StarWind iSCSI SAN Software: Using StarWind to provide Cluster Shared Disk resources for Hyper-V Failover Clusters

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Table of Contents

Guide

Introduction

Software clustering technology works to provide a group of systems as a unified redundant network resource. Various cluster configurations can be implemented. One of the most frequently used configurations is failover cluster. This High Availability (HA) configuration assumes that if one of the cluster nodes fails, the reserved node automatically comes online, providing little or no application downtime. With this type of configuration, user workflow remains virtually uninterrupted and secured.

Failover cluster configuration requires two or more server nodes that share an external storage. Based on the iSCSI technology, the StarWind solution enables you to create an external storage system in the Windows environment without implementation of expensive Fiber Channel or external SCSI solutions. With StarWind you can create a shared disk array on a host running Microsoft Windows Server.

This document provides step-by-step instructions on configuring StarWind with Hyper-V and failover clustering.

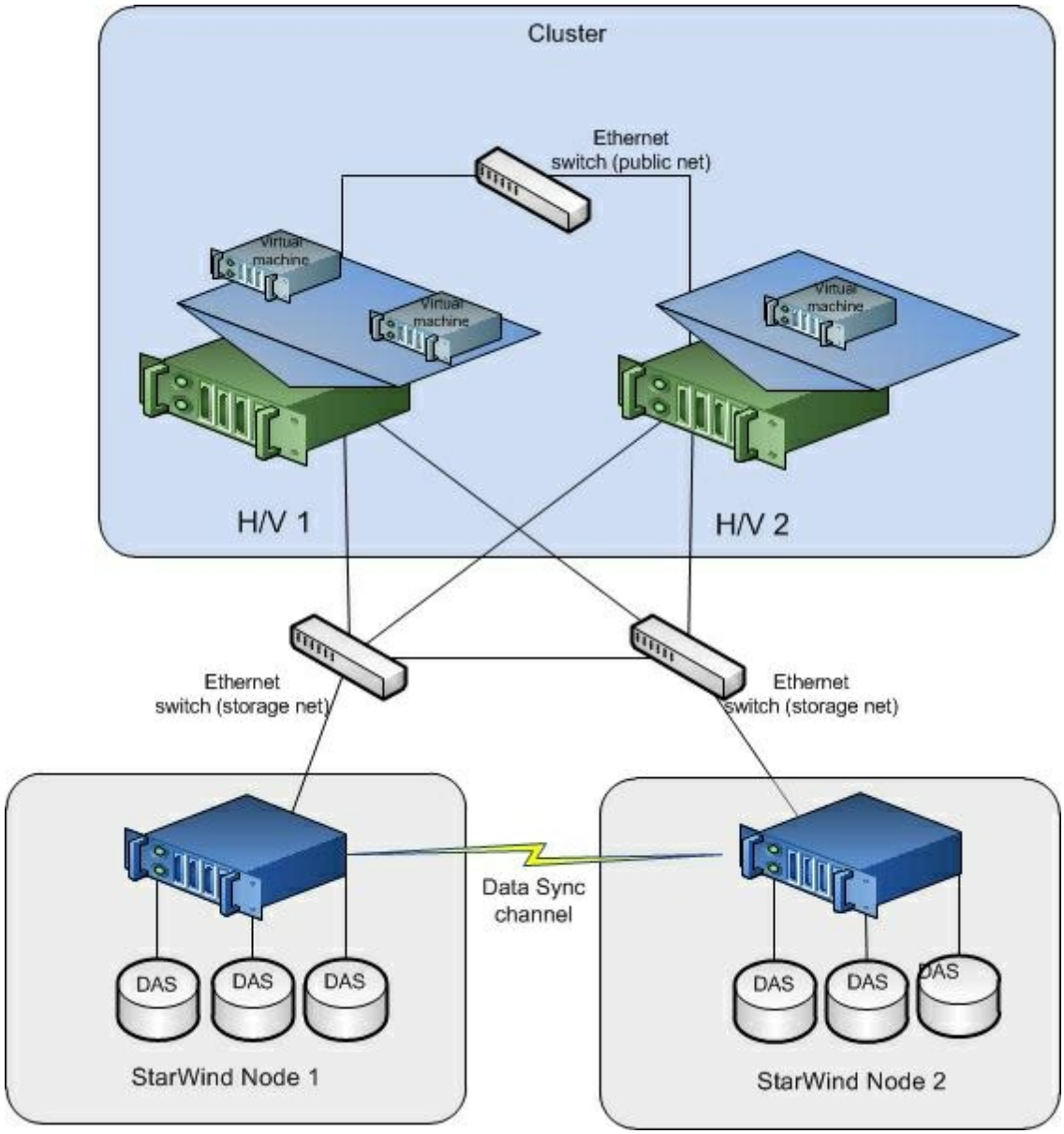


Figure 1. StarWind provides shared-disk resources to clusters

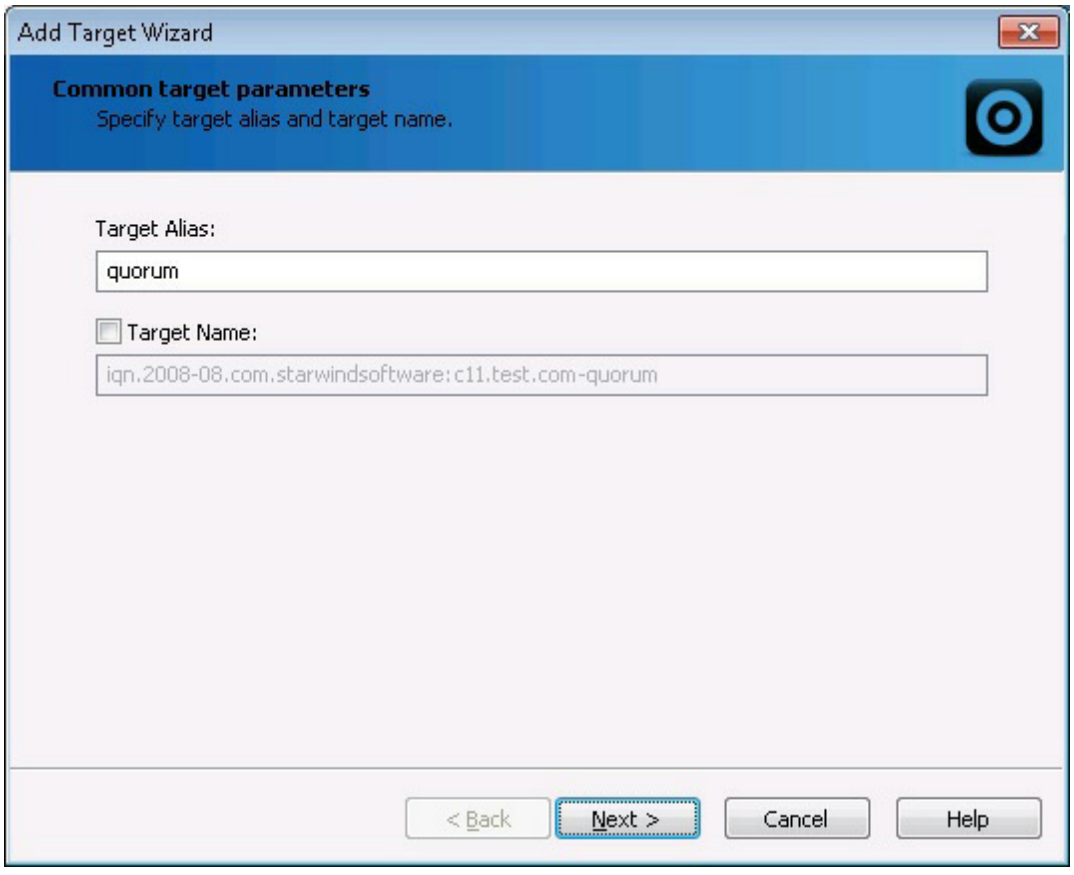
Preparing Shared Storage

1. Launch StarWind Management Console by clicking **Start -> All Programs -> StarWind Software -> StarWind -> StarWind**.

2. Establish a server connection.

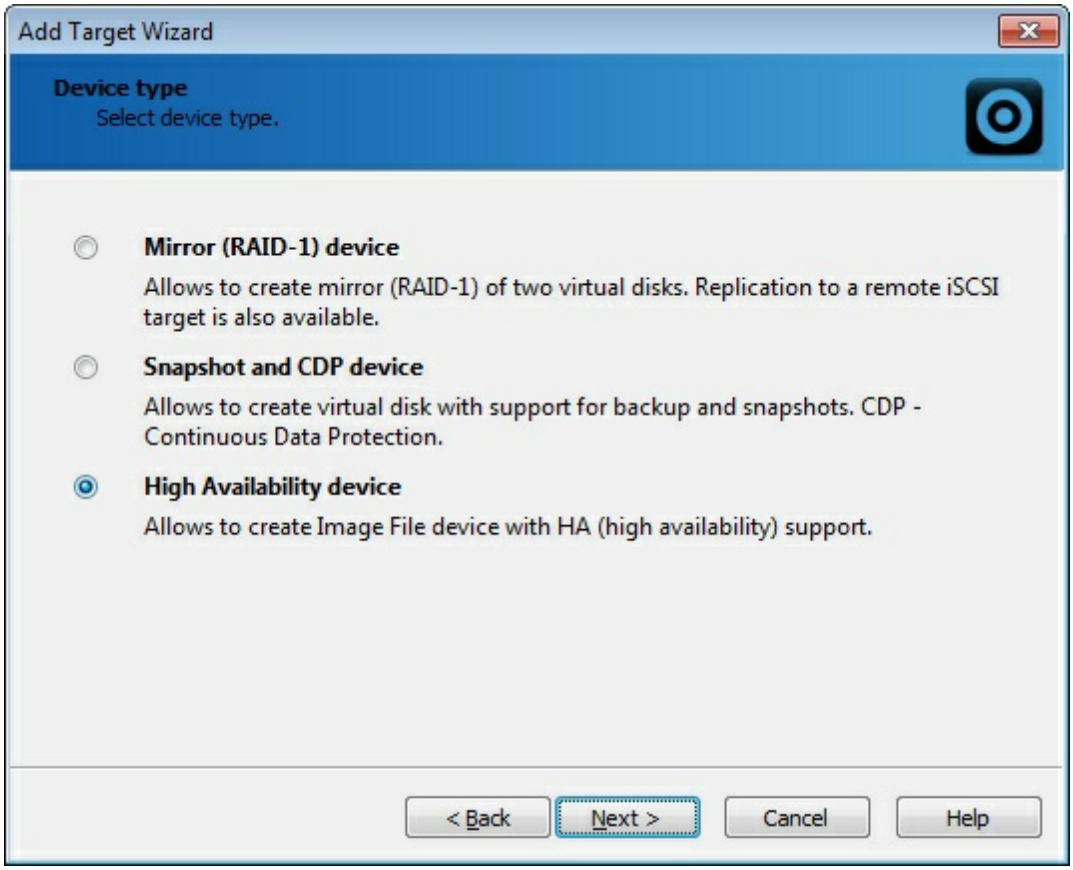
3. Click the **Add Target** button on the toolbar.

4. In **Add Target Wizard** that appears, enter the target alias in the corresponding text field. Target name is generated automatically, but you can edit it if necessary.



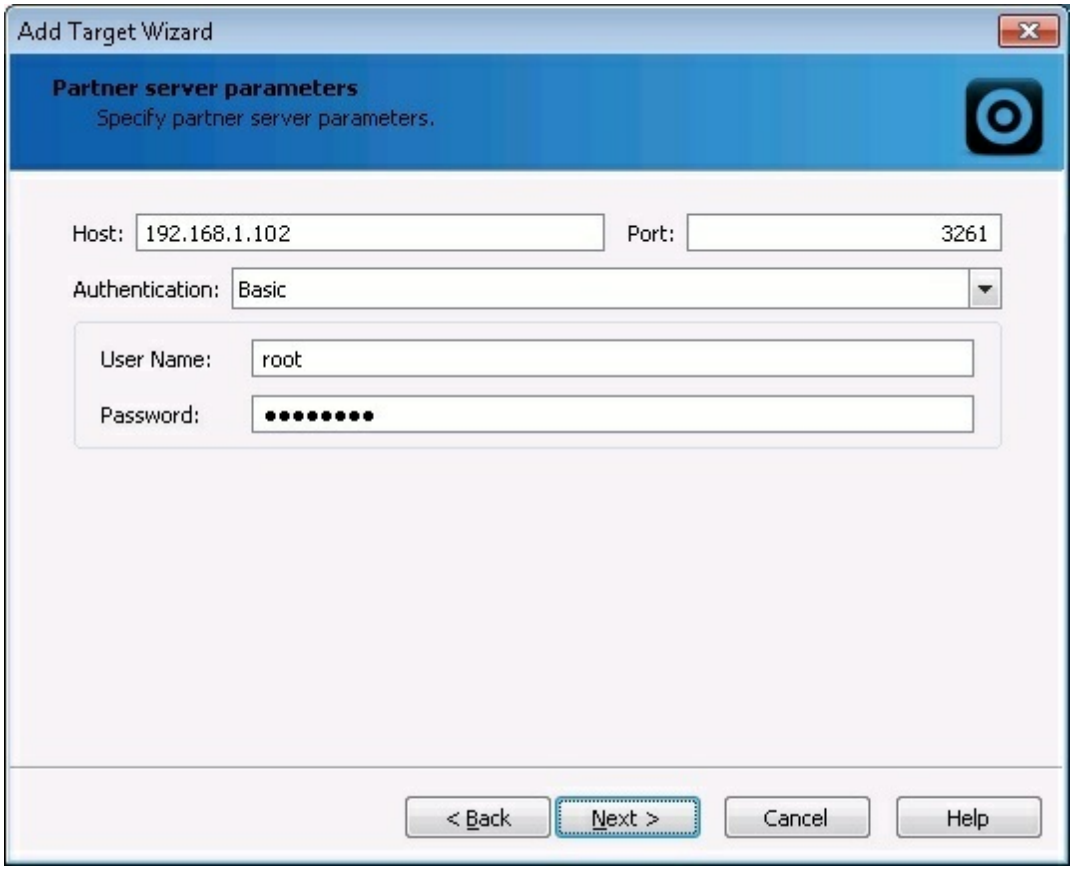
5. Click **Next** to continue.

6. To select the device type, click the **High Availability device** option button.



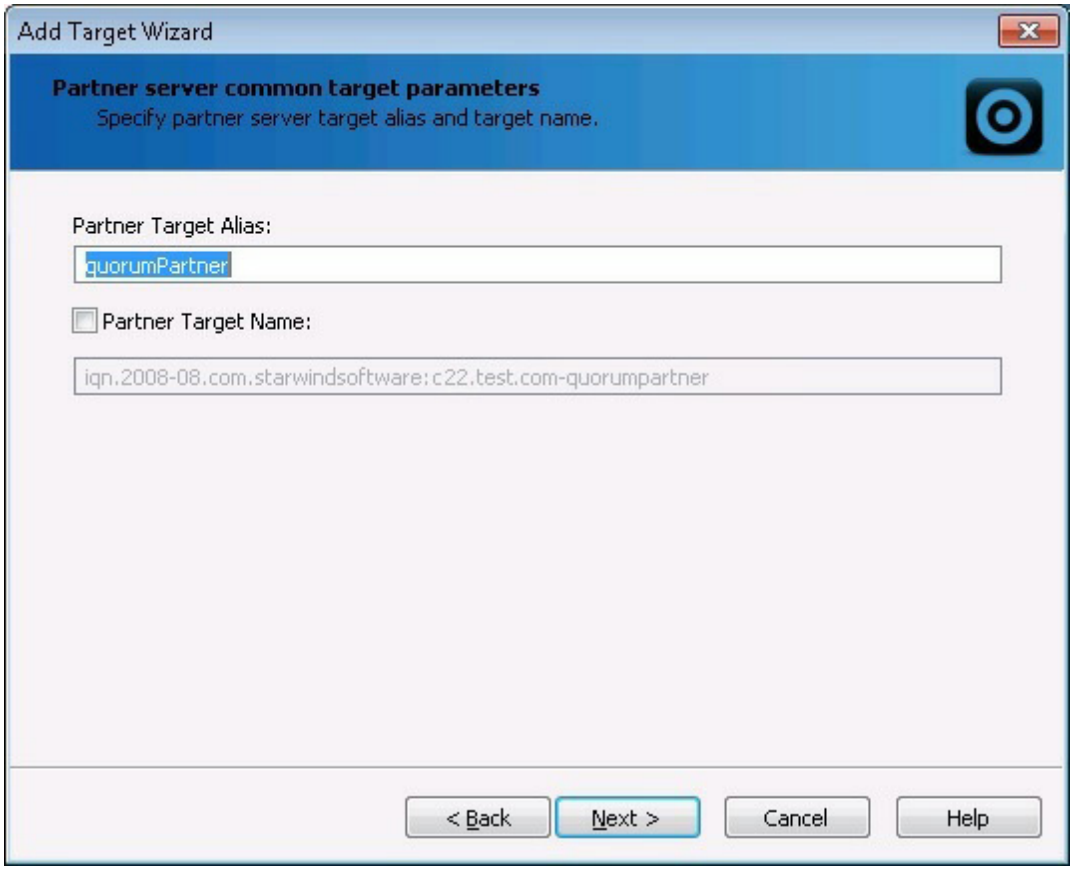
7. Click **Next** to continue.

8. Specify the partner server parameters. Enter the server's IP address or host, and specify the user name and password for the StarWind Service.



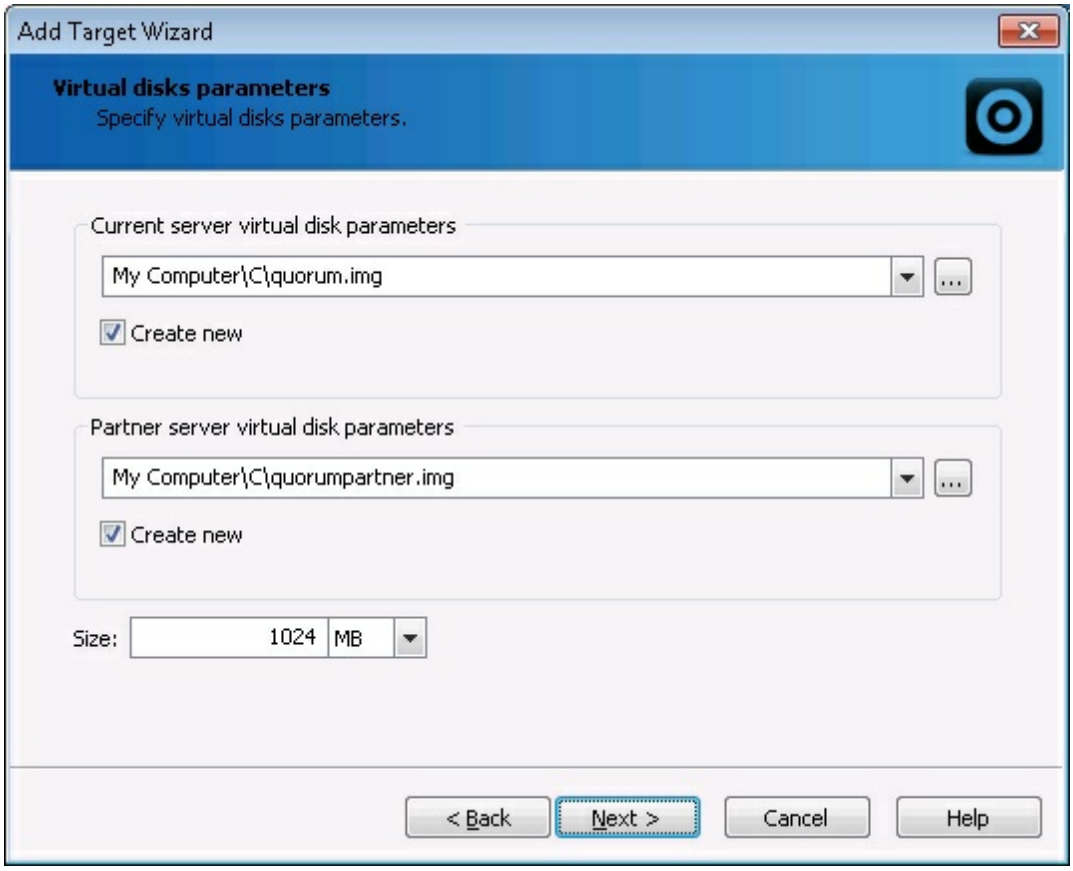
9. Click **Next** to continue.

