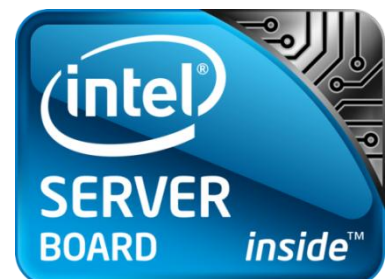


Sanbolic Melio FS* on Microsoft Windows Server* 2008 R2 Virtual Storage for Virtual Datacenters

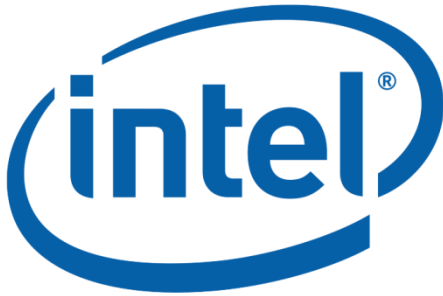
Intel® Modular Server

Intel® Server Compute Module MFS5000SI

Intel® Enabled Solutions Acceleration Alliance (Intel® ESAA)



Recipe ID: 30SNBL750000000024-01
1 November 2010



www.intel.com/go/esaa

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Hardware Components

Quantity	Item	Manufacturer	Model
1	Intel® Modular Server	Intel	MFSYS25 or MFSYS35
1-6	Intel® Server Compute Module	Intel	MFS5000SI
4 GB or more	Memory Modules	Any supported	Refer to the tested memory list at http://support.intel.com/support/motherboards/server/MFS5000SI/sb/CS-028536.htm
2	Intel® Xeon® processor	Intel	Refer to the supported processor list at http://support.intel.com/support/motherboards/server/MFS5000SI/sb/CS-028534.htm
7 to 14 (2.5") or 4 to 6 (3.5") per chassis	Hard drives or SSD	Any supported	Refer to the tested hardware and operating system list at http://www.intel.com/support/motherboards/server/mfs5520vi/sb/CS-030301.htm
2 or more	Power supply	Intel	AXXPSU
1 or 2	SAS Storage module	Intel	AXXSCM3S
1 or 2	Ethernet Switch module	Intel	AXXSW1GB

Table 1 - Hardware Bill of Materials

Software Components

Item	Version	Manufacturer	Comment
Sanbolic* software	Melio FS*	Sanbolic, Inc.*	Available at http://www.sanbolic.com .
Microsoft* Windows* OS	Windows Server 2008* R2	Microsoft Corp.*	Contact Microsoft Corp.

Table 2 - Software Bill of Materials

Reference Documentation

- Melio FS* user manuals available at http://www.sanbolic.com/support_manuals.htm.
- Configuration guides available at http://www.sanbolic.com/support_cgguides.htm.
- Melio FS* storage solutions available at <http://www.sanbolic.com/virtualization.htm>.

About Sanbolic*

Sanbolic* develops software designed to simplify, share and enhance SAN storage. Offering innovative, cost-effective, easy-to-use products, Sanbolic helps organizations achieve the greatest value from their enterprise applications and solutions by extending the capabilities of their storage infrastructures.

Sample Deployment of Sanbolic Melio FS* with Microsoft Hyper-V*

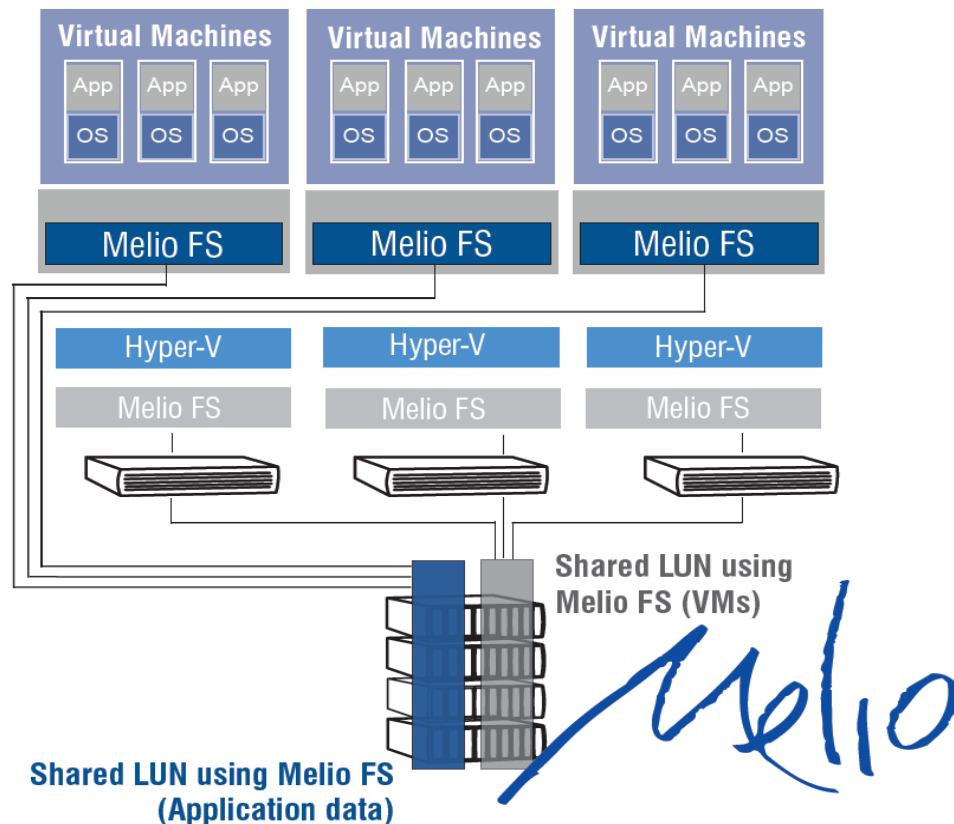


Figure 1 - Sample Deployment of Sanbolic Melio FS*

Deploying Sanbolic Melio FS* virtual shared storage in virtual datacenters built on Microsoft Hyper-V* server virtualization offers the following key benefits:

- Significant improvements in application performance, scalability and availability.
- Greatly simplified virtual machine storage management.
- Seamless and dynamic virtual server infrastructure scale-out.
- Enhanced data protection for virtual machines.
- Dramatically reduced storage costs through enhanced storage utilization.

The combination of Sanbolic* and Microsoft* technologies allows organizations to realize the greatest return on investments (ROIs) in enterprise-class server virtualization.

Network Recommendations

Melio* FS employs a proprietary communications protocol (based on TCP and UDP) for file system management. To ensure that communications between Melio nodes are not affected by intermittent network issues, Sanbolic strongly recommends providing a dedicated network (i.e., VLAN or switch) for Melio cluster administration traffic. This network should be completely isolated from the rest of the LAN.

Note: Melio FS does not support NIC teaming/bonding. Please ensure that the network interface assigned for Melio cluster administration traffic is not teamed with another network interface*

Installing Sanbolic FS* on Microsoft Windows Server* 2008 R2

Perform the following steps to install Sanbolic Melio FS* software on two or more Intel® Server Platforms running Microsoft Windows Server* 2008 R2.

- 1) Install Microsoft Windows Server* 2008 R2 operating system on two or more Intel® Server Platforms.
- 2) Provision a new LUN on the storage array and present it to each server.
- 3) Download Sanbolic Melio FS* software from <http://clients.sanbolic.com/>.
- 4) Copy the Melio FS* setup file to the desktop of each server that share access to one or more Melio volumes on SAN storage.
- 5) Double-click the Melio FS* Setup file to run the installer.



Figure 2 – Melio* Setup Wizard Welcome to the Melio FS Setup Wizard Window

- 6) Click "Next".

- 7) Click "I accept the agreement", then click "Next".

