Using SANDeploy iSCSI SAN for Windows Server 2008 Clustering

Friday, October 8, 2010

www.sandeploy.com

Table of Contents

Overview

High-availability clusters (also known as HA Clusters or Failover Clusters) are computer clusters that are implemented primarily for the purpose of providing high availability of services which the cluster provides. They operate by having redundant computers or nodes which are then used to provide service when system components fail. Normally, if a server with a particular application crashes, the application will be unavailable until someone fixes the crashed server. HA clustering remedies this situation by detecting hardware/software faults, and immediately restarting the application on another system without requiring administrative intervention, a process known as Failover. As part of this process, clustering software may configure the node before starting the application on it. For example, appropriate file systems may need to be imported and mounted, network hardware may have to be configured, and some supporting applications may need to be running as well.

A SCSI-3 compatible external storage is necessary for using Windows Server 2008 Clustering. SANDeploy offers a SCSI-3 compatible iSCSI storage service, that enable to create an external shared storage in Microsoft Windows environment without extra hardware needed.

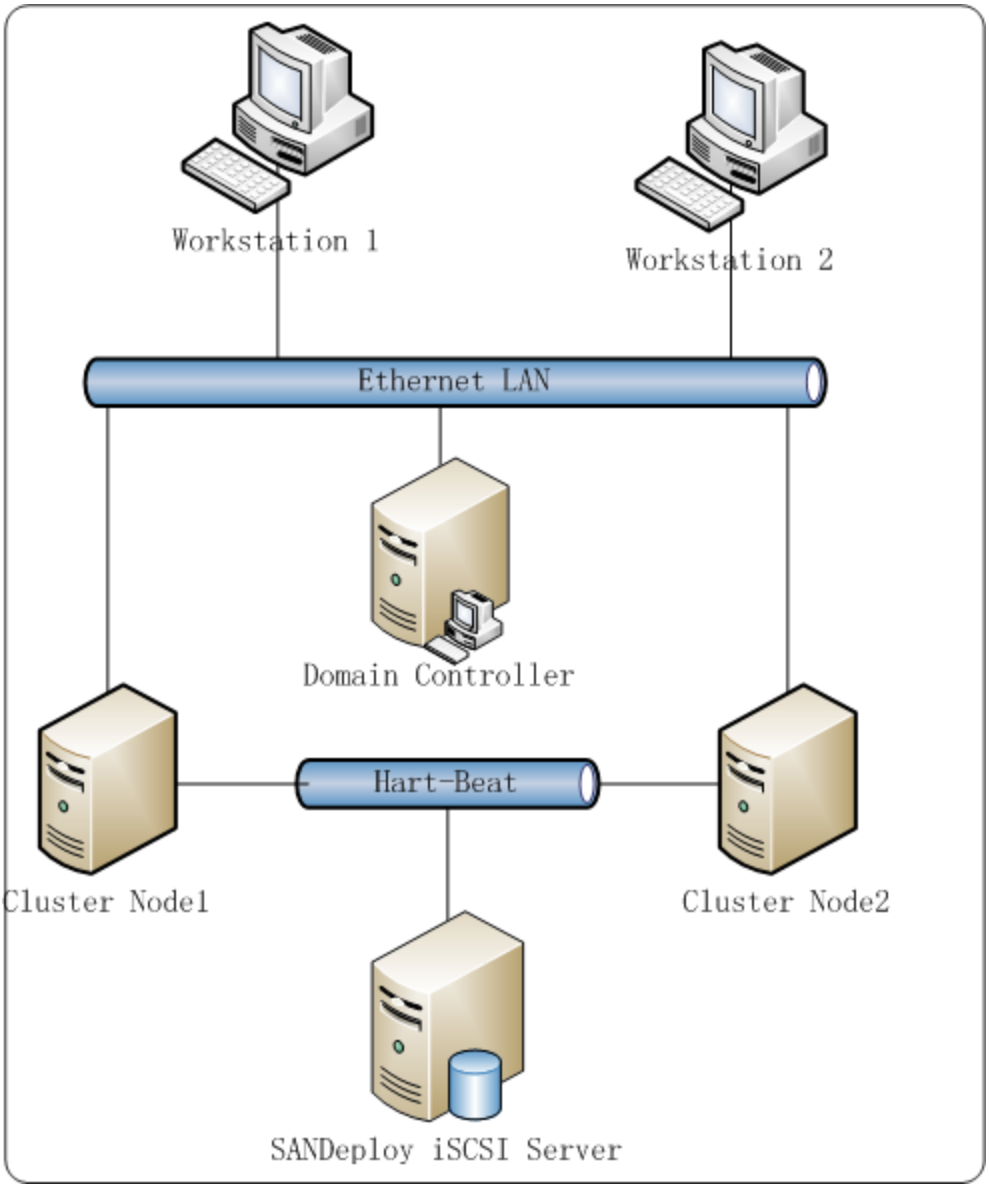


Figure 1, SANDeploy Offers shared-storage array for Windows Server 2008 Cluster

This document gives users detailed step-by-step instructions on configuring SANDeploy iSCSI SAN for Windows Server 2008 or Windows Server 2008 R2 failover clusters. Failover clustering needs two or more computers use a few external storages such as iSCSI disks. With SANDeploy, you can quickly create a series of shared disks for clustering. Before to do so, prepare the following three computers or virtual machine in Hyper-v:

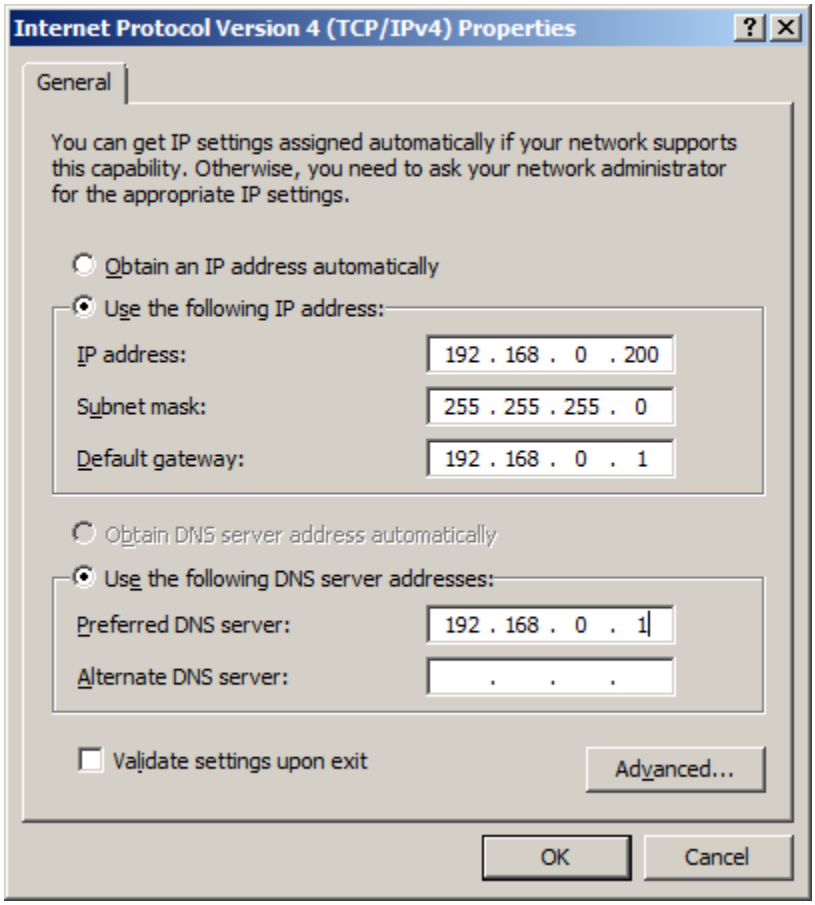
Name	IP Address	Detail
08DC	192.168.0.100 / 192.168.100.100	Domain Controller
08Node1	192.168.0.101 / 192.168.100.101	Failover Node 1
08Node2	192.168.0.102 / 192.168.100.102	Failover Node 2
SANServer	192.168.0.3 / 192.168.100.3	SANDeploy Server

Configuring on Domain Controller

Network Adapter

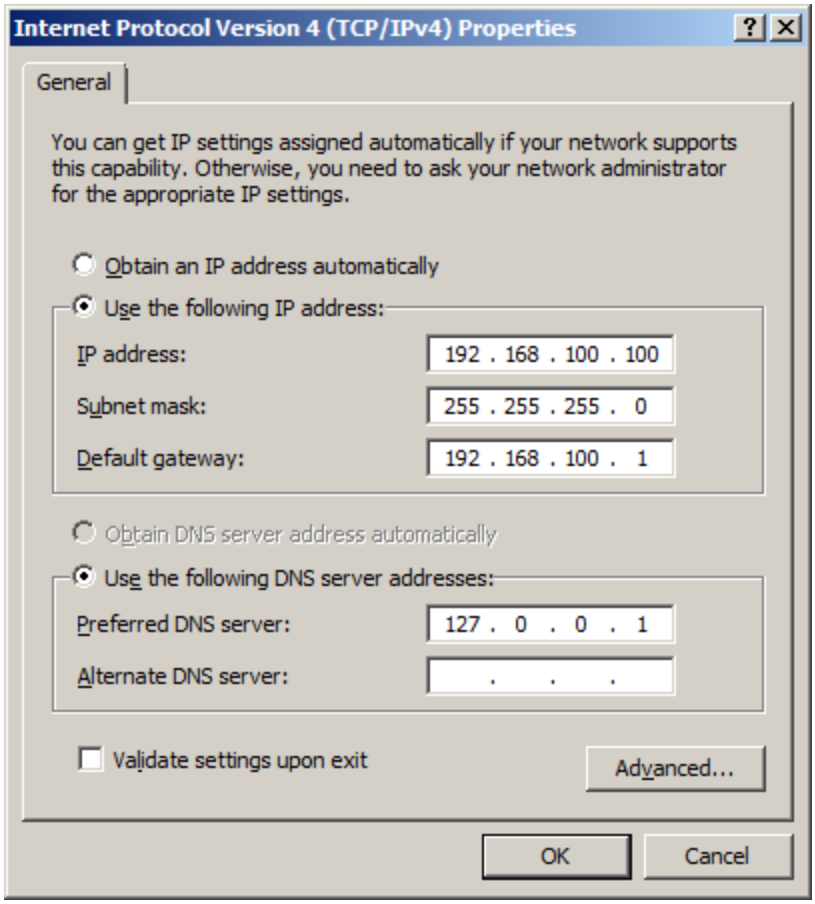
For working in clustering environment, the network adapter must be assigned a static IP address. Select the **Internet Protocol Version 4(TCP/IPv4)** and then press the **Properties** button, the **Internet Protocol Version 4 (TCP/IPv4)** dialog is shown. As Active Directory requires DNS, an address must be provided, in this case we can specify itself IP address. DNS will be installed later after installed Active Directory.

Set the first network adapter, this adapter will connect to external network.



Type the IP address and DNS server address.

Set the second network adapter, this adapter will connect to internal network.

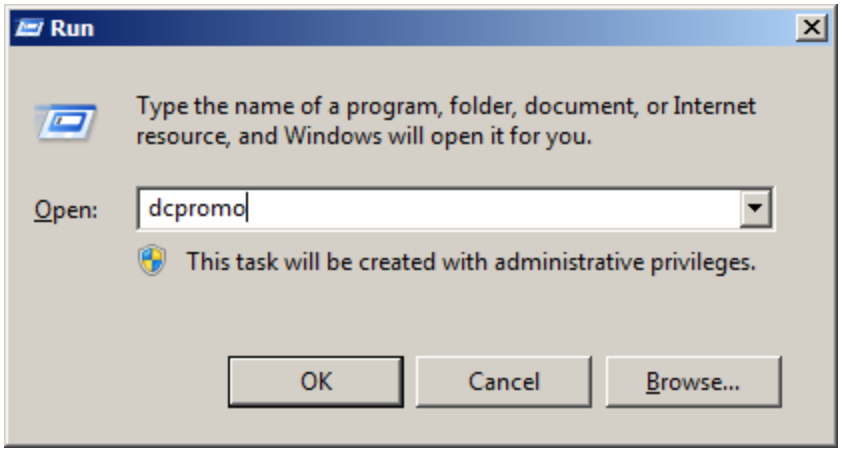


Type the IP address and DNS server address.

Press the **OK** button to continue.

Install Active Directory

Select **Start->Run** and type **dcpromo** in the **Open** input box.

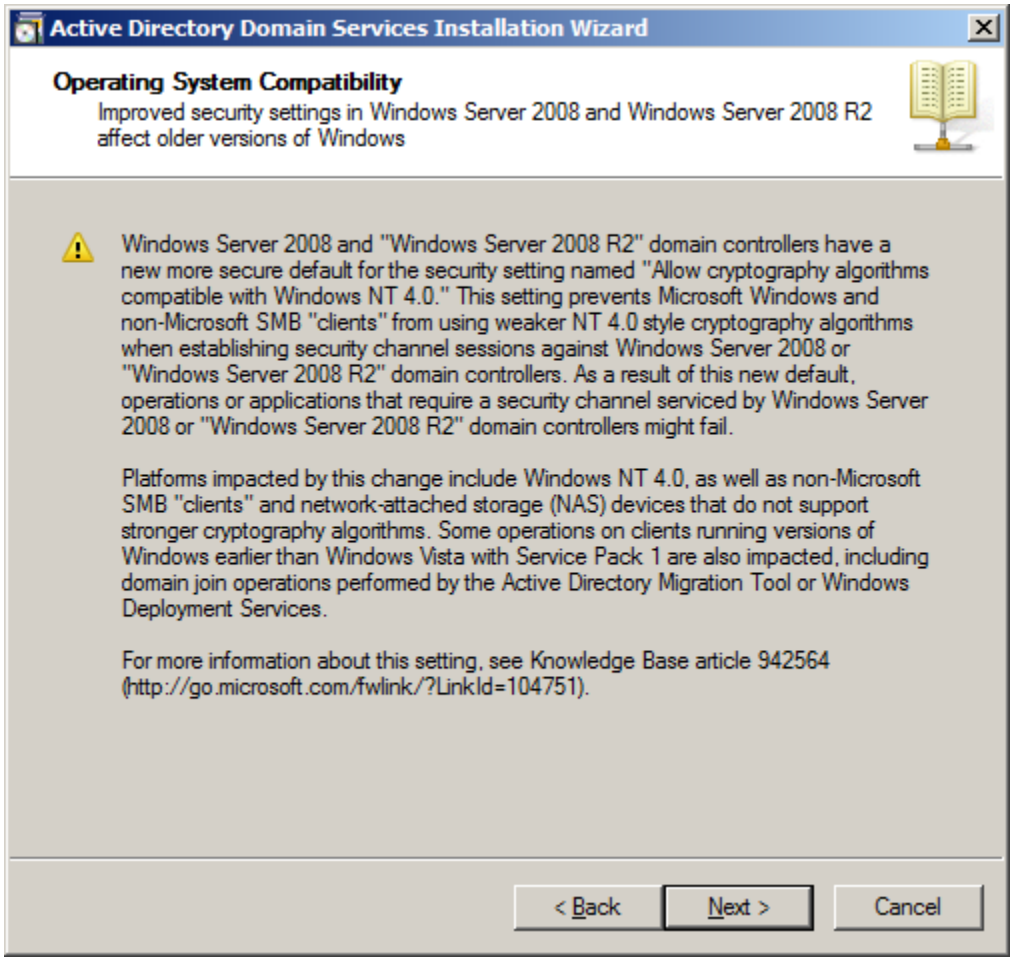


Press the **OK** button to continue.

The **Active Directory Domain Services Installation Wizard** appears.

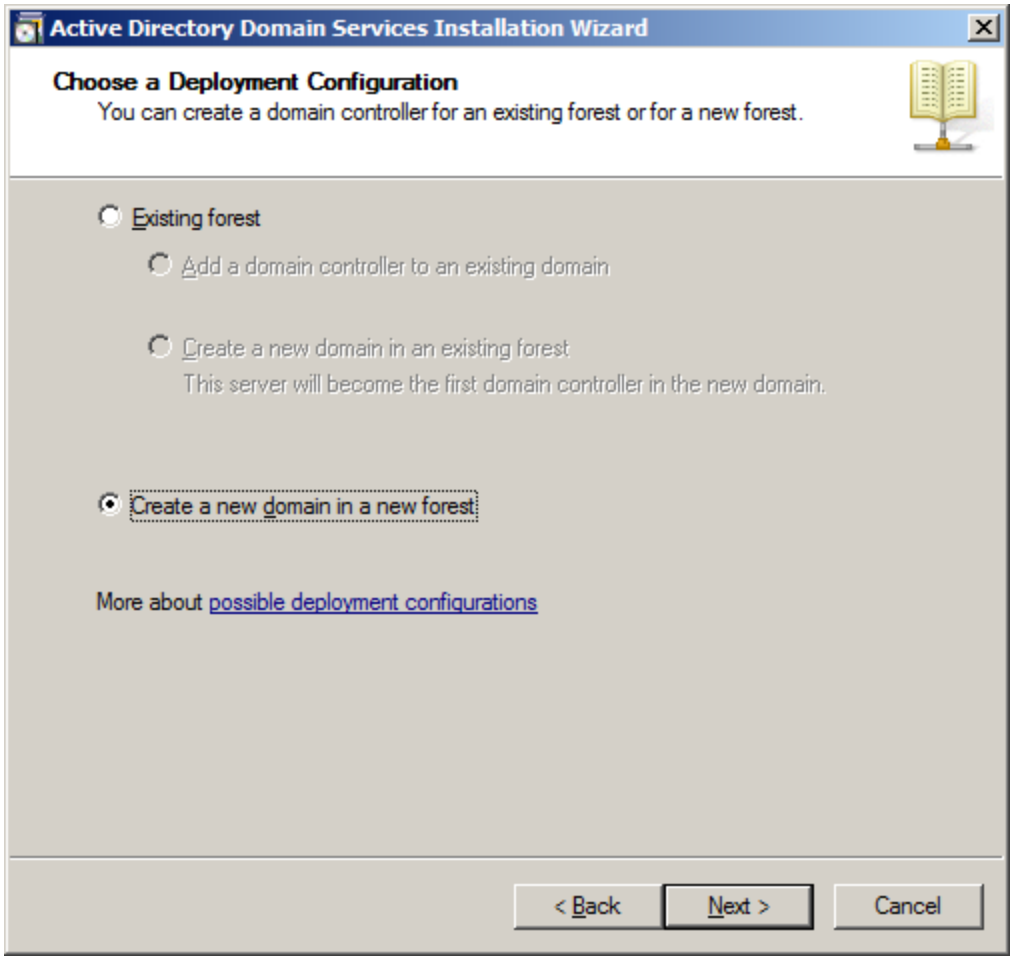
Press the **Next** button to continue.

The **Active Directory Domain Services Installation Wizard** is shown, before to do next, please read the introducing instructions carefully.



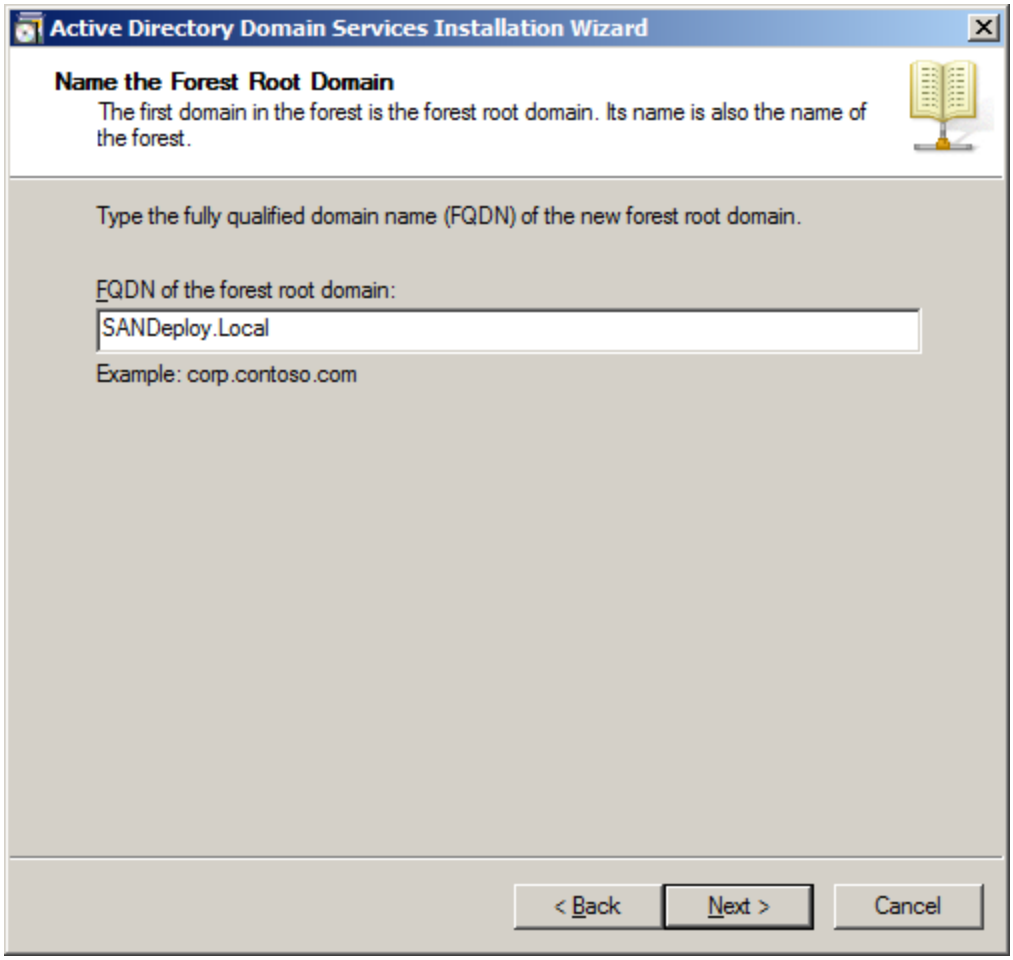
Press the **Next** button to continue.

Because we are creating Active Directory, Select the **Create a new domain in a new forest** option.



Press the **Next** button to continue.

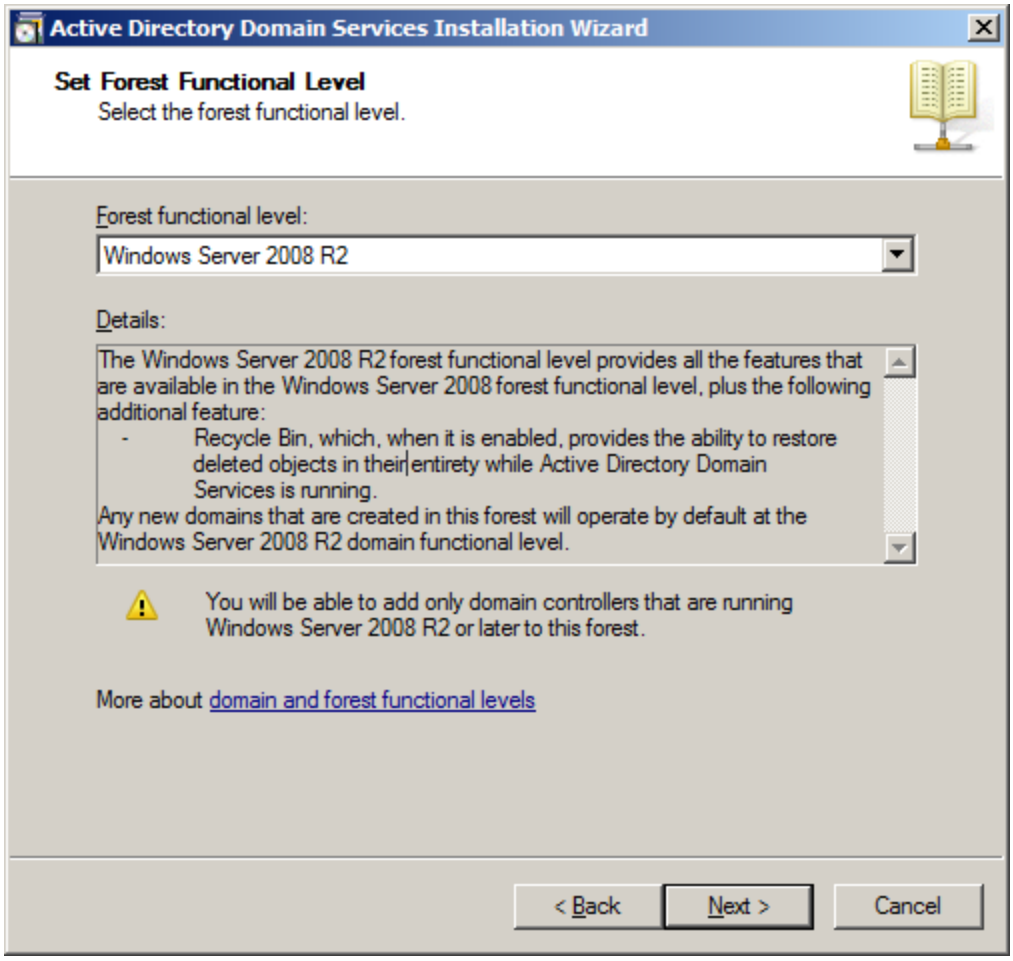
Specify the name of Forest Root Domain.



Type the domain name.

Press the **Next** button to continue.

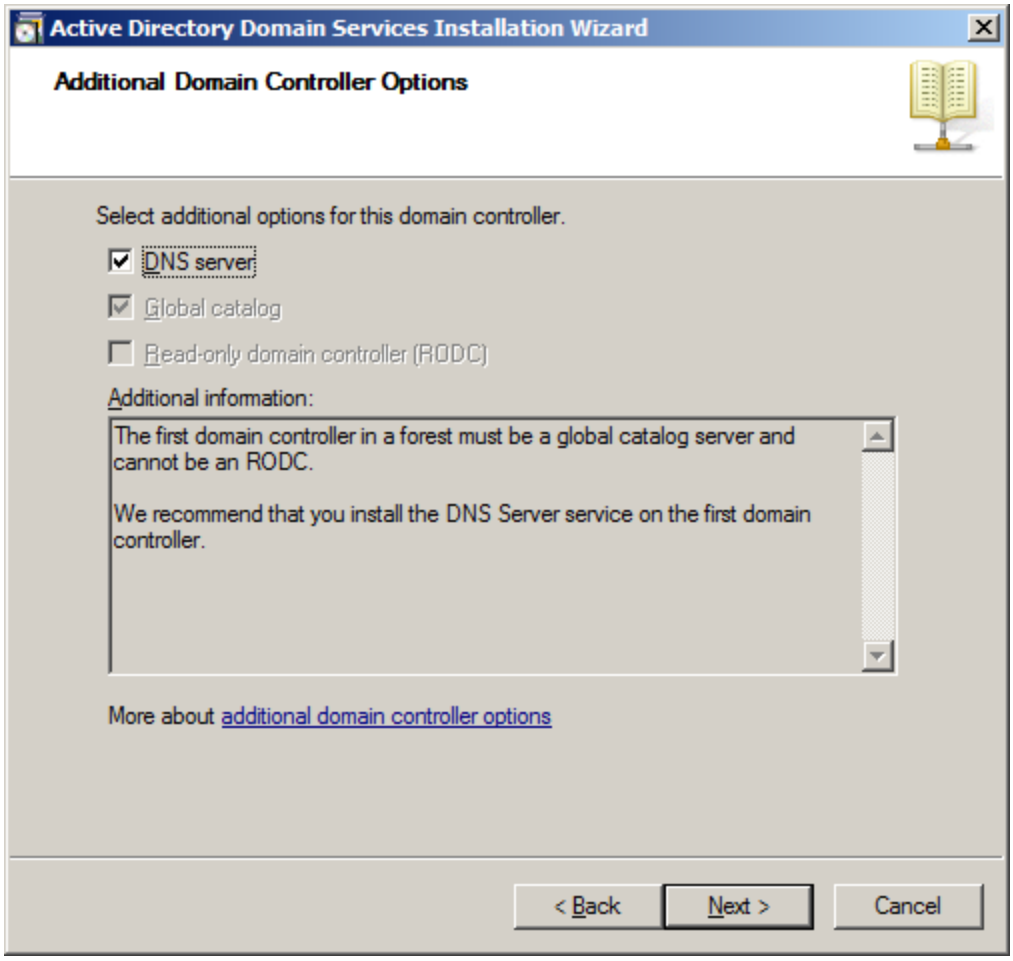
Select the Forest functional level.



Select Windows Server 2008 or Windows Server 2008 R2 if building Windows Server 2008 R2 clustering.

Press the **Next** button to continue.

Select the additional options for this domain controller.