10. Enter the target alias and name to be assigned to the partner target.



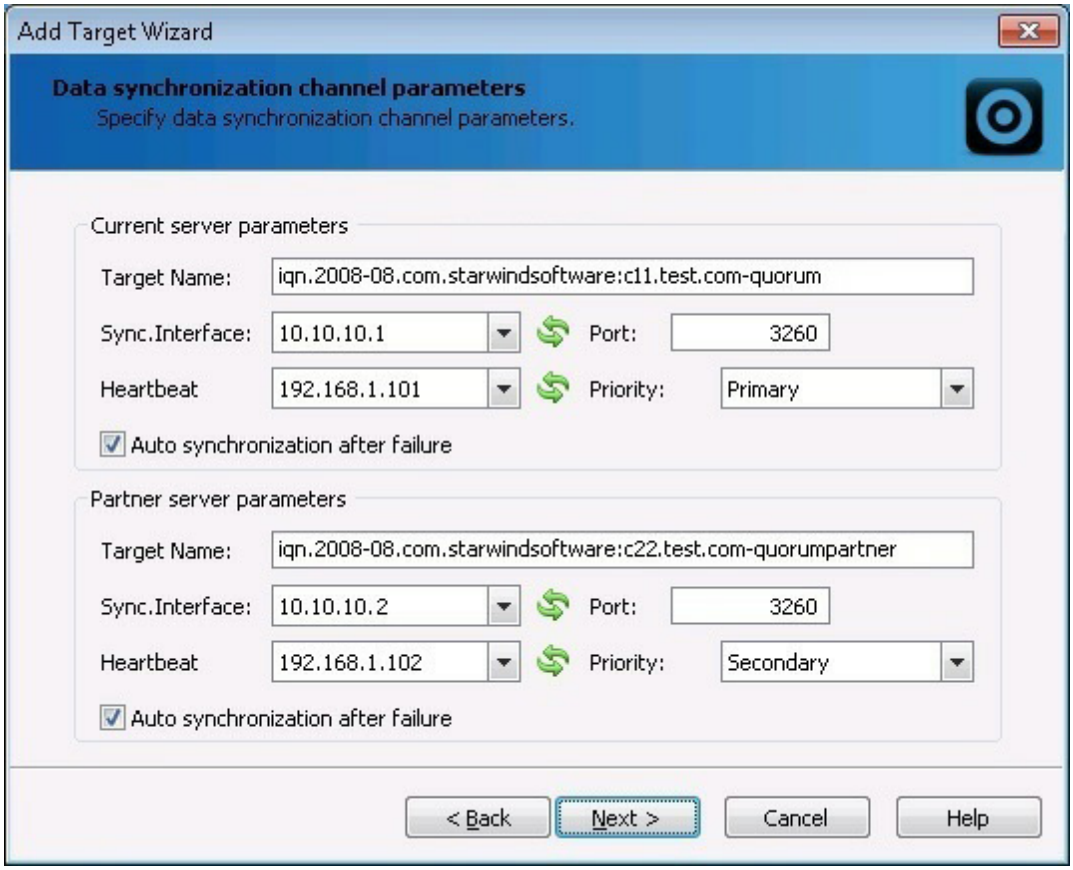
11. Click **Next** to continue.

12. Specify location and name of your local virtual disks and your partner's virtual disks by clicking the ... button. If you want to create new virtual disks, select the **Create new** checkbox.



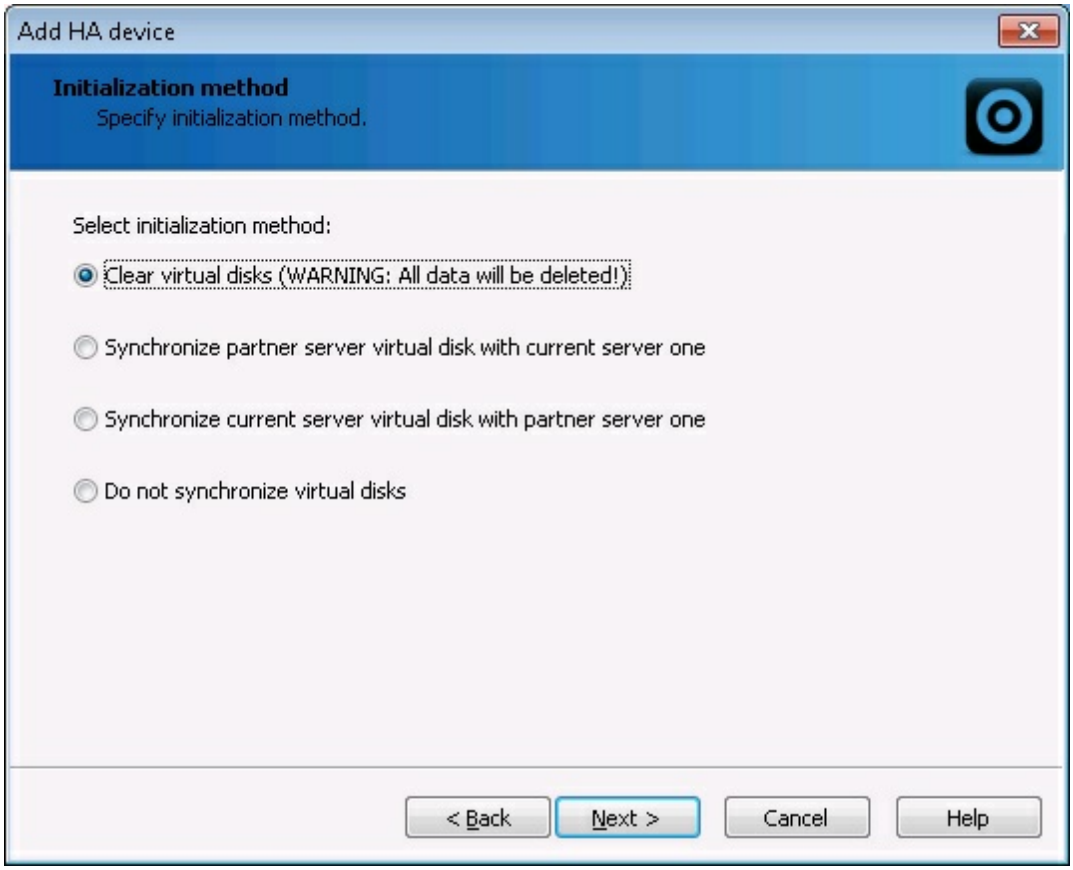
13. Click **Next** to continue.

14. Configure the data synchronization and heartbeat channels parameters by specifying the network interface for synchronization and heartbeat respectively. You can also define node priority by designating it as **Primary** or **Secondary**.



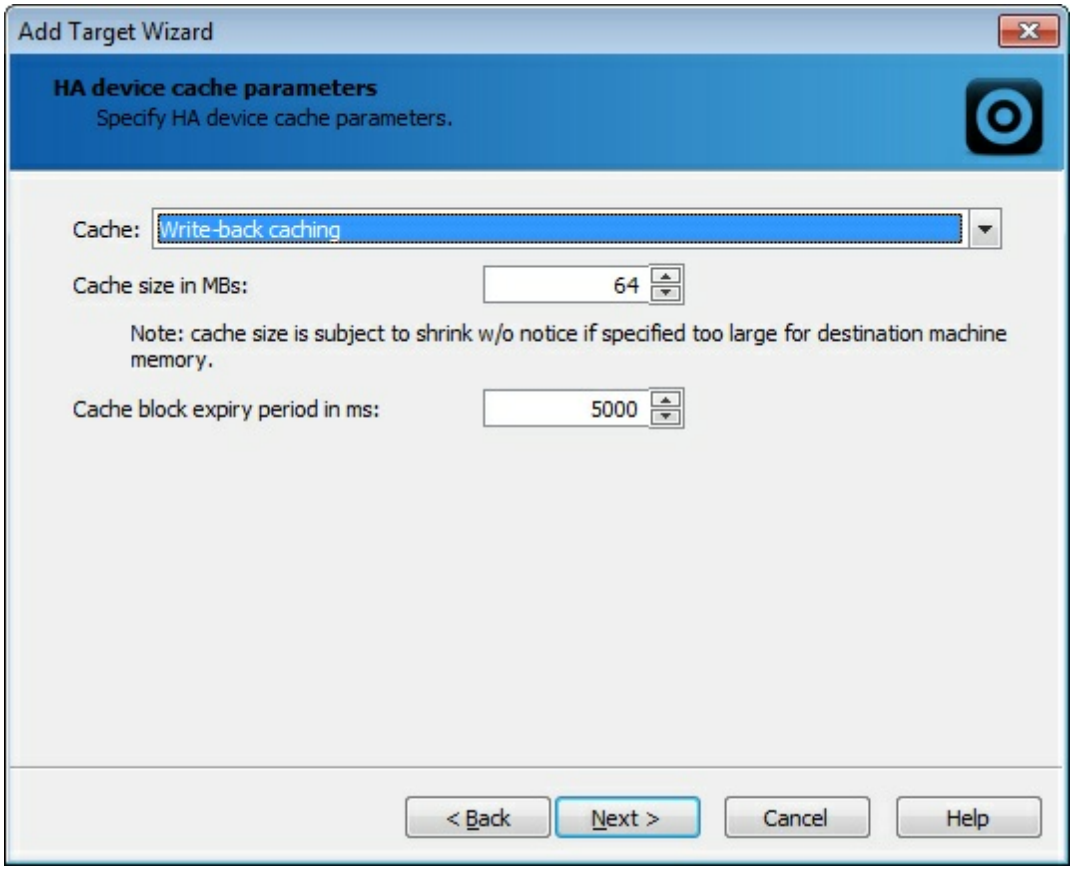
15. Click **Next** to continue.

16. Specify the method to initialize your HA device.



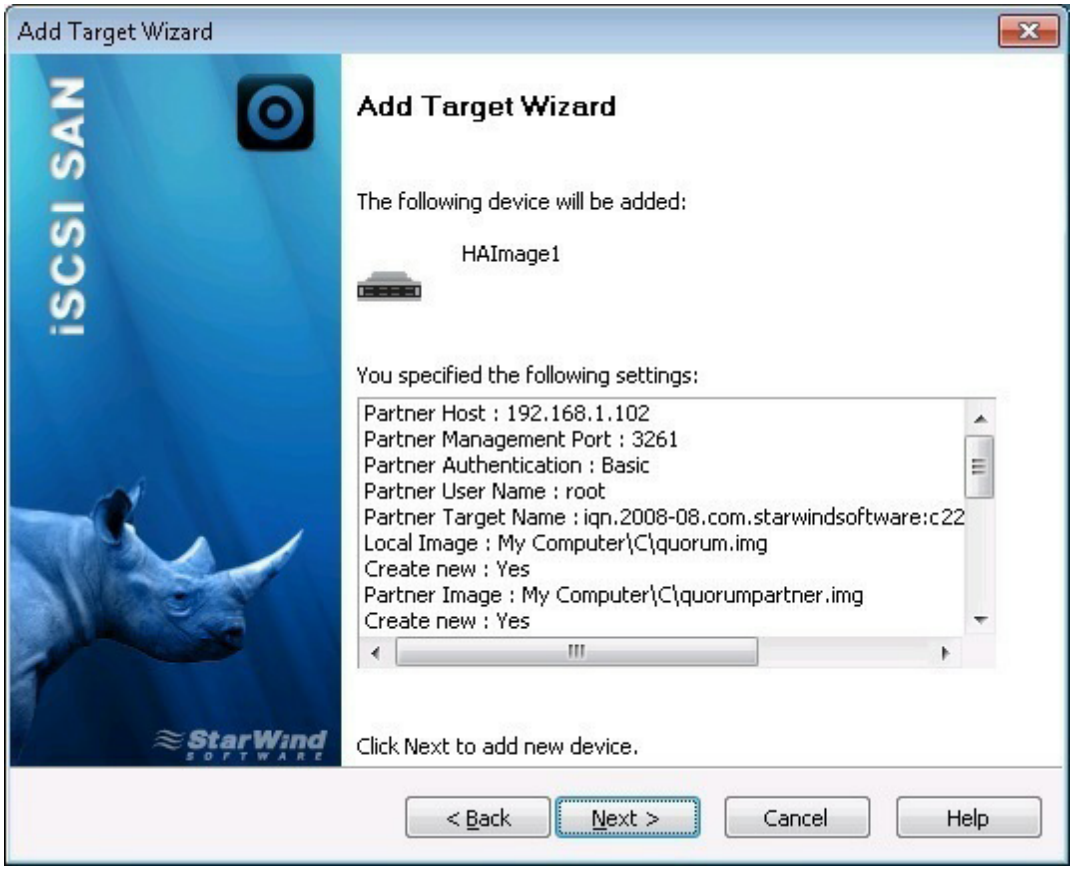
17. Click **Next** to continue.

18. Specify cache type and size of the HA device .



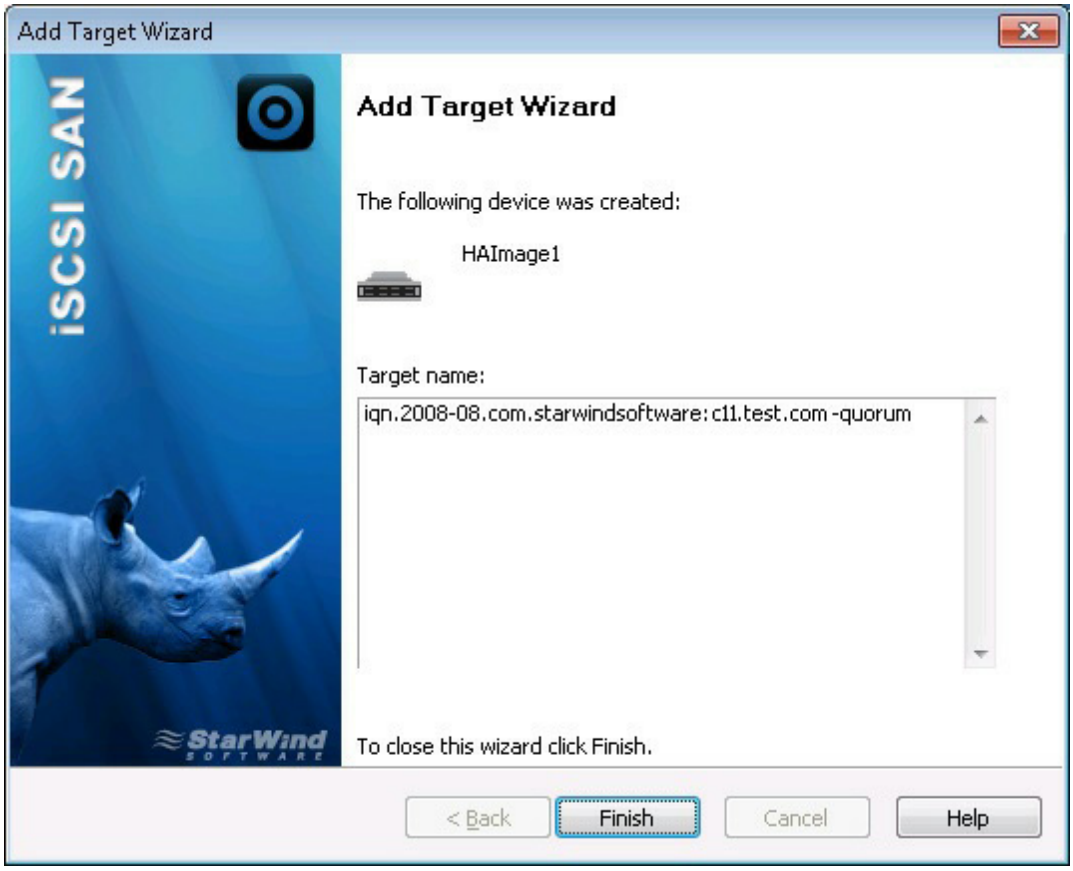
19. Click **Next** to continue.

20. Make sure that the device parameters are correct. Click **Back** should any changes be required.



21. Click **Next** to continue.

A summary is displayed on the last wizard page.



22. Click **Finish** to close the wizard.

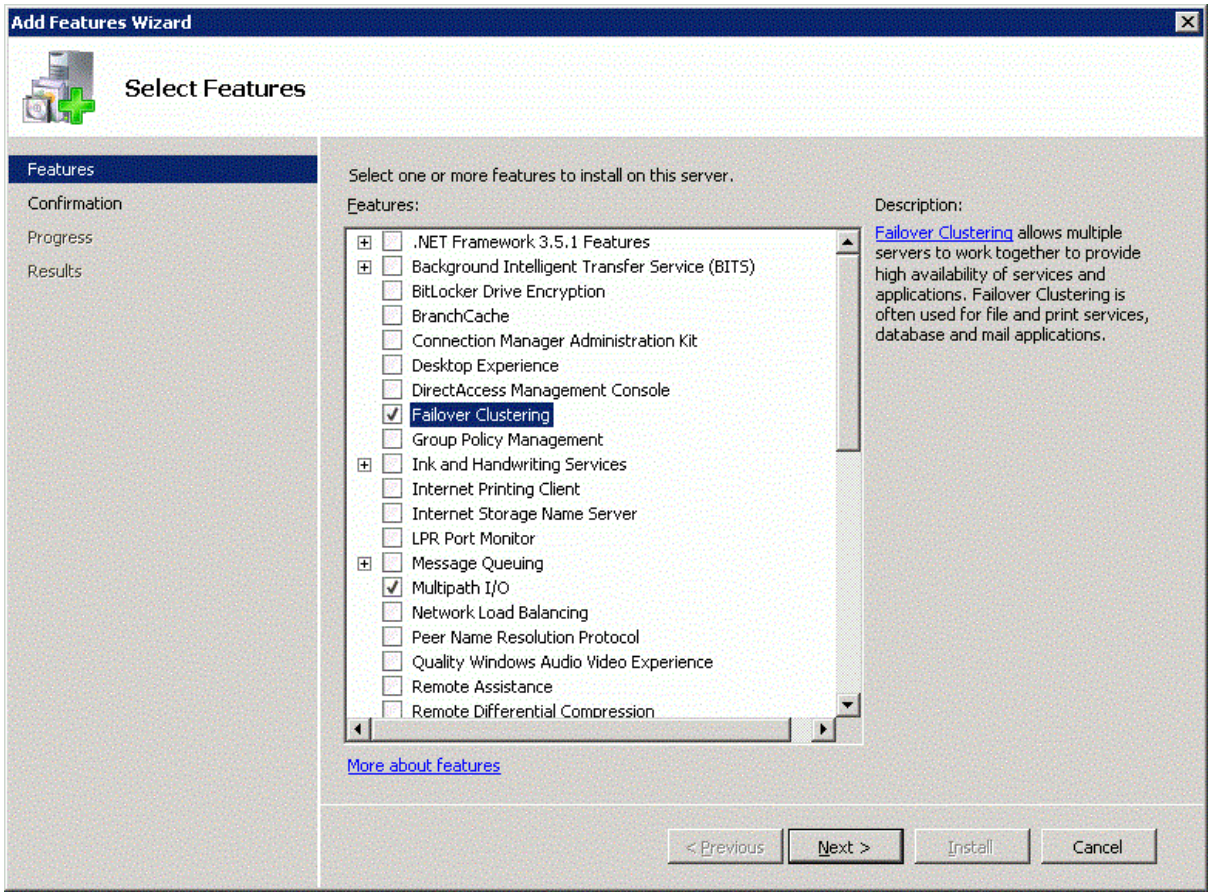
Follow the same procedure to create the second device, that'll be used as generic.

Configuring Hyper-V Severs

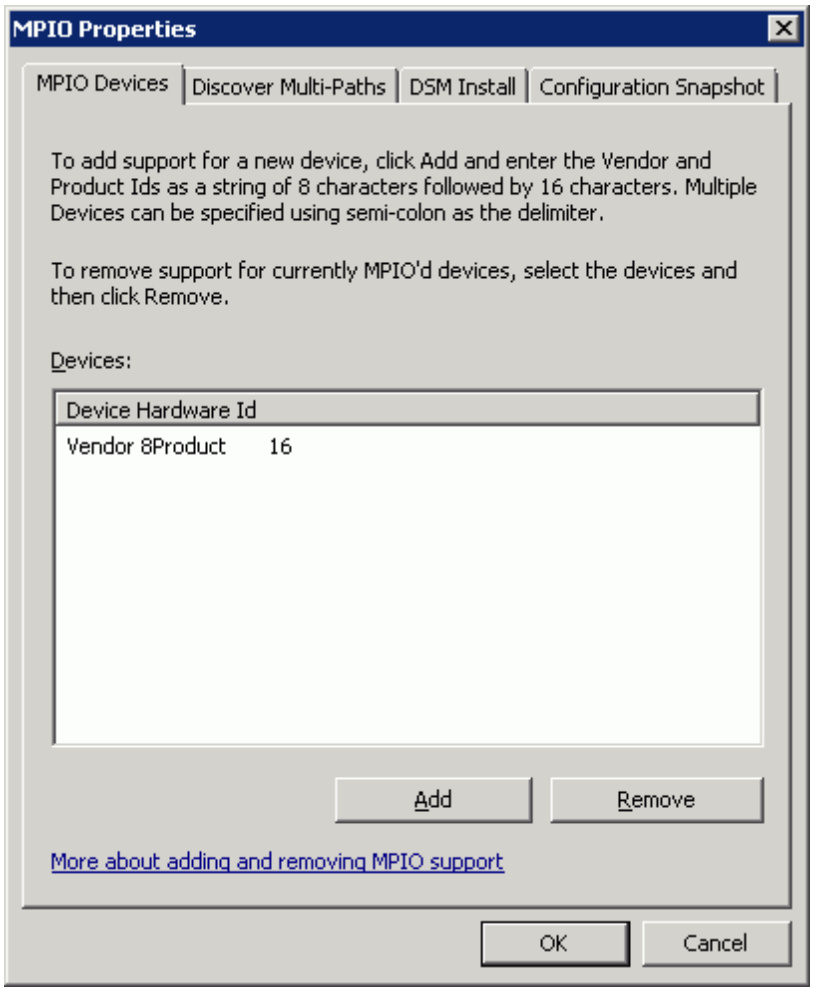
This document assumes that you already have Active Directory configured and two servers on the domain. This document also assumes that you have enabled the **Failover Clustering, Multipath I/O** features and the **Hyper-V** role on the both servers.