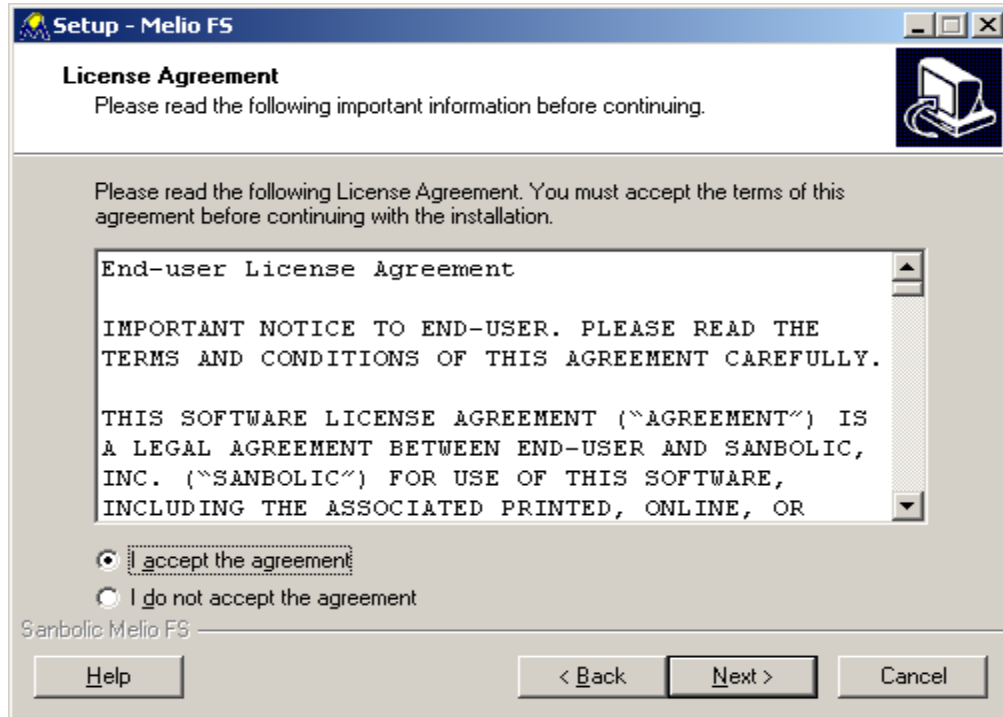


Figure 3 - Melio* Setup Wizard License Agreement Window

- 8) Click "Next" to select the default installation directory or click the "Browse" button to select another folder to install the Melio FS* software.

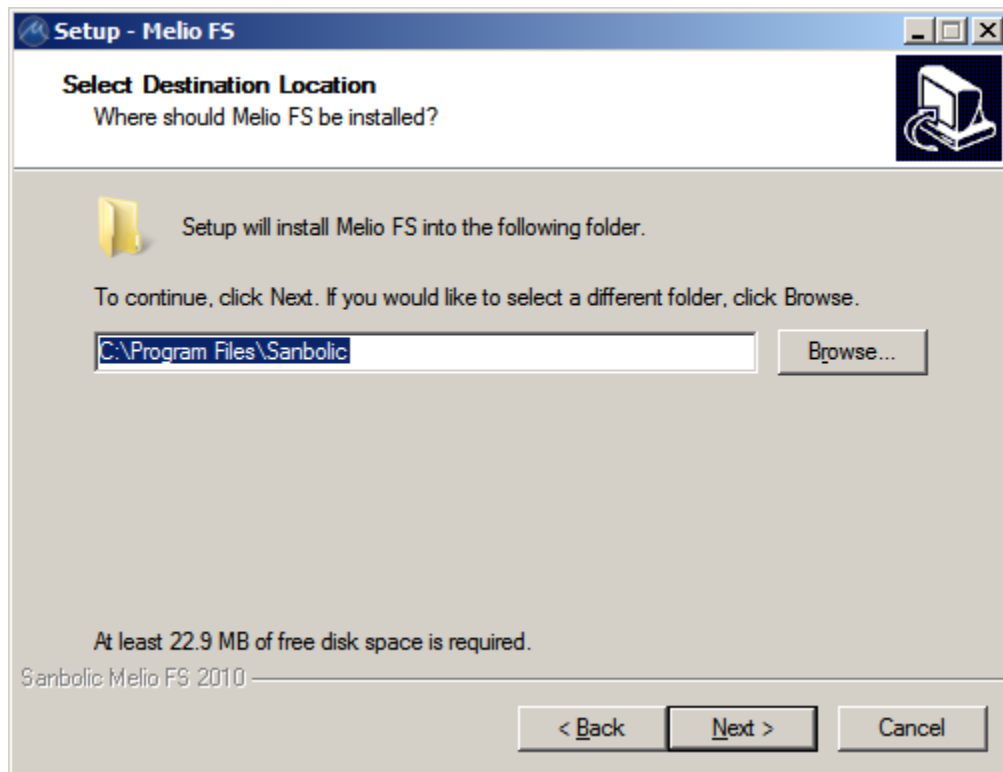


Figure 4 - Melio* Setup Wizard Select Destination Location Window

9) Click "Next" to install all Melio FS* software components.

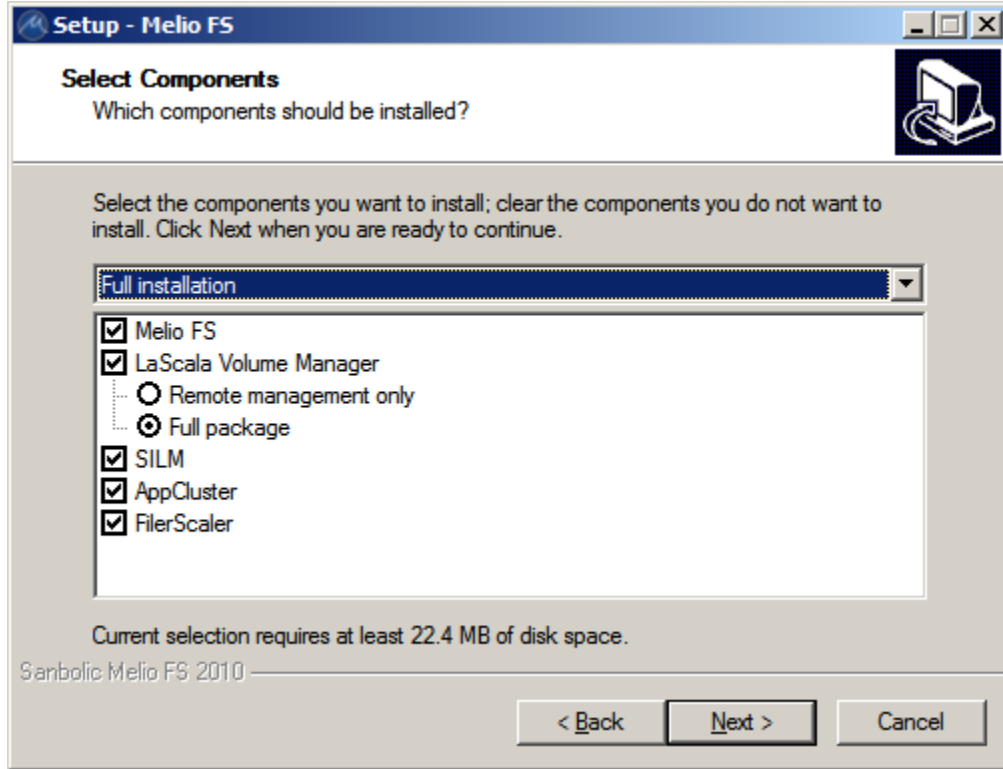


Figure 5 - Melio* Setup Wizard Select Components Window

10) Select a network interface (dedicated network is recommended) for Melio FS* cluster administration traffic, then click "Next".