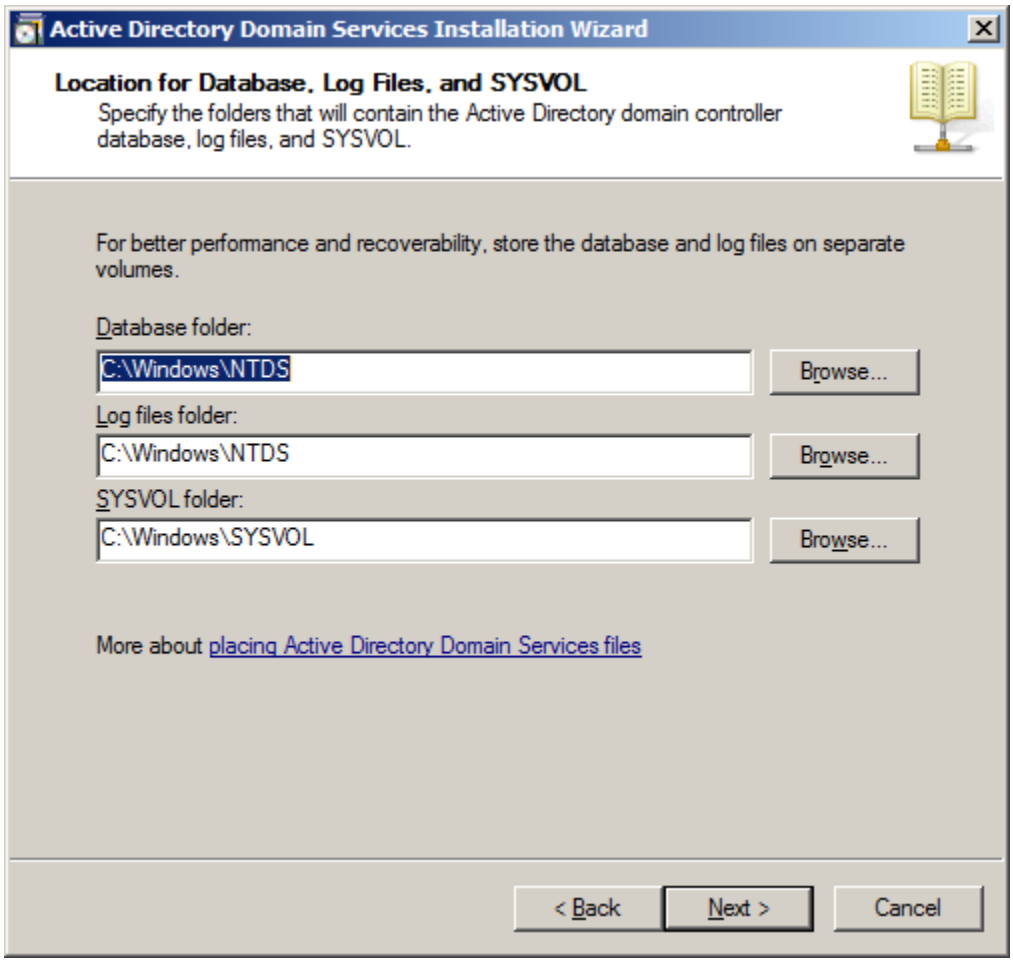
Keep the selection of the **DNS Server**.

Press the **Next** button to continue.

The **Active Directory Domain Services Installation Wizard** appears.

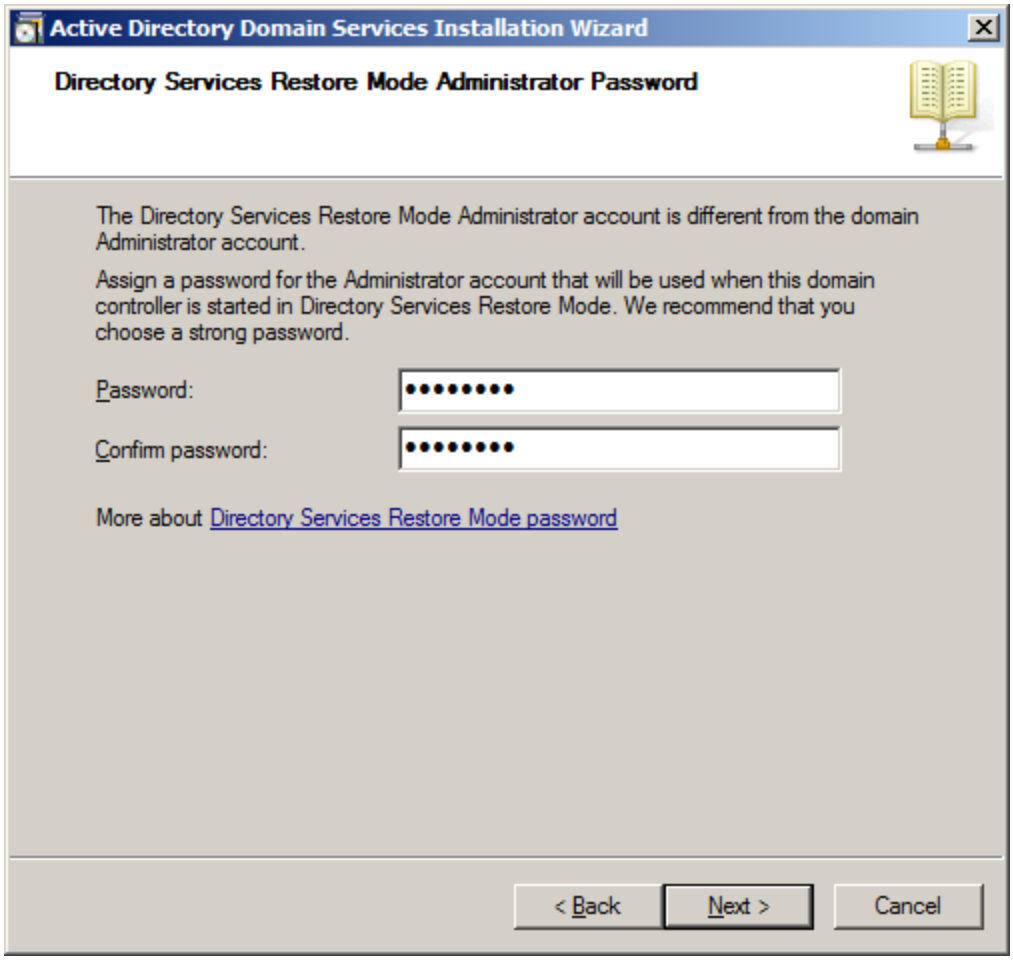
Press the **Yes** button to continue.

Customize the directories for Database folder, Log files folder and SYSVOL folder.



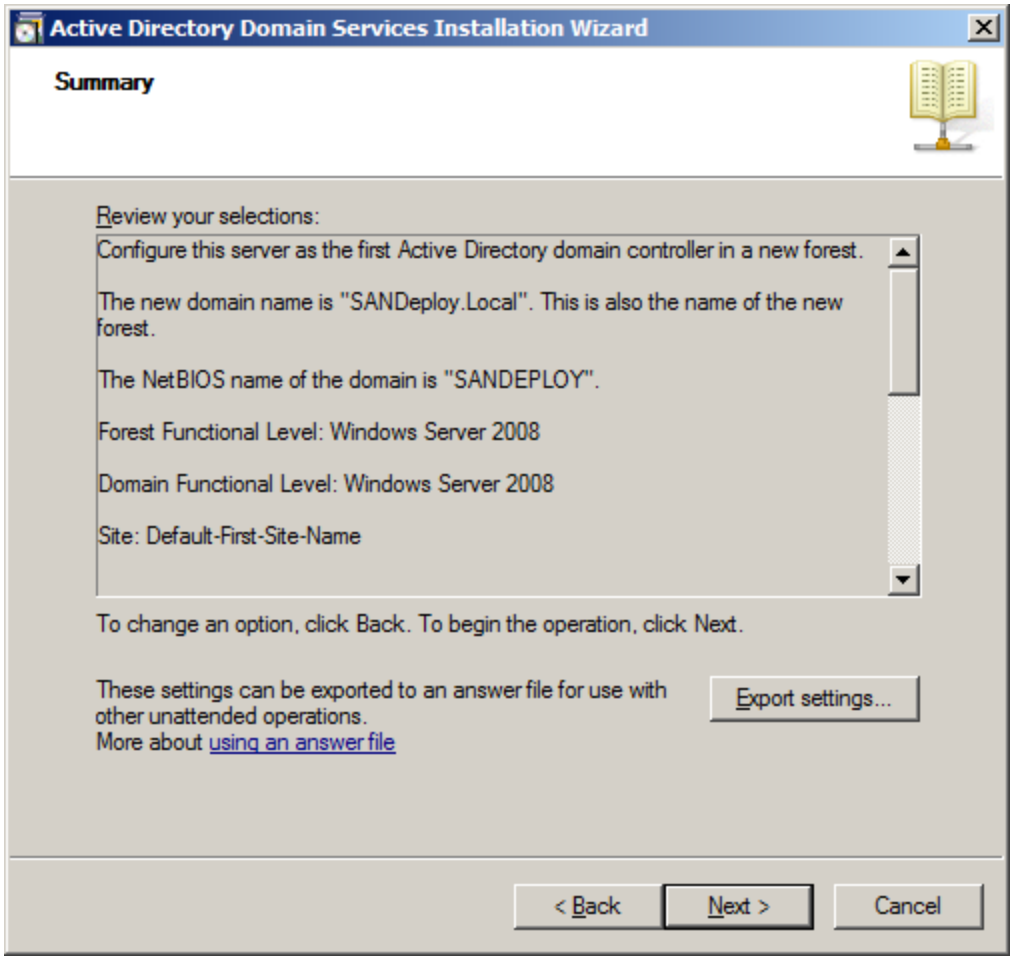
Press the **Next** button to continue.

Specify the **Directory Services Restore Mode Administrator Password**.



Press the **Next** button to continue.

Check all of the parameters are correct; press the **Back** button if any change is required.

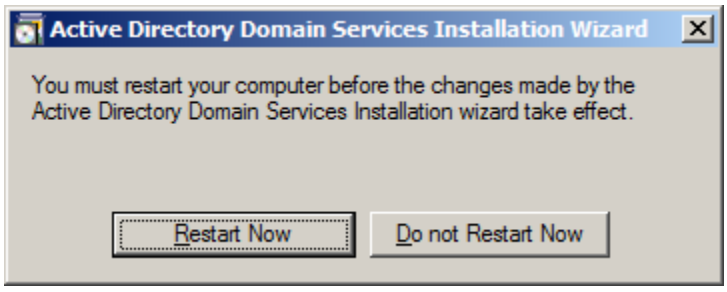


Press the **Next** button to continue.

After a while, Active Directory Domain Services Installation is completed.

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

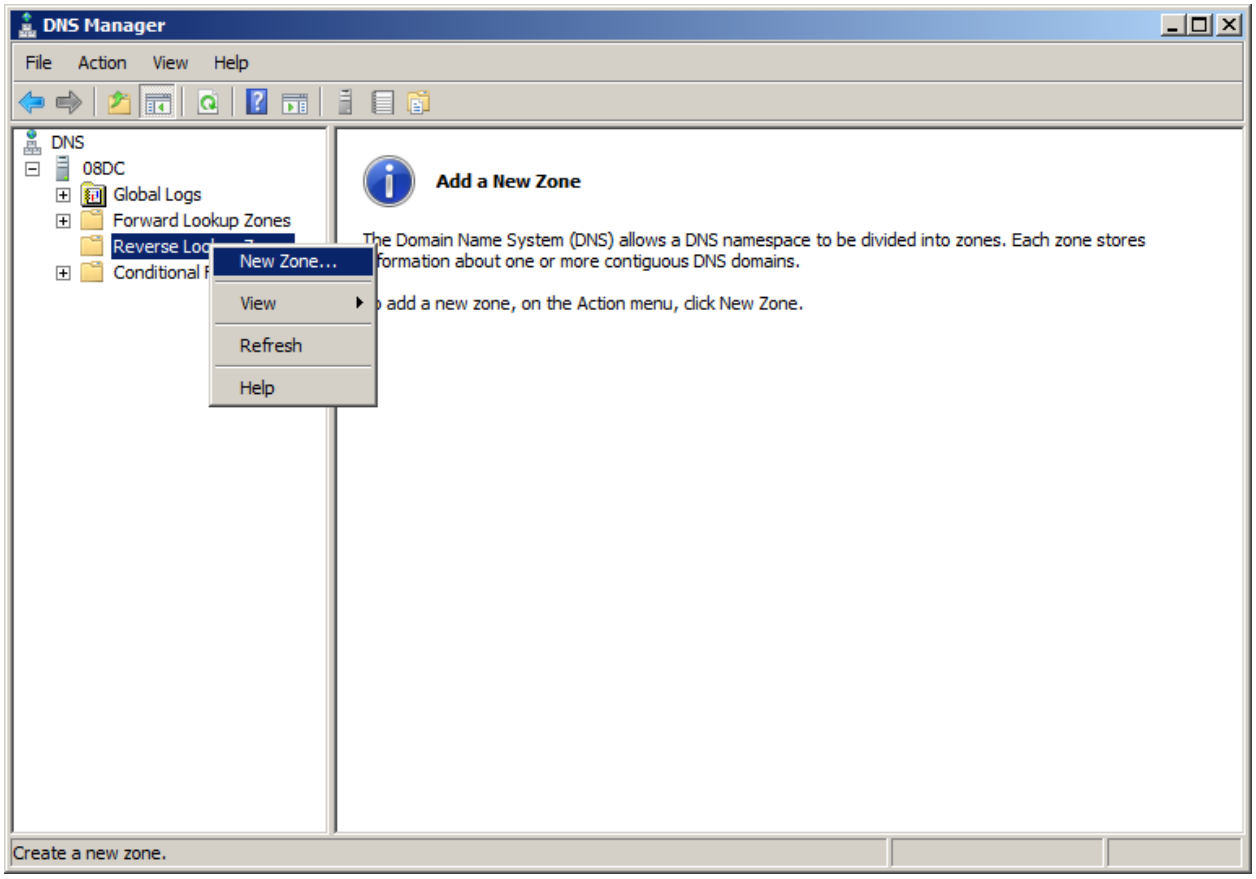
Restart is required.



Press the **Restart Now** button to restart the computer.

Install DNS

Use administrator role to log on to the Domain controller machine and launch the **DNS Manager**.

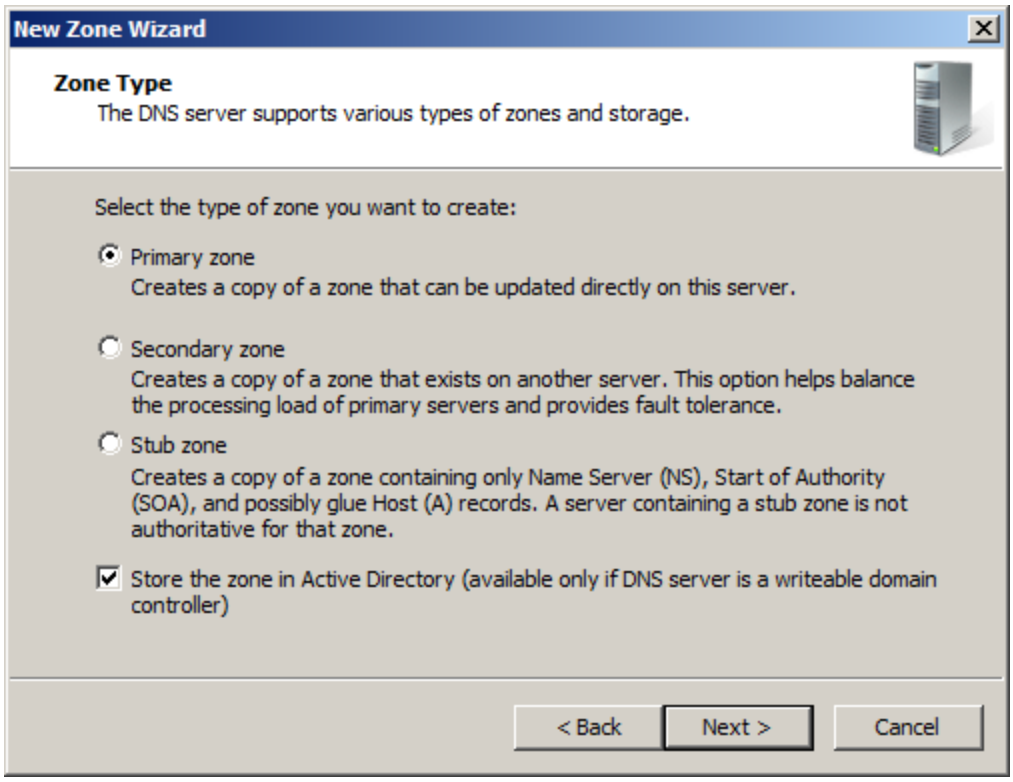


Right click on the **Reverse Lookup Zone** in the left tree view and then select **New Zone…** menu item.

The **New Zone Wizard** appears.

Press the **Next** button to continue.

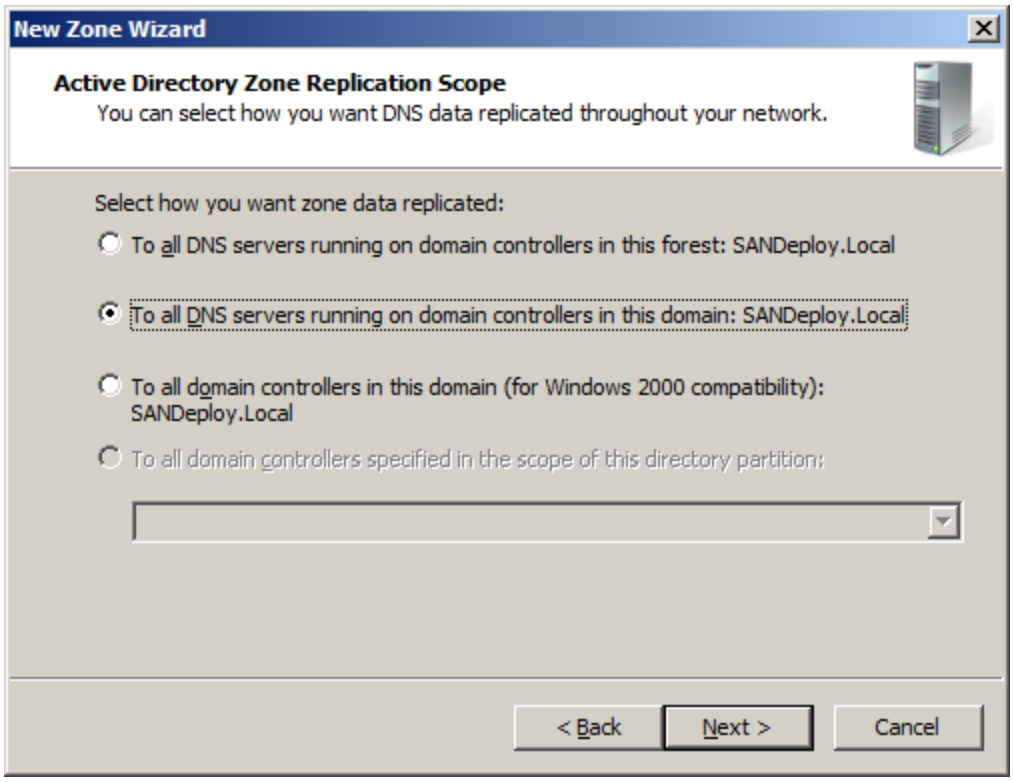
Select zone type.



Select the **Primary zone** and keep the selection of **Store the zone in Active Directory**.

Press the **Next** button to continue.

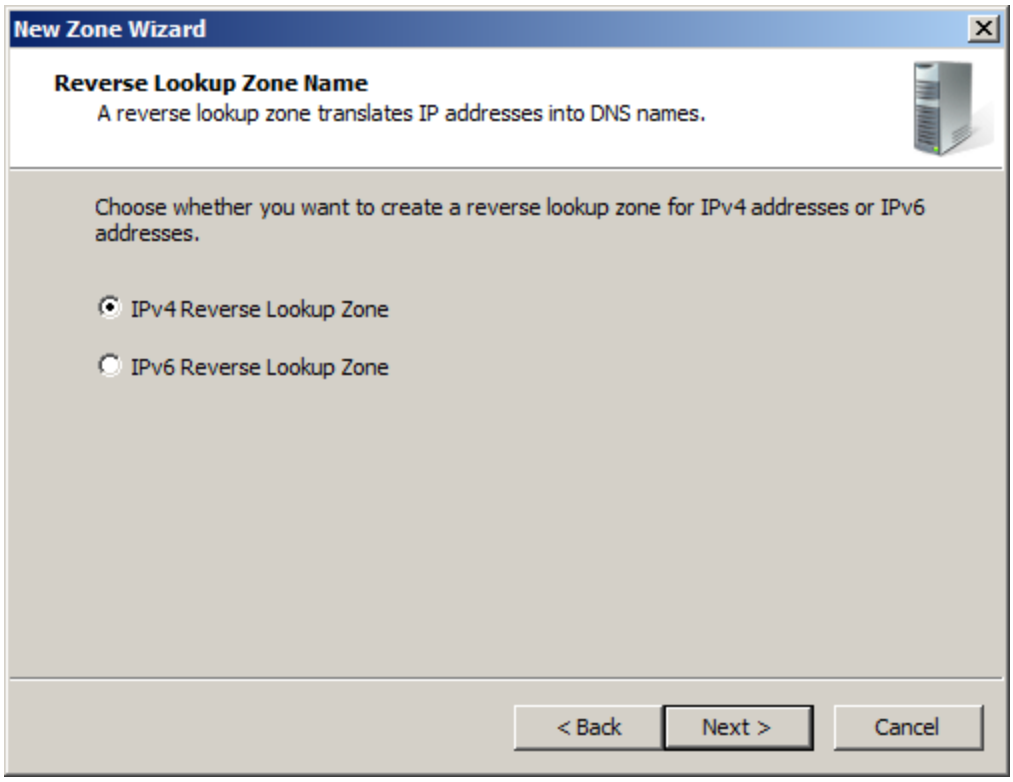
Select zone replication scope.



Keep the default selection.

Press the **Next** button to continue.

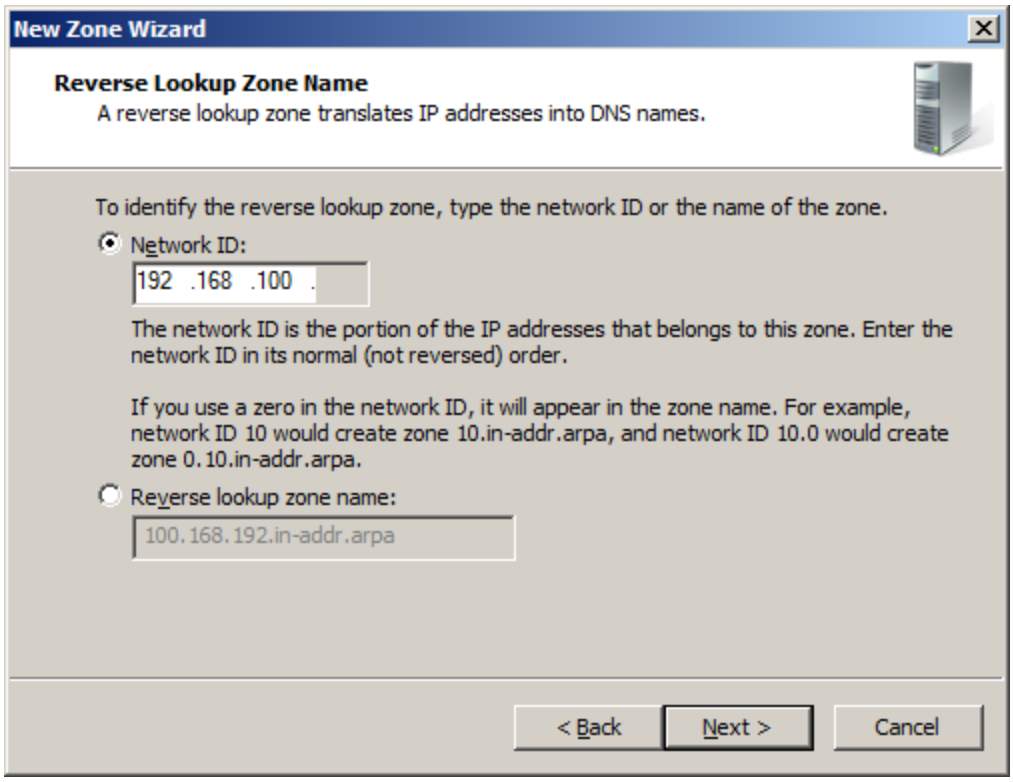
Choose reverse lookup zone name.



Select **IPv4 Reverse Lookup Zone**.

Press the **Next** button to continue.

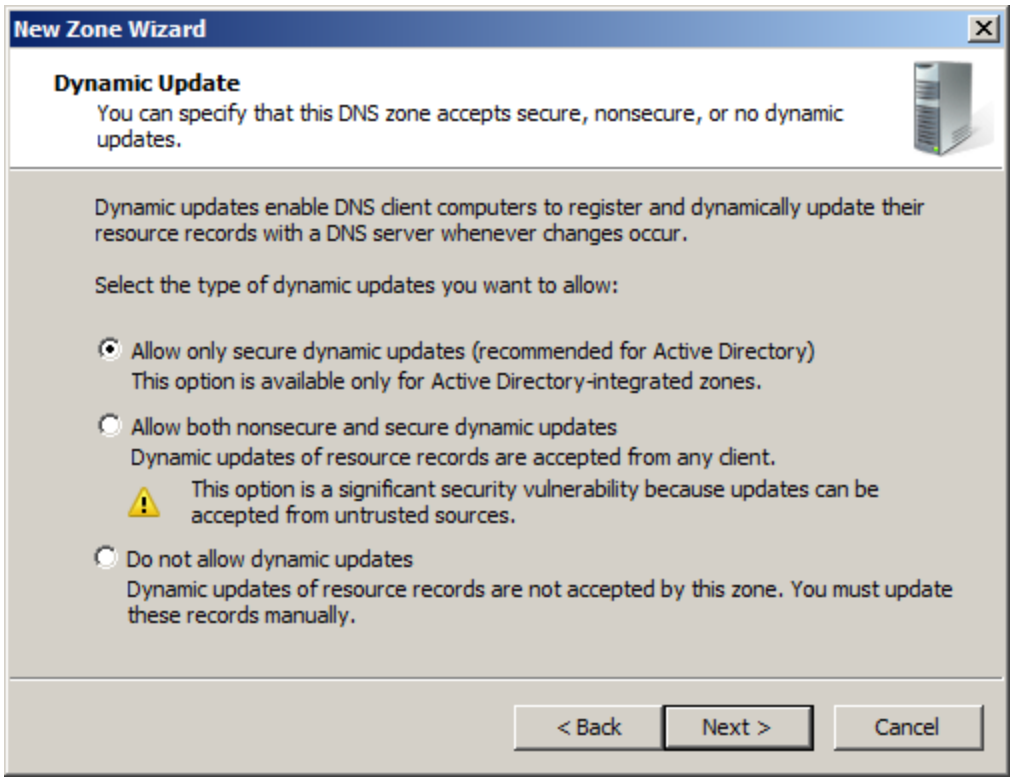
Type the network ID or zone name.



Select the **Network ID** and then type IP address in the **Network ID**.

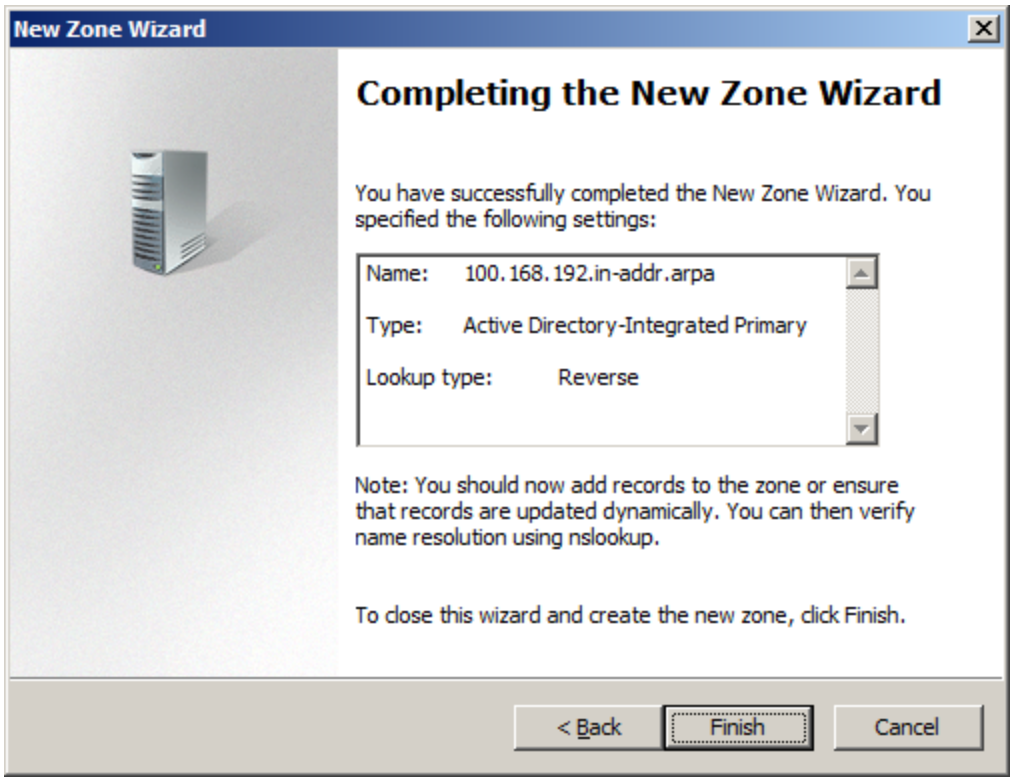
Press the **Next** button to continue.

