StarWind iSCSI SAN Software: Using StarWind with MS Cluster on Windows Server 2008

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TRADEMARKS

CHANGES

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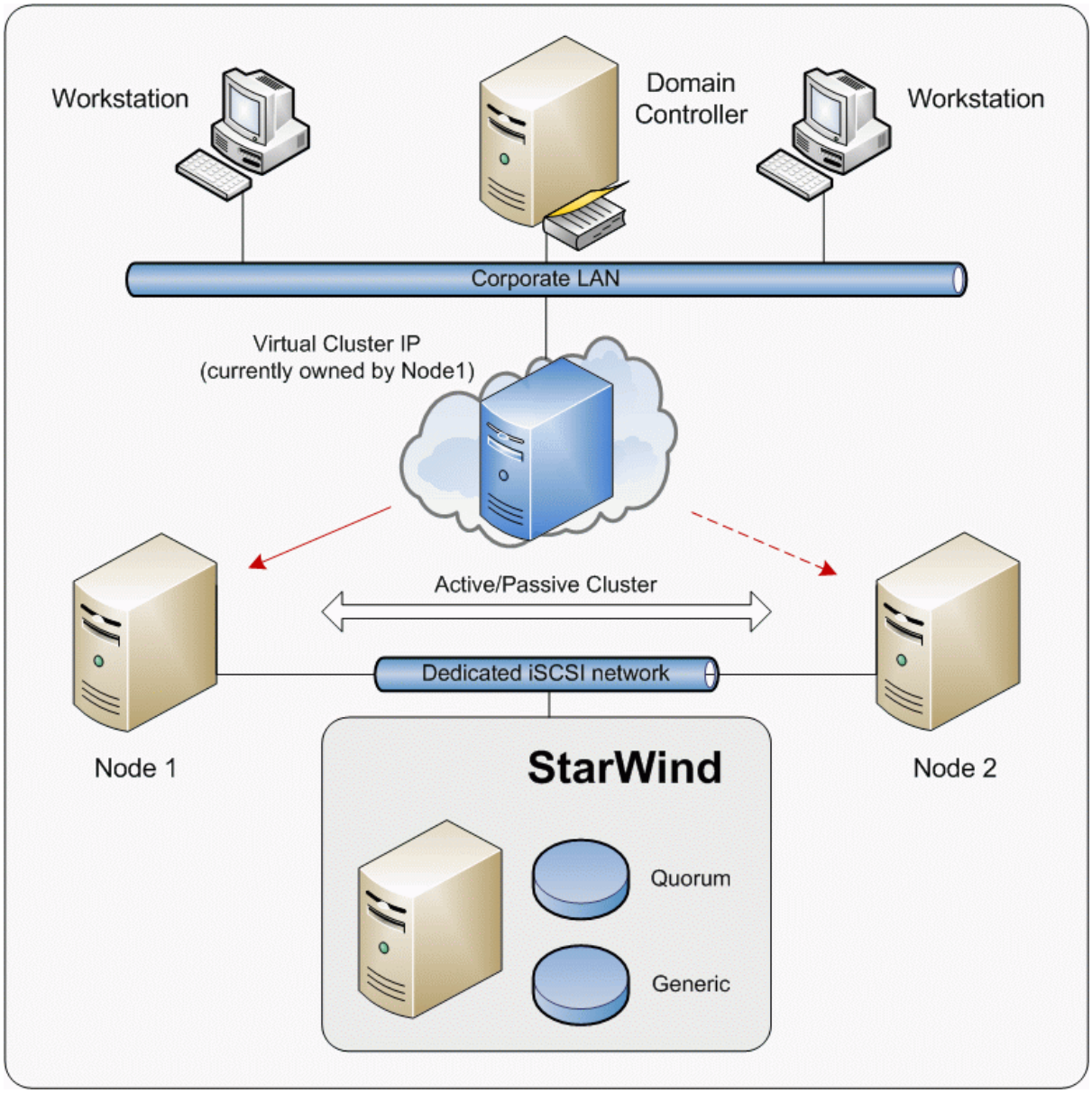
Guide

Introduction

Software clustering technology enables you to make several servers to work as a unit. Various cluster configurations can be implemented. One of the most frequently used configurations is the failover cluster. This configuration assumes that if one of the cluster nodes fails, the reserved node automatically brings online, serving the applications. With that the workflow remains uninterrupted and secured.

Failover cluster configuration includes two (or more) server nodes that share an external storage. Based on the iSCSI technology, **StarWind Softwafe Inc. StarWind** enables to create an external storage in Windows environment without implementation of expensive FC or external SCSI solutions. With **StarWind** you can create a shared disk array on a host running Microsoft Windows.

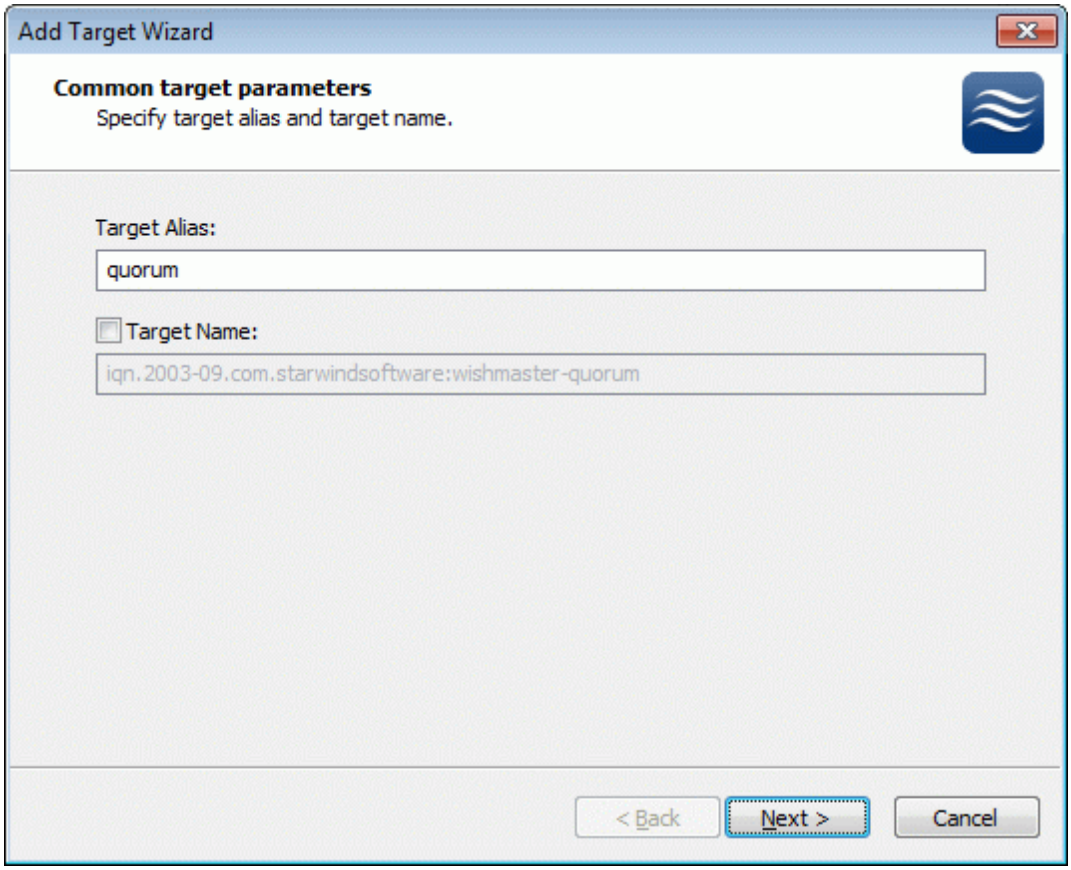
This document gives you detailed step-by-step instructions on **StarWind** configuring for failover clusters.



Configuring StarWind Server

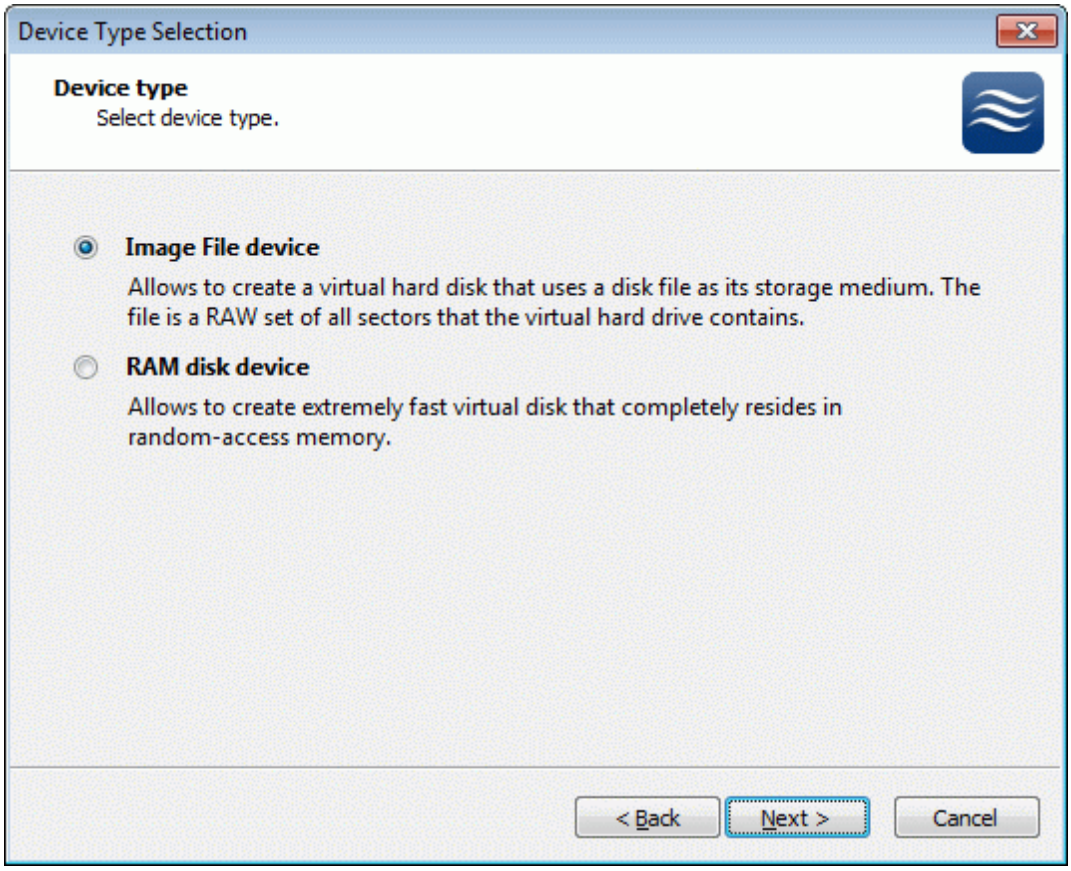
Preparing Quorum Volume

Launch the **StarWind Management Console** selecting **Start -> All Programs -> StarWind Software -> StarWind -> StarWind**. After the console is launched its icon appears in the system tray. Double click the icon with the left mouse button or single click it with the right and select **Start Management** pop-up menu item. From the **StarWind Servers** tree please select the computer you wish to connect to. Press the right mouse button over the desired host (computer) and select the **Connect** menu item. You will be prompted to enter the login and password. Default ones are: root, starwind. You can always change them later. After you have successfully connected to the **StarWind Service**, please click the right mouse button over the desired host (computer) and select **Add Target** pop-up menu item. In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.



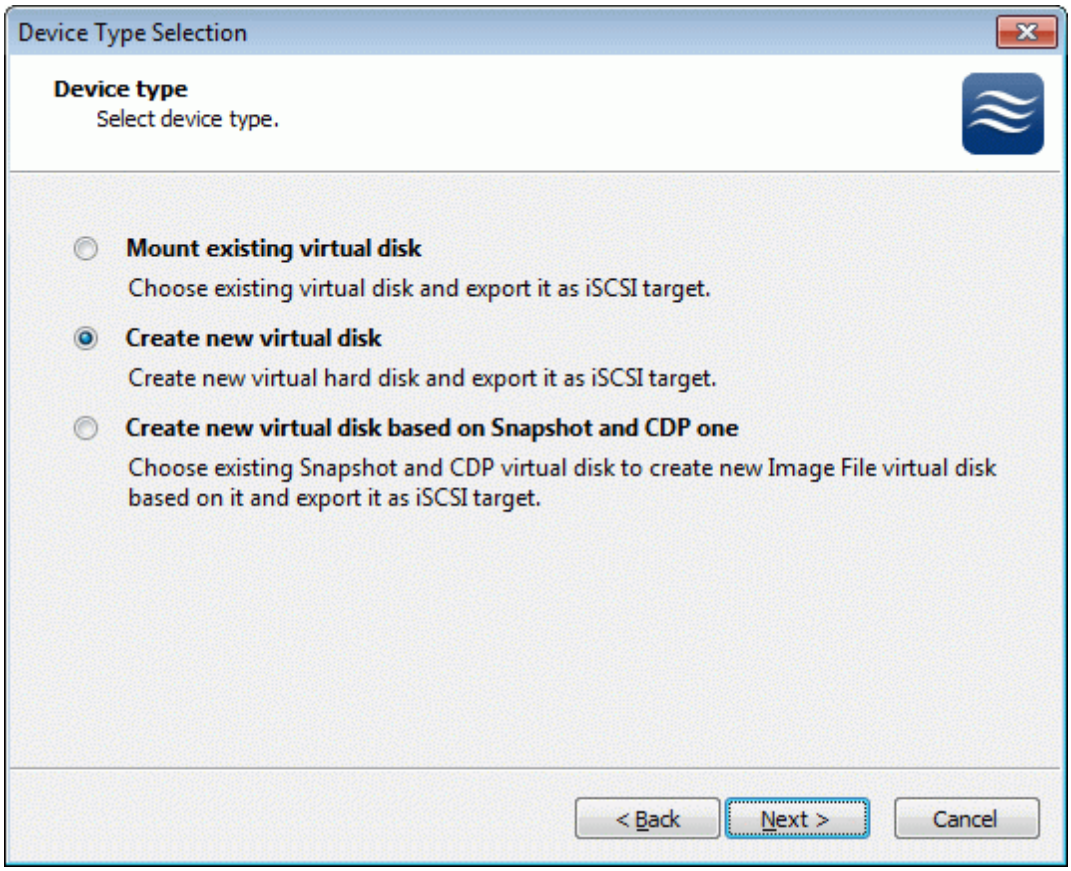
Press the **Next** button to continue.

Select **Image File device**.



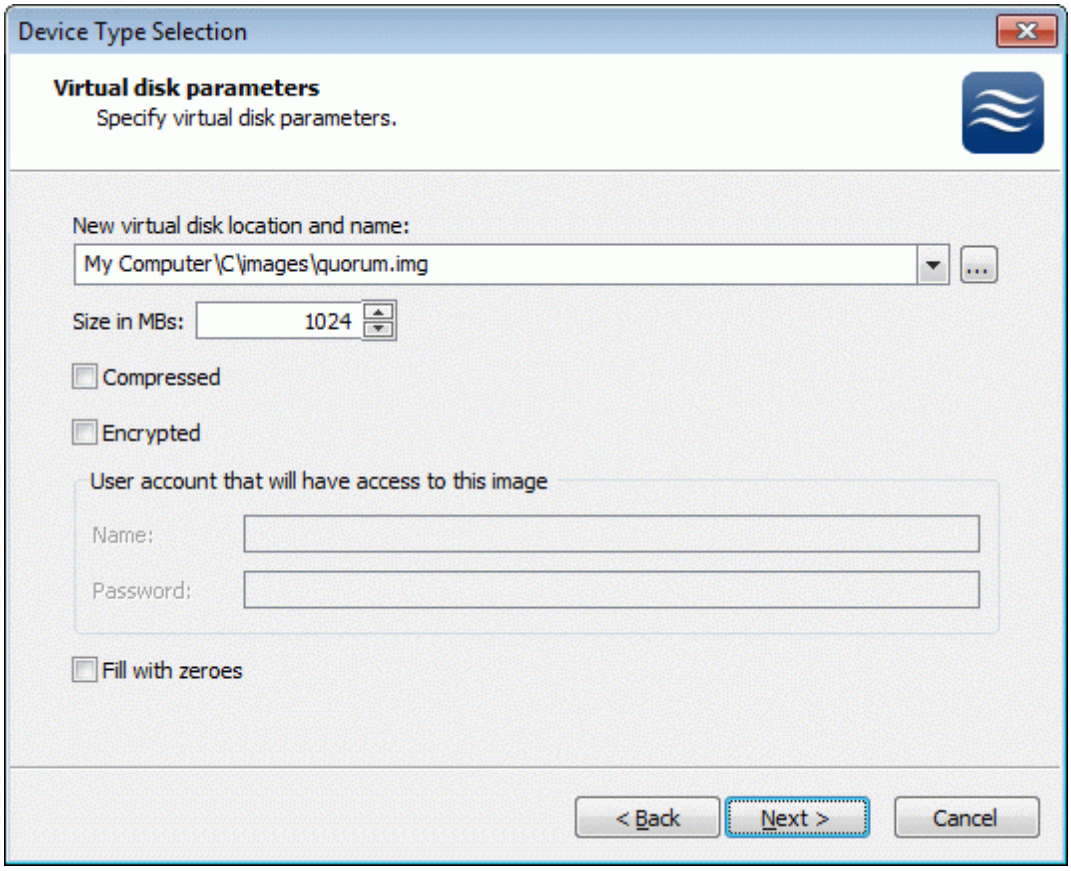
Press the **Next** button to continue.

Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.



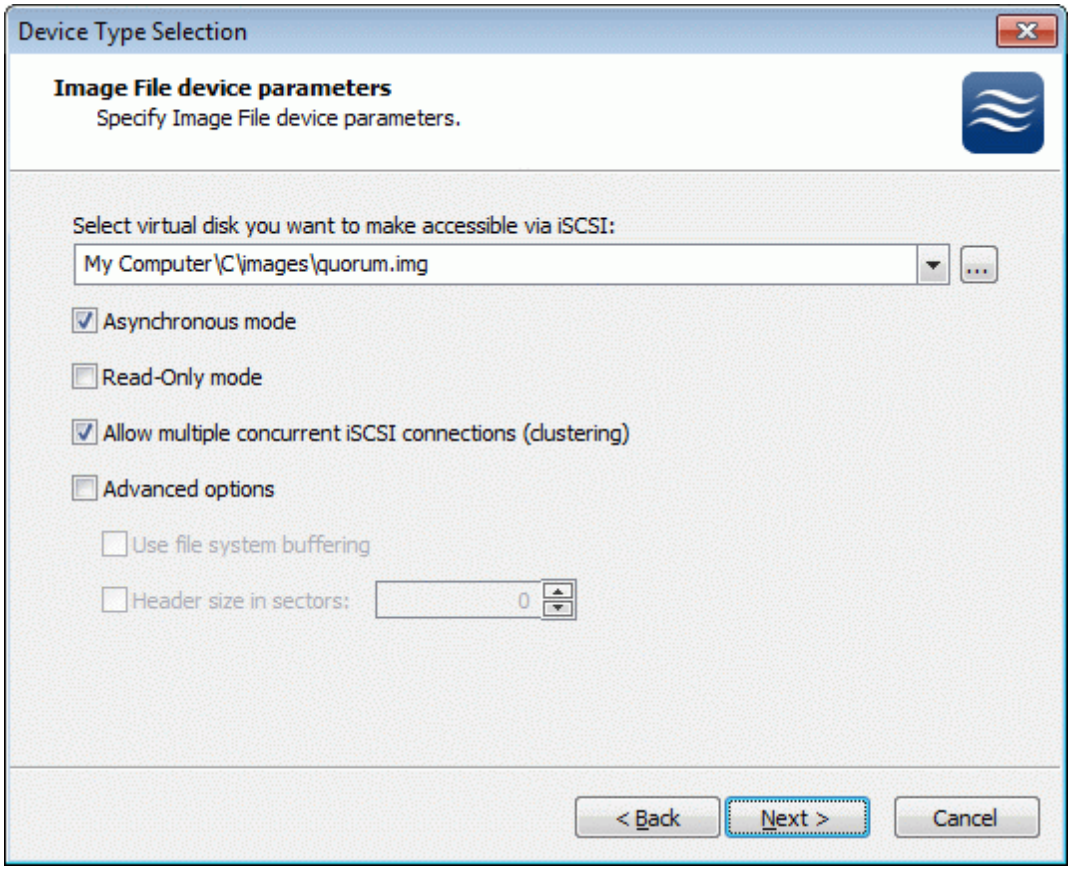
Press the **Next** button to continue.

If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual disk you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).



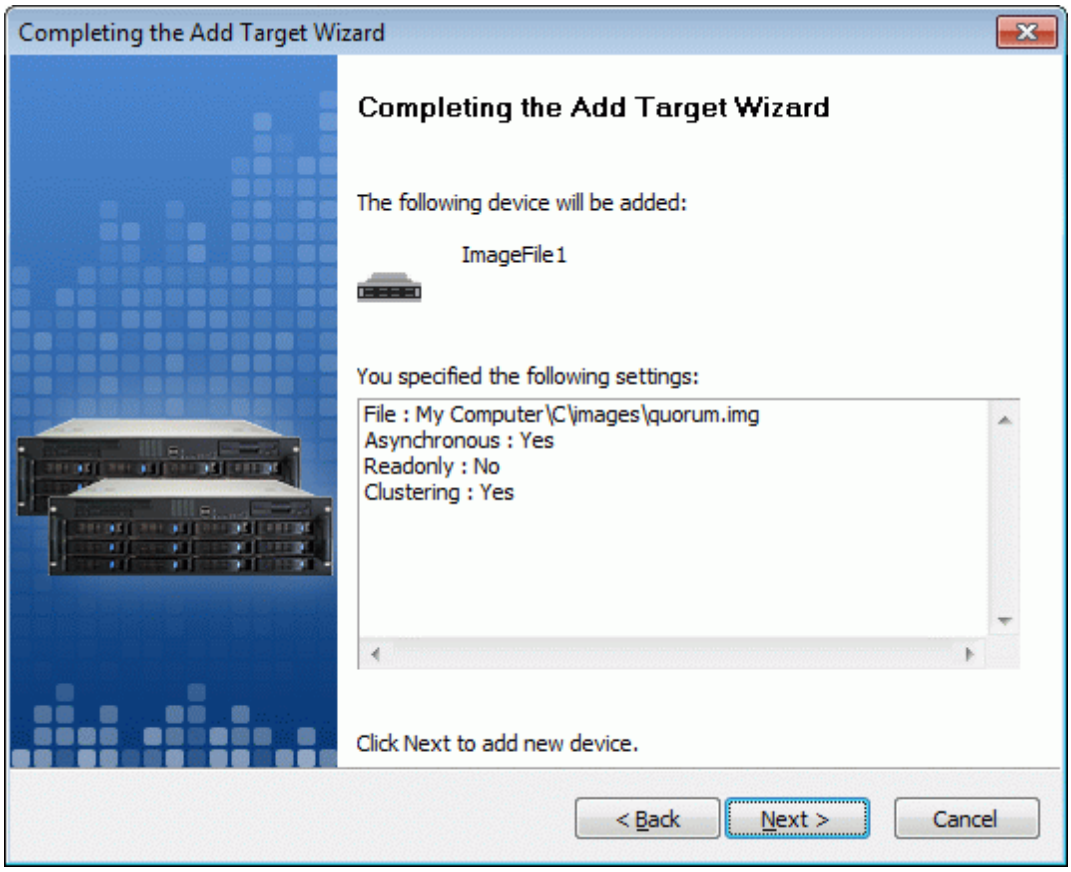
Press the **Next** button to continue.

Image File device has some extra parameters. Check **Allow multiple concurrent iSCSI connections (clustering)** checkbox. Please refer to the online help for details regarding those additional parameters (**Asynchronous mode, Allow multiple connections (clustering), Read-only mode** and **Specify advanced options**).



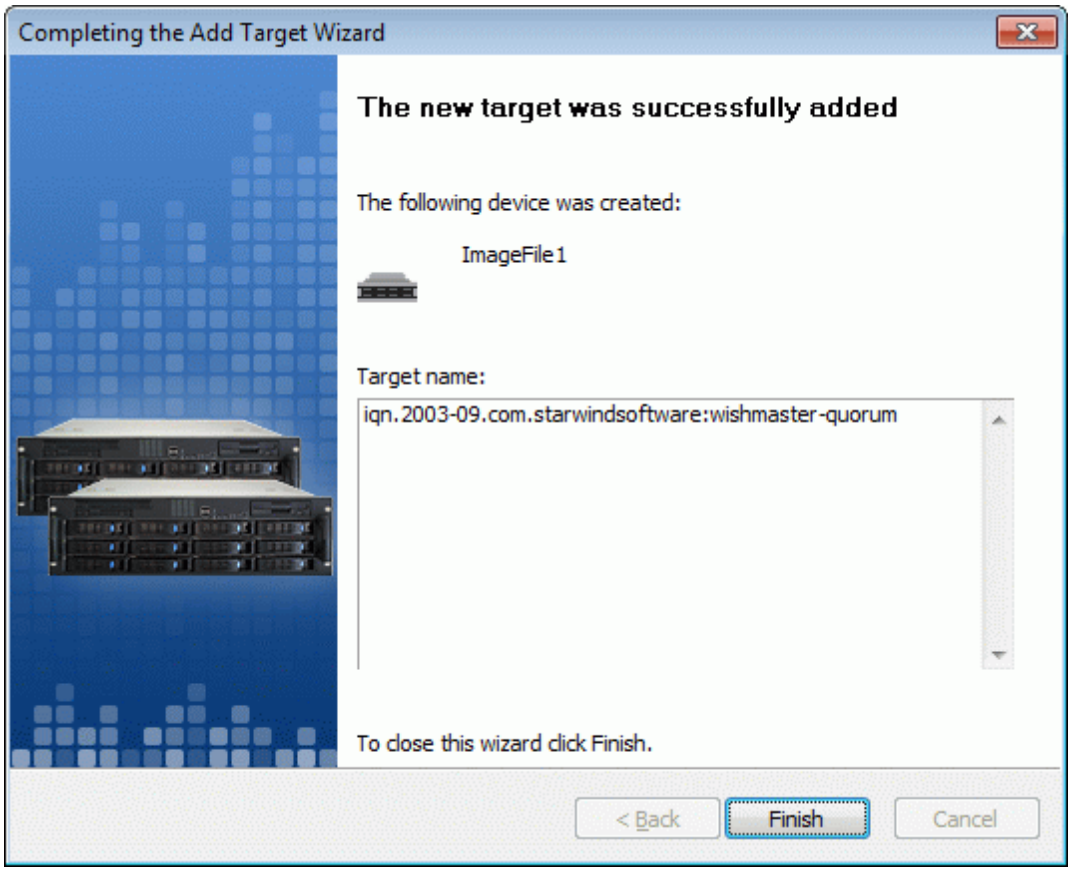
Press the **Next** button to continue.

Check the device parameters are correct. Press the **Back** button should any changes be required.



Press the **Next** button to continue.

A summary of the created device is displayed on the last wizard page (see image below).

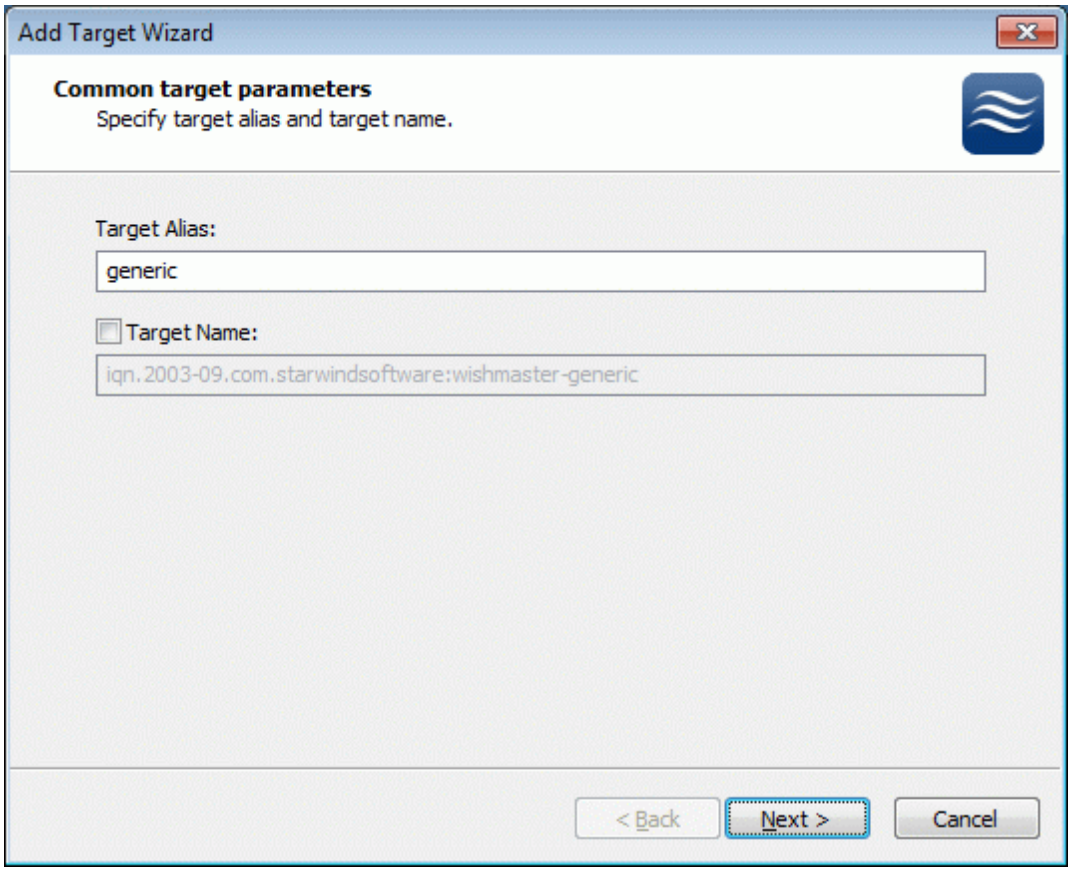


Press the **Finish** button to close the wizard.

Preparing Generic Volume

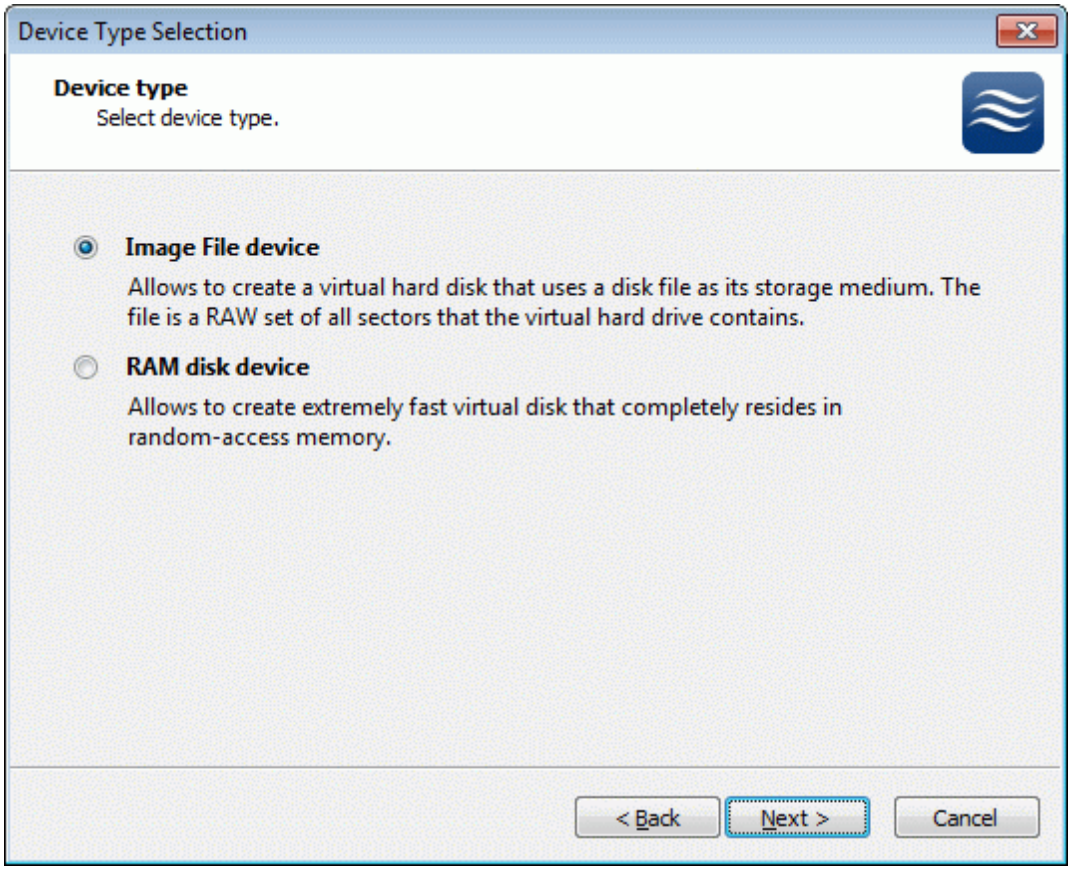
Click the right mouse button over the host and select **Add Target** pop-up menu item.

In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.



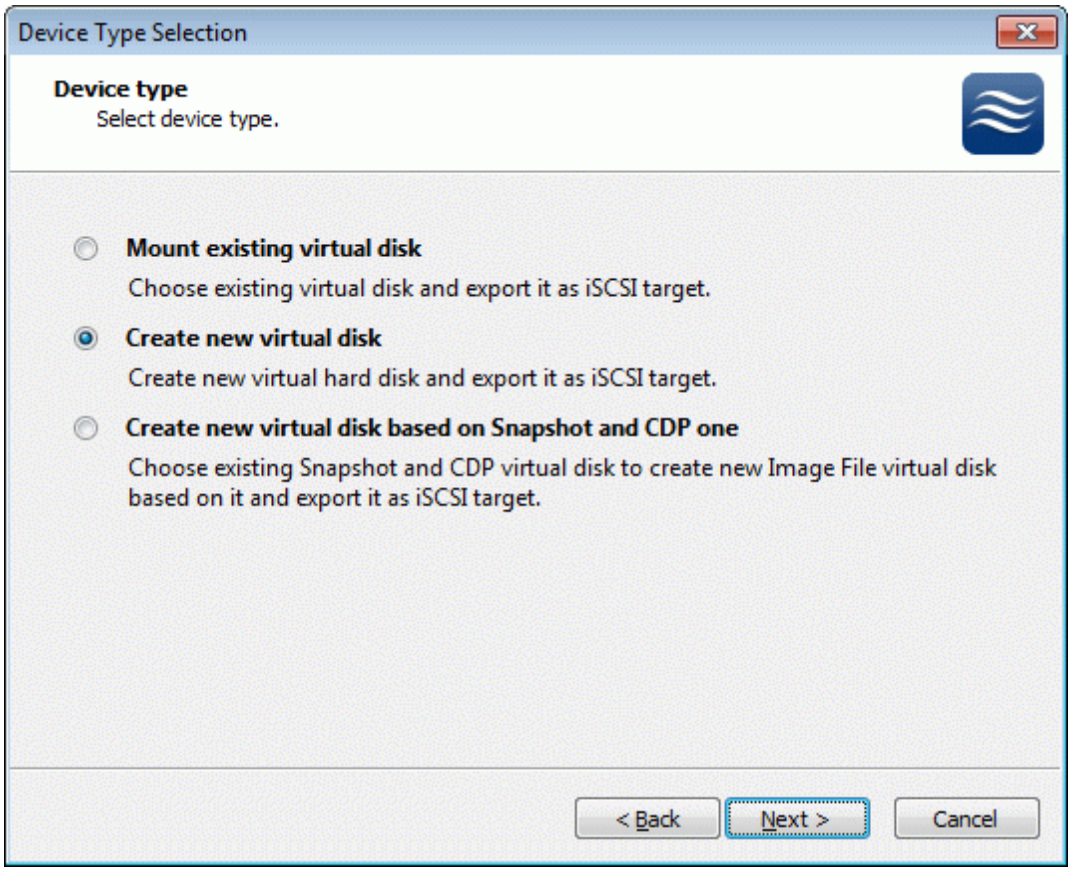
Press the **Next** button to continue.

Select **Image File device**.



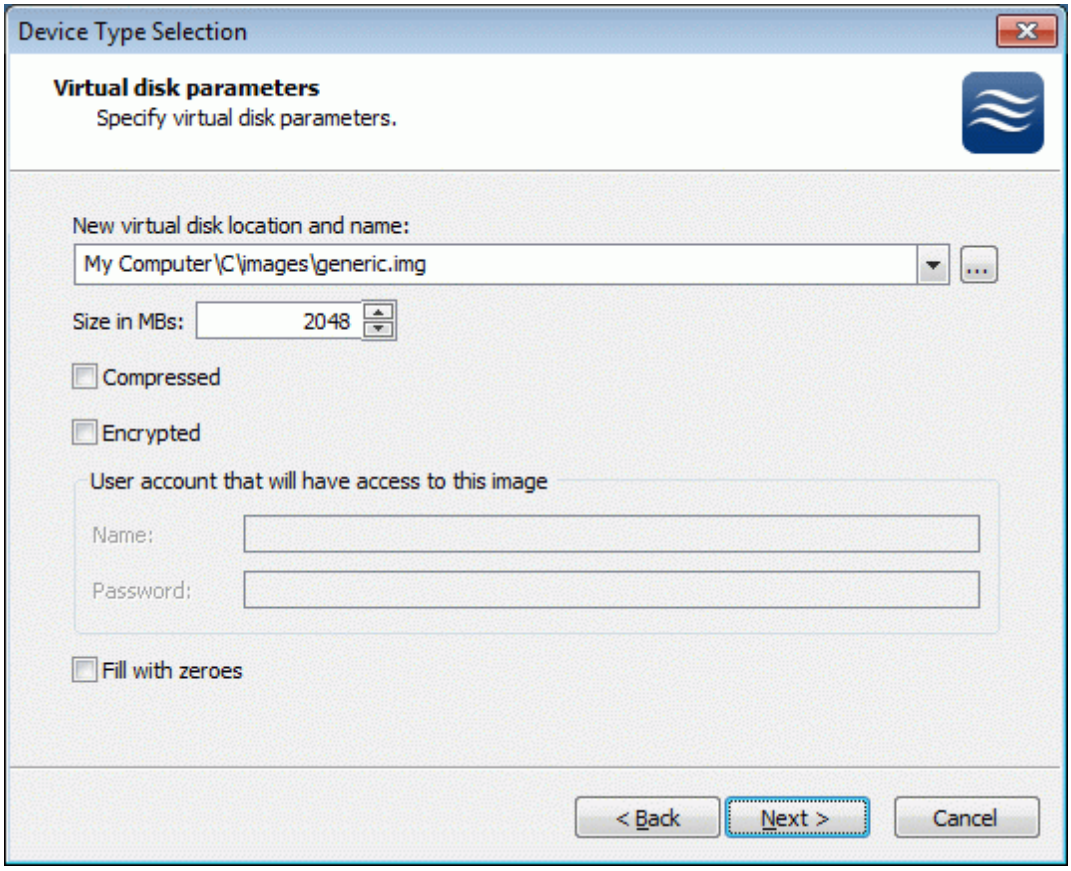
Press the **Next** button to continue.

Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.