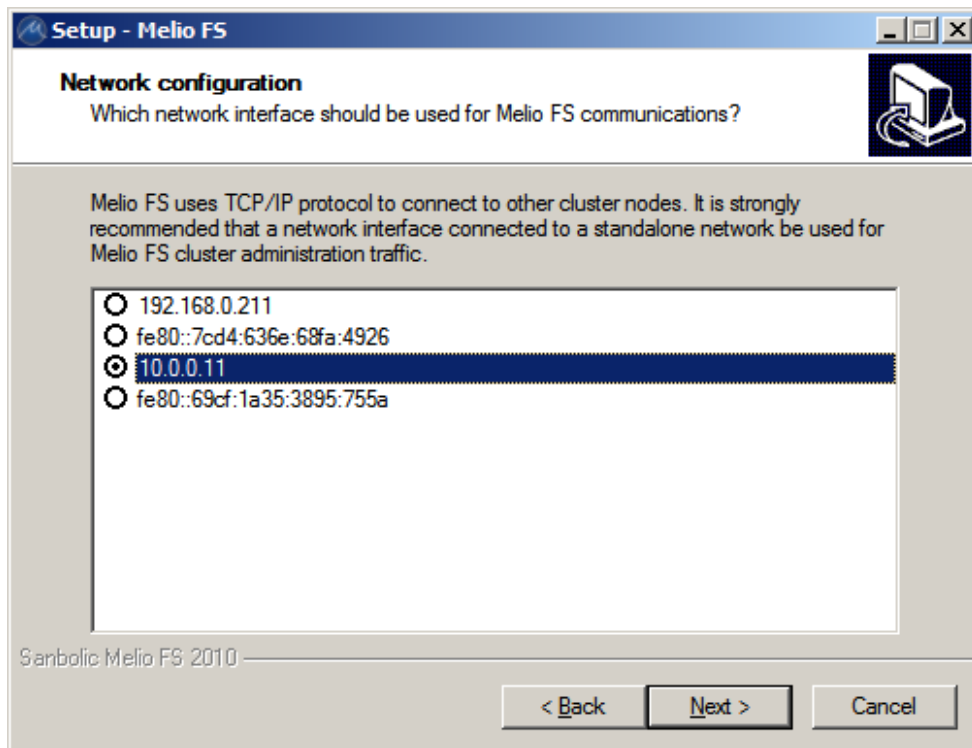


Figure 6 - Melio* Setup Wizard Network Configuration Window

- 11) Melio FS* exchanges information with other servers running Melio FS through TCP and UDP ports 7777 and 7778. Leave the box checked, then click "Next" to allow Melio FS to open these ports and establish communications.

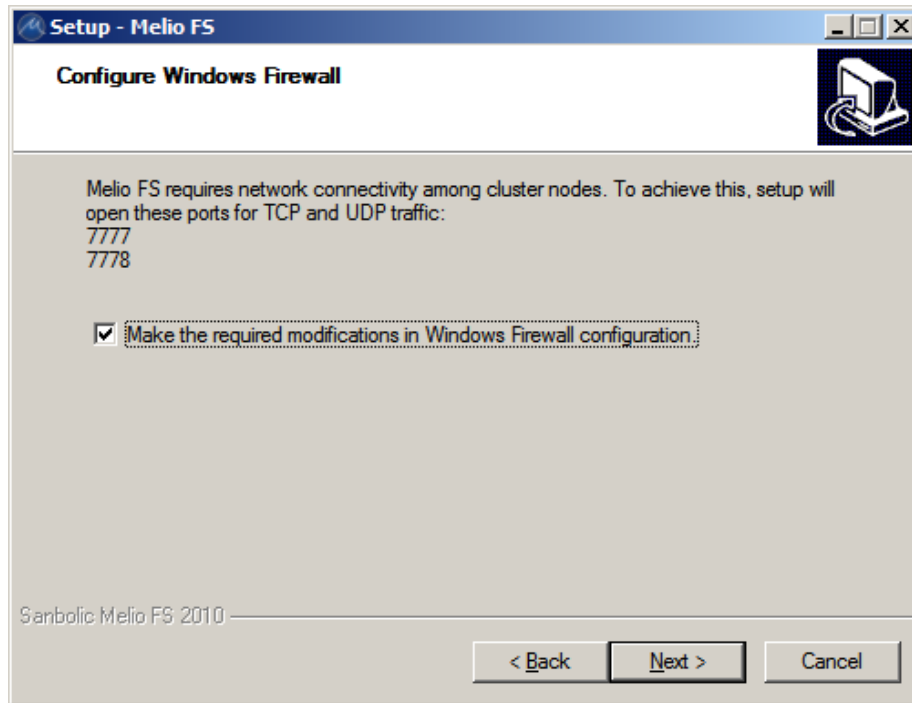


Figure 7 - Melio* Setup Wizard Configure Windows Firewall Window

- 12) Enter the name and password of a machine account that will be used by the Melio FS* cluster volume manager (LaScala*), then click "Next".

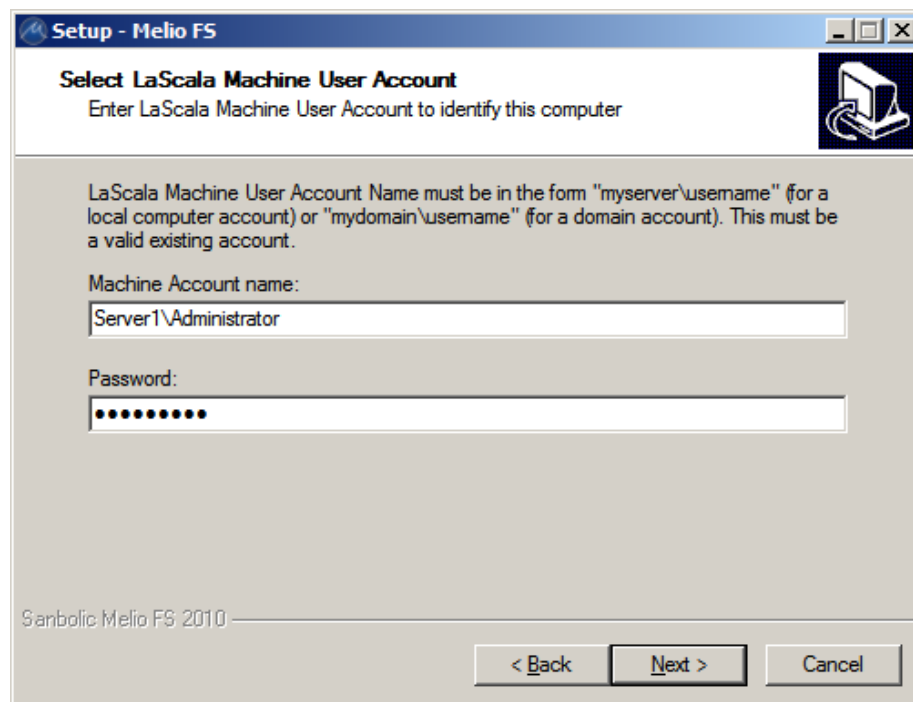


Figure 8 - Melio* Setup Wizard Select LaScala* Machine User Account Window

- 13) Enter the name and password of a machine account that will be used by the Melio FS* Information Life Cycle utility (SILM*), then click "Next".