Specify dynamic update options.



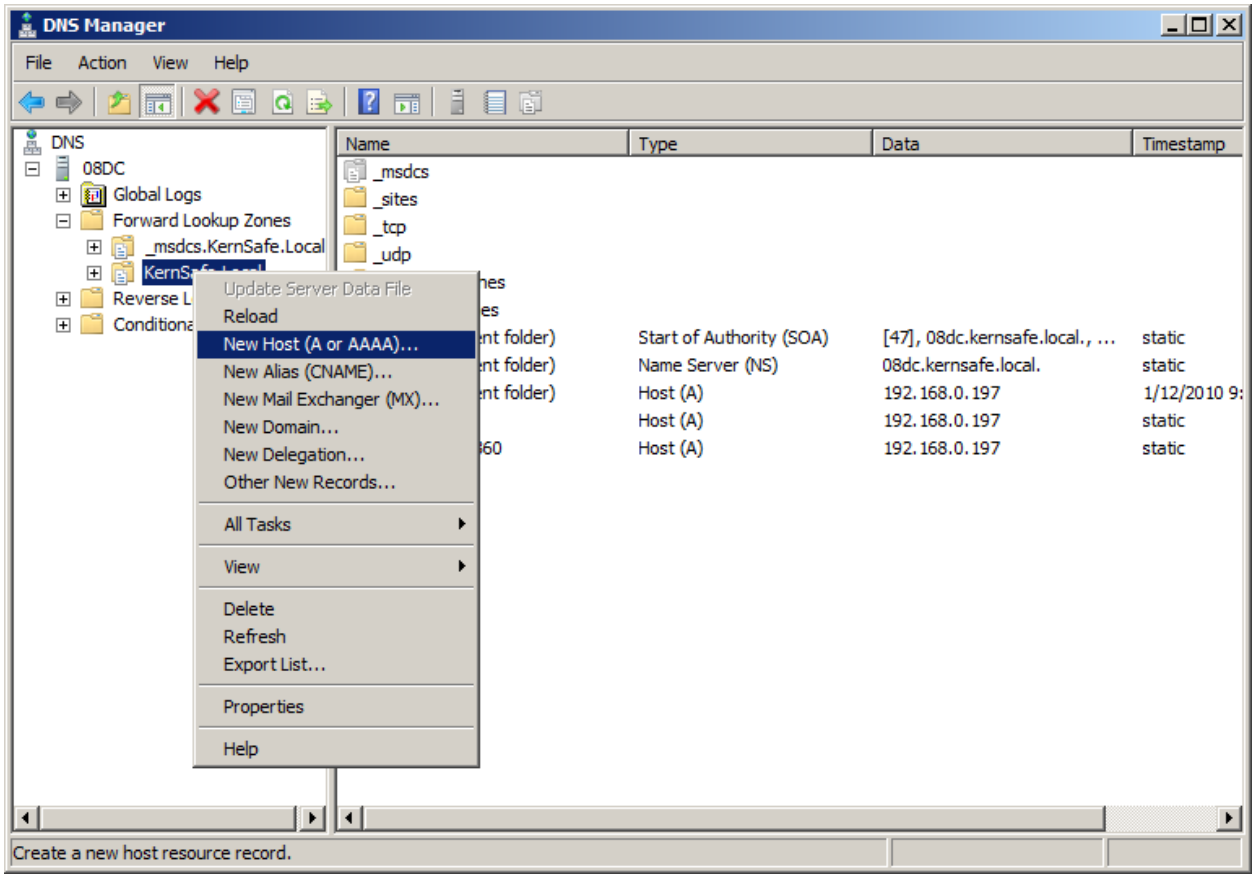
Press the **Next** button to continue.

Check all the parameters all required, press the **Back** button if any change is required.

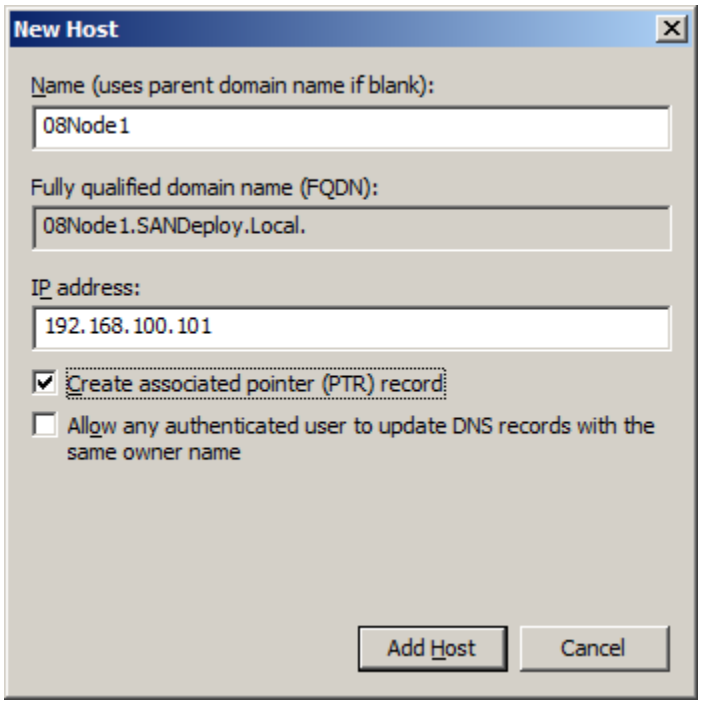


Press the **Finish** button to close the **New Zone Wizard**.

Right click on the **SANDeploy.Local** in the left tree view of **DNS Manager**, then select **New Host (A or AAA)…** menu item.



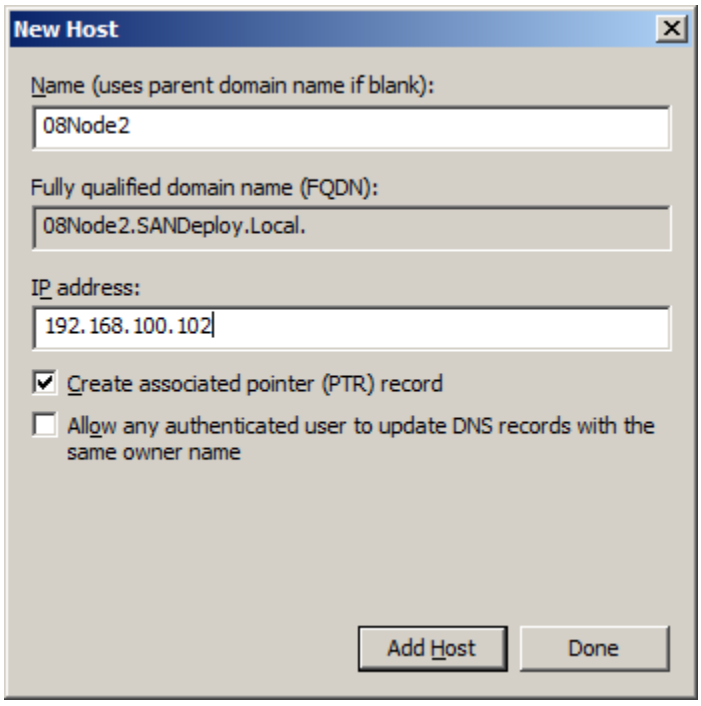
The **New Host** dialog appears.



Type host name in the **Name** and IP address in the **IP address** field for the **08Node1** machine.

Check the **Create associated pointer (PTR) record** checkbox.

Press the **Add Host** button to add 08Node1 DNS record.



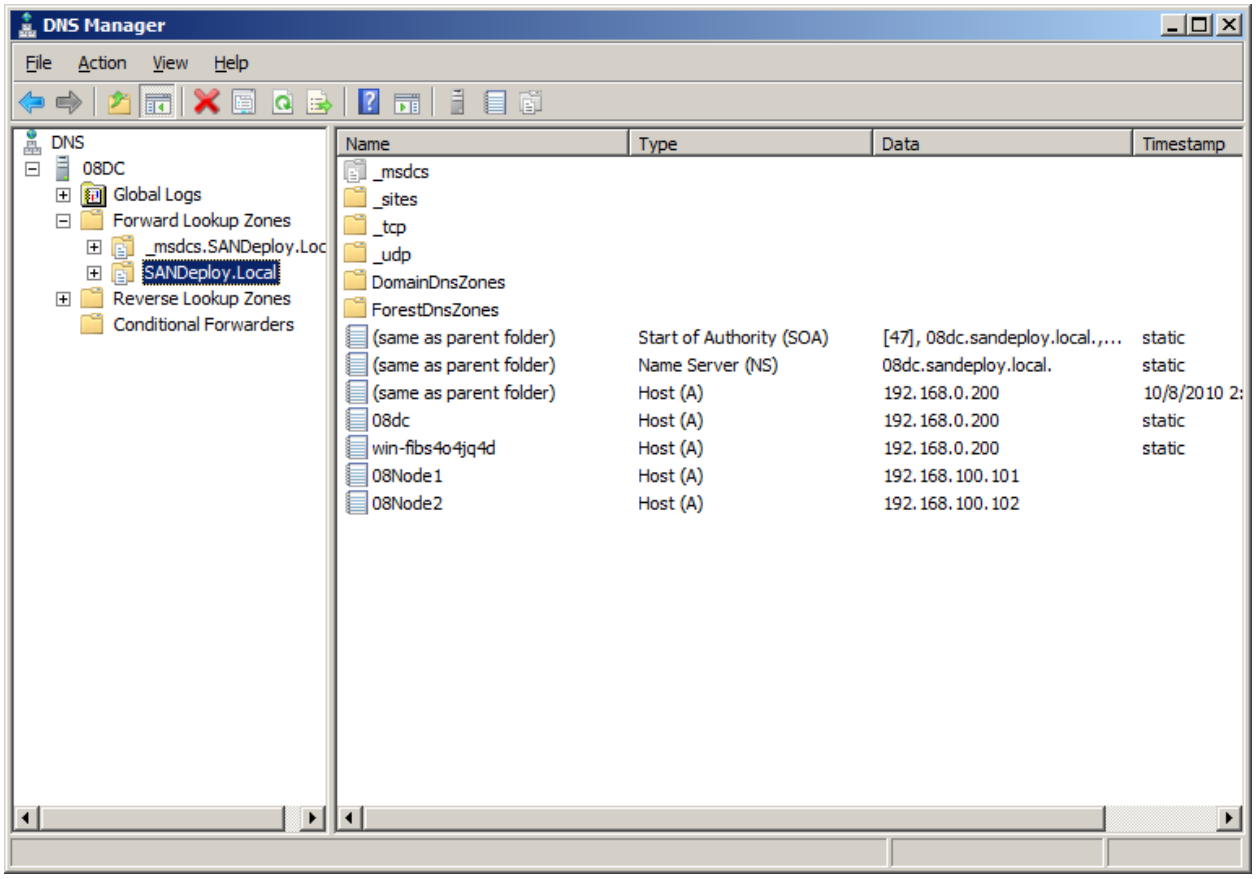
Type host name in the **Name** and IP address in the **IP address** field for the **08Node2** machine.

Check the **Create associated pointer (PTR) record** checkbox.

Press the **Add Host** button to add 08Node2 DNS record.

Press the **Done** button to close **New Host** dialog.

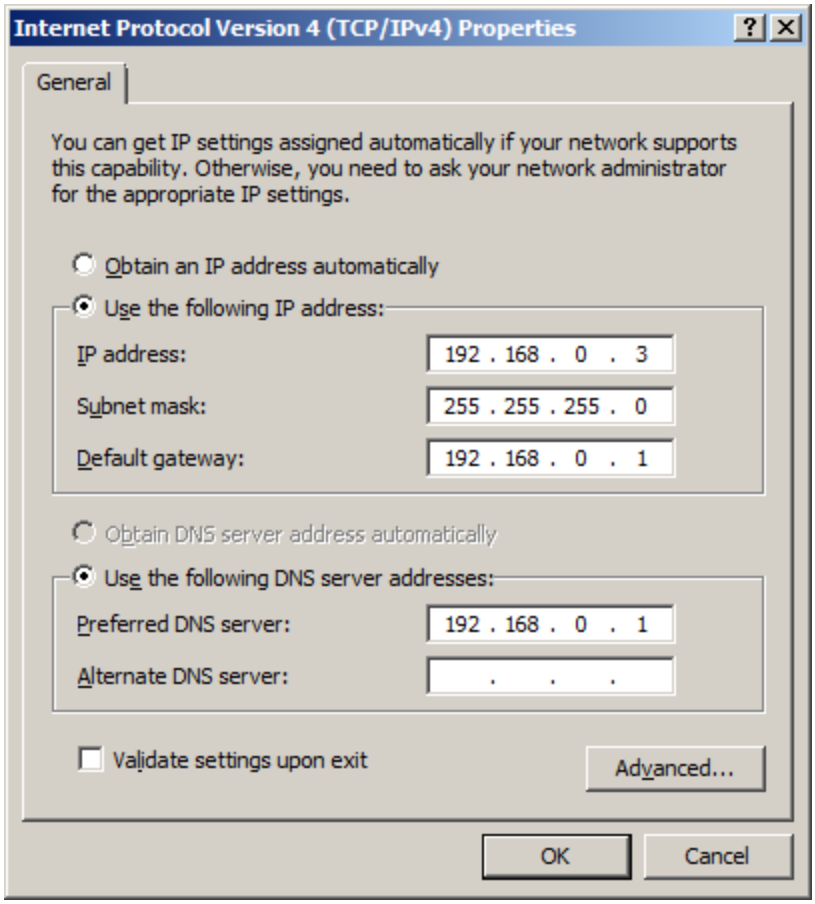
Now we will see the two records in the **DNS Manager**.



Configuring on SANDeploy Server

Network Adapter

For working in clustering environment, the network adapter must be assigned a static IP address. Select the **Internet Protocol Version 4(TCP/IPv4)** and then press the **Properties** button, the **Internet Protocol Version 4 (TCP/IPv4)** dialog appears.

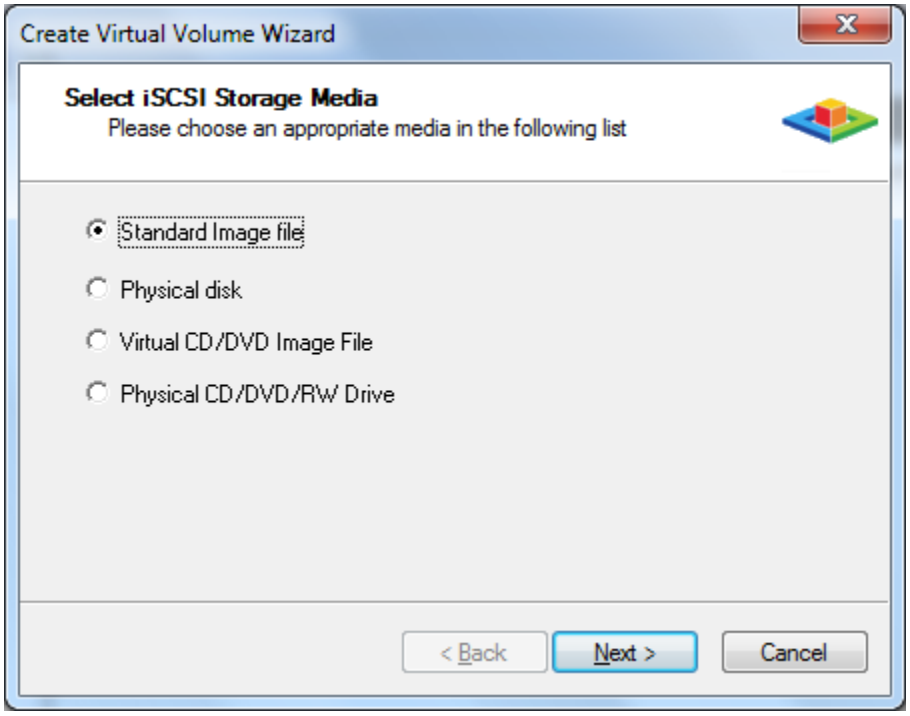


Set the second network adapter of Domain Controller as shown in the figure. IP address is set as 192.168.100.3 and Subnet mask is set as 255.255.255.0.

Preparing Quorum Volume

Click Start->Administrative Tools->SANDeploy Server (SANDeploy Boot Server) to launch the **SANDeploy management console**, right click on the **Virtual Volumes** tree node, and then select the **Create Virtual Volume…** menu item. the **Create Virtual Volume Wizard** appears.

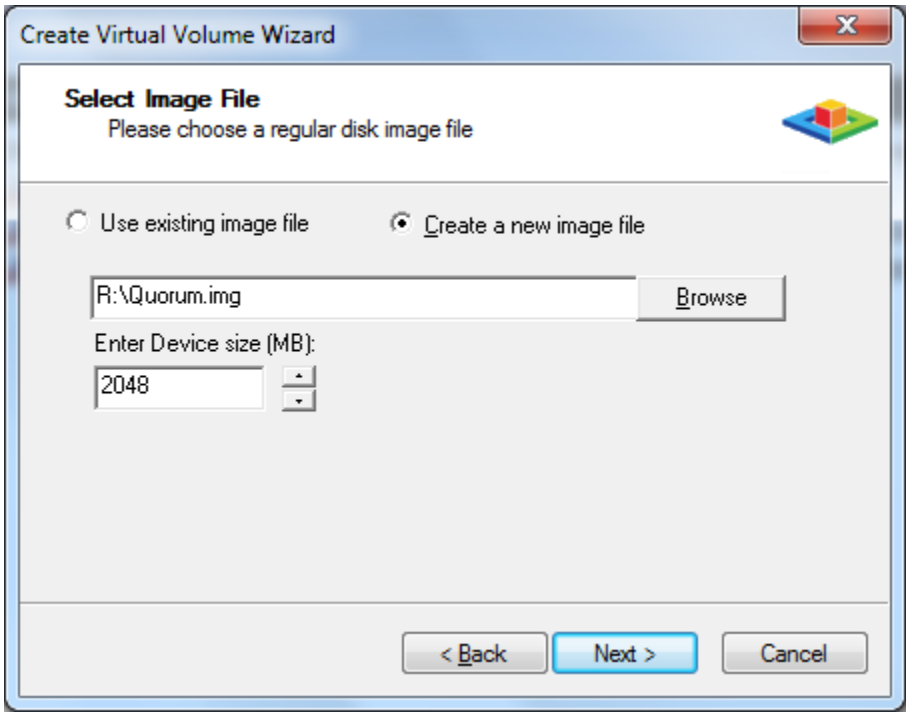
Select Storage Media type



Choose **Standard Image file**.

Press the **Next** button to continue.

Select image file.

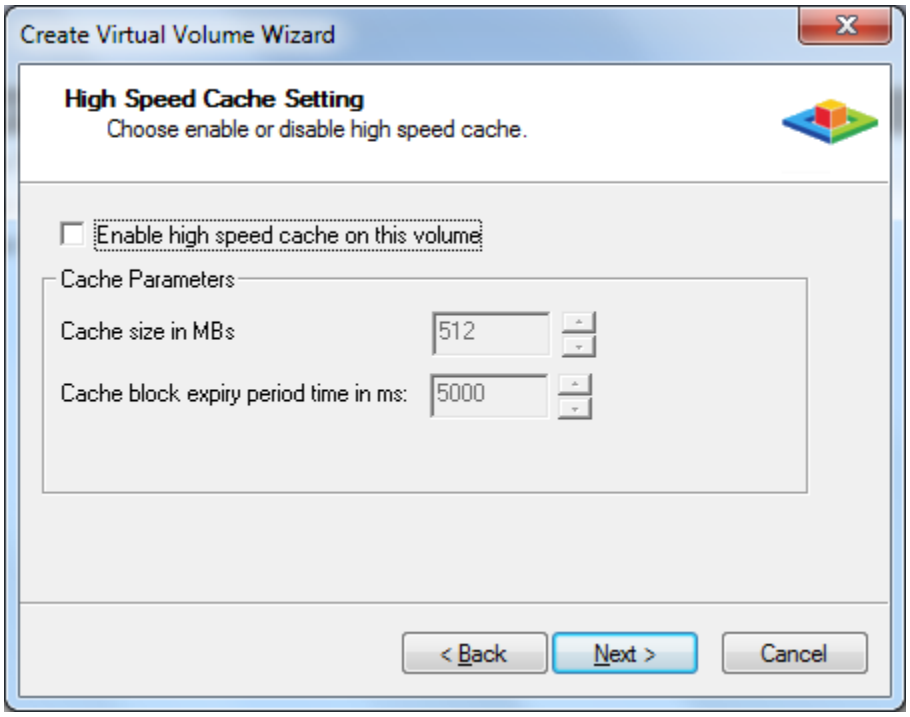


Select **Create a new image file** or **Use existing image file** if you already have a one.

Specify the device size.

Press the **Next** button to continue.

Set cache settings.



Cache option is optionally for this project.

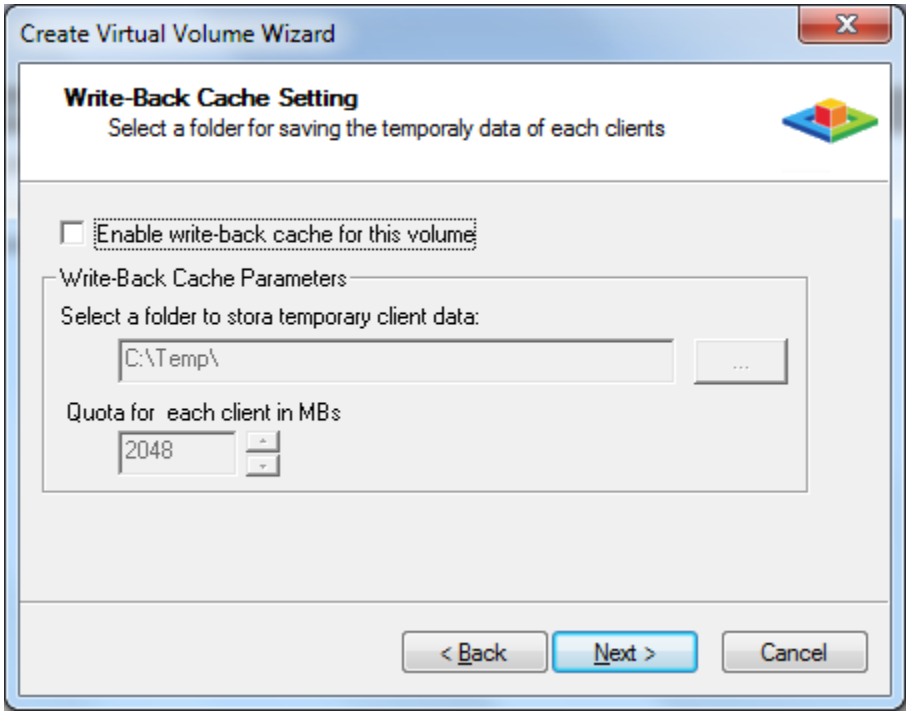
Choose or not choose **Enable high speed cache on this volume**.

Specify Cache size.

Specify Cache block expiry period time.

Press the **Next** button to continue.

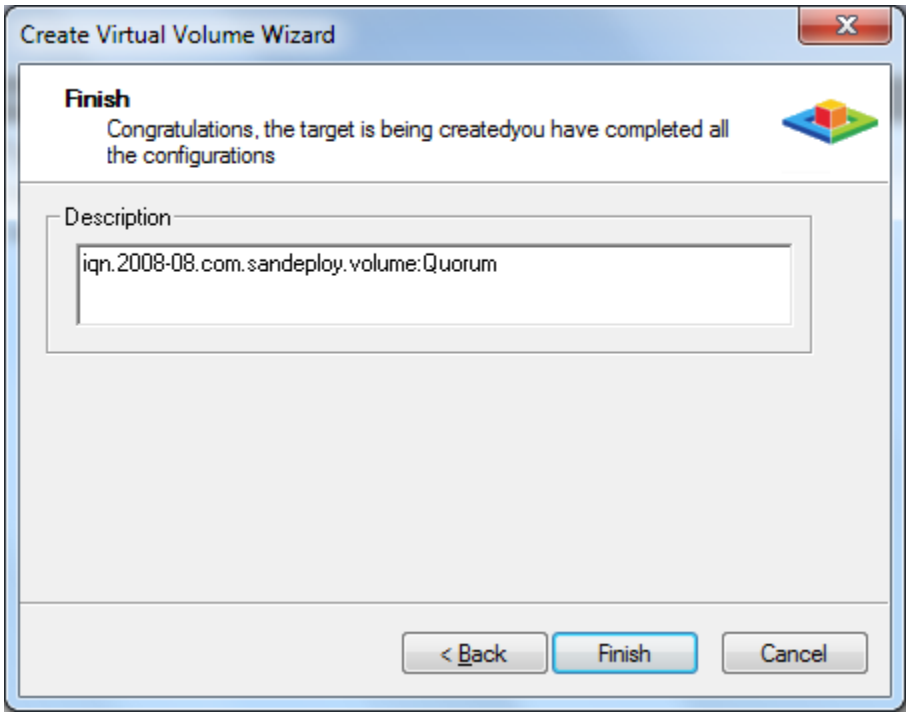
Set Write-Back Cache settings.



This option has no sense to use on this session.

Do not select **Enable write-back cache on this volume**.

Press the **Next** button to continue.



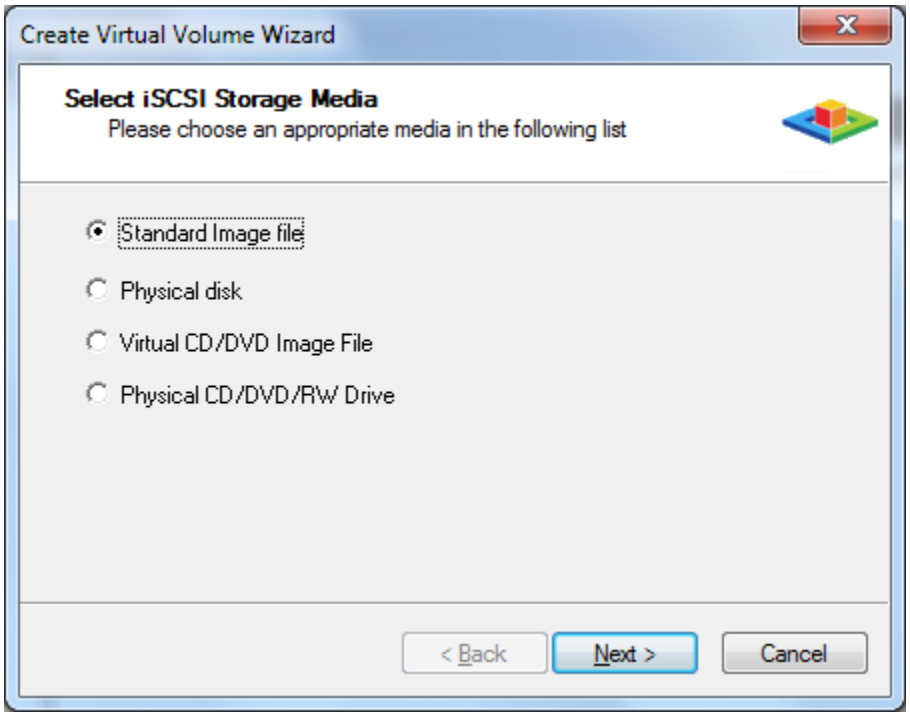
Type description in the **Description** field.

Press the **Finish** button to complete quorum virtual volume creating.

Preparing Standard Volume

In the **SANDeploy management console**, right click on the **Virtual Volumes** tree node, and then select the **Create Virtual Volume…** menu item. the **Create Virtual Volume Wizard** appears.

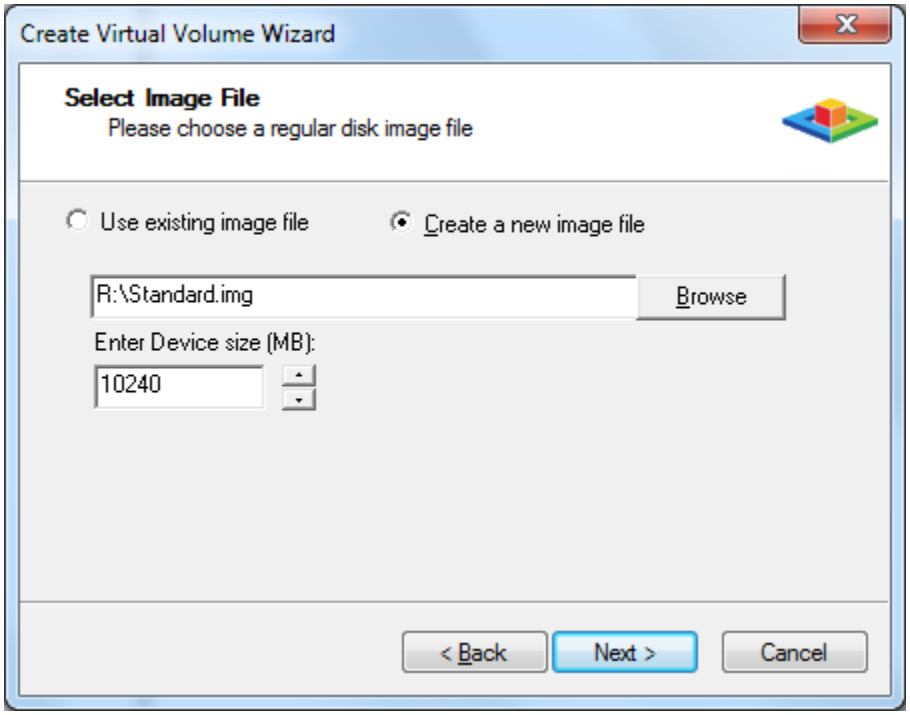
Select Storage Media type



Choose **Standard Image file**.