These configurations can be made using Server Manager (in the **Features and Roles** sections).

1. Launch **Server Manager**, select the **Features** item and click the **Add Features** lin . Install the **Failover Clustering** feature by following the wizard's instructions.



2. Now open the **MPIO manager** by clicking **Start -> Administrative Tools -> MPIO**.



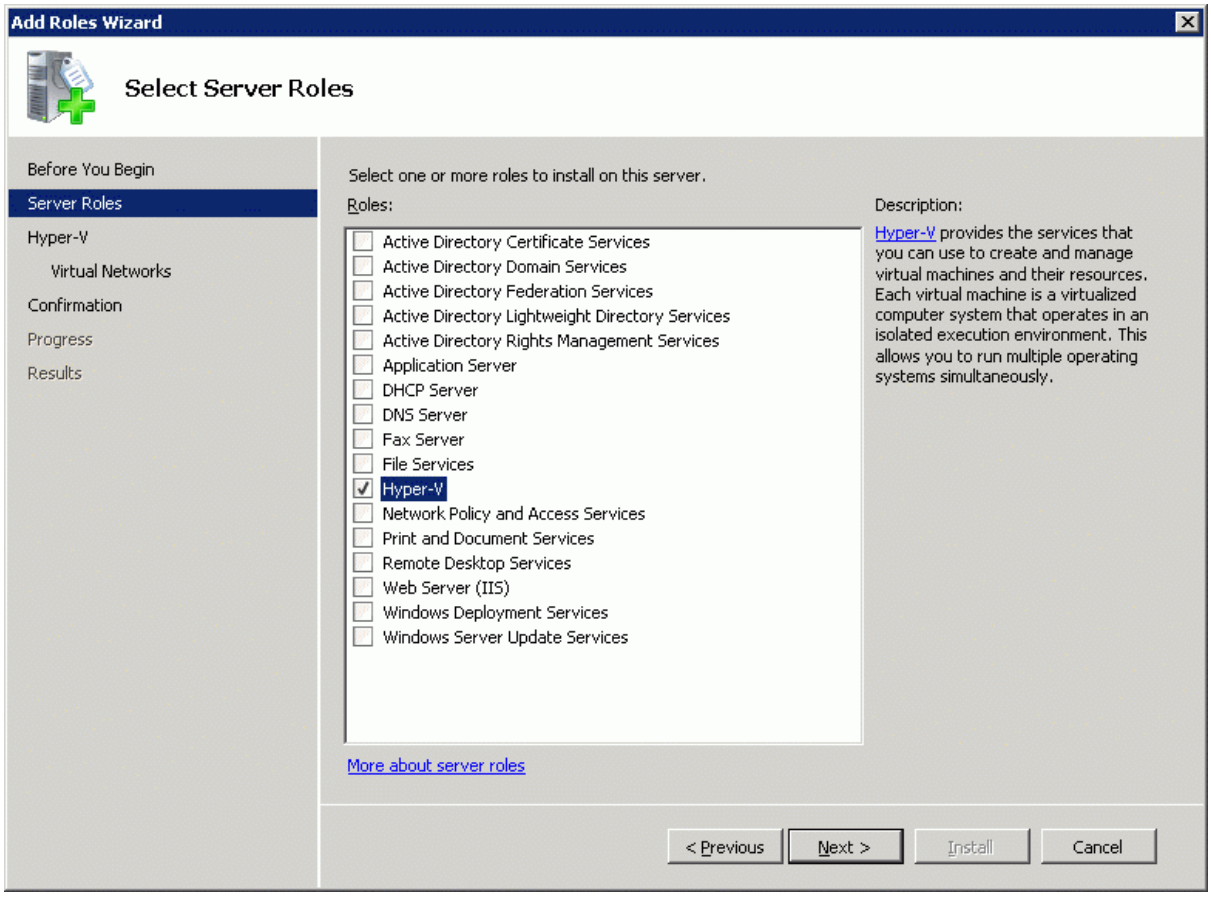
3. Click **Add** and enter the following: **MSFT2005iSCSIBusType_0x9**.

4. Click **OK**.

5. You will be prompted to reboot the server. Click **Yes** to proceed.

6. Launch **Server Manager**, select the **Server Roles** item, and click the **Add Roles** link.

7. In the **Roles** section, select the **Hyper-V** checkbox and follow the wizard's instructions.

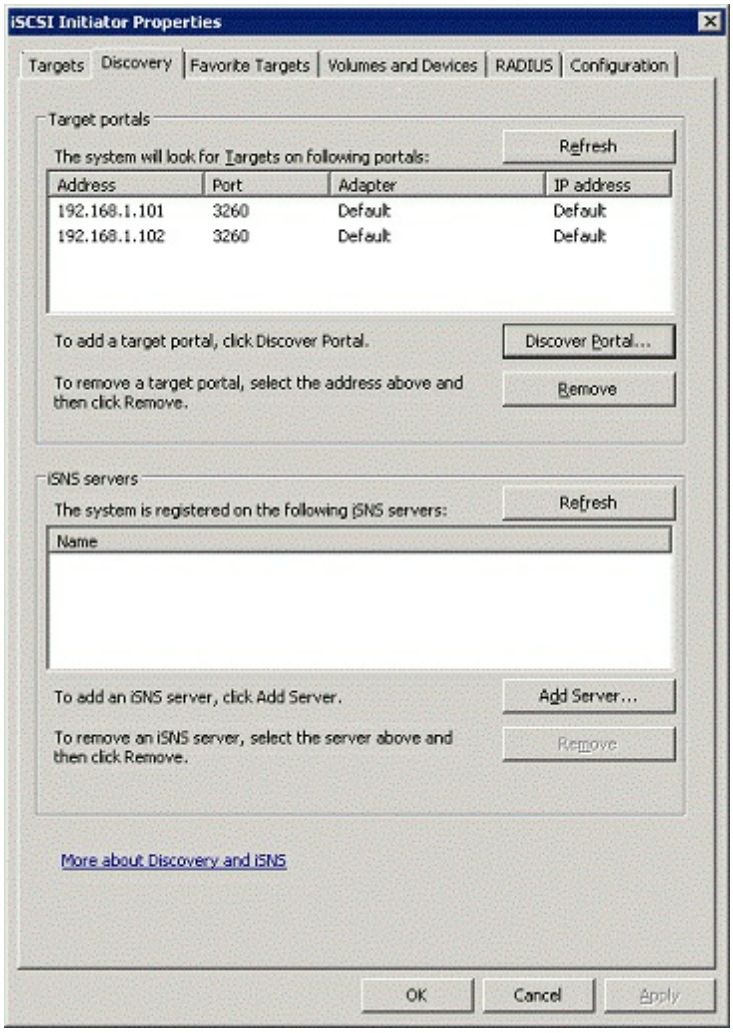


Set Up Disks

For this step you will need to connect the previously created disks on all of the servers which will be added to the cluster.

1. Launch **Microsoft iSCSI Initiator** and click the **Discovery** tab.

2. In the **Discover Target Portal** dialog that appears, enter IP address of both StarWind servers. The **iSCSI Initiator Properties** window appears.

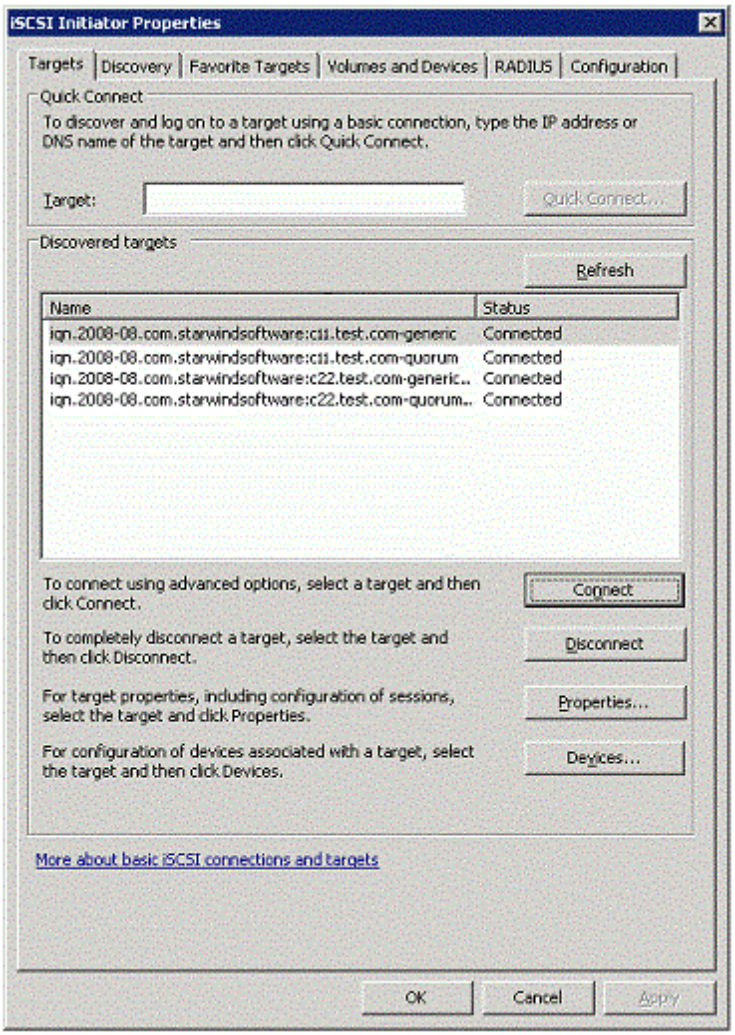


3. Click the **Targets** tab. The previously created targets are listed in the **Discovered Targets** section.

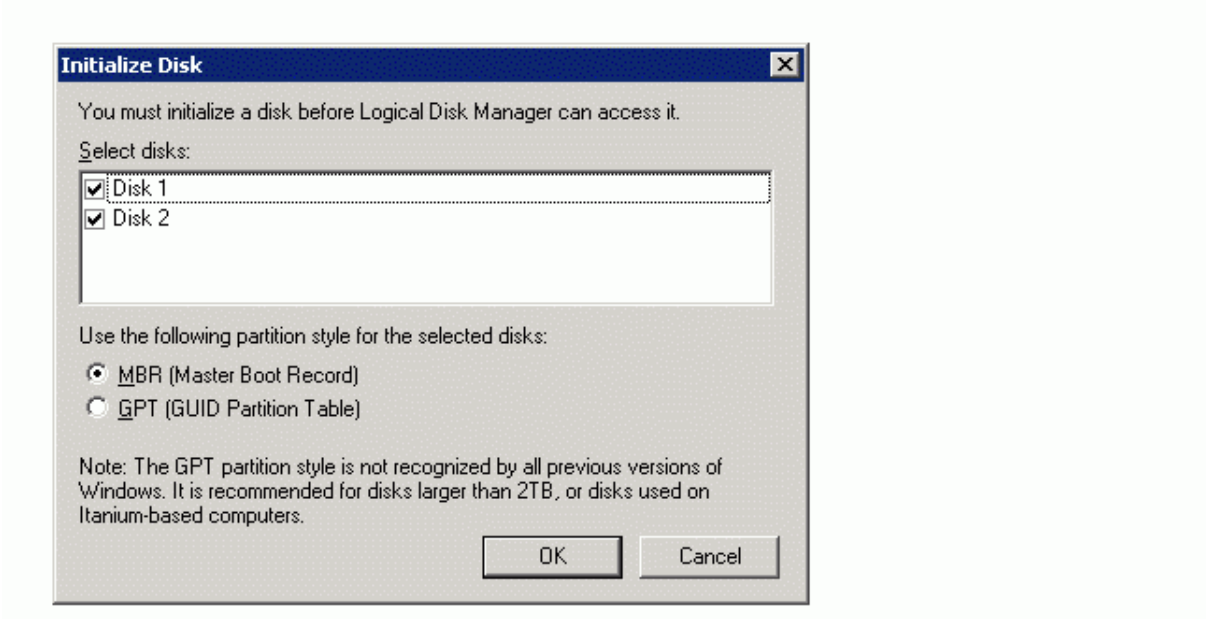
Note: If the created targets are not listed, check the firewall settings on the StarWind server as well as the list of networks served by the StarWind server. You can do this by clicking **StarWind Management Console** ->**Configuration -> Network**.

4. Add the targets one by one by selecting them and then clicking **Connect**.

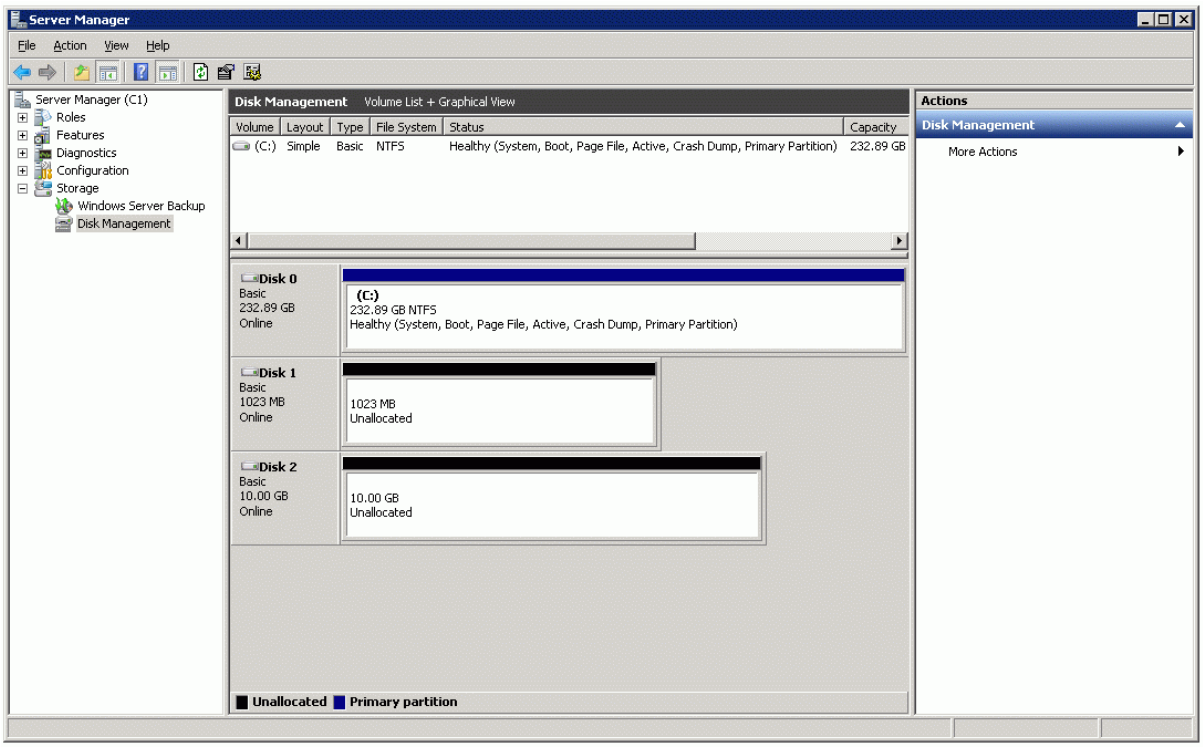
5. In the **Connect To Target** dialogs that appears, select the **Add this connection to the list of Favorite Targets** checkbox. This is necessary to automatically reconnect to the targets upon client restart. Initiator window appears.



6. Launch **Server Manager** and go to the **Disk Management** section. Bring online the disks that appear and initialize them.

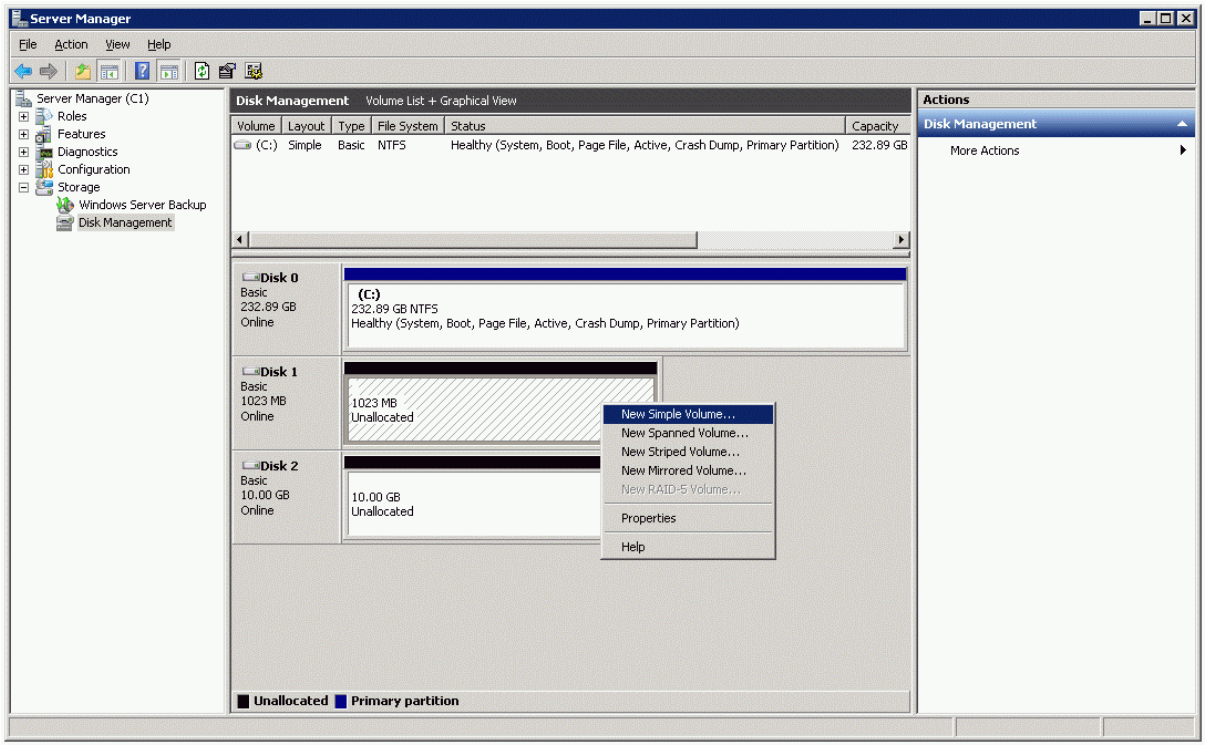


The **Server Manager** window appears. Two new clean disks appeared on the system.