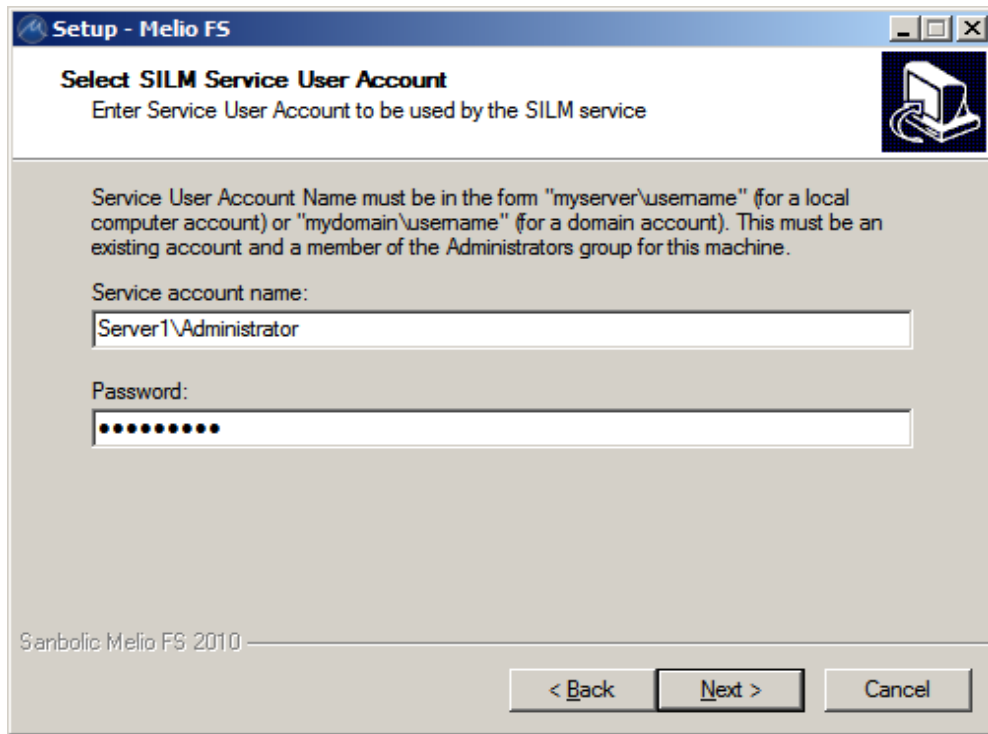


Figure 9 - Melio* Setup Wizard Select SILM Service User Account Window

- 14) Review the installation settings and click "Install" to install the Melio FS* software using the specified settings.

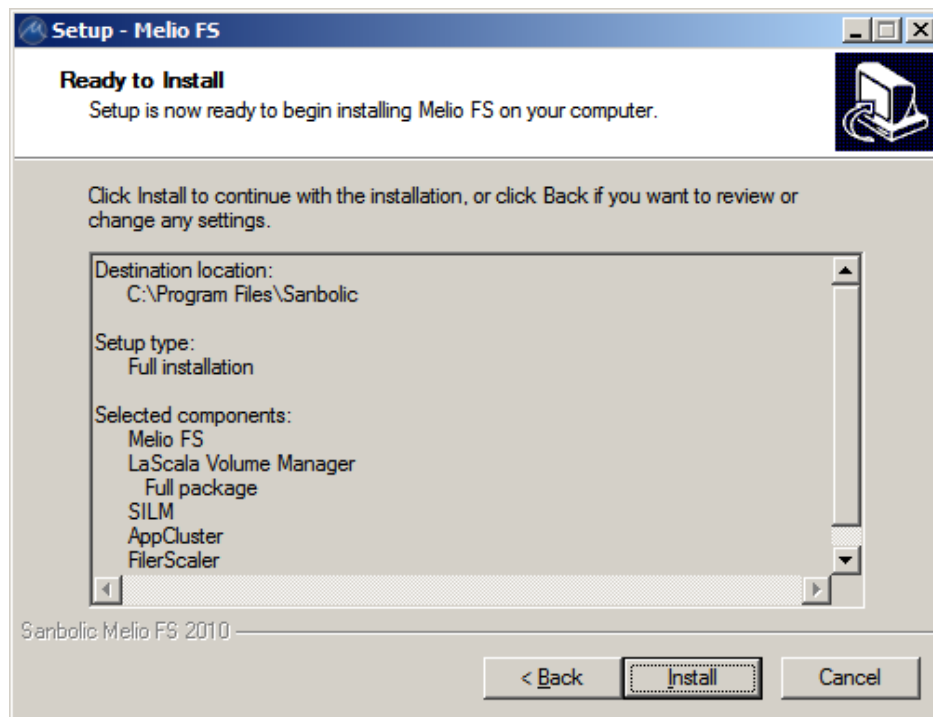


Figure 10 - Melio* Setup Wizard Ready to Install Window

- 15) When prompted to select the mode of operation (Trial or Full), leave the default setting (Trial), then click "Next".
- 16) Click "Finish" to complete the installation of the Melio FS* software.

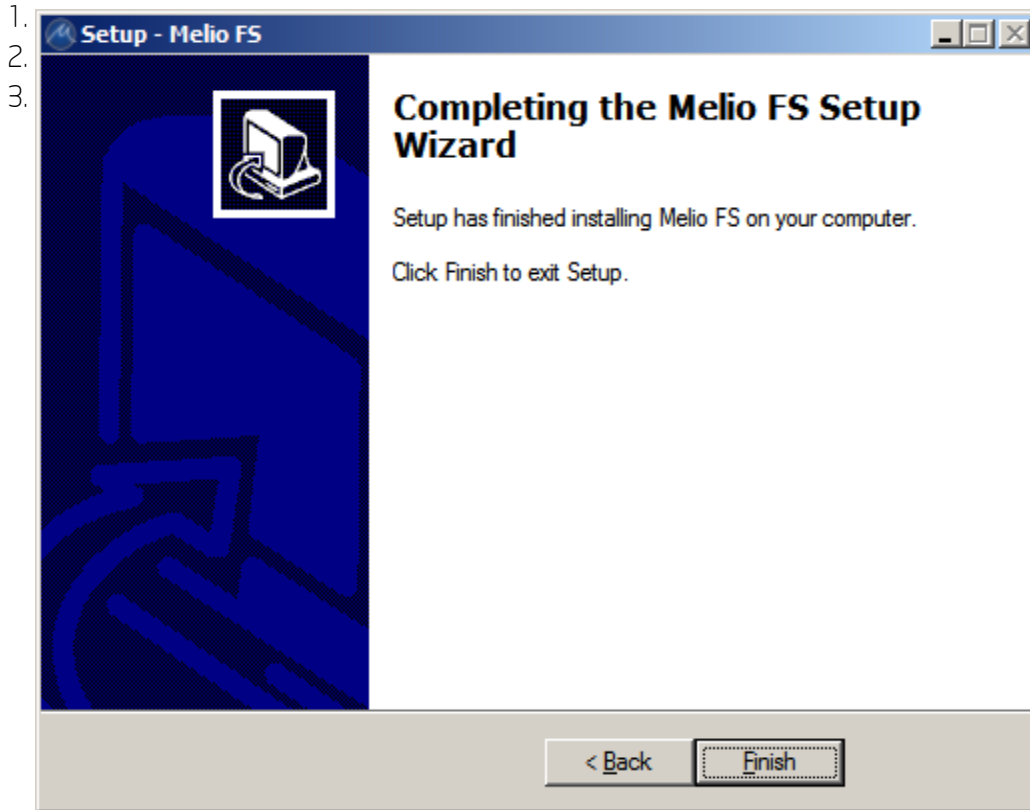


Figure 11 - Melio* Setup Wizard Completing the Melio* FS Setup Wizard Window

The installation of the Melio FS* SAN software is now complete. Repeat the above steps on each server sharing access to a Melio volume.

Create Virtual Shared Storage with Sanbolic Melio FS*

Perform the following steps to create virtual SAN storage that can be accessed by multiple Windows* 2008 R2 servers simultaneously for read and write purposes.

- 1) Provision one or more new LUNs on the storage array and assign it to each server that is going to access the Melio* shared volume.
- 2) Launch the Sanbolic LaScala* cluster volume manager ("Start" > "All Programs" > "Sanbolic" > "LaScala") on one server.