Press the **Next** button to continue.

Select image file.

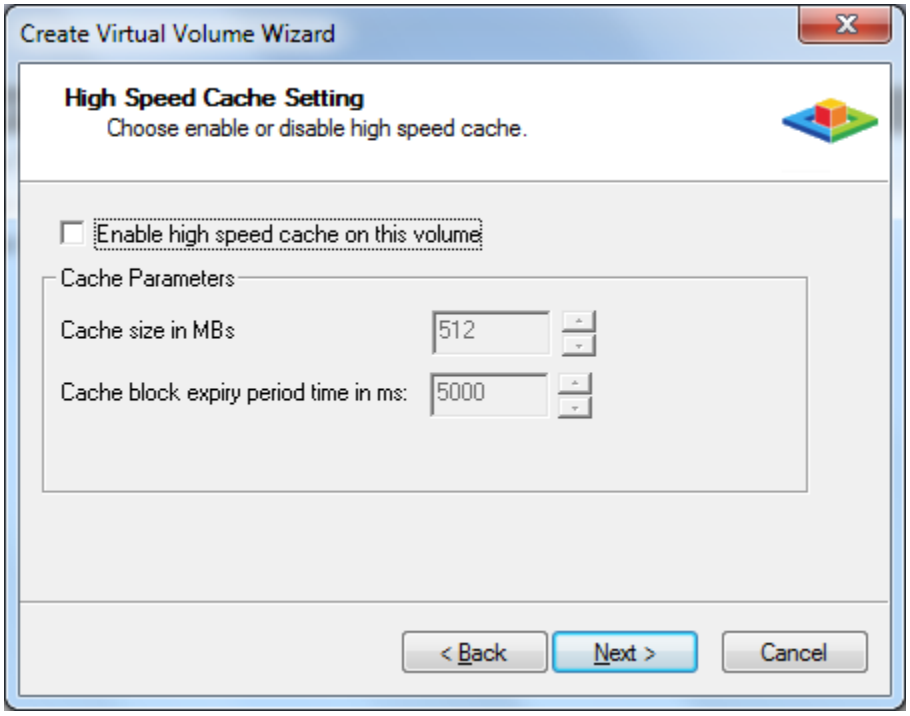


Select **Create a new image file** or **Use existing image file** if you already have a one.

Specify the device size.

Press the **Next** button to continue.

Set cache settings.



Cache option is optionally for this project.

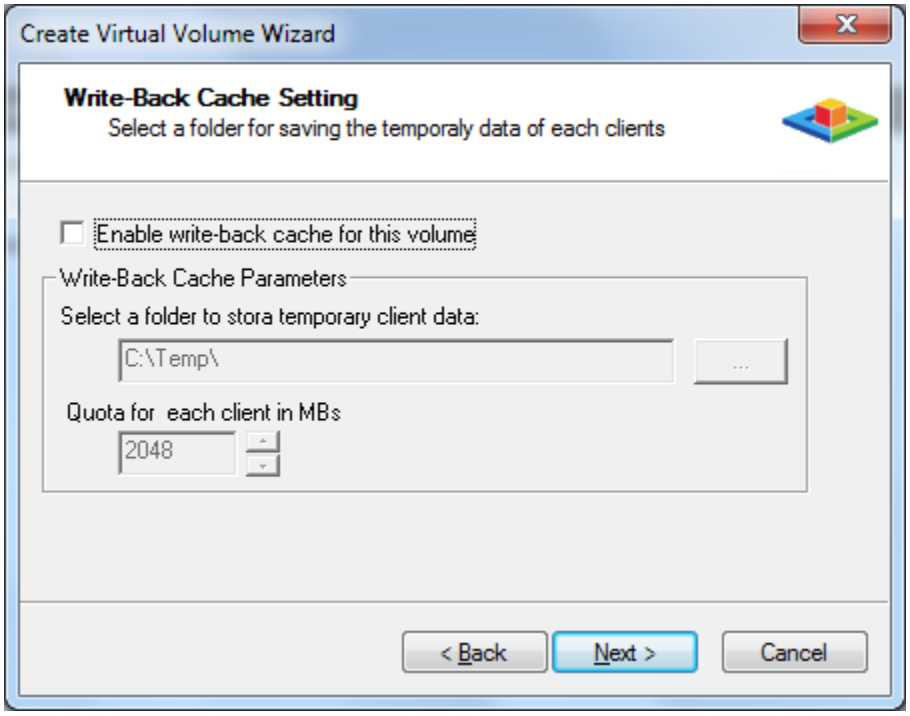
Choose or not choose **Enable high speed cache on this volume**.

Specify Cache size.

Specify Cache block expiry period time.

Press the **Next** button to continue.

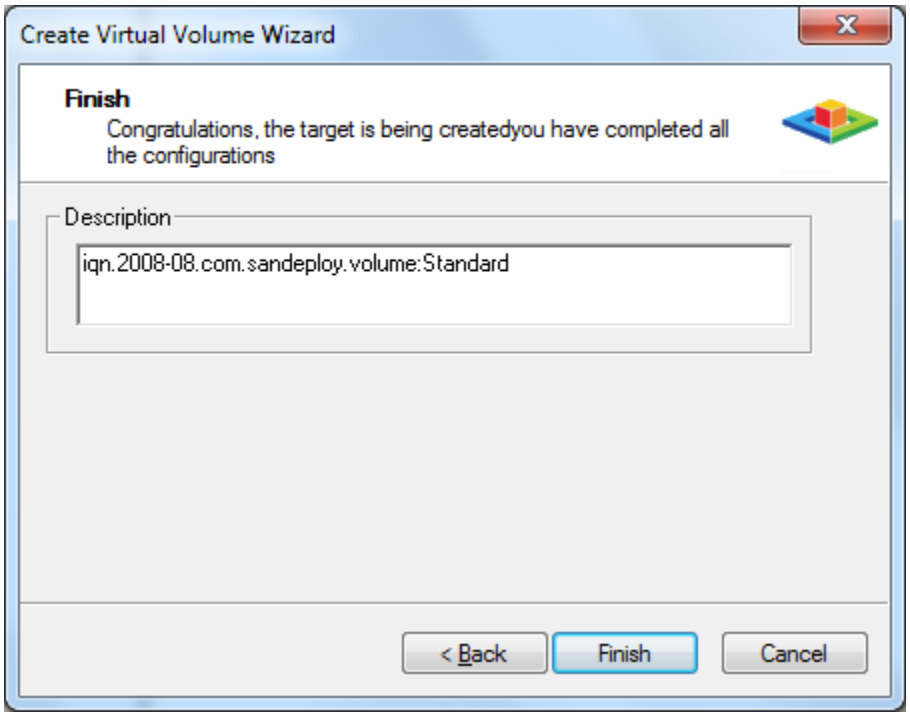
Set Write-Back Cache settings.



This option has no sense to use on this session.

Do not select **Enable write-back cache on this volume**.

Press the **Next** button to continue.



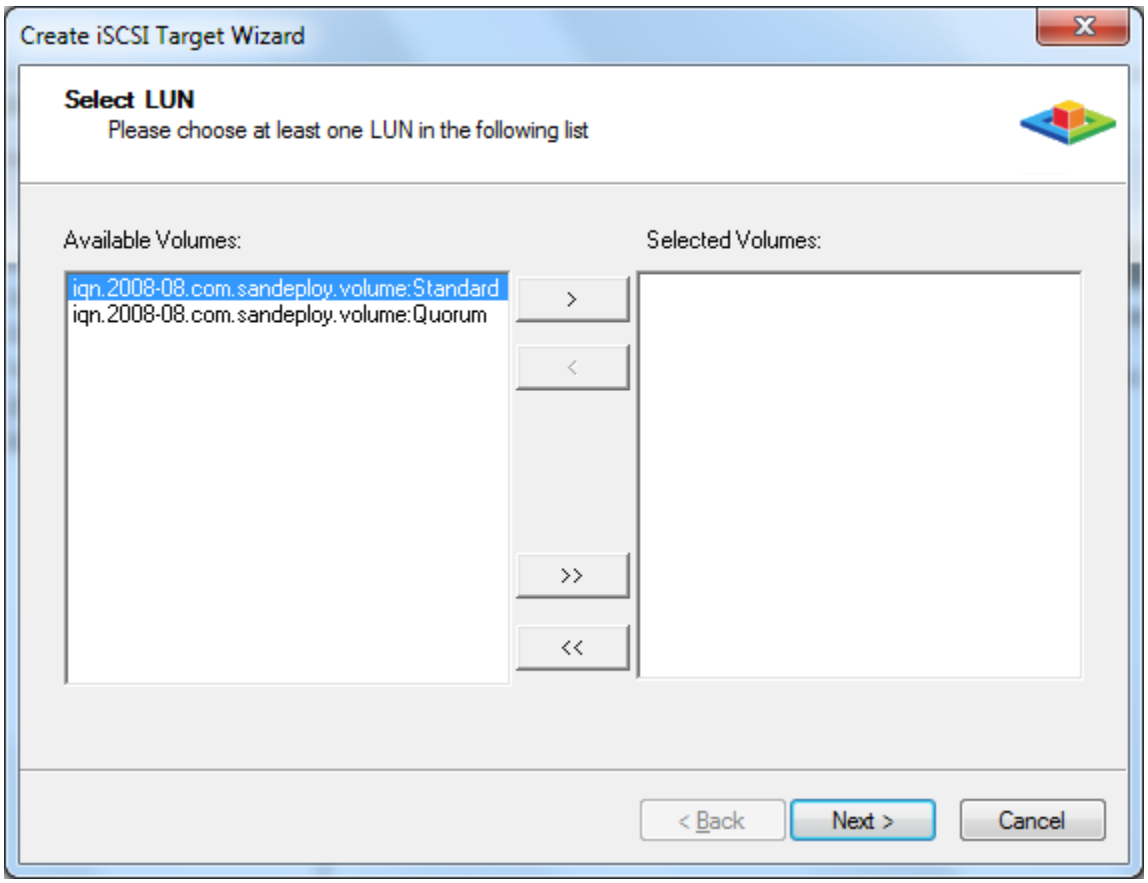
Type description in the **Description** field.

Press the **Finish** button to complete quorum virtual volume creating.

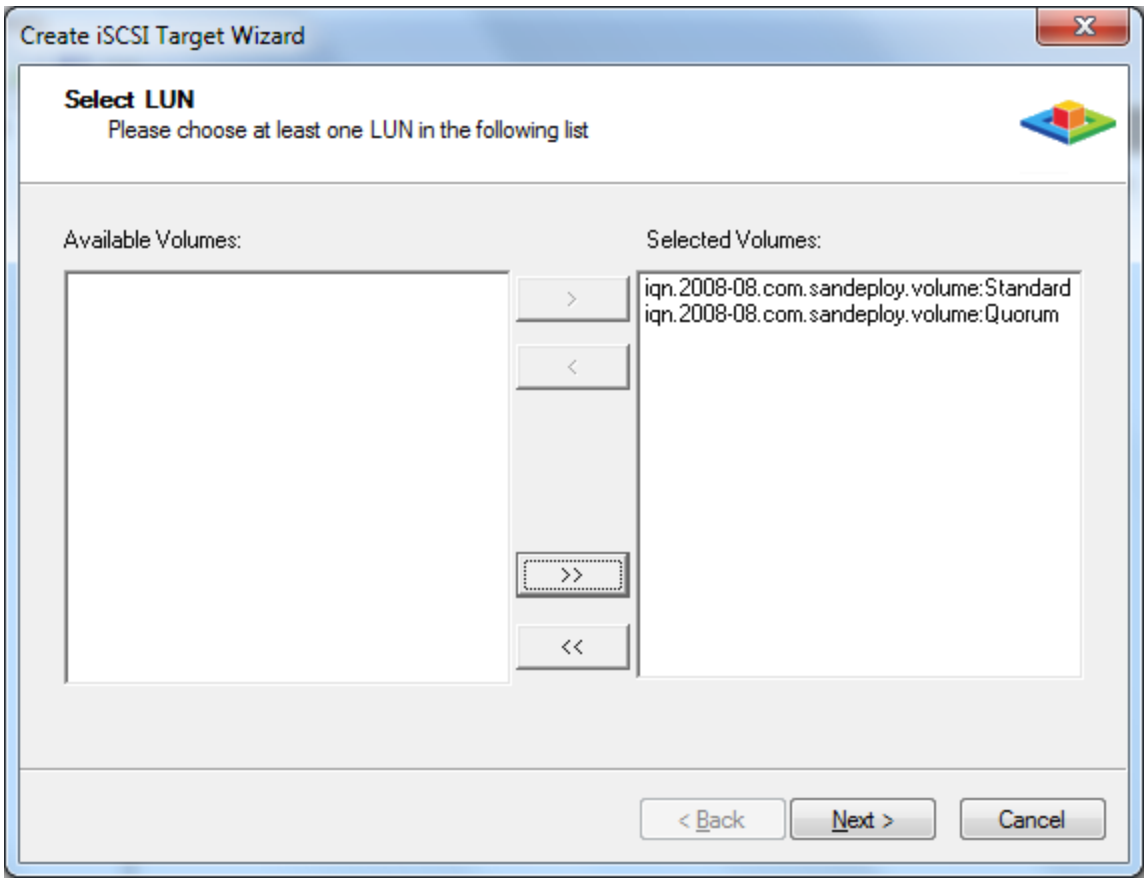
Preparing iSCSI Target

In the **SANDeploy Management Console**, right click on the **iSCSI Targets** node of left tree, then select the **Create Target…** menu item. The **Create iSCSI Target Wizard** appears.

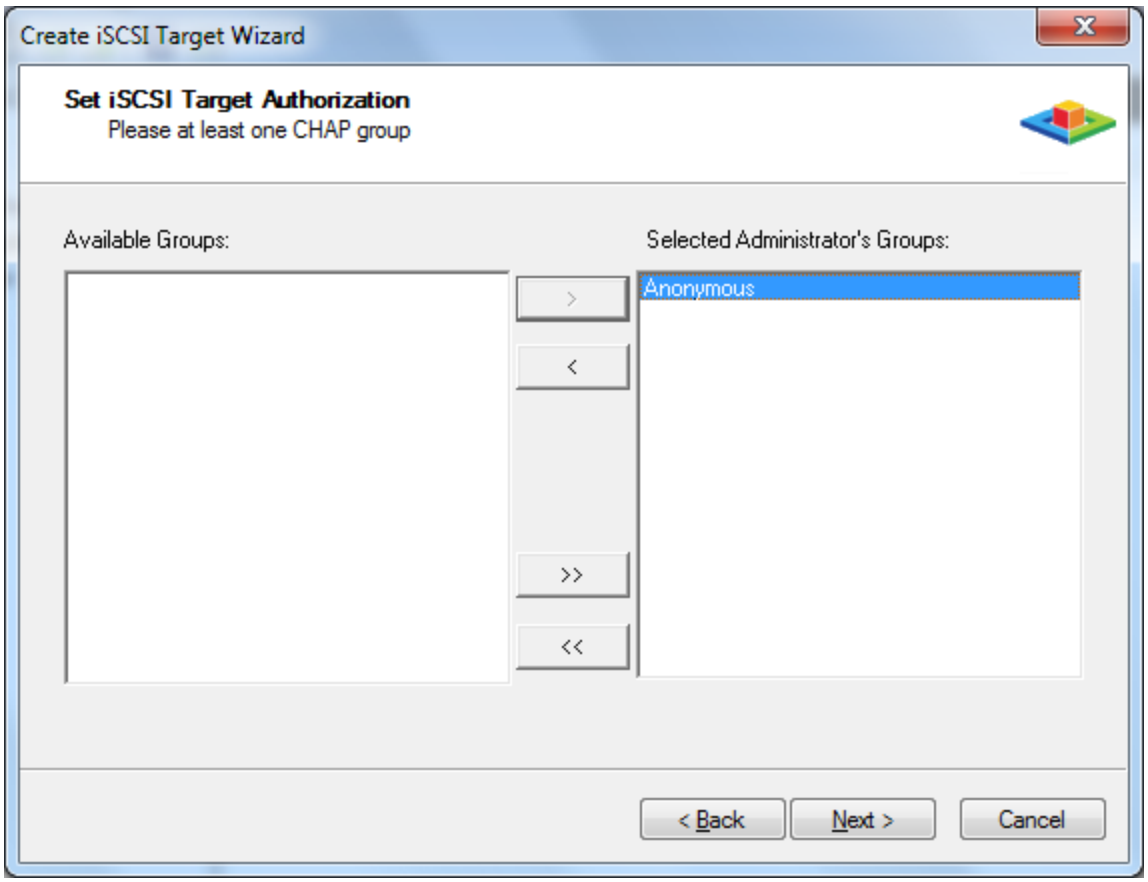
Select LUNs.



Select the two volumes that we just created a few minutes ago.



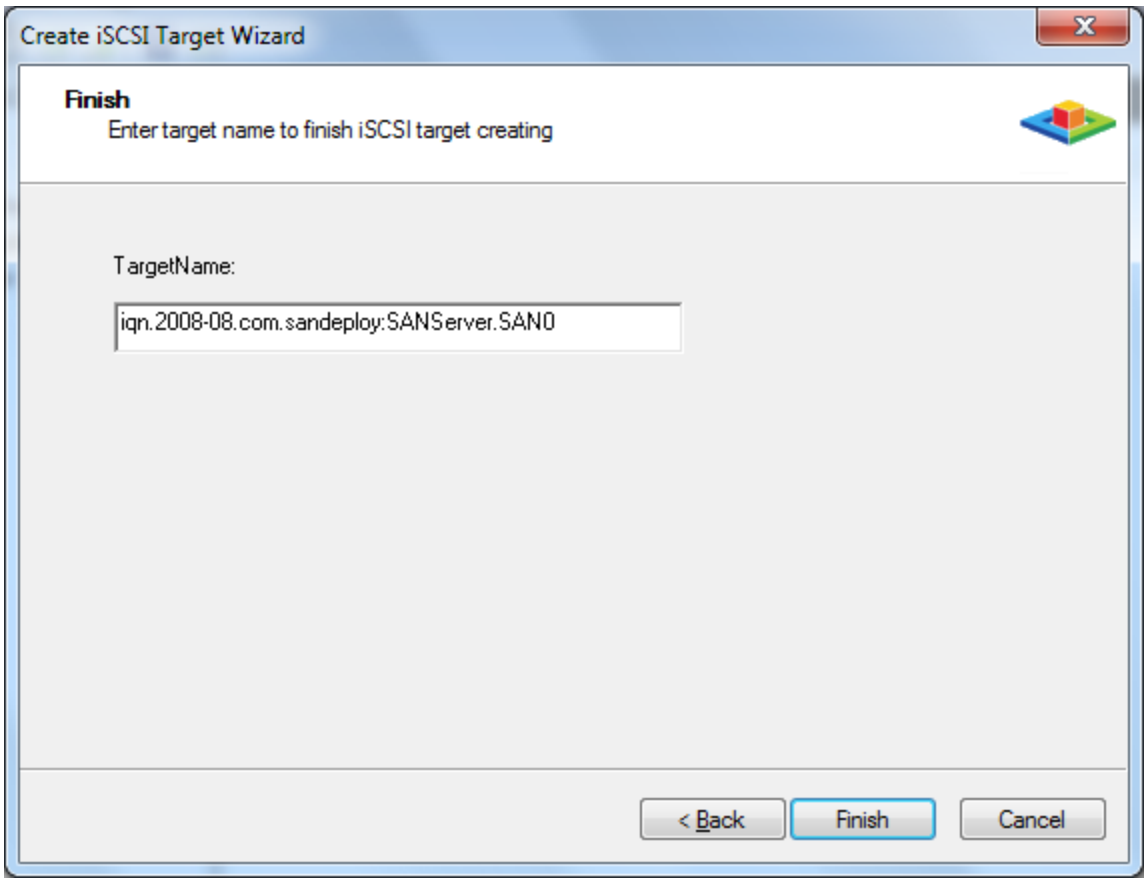
Press the **Next** button to continue.



Choose a CHAP user's group to obtain administrator's access right. We select **Anonymous** (no CHAP authorization) as a demo.

Press the **Next** button to continue.

Specify Target Name.



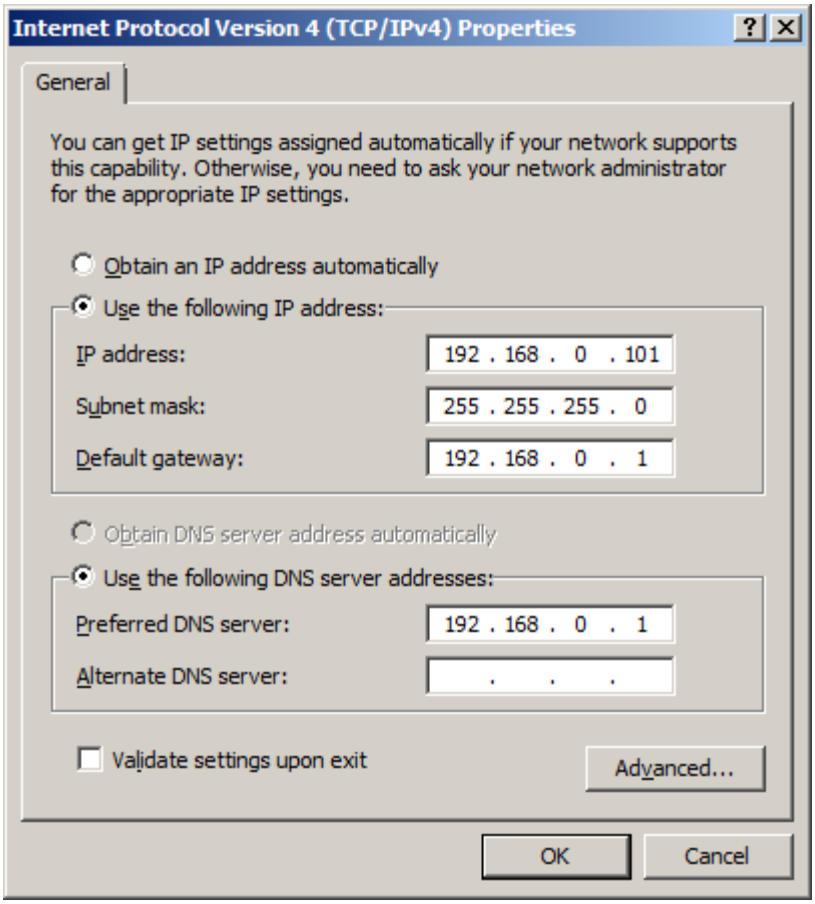
Type the target name.

Press the **Finish** button to complete the iSCSI target creating.

Configuring on Cluster Node 1

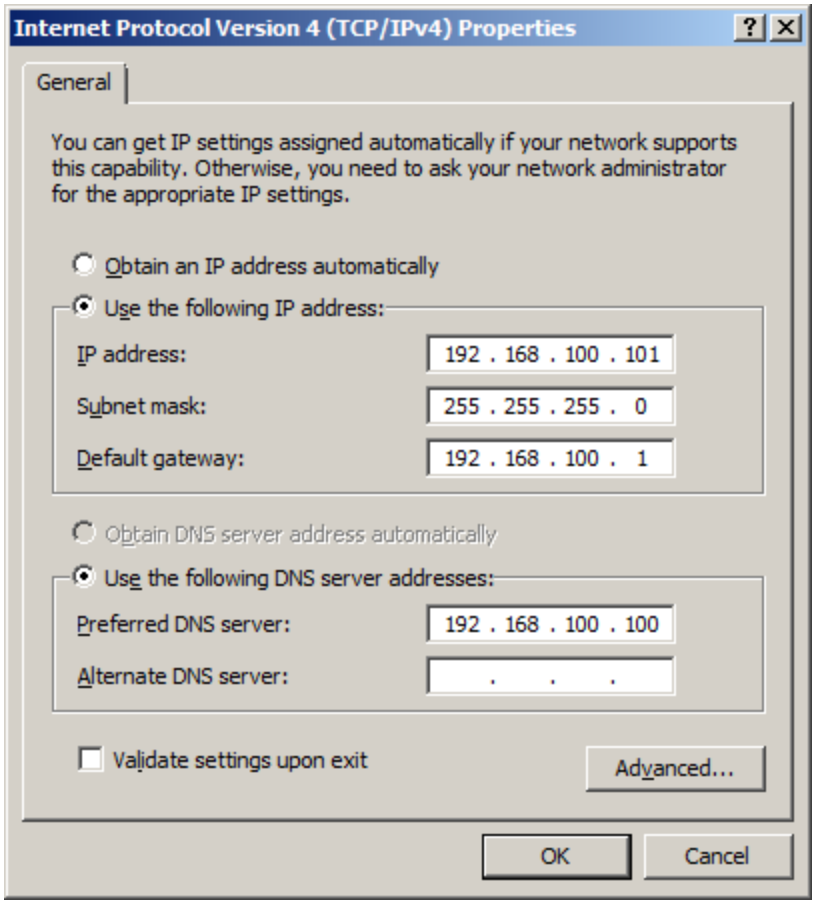
Network Adapter

For working in clustering environment, the network adapter must be assigned a static IP address. Select the **Internet Protocol Version 4(TCP/IPv4)** and then press the **Properties** button, the **Internet Protocol Version 4 (TCP/IPv4)** dialog appears.



Type in the **IP address**, **Subnet mask**, **Default gateway** and **Preferred NDS server**.

Set the second network adapter of 08Node1.



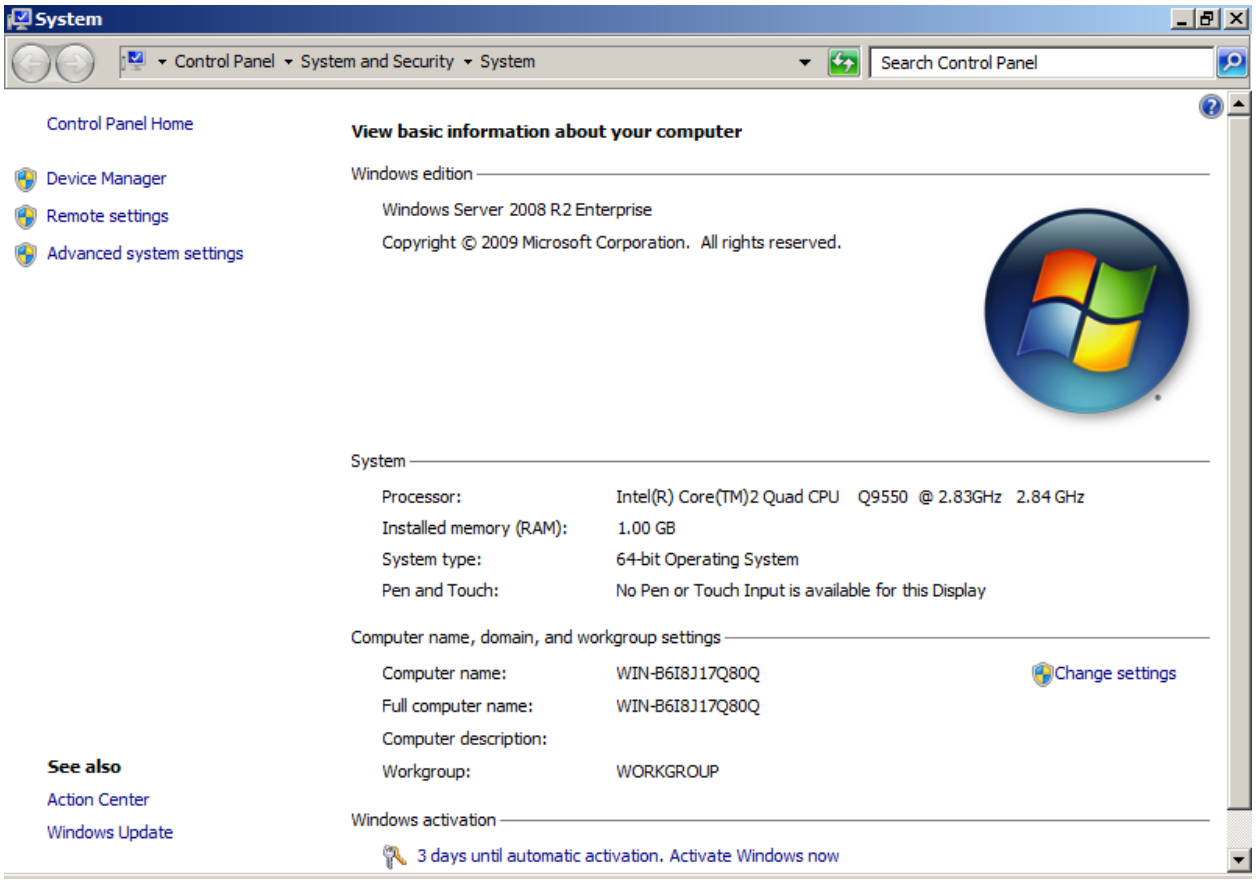
Type in the IP address and Subnet mask.