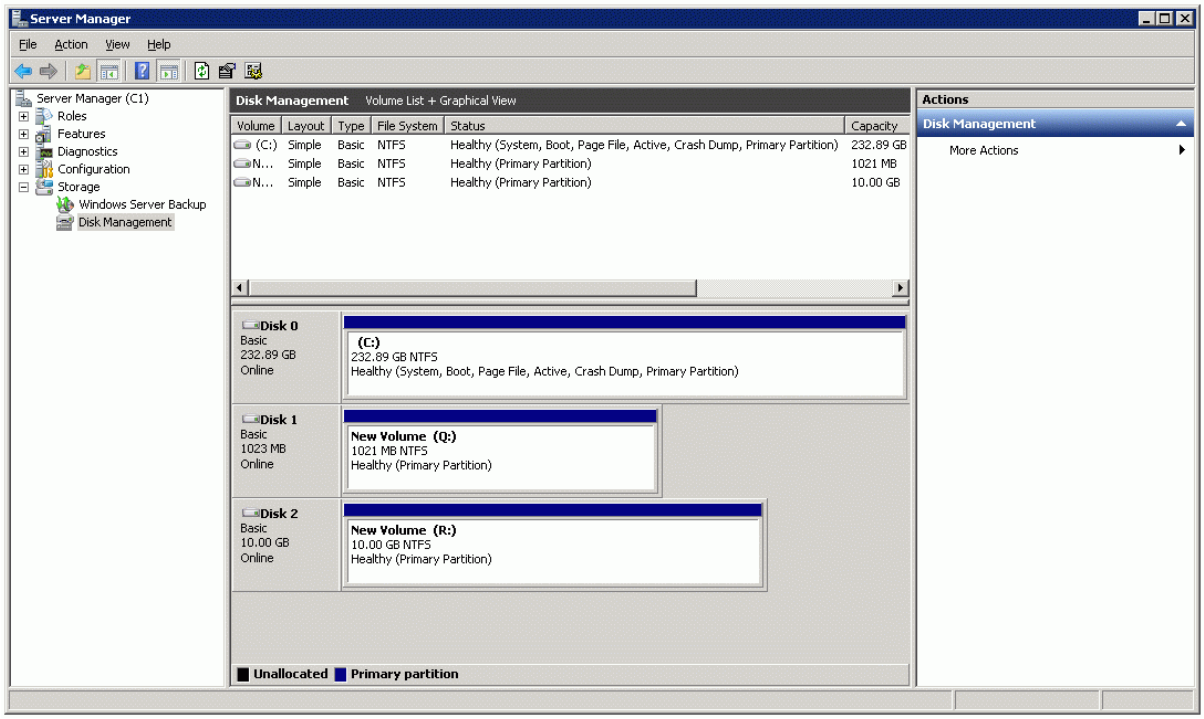


To create the partitions and format the new disks:

1. Right-click each of the disks, and then click **New Simple Volume**.



2. Create partitions by following the wizard's instructions. The **Server Manager** window appears.



The same actions need to be made on the other servers as well, except that creating partitions will no longer be necessary:

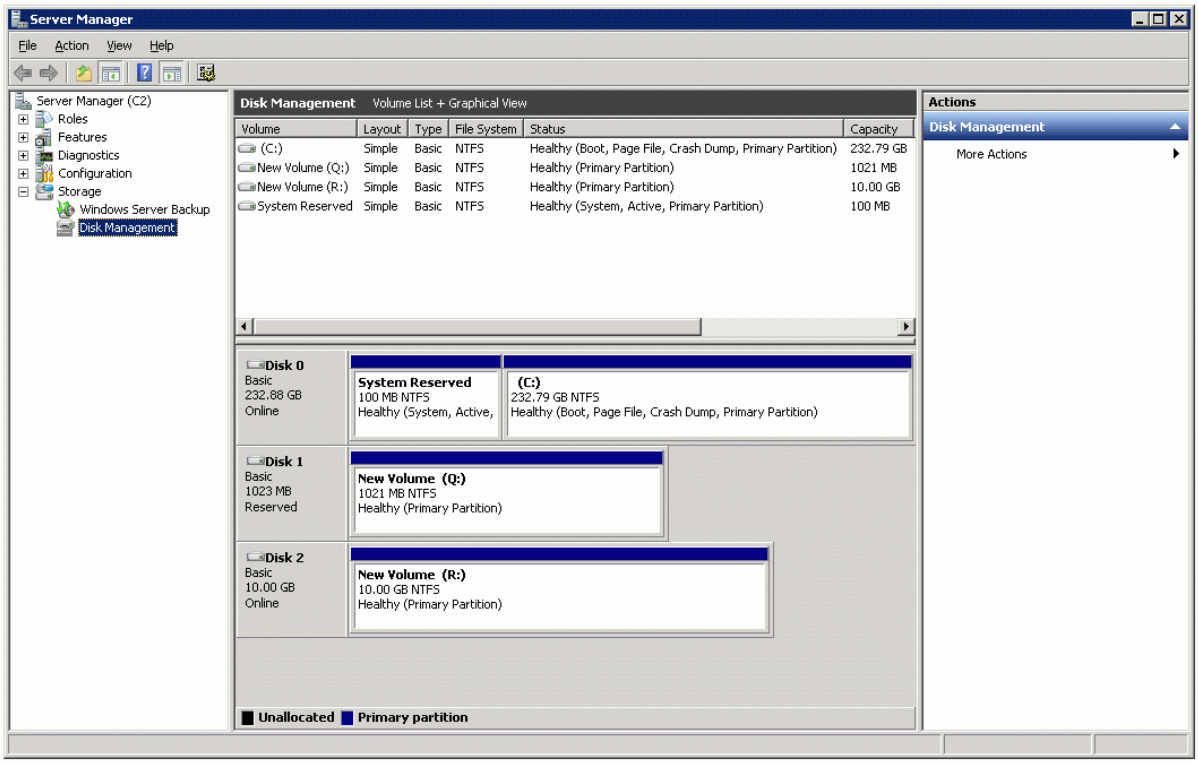
1. Launch **Microsoft iSCSI Initiator**, and click the **Discovery** tab.

2. Add IP address of the StarWind server to the Target Portals.

3. Click the **Targets** tab and connect to the targets by selecting the **Add this connection to the list of Favorite Targets** checkbox.

4. Bring online the disks that appear.

5. Launch **Server Manager**, go to the **Disk Management** section, and bring online the disks that appear. The **Server Manager** window appears.

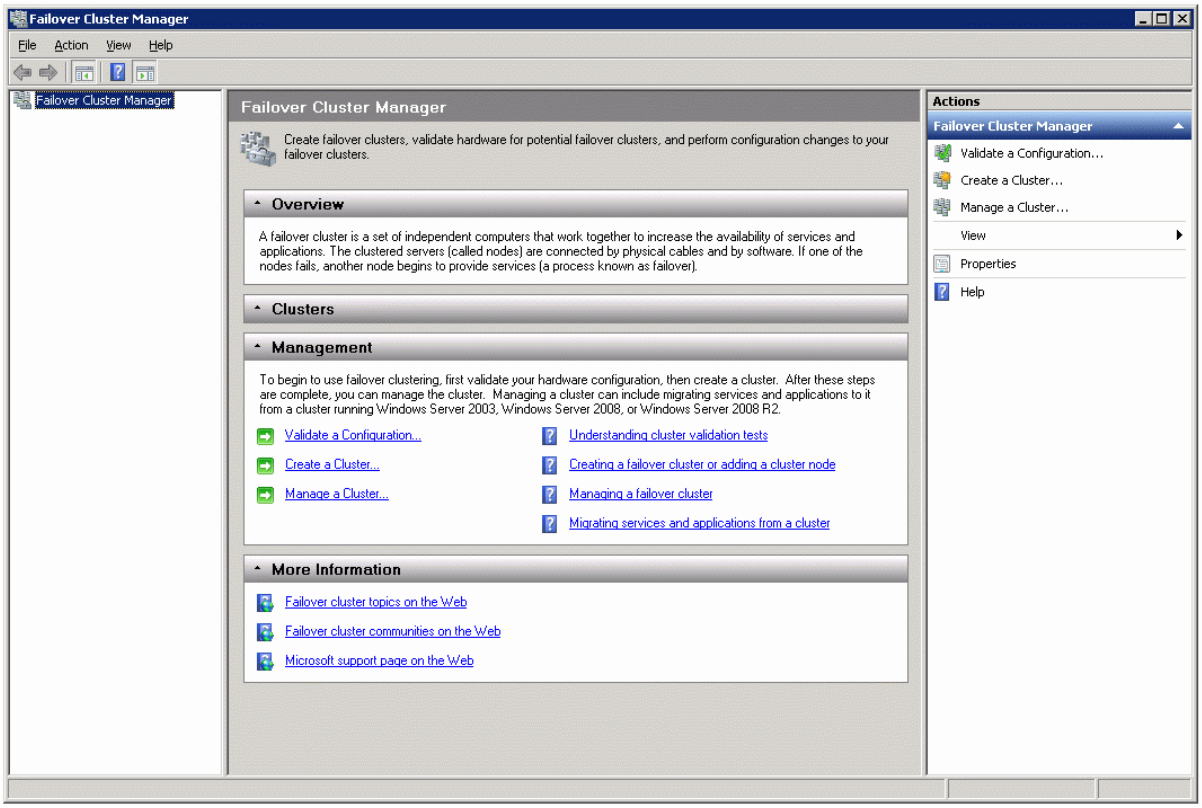


Create a Cluster

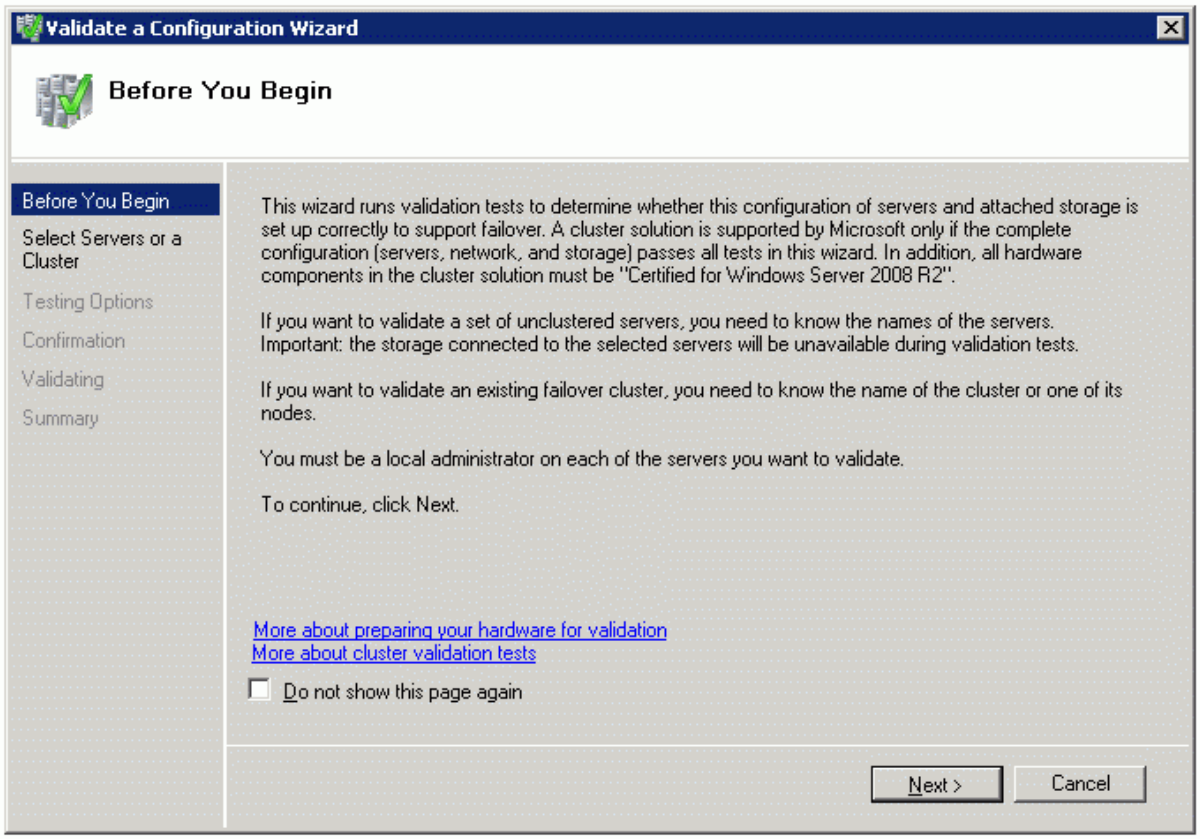
To create a cluster:

1. Launch **Failover Cluster Manager**.

2. Before creating a cluster, you will need to validate your configuration. In the **Actions** section, click **Validate a Configuration** .

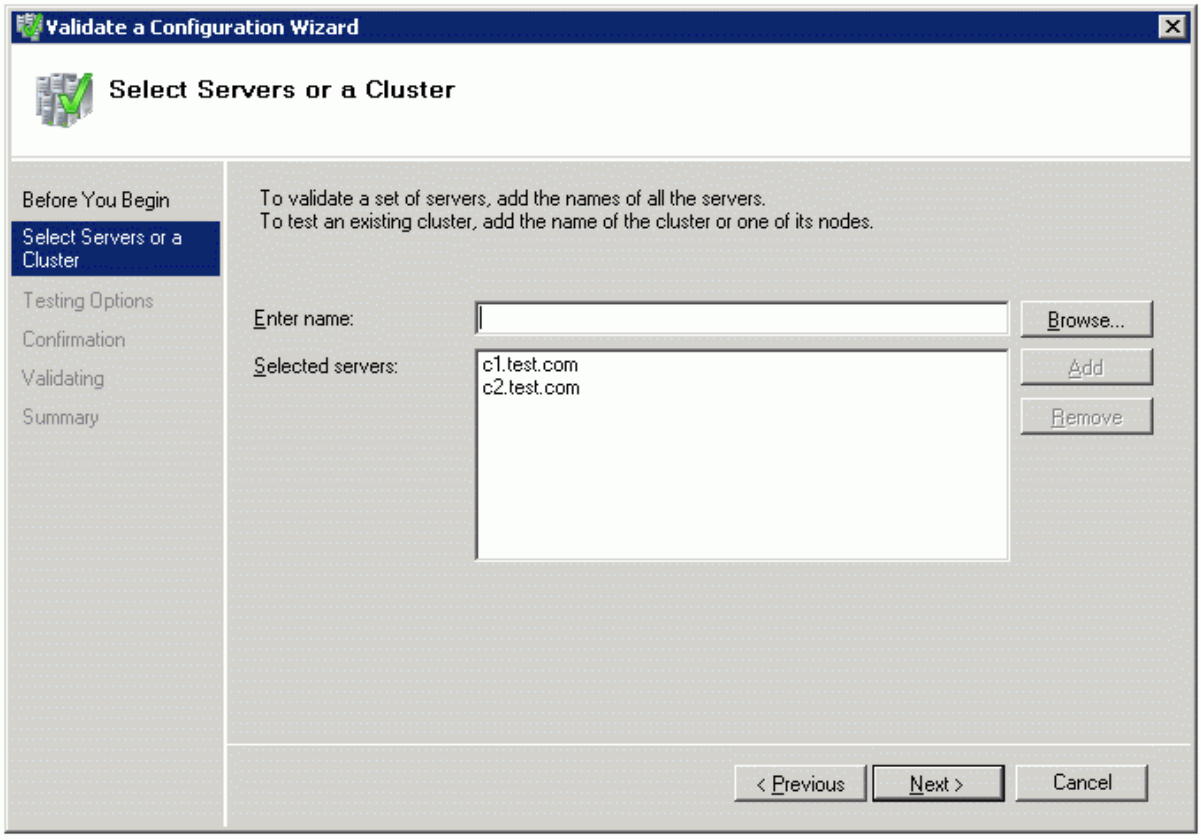


3. In the **Validate a Configuration Wizard** that appears, familiarize yourself with the information presented on the window.



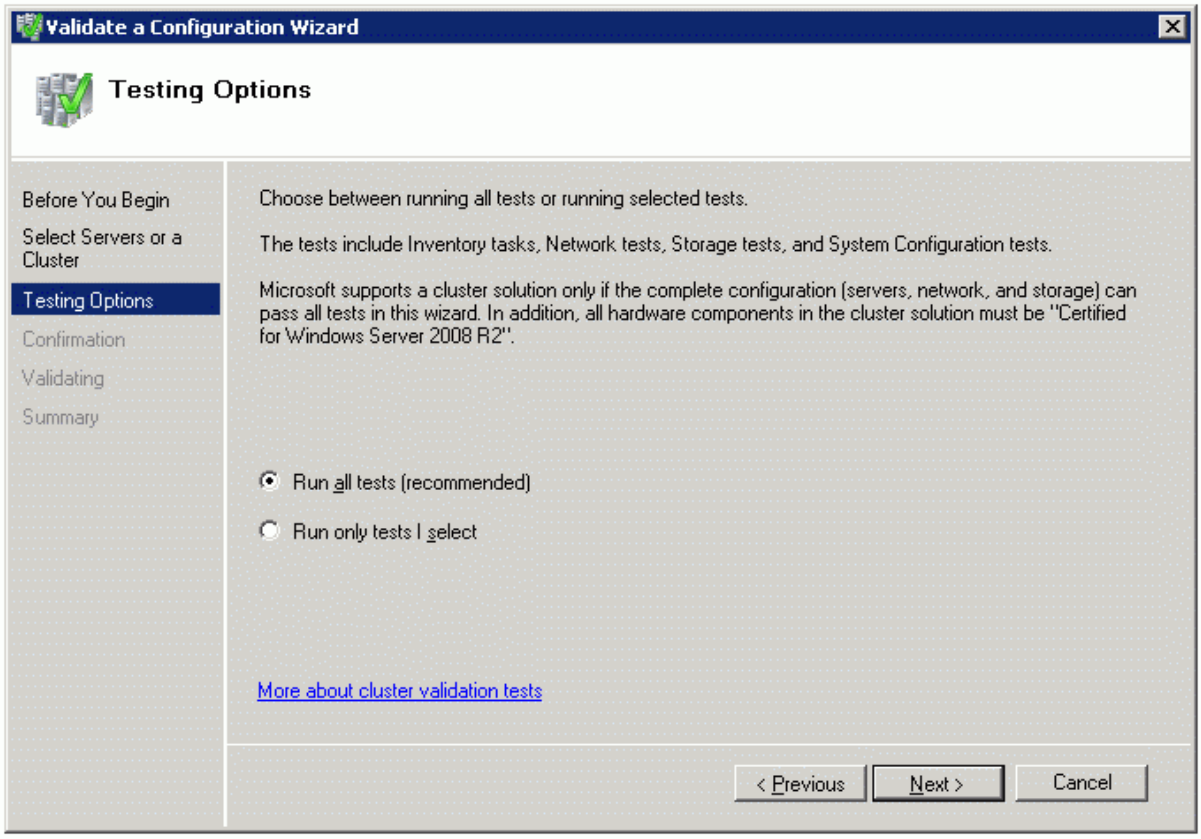
4. Click **Next** to continue.

5. Add the servers that need to be validated.



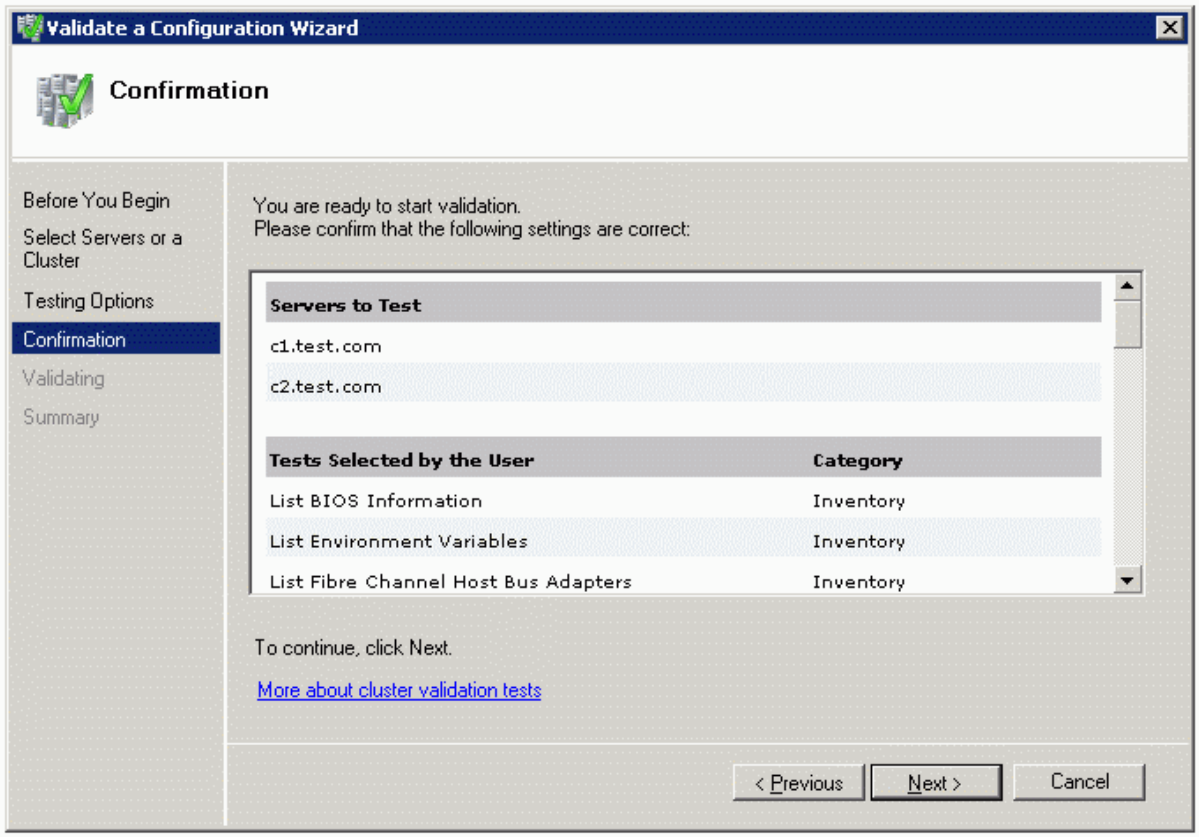
6. Click **Next** to continue.

7. Define the set of tests you would like to conduct by clicking either **Run all tests (recommended)**, or **Run only tests I select** option button.



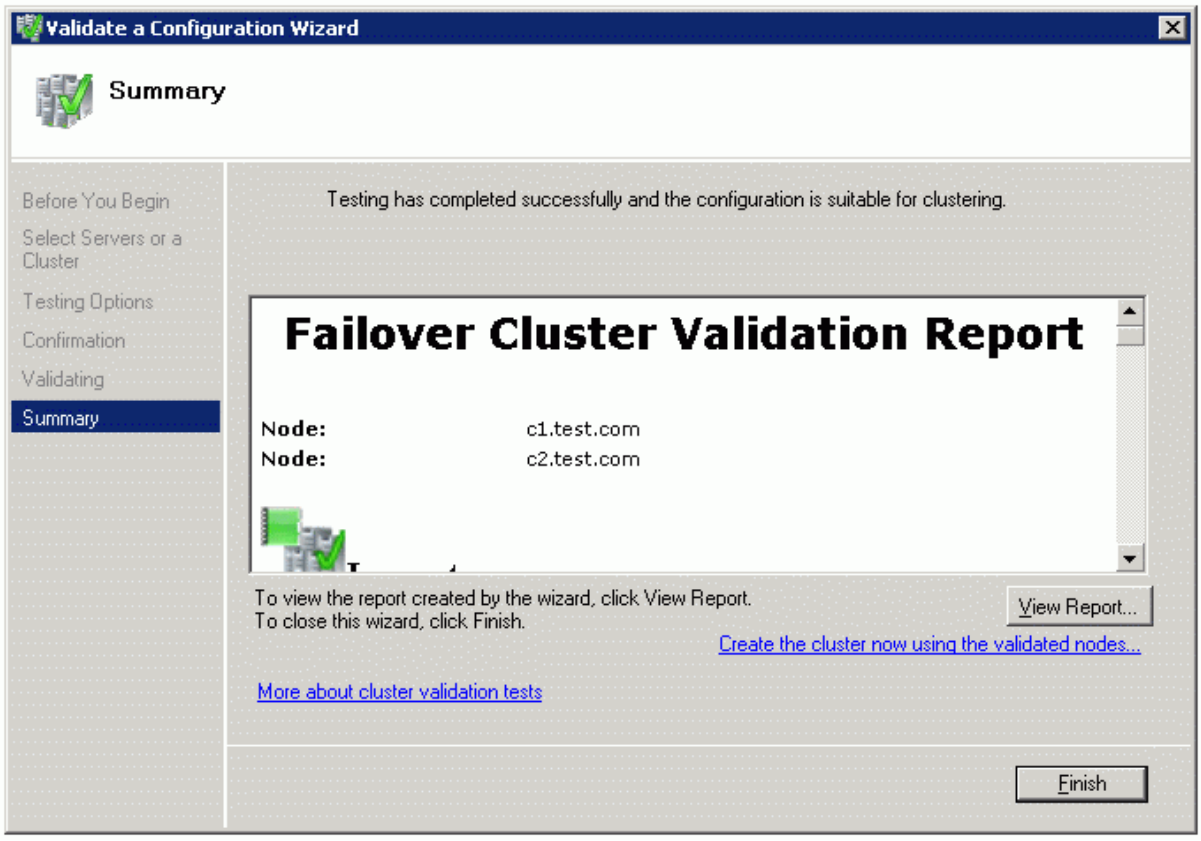
8. Click **Next** to continue.