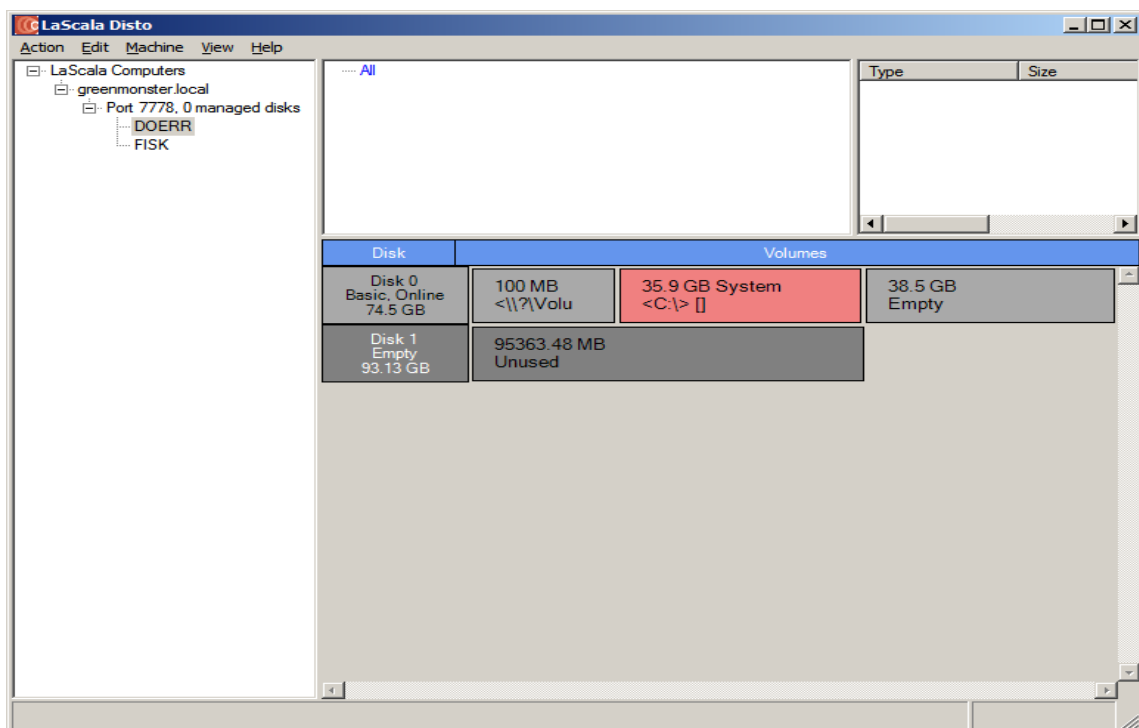


Figure 12 - Launching the Sanbolic* LaScala* Cluster Volume Manager Application Window

- 3) When the LaScala* management console opens, select "View" > "Select Managed Computers" from the toolbar at the top of the console.

To add a server to the list of computers running Melio FS*, enter the name or IP address of a server in the "Computer" field and click the "Add Manually" button to add the server to the list on the right-hand side.

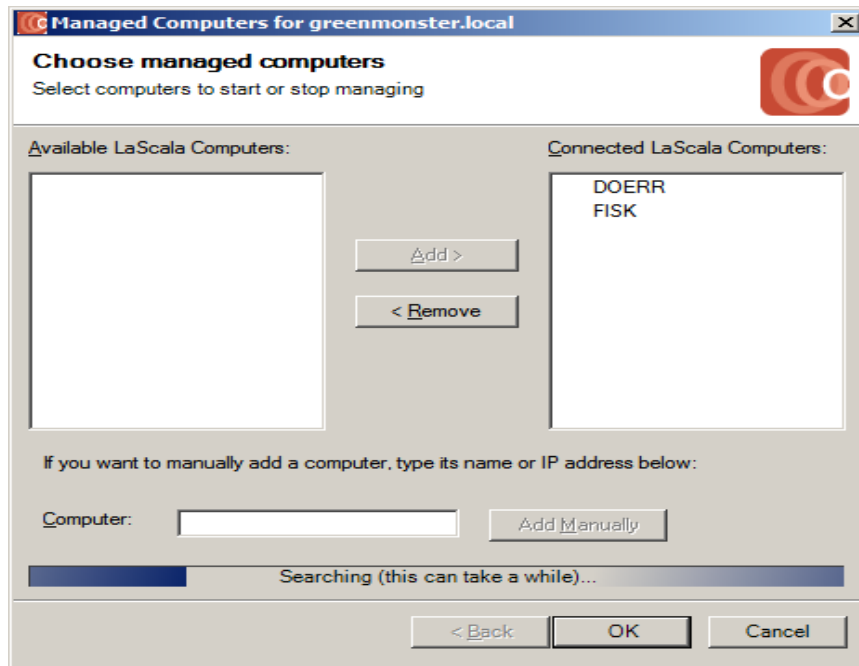


Figure 13 - Selecting the Managed Computers Window

- 4) Once all servers have been added to the list, click "OK" to close the window.
- 5) The list of servers participating in the Melio* cluster will appear on the left-hand side of the management console.
- 6) From the toolbar, select "View" > "Rescan disks" to see all LUNs provisioned in step #1 above.
- 7) All LUNs assigned to the servers will appear on the lower right-hand side of the console.

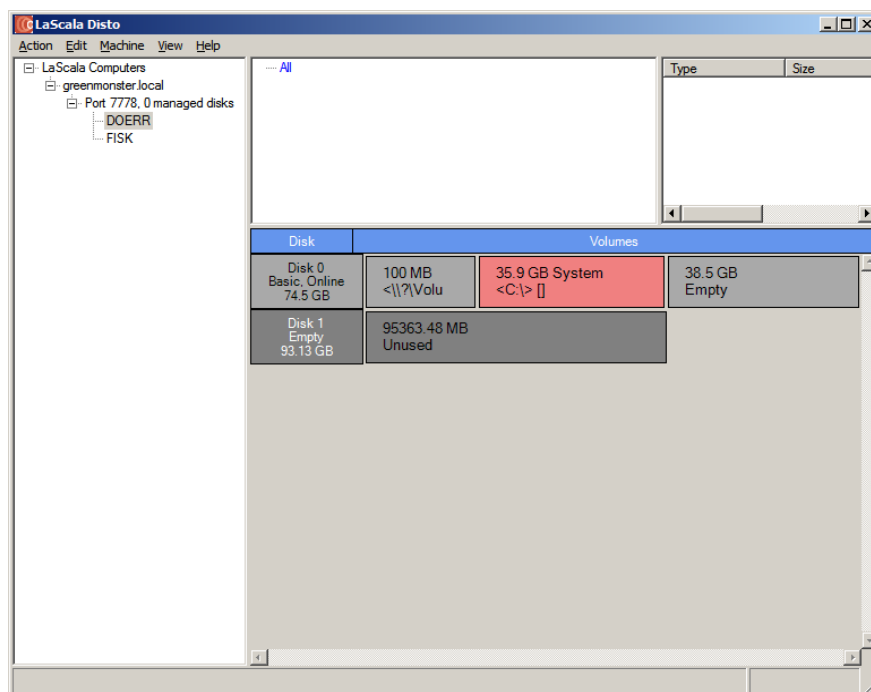


Figure 14 - LUNs Assigned to the Servers Window

- 8) To manage one or more of the LUNs with LaScala*, right-click on a LUN and select "Manage" (to manage a single LUN) or "Manage Multiple" (to manage more than one LUN).
- 9) Leave the default values and click "OK".

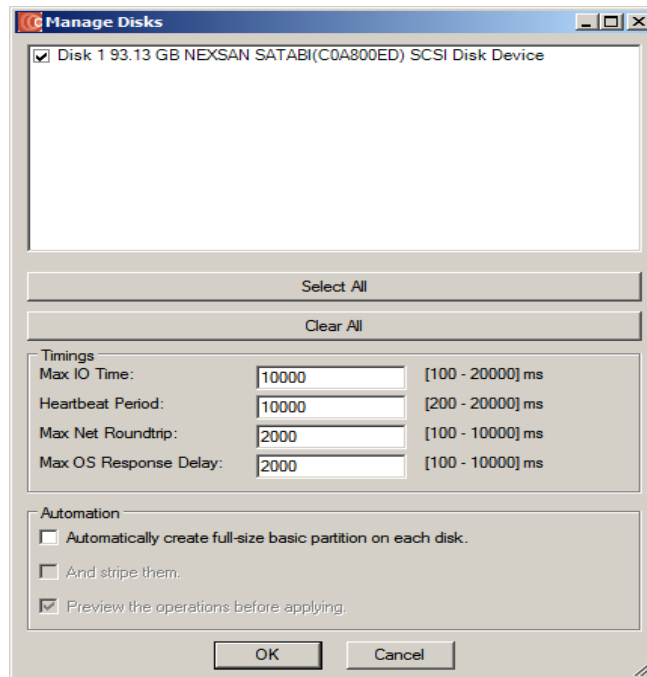


Figure 15 - Managing LUNs with LaScala* Window

- 10) During the format process, a message appears and indicates the LUN is being formatted. Once the LUN is formatted, click "OK".
- 11) The formatted LUN will now appear as "Managed" by LaScala* (see Disk 1 below).