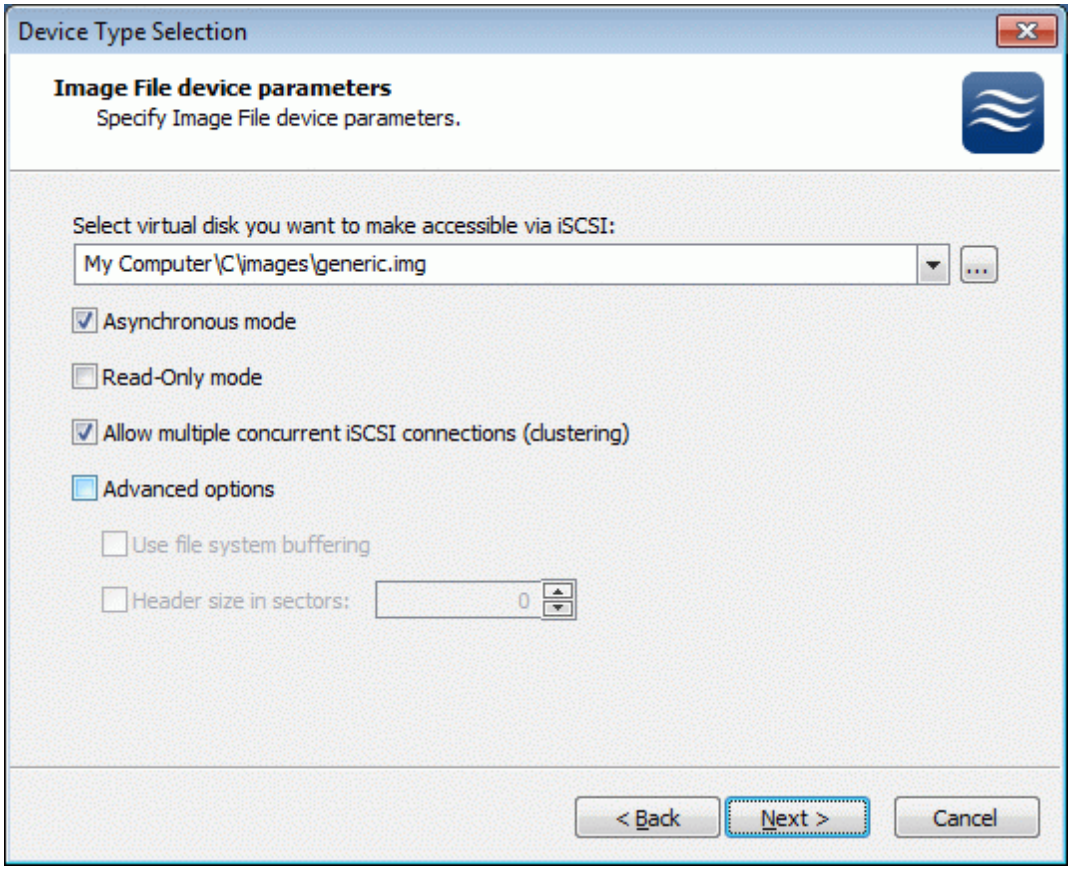
Press the **Next** button to continue.

If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual disk you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).



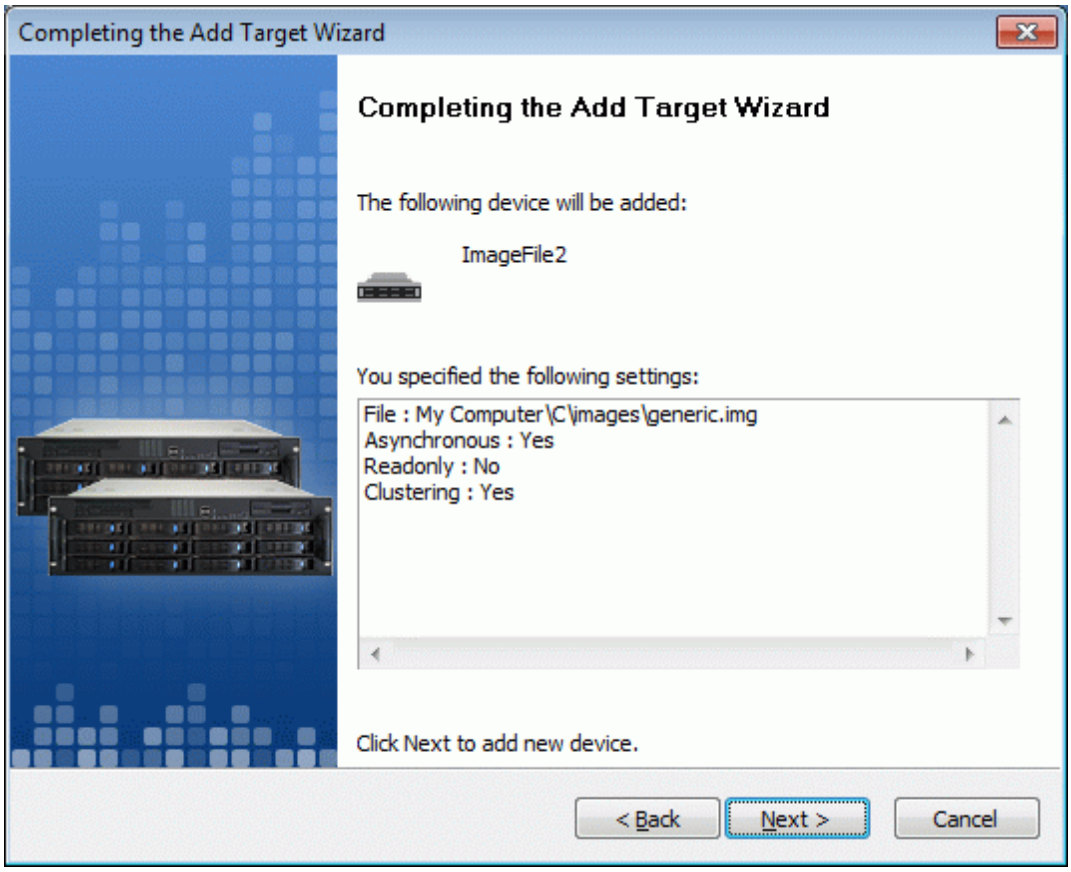
Press the **Next** button to continue.

Image File device has some extra parameters. Check **Allow multiple concurrent iSCSI connections (clustering)** checkbox. Please refer to the online help for details regarding those additional parameters (**Asynchronous mode, Allow multiple connections (clustering), Read-only mode** and **Specify advanced options**).



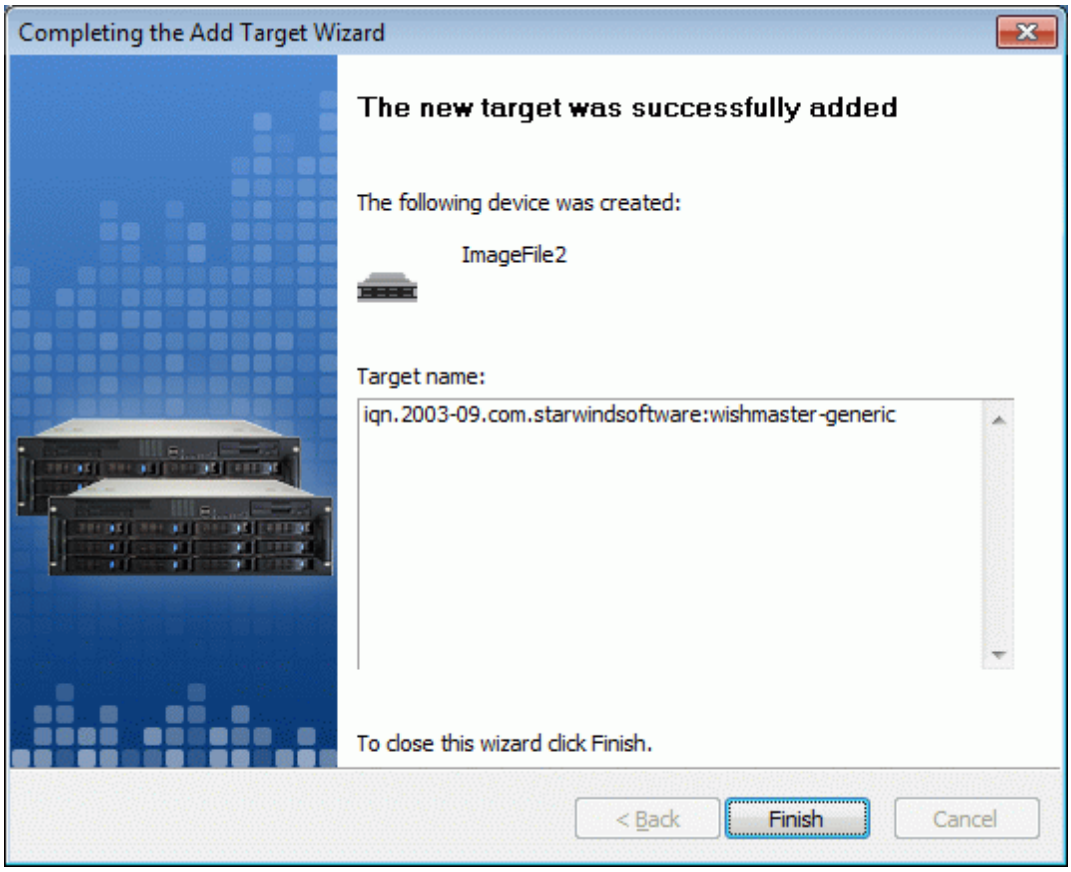
Press the **Next** button to continue.

Check the device parameters are correct. Press the **Back** button should any changes be required.



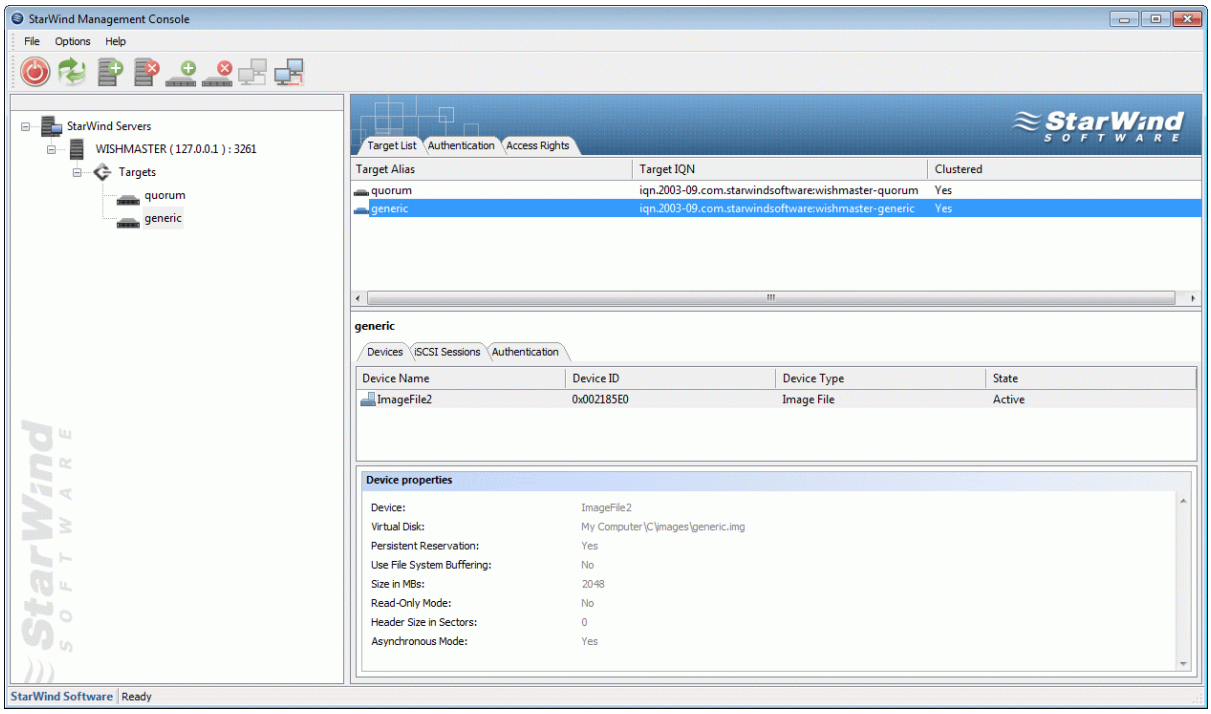
Press the **Next** button to continue.

A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.

If successful, the **StarWind Console** should look like the sample image provided below.

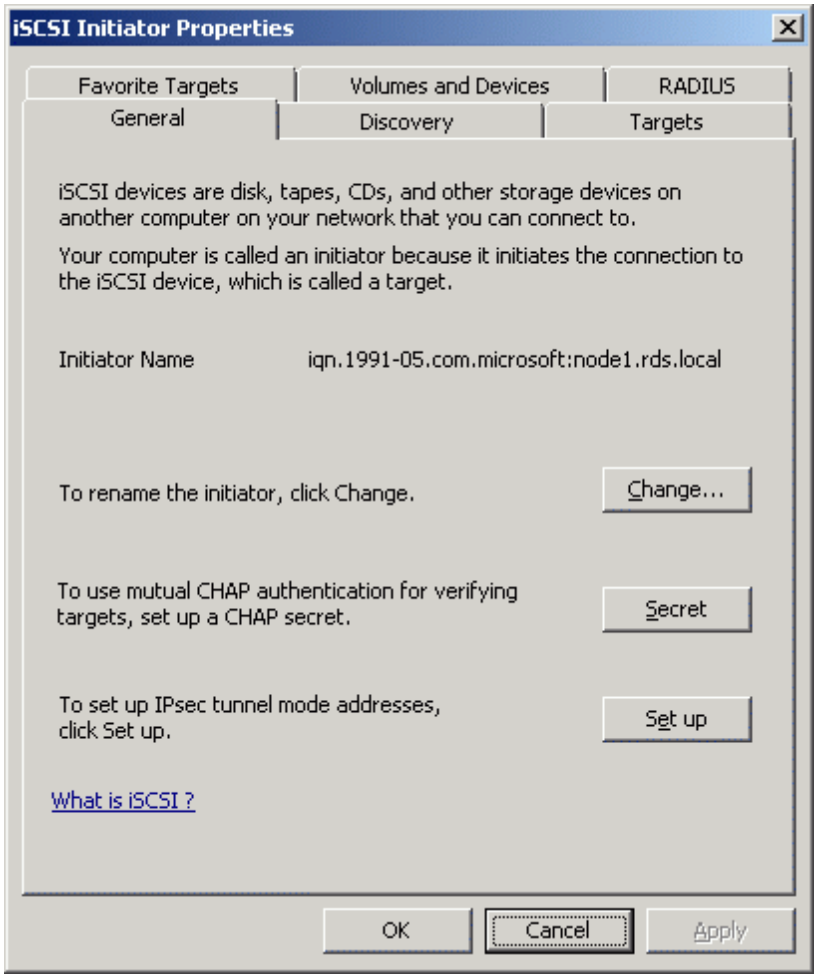


Preparing Cluster Nodes

Node 1

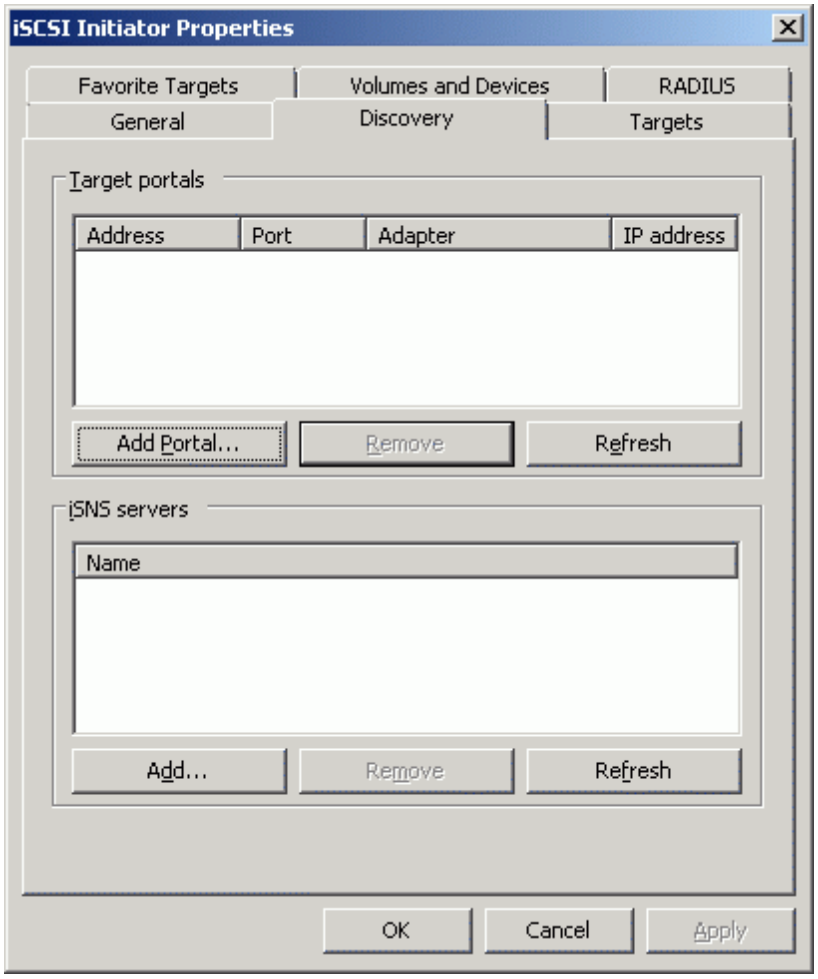
Configuring iSCSI initiator

Launch the Microsoft iSCSI Software Initiator application **Administrative Tools -> iSCSI Initiator**



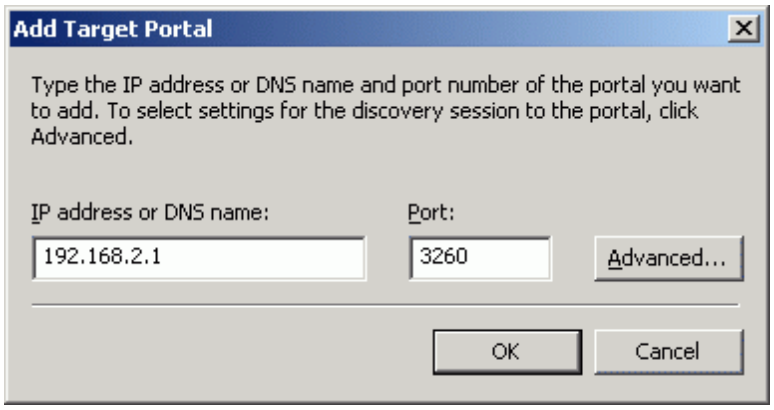
Select the **Discovery** Tab.

In the **Target Portals** group, click the **Add Portal...** button.



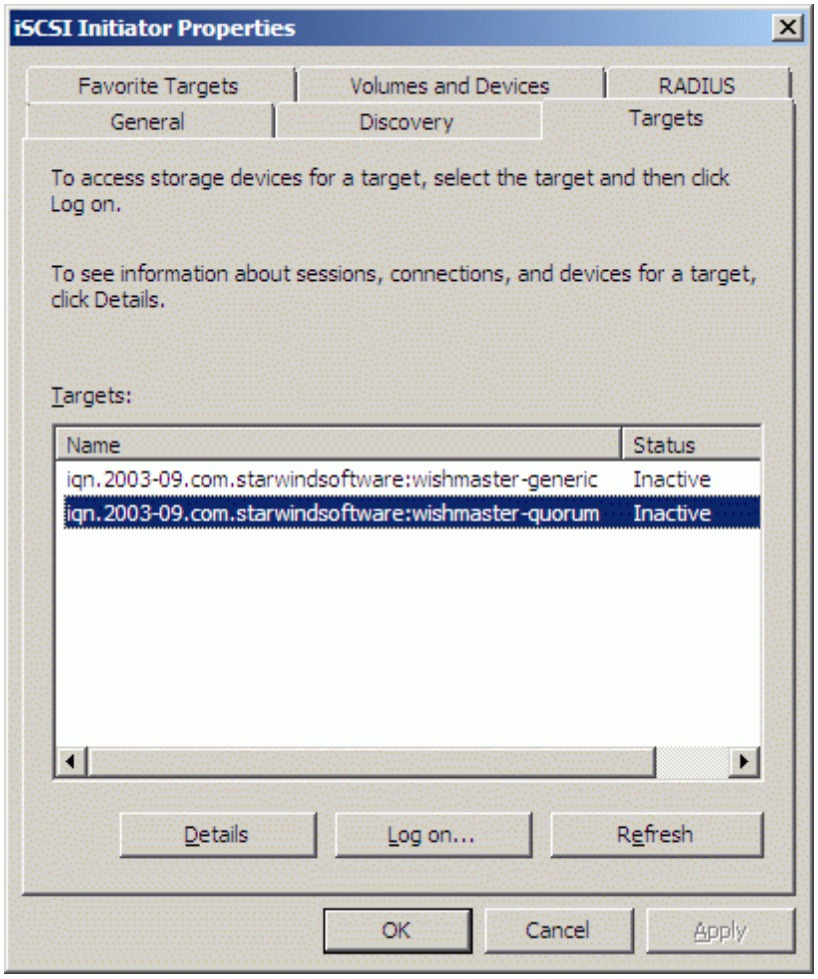
Press the **Add Portal...** button.

In the **Add Target Portal** dialog enter **IP address or DNS name** of the **StarWind** target server.



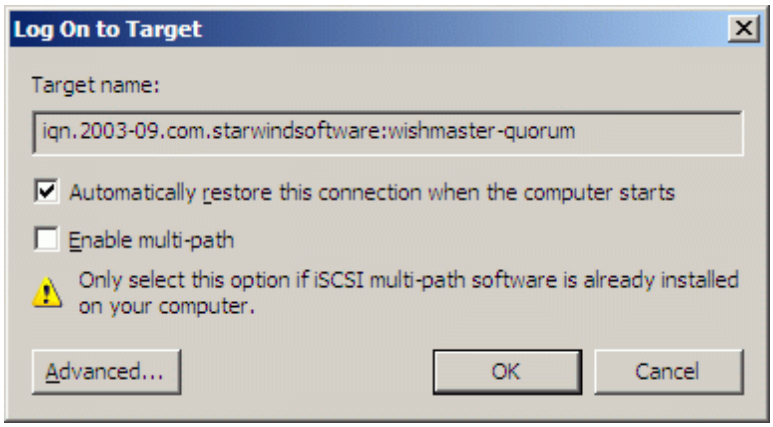
Press the **OK** button to continue.

Click on the **Targets** tab. Select the IQN of the target just added.

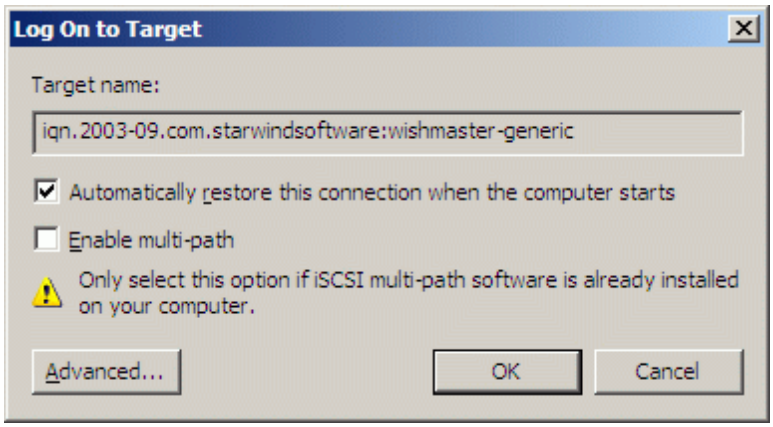


Press the **Log On…** button.

The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.

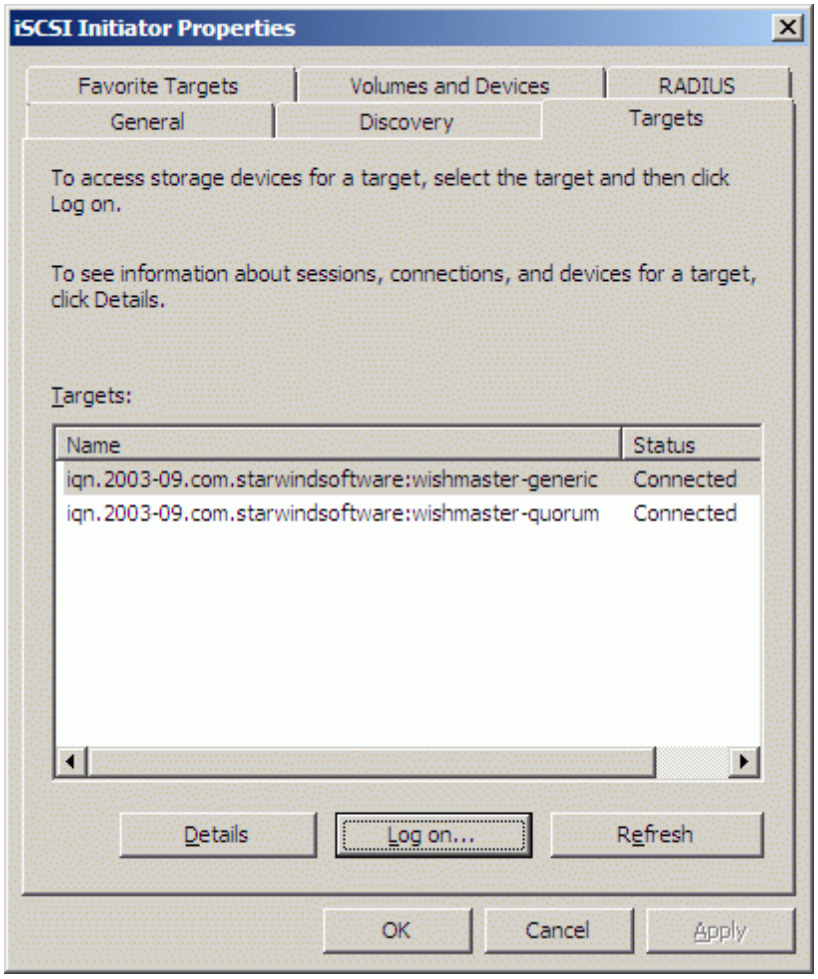


Press the **OK** button to continue.



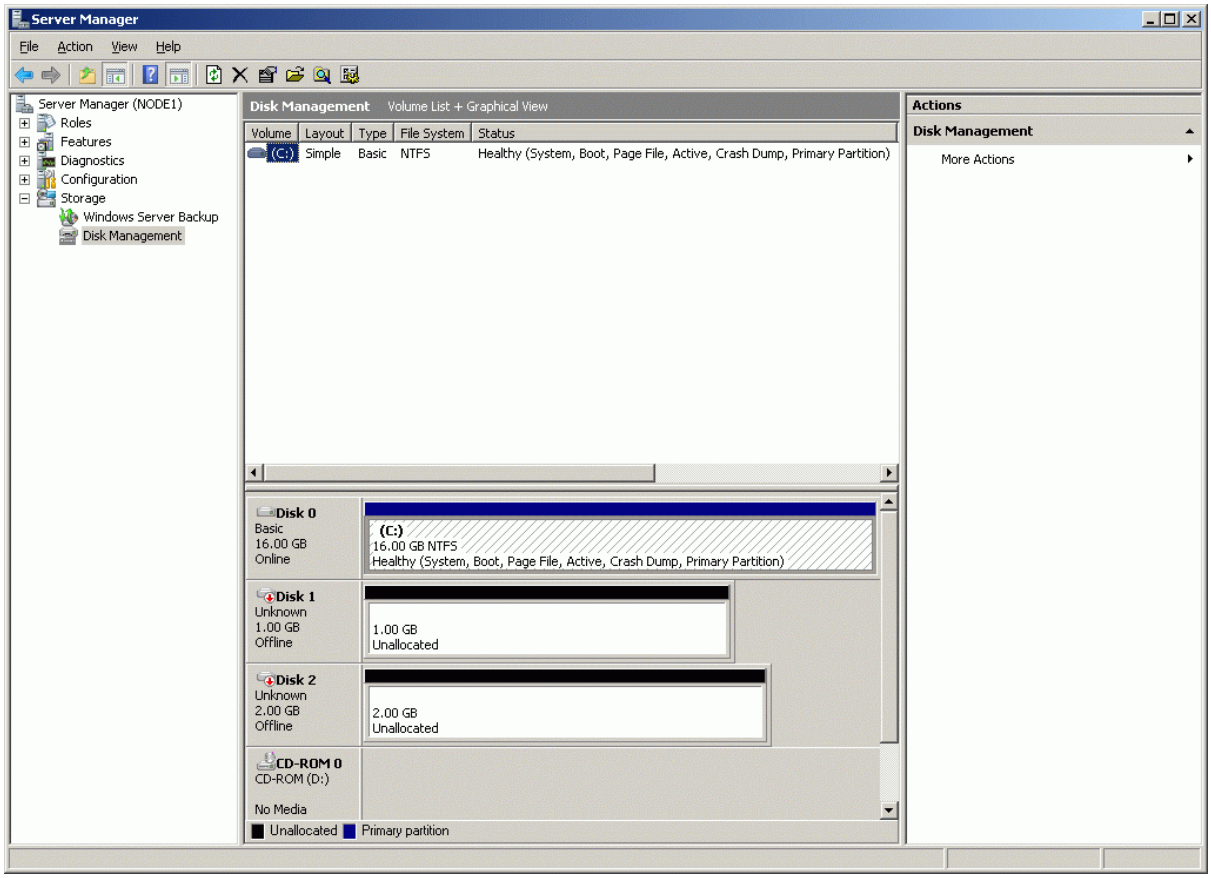
Press the **OK** button to continue.

If successful, the initiator is now logged on to **StarWind**.



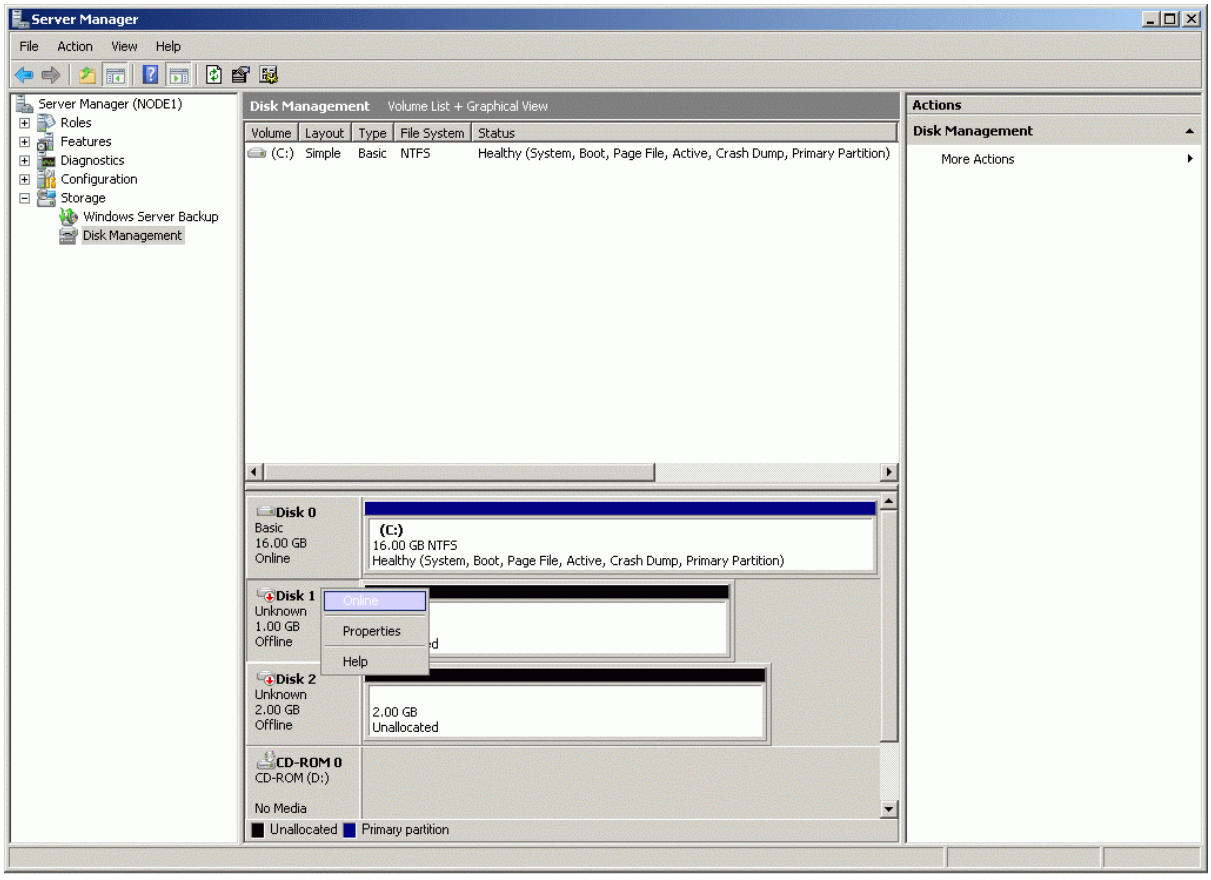
Initializing, formatting and creating partitions

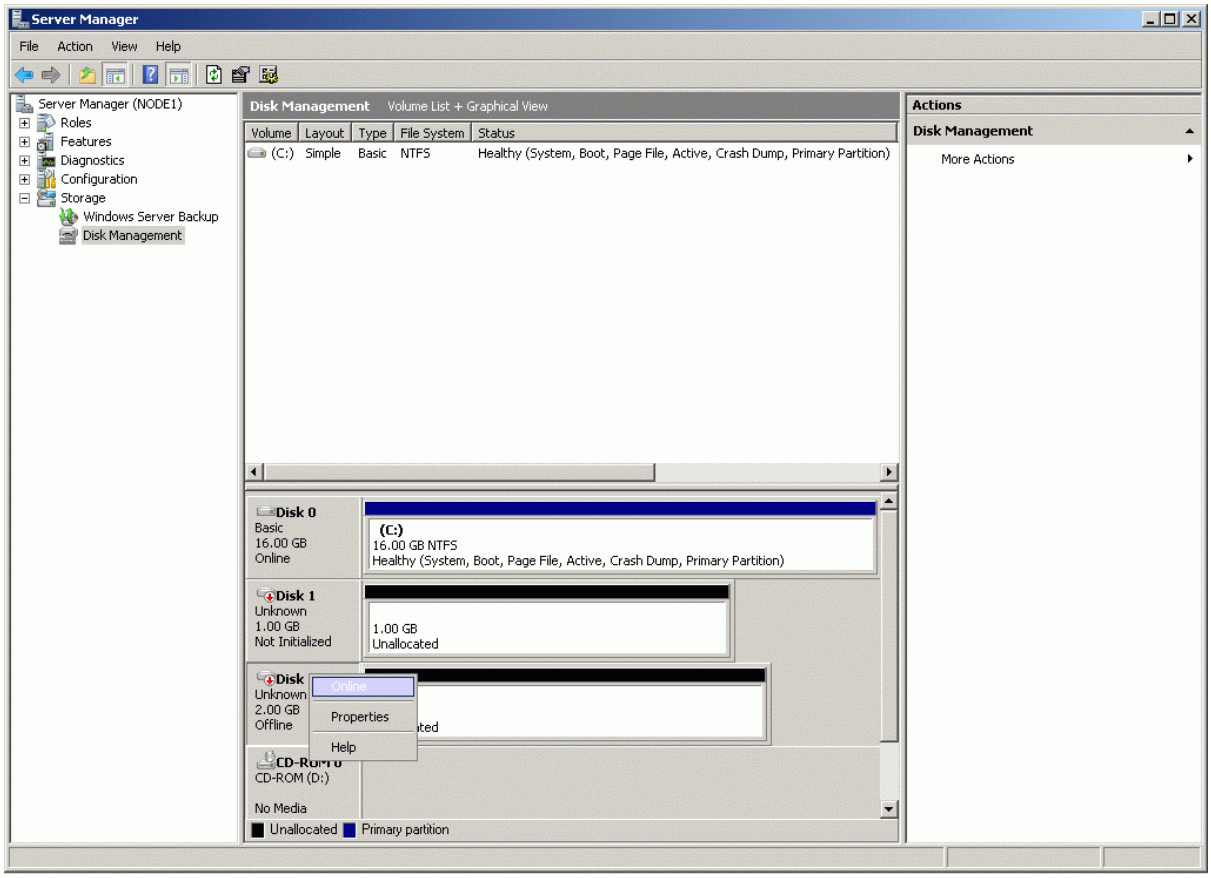
When the **StarWind** Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be initialized and formatted. Launch the **Computer Management** console.



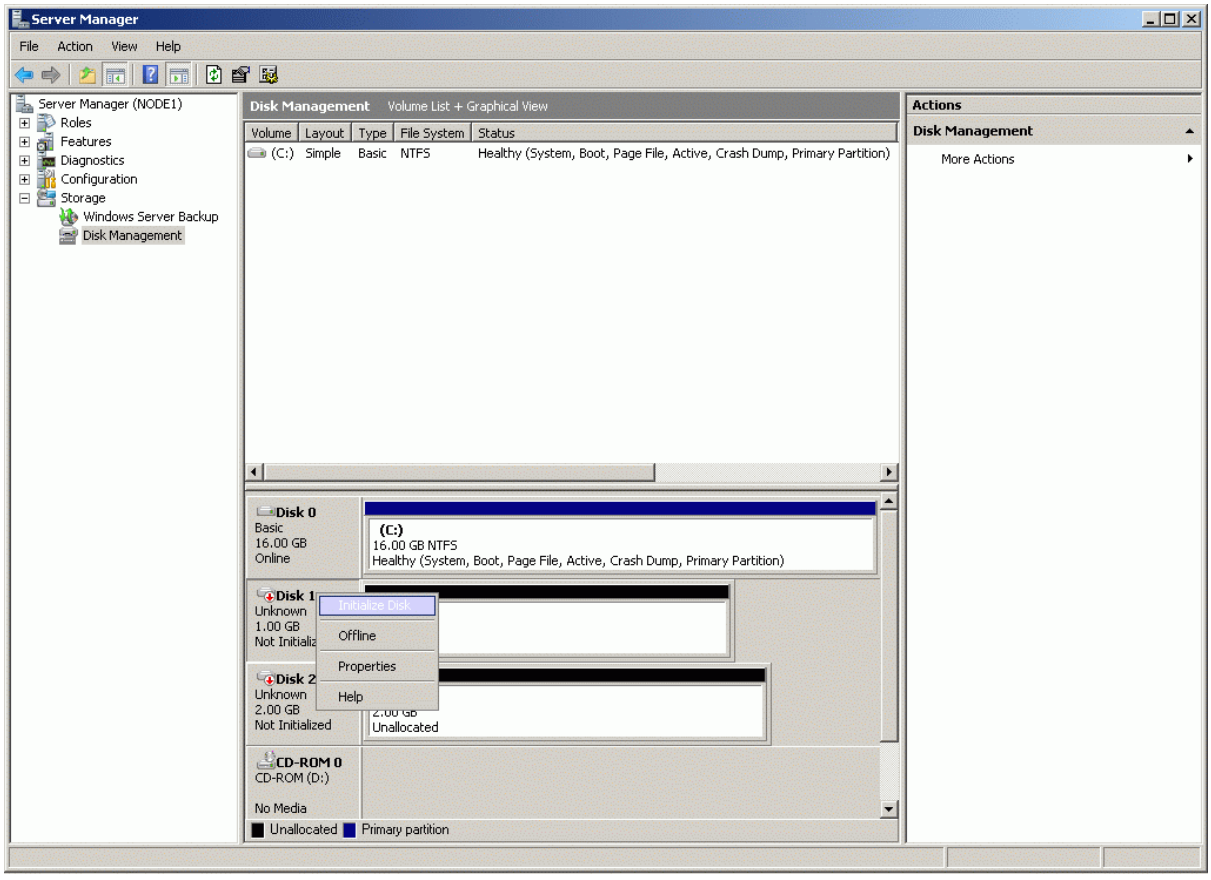
Select **Disk Management**.

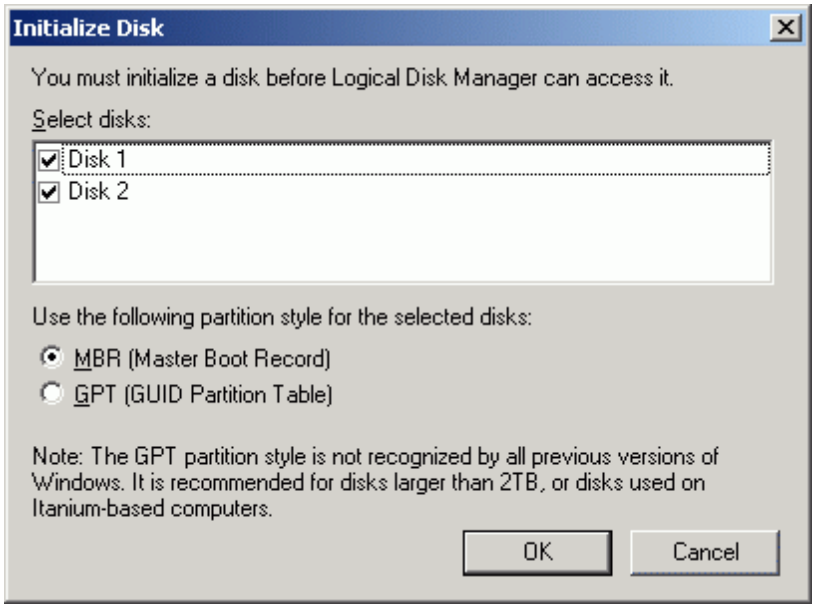
Bring disks online. Press the right mouse button over the disk and select **Online**.