9. Make sure that all of the previously defined options are correct. Click **Previous** if something needs to be changed.



10. Click **Next** to continue.

11. The validation process starts. The completed validation process results in a report. Carefully review the report and fix any configuration deficiencies found by the **Validate a Configuration Wizard**.

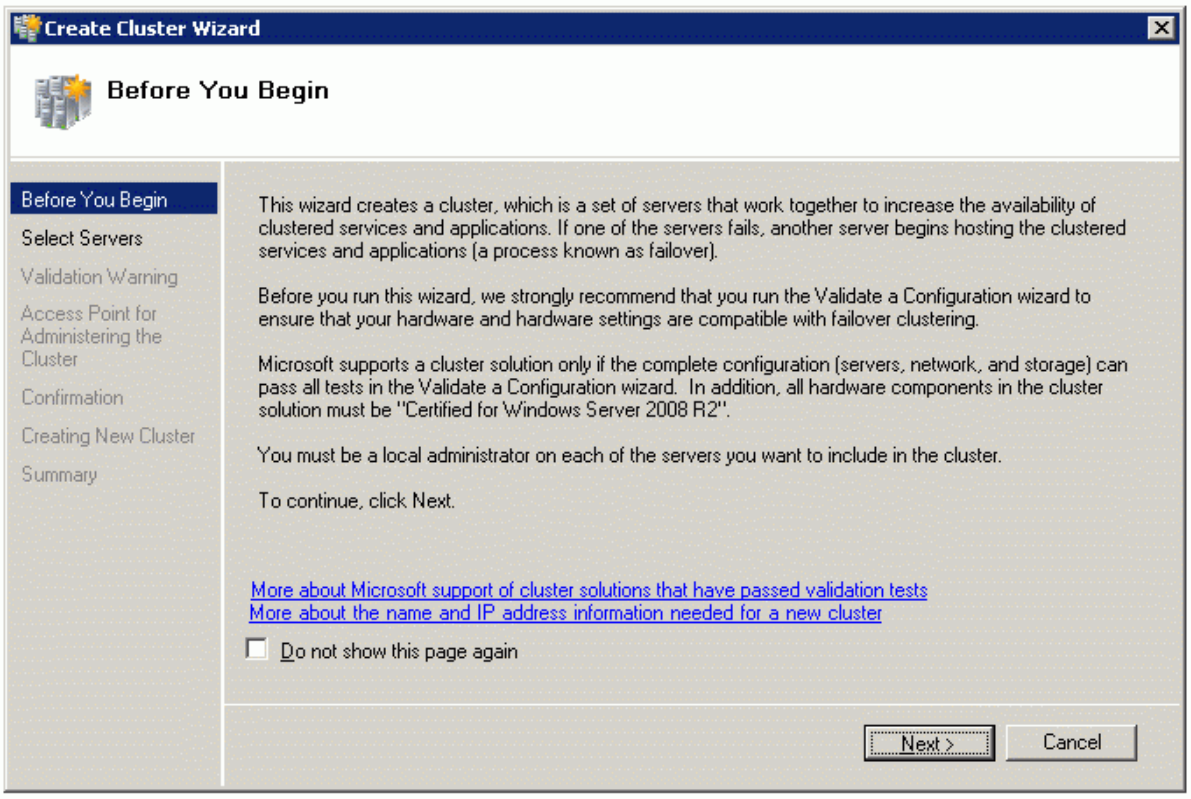


12. Click **Finish** to complete working with the wizard.

To create a cluster:

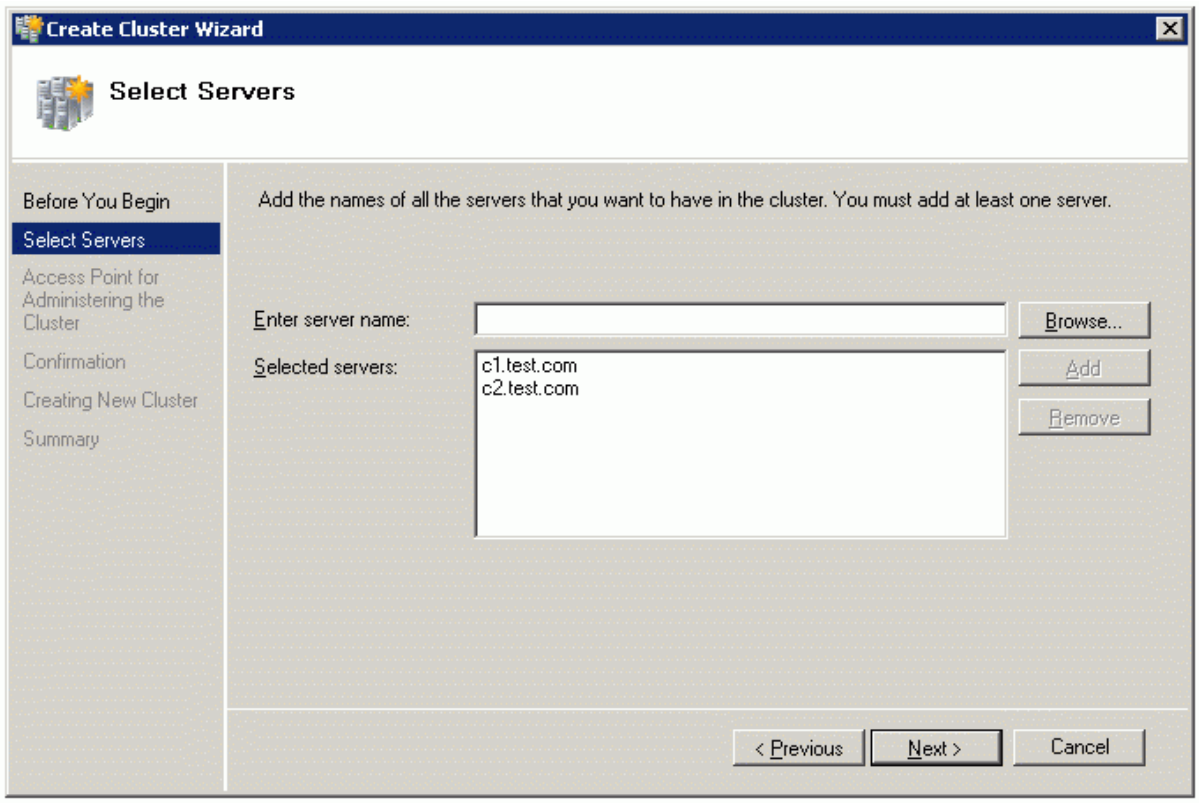
1. Click the **Create a Cluster** item in the **Actions** section.

2. In the **Create Cluster Wizard** that appears, familiarize yourself with the information given on the window.



3. Click **Next** to continue.

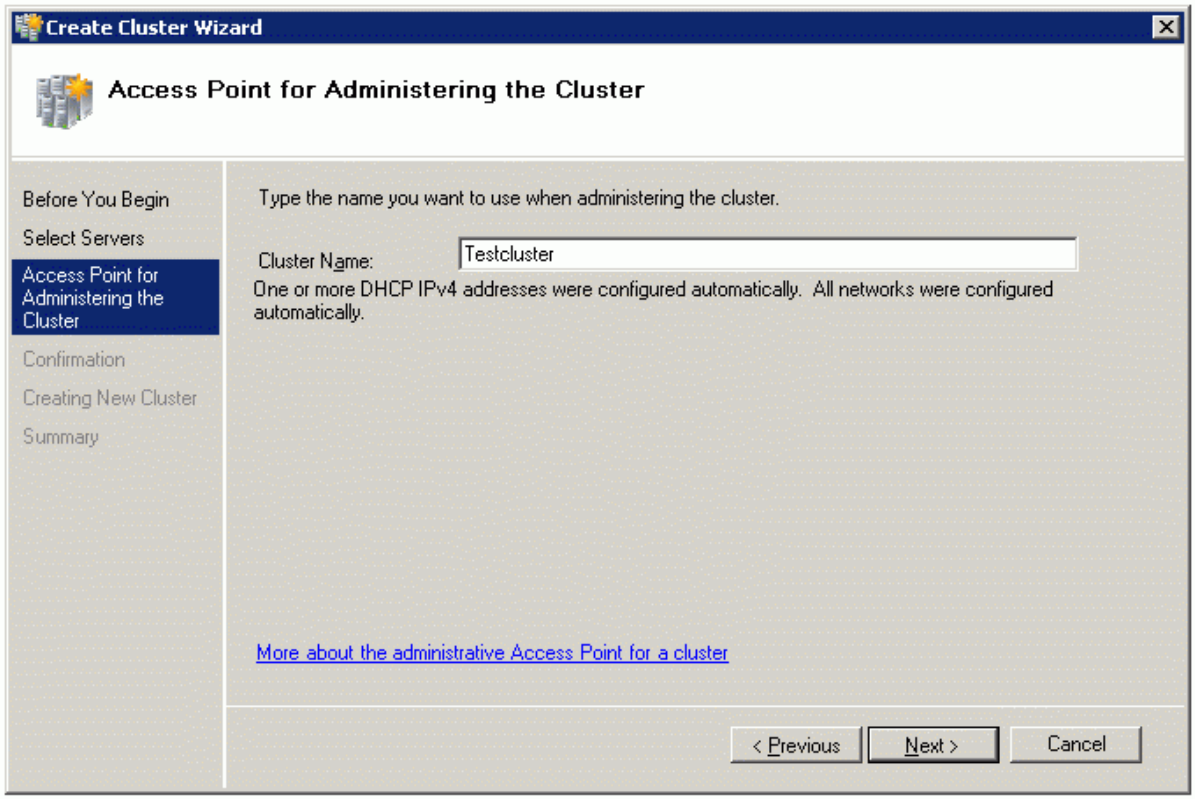
4. Specify the servers that will be included into the cluster.



5. Click **Next** to continue.

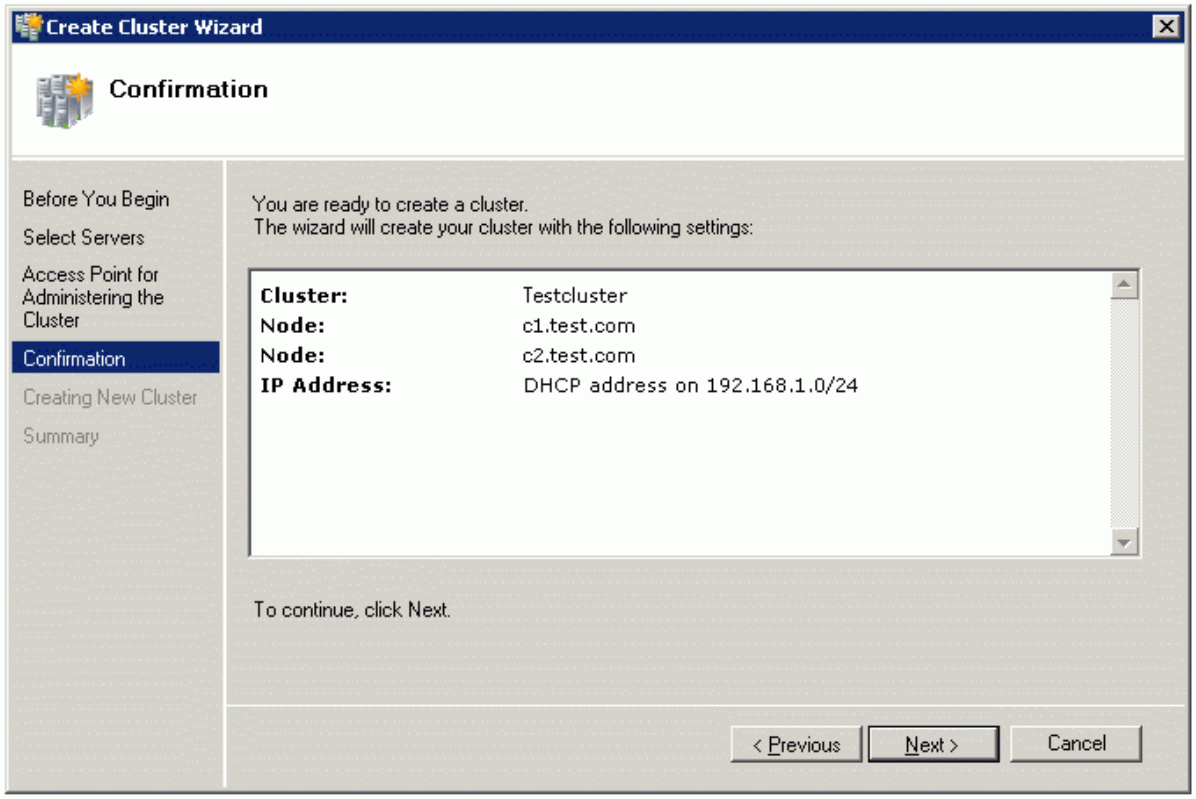
6. Specify the cluster name.

Note: If the cluster servers get IP addresses over DHCP, then the cluster will get its IP address over DHCP as well. If the IP addresses are set statically, then you will need to set an IP address for the cluster as well.



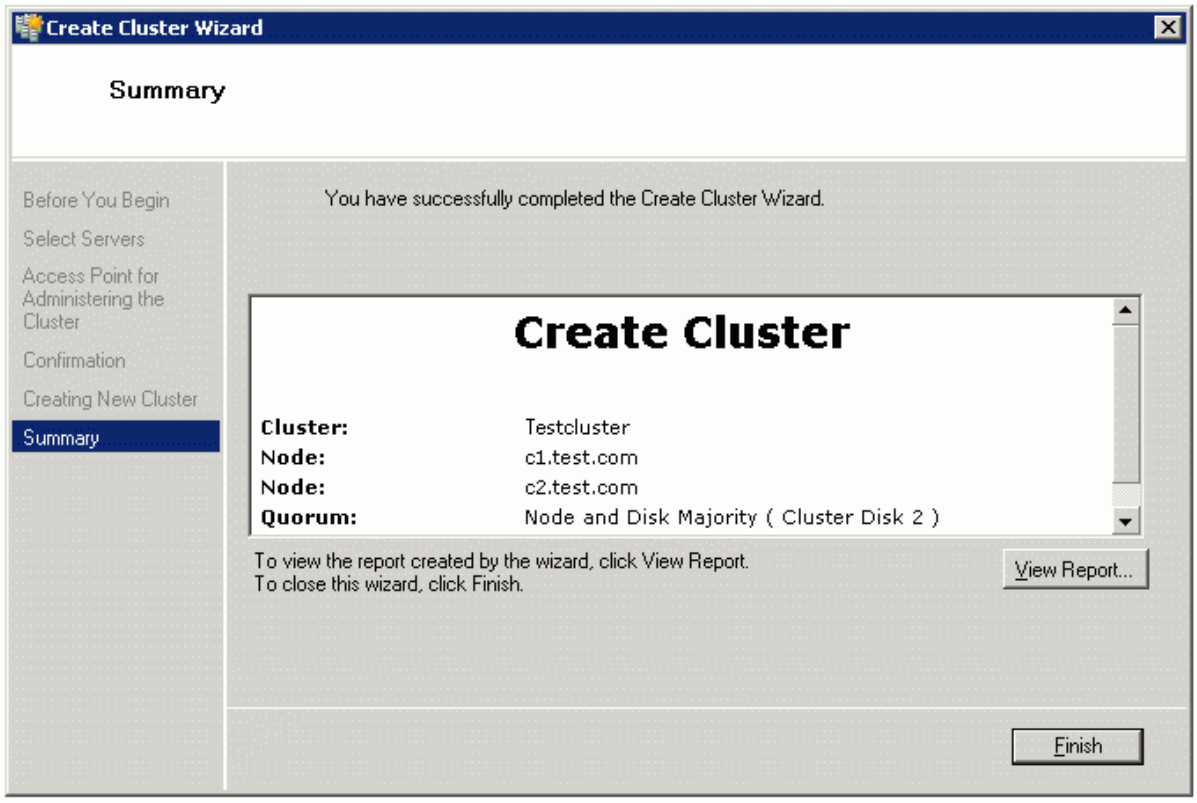
7. Click **Next** to continue.

8. Make sure that all of the previously defined options are correct. Click **Previous** if something needs to be changed.



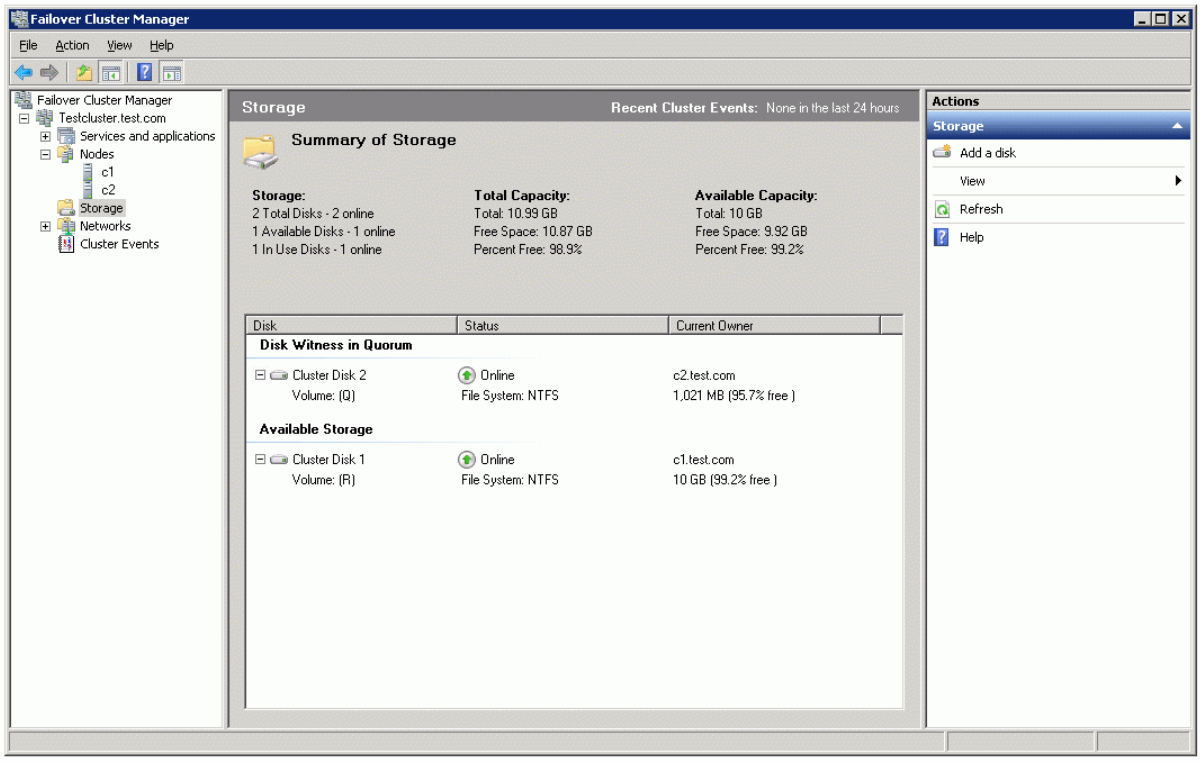
9. Click **Next** to continue.

10. The process of creating the cluster begins. After creation of cluster is completed, a report with additional information appears. Read through this report.