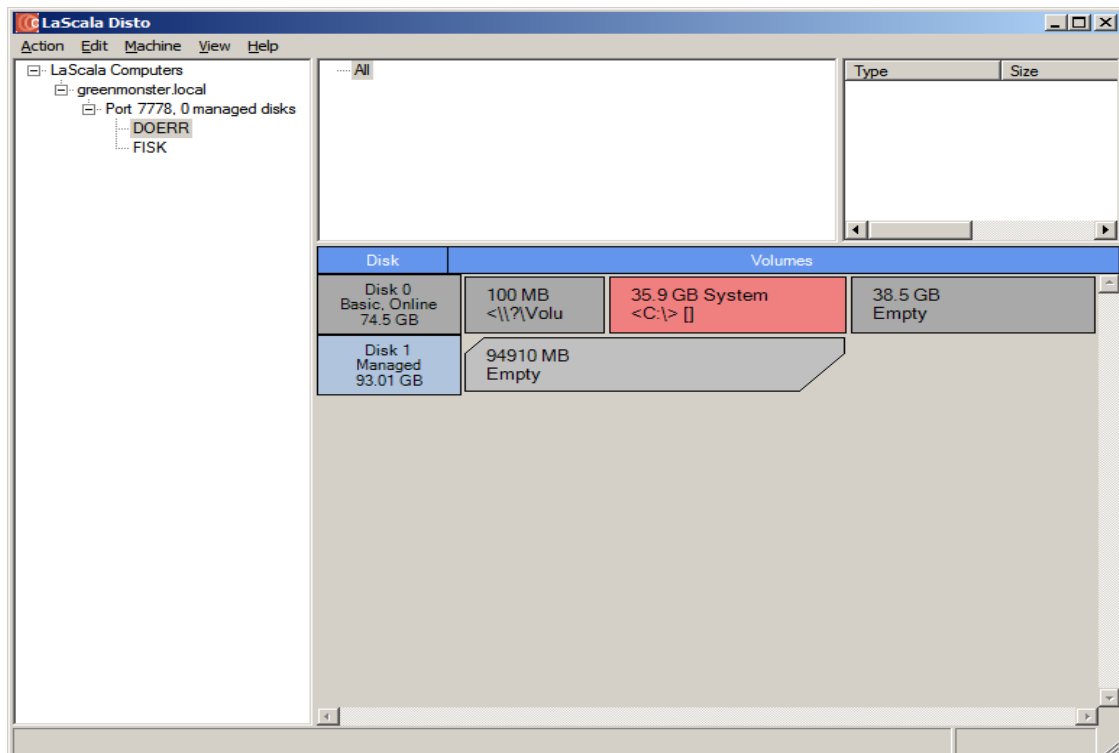


Figure 16 - Managed LUNs in LaScala* Window

- 12) Right-click on the formatted LUN (where it shows “Empty”) and select “New” to create a new partition.

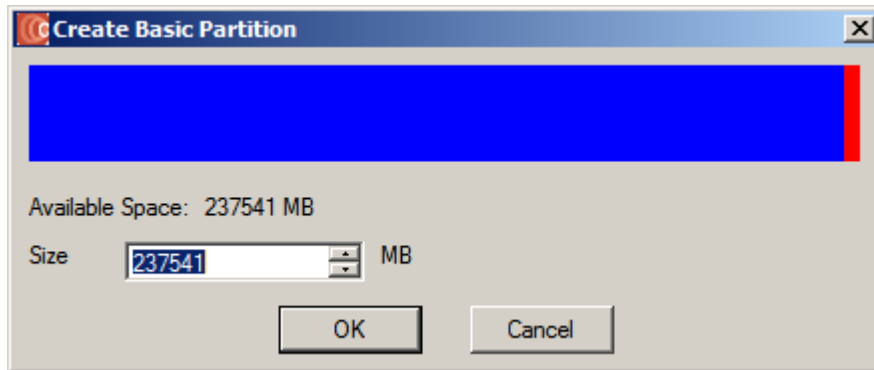


Figure 17 - Creating a Basic Partition Window

- 13) After the partition is created, it will appear in the upper left-hand window pane of the management console.

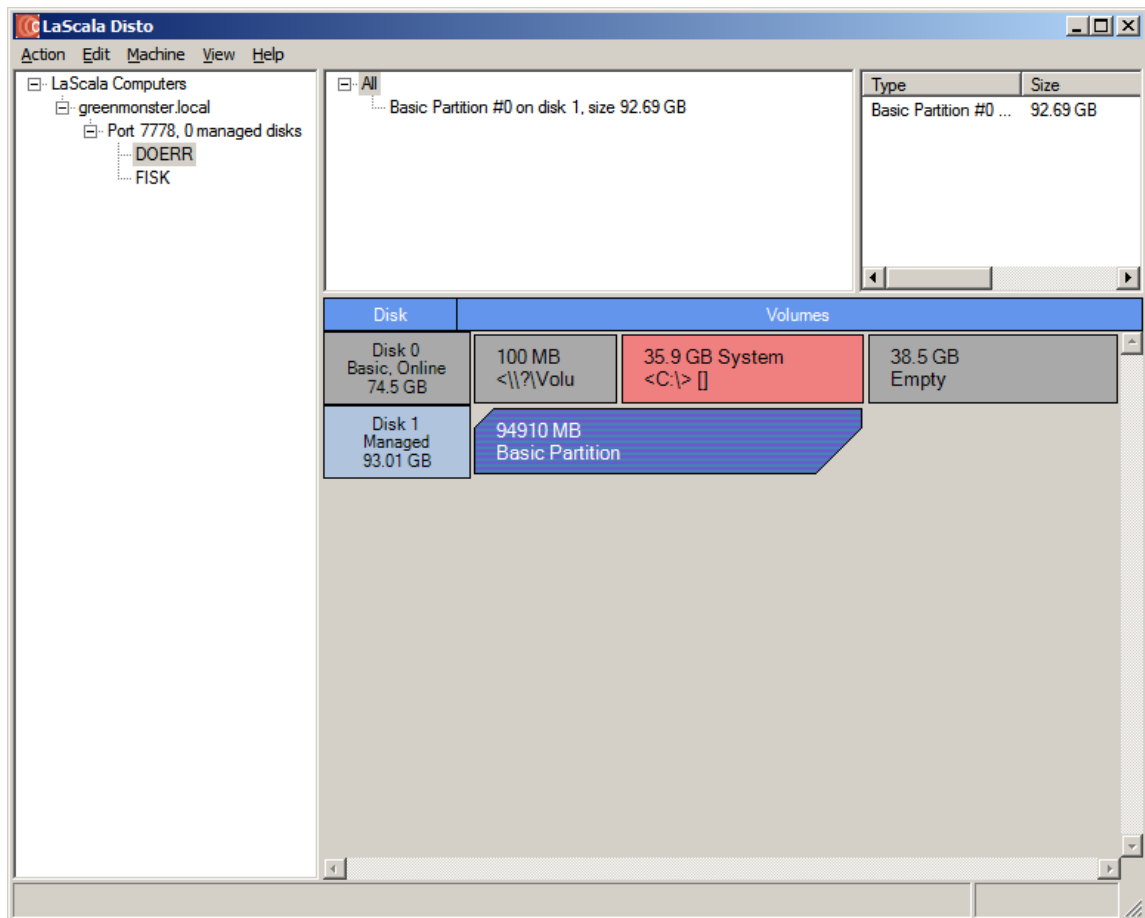


Figure 18 - Partitioned Details in the in LaScala* Window

- 14) From the toolbar, click “Action” > “Apply Changes” to complete the creation of the partition.