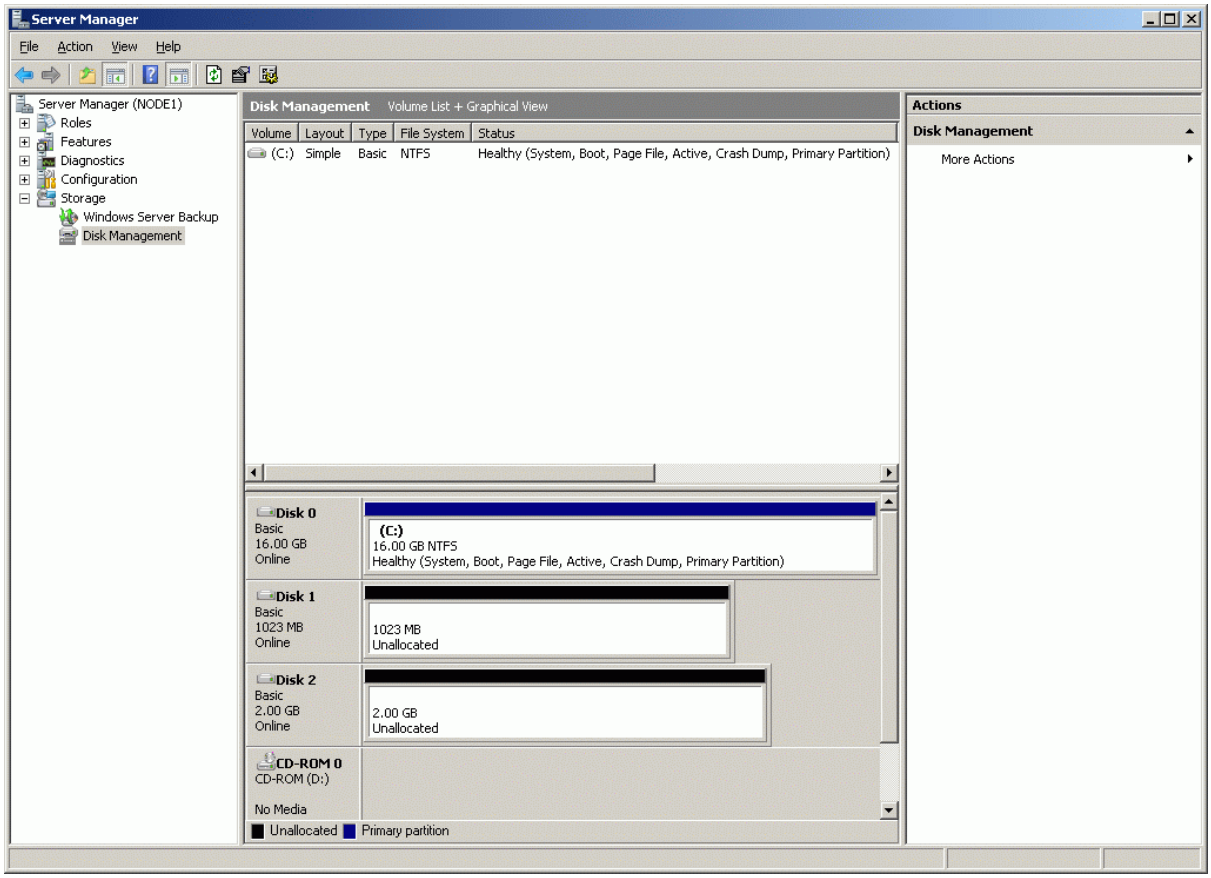
Initialize the Disks. Press the right mouse button over the Disk and select **Initialize Disk**. Follow the wizard to initialize the new disks.



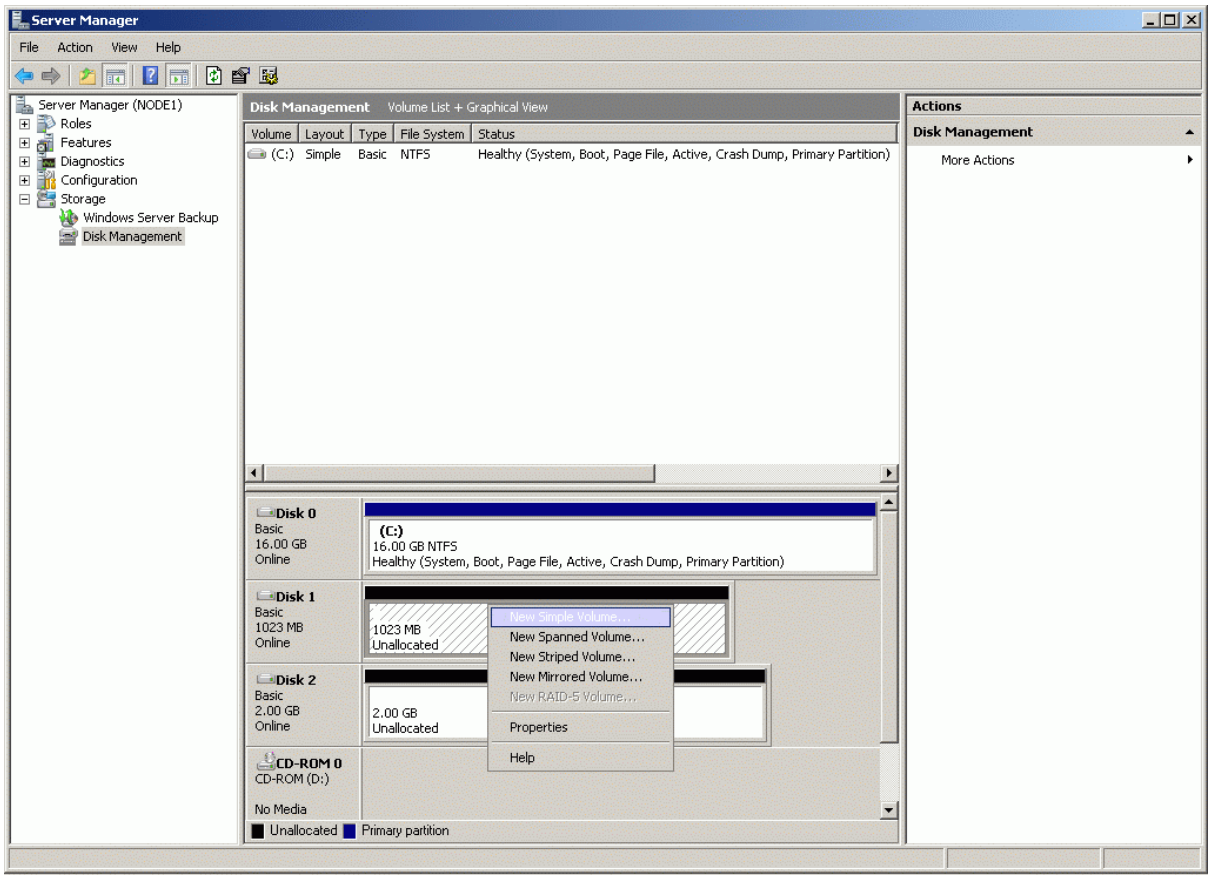


Press the **OK** button to continue.

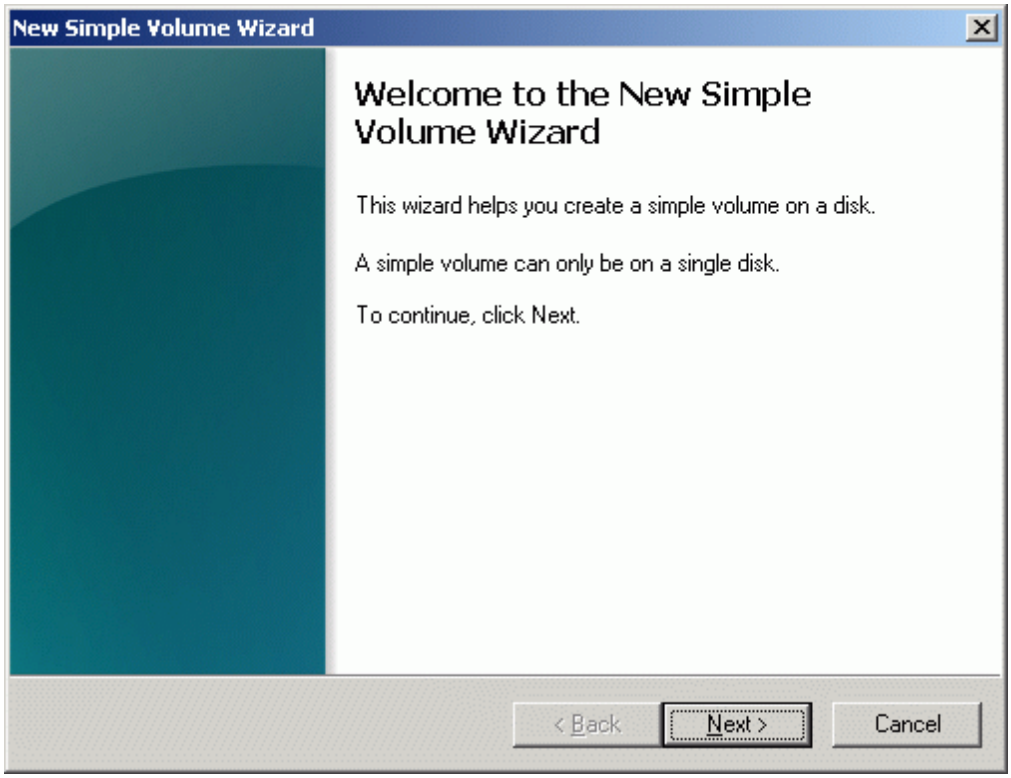
Both disks have now been initialized.



Right-click over the unallocated space and select **New Simple Volume**. Follow the instructions in the wizard to create an NTFS partition for use as the quorum disk.

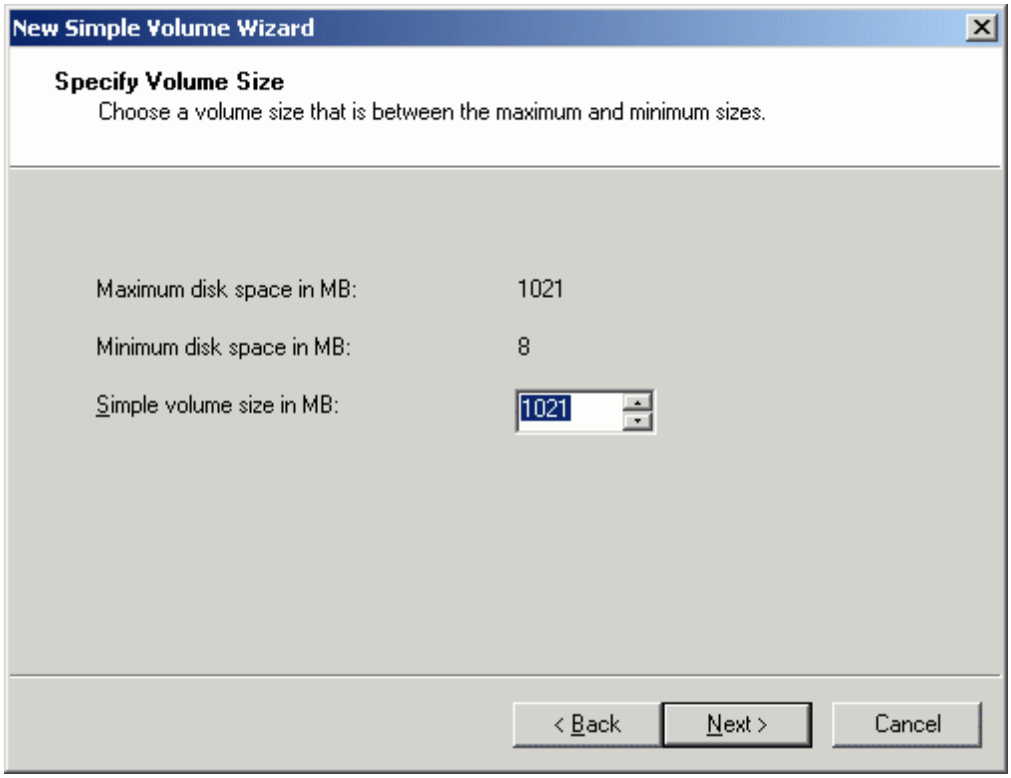


New Simple Volume Wizard appears.



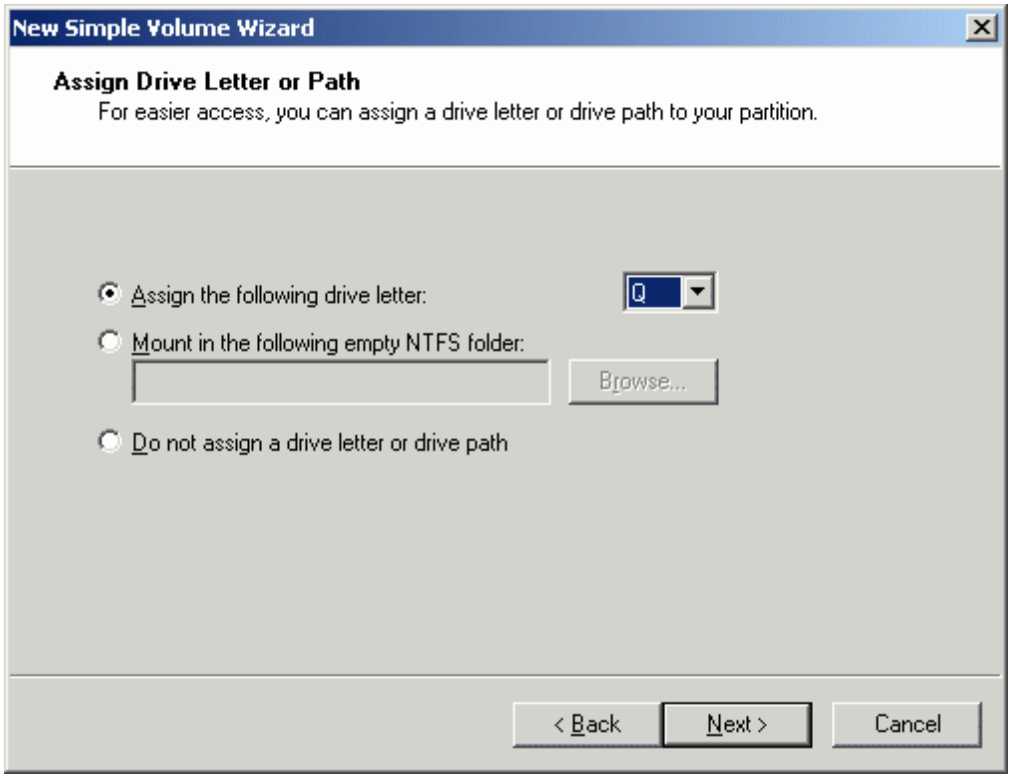
Press the **Next** button to continue.

Specify new volume size in megabytes.



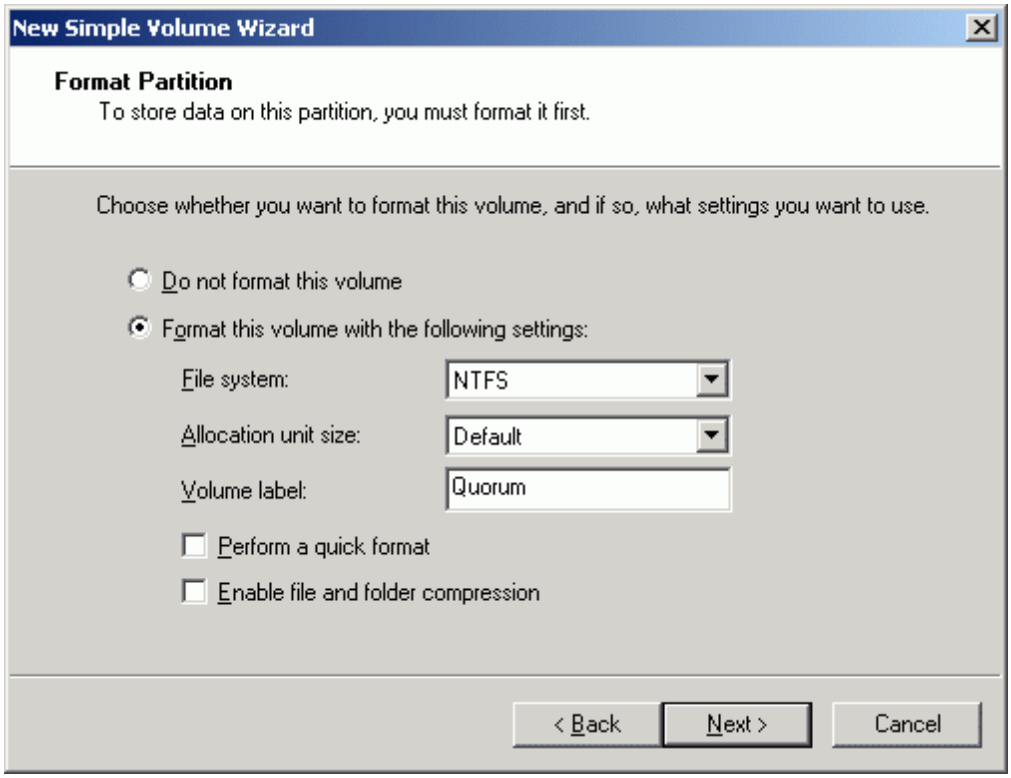
Press the **Next** button to continue.

Choose the **Drive Letter** to assign.



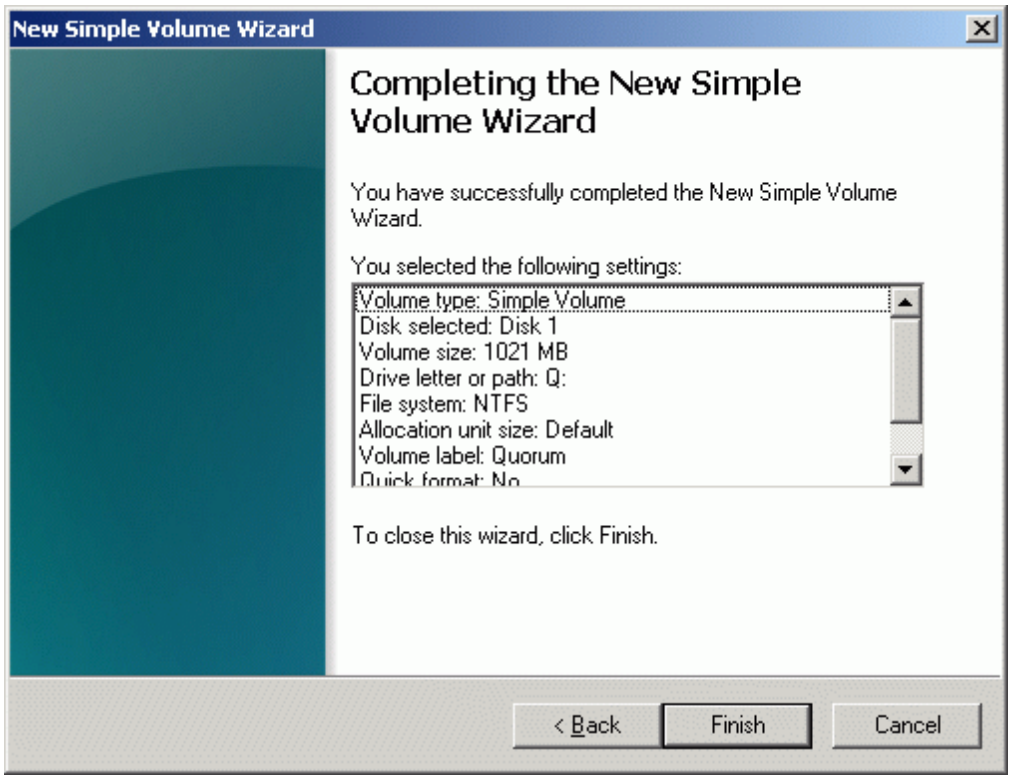
Press the **Next** button to continue.

Specify format options. Provide the **Volume Label**.



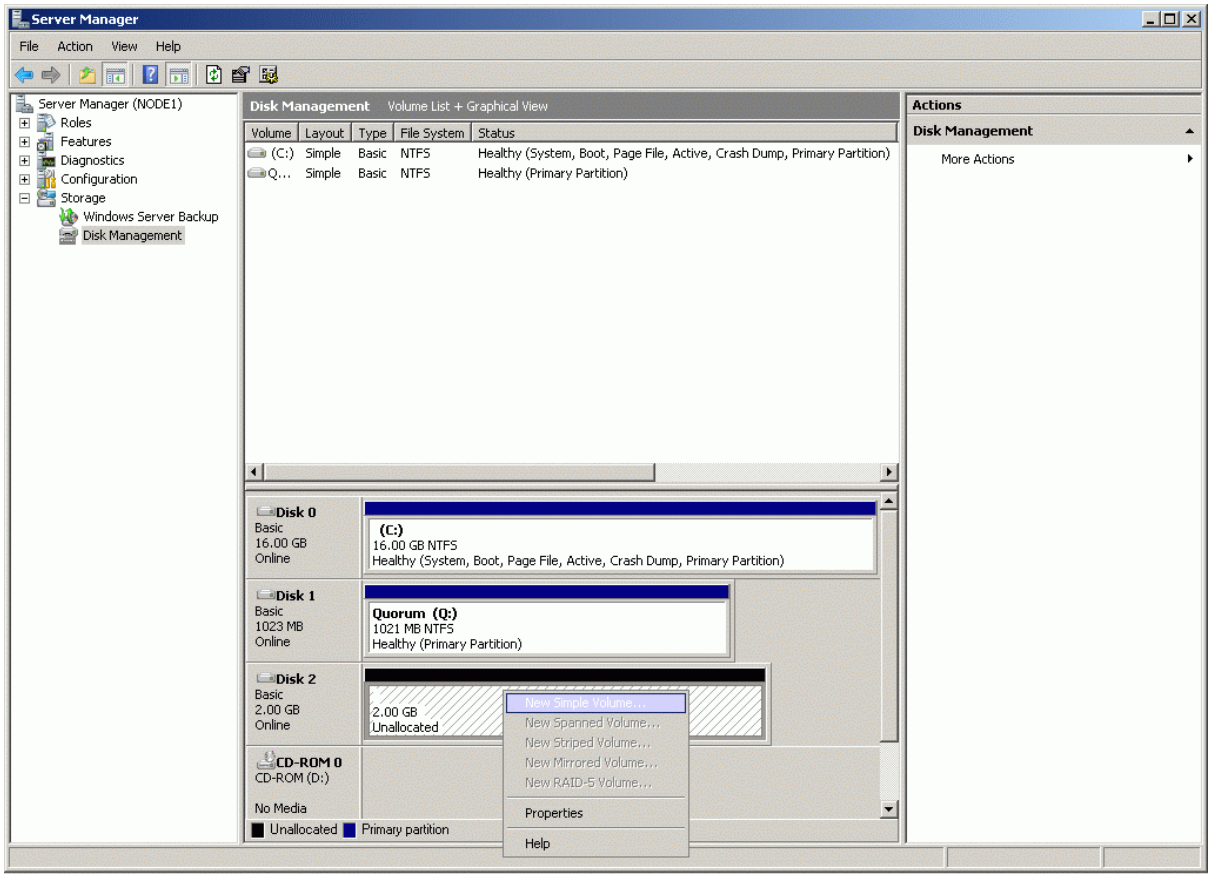
Press the **Next** button to continue.

Check the settings are correct. Press the **Back** button should any changes be required.



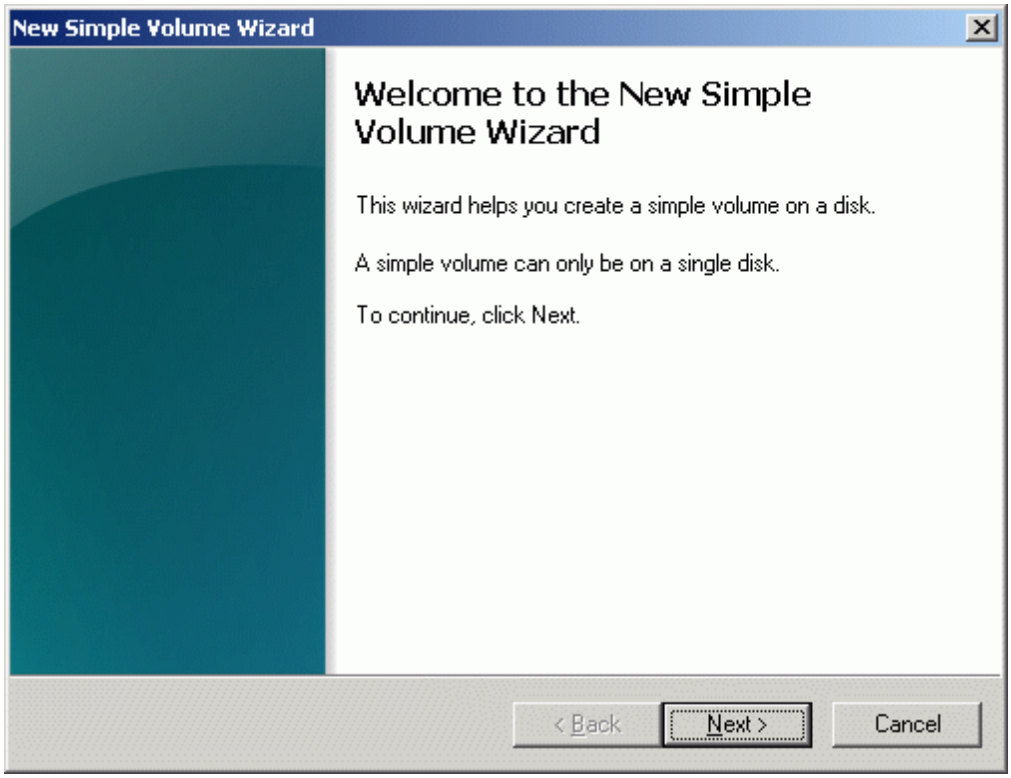
Press the **Finish** button to close the wizard.

If successful, a new volume will be created as shown in the example image below. Repeat the same steps to create the second volume.



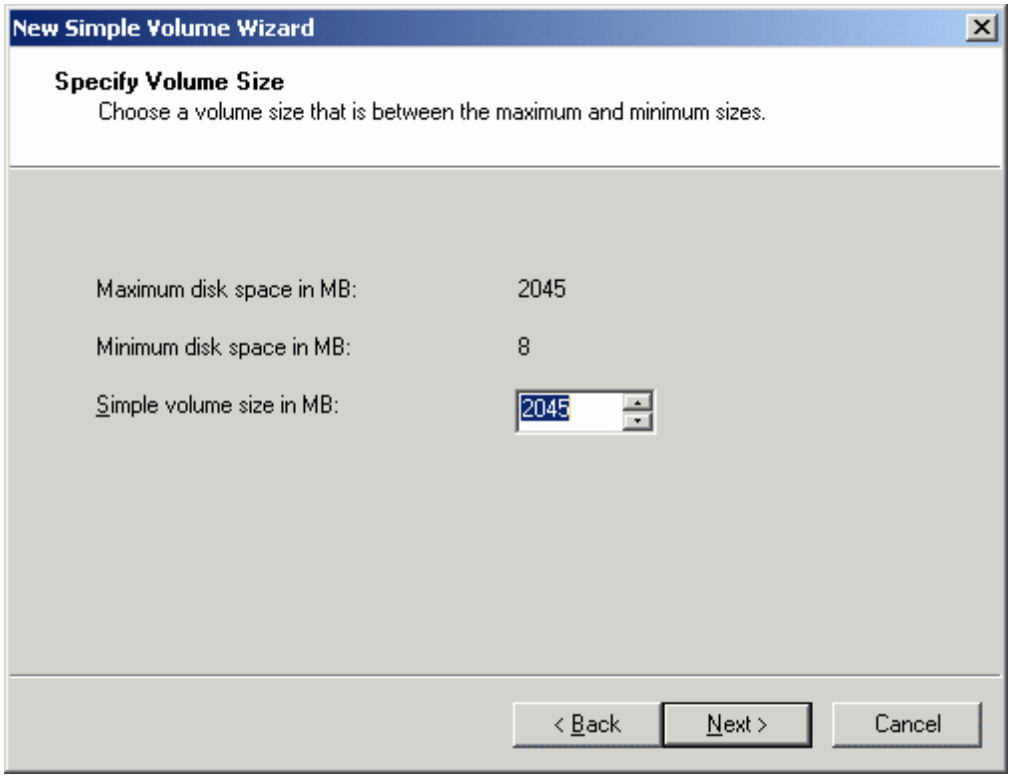
Right-click over the unallocated space and select **New Simple Volume**. Follow the instructions in the wizard to create an NTFS partition for use as the generic disk.

New Partition Wizard appears.



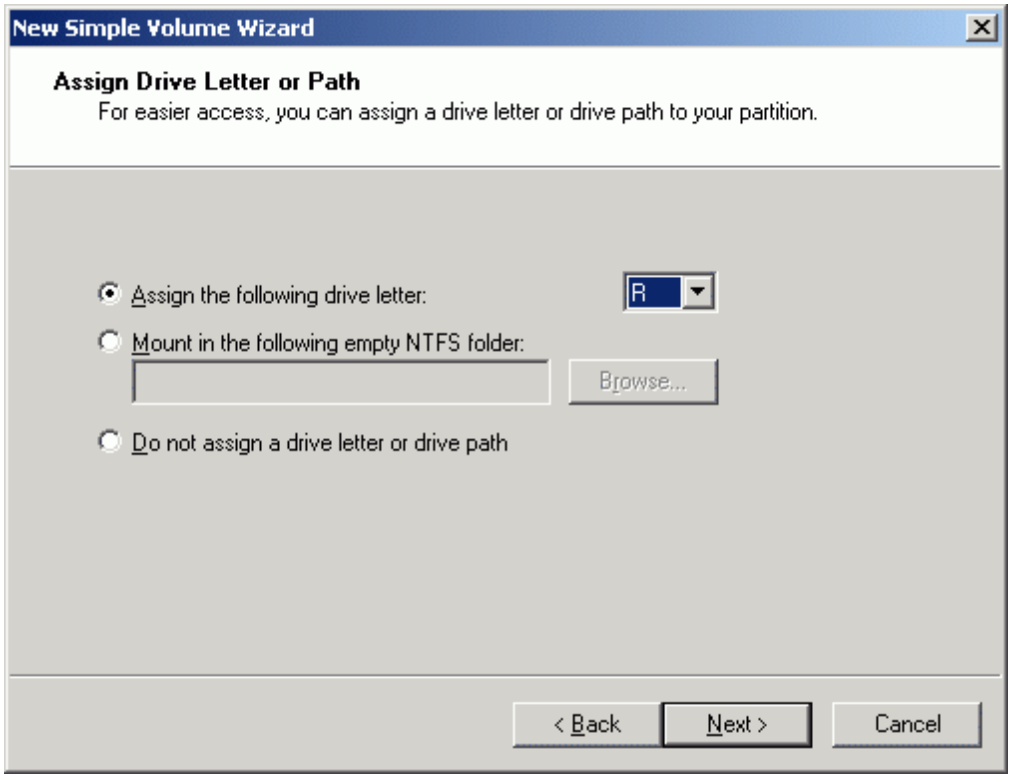
Press the **Next** button to continue.

Specify new volume size in megabytes.



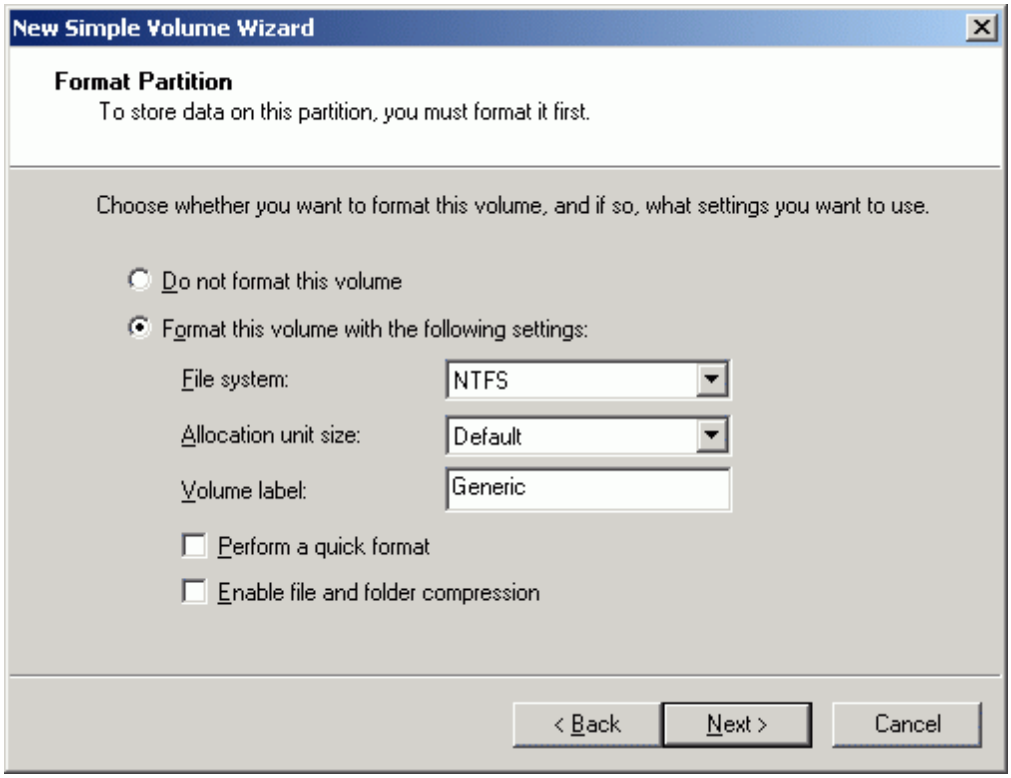
Press the **Next** button to continue.

Choose the **Drive Letter** to assign.



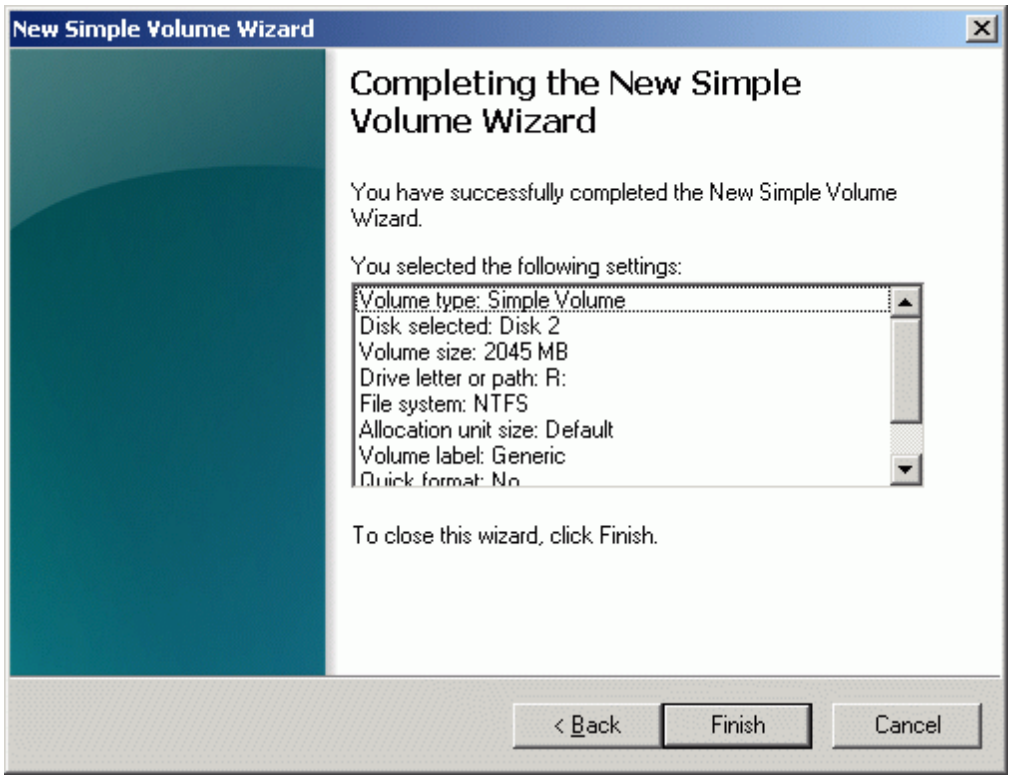
Press the **Next** button to continue.

Specify format options. Provide the **Volume Label**.



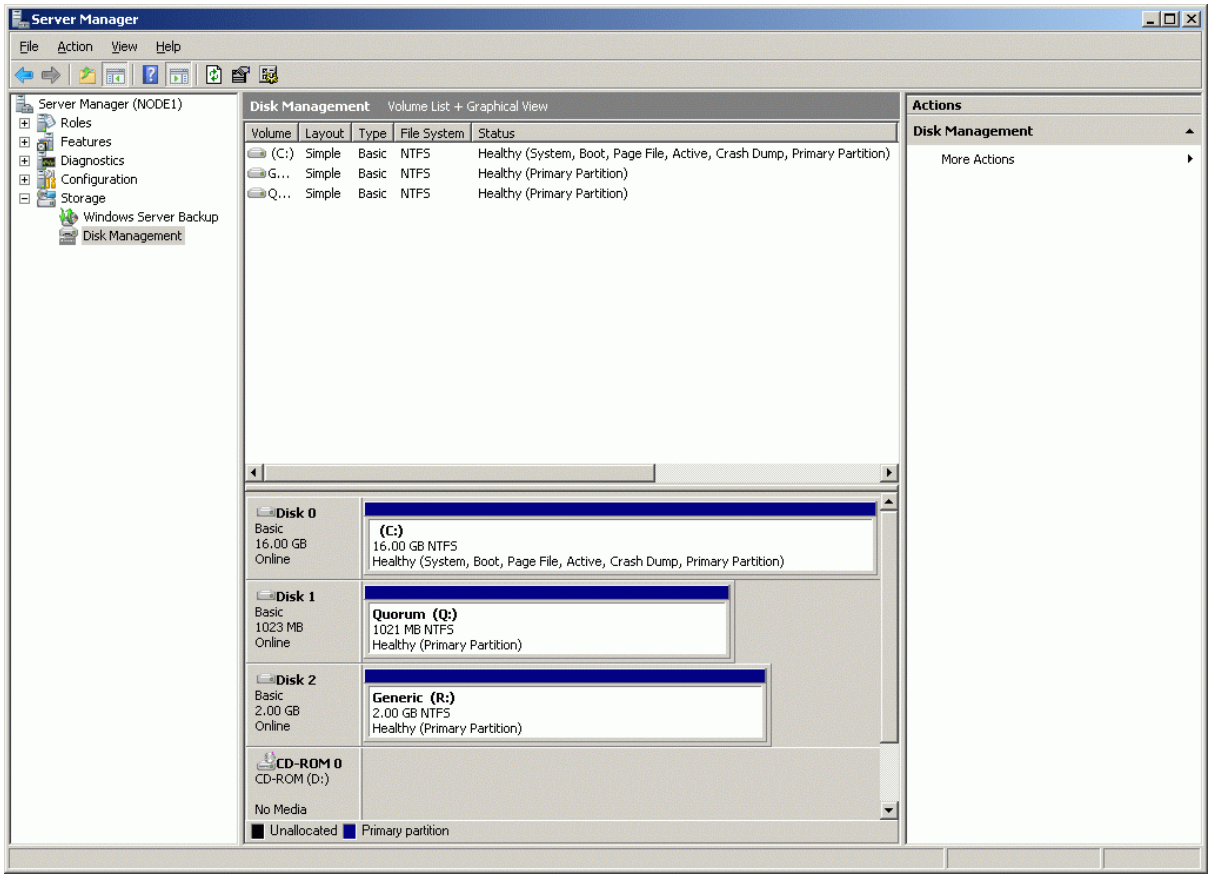
Press the **Next** button to continue.