Press the **OK** button to change IP address.

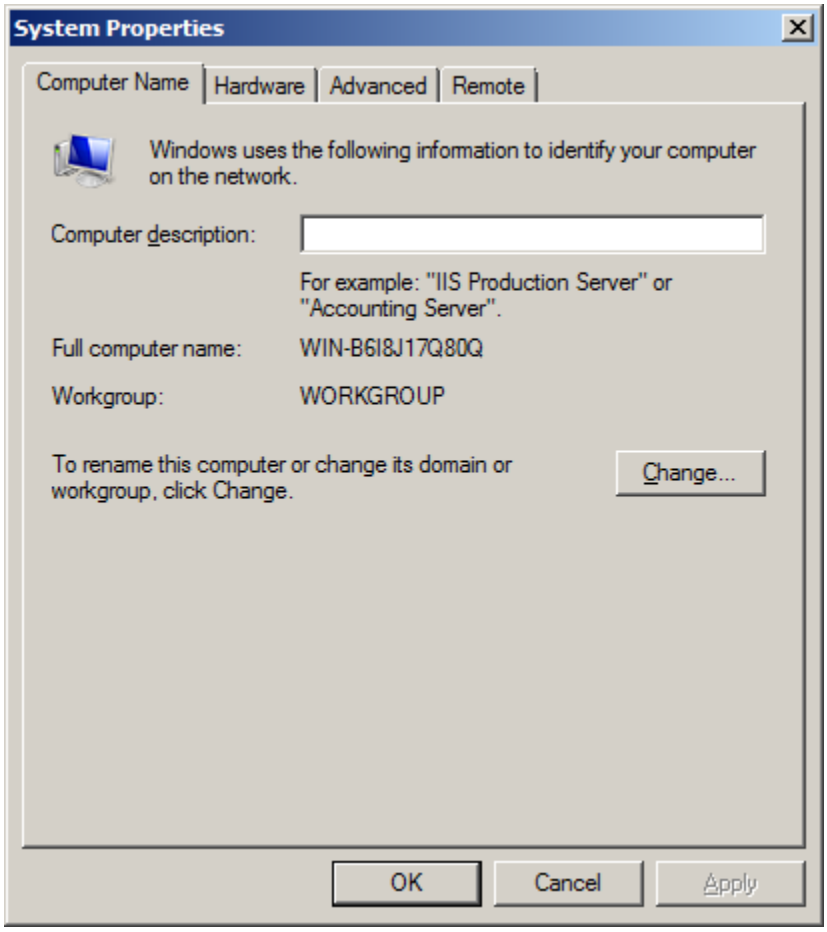
Join to the domain

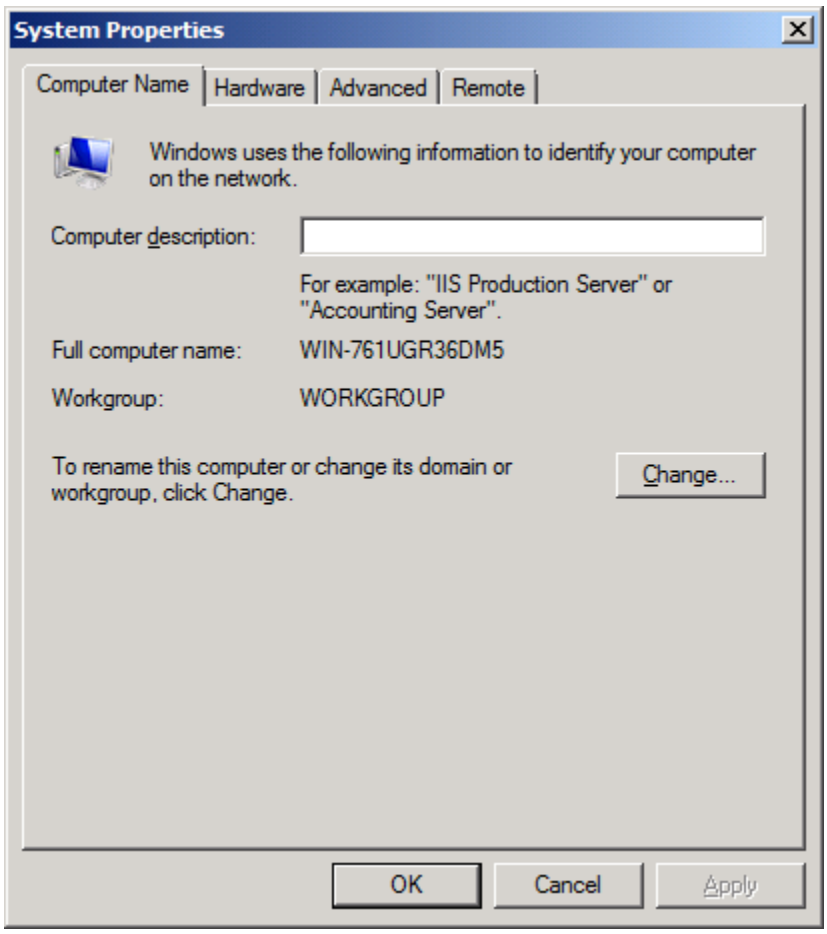
Press the **OK** button to change IP address.

Open System Properties page.

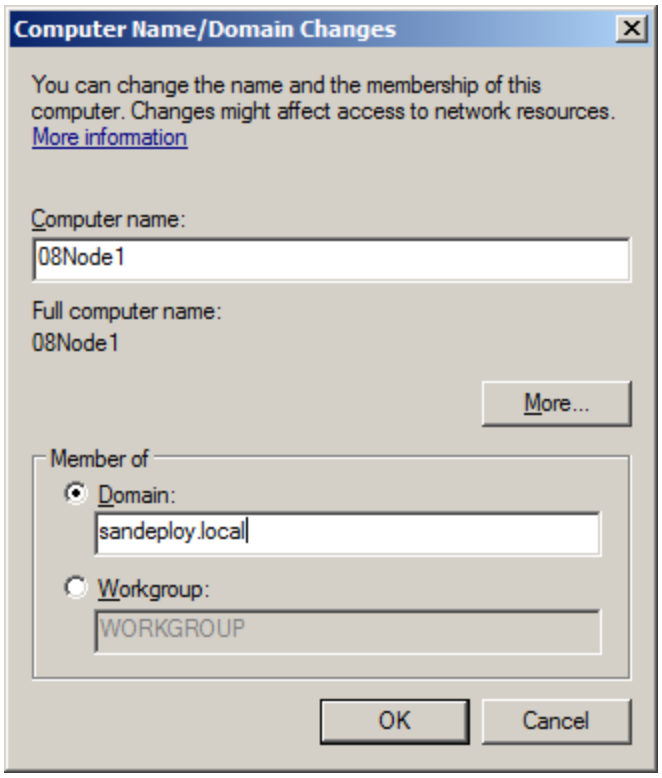


Click on the **Change settings** link, the **System Properties** Dialog appears.


System Properties
Computer Name
Hardware
Advanced
Remote
Windows uses the following information to identify your computer on the network.
Computer description:
For example: "IIS Production Server" or "Accounting Server".
Full computer name:
WIN-B6I8J17Q80Q
Workgroup:
WORKGROUP
To rename this computer or change its domain or workgroup, click Change.
Change...
OK
Cancel
Apply



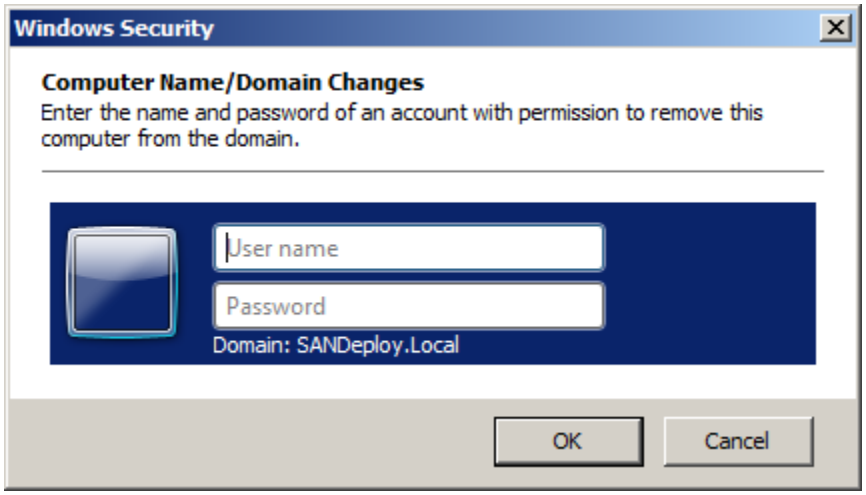
Press the **Change…** button.



Type 08Node1 in the **Computer name** and sandeploy.local in the **Domain**.

Press the **OK** button to change computer name and join the domain.

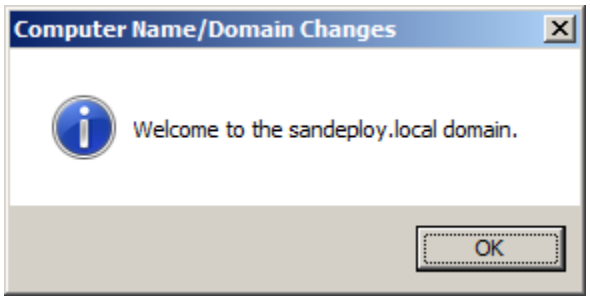
Domain controller account is required to join the domain.



Type your user name and password.

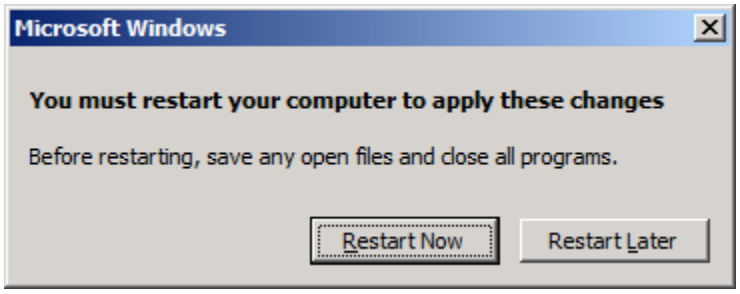
Press the **OK** button to continue.

If successful, the **Computer Name/Domain Changes** notification dialog is shown as below.



Press the **OK** button to continue.

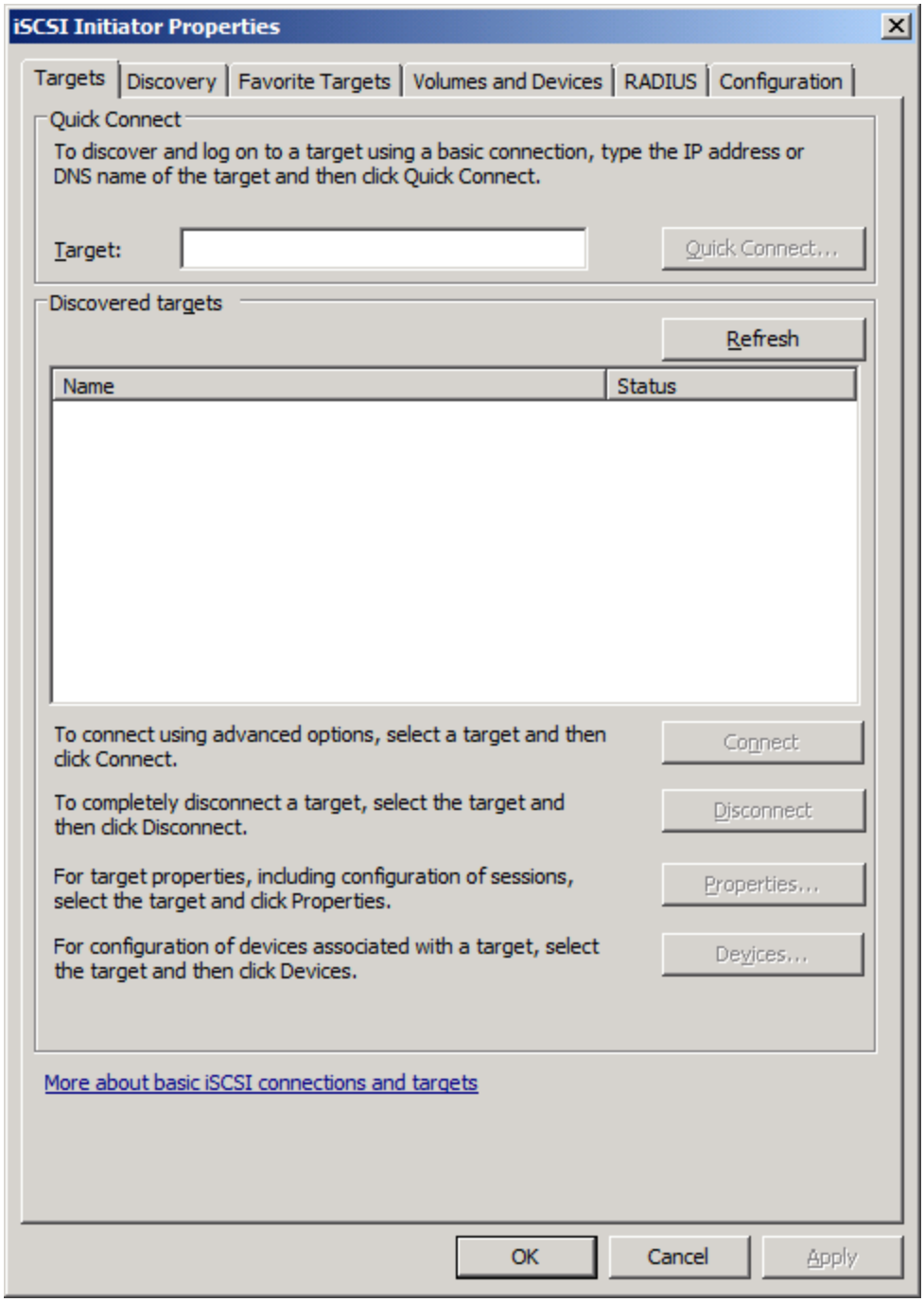
Restart is required.



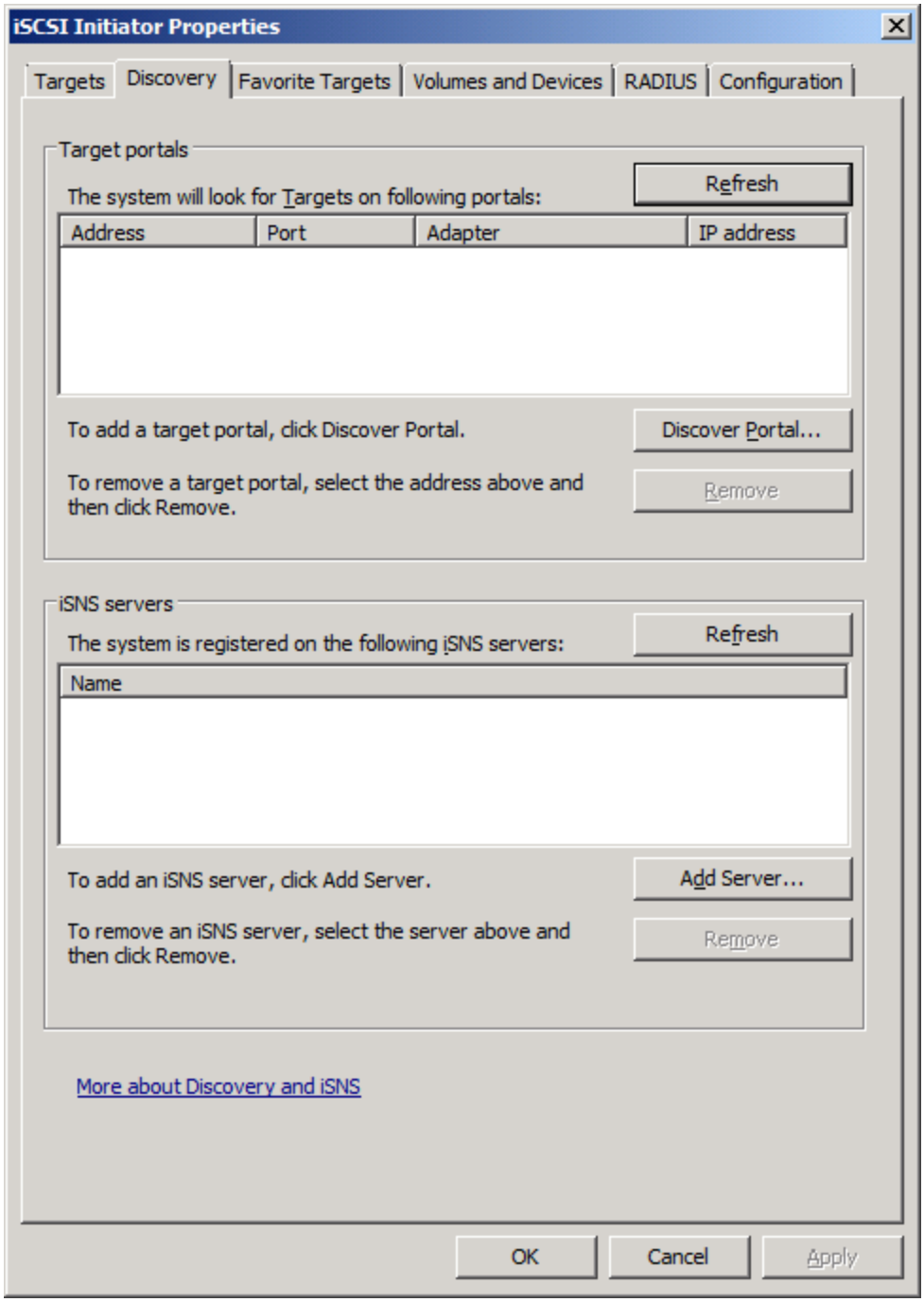
Press the **Restart Now** button to restart the computer.

Log in to iSCSI disks

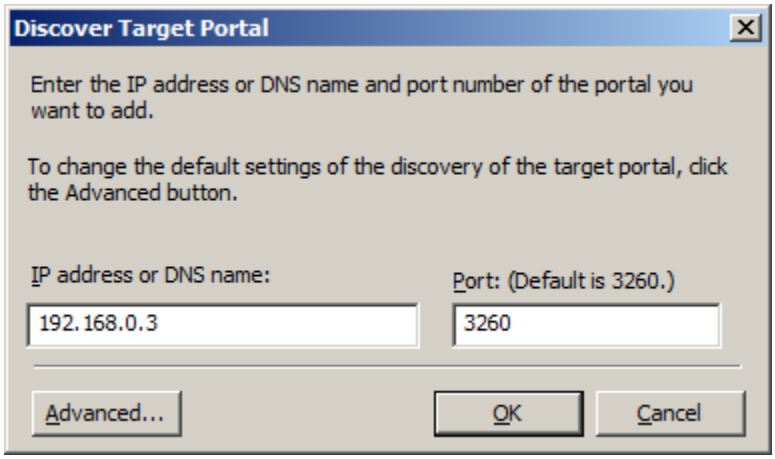
Lunch the Administrative Tools -> Microsoft iSCSI initiator.



Select the **Discovery** page.



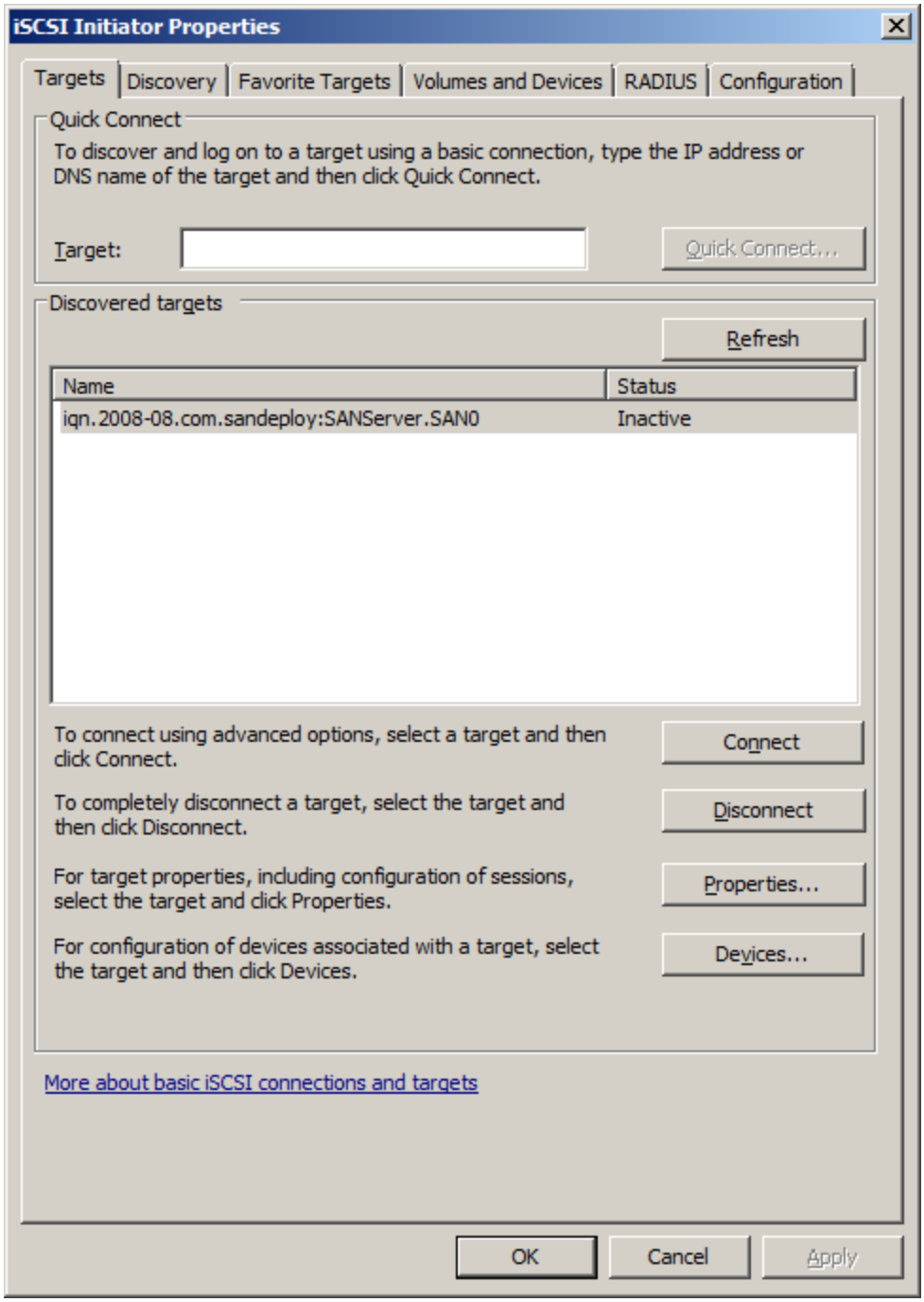
Press the **Discovery Portal** button, the **Discovery Target Portal** dialog appears.



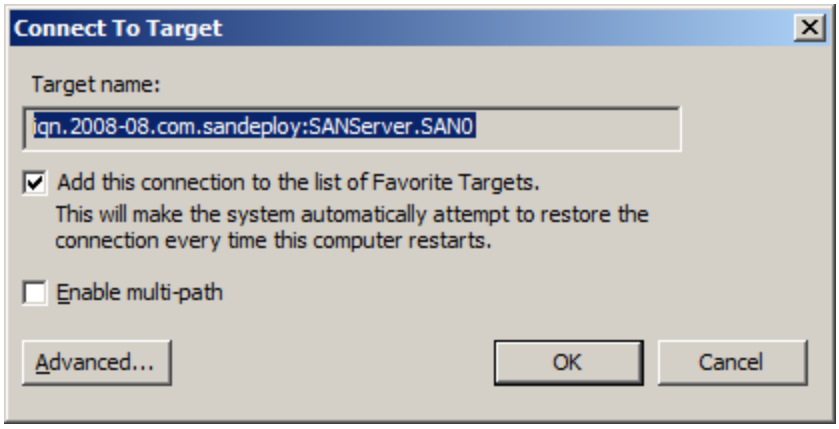
Type **IP address or NDS name** and **Port** of the SANDeploy Server in the required fields.

Press the **OK** button to add.

Select the **Targets** page.



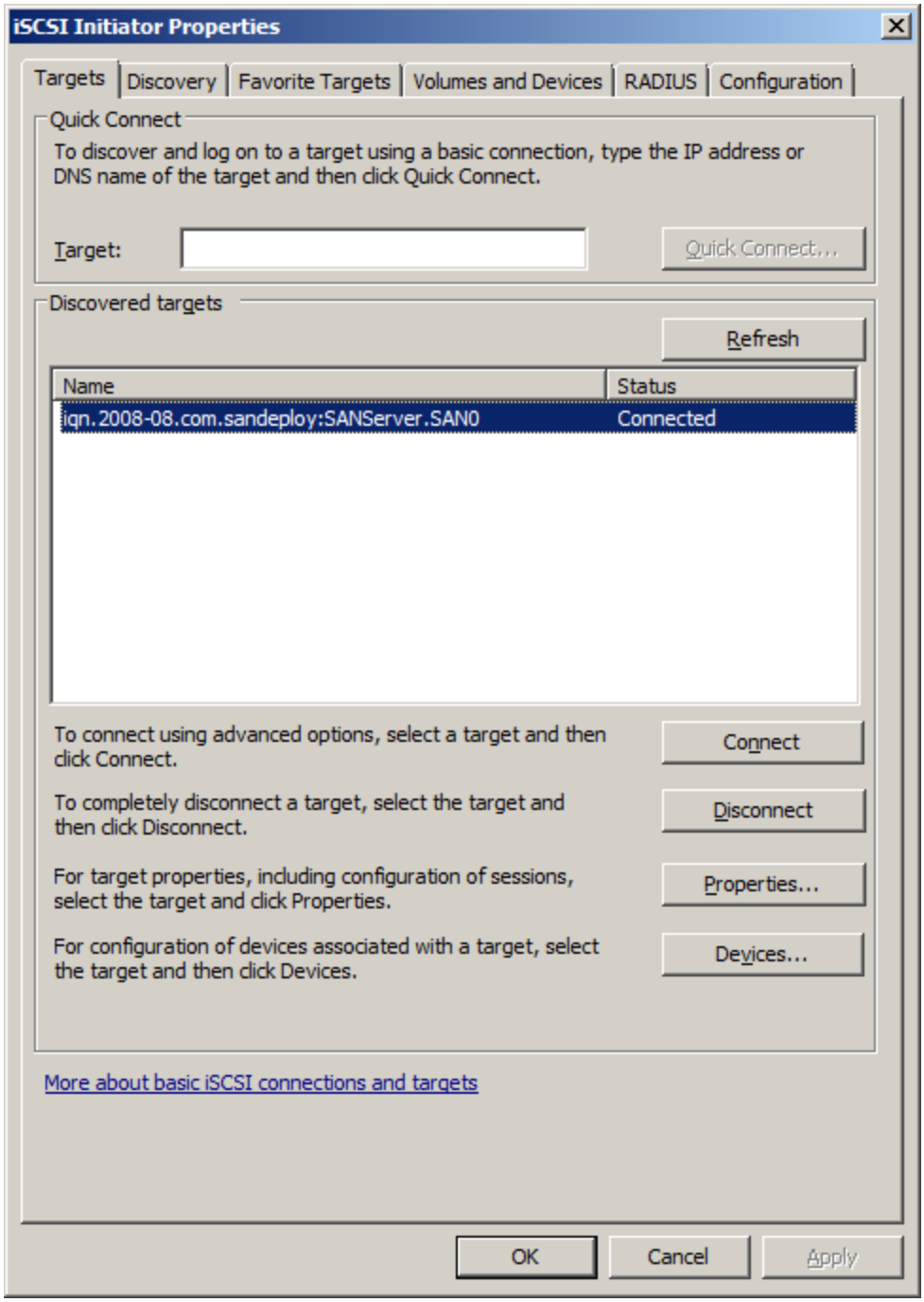
Select the target just added and then press the **Connect** button.



Keep selection of **the Add this connection to the list of Favorite Targets**.

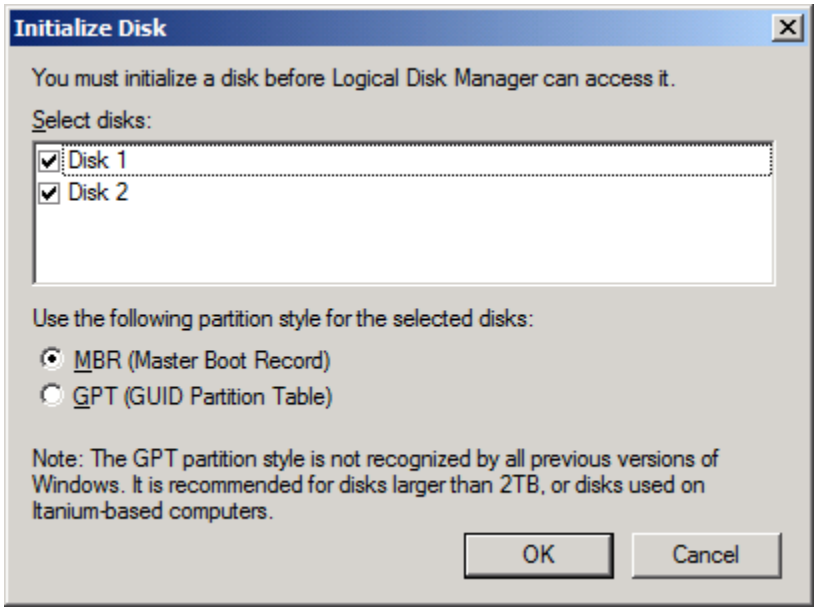
Press the **OK** button to continue.

