UI: Breaking unsynchronized mirror could fail with error code EAA00026.

New features/enhancements included in Melio 4

The following new features/enhancements are included in Melio 4:

- AppCluster R2
- Updates to FilerScaler
- Enhanced volume IO performance.
- Added volume event notifications. Reported events:
  * FSRTL_VOLUME_MOUNT/FSRTL_VOLUME_DISMOUNT (N.B.: FSRTL_VOLUME_DISMOUNT_FAILED is not reported)
  * FSRTL_VOLUME_LOCK/FSRTL_VOLUME_LOCK_FAILED, FSRTL_VOLUME_UNLOCK
  * FSRTL_VOLUME_NEEDS_CHKDSK
  * FSRTL_VOLUME_CHANGE_SIZE
  * FSRTL_VOLUME_BACKGROUND_FORMAT
- The current **MelioService** becomes **MelioAccountService**. A new MelioService will handle some user-mode helper code, mainly network-related.

New features/enhancements included in previous releases of Melio

The following new features/enhancements were included in previous releases of Melio:

- Enhanced volume IO performance.
- Enhanced mirror write IO performance.
- Enhanced stripe set IO performance.
- Improved Melio Repair tool.
- Improved Melio Snapshots.
- Added workaround for network drivers not supporting IP address change notifications properly.
- Improved Melio UI, installation and user guides.
- New and improved cluster volume manager.
- SCSI reservations.
- RAID1 (mirroring of physical partitions).

- Support for live storage/data migration.
- Dynamic storage Quality of Service (QoS).
- New WMI API.
- Support for hard links.
- Quota support.
- Writeable snapshots.
- NTFS compatibility\$Volume, file sharing.
- Additional network configuration support (i.e., DHCP, IPv6, multicasting).
- Support for Windows® guest clustering on VMware® vSphere™ and Citrix® XenServer™.
- Per-volume license activation.
- Added a new volume tweak to increase the speed of close operations.
- Added a new process tweak to support changes to the way Citrix® Provisioning Services™ 5.x Stream process writes to VHDs.
- Added support for multi-processor systems running more than 32 processors.
- Added warning message during software installation notifying users to back up data on Melio shared volumes prior to commencing with upgrade process.
- Introduced support for multi-language core Windows (i.e., German, French, and Japanese).
- Improved file system allocator free space calculations and usage.

Additional notes

- Operating systems supported in Melio 4:
    - Windows Server 2003 R1 and R2, 64-bit edition
    - Windows Server 2008 R1, 32-bit and 64-bit editions
    - Windows Server 2008 R2, 64-bit edition

Sanbolic Inc.

304 Pleasant Street, 2nd Floor
Watertown, MA 02472
Phone: 617 833 4242
Fax: 617 926 2808
URL: www.sanbolic.com
Email: sales@sanbolic.com