Check the settings are correct. Press the **Back** button should any changes be required.



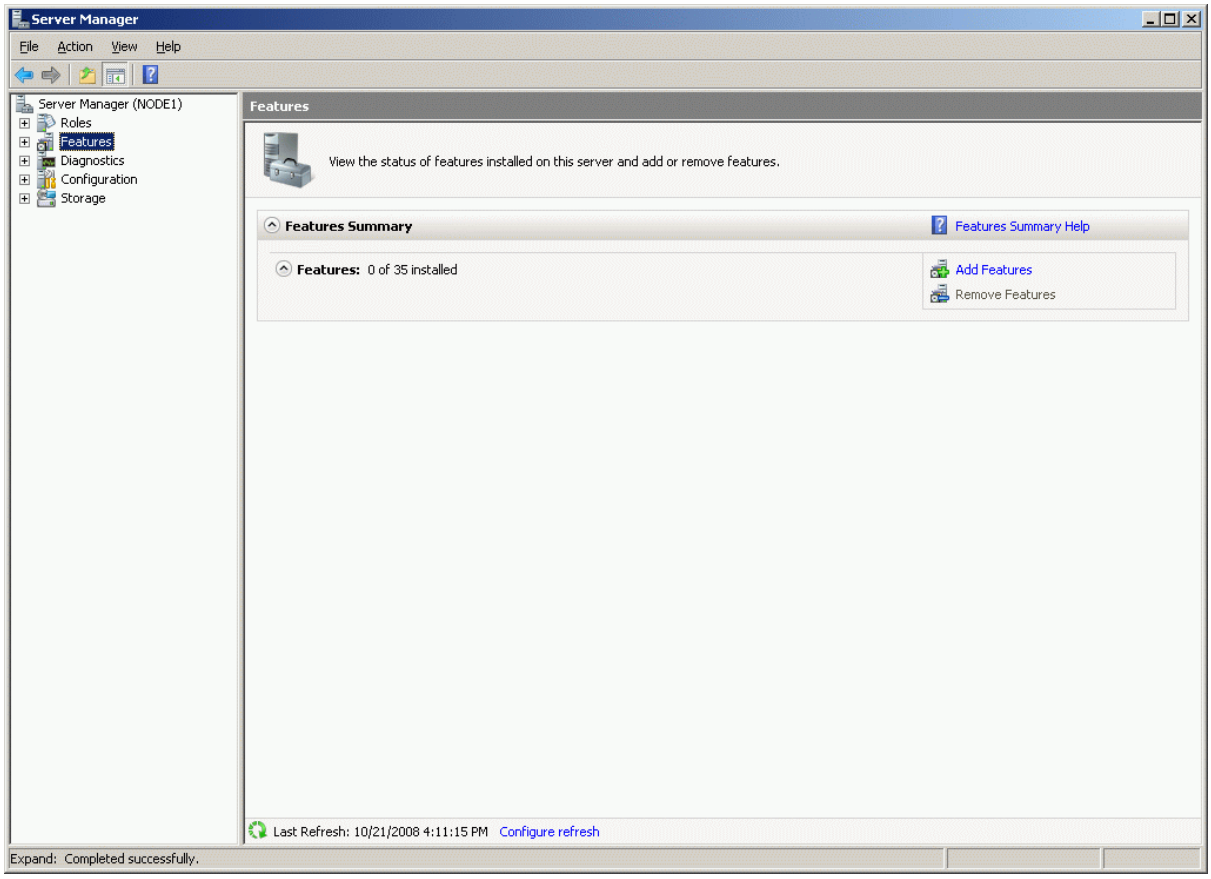
Press the **Finish** button to close the wizard.

If successful, both of the disks are now formatted as shown in the example image below.



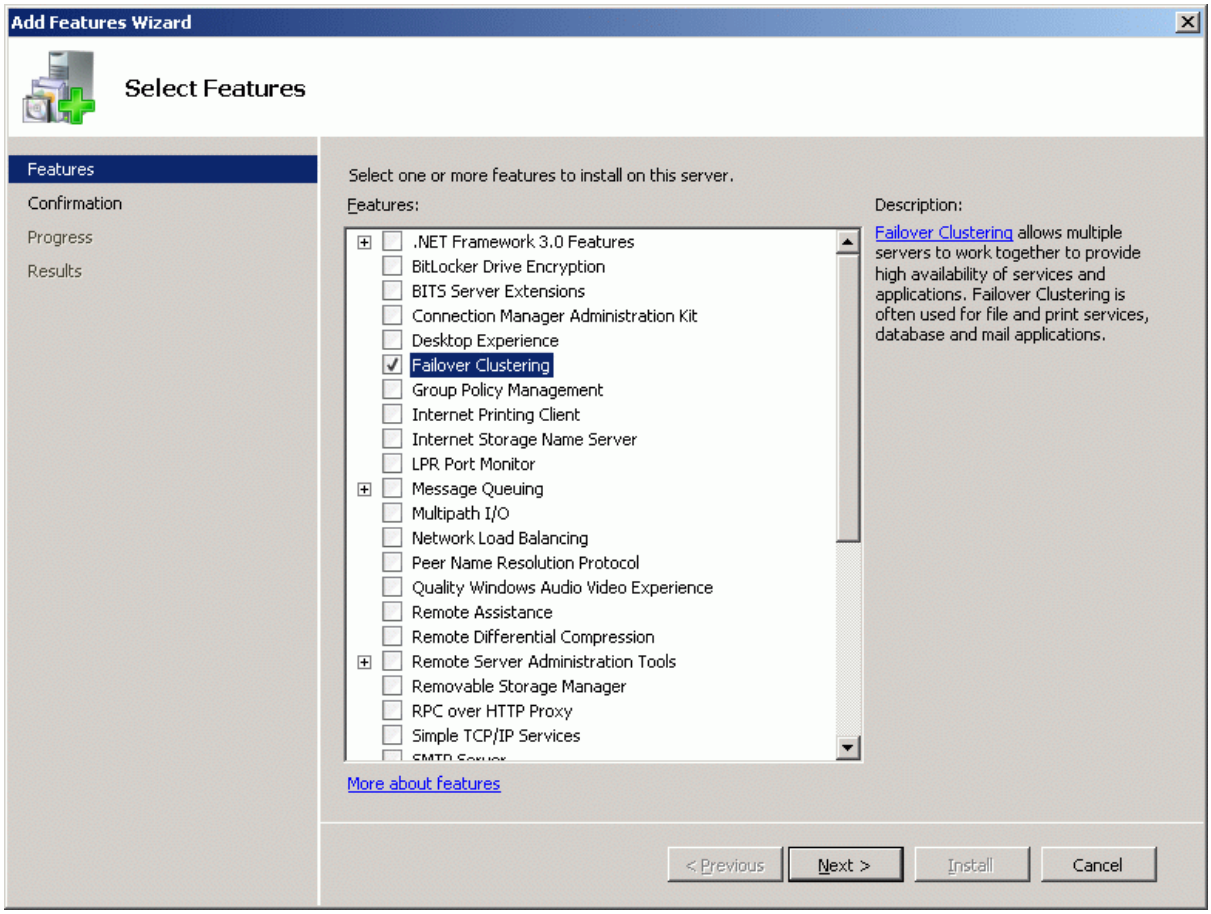
Installing Failover Clustering Feature

Launch the **Computer Management** console. Select **Features** node from the list.



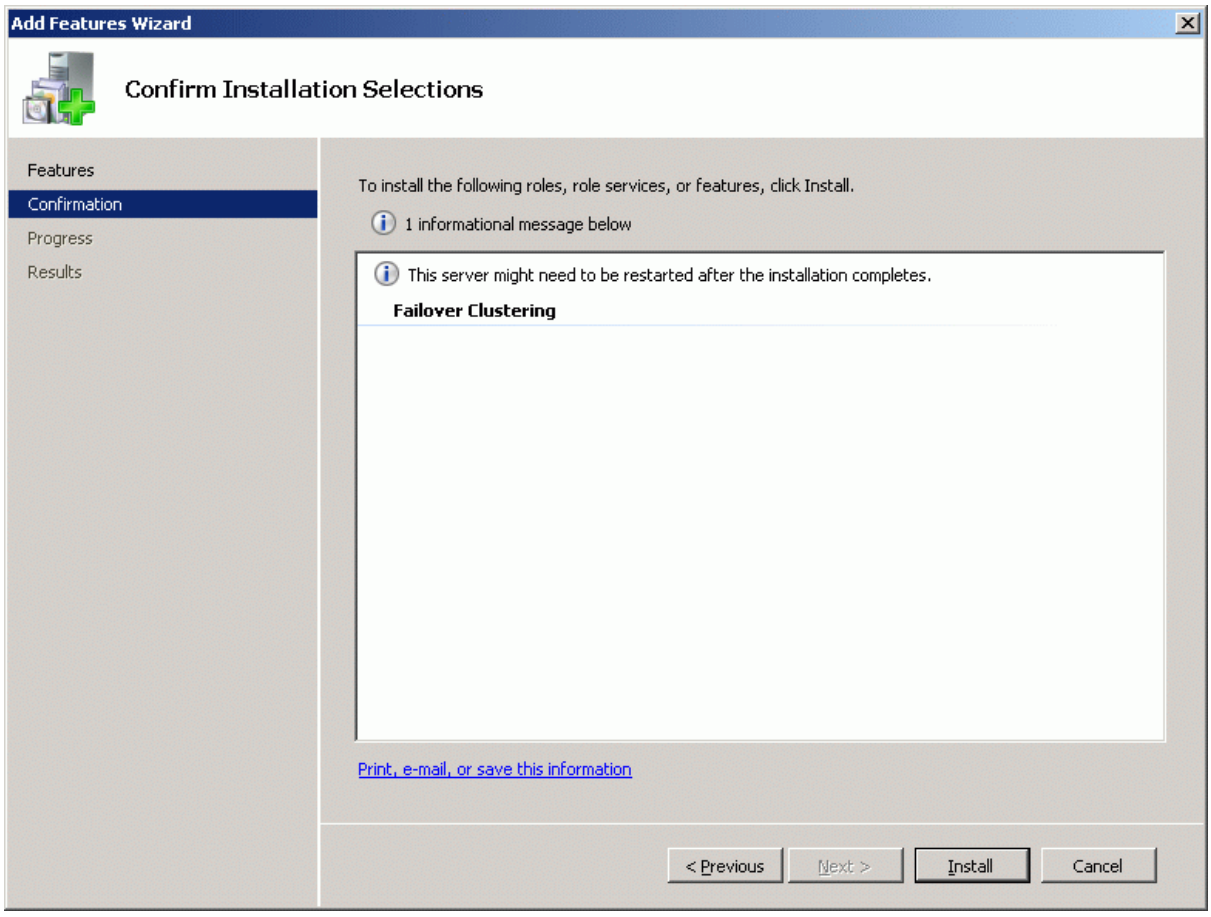
Click the **Add Features** to continue.

Add Features Wizard appears. Check the **Failover Clustering feature**.



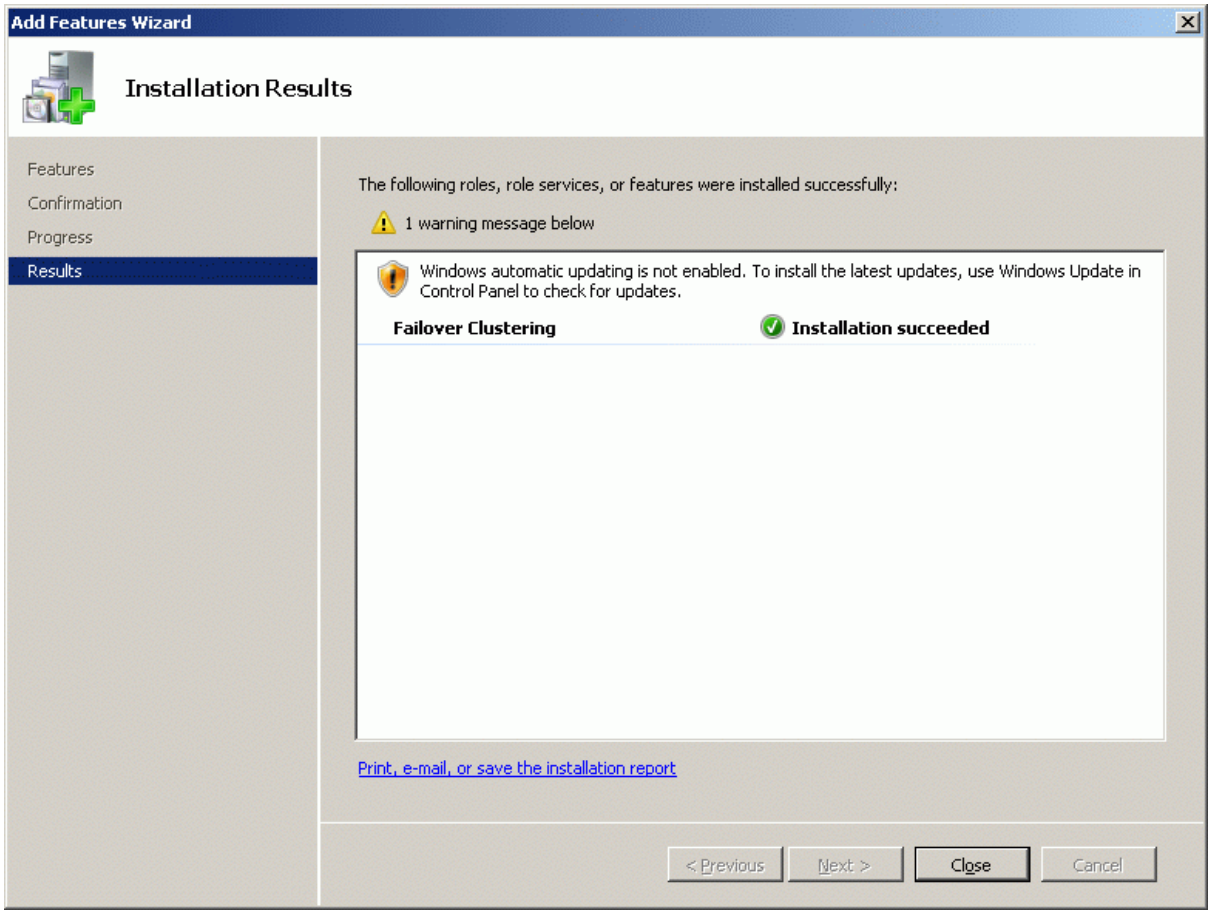
Press the **Next** button to continue.

Check that the parameters are correct. Press the **Previous** button should any changes be required.



Complete the installation of the Failover Clustering Feature by pressing the **Install** button.

If the feature is successfully installed, the wizard should look similar to the example image below.



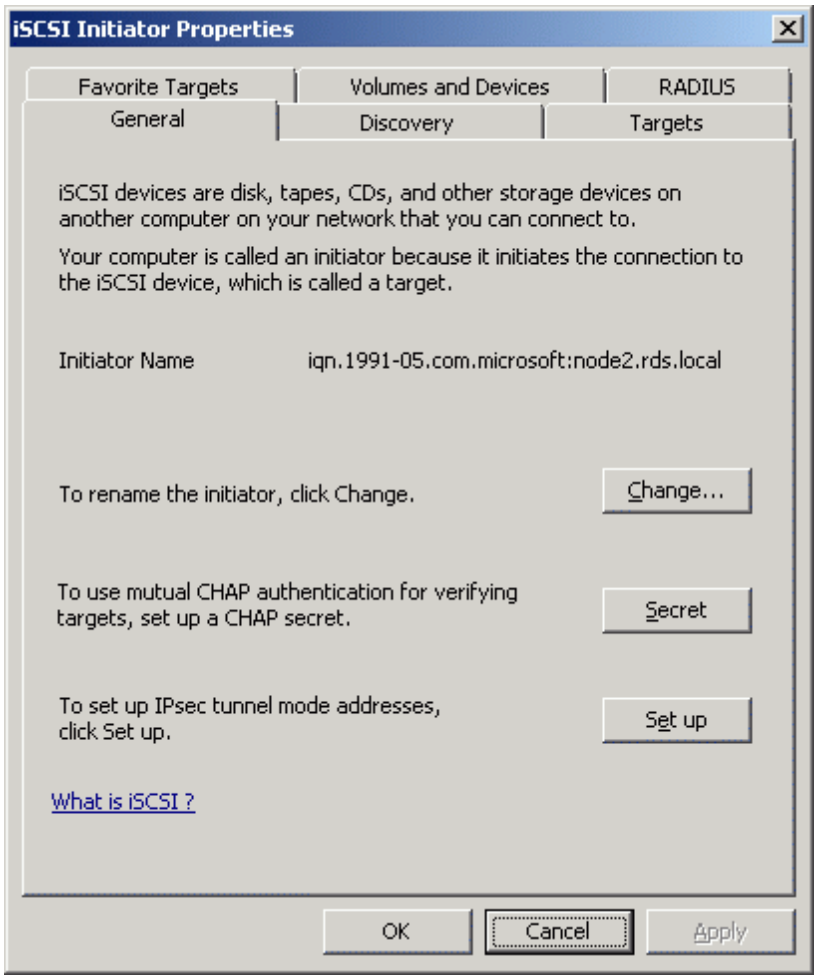
Press the **Close** button.

Shut down the server.

Node 2

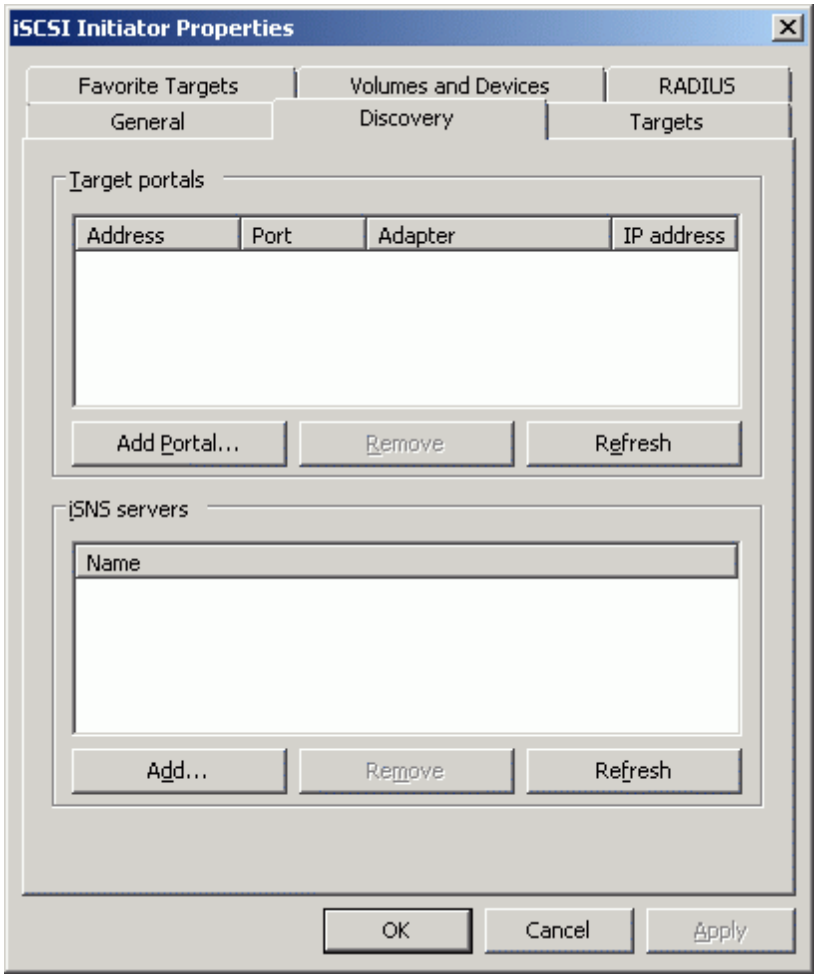
Configuring iSCSI initiator

Launch the Microsoft iSCSI Software Initiator application **Administrative Tools -> iSCSI Initiator**



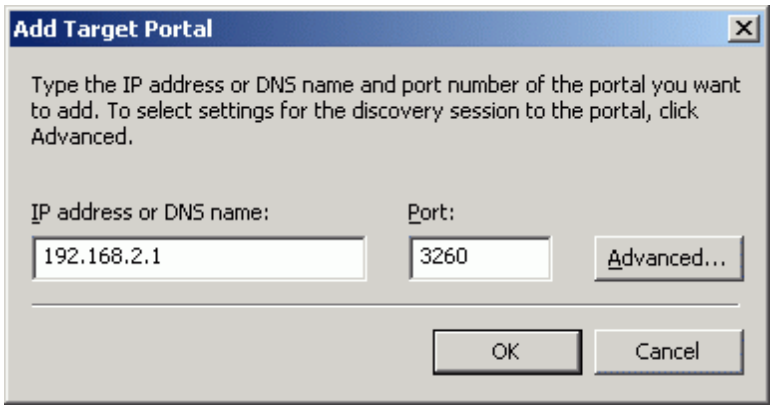
Select the **Discovery** Tab.

In the **Target Portals** group, click the **Add Portal...** button.



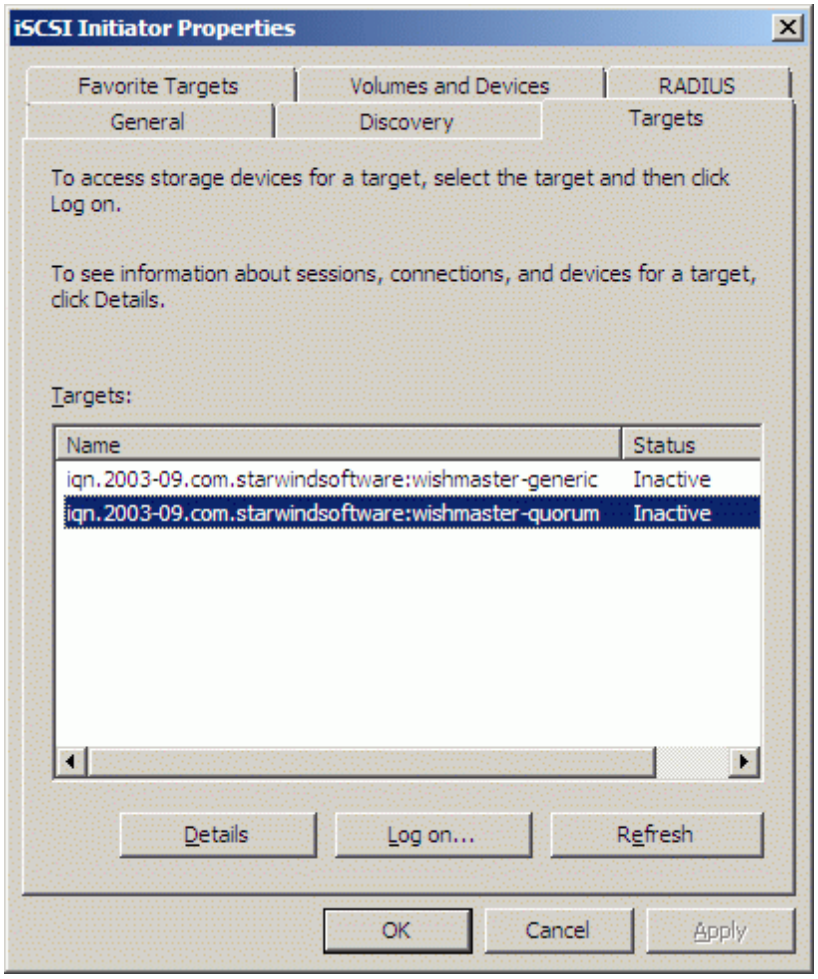
Press the **Add Portal...** button.

In the **Add Target Portal** dialog enter **IP address or DNS name** of the **StarWind** target server.



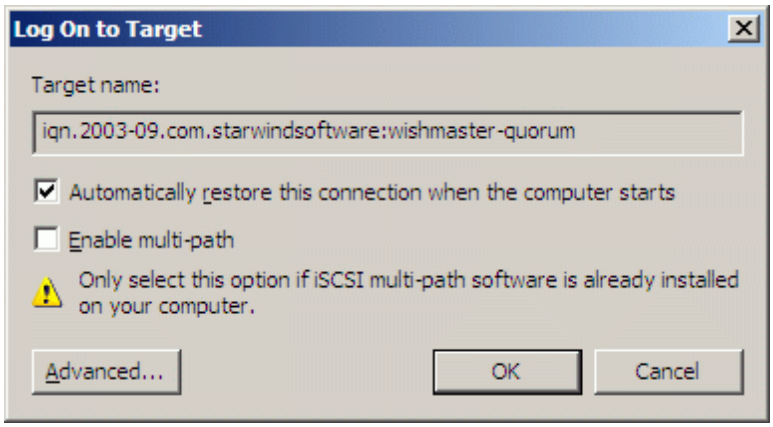
Press the **OK** button to continue.

Click on the **Targets** tab. Select the IQN of the target just added.

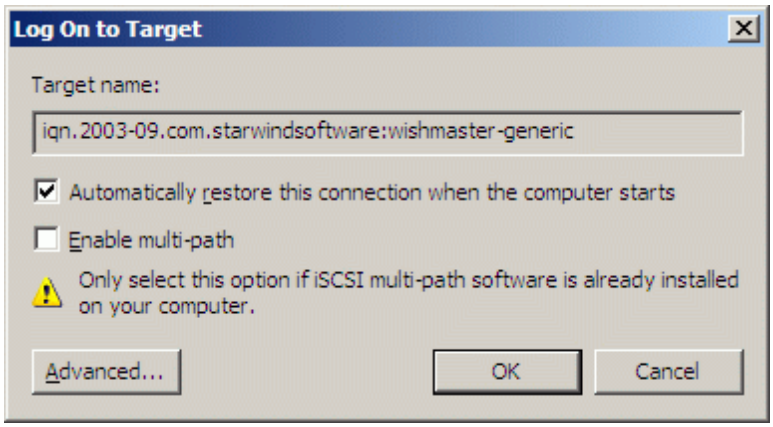


Press the **Log On…** button.

The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.

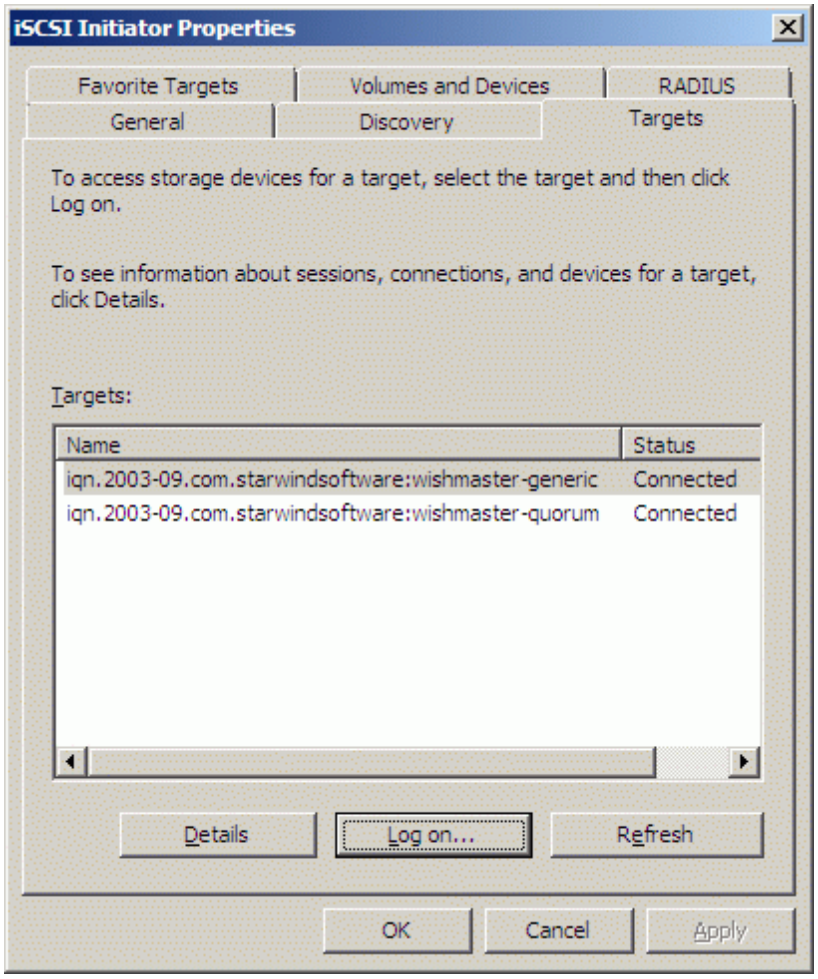


Press the **OK** button to continue.



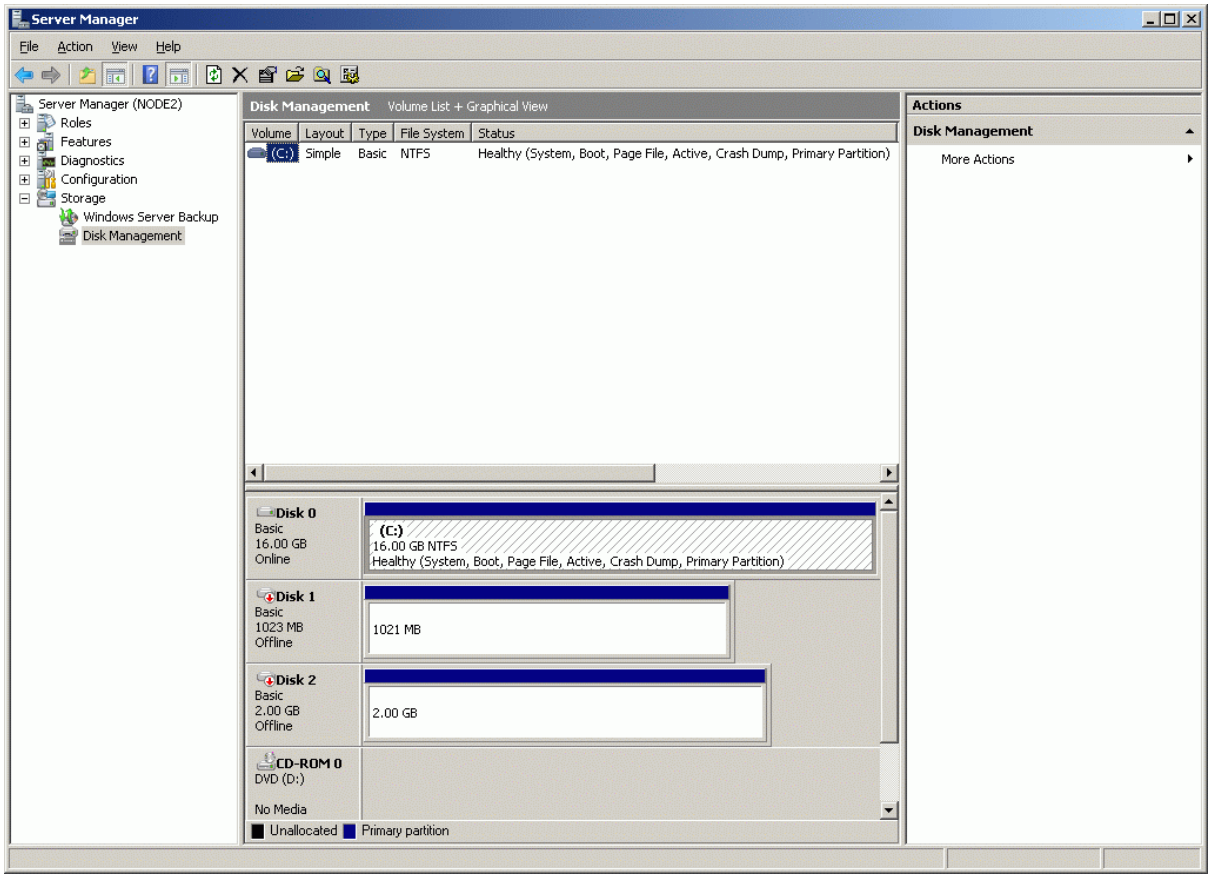
Press the **OK** button to continue.

If successful, the initiator is now logged on to **StarWind**.



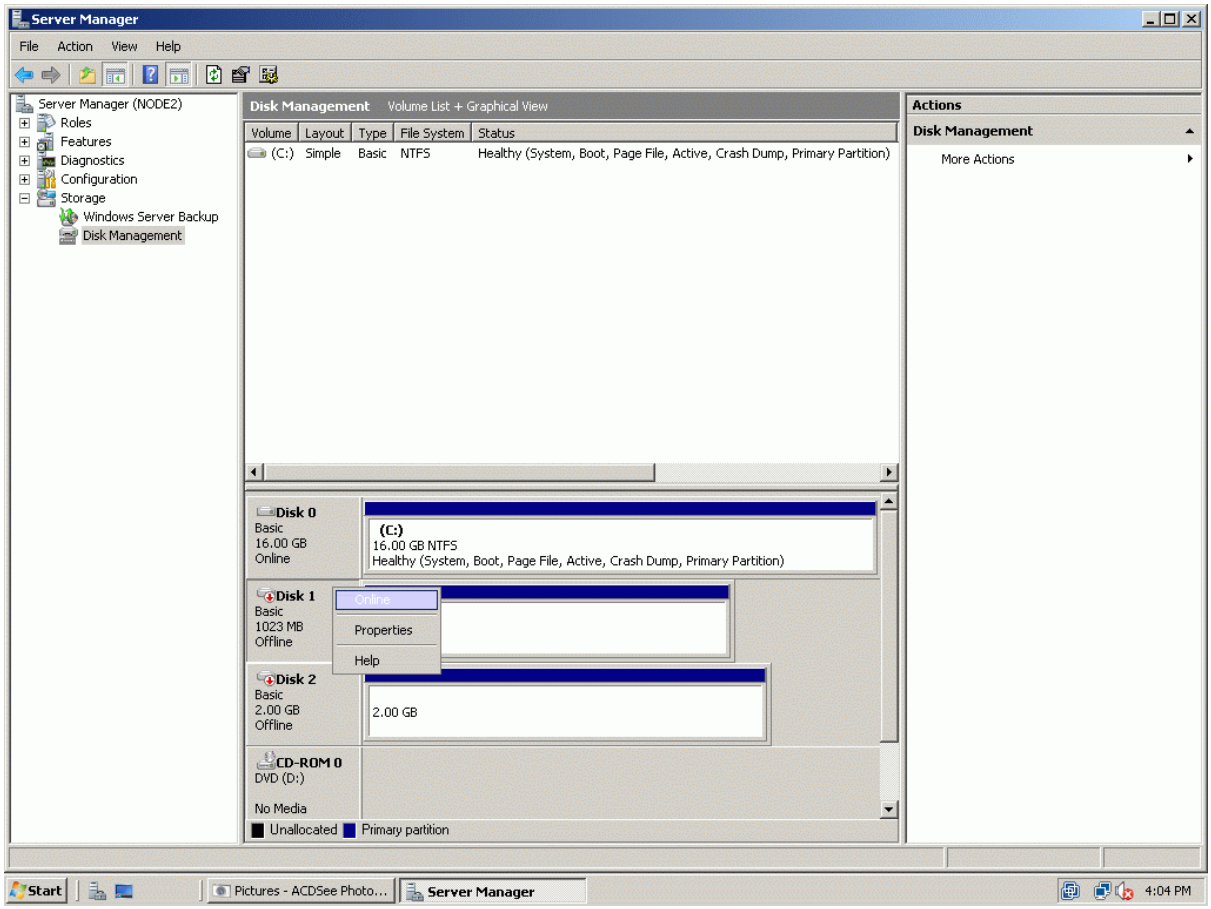
Assigning drive letters

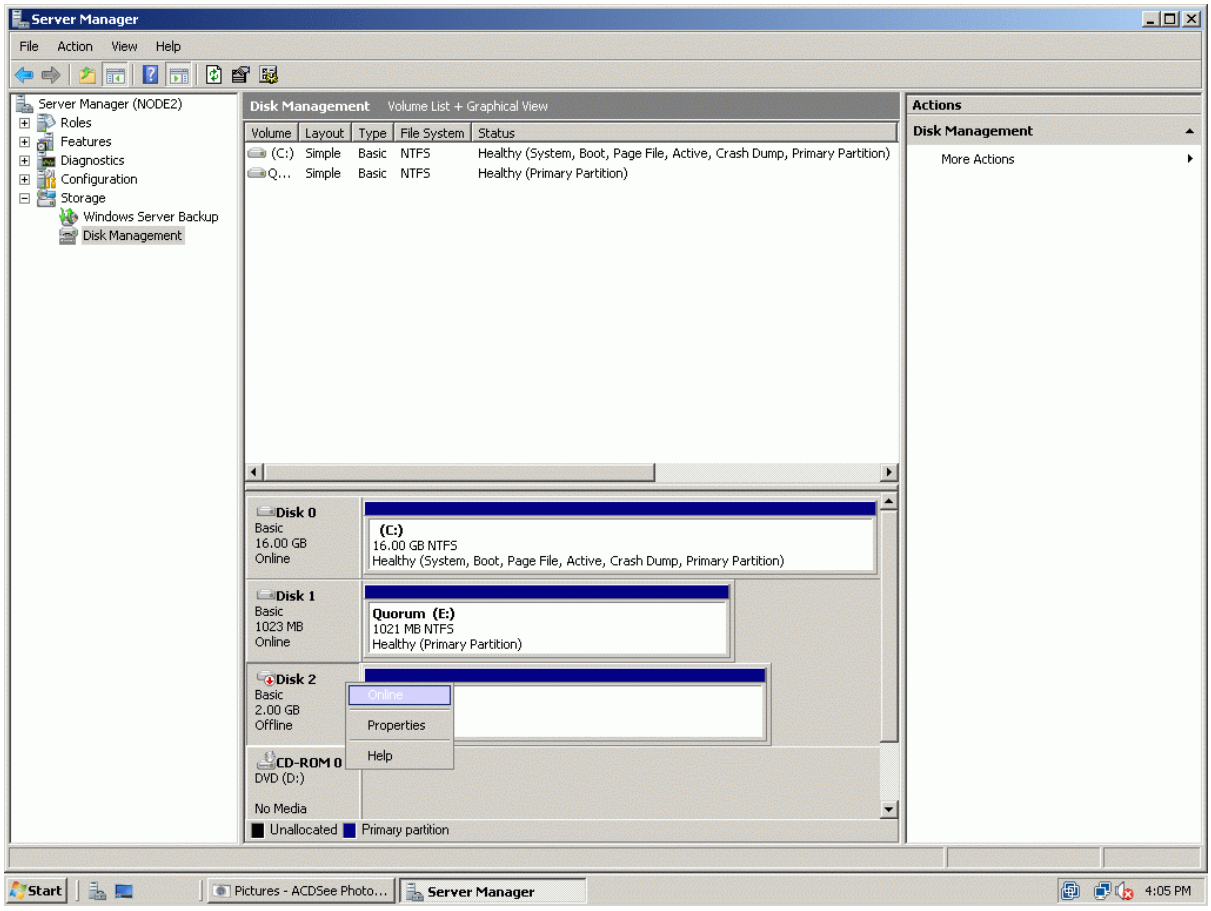
When the StarWind Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be mounted. Launch the **Computer Management** console.