If successful, the logged on targets are shown in the figure.



Launch the **Windows Computer Management Console**.

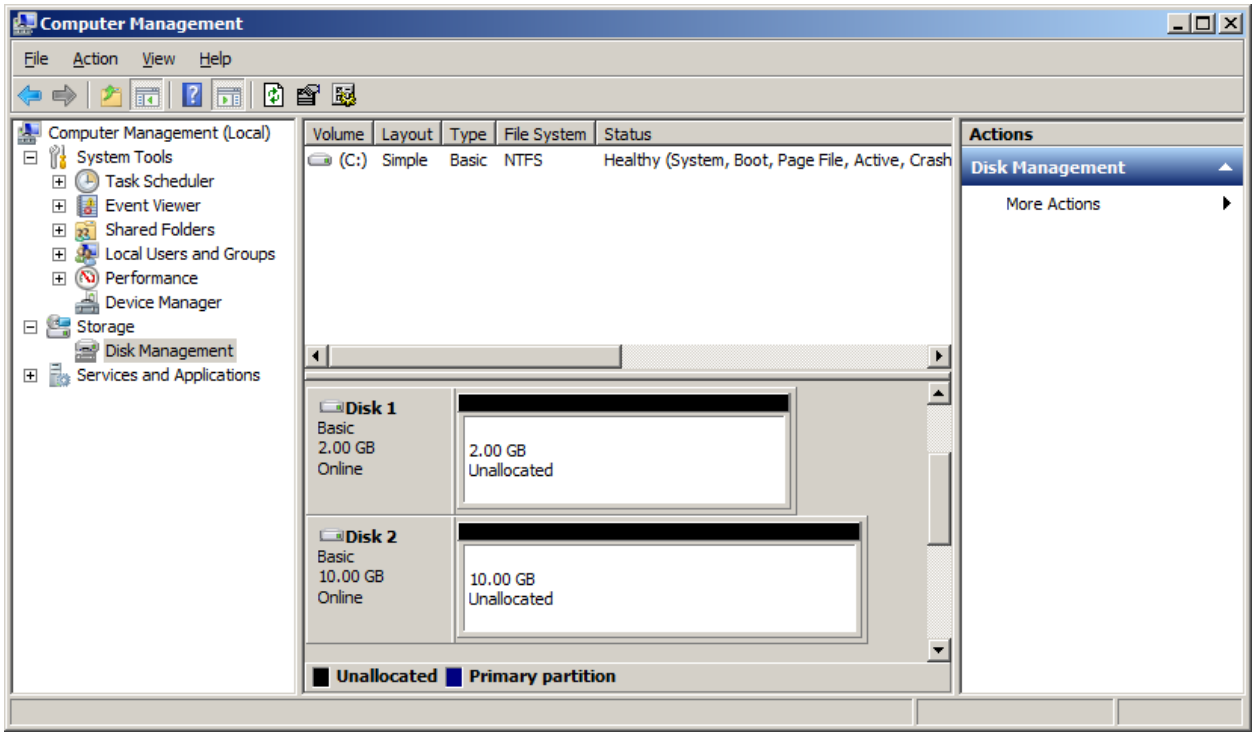
An **Initialize Disk** dialog is shown.



Keep the selection of the tow disks.

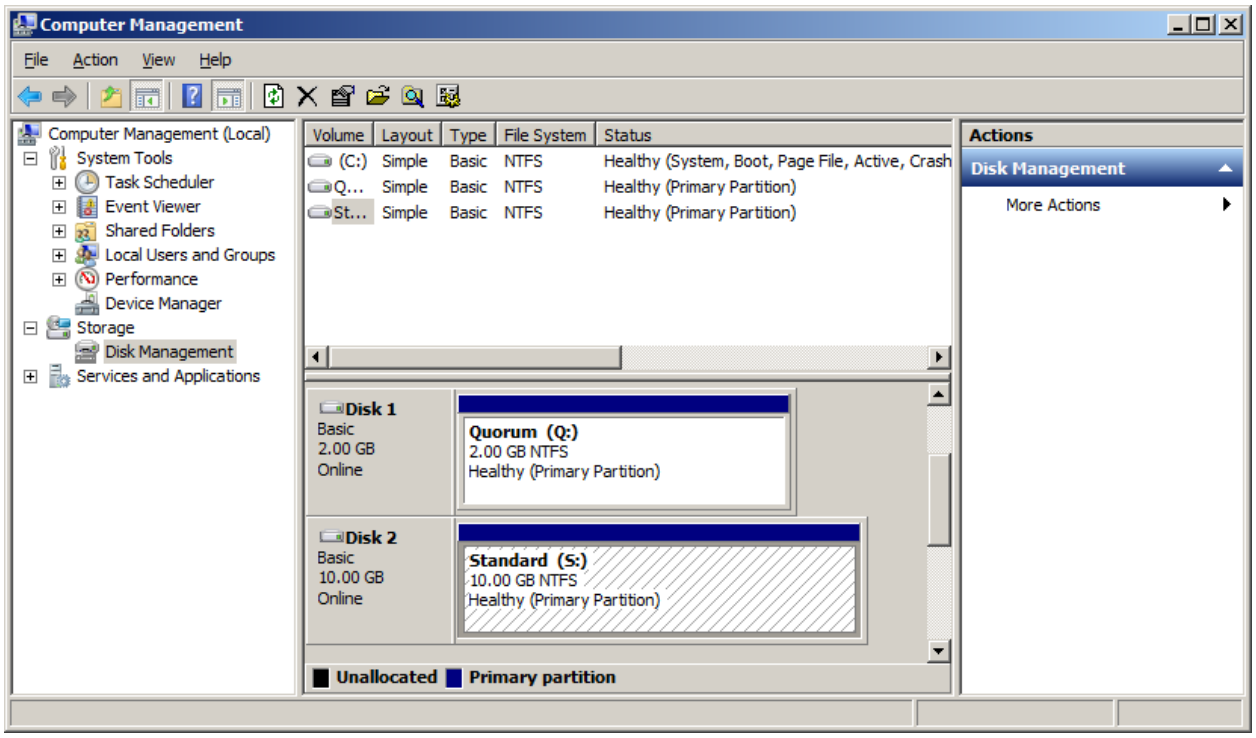
Select partition style for the selected disks.

Press the **OK** button to continue.



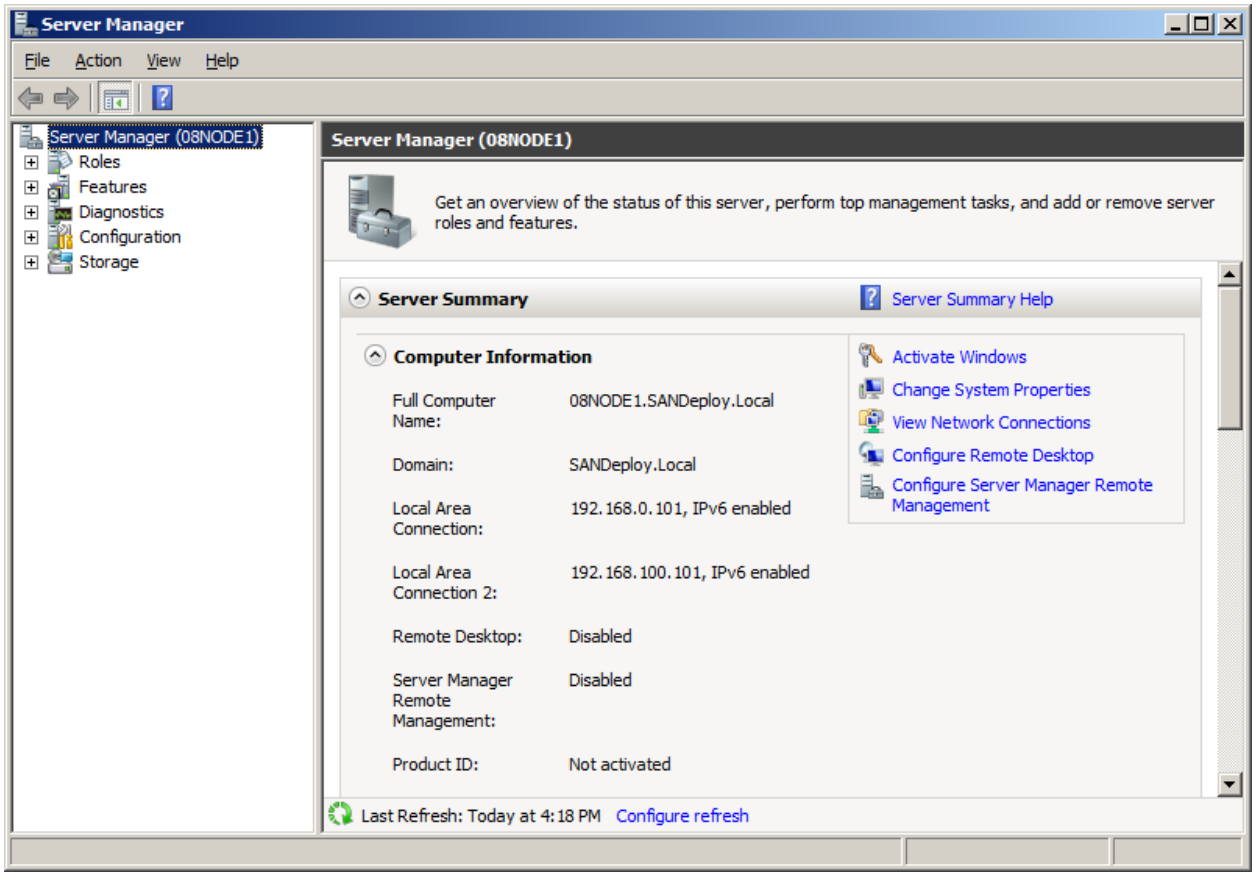
Right click on the Disks and then select New Simple Volume, partition and format the two disks followed by wizard.

If successful, the new volumes created are shown in the figure below.

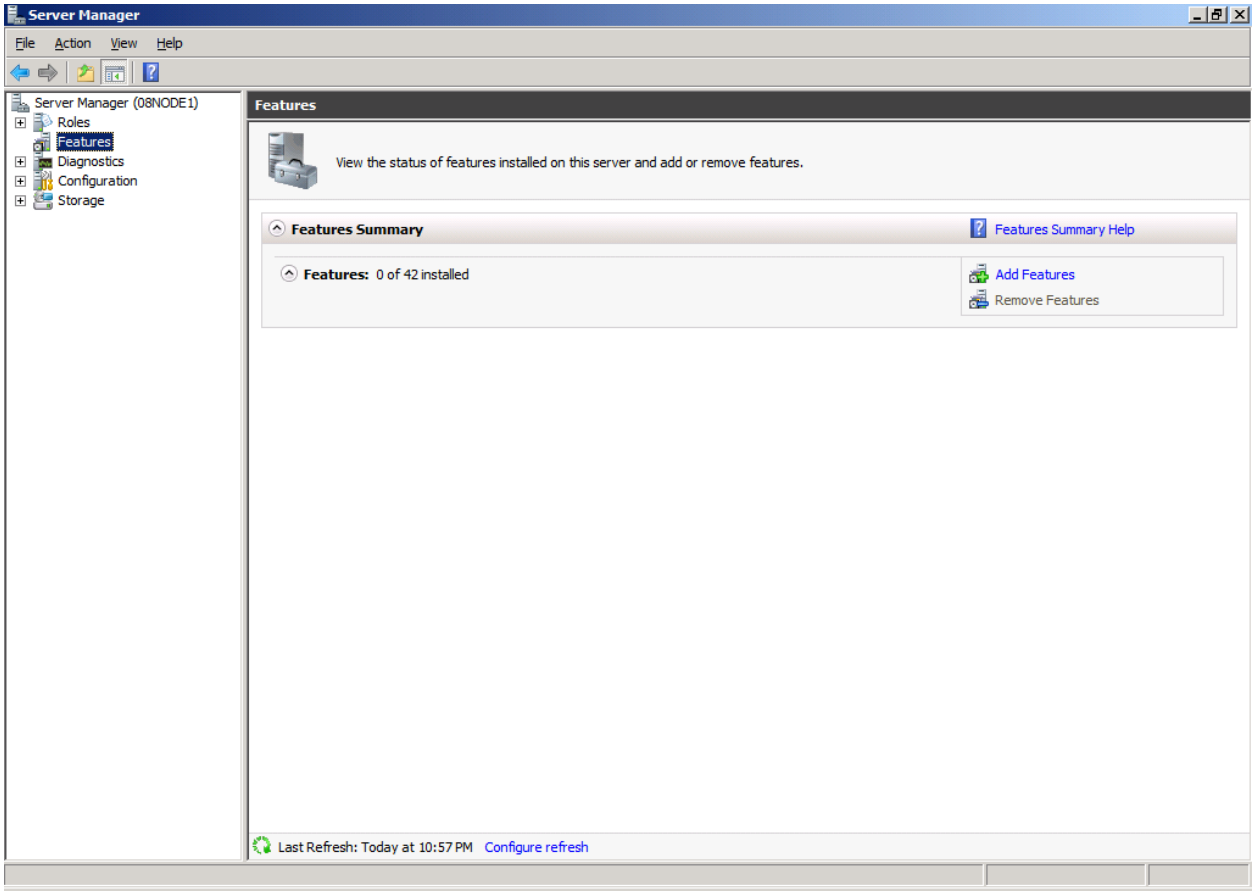


Installing Failover Clustering Service

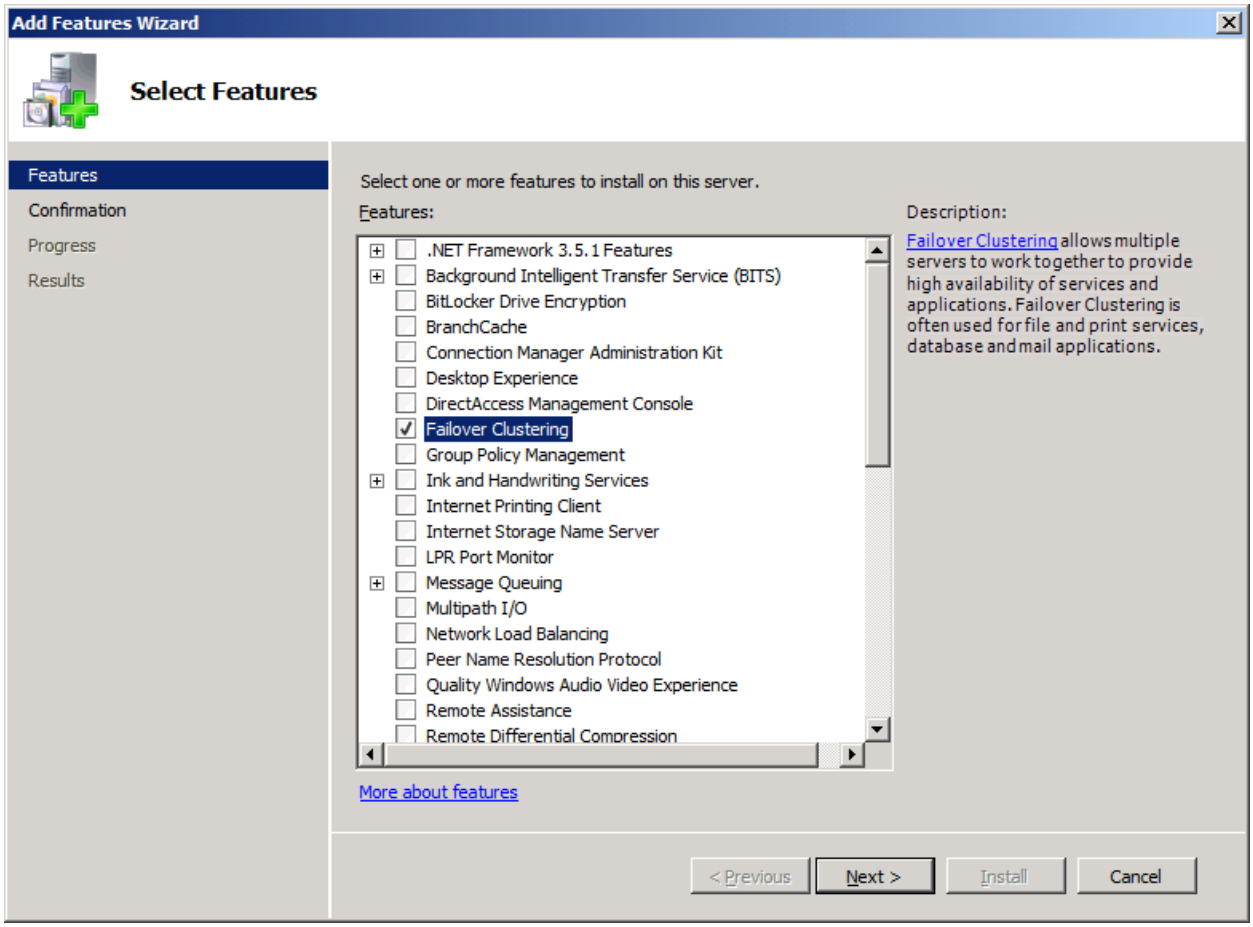
Launch the **Windows Server manager Console**.



Select the **Features** node from the left tree view.

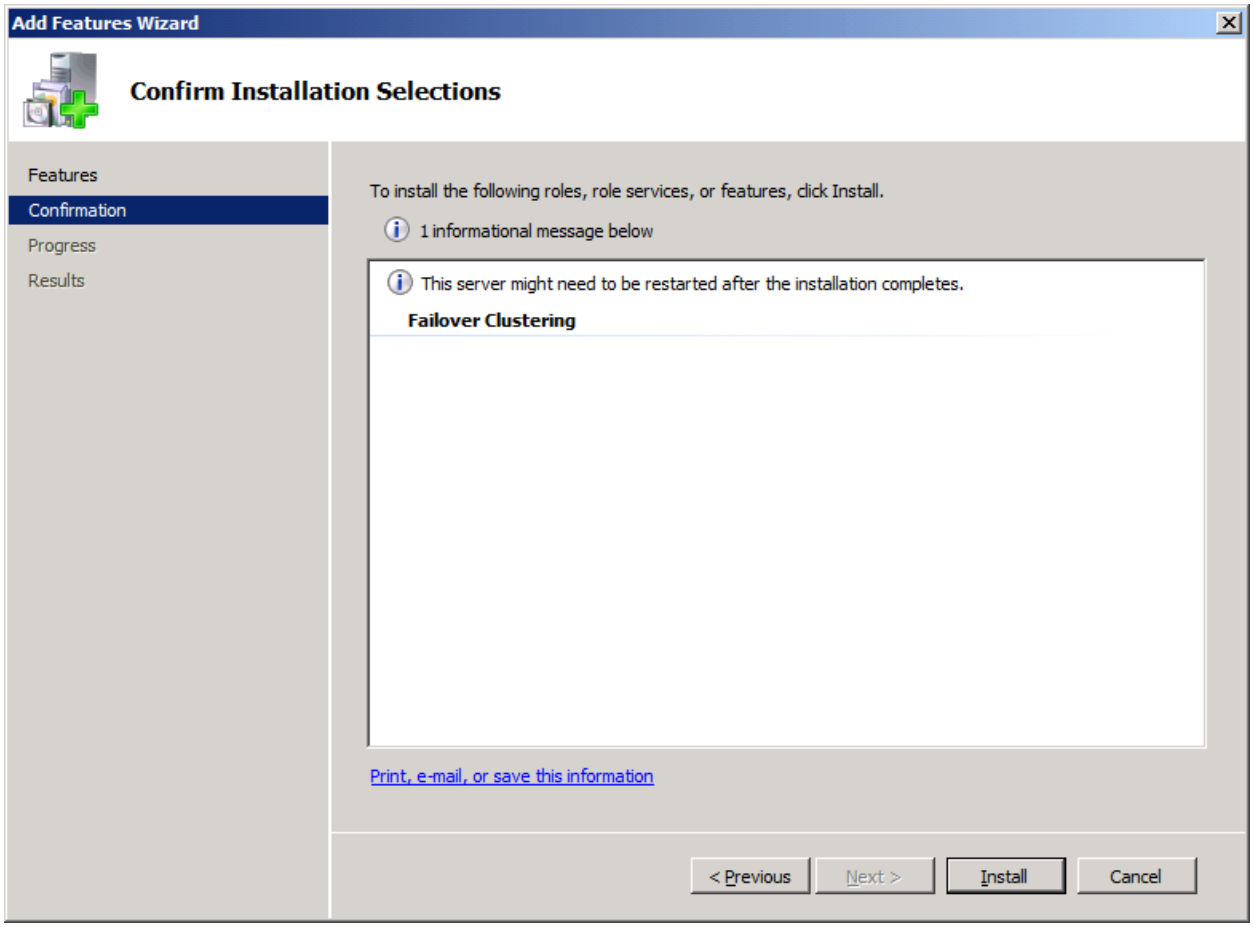


Click the **Add Features** link, the **Add Features Wizard** appears.



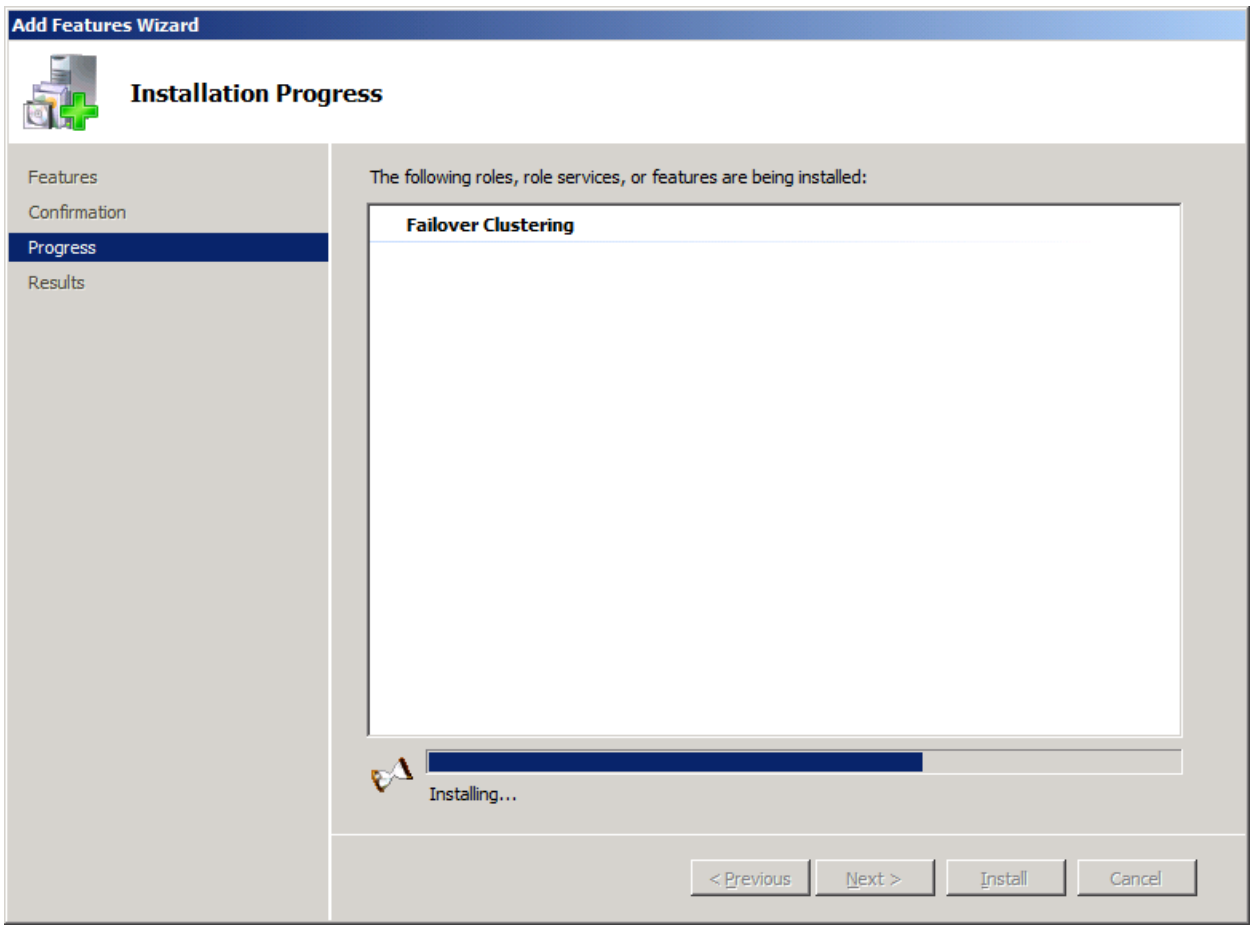
Select **the Failover Clustering**.

Press the **Next** button to continue.

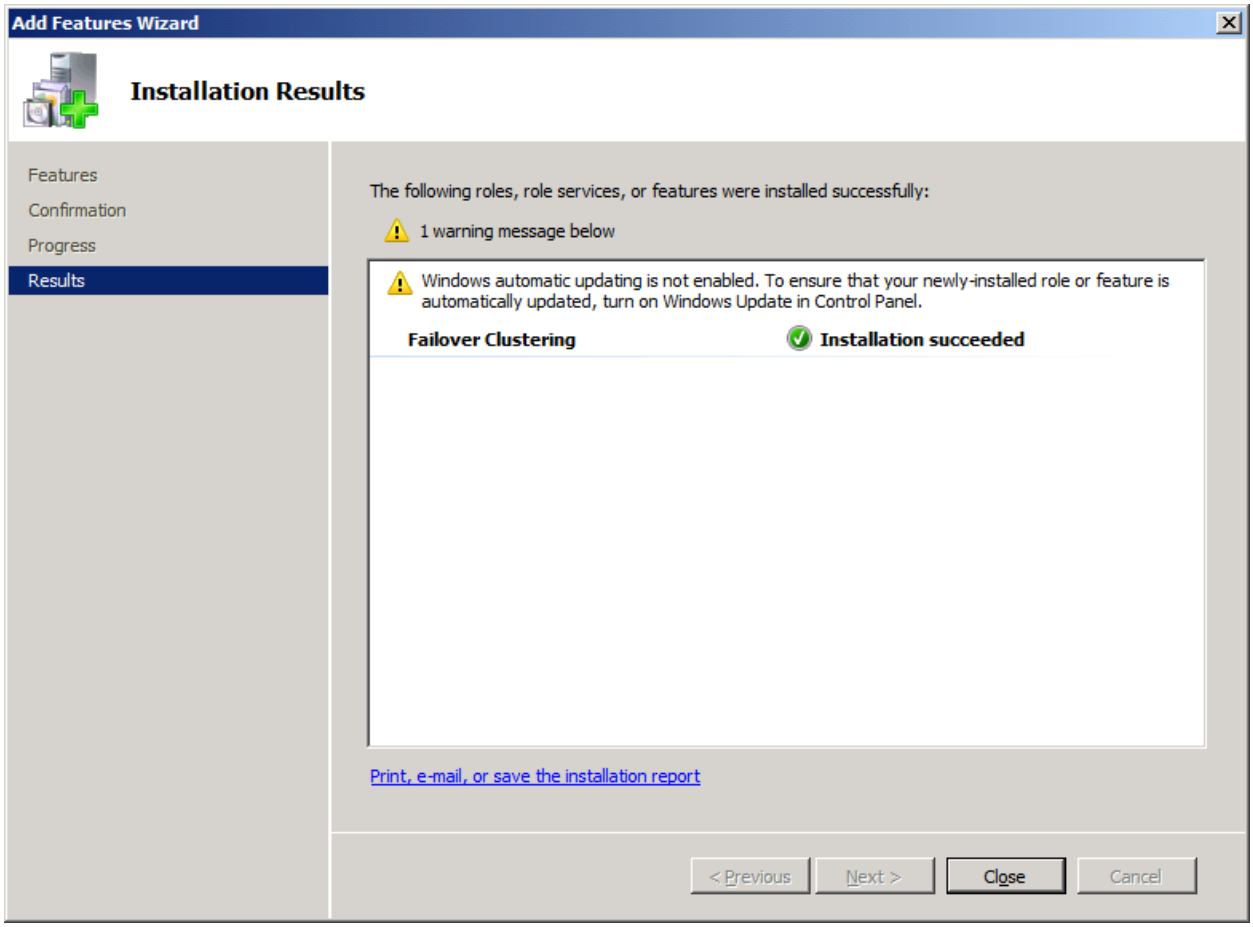


Press the **Install** button to install the **Failover Clustering** feature.

The installation of the Failover Clustering is going on.



If successful, the wizard will complete and show as the figure below.