11. Click **Finish** to complete working with the wizard.

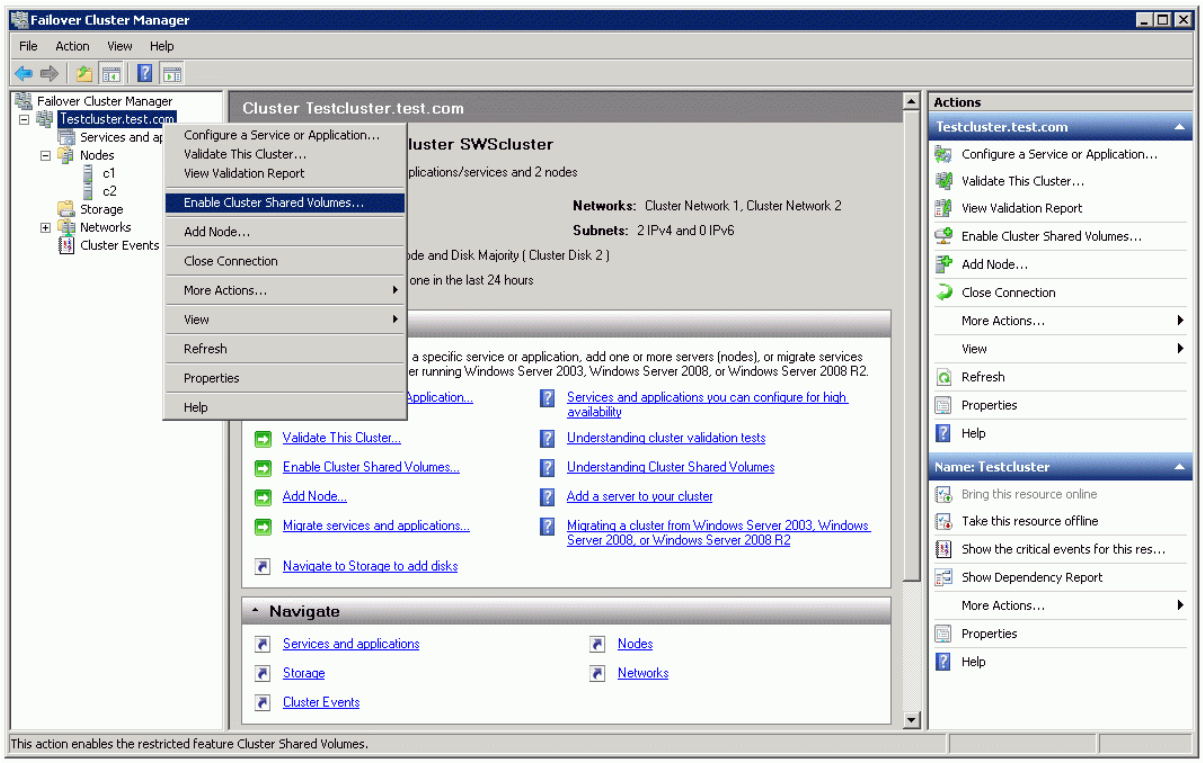
After these actions, the **Failover Cluster Manager** window appears.



Enable Cluster Shared Volumes

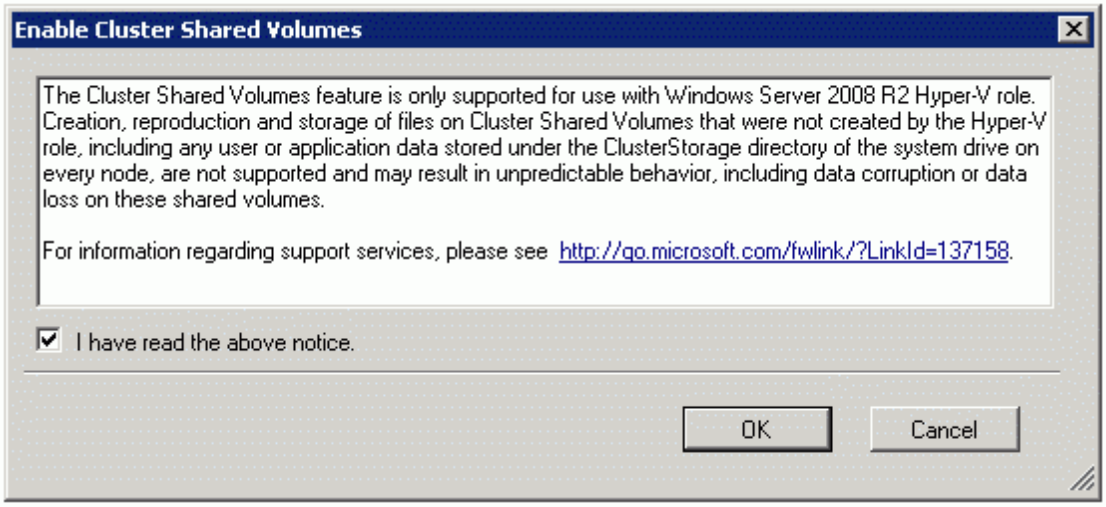
To enable **Cluster Shared Volumes (CSV)** which is necessary to work with Hyper-V virtual machines:

1. Right-click the cluster, and click **Enable Cluster Shared Volumes.**



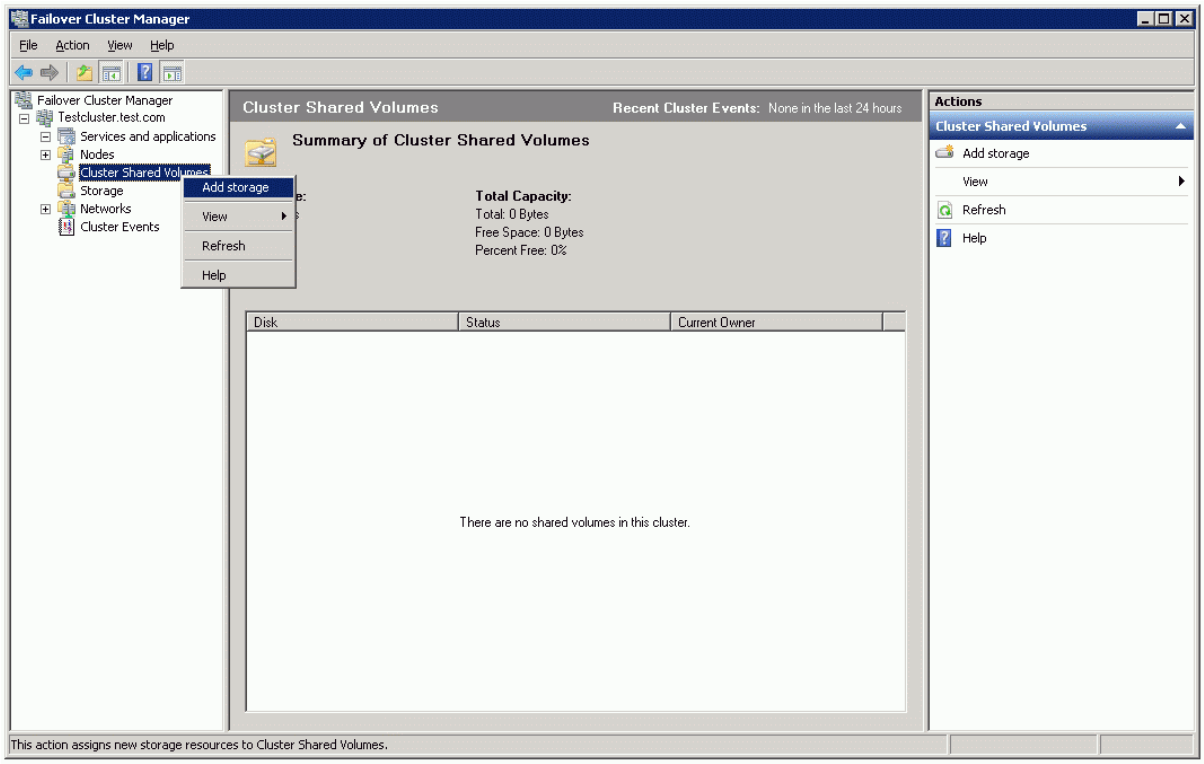
2. A dialog appears with information about CSV and purpose to use it. Familiarize yourself with this information.

Note: Use the CSV feature for its intended purpose only.

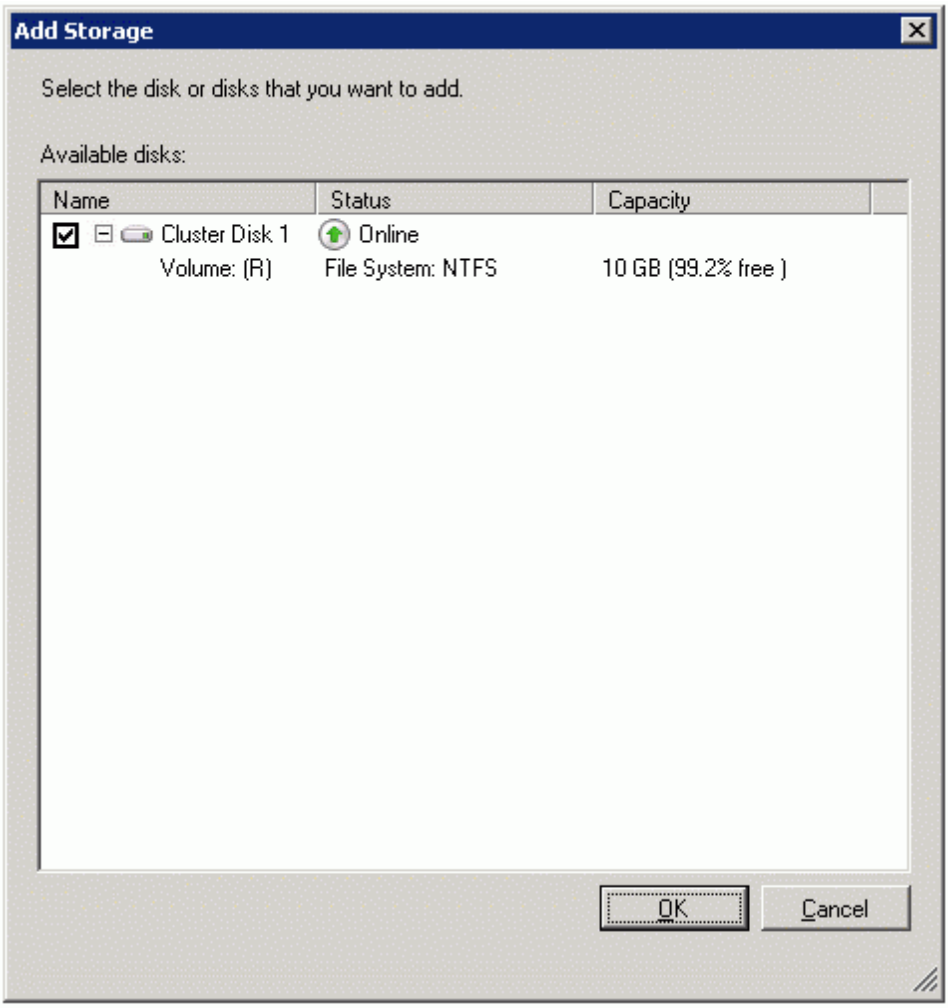


3. Click **OK**.

4. **Cluster Shared Volumes** item appears in the **Actions** section. Right-click this item, and click **Add storage.**

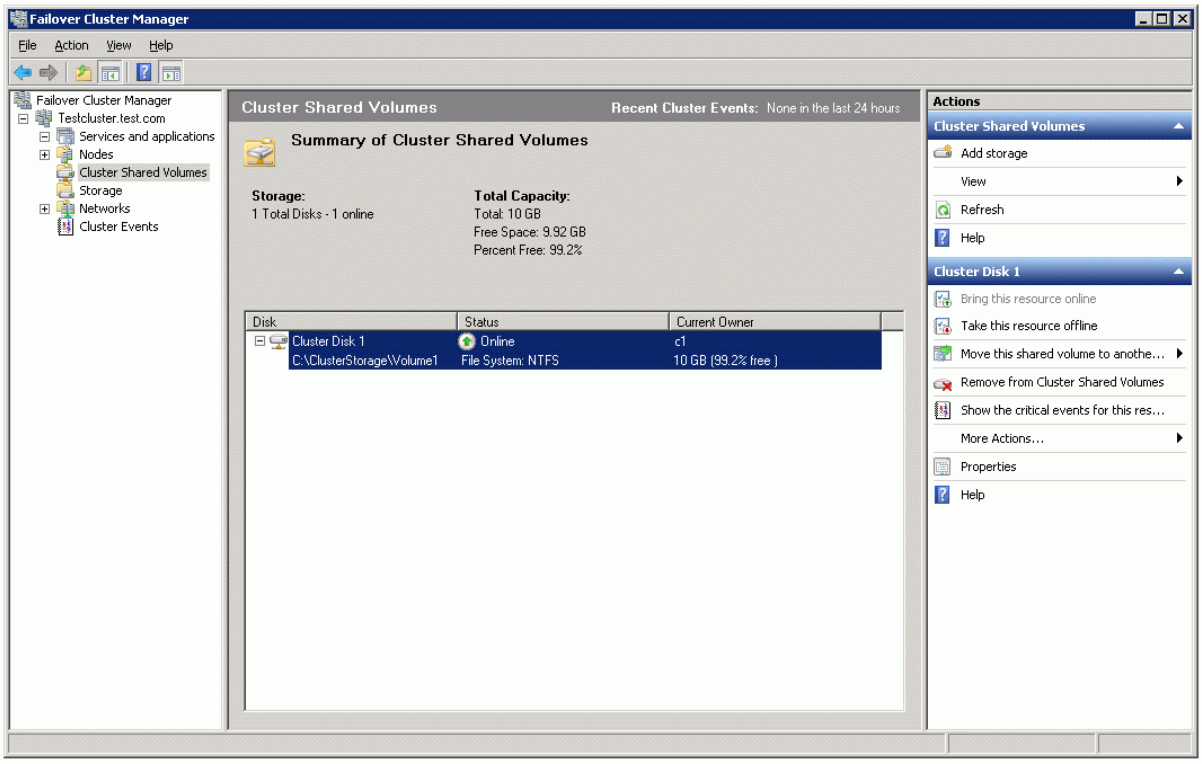


5. In the **Add Storage** dialog that appears, specify the disk to be added.



6. Click **OK**.

7. The **Failover Cluster Manager** window appears .

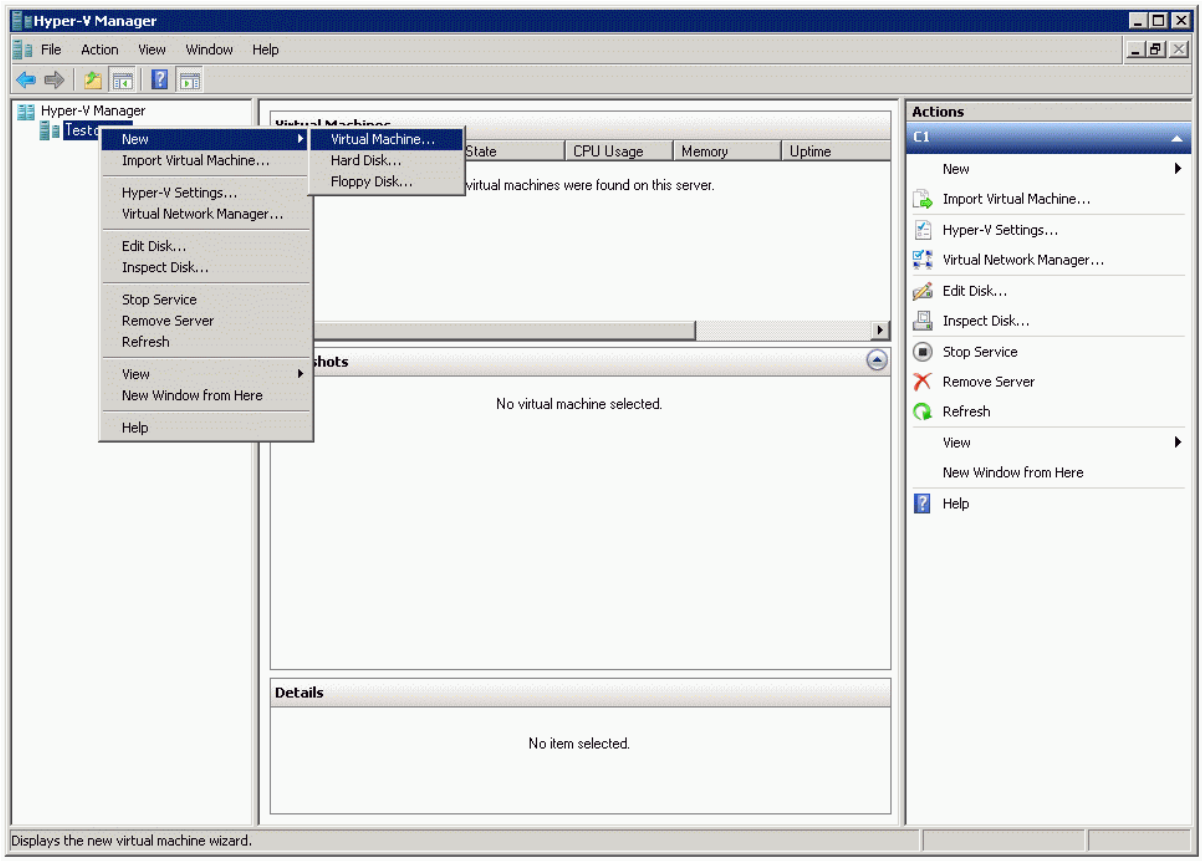


Create Virtual Machine

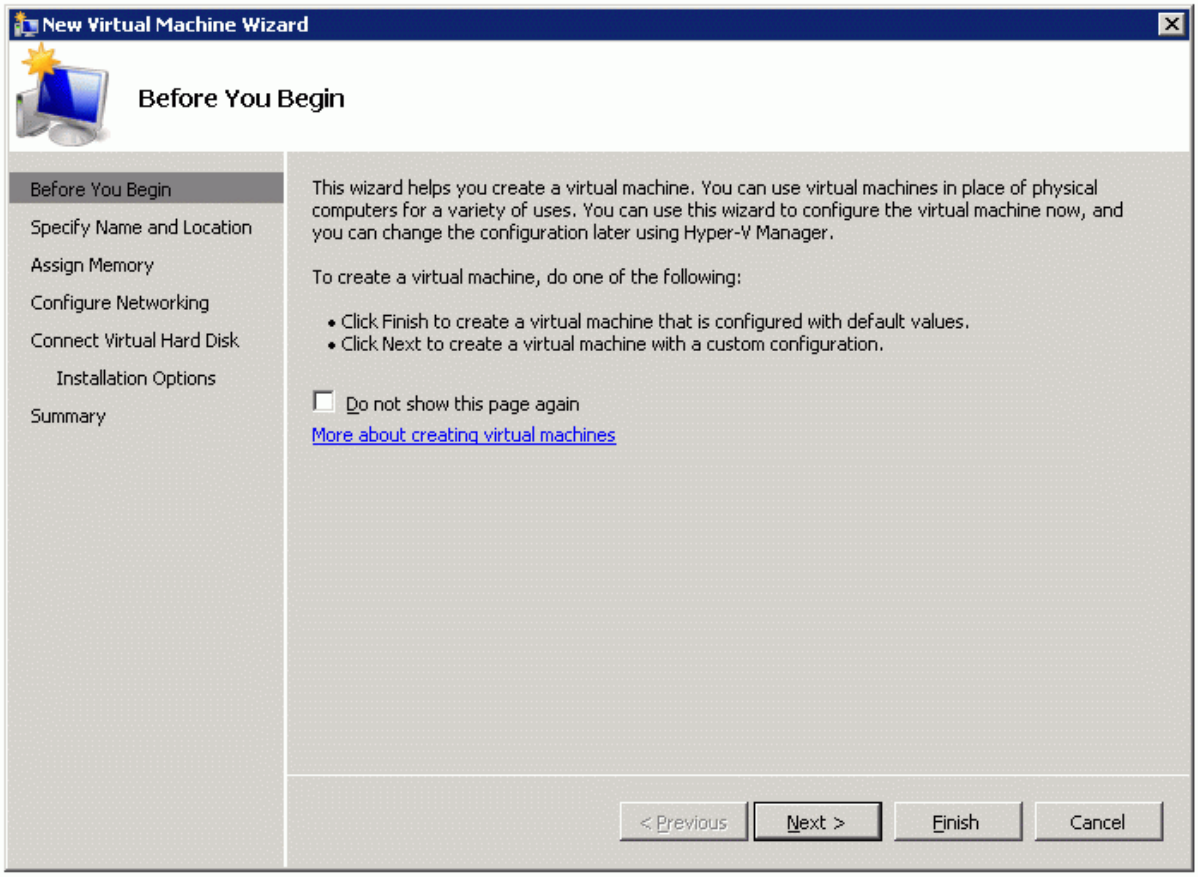
To create a virtual machine:

1. Launch **Hyper-V Manager**.

2. Right-click the host name, and click **New -> Virtual Machine**.

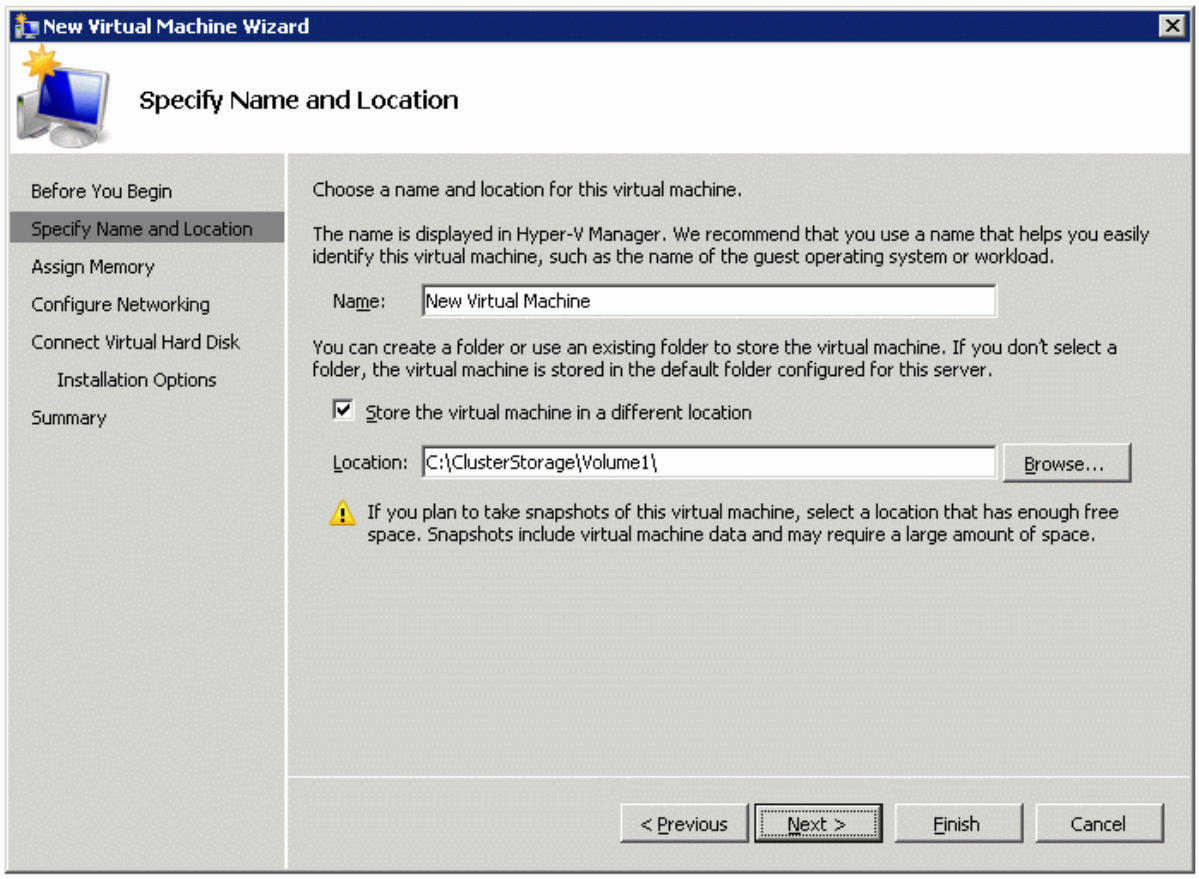


3. In the **New Virtual Machine Wizard** that appears, familiarize yourself with the information on the window.



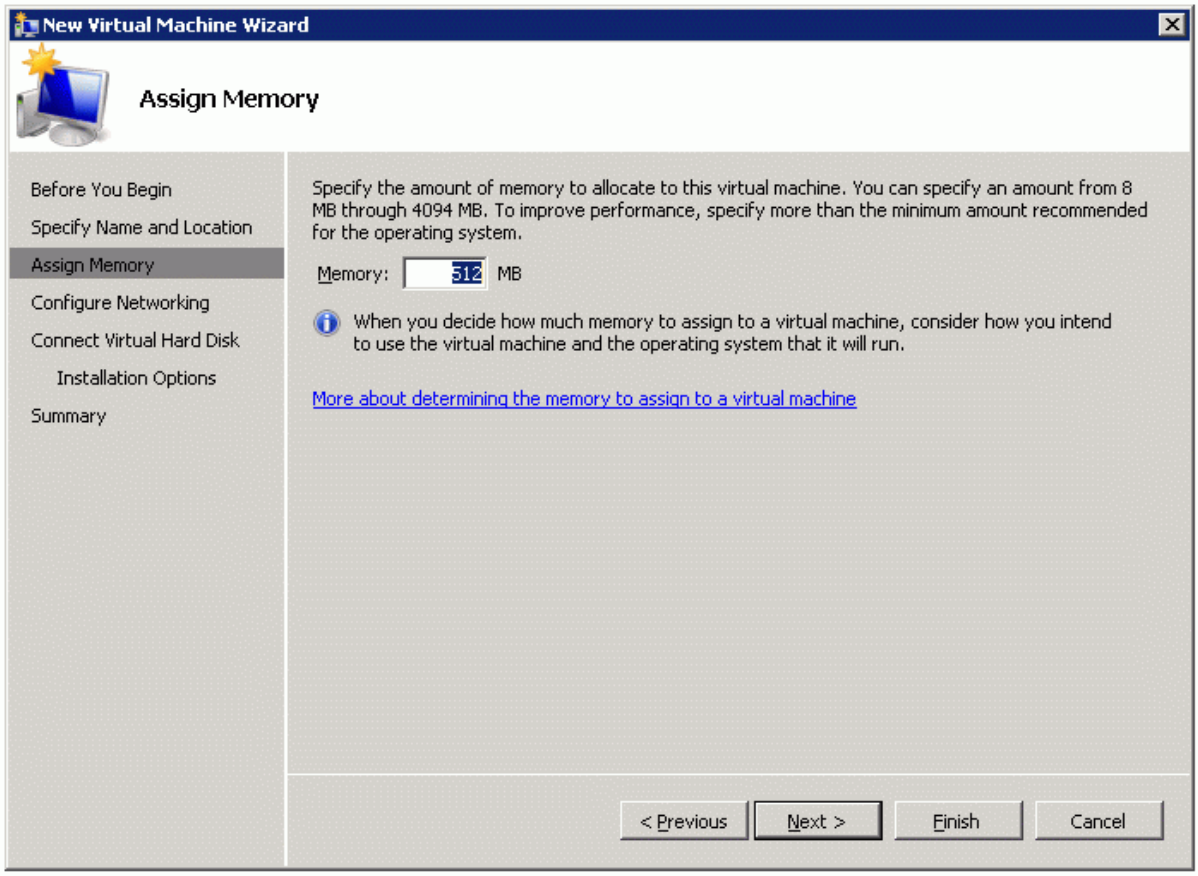
4. Click **Next** to continue.

5. Specify the name and location of the virtual machine.



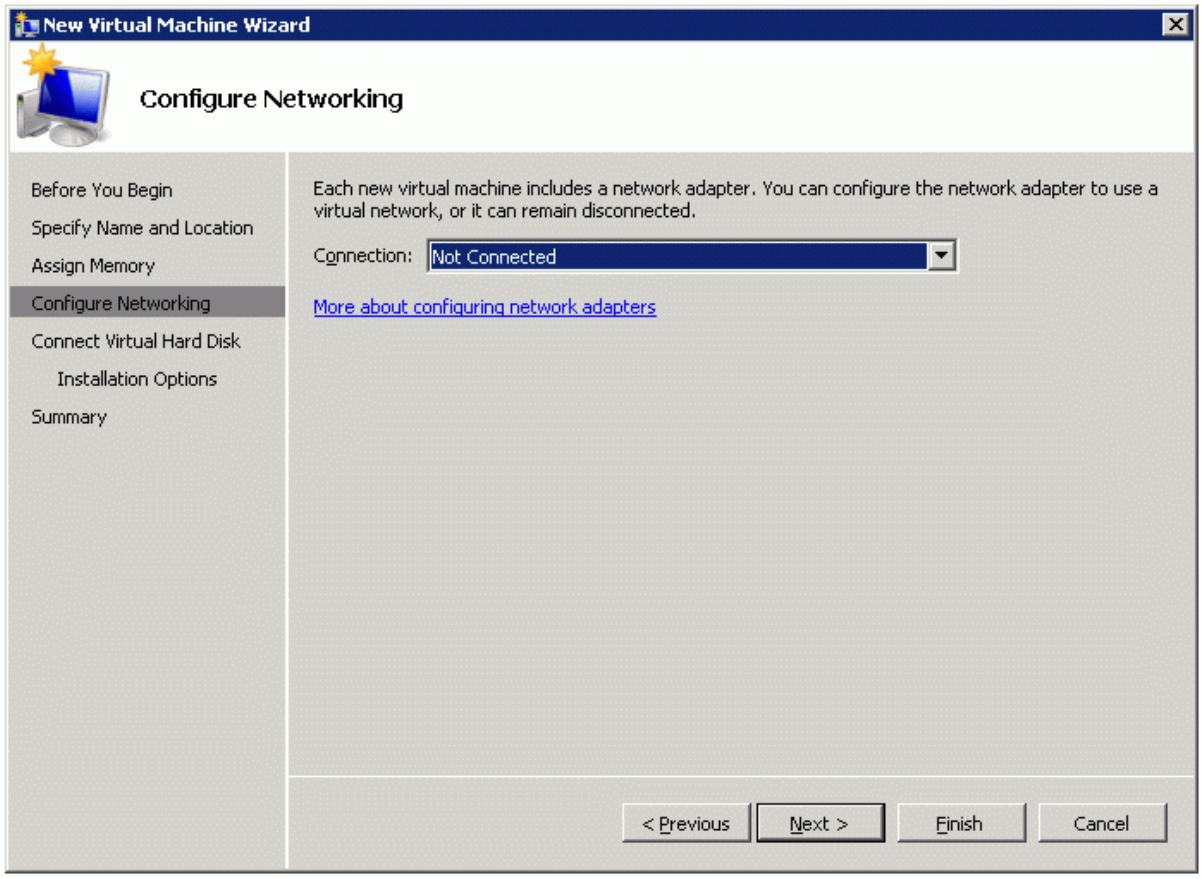
6. Click **Next** to continue.

7. Define the amount of memory to allocate to the virtual machine.



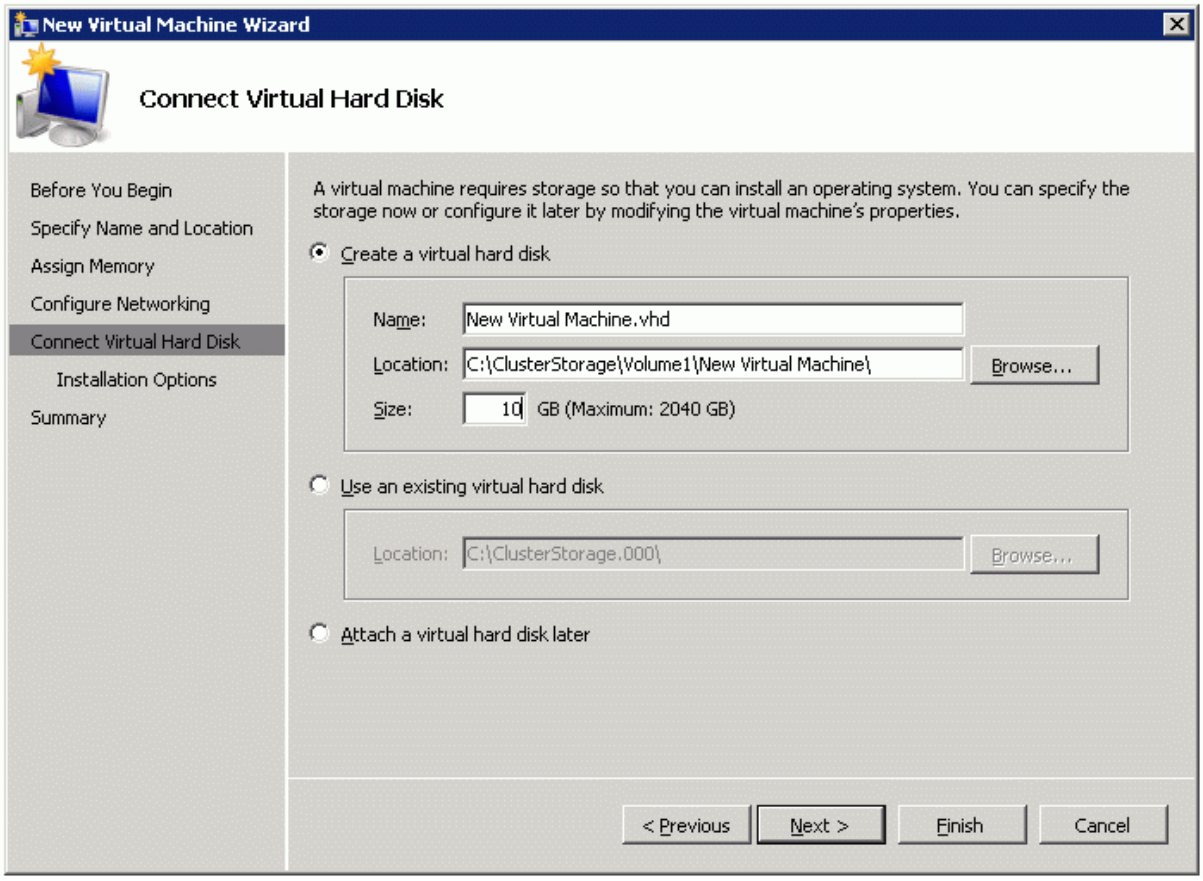
8. Click **Next** to continue.

9. Specify the necessary network connection options or leave the default parameters unchanged.



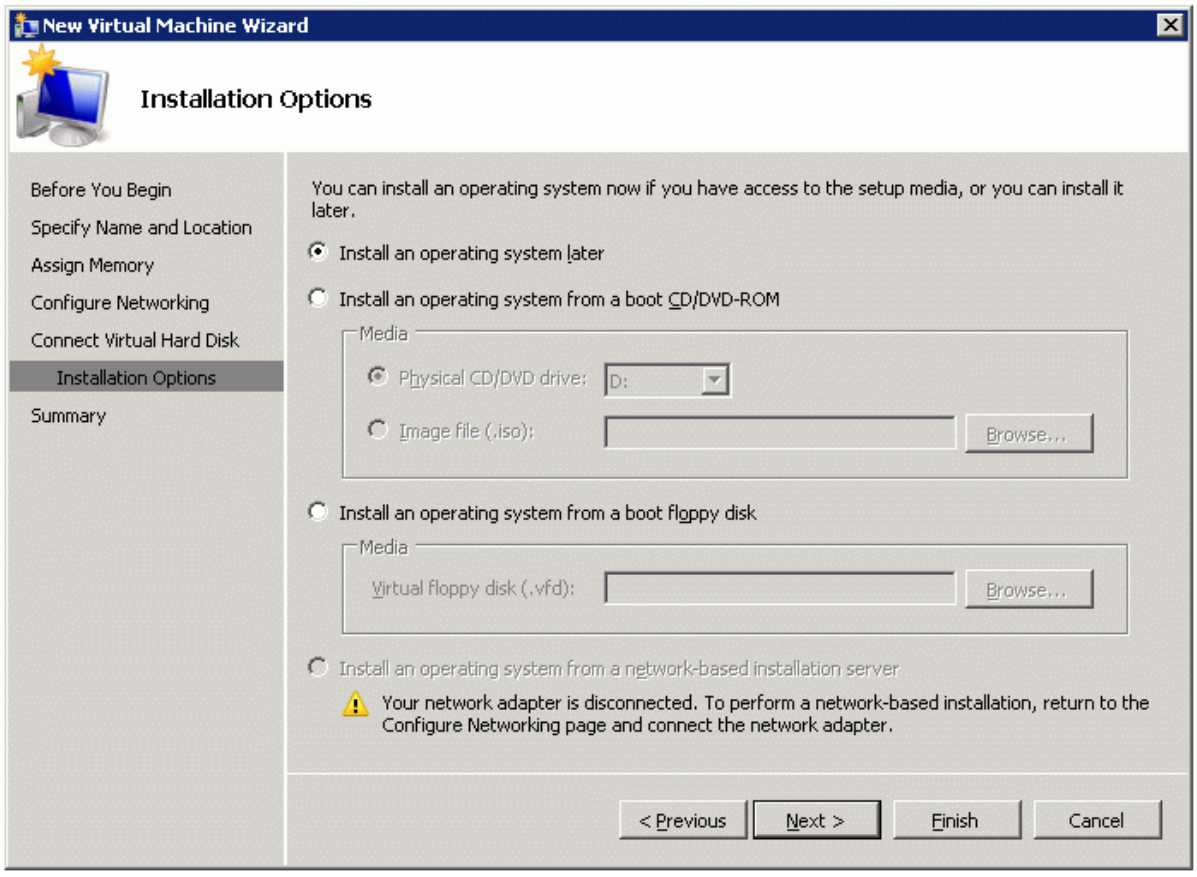
10. Click **Next** to continue.

11. Specify name, size and location of the virtual disk.



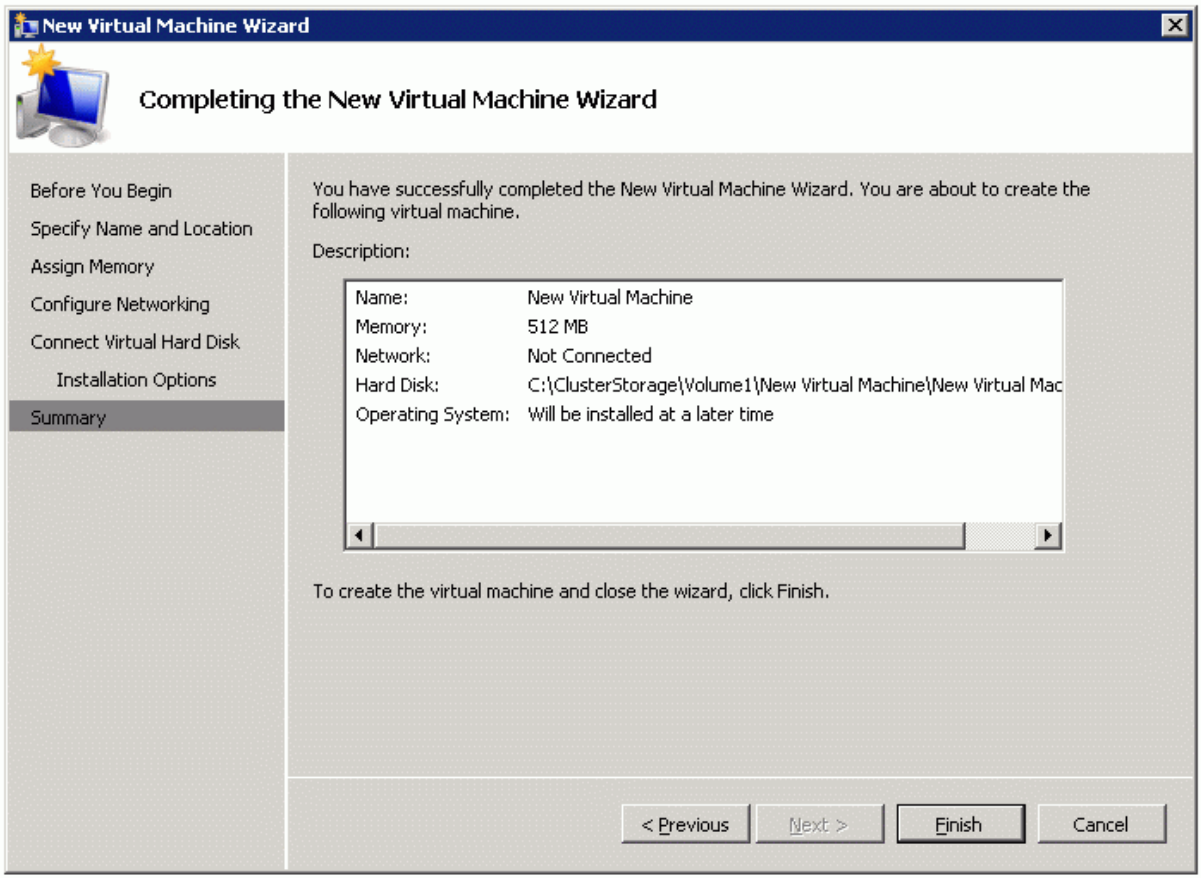
12. Click **Next** to continue.