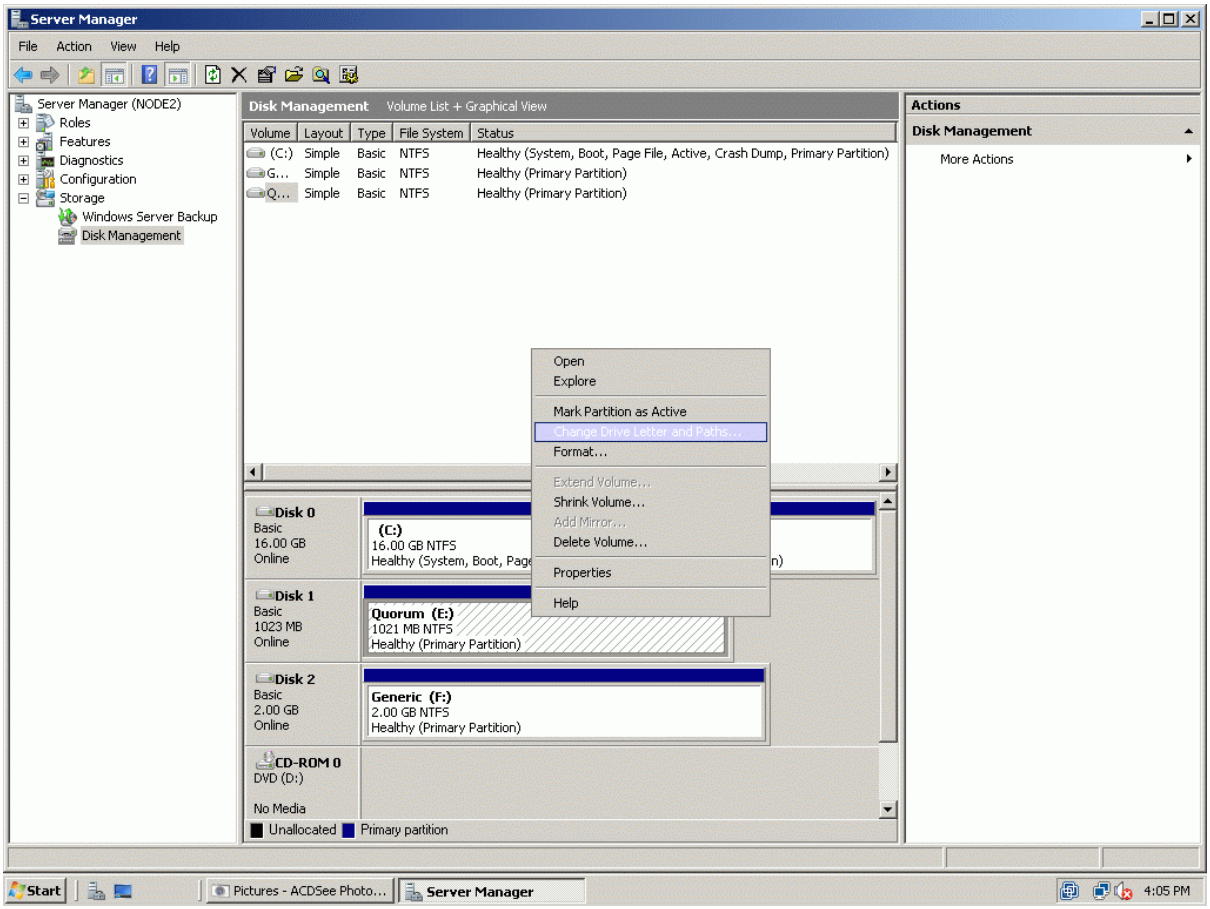
Select **Disk Management**.

Bring disks online. Press the right mouse button over the disk and select **Online**.



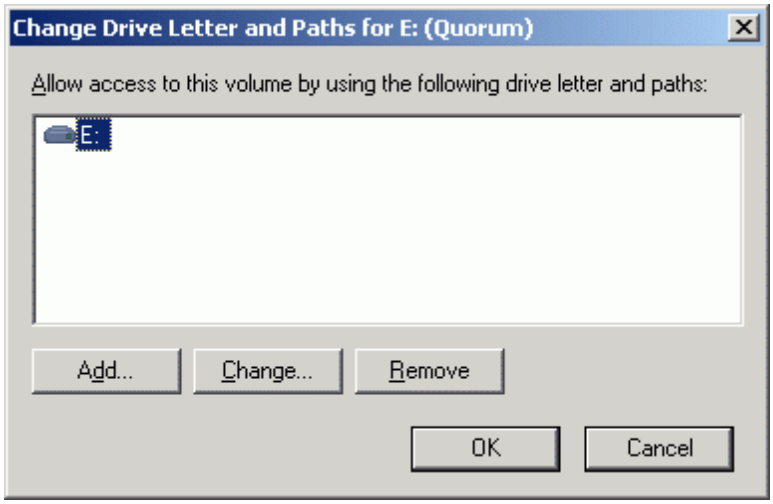


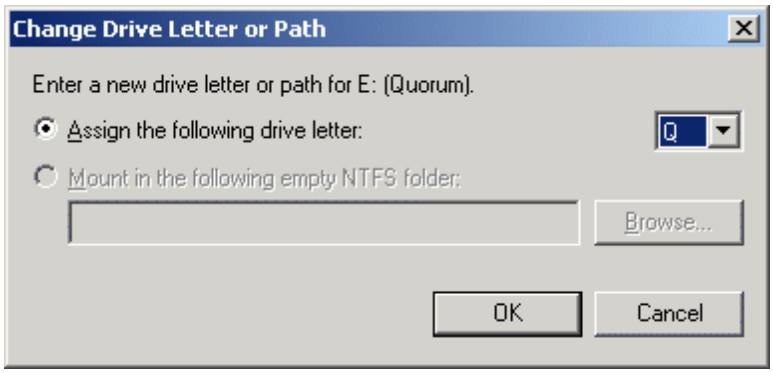
The picture below shows that Windows has automatically assigned Drive Letters to the mounted volumes. As these are local drive letters they may not be the same as we have assigned to these volumes on the first node. However, as all volumes of a cluster must be assigned the same drive letters, any differences must be manually changed. Press the right mouse button over the Quorum volume.



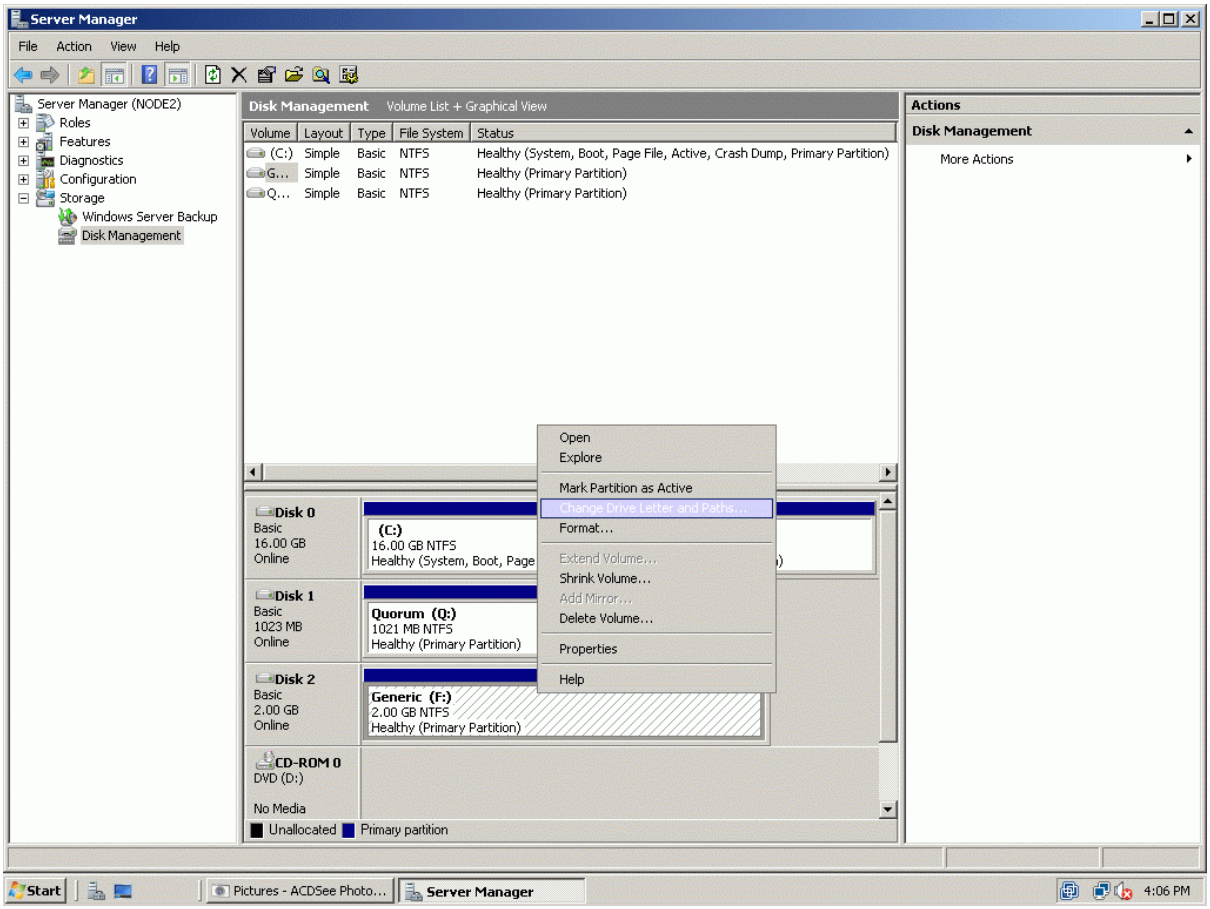
Select **Change Drive Letter and Paths...**

Change the Drive Latter for the Quorum to Q.



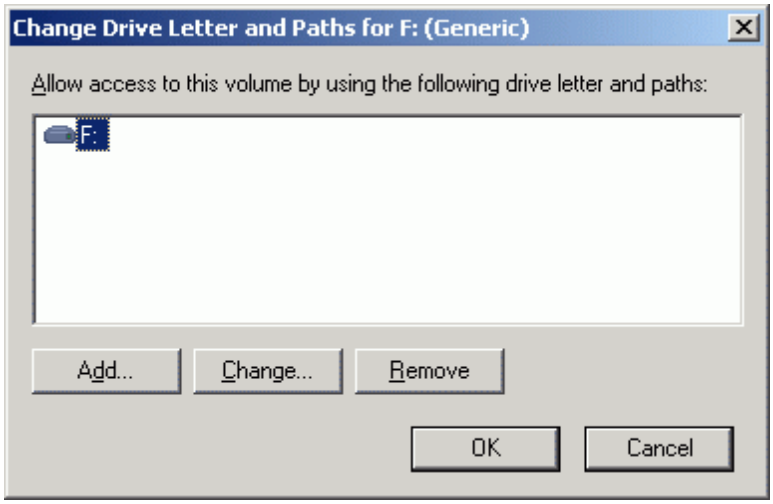


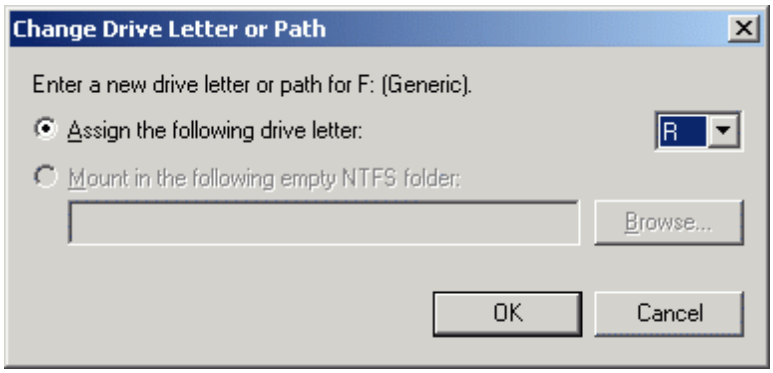
Press the right mouse button over the Generic volume.



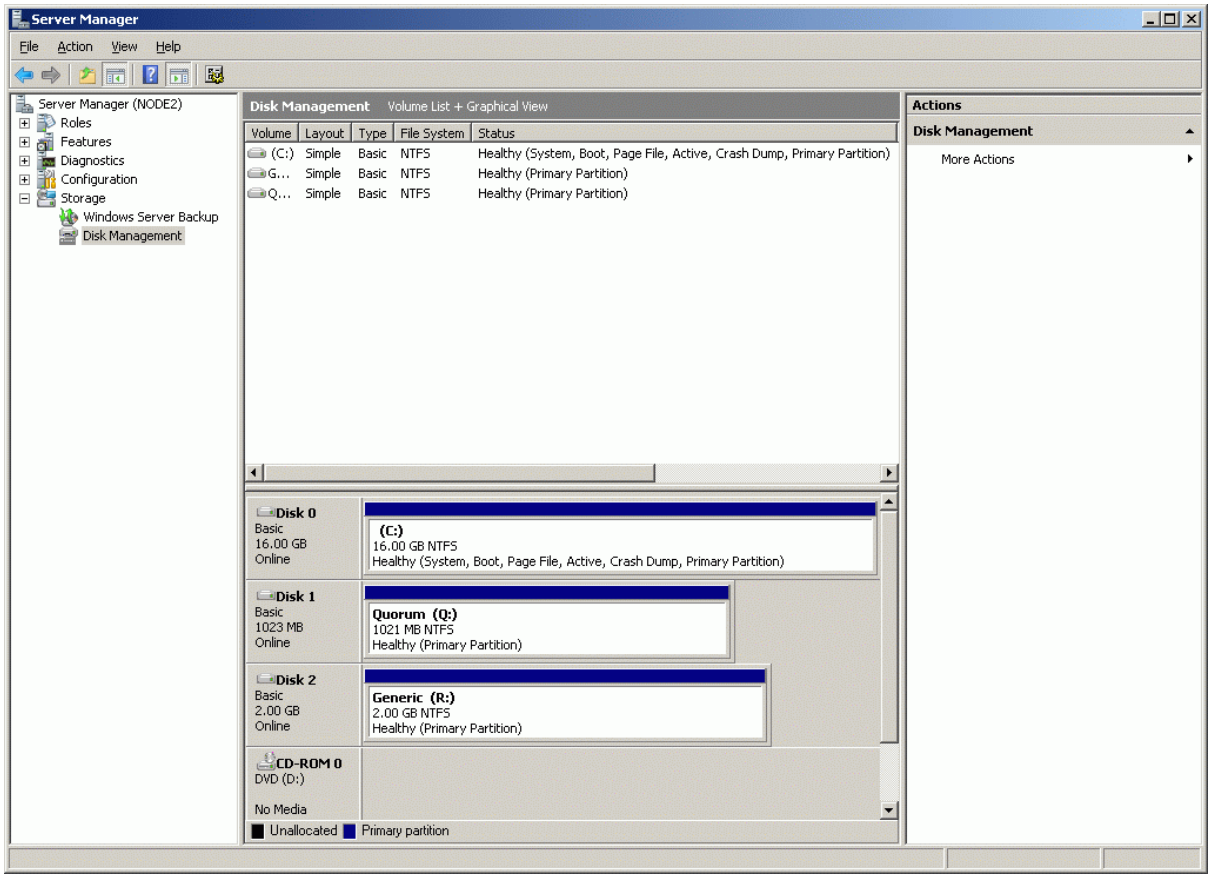
Select **Change Drive Letter and Paths...**

Change the Drive Latter for the Generic to R.



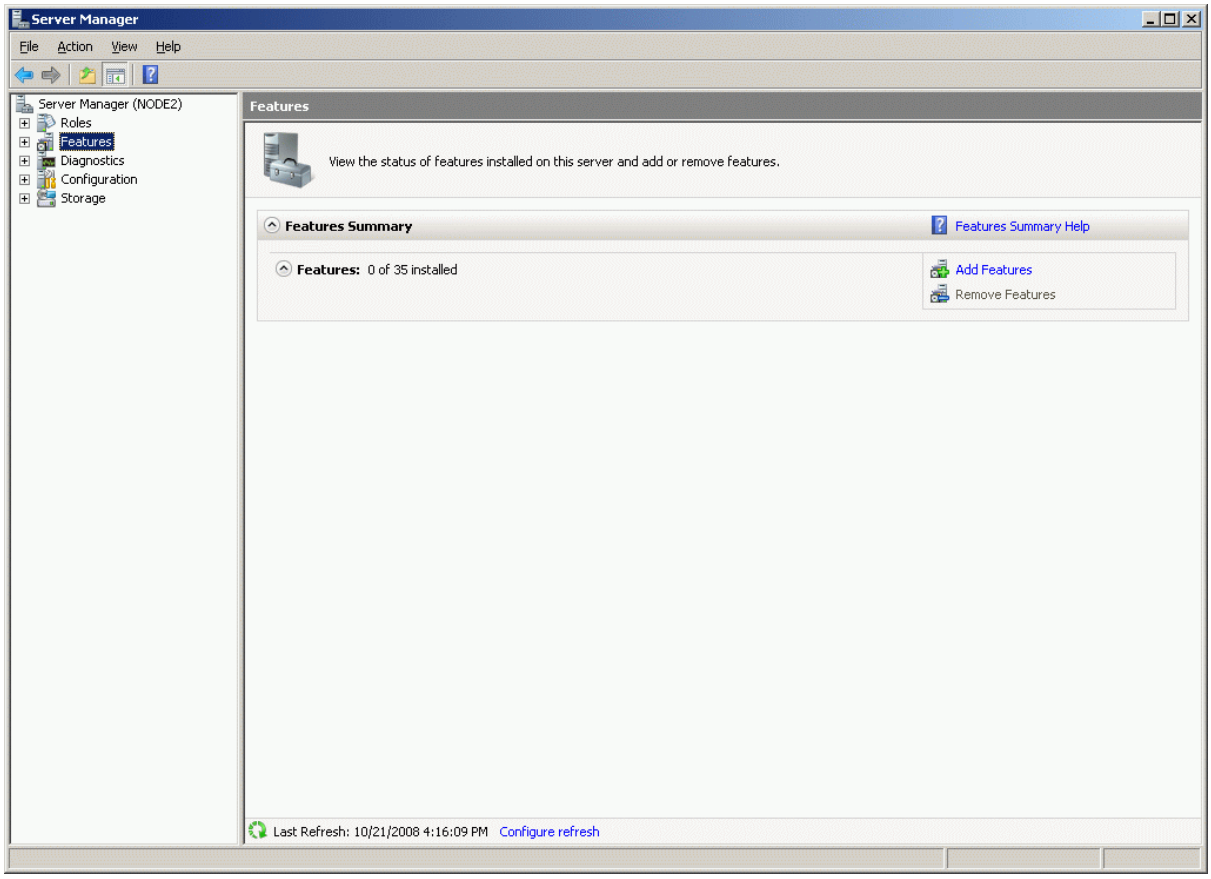


If successful, the **Computer Management** console should look like the sample image provided below.



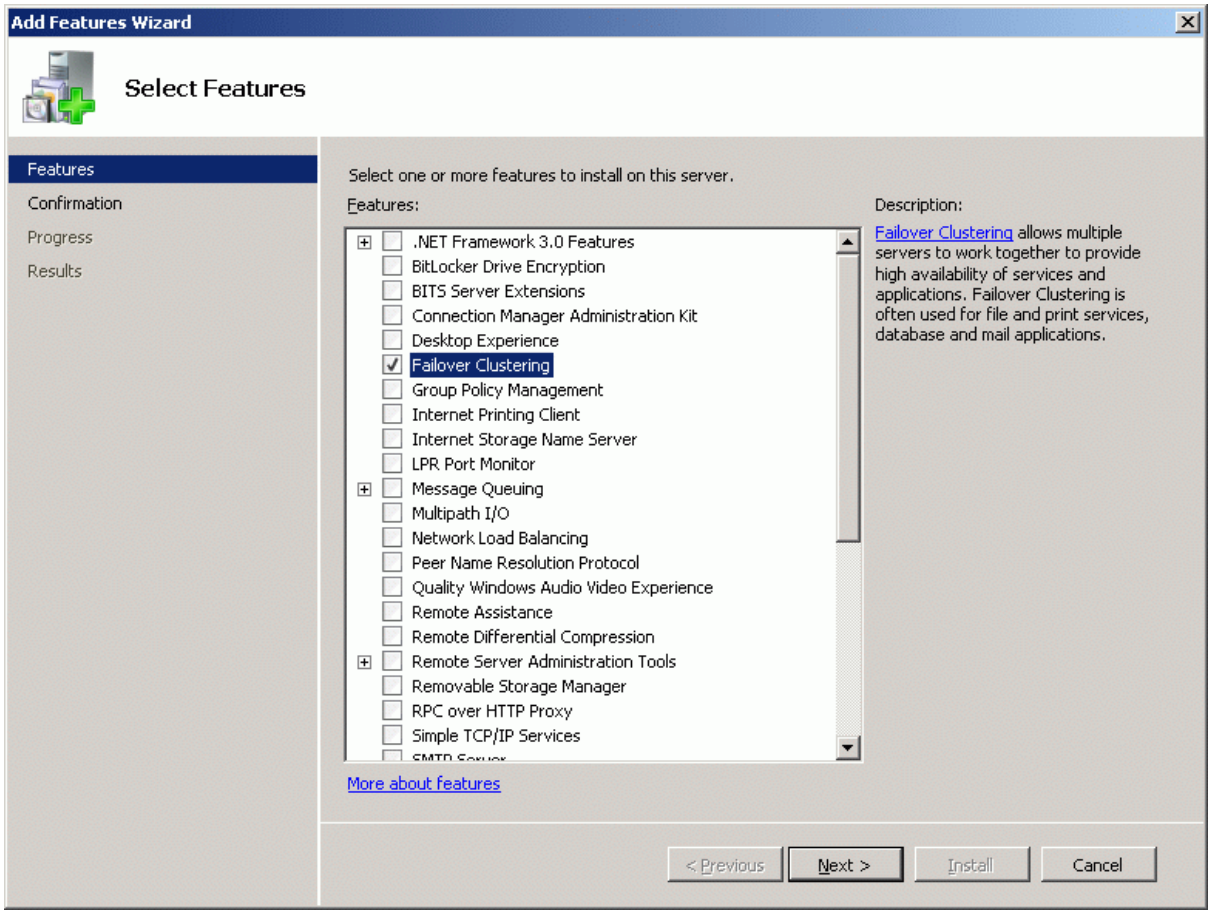
Installing Failover Clustering Feature

Launch the **Computer Management** console. Select **Features** node from the list.



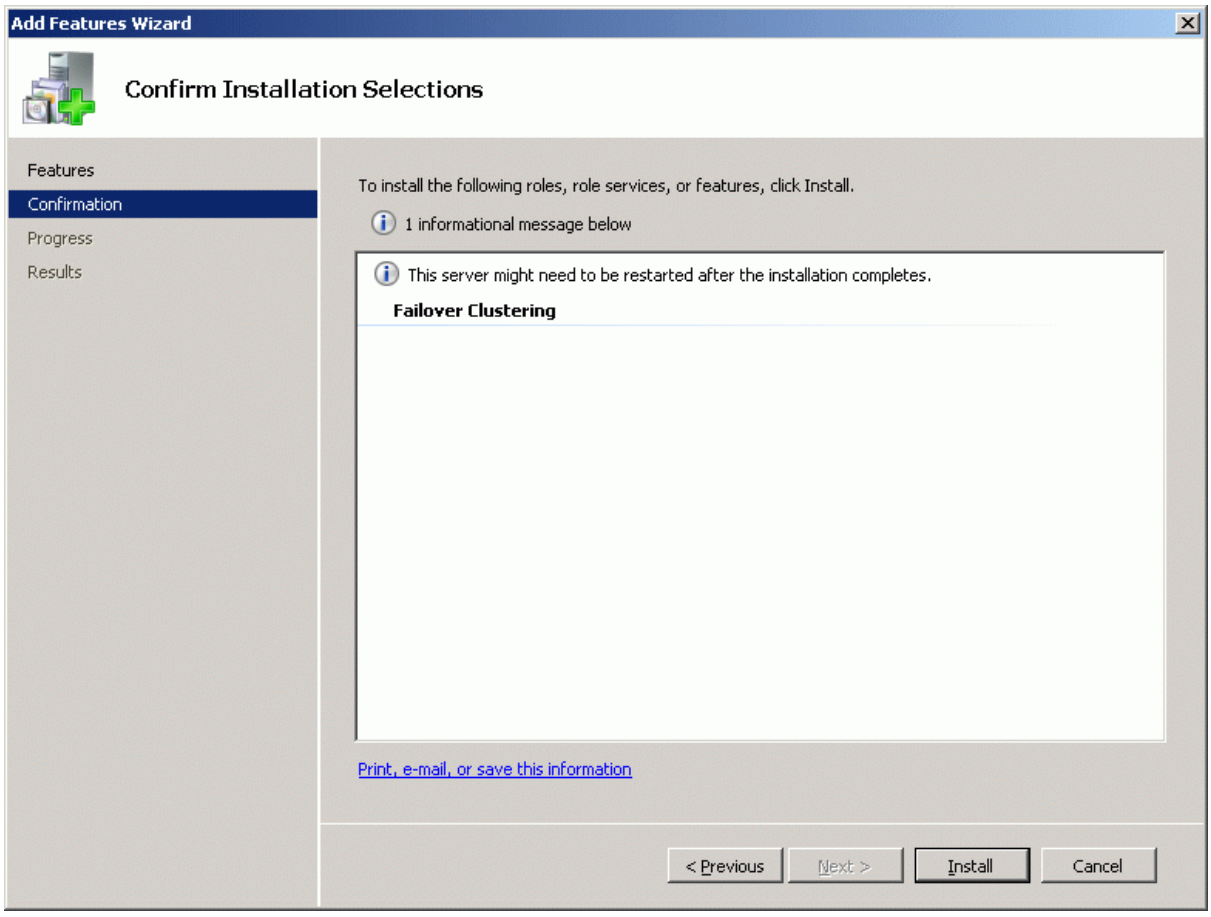
Click the **Add Features** to continue.

Add Features Wizard appears. Check the **Failover Clustering feature**.



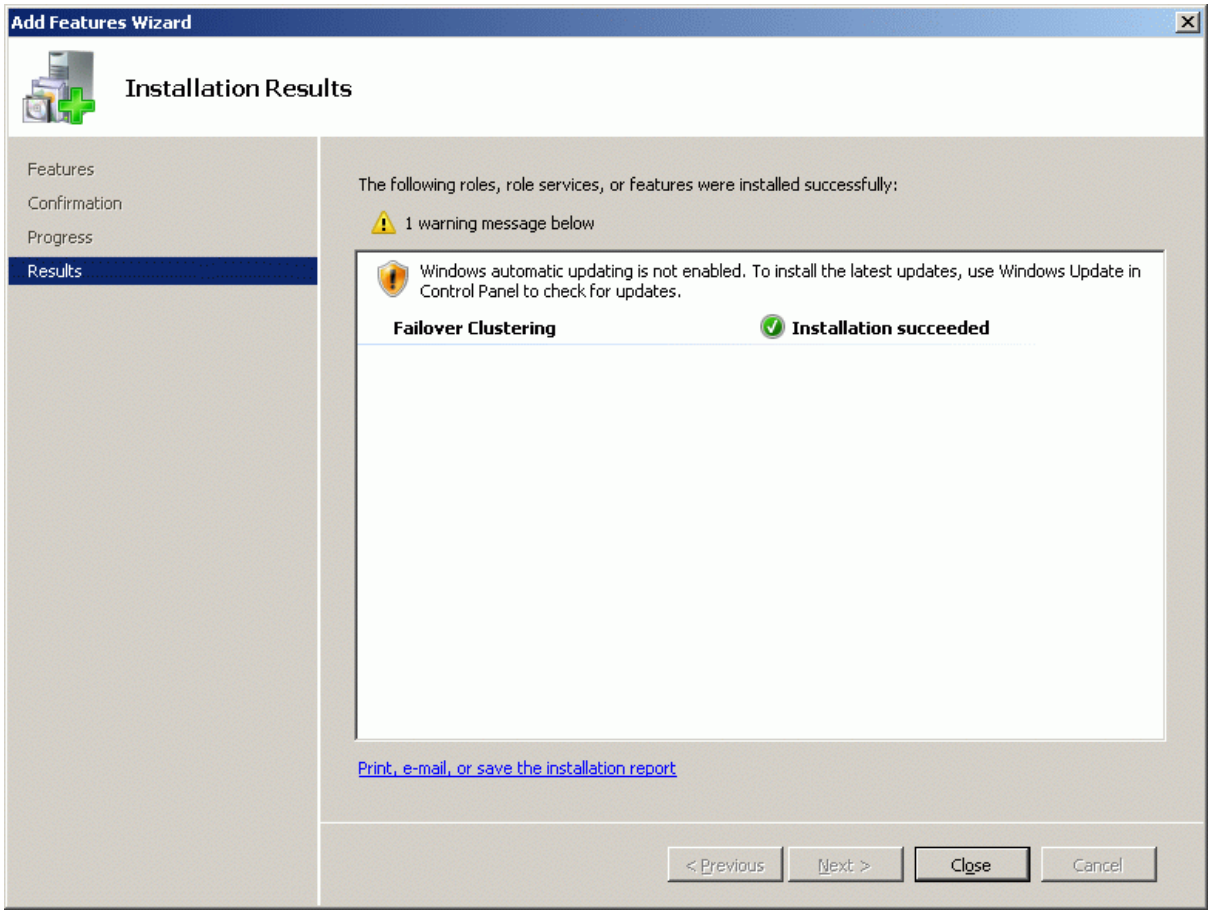
Press the **Next** button to continue.

Check that the parameters are correct. Press the **Previous** button should any changes be required.



Complete the installation of the Failover Clustering Feature by pressing the **Install** button.

If the feature is successfully installed, the wizard should look similar to the example image below.



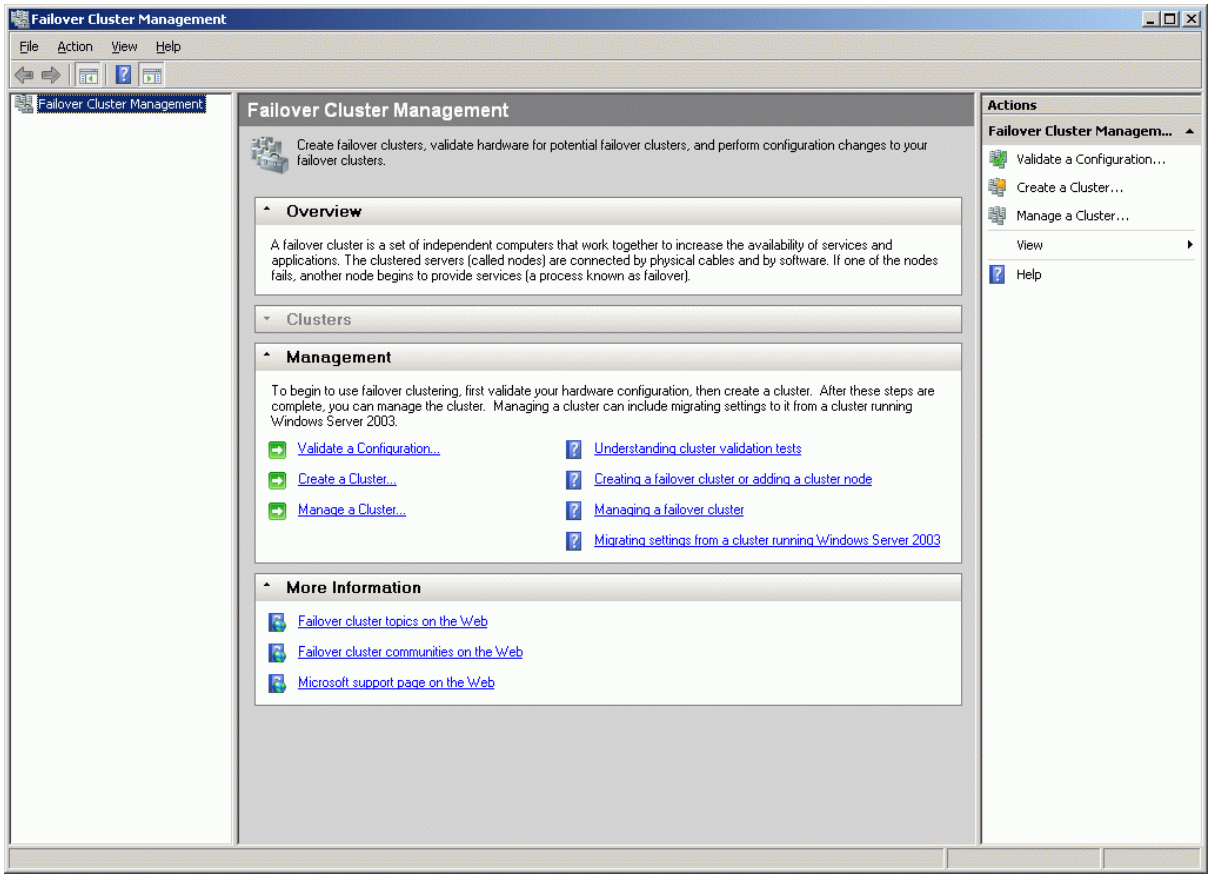
Press the **Close** button.

Shut down the server.

Configuring Microsoft Cluster Service

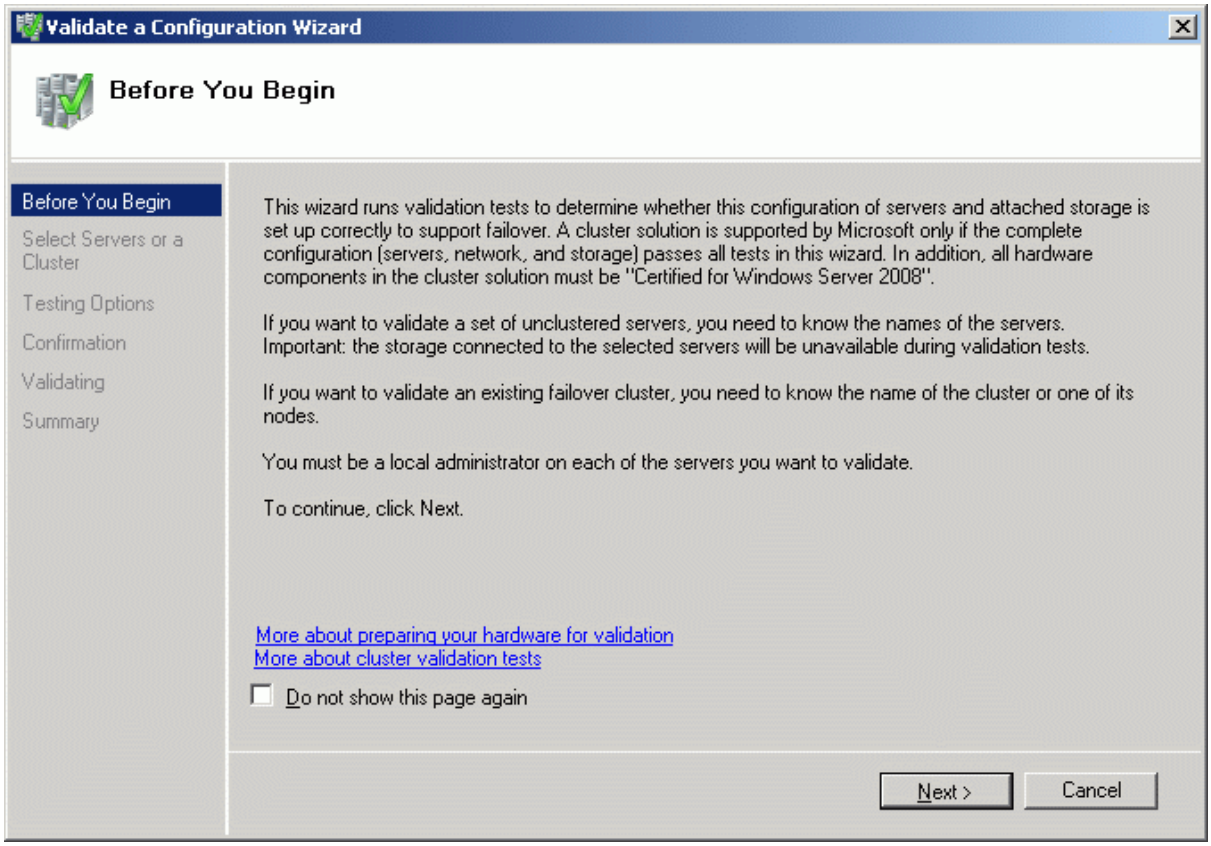
Validate a Configuration

Start both **Cluster Node 1 Server** and **Cluster Node 2 Server**. Launch the **Failover Cluster Management** console selecting **Administrative Tools->Failover Cluster Management**.



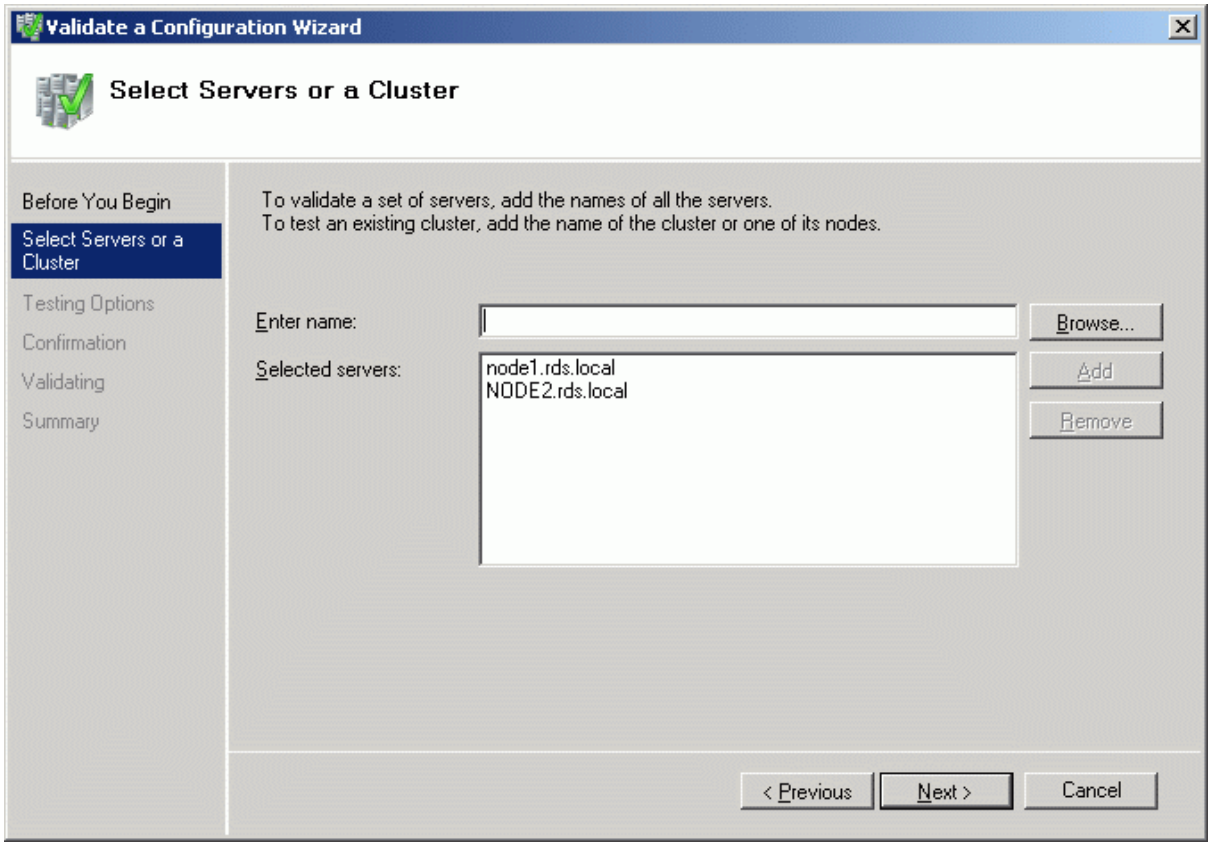
After the management console is launched please click **Validate a Configuration...** item to ensure that the configuration is suitable for failover clustering.

Validate a Configuration Wizard appears.