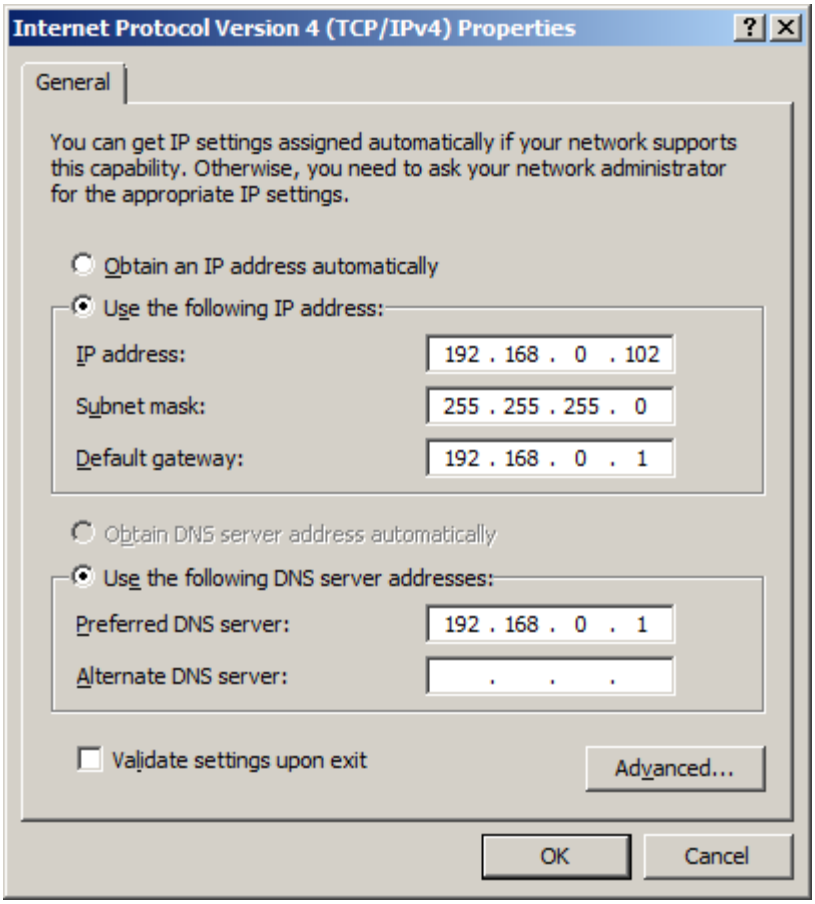


Press the **Close** button.

Configuring on Cluster Node 2

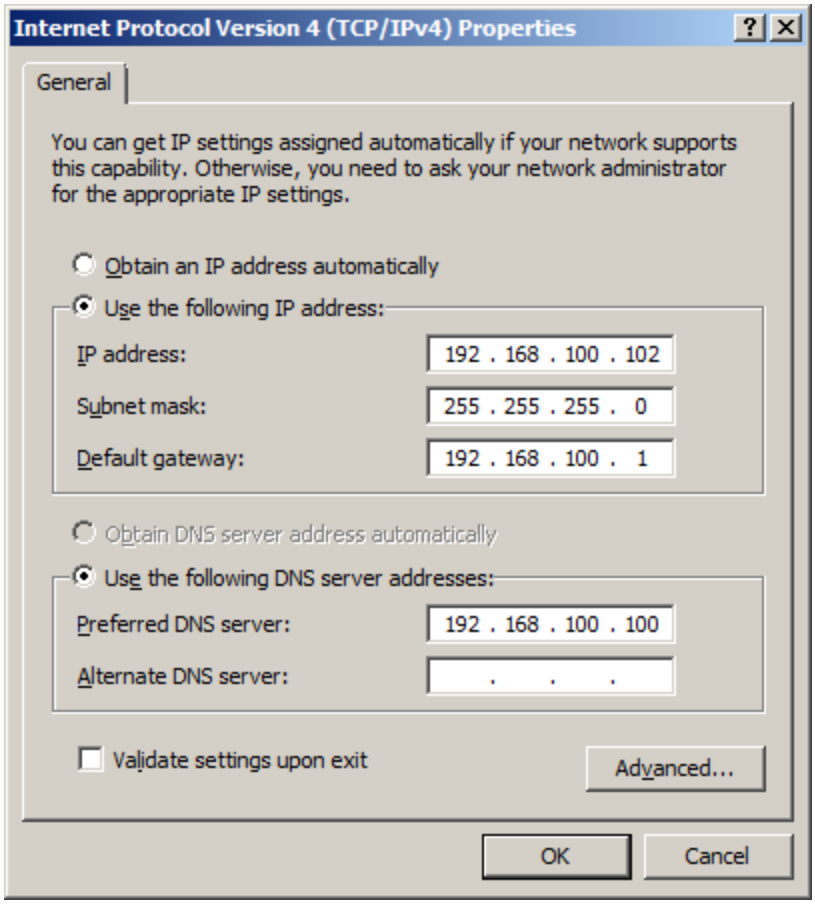
Network Adapter

For working in clustering environment, the network adapter must be assigned a static IP address. Select the **Internet Protocol Version 4(TCP/IPv4)** and then press the **Properties** button, the **Internet Protocol Version 4 (TCP/IPv4)** appears.



Type in the **IP address**, **Subnet mask**, **Default gateway** and **Preferred NDS server**.

Set the second network adapter of 08Node2.



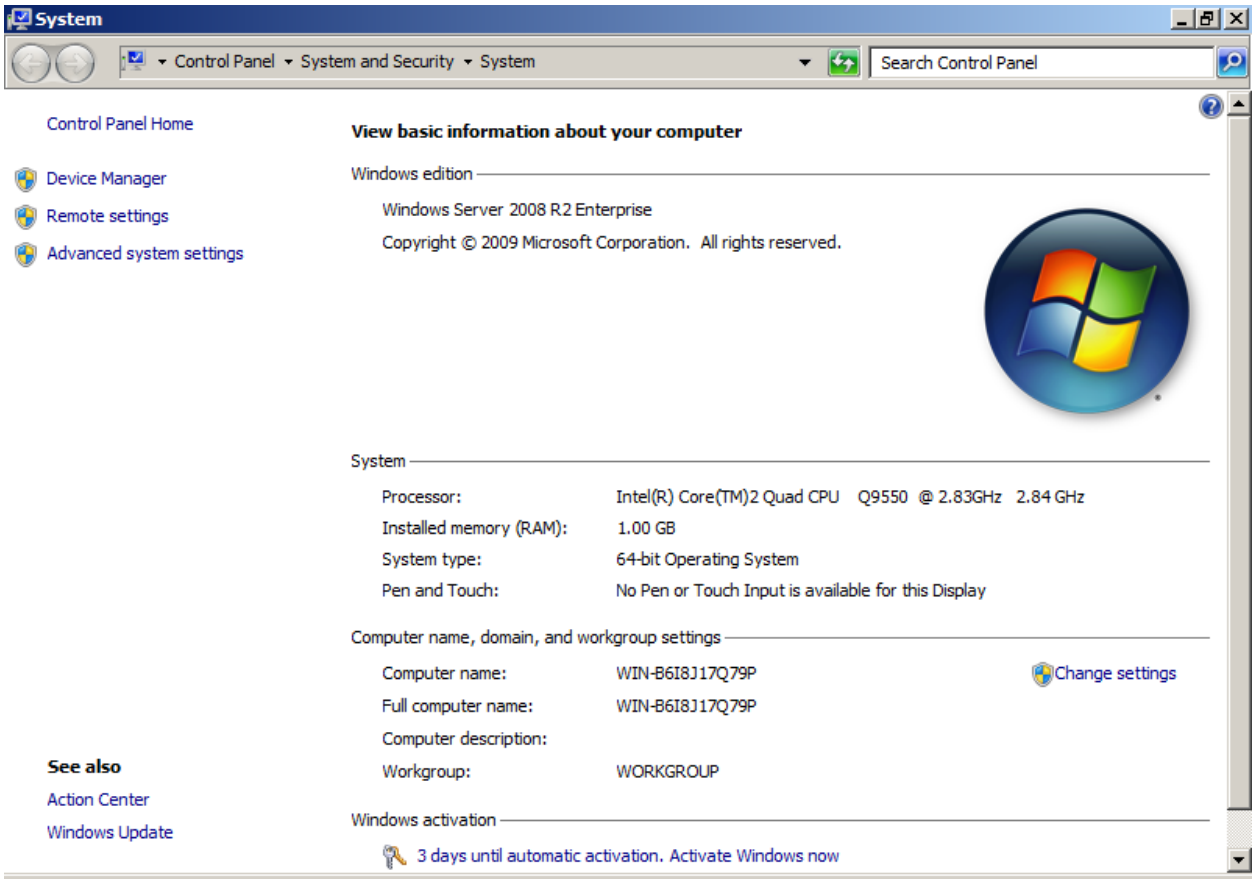
Type in the IP address and Subnet mask.

Press the **OK** button to change IP address.

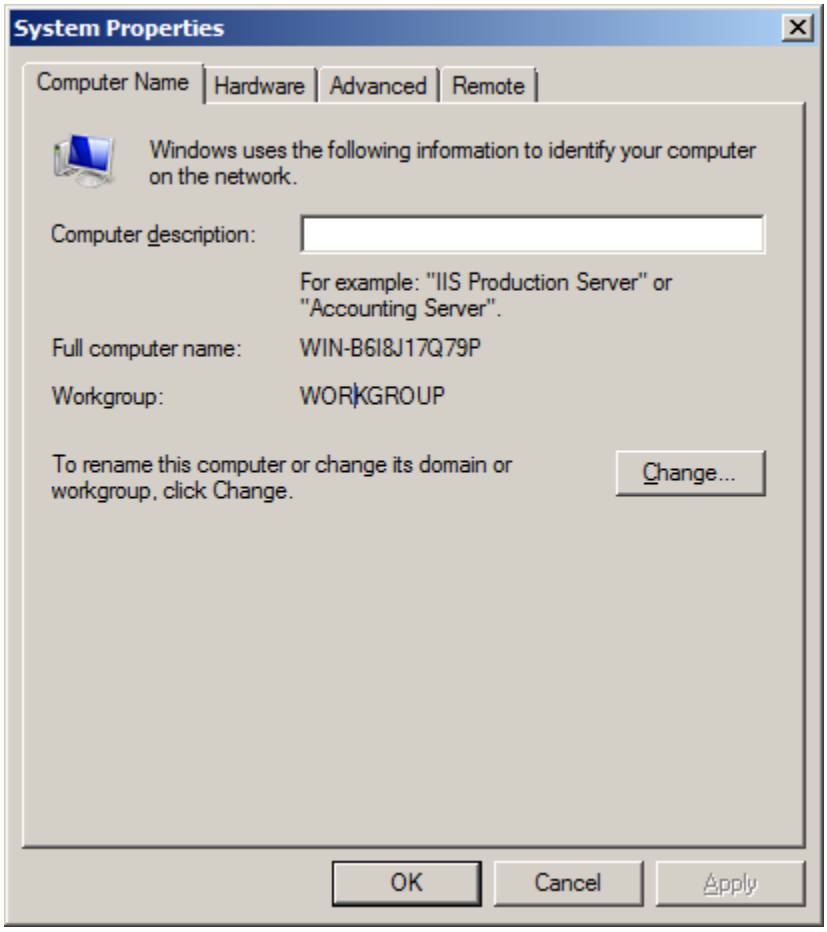
Join to the domain

Press the **OK** button to change IP address.

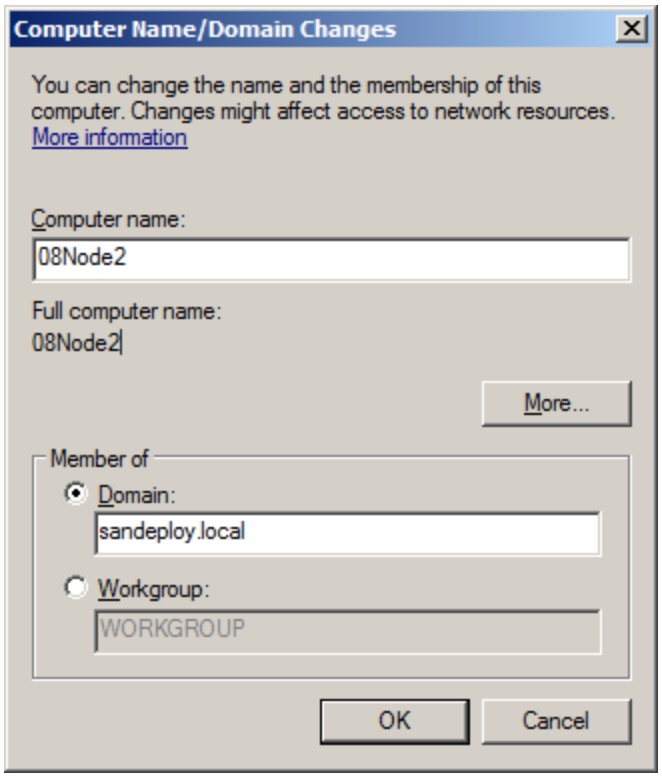
Open System Properties page.



Click on the **Change settings** link, the **System Properties** Dialog appears.



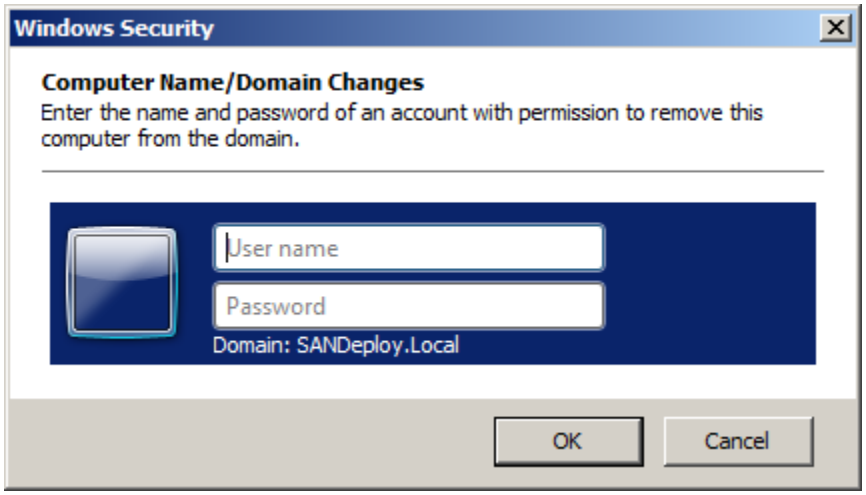
Press the **Change…** button.



Type 08Node2 in the **Computer name** and sandeploy.local in the **Domain**.

Press the **OK** button to change computer name and join the domain.

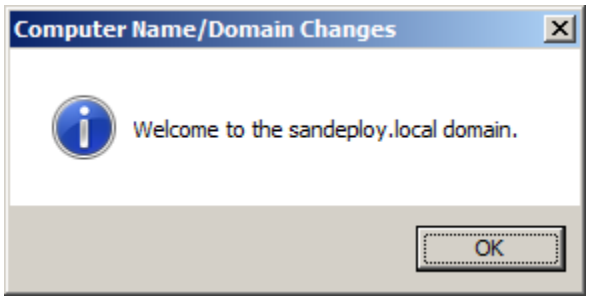
Domain controller account is required to join the domain.



Type your user name and password.

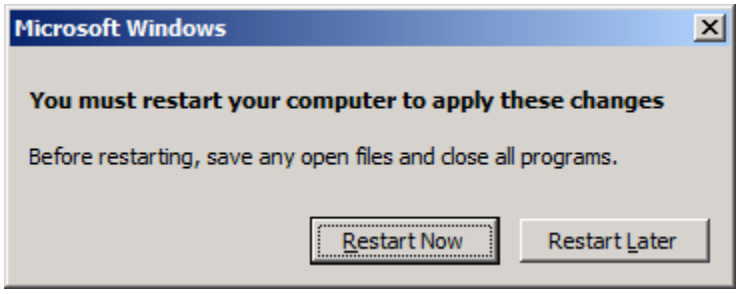
Press the **OK** button to continue.

If successful, the **Computer Name/Domain Changes** notification dialog is shown as below.



Press the **OK** button to continue.

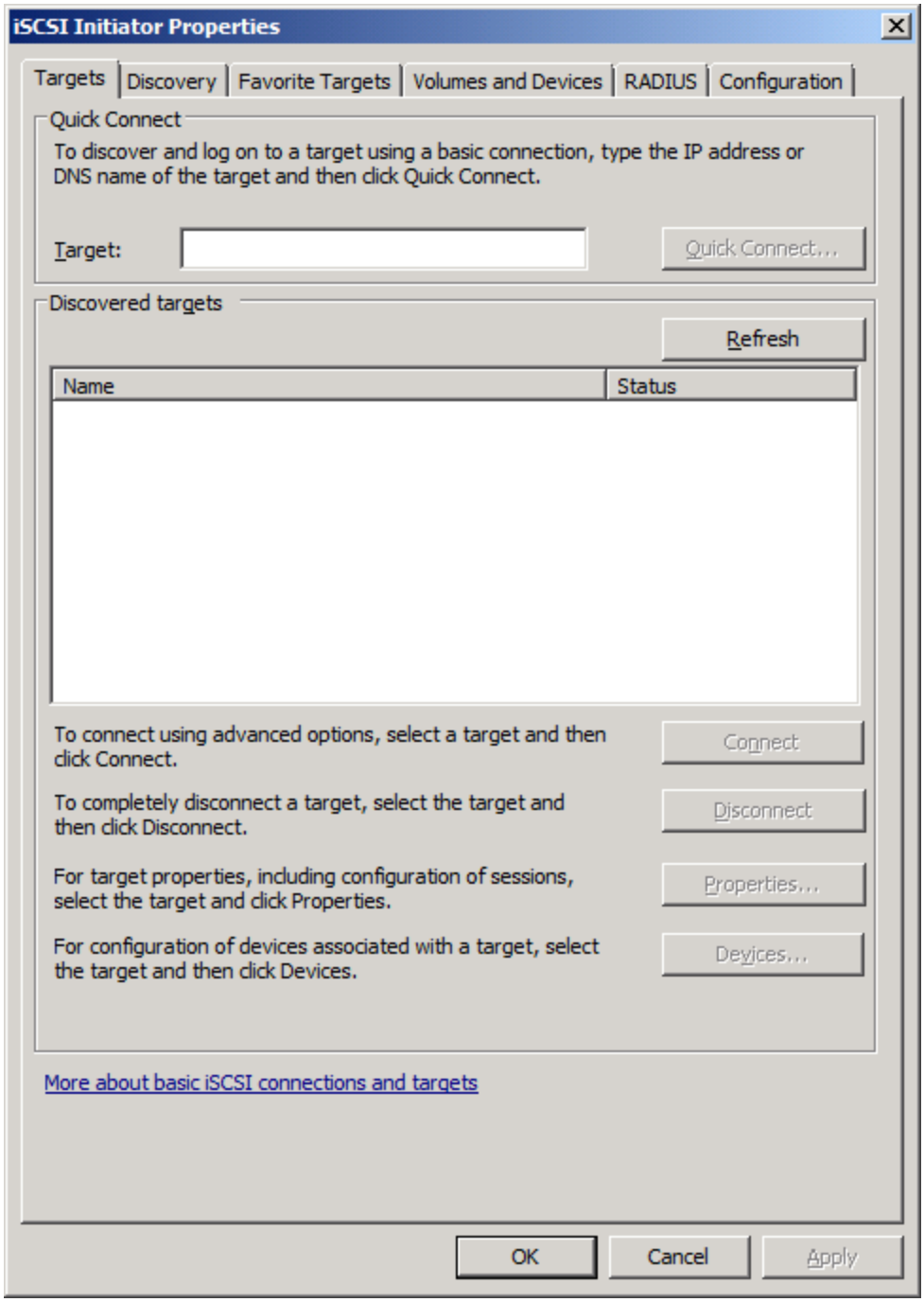
Restart is required.



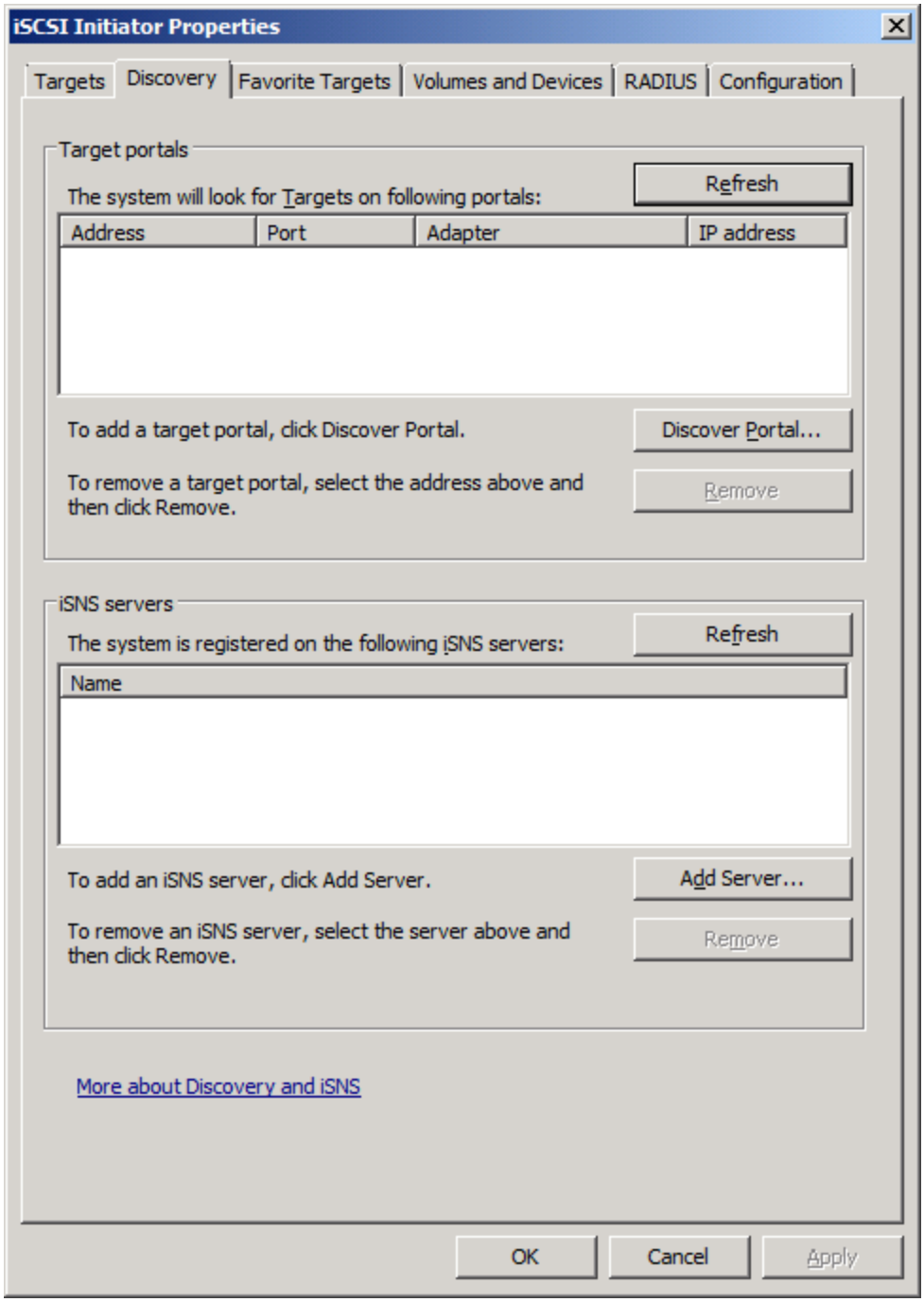
Press **the Restart Now** button to restart the computer.

Log in to iSCSI disks

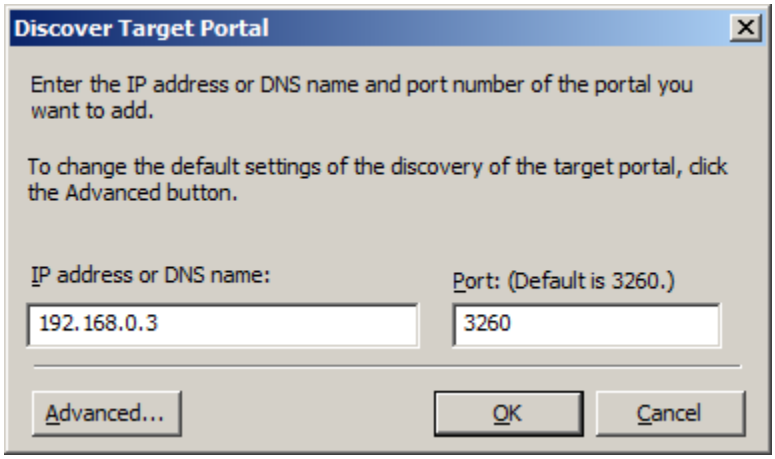
Lunch the Administrative Tools -> Microsoft iSCSI initiator.



Select the **Discovery** page.



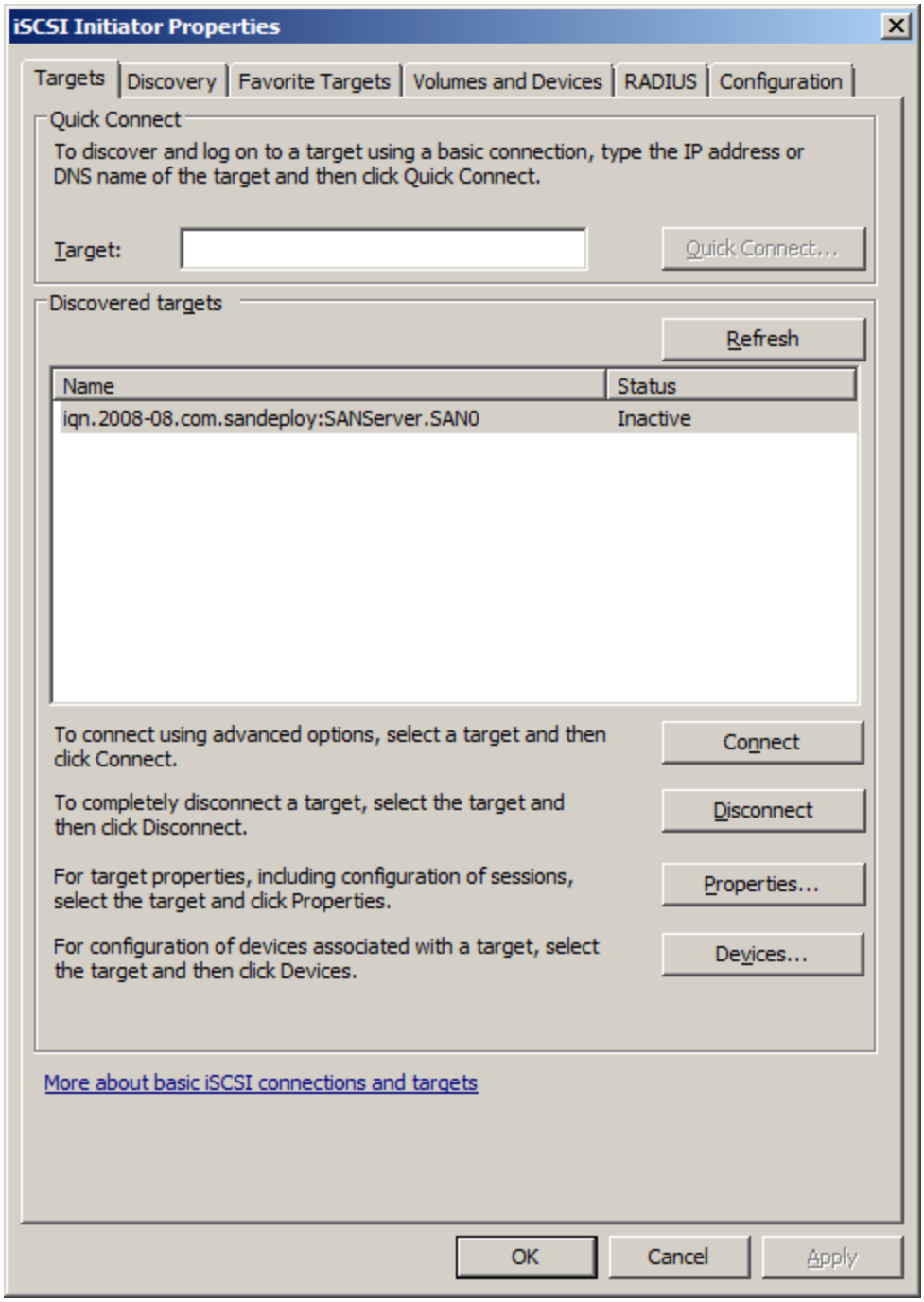
Press the **Discovery Portal** button, the **Discovery Target Portal** dialog is shown.