Note: The color of the partition will change from blue to black, indicating that it is now an active partition.

15) Right-click on the partition and select "Create Logical Drive".

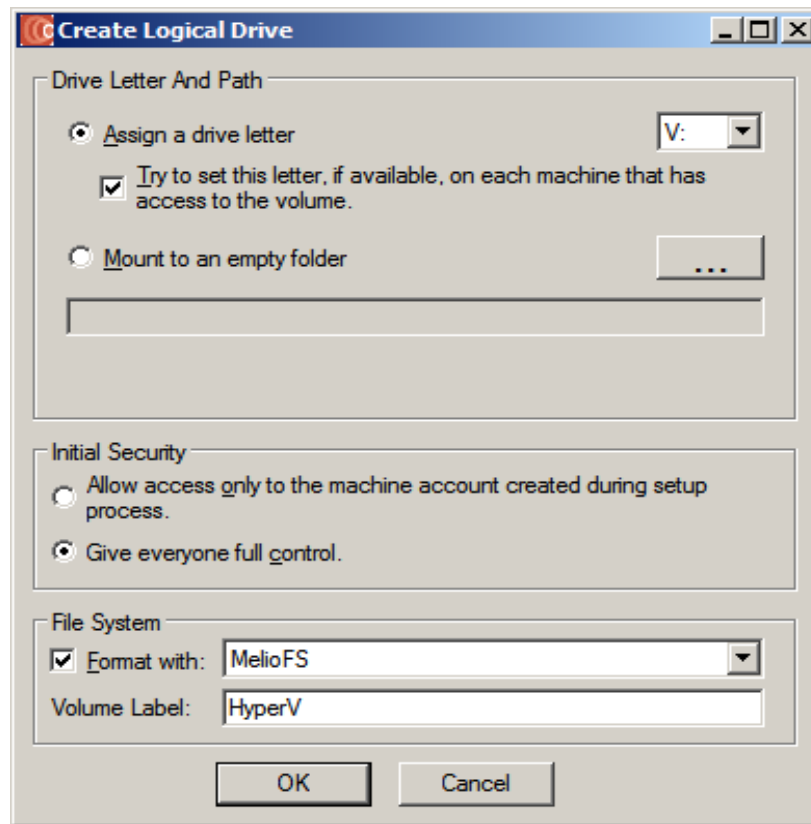


Figure 19 - Creating a Logical Drive Window

16) Specify the drive letter assigned to the new volume. Select the option "Give everyone full control". Leave the file system as "Melio FS" (default). Enter a label (optional), and click "OK" to create the logical drive. A message will appear indicating that the logical drive is being created.

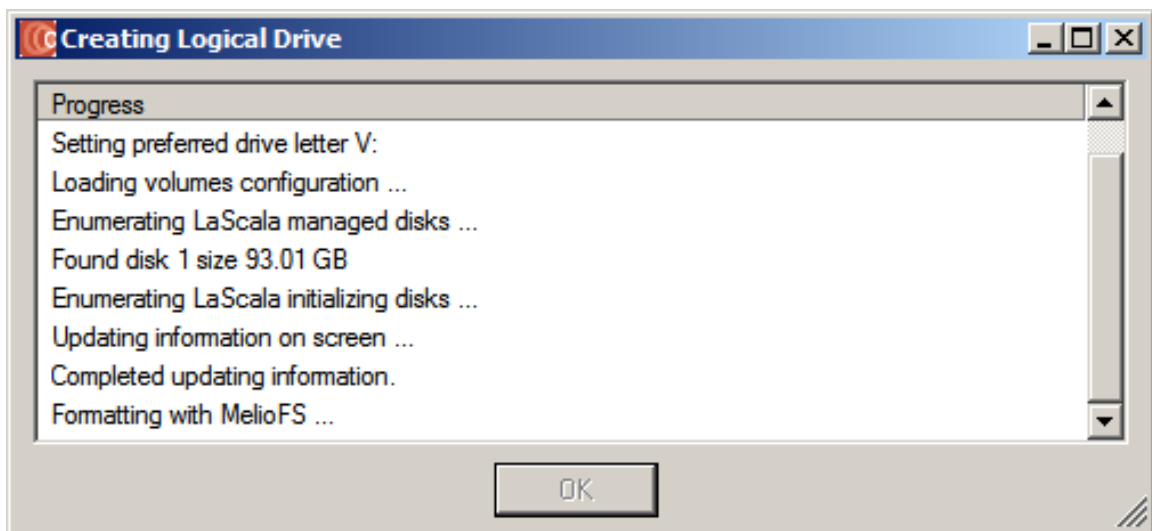


Figure 20 - Creating Logical Drive Window

Note: If Windows displays a message to format the new drive, click "Cancel" as the drive is already being formatted with the Melio* file system.*

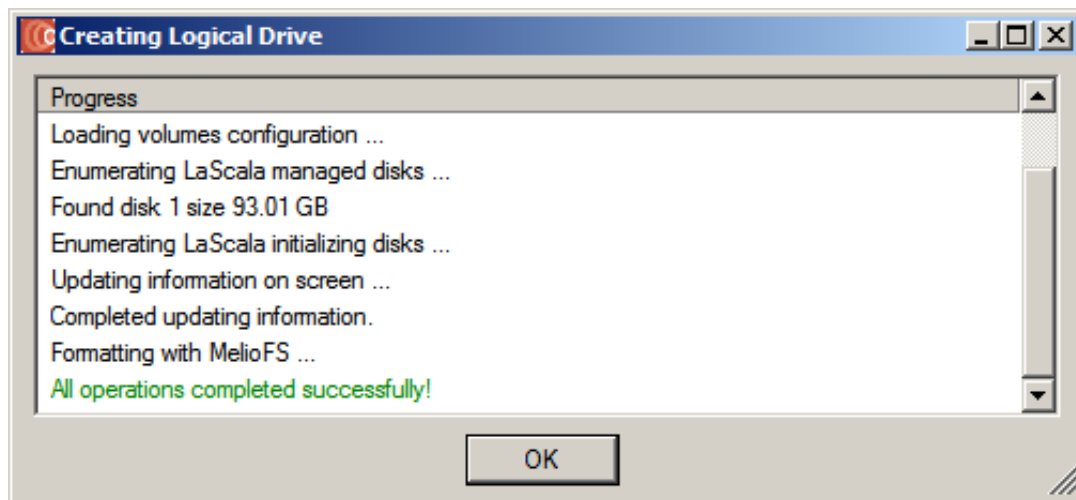


Figure 21 - Creating Logical Drive Window

- 17) Once the logical drive is created, a message appears and indicates the logical drive is created.
- 18) Click "OK" to return to the LaScala* management console.
- 19) The logical drive will appear with its assigned drive letter in the upper left-hand window pane of the management console.