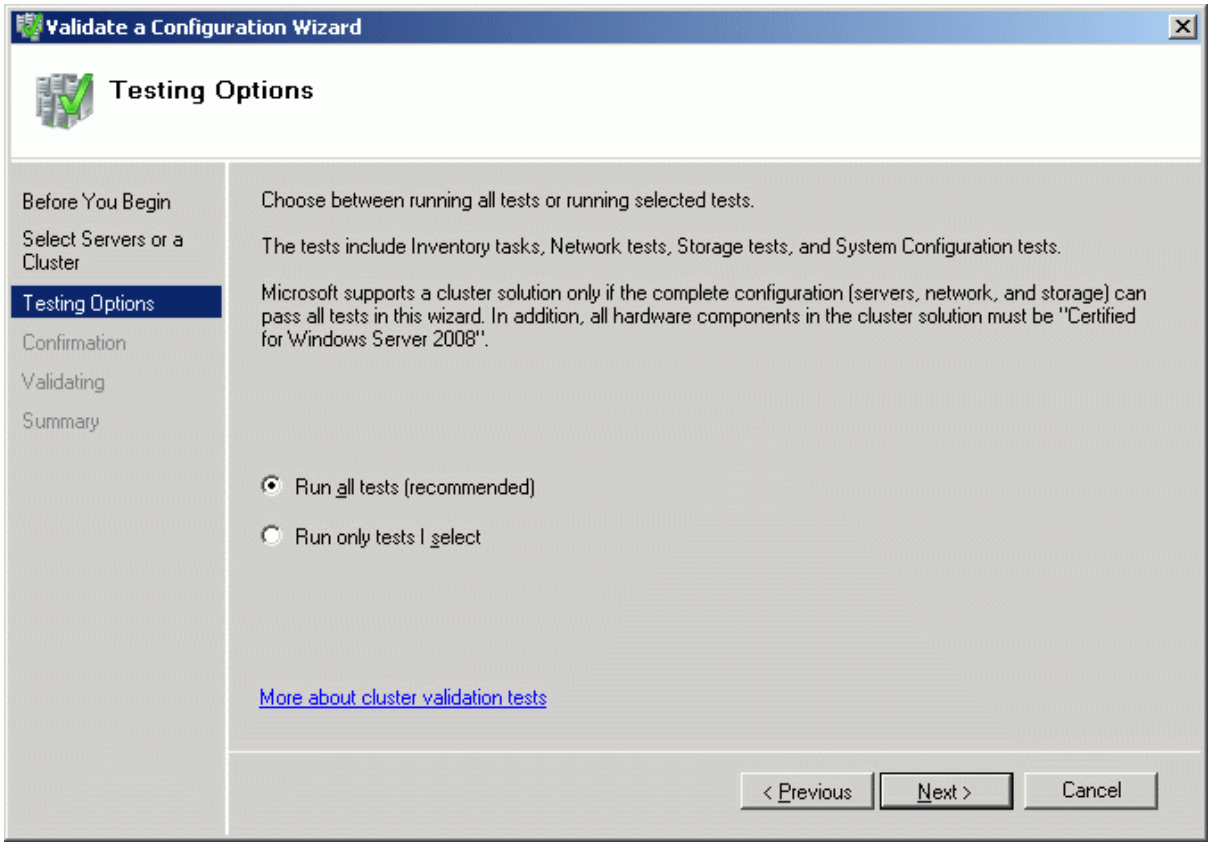
Press the **Next** button to continue.

Add the names of servers you wish to use as cluster nodes.



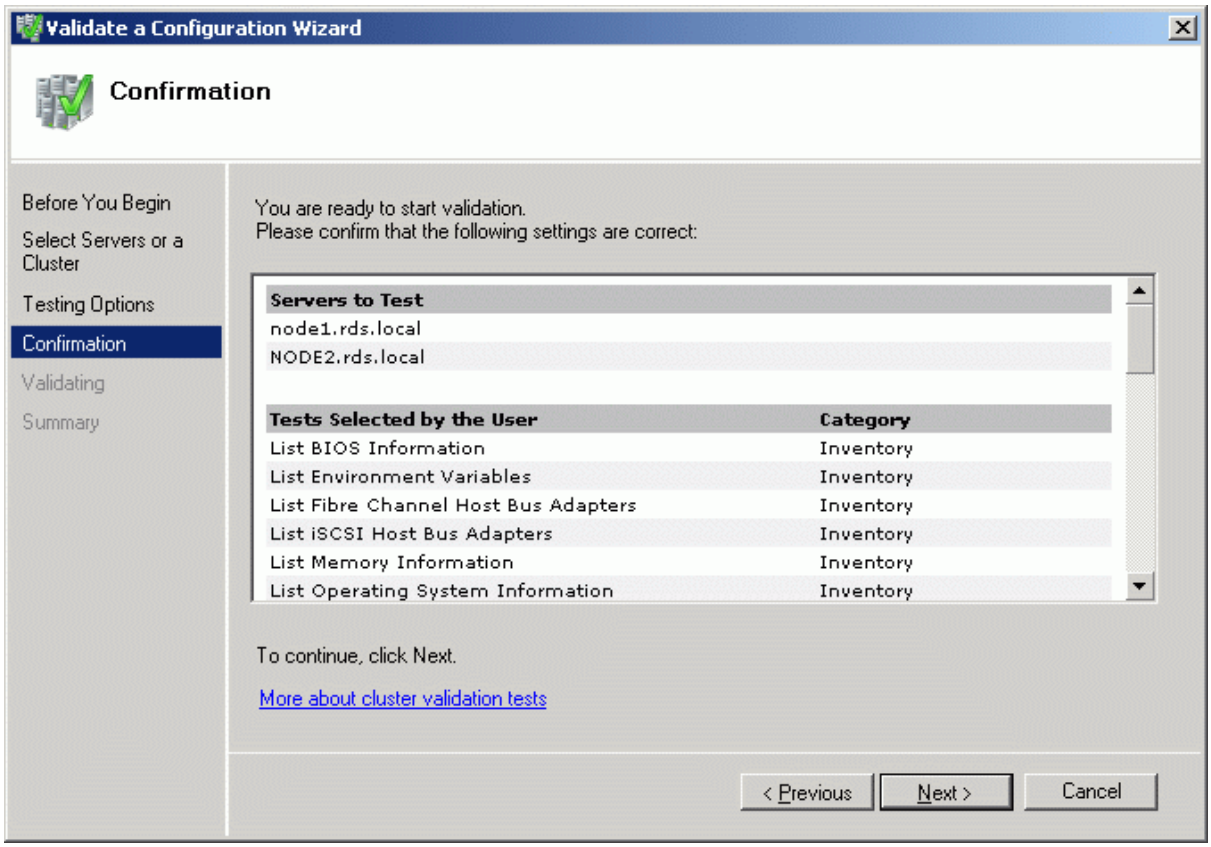
Press the **Next** button to continue.

Select **Run all tests (recommended)** for testing the complete configuration.



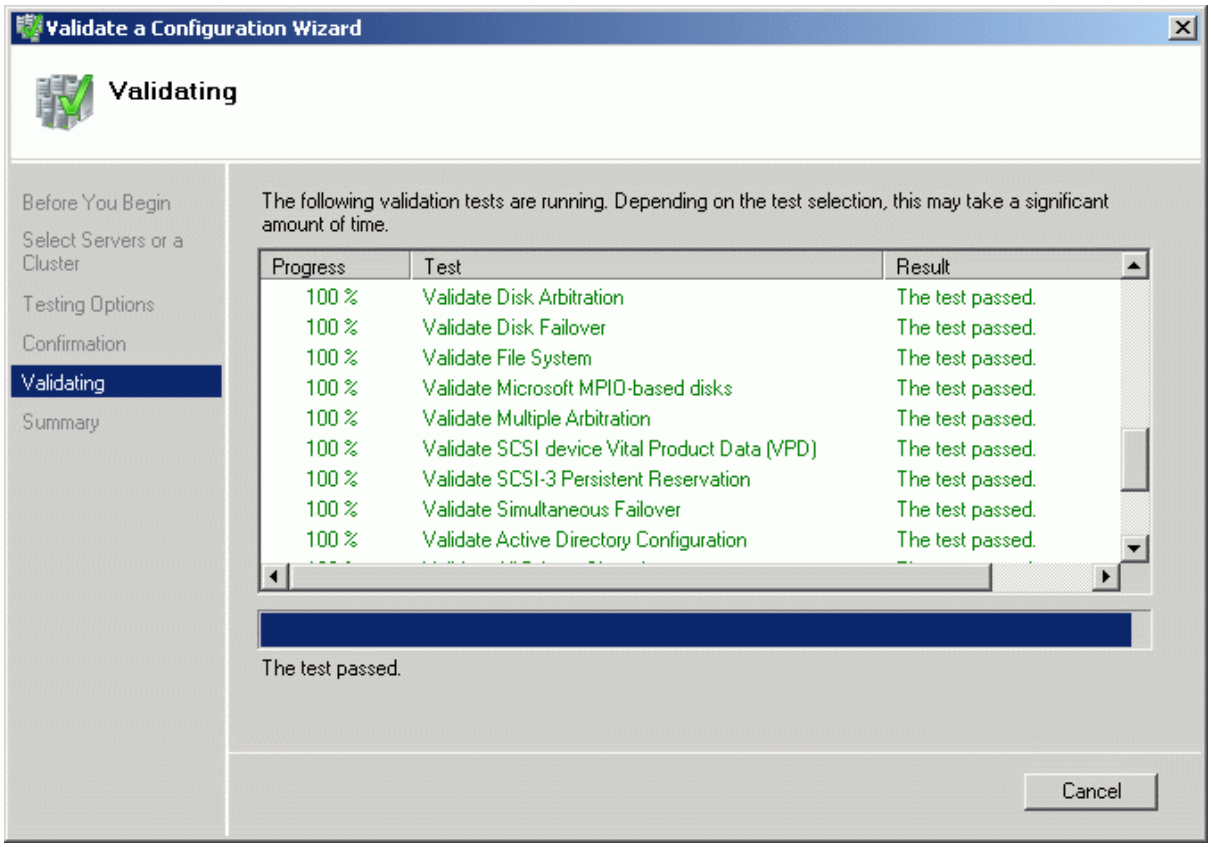
Press the **Next** button to continue.

Check the parameters are correct. Press the **Previous** button should any changes be required.

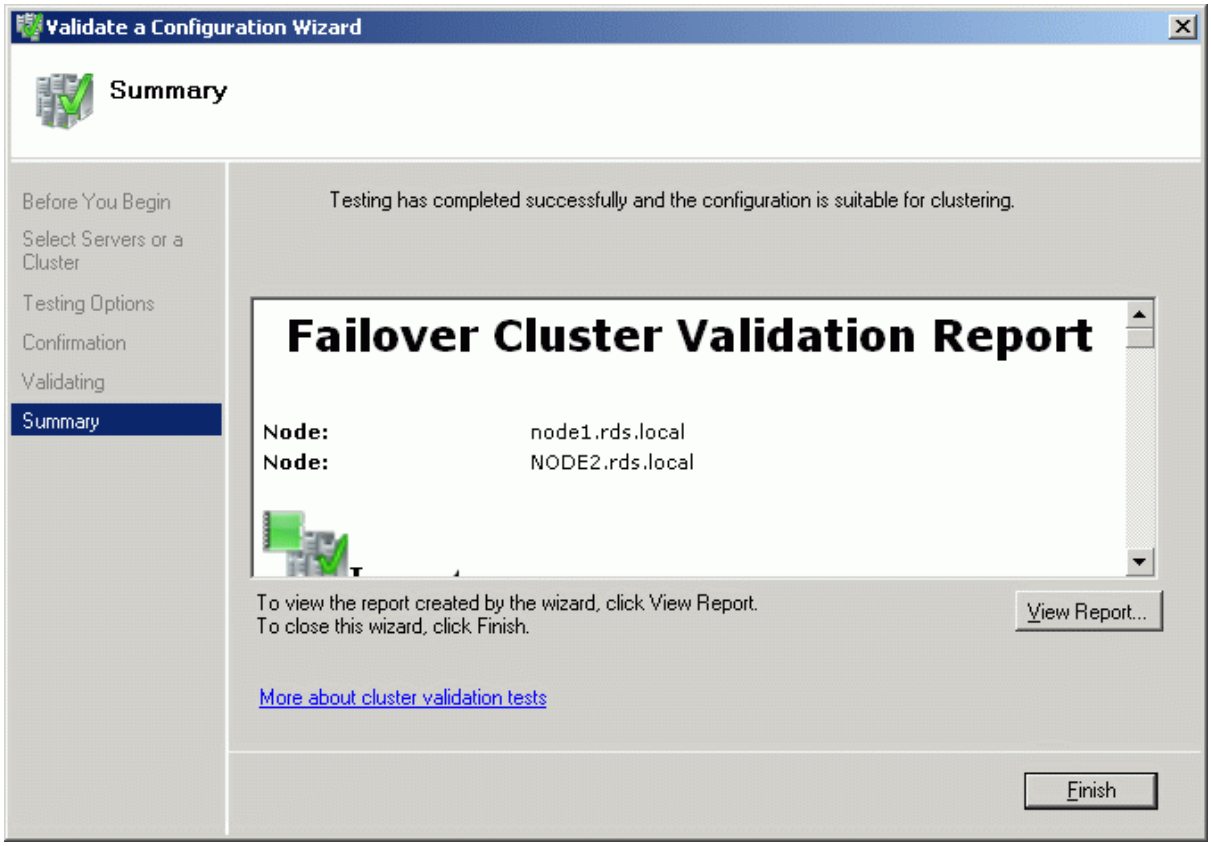


Press the **Next** button to continue.

If all of the tests are successful, the wizard should look similar to the example image below.



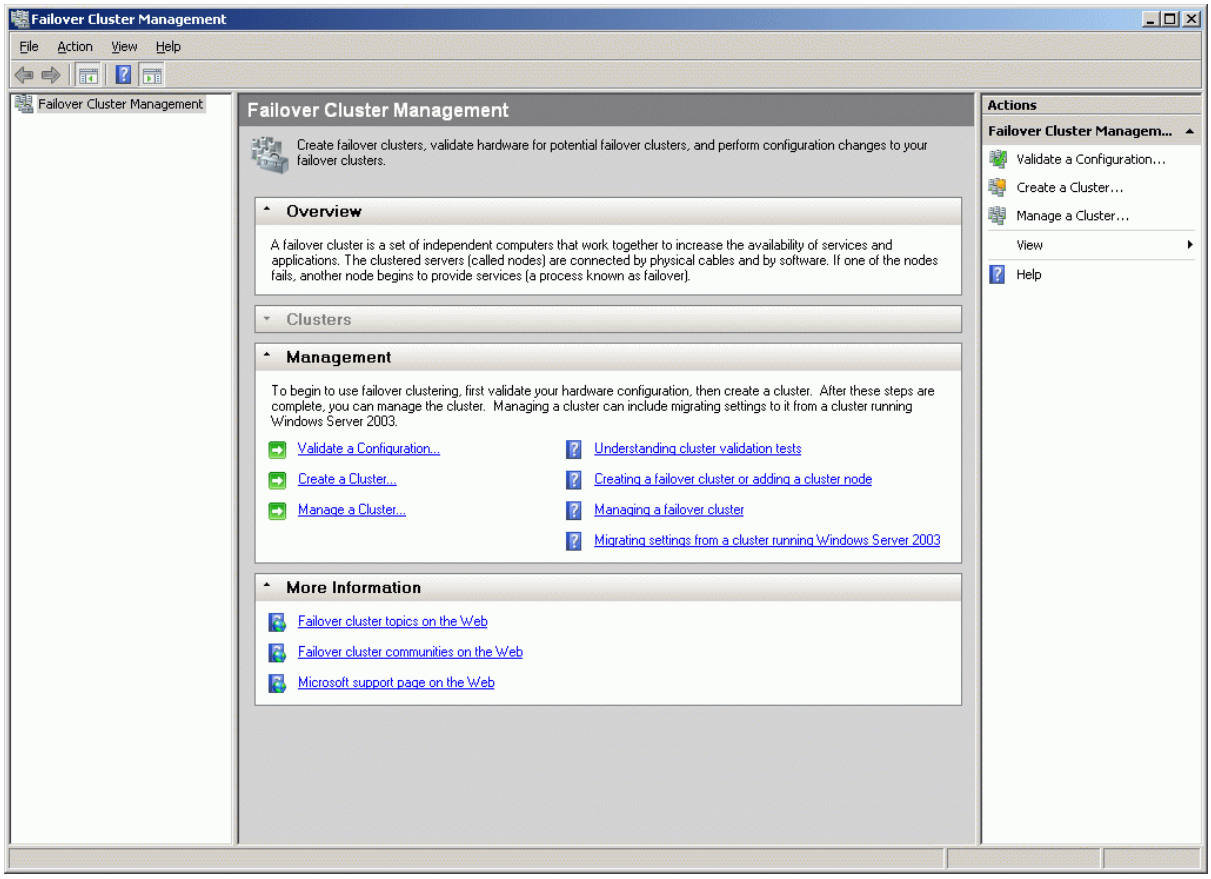
If successful, the wizard should look like the example picture provided below.



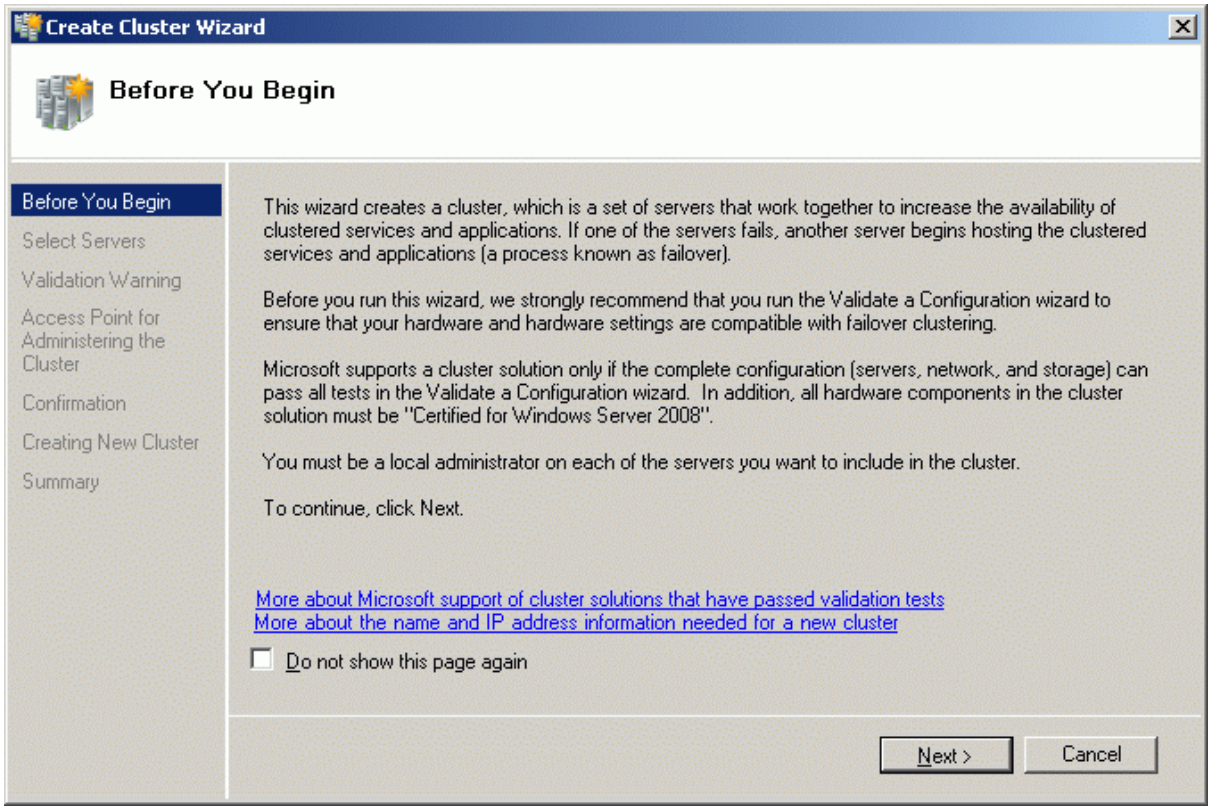
Press the **Finish** button.

Create a Cluster

It is now time to create the cluster. Click **Create a Cluster** item from the Actions panel shown on the right.

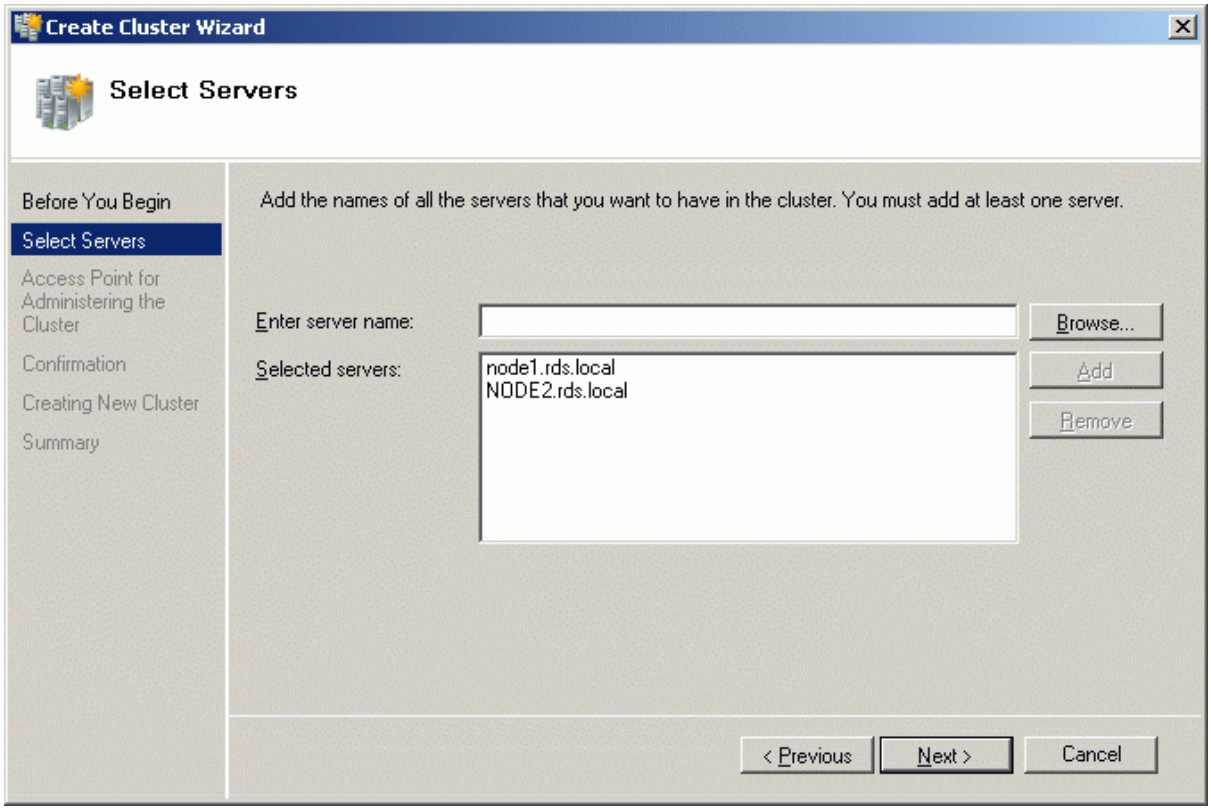


Create a Cluster Wizard appears.



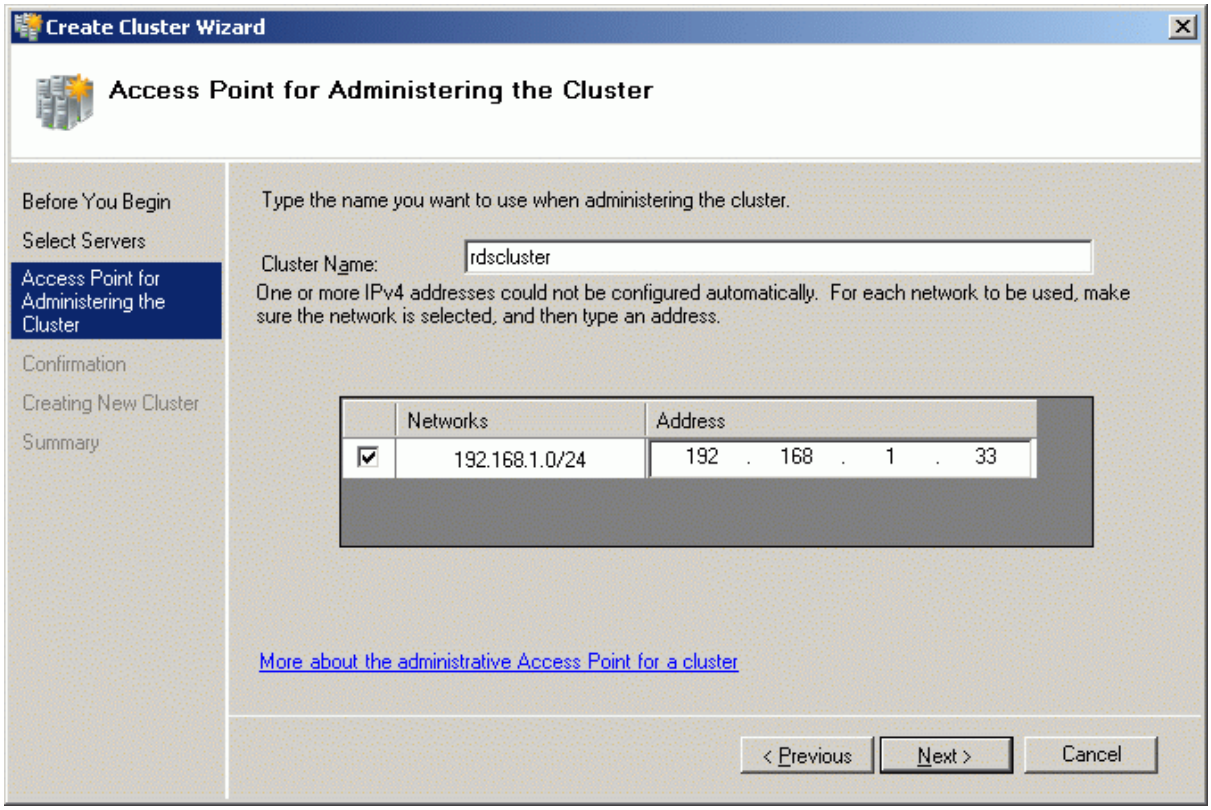
Press the **Next** button to continue.

Add the names of servers you wish to use as cluster nodes.



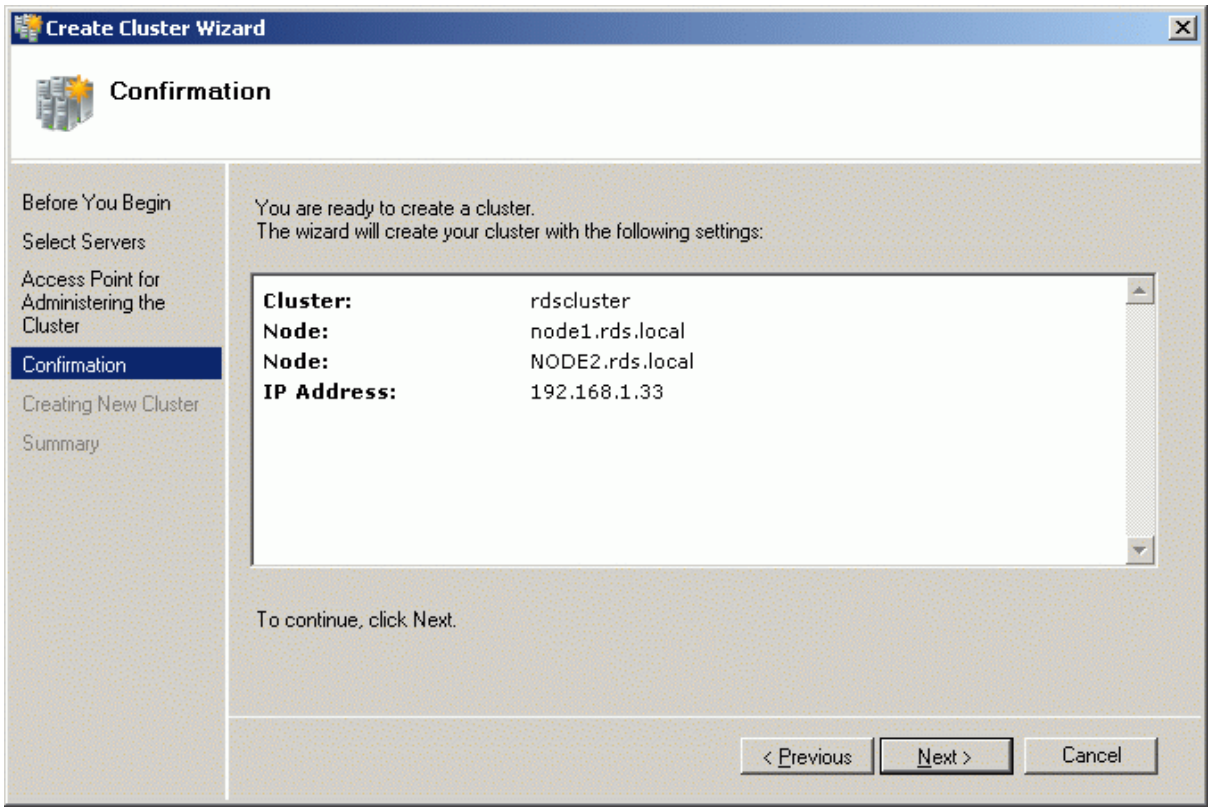
Press the **Next** button to continue.

Specify Cluster Name and Cluster IP address.



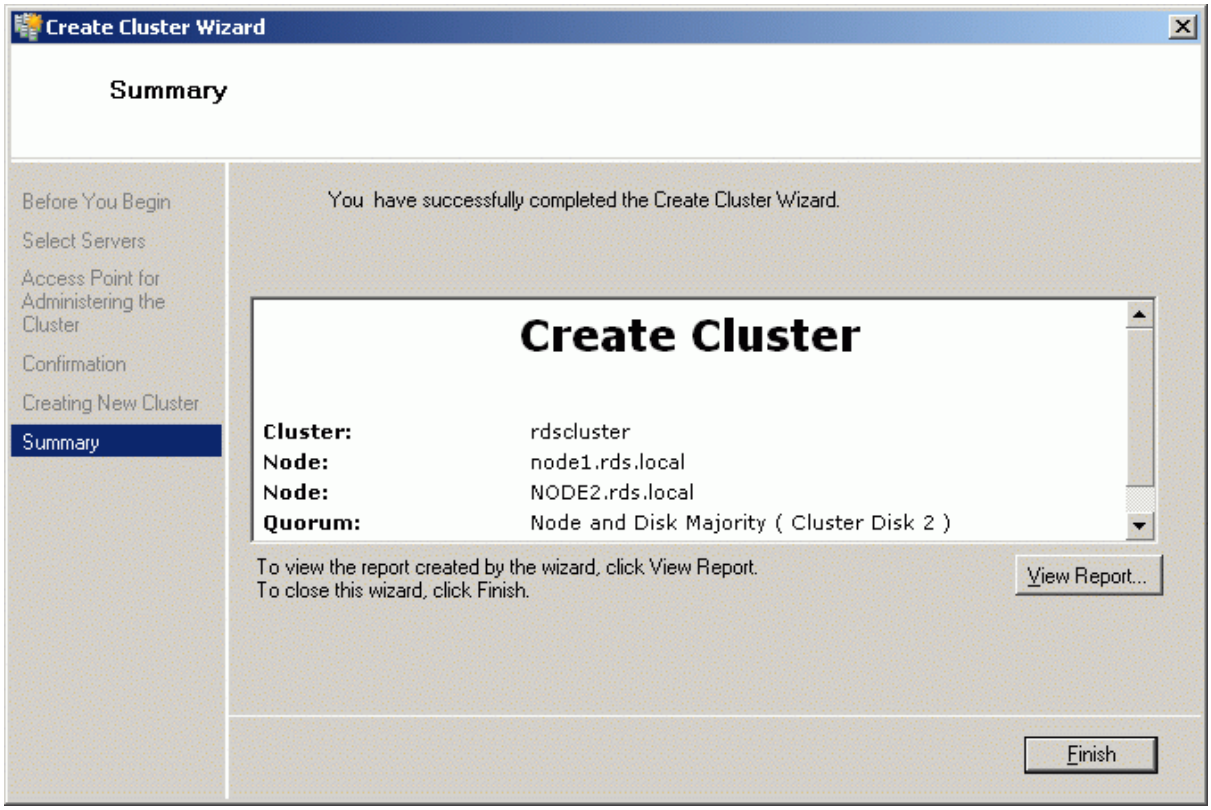
Press the **Next** button to continue.

Check the parameters are correct. Press the **Previous** button should any changes be required.



Press the **Next** button to continue.

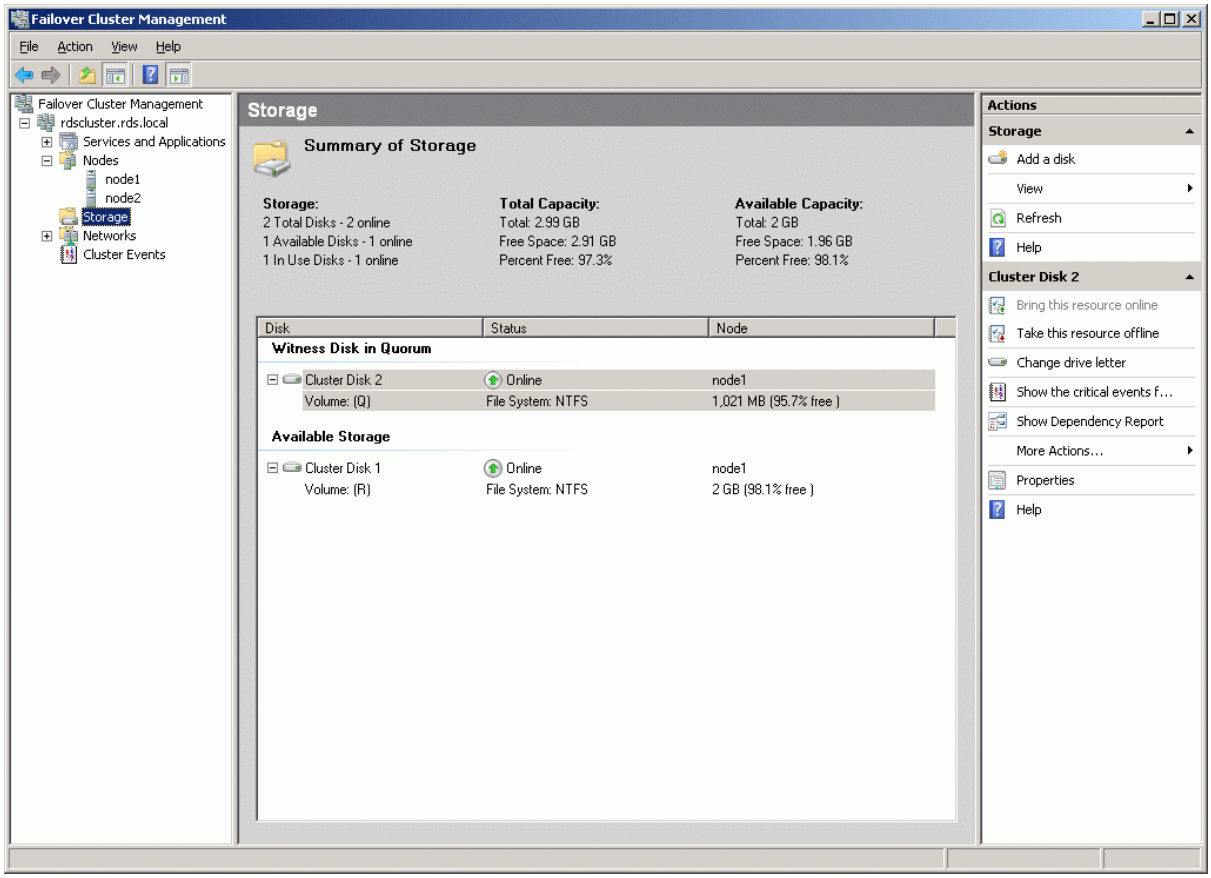
If successful, the wizard should look like the example picture provided below.



Press the **Finish** button.

Now that the creation of the cluster is complete it will be shown in the panel on the left.

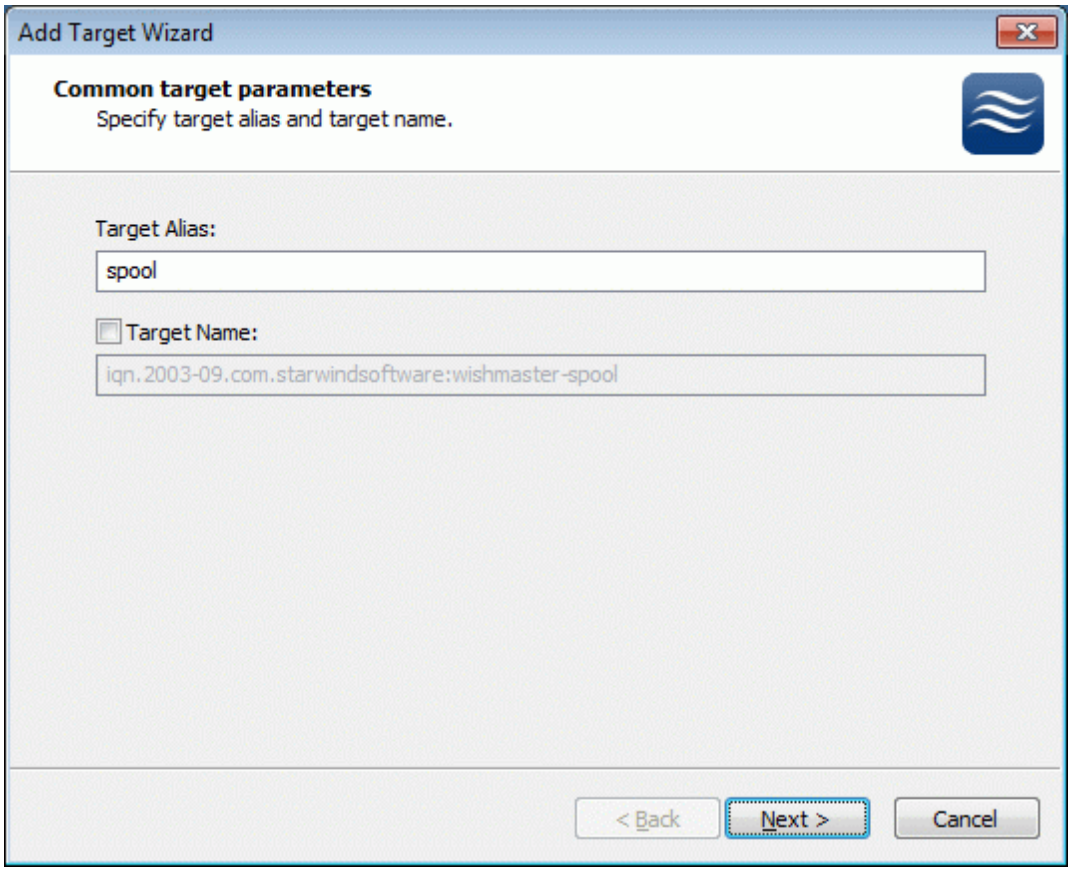
Expand the cluster by clicking on the '+' symbol next to the cluster, then click on **Storage**. The **Failover Cluster Management** console should look like the example picture provided below. Both cluster disk resources will be shown as online.