13. Specify the installation options of operating system or leave the default parameters unchanged.



14. Click **Next** to continue.

15. Make sure that all of the parameters are correct. Click Previous should any changes be required.

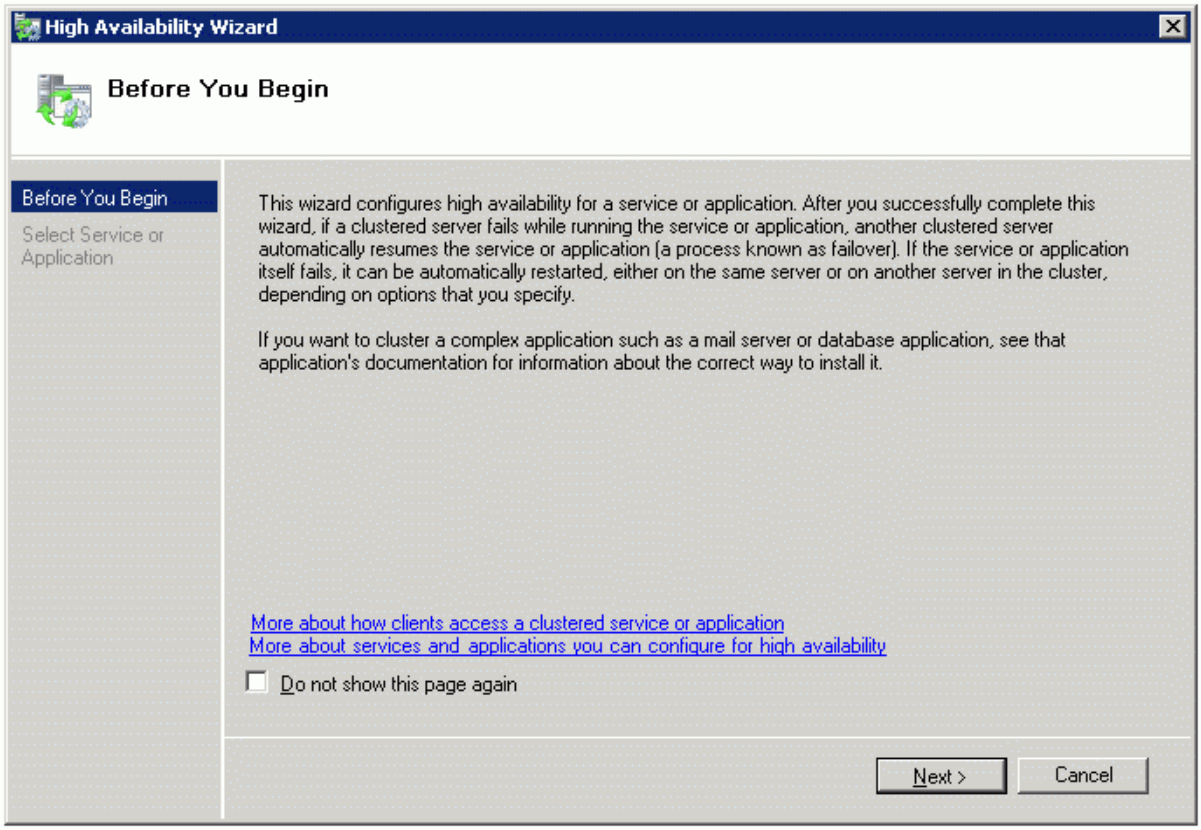


16. Click **Finish** .

To make your virtual machine highly available:

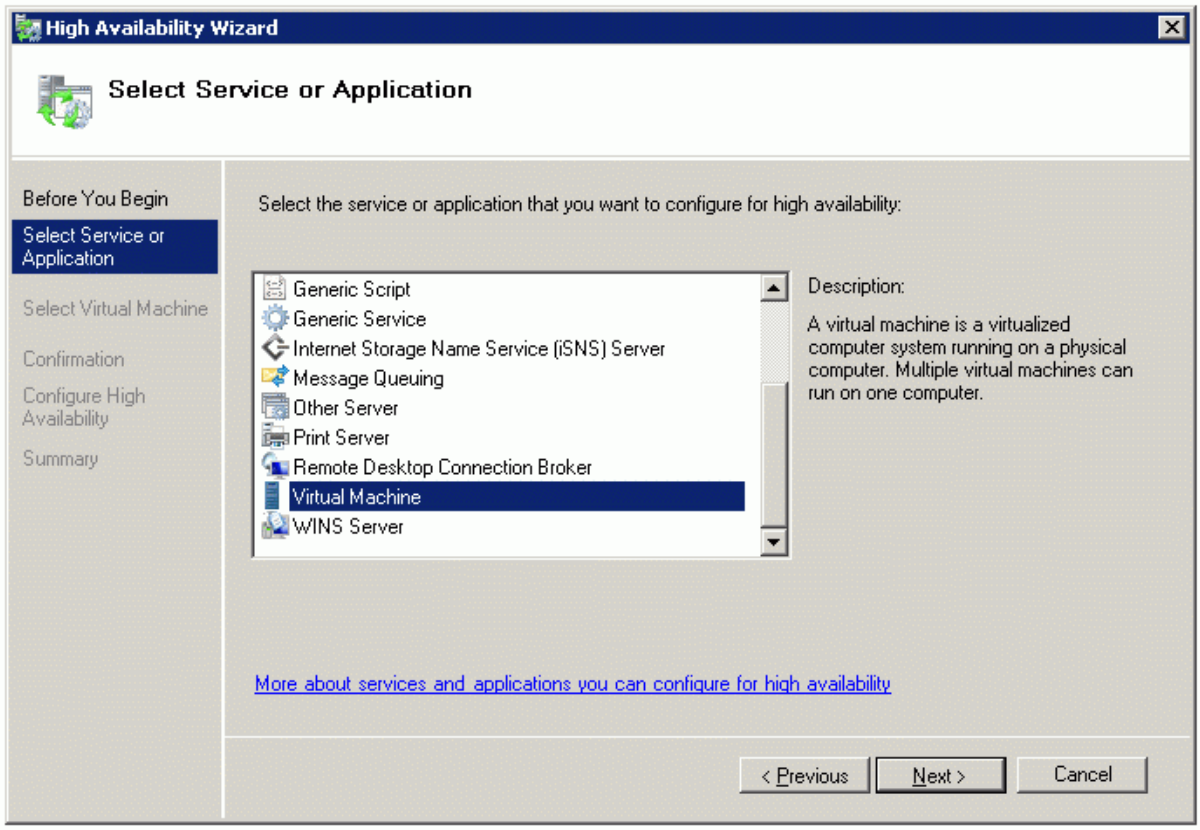
1. Launch **Failover Cluster Manager,** go to the **Services and Application** section, and click the **Configure a Service or Application** link.

2. In the **High Availability Wizard** that appears, review the information presented on the window.



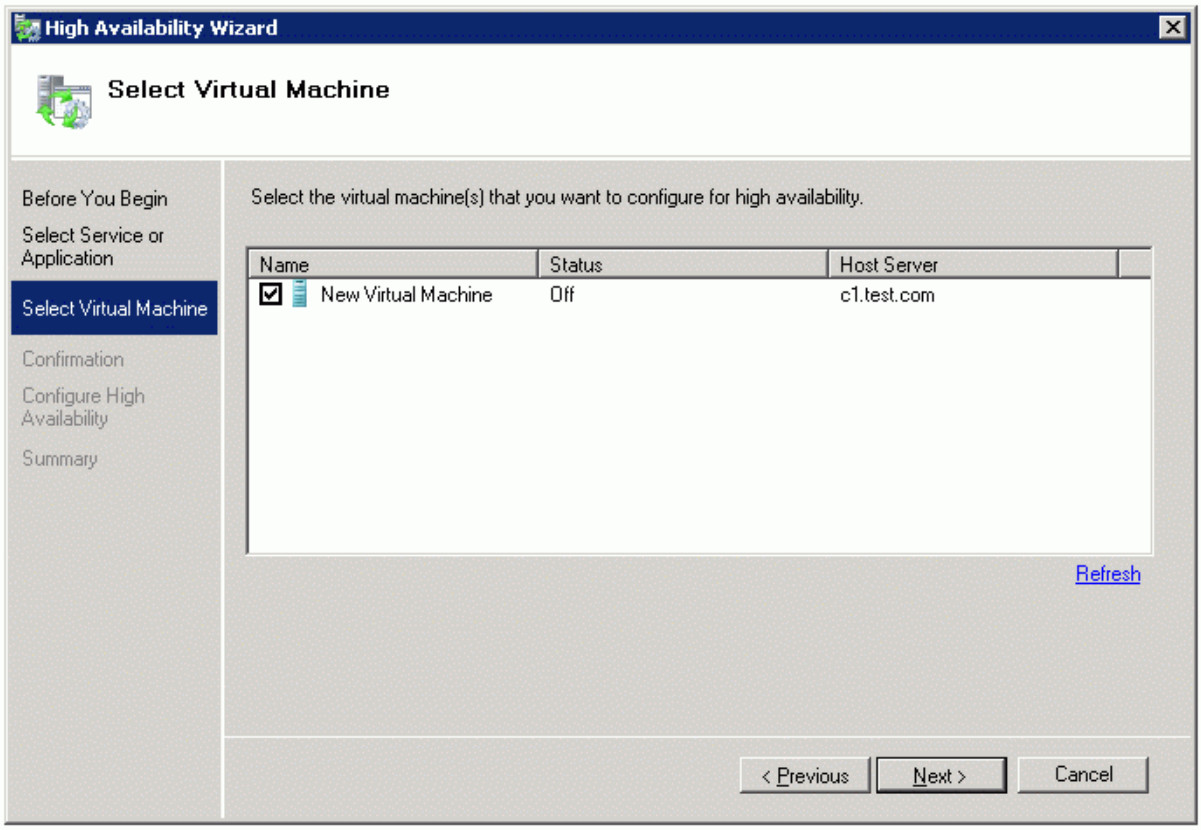
3. Click **Next** to continue.

4. In the list of services that can be configured for high availability, click Virtual Machine.



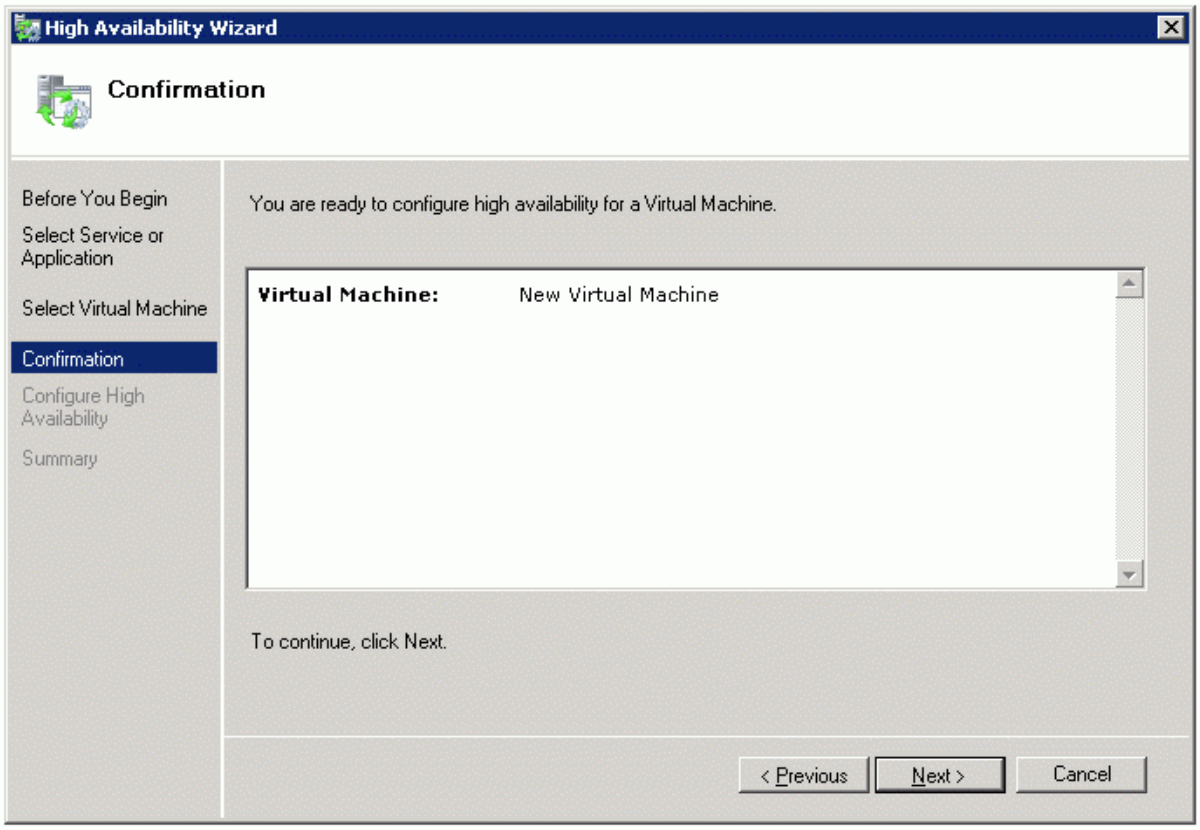
5. Click **Next** to continue.

6. In the list of virtual machines, place a checkmark by the one you created before.



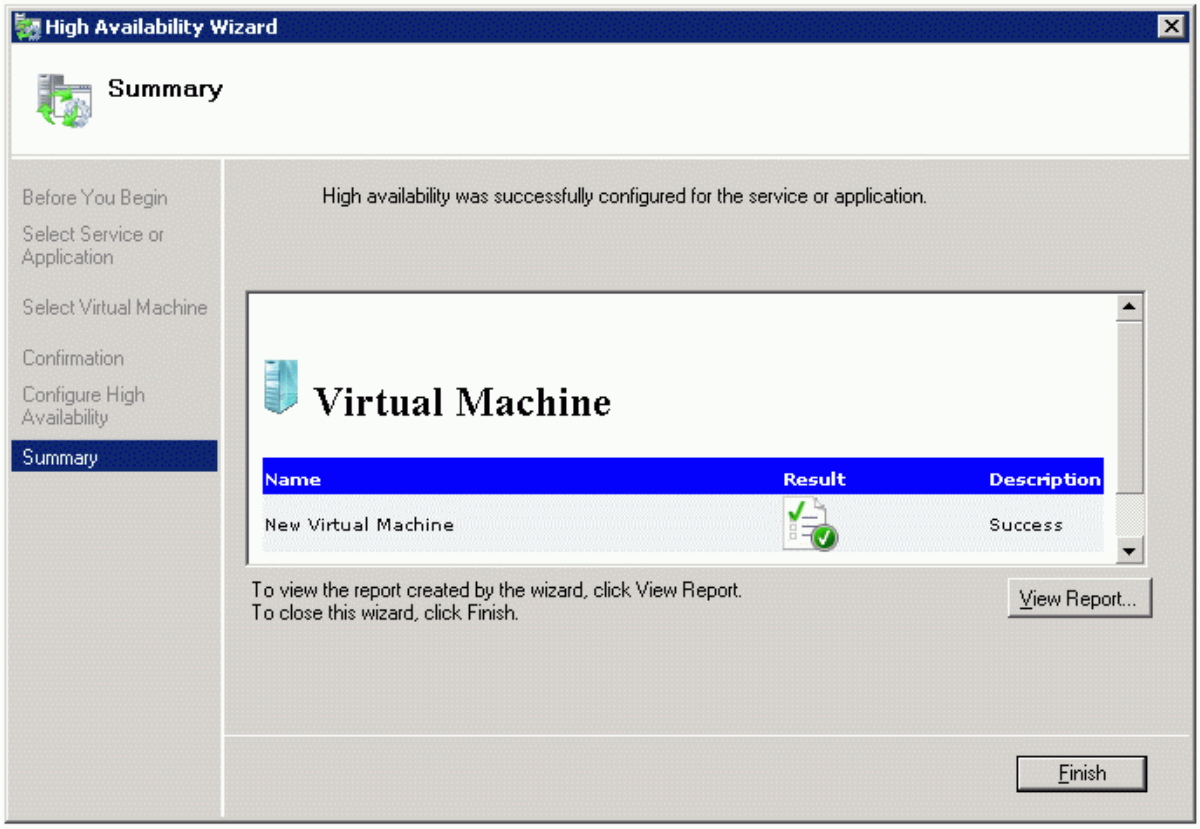
7. Click **Next** to continue.

8. Make sure that the previously selected options are correct. Click **Previous** button if something needs to be changed.



9. Click **Next** to continue.

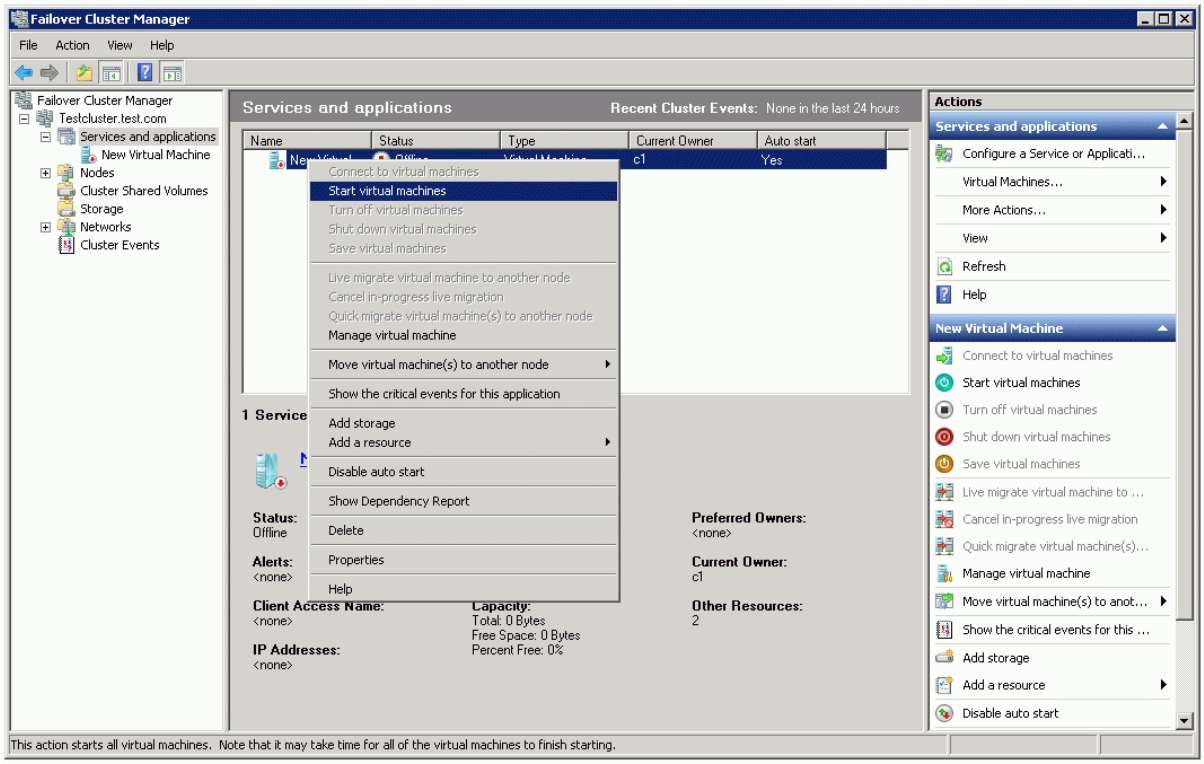
10. The process of configuring high availability for the virtual machine begins. When it is complete, a report with additional information is issued. Read it carefully.



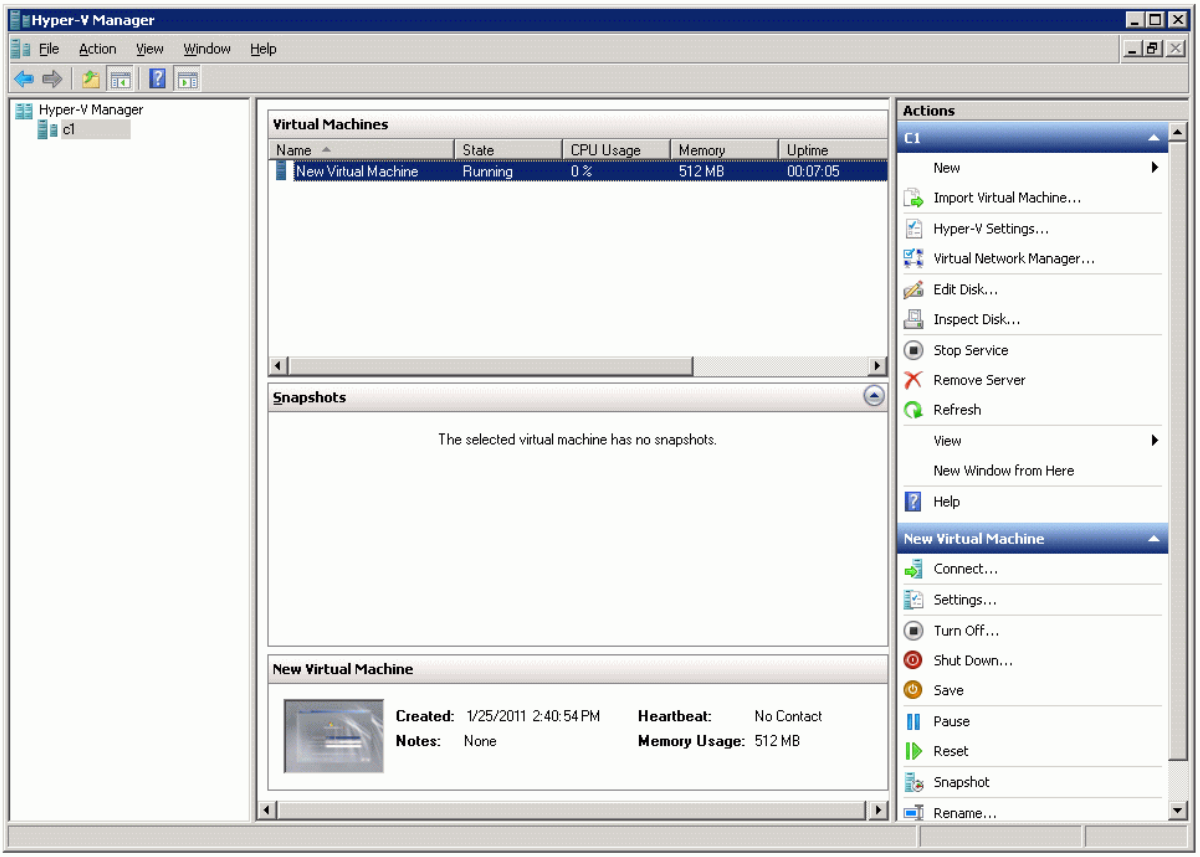
11. Click **Finish** to complete working with the wizard.

12. The **Failover Cluster Manager** window appears.

13. Right-click the added virtual machine, and click **Start virtual machines**.



14. You may also launch Hyper-V Manager and confirm that the virtual machine is running and operating successfully.



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