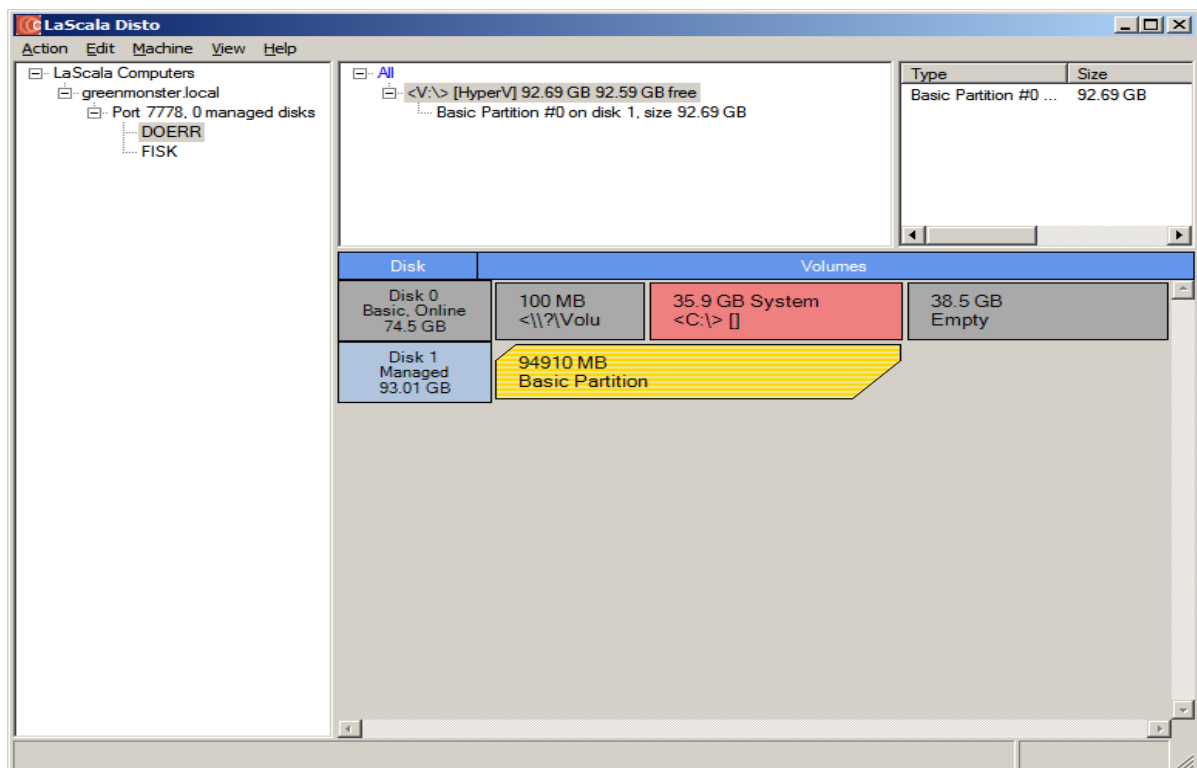


Figure 22 - Assigned Drive in LaScala* Window

- 20) Open "My Computer" to see the new Melio* volume managed by LaScala*.
- 21) Open "My Computer" on all other server(s) participating in the Melio* cluster to see the new Melio* shared volume.

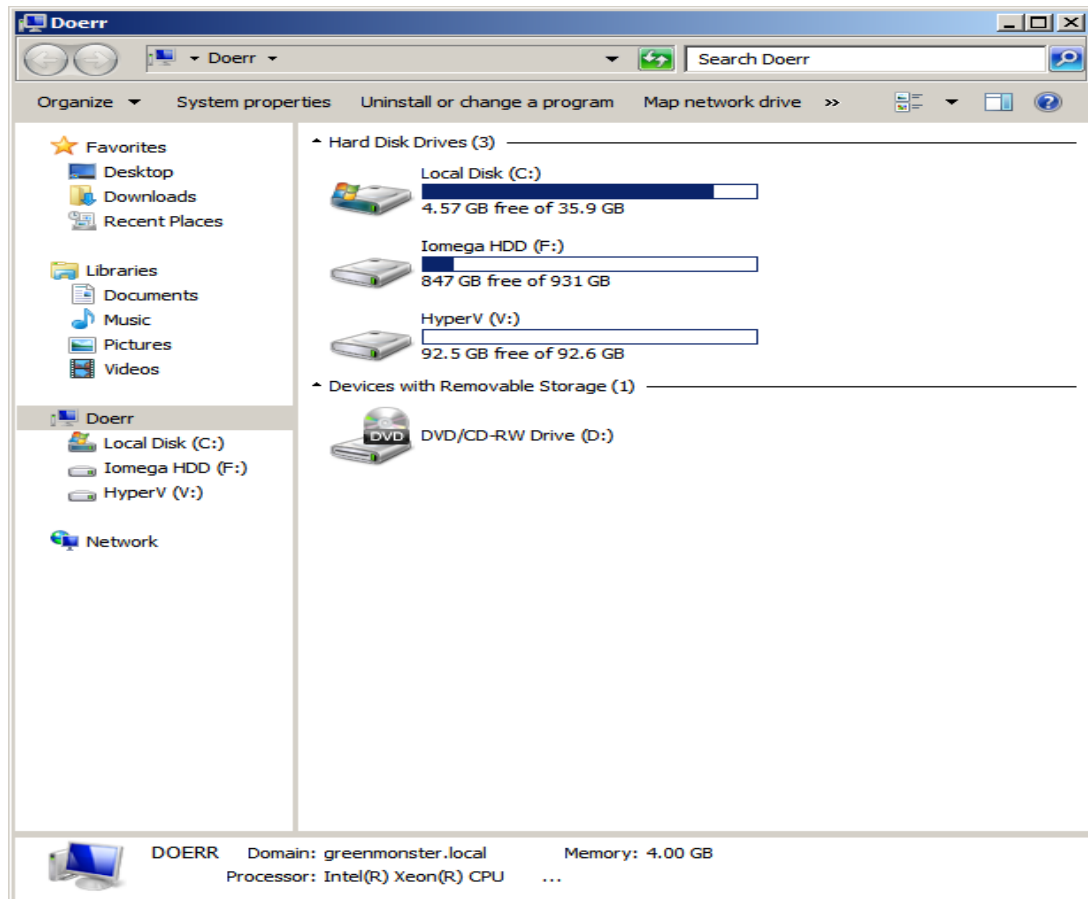


Figure 23 - My Computer Window Displaying the Melio Shared Volume Window

Congratulations! A virtual shared storage for a virtual datacenter is created.

Advantages of Using Sanbolic Melio FS* with Microsoft Hyper-V*

Using Sanbolic Melio FS* and Microsoft Hyper-V*, organizations can realize the benefits afforded by the combination of enterprise-class server and storage virtualization, including the following:

- 1) Shared read-and-write access to VM VHDs by multiple Hyper-V* hosts.
- 2) High availability of virtual machines via live migration between Hyper-V* hosts.
- 3) Cluster-wide or per-VM snapshots for enhanced VM protection.
- 4) The ability to backup any VM at any time from any Hyper-V* host.
- 5) Centralized data access for applications running on virtual machines.
- 6) Application clustering to improve application performance, scalability and availability.
- 7) Network sharing via CIFS or NFS.
- 8) The ability to guarantee storage throughput to specific VMs, VHDs and/or processes via storage-based Quality of Service (QoS).
- 9) Enhanced locking for VHDs.
- 10) Support for up to 256 Hyper-V* hosts.
- 11) Support for up to 128 failover clusters.

Additional Benefits:

- 1) Volumes managed and formatted with Sanbolic Melio FS* are automatically recognized by Windows* Failover Services, ensuring quick and seamless implementation in Hyper-V* virtual server infrastructures.
- 2) Sanbolic Melio FS* is compatible with System Center Virtual Machine Manager (SCVMM) R2*.

Support Information

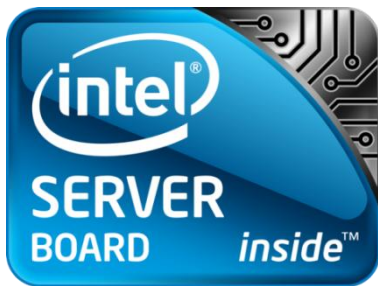
Please contact the vendor for any support issues with application software or third party hardware used in recipe configurations. Intel customer support does not provide support for any third party software or hardware-related issues and calls received by the Intel support site will be referred to the appropriate vendor.

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