Adding New Shared Disk Resource

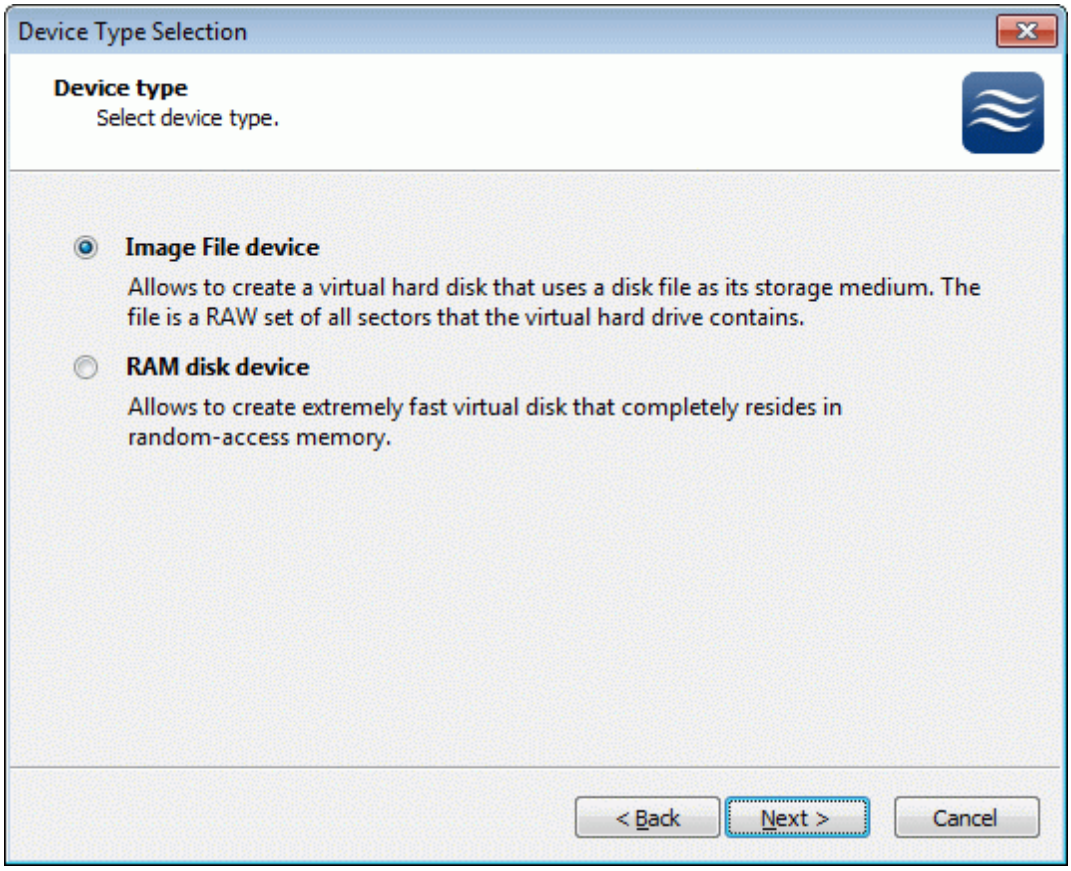
StarWind Target

Click the right mouse button over the host and select **Add Target** pop-up menu item.
In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.



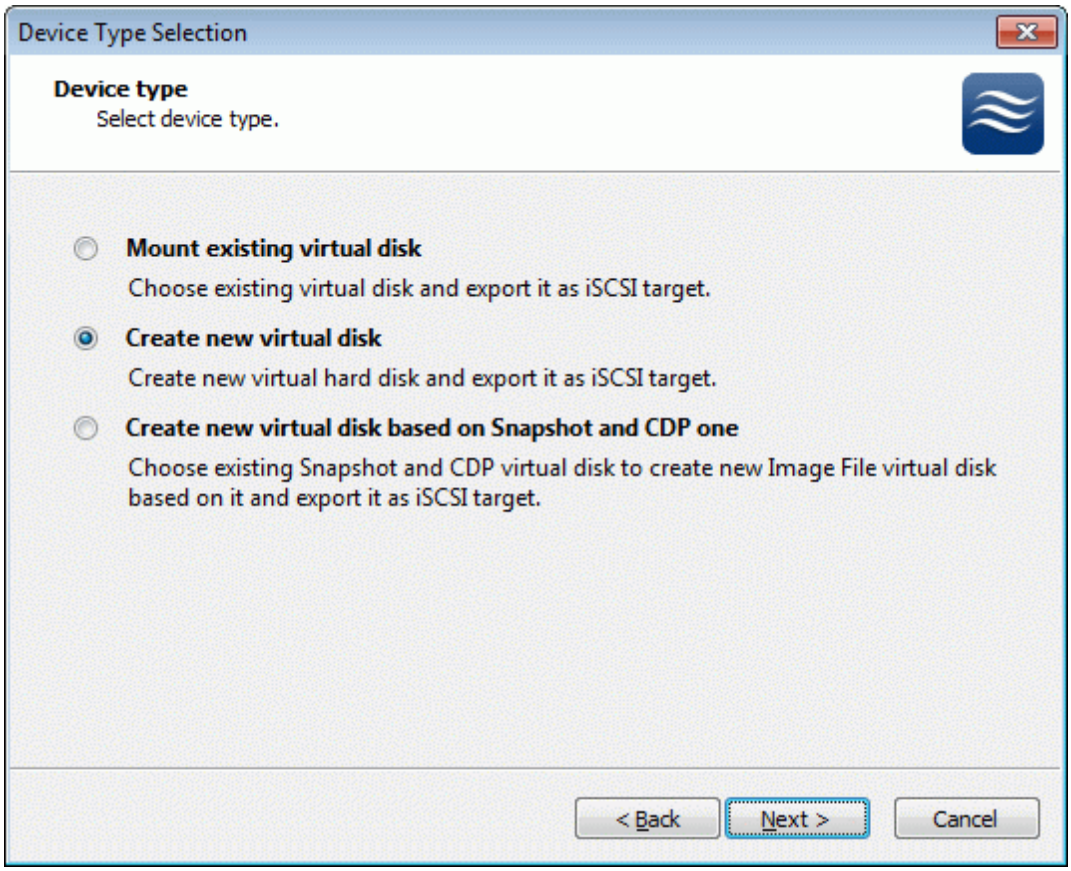
Press the **Next** button to continue.

Select **Image File device**.



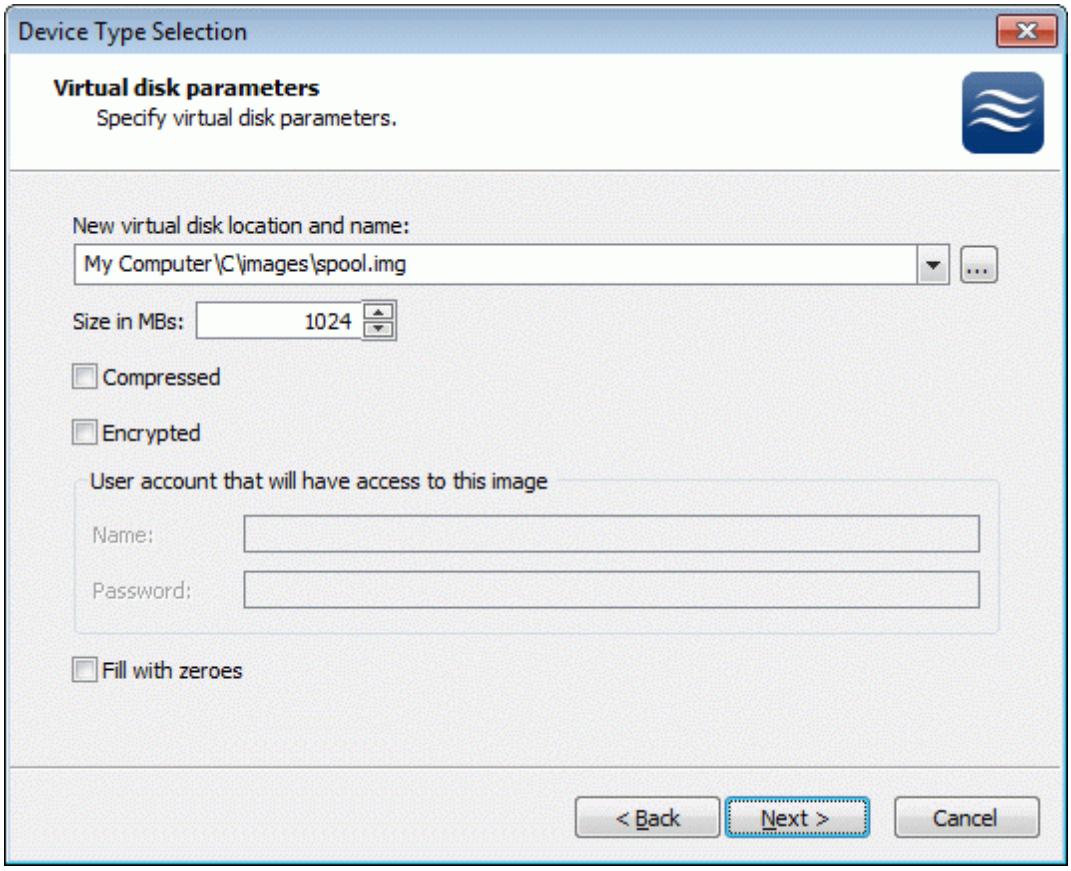
Press the **Next** button to continue.

Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.



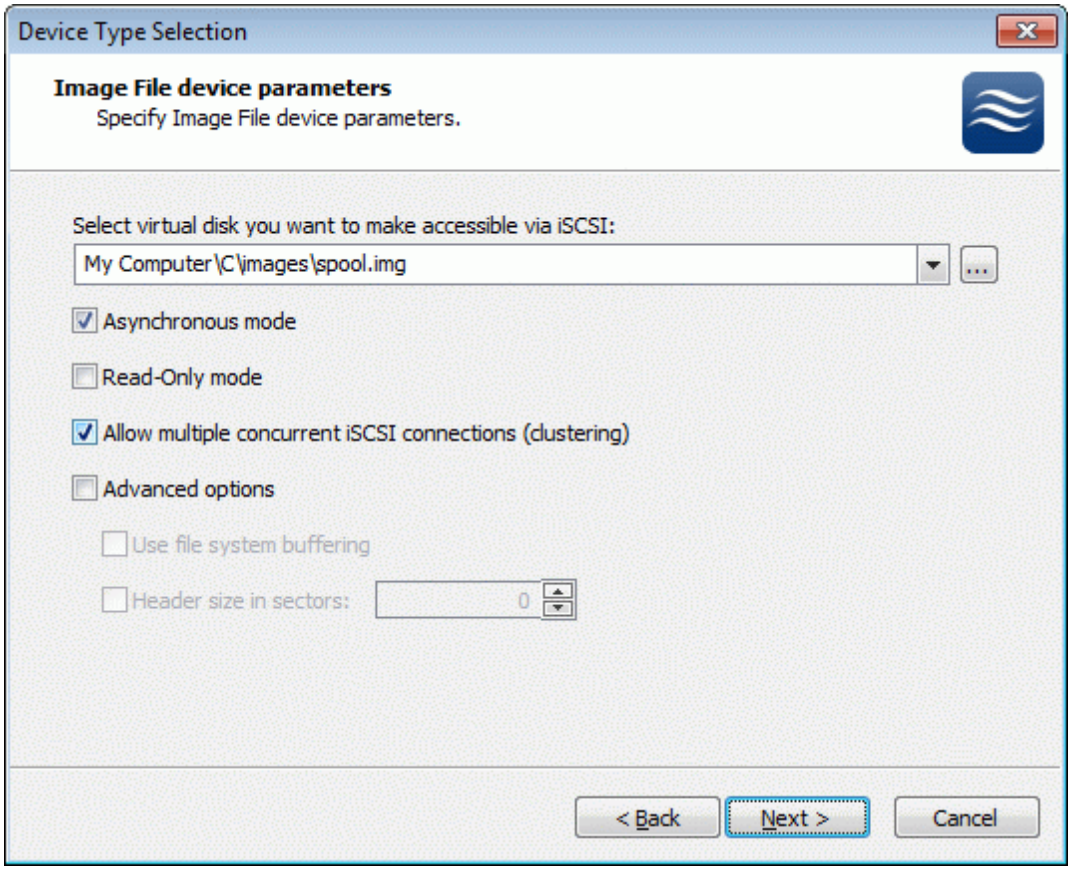
Press the **Next** button to continue.

If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual dsik you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).



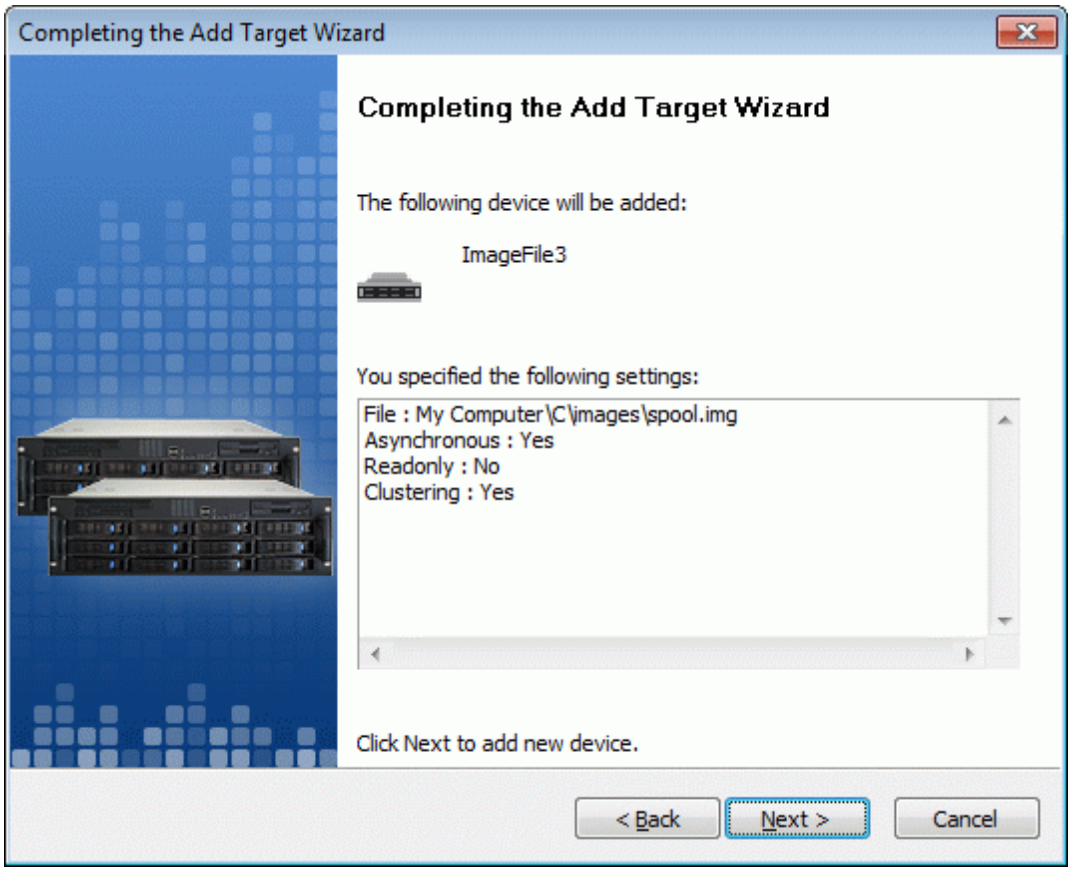
Press the **Next** button to continue.

Image File device has some extra parameters. Check **Allow multiple concurrent iSCSI connections (clustering)** checkbox. Please refer to the online help for details regarding those additional parameters (**Asynchronous mode, Allow multiple connections (clustering), Read-only mode** and **Specify advanced options**).



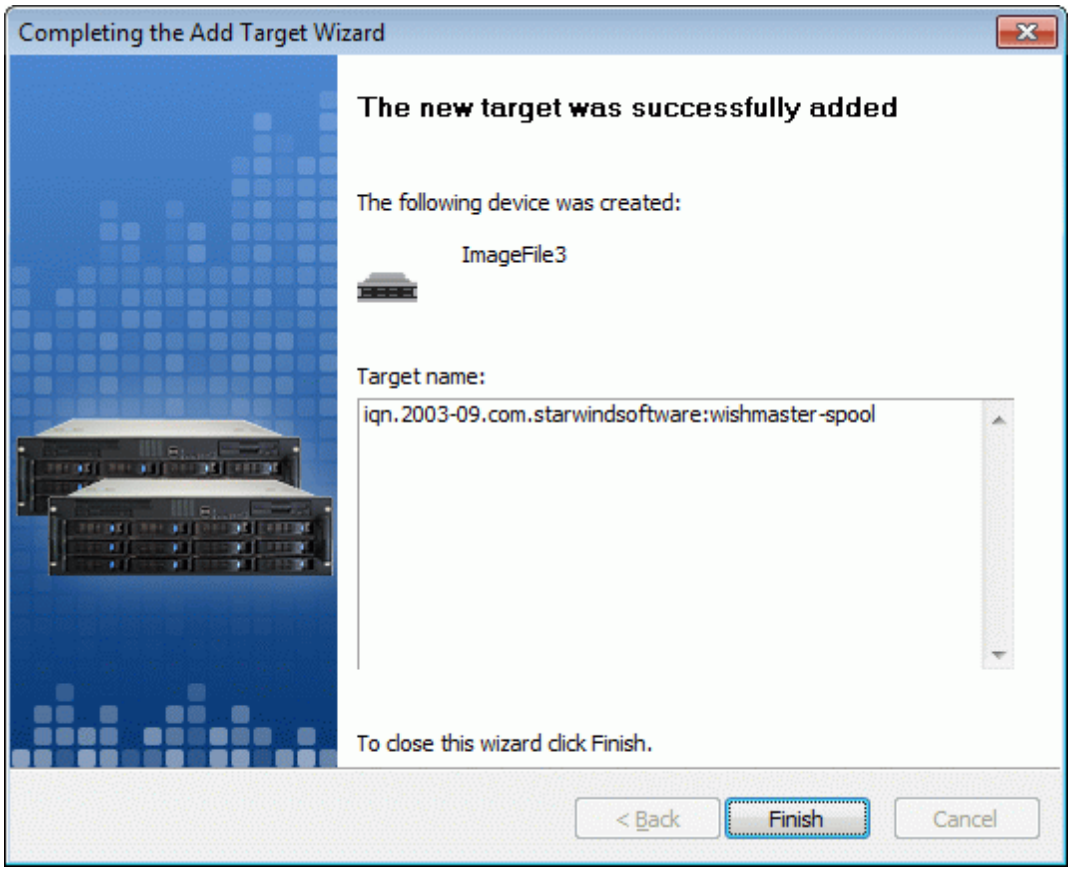
Press the **Next** button to continue.

Check the device parameters are correct. Press the **Back** button should any changes be required.



Press the **Next** button to continue.

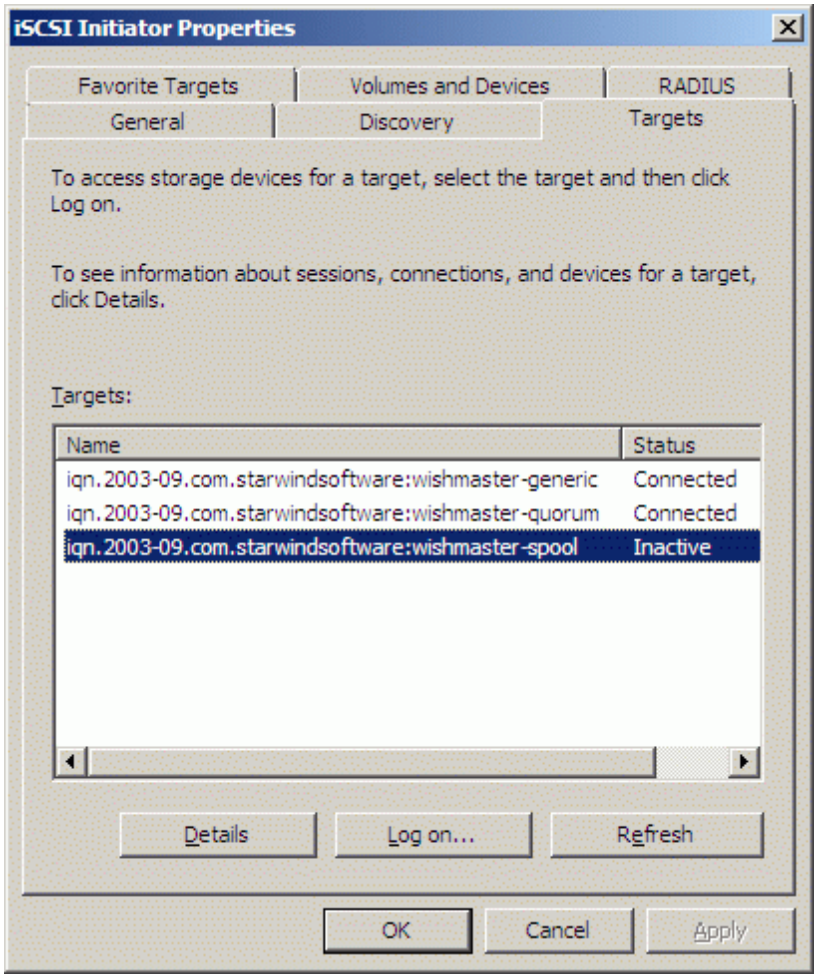
A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.

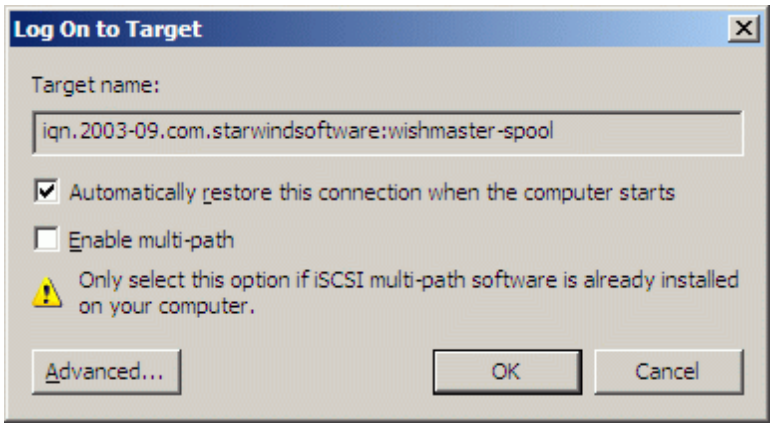
Node 1

Launch the Microsoft iSCSI Software Initiator application **Administrative Tools -> iSCSI Initiator**. Click on the **Targets** tab. Select the IQN of the target just added.



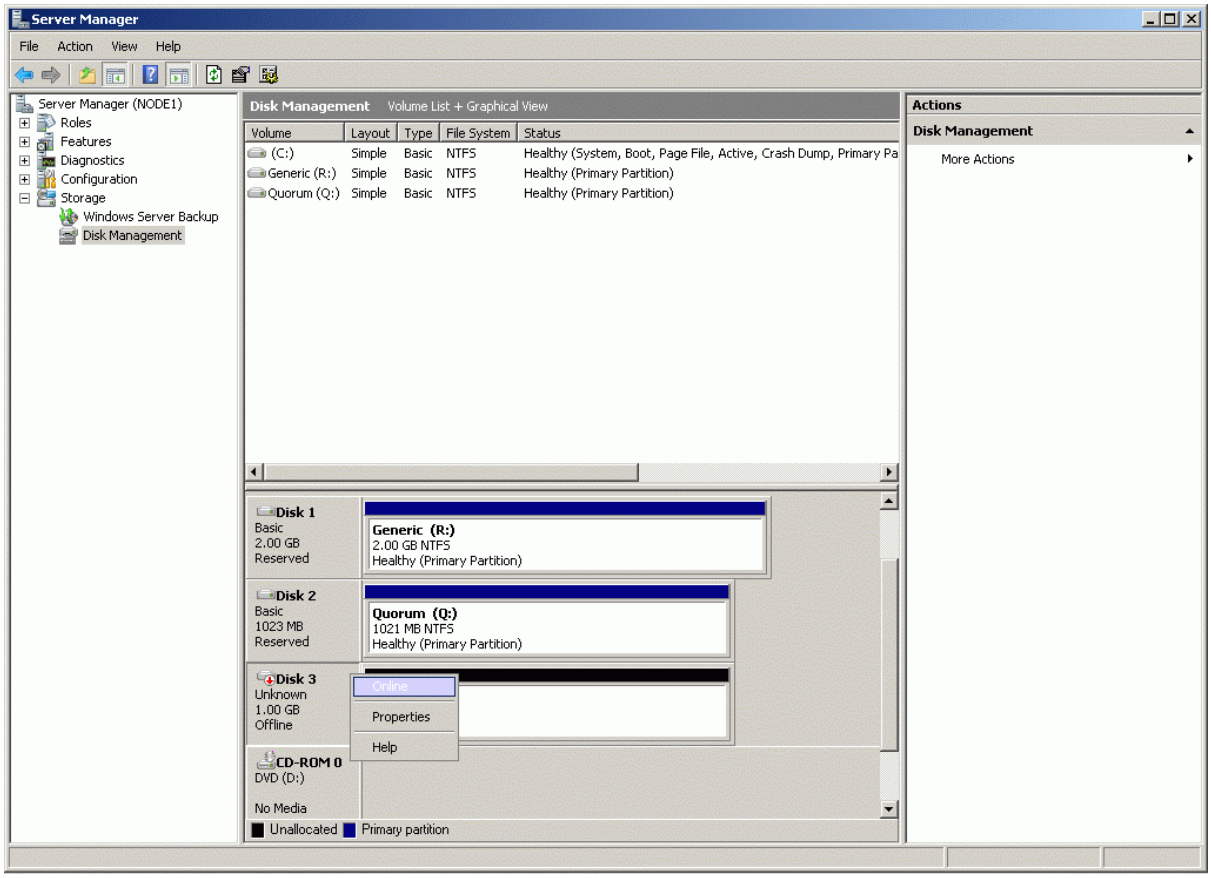
Press the **Log On…** button.

The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.



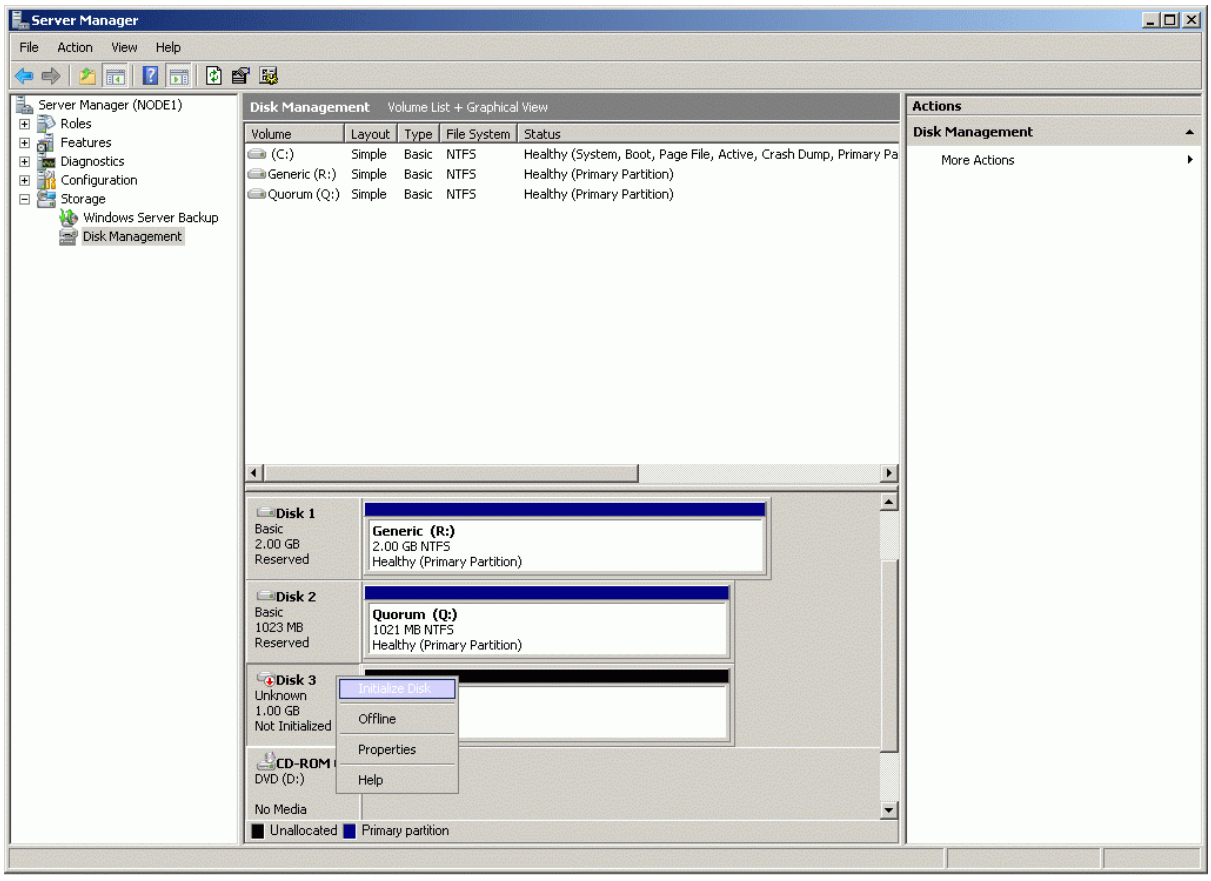
Press the **OK** button to continue.

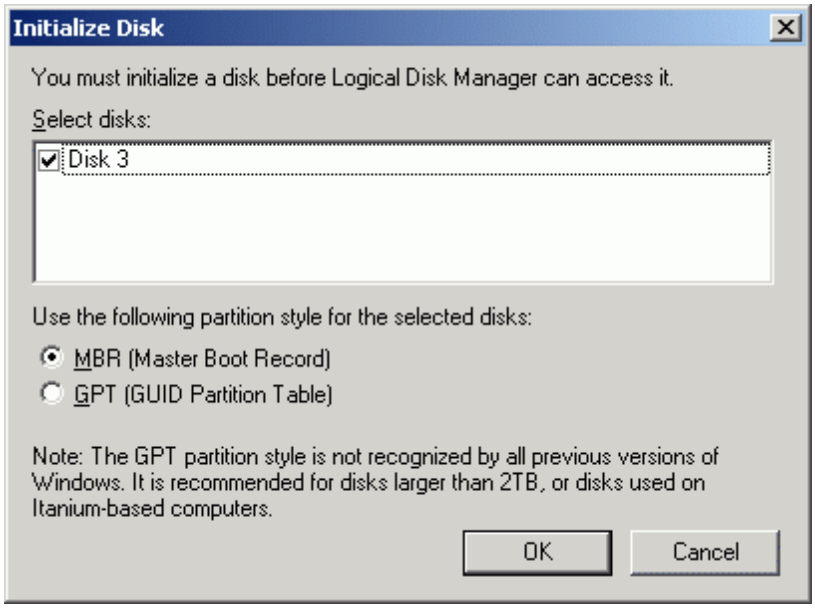
When the **StarWind** Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be initialized and formatted. Launch the **Computer Management** console. Select **Disk Management**.



Bring disk online. Press the right mouse button over the disk and select **Online**.

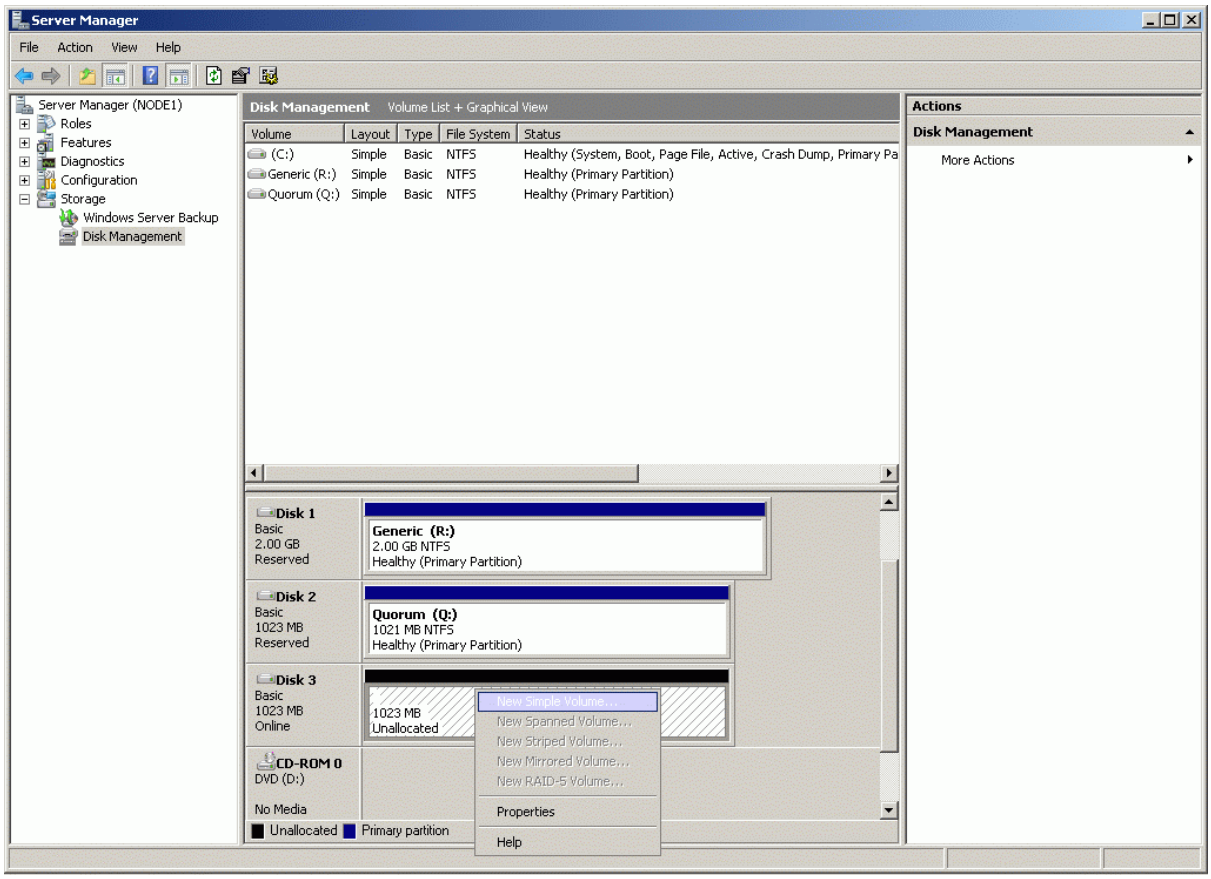
Initialize the Disk. Press the right mouse button over the Disk and select **Initialize Disk**. Follow the wizard to initialize the new disk.



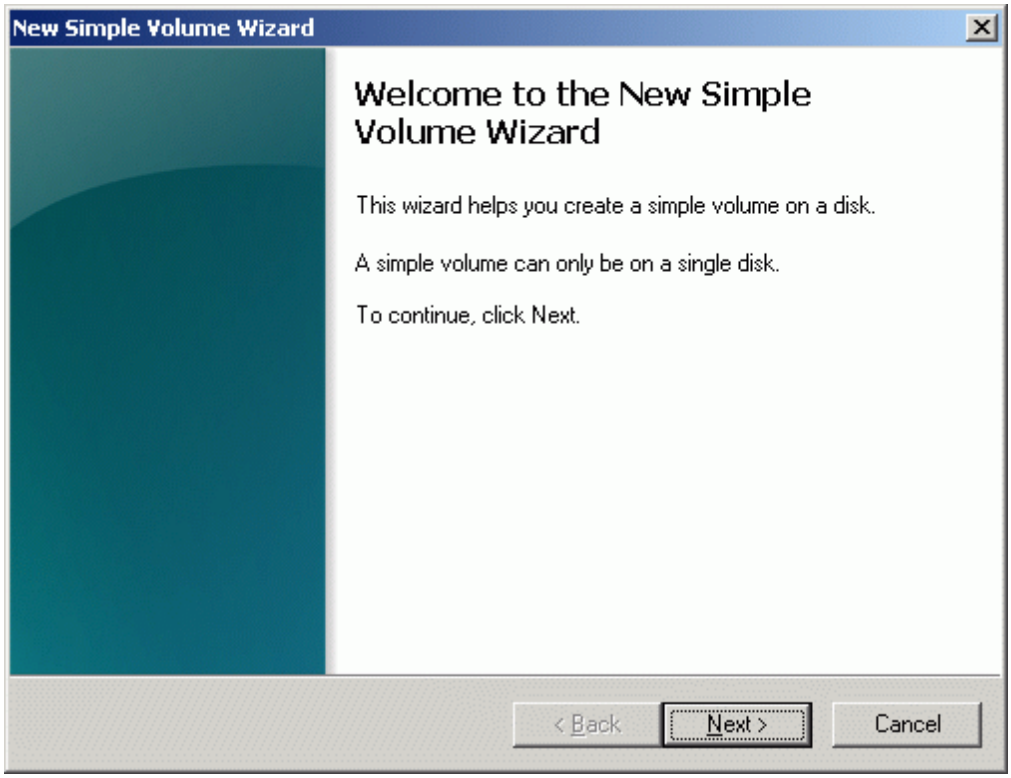


Press the **OK** button to continue.

The disk has now been initialized. Right-click over the unallocated space and select **New Simple Volume**. Follow the instructions in the wizard to create an NTFS partition for use as the spool disk.

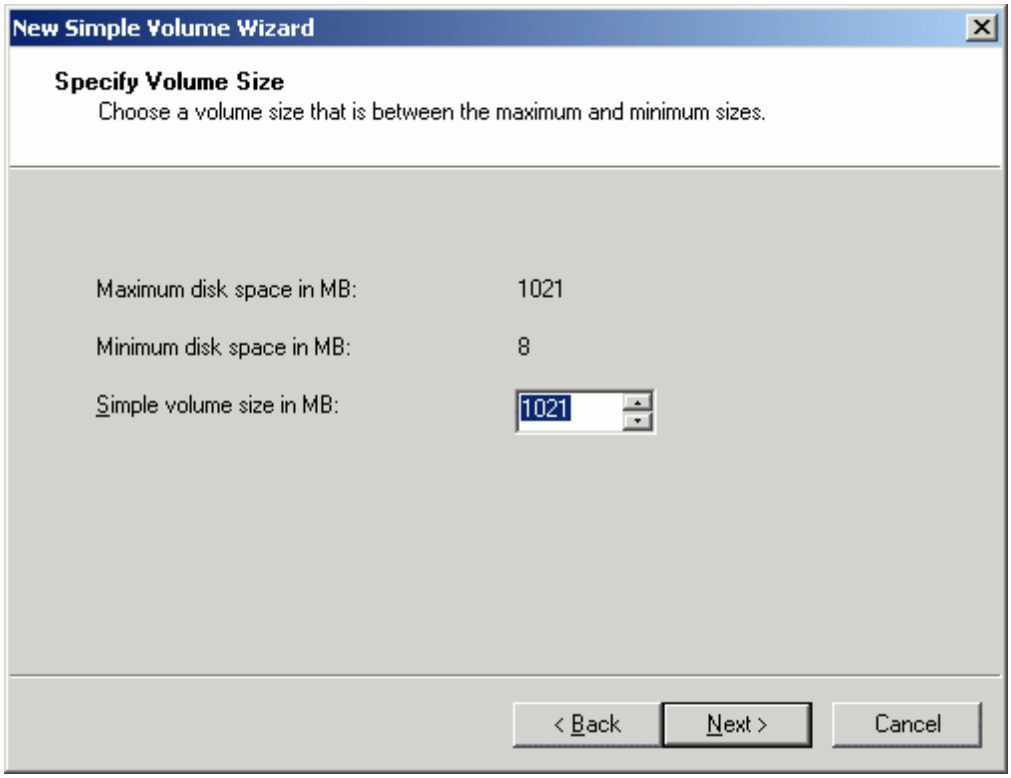


New Simple Volume Wizard appears.



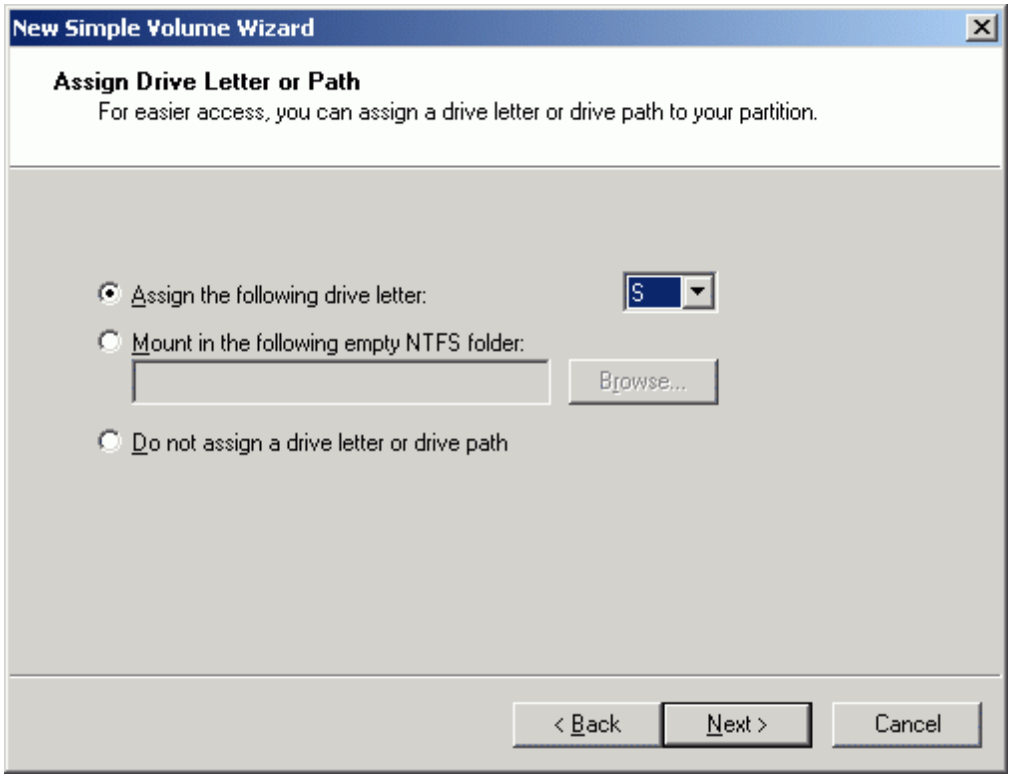
Press the **Next** button to continue.

Specify new volume size in megabytes.



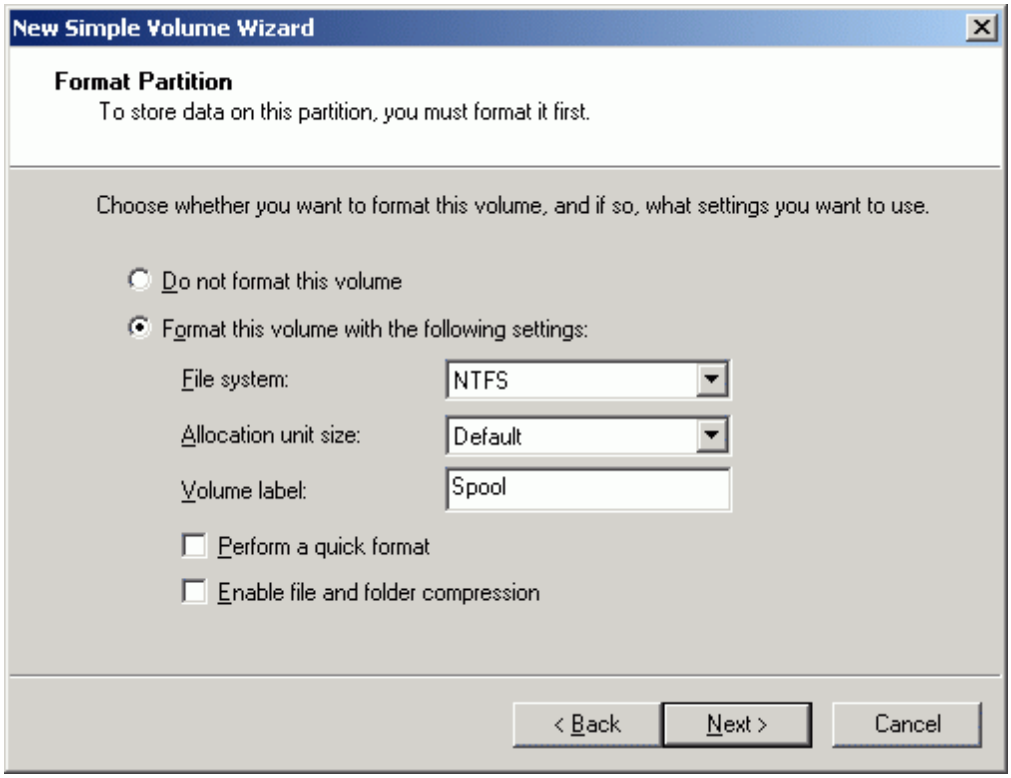
Press the **Next** button to continue.

Choose the **Drive Letter** to assign.



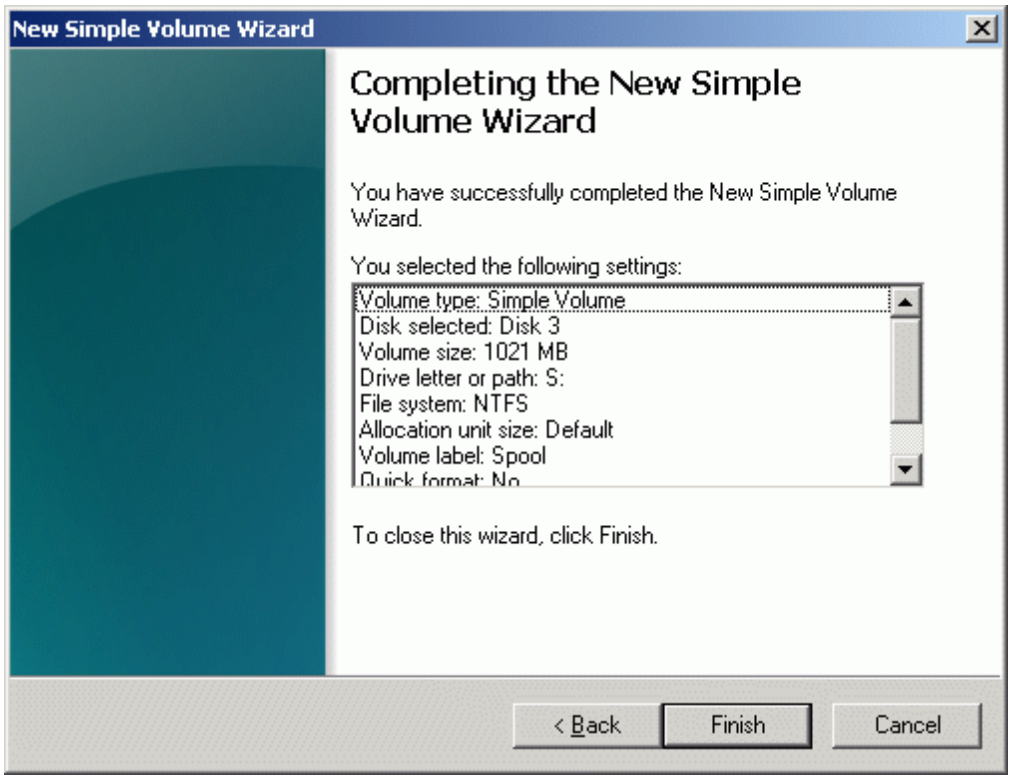
Press the **Next** button to continue.

Specify format options. Provide the **Volume Label**.



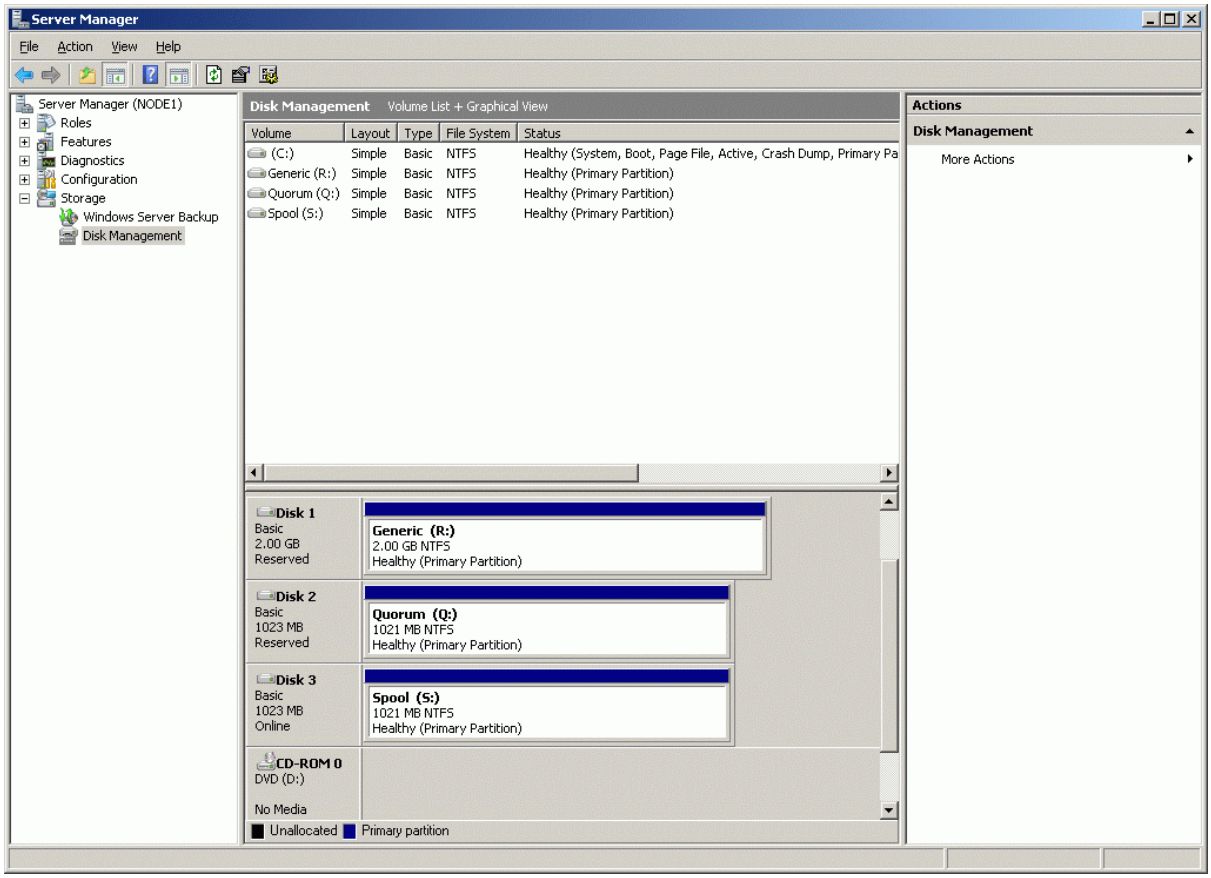
Press the **Next** button to continue.

Check the settings are correct. Press the **Back** button should any changes be required.



Press the **Finish** button to close the wizard.

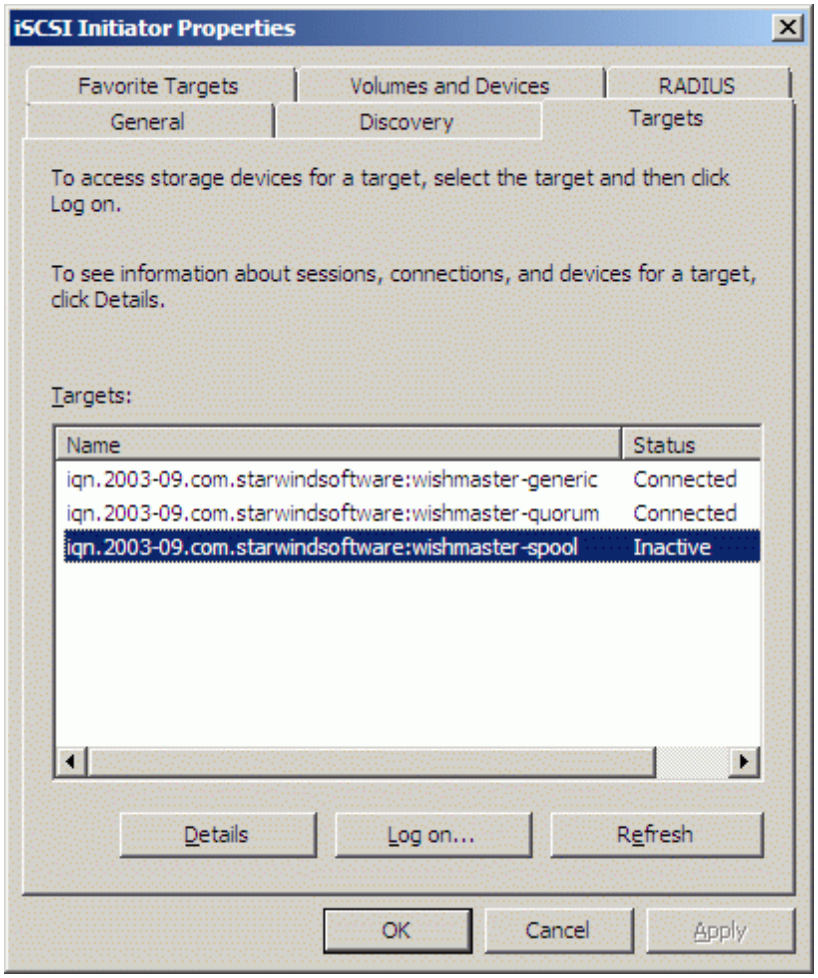
If successful, the disk is now formatted as shown in the example image below.



Shut down the node.

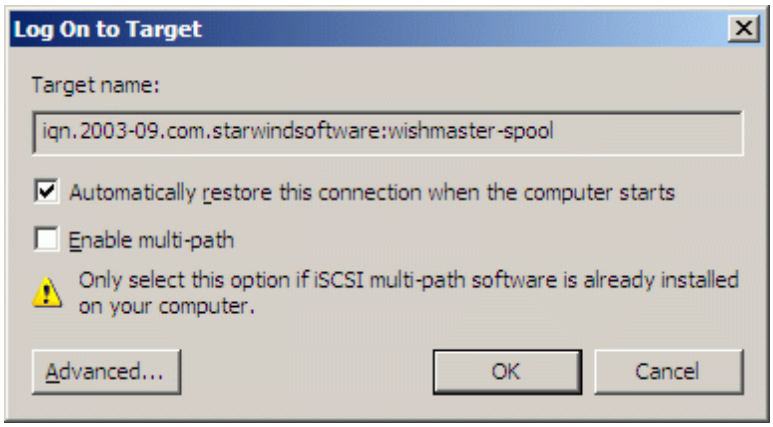
Node 2

Launch the Microsoft iSCSI Software Initiator application **Administrative Tools -> iSCSI Initiator**. Click on the **Targets** tab. Select the IQN of the target just added.



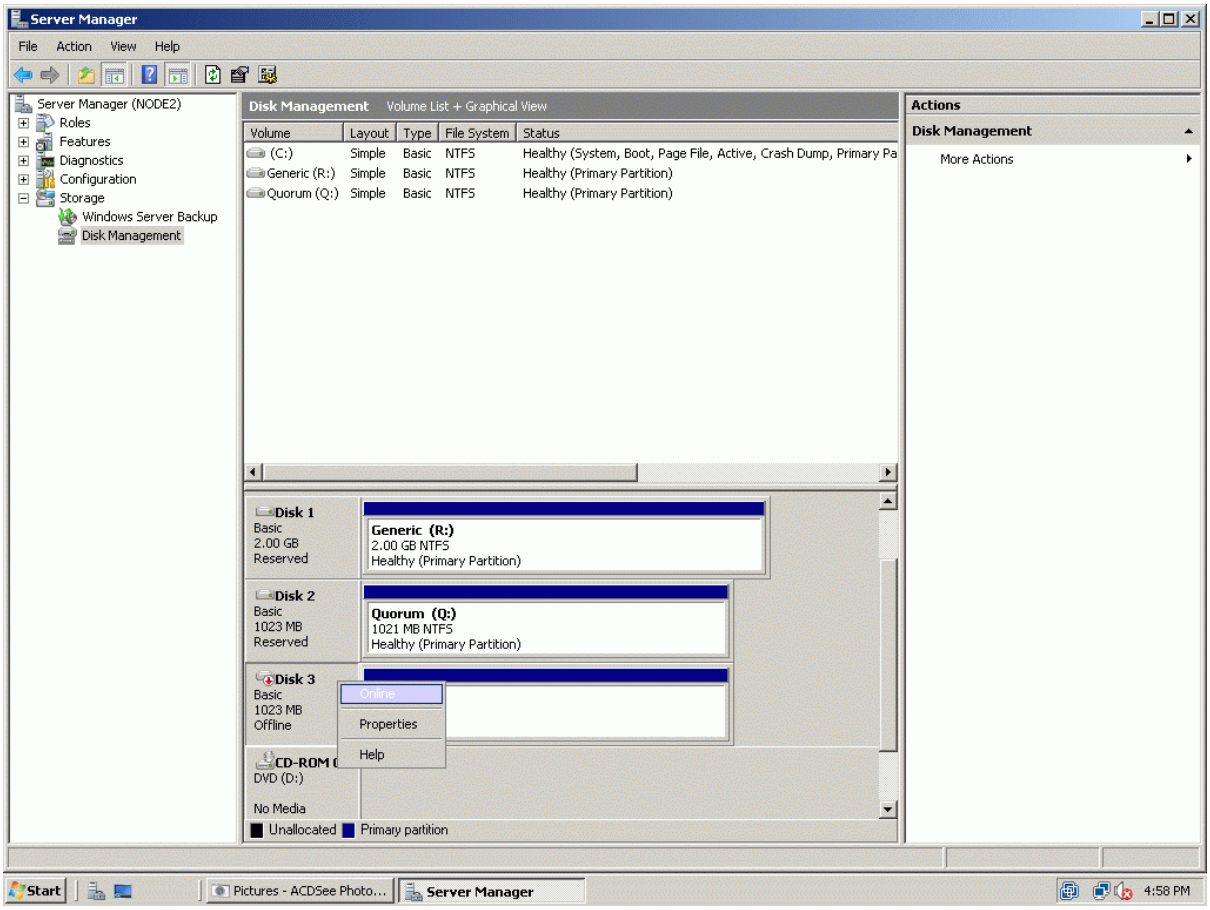
Press the **Log On…** button.

The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.



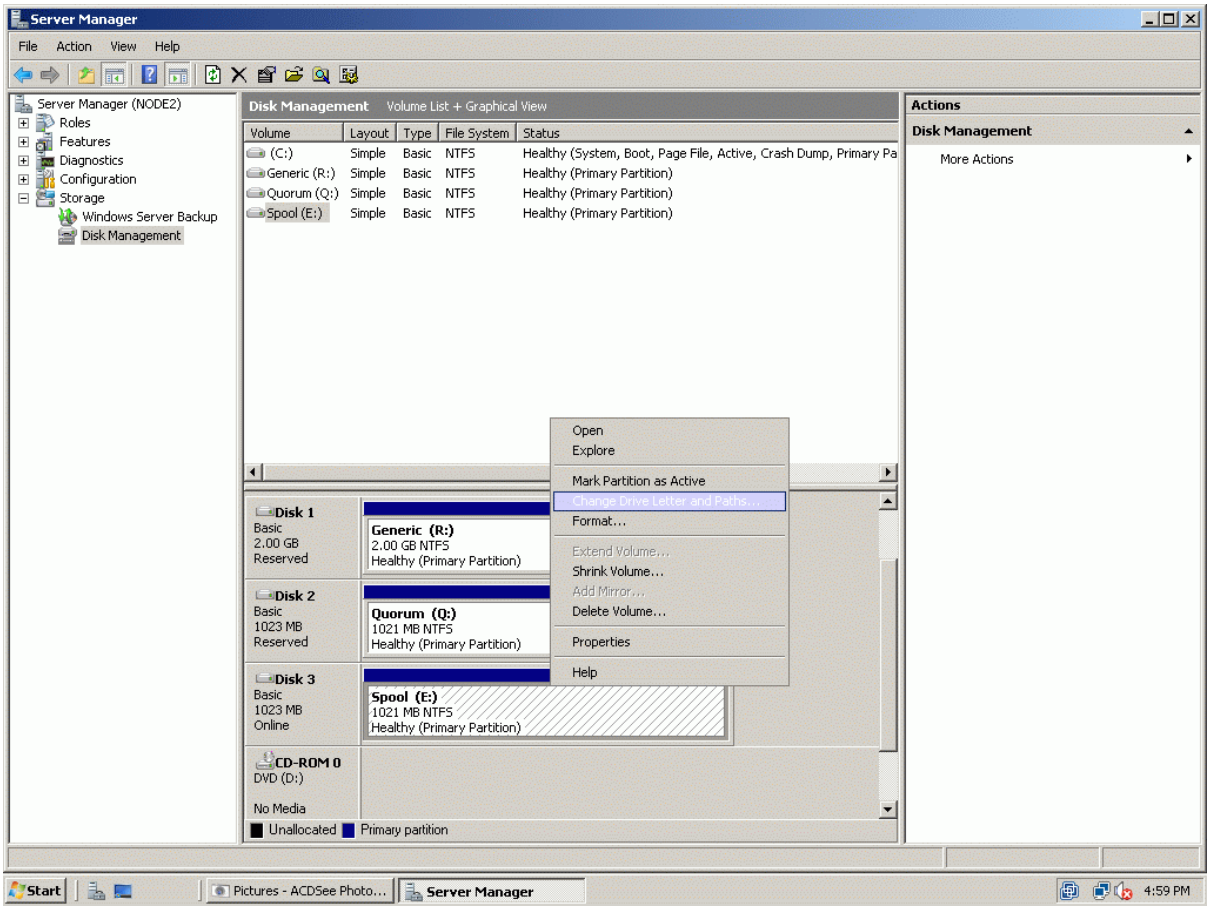
Press the **OK** button to continue.

When the StarWind Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be mounted. Launch the **Computer Management** console. Select **Disk Management**.



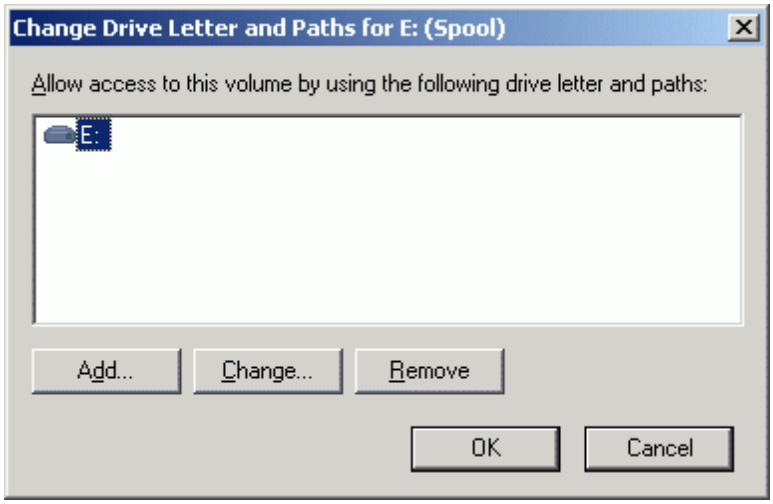
Bring disks online. Press the right mouse button over the disk and select **Online**.

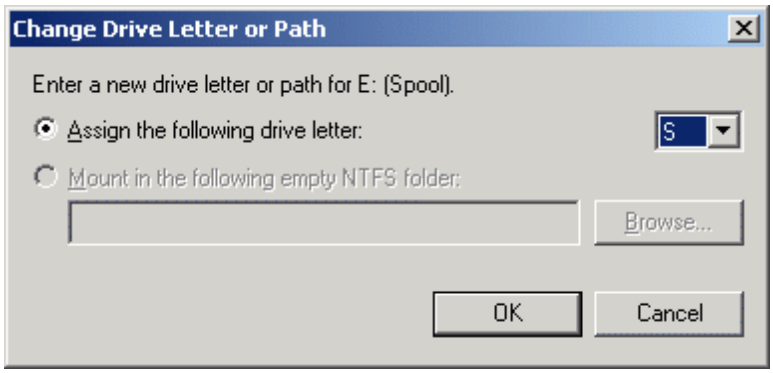
The picture below shows that Windows has automatically assigned Drive Letters to the mounted volumes. As these are local drive letters they may not be the same as we have assigned to these volumes on the first node. However, as all volumes of a cluster must be assigned the same drive letters, any differences must be manually changed. Press the right mouse button over the **Spool** volume.



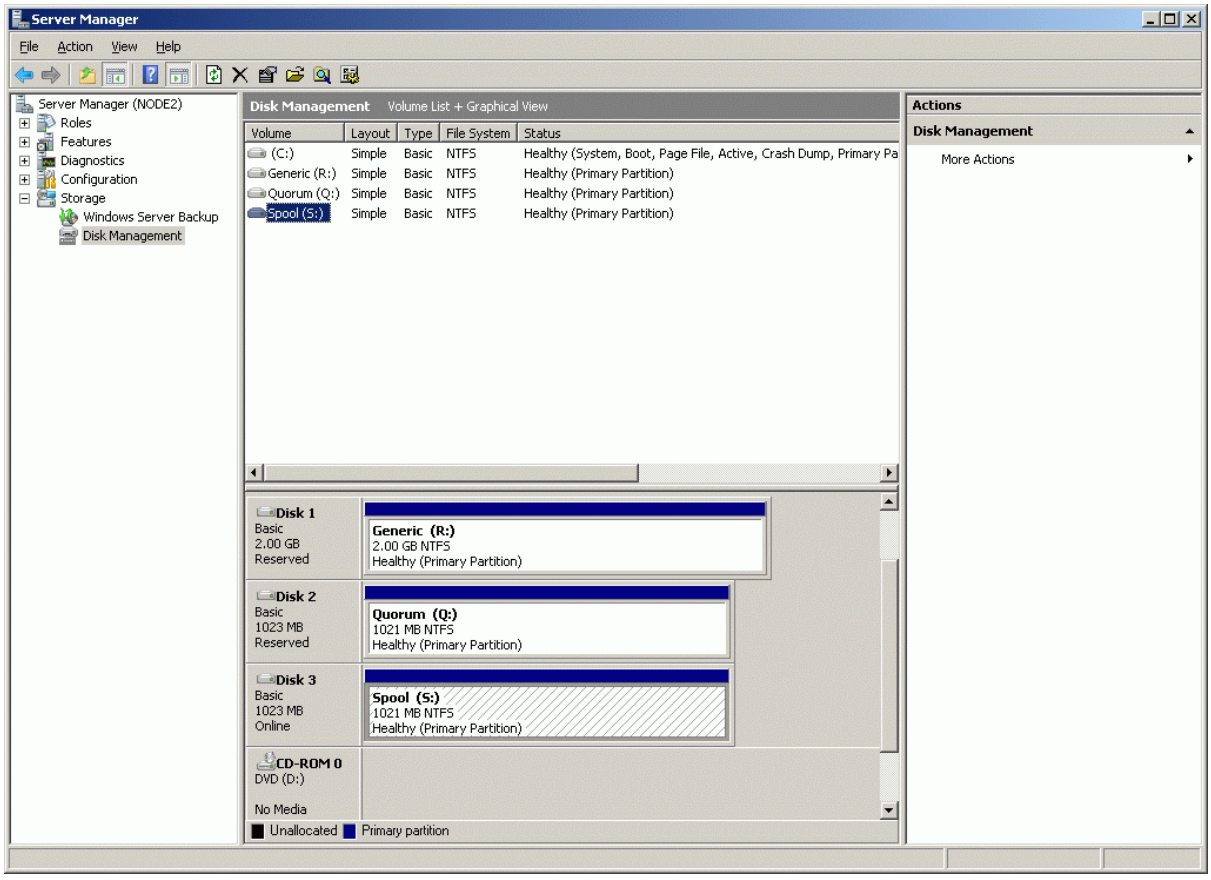
Select **Change Drive Letter and Paths...**

Change the Drive Latter for the Spool to S.

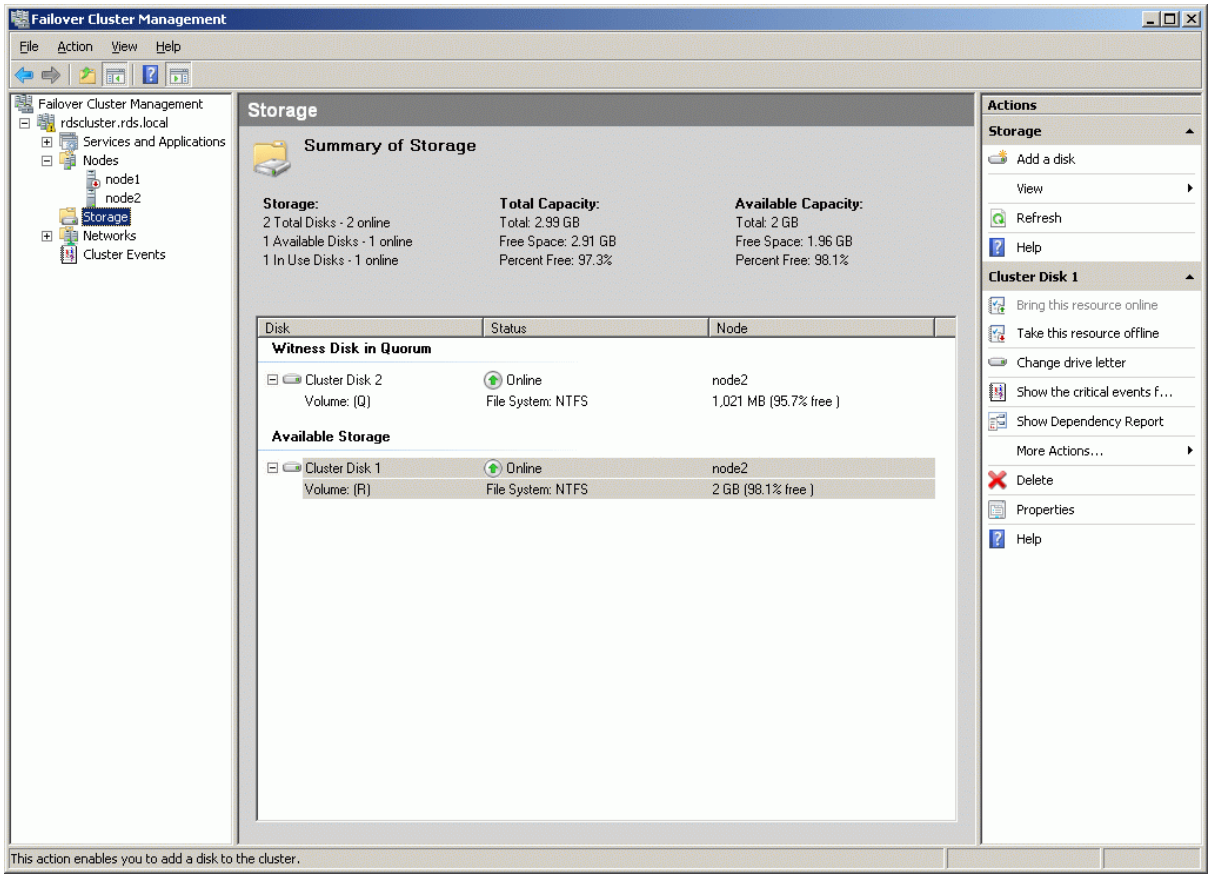




If successful, the **Computer Management** console should look like the sample image provided below.

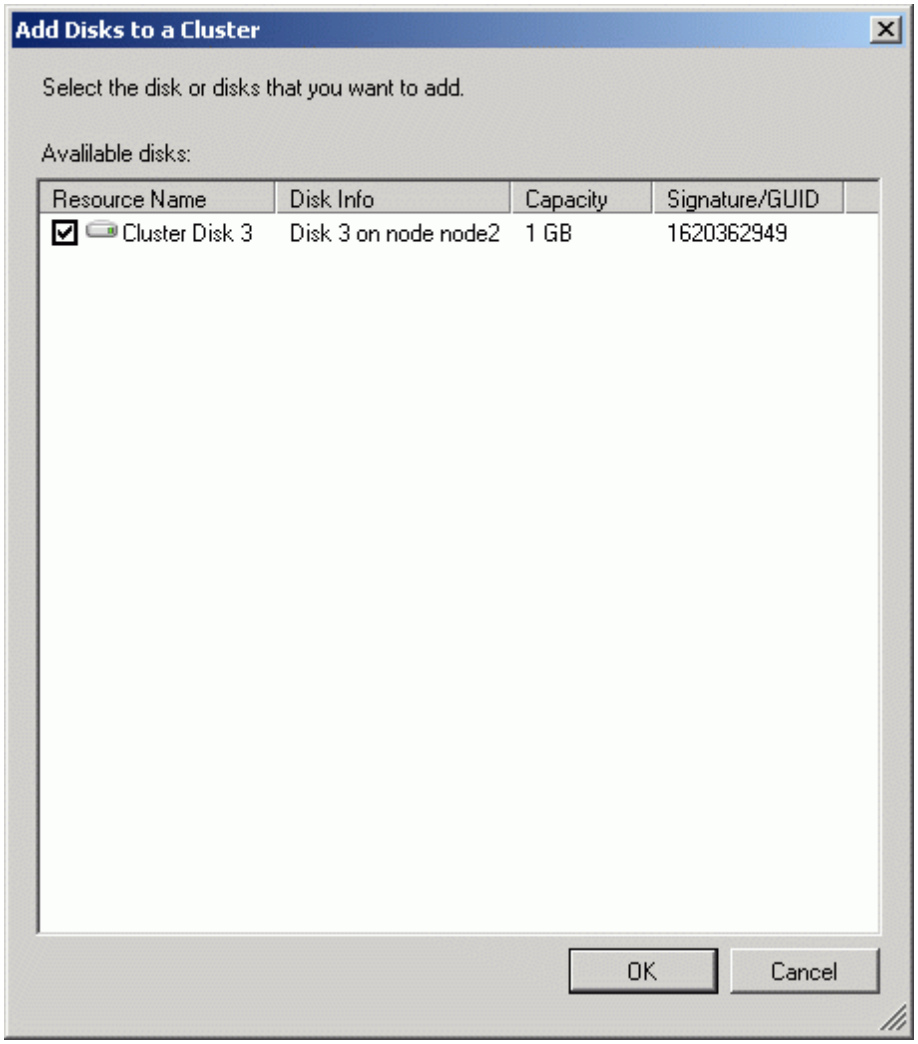


Launch the **Failover Cluster Management** console. Click on **Storage** node.



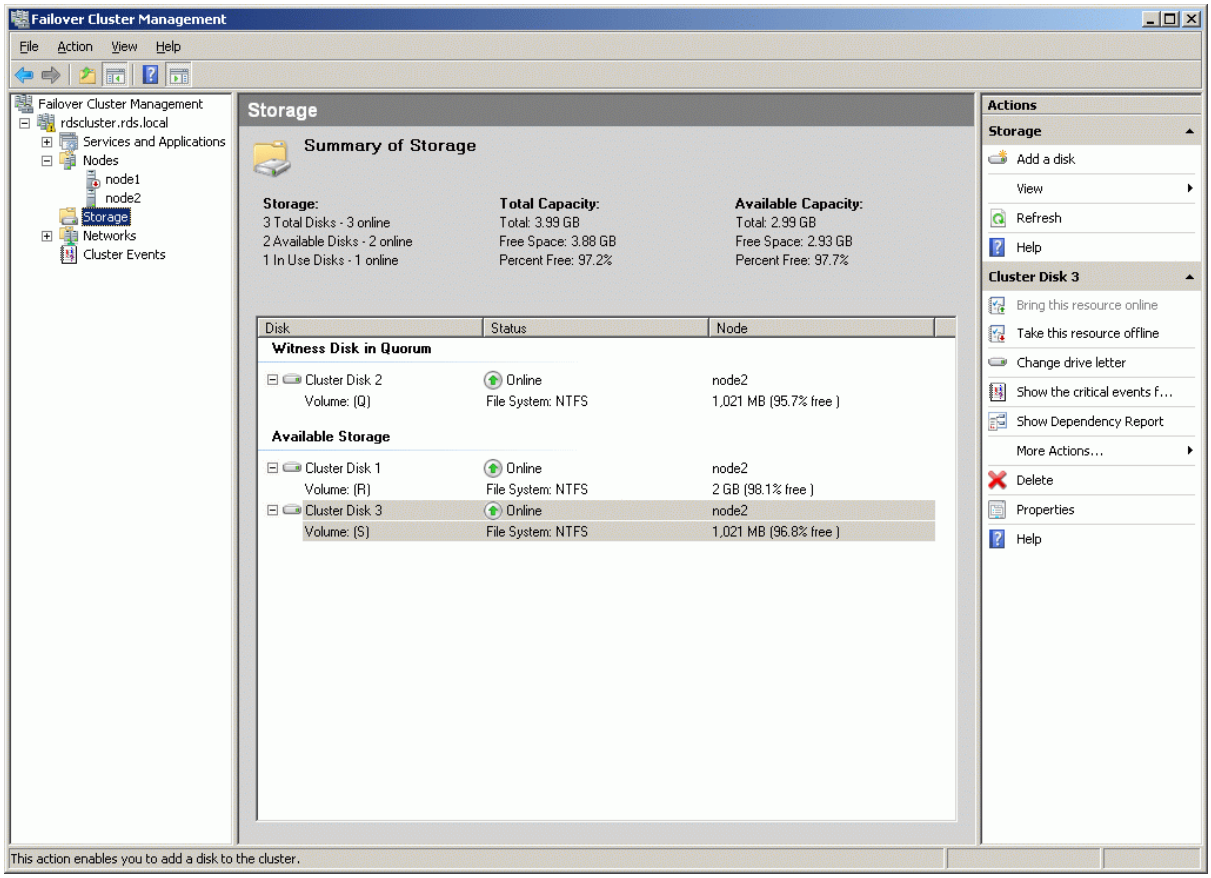
Click **Add a Disk** item from the Actions panel shown on the right.

Add Disks to a Cluster dialog appears. Select the disk to add.

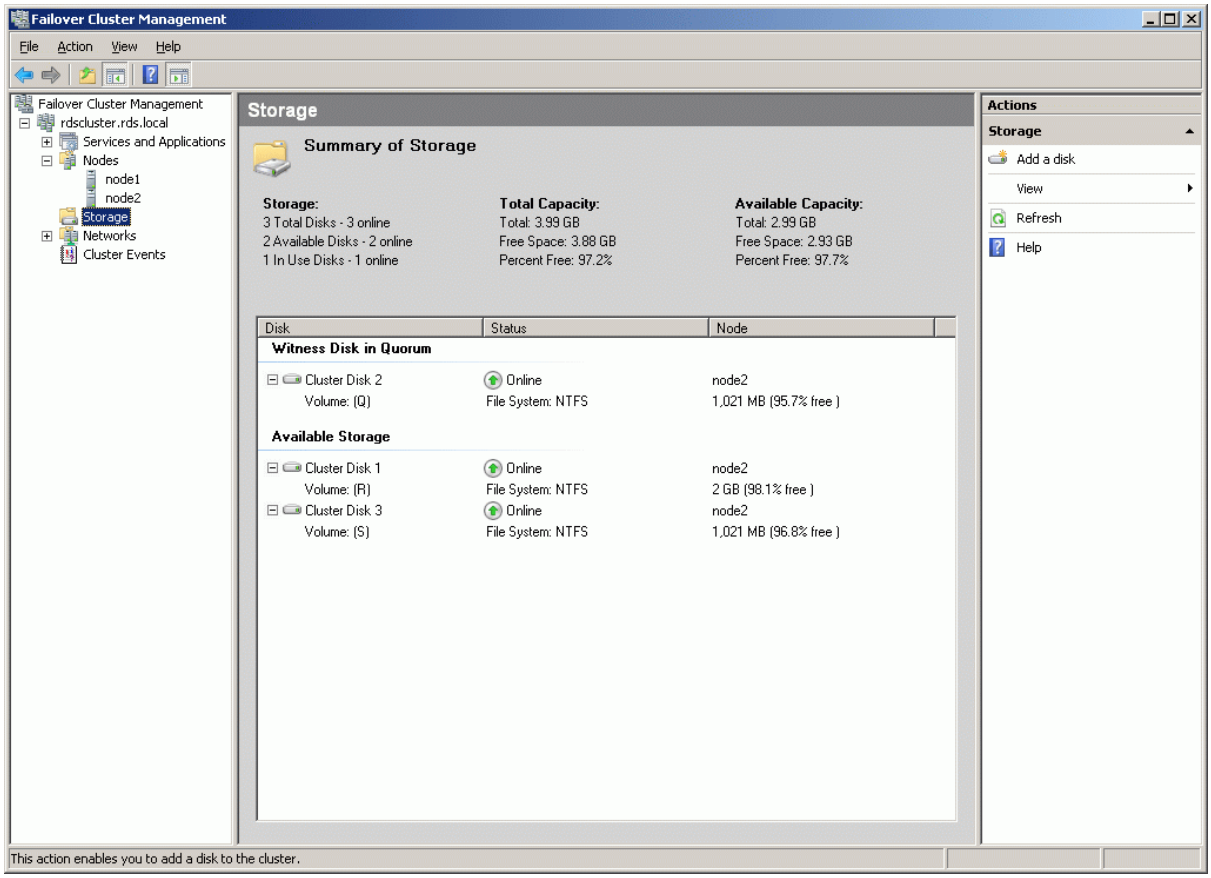


Press the **OK** button to continue.

When completed, the disk is now a cluster disk.



Start the other servers in the cluster.



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