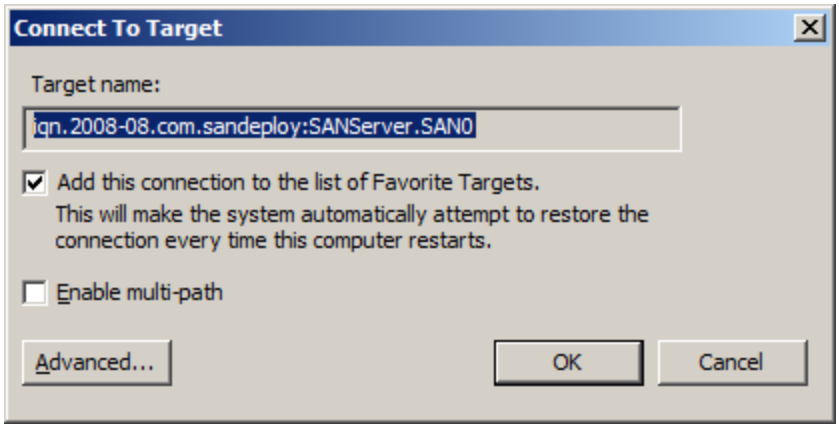
Type **IP address or NDS name** and **Port** of the SANDeploy Server in the required fields.

Press the **OK** button to add.

Select the **Targets** page.



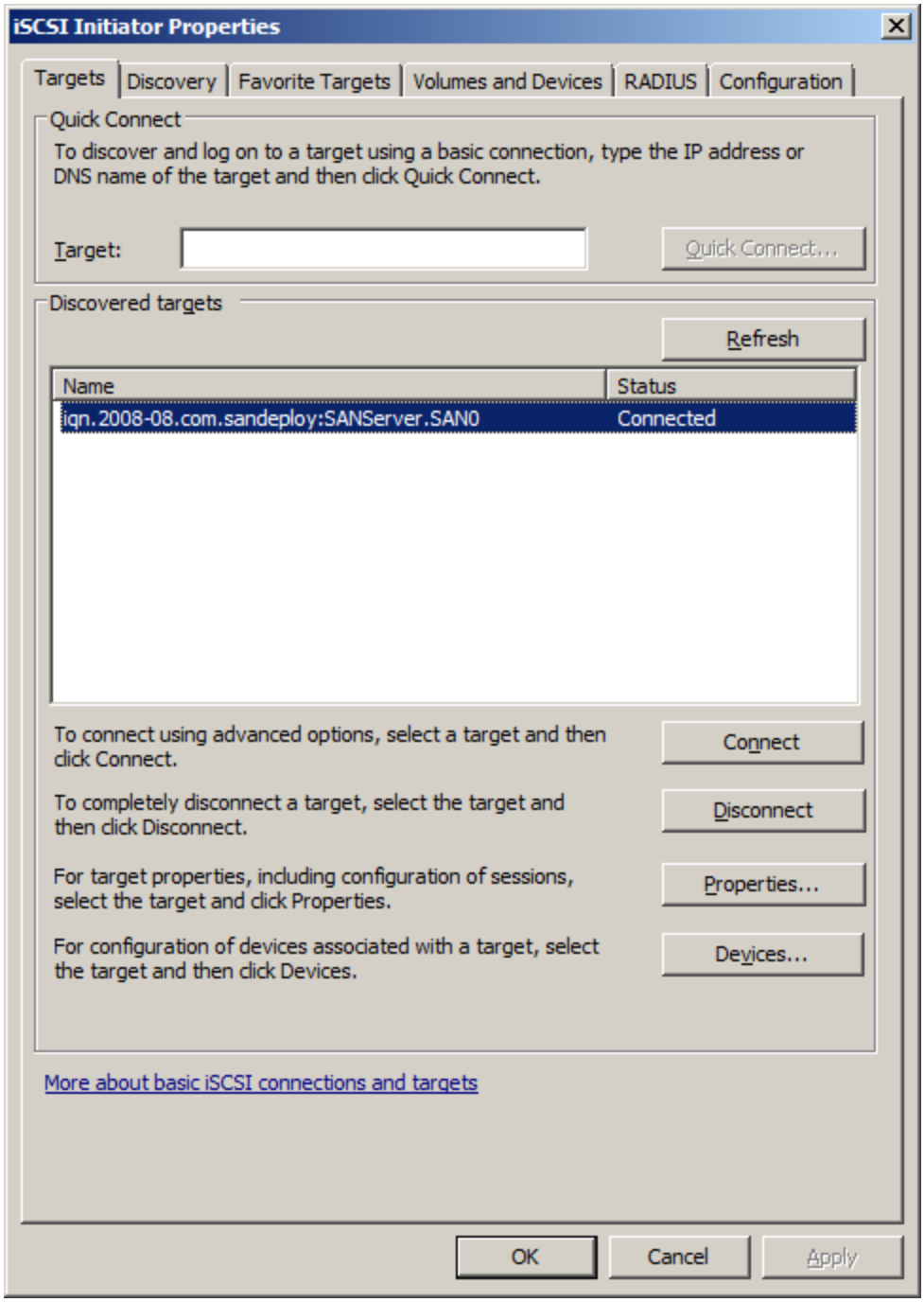
Select the targets just added and then press the **Connect** button.



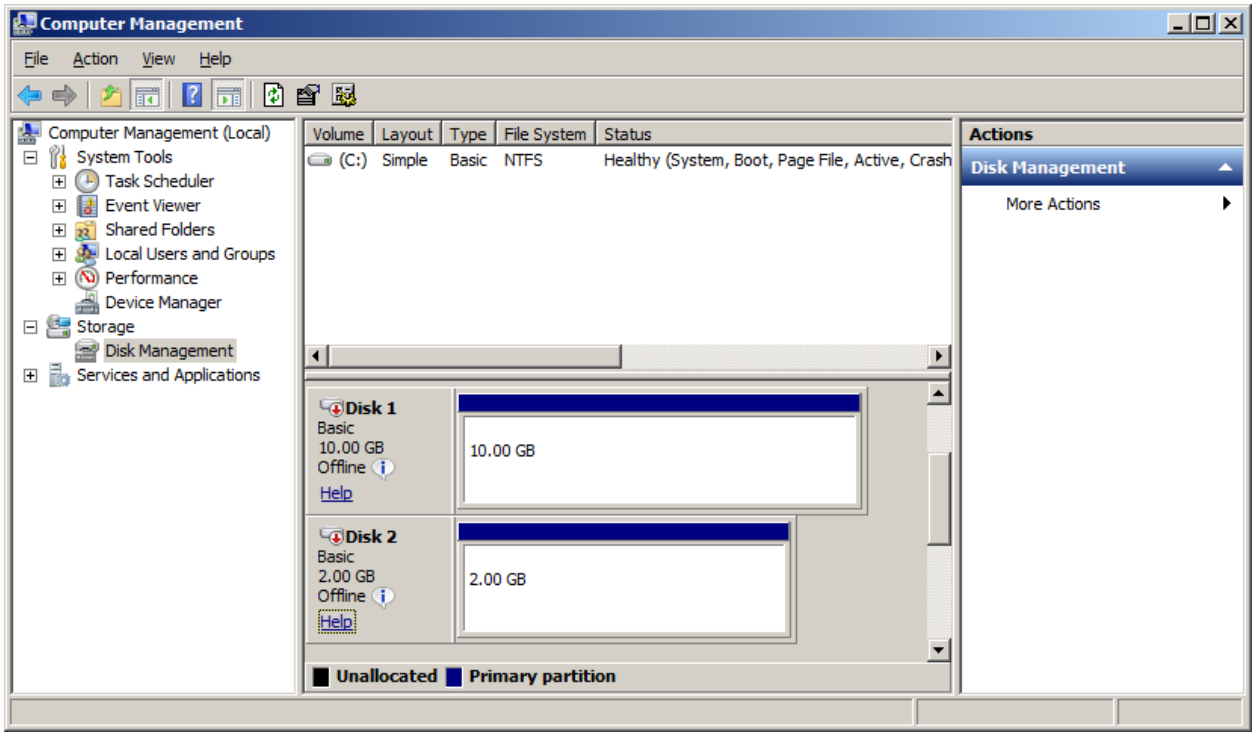
Keep selection of **the Add this connection to the list of Favorite Targets**.

Press the **OK** button to continue.

If successful, the logged on targets are shown in the figure.

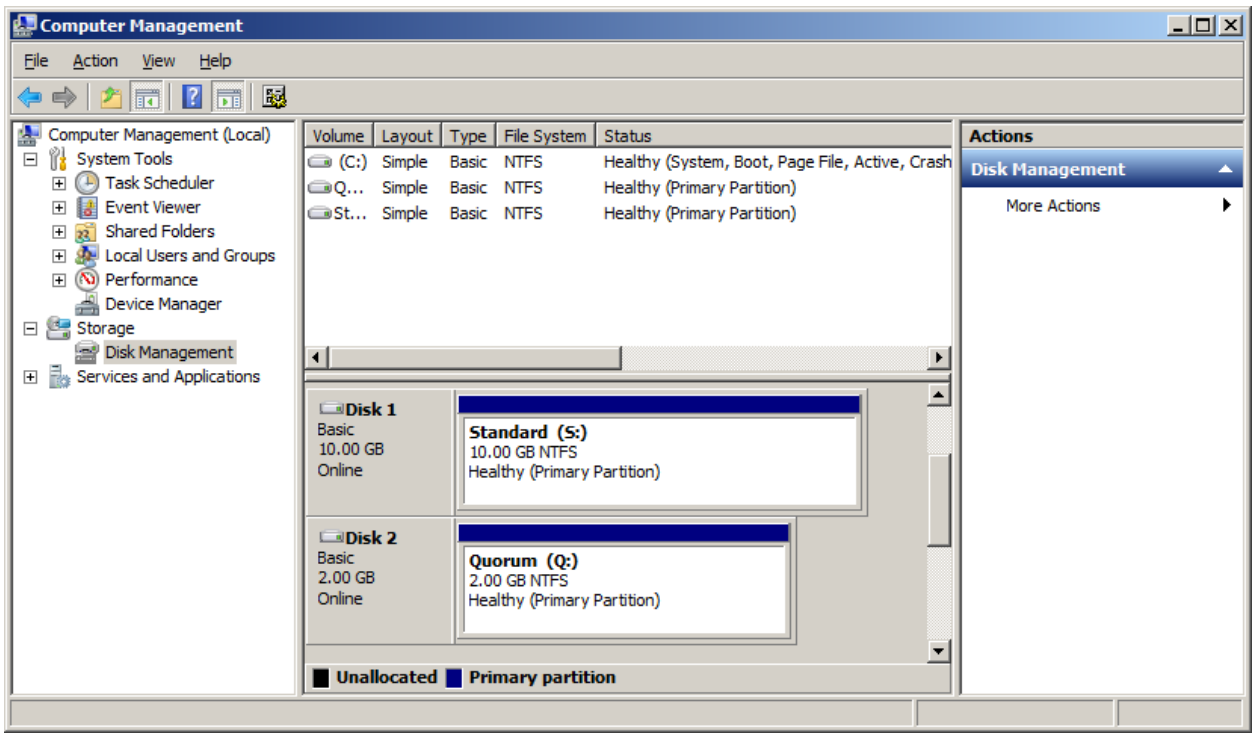


Launch the **Windows Computer Management Console**.



Right click on the **Disk1** and then select the **Online** menu item, bring **Disk1** online.

Right click on the **Disk2** and then select the **Online** menu item, brings **Disk2** online.

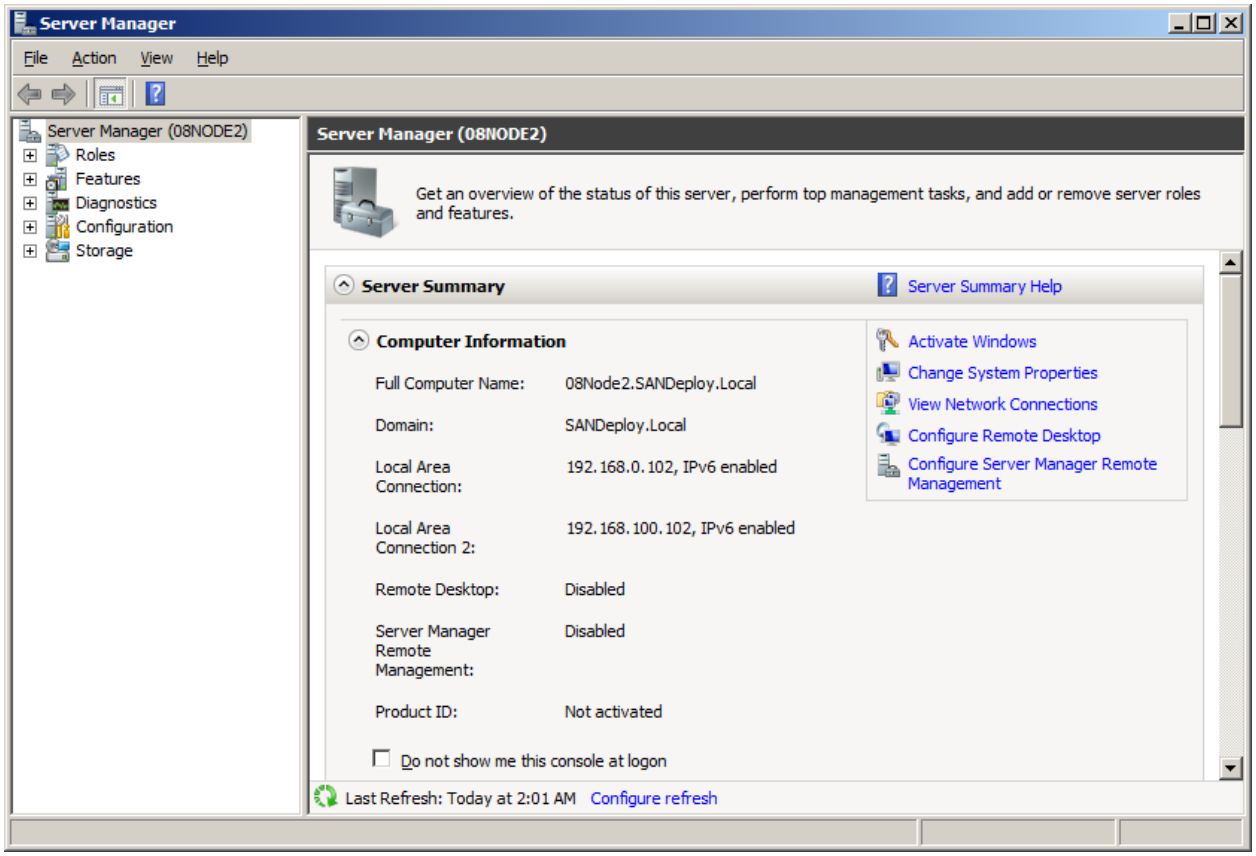


Right on the Disk1 and then select the **Change Driver Letter and Paths…** menu item, change the letter of Disk1 to S:.

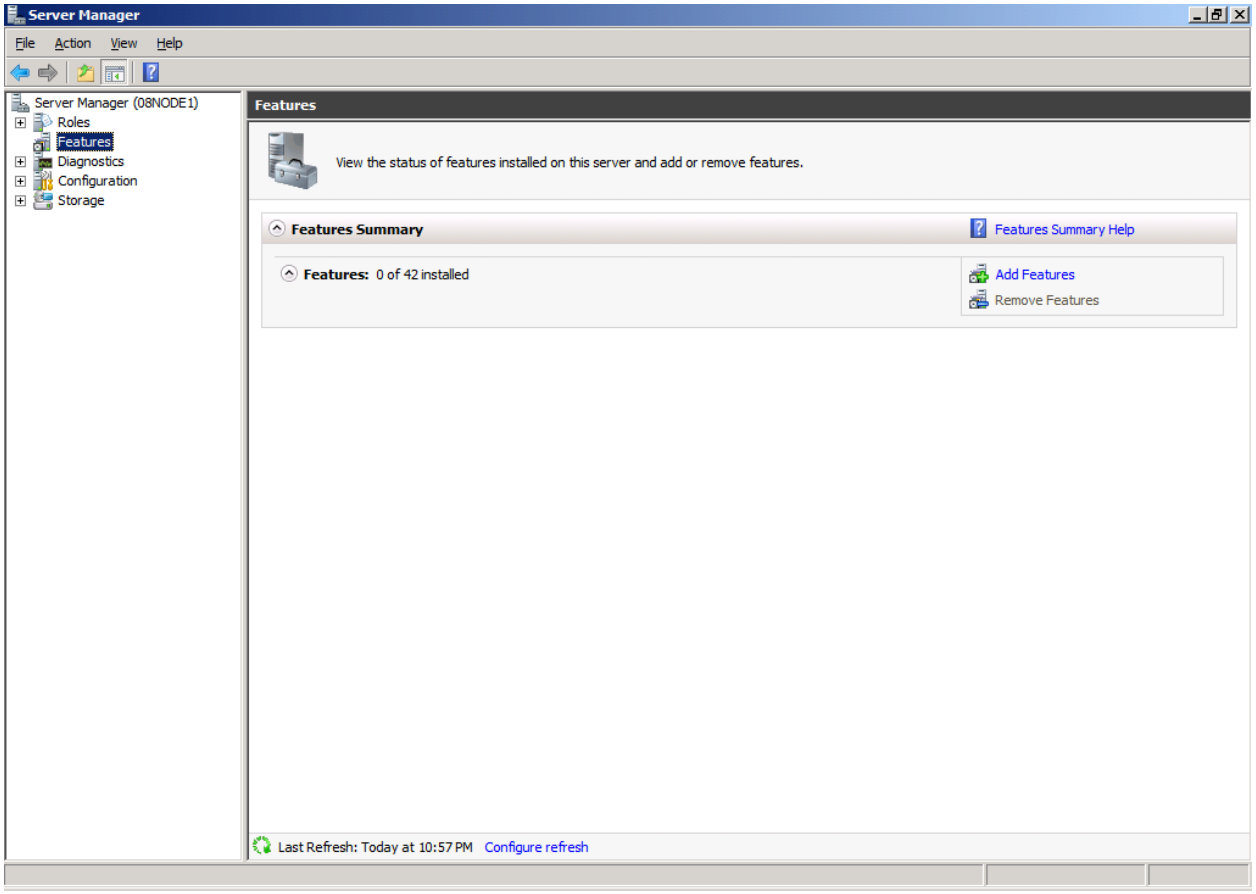
Right on the Disk2 and then select the **Change Driver Letter and Paths…** menu item, change the letter of Disk2 to Q:.

Installing Failover Clustering Service

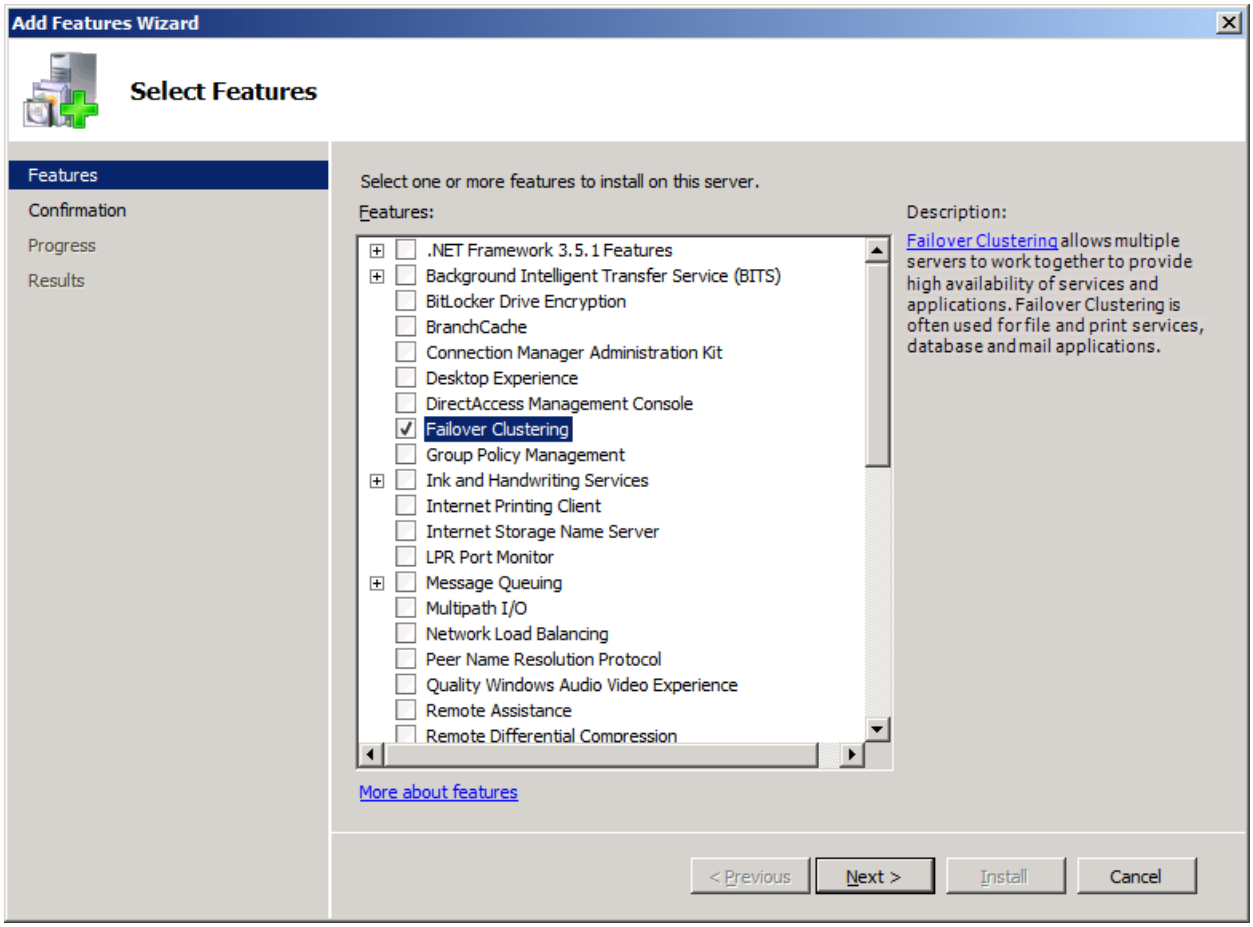
Launch the **Windows Server manager Console**.



Select the **Features** node from the left tree view.

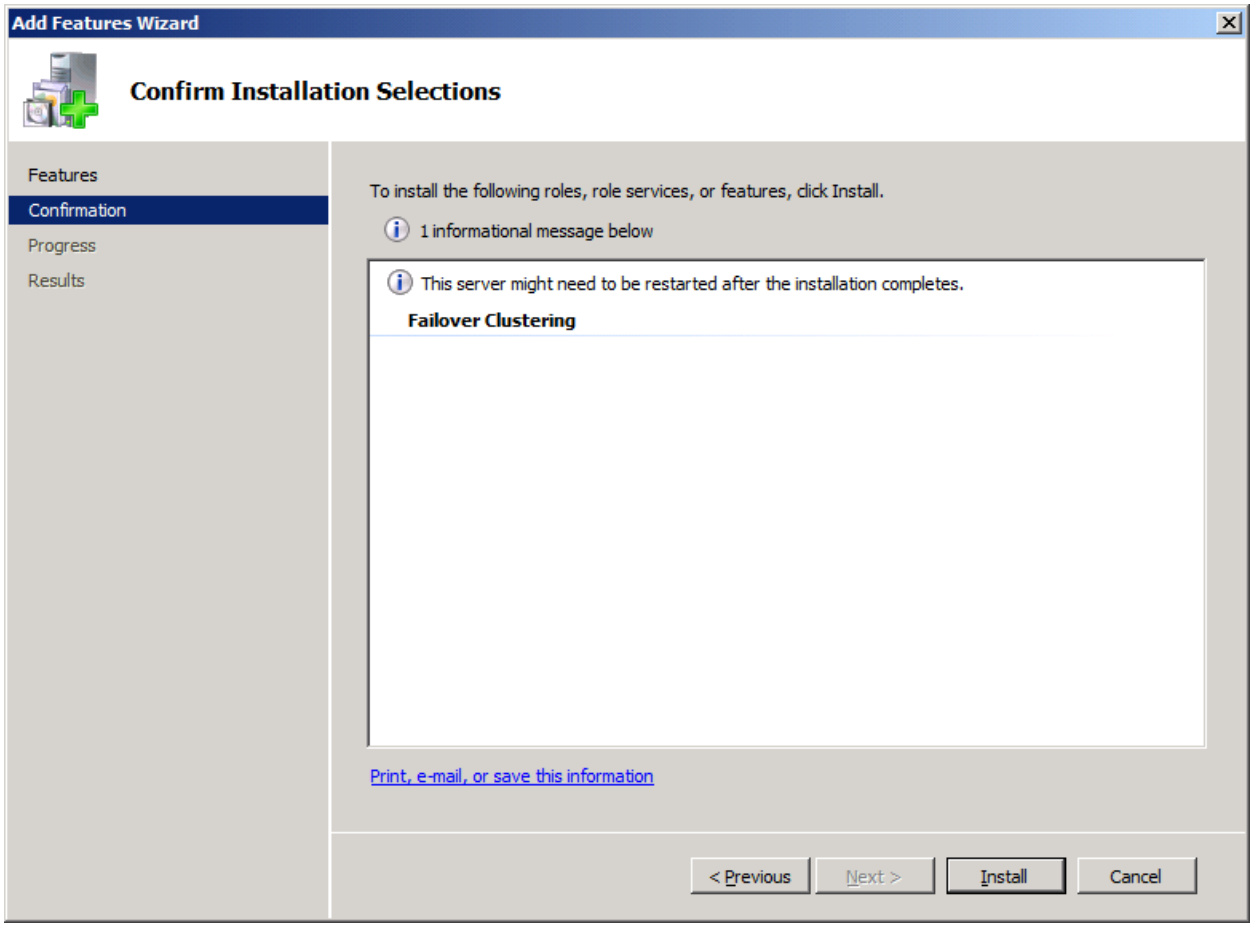


Click the **Add Features** link, the **Add Features Wizard** is shown.



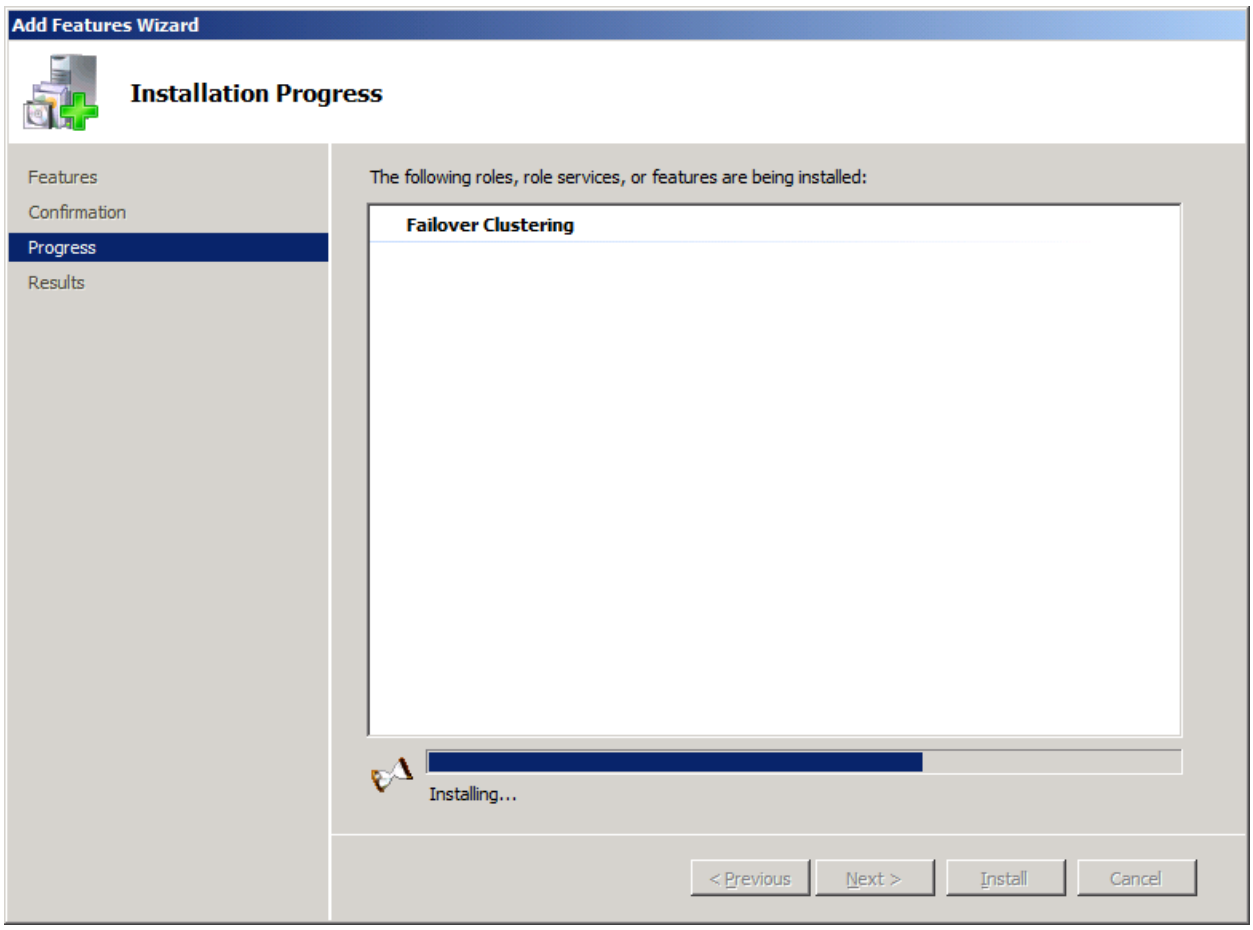
Select **the Failover Clustering**.

Press the **Next** button to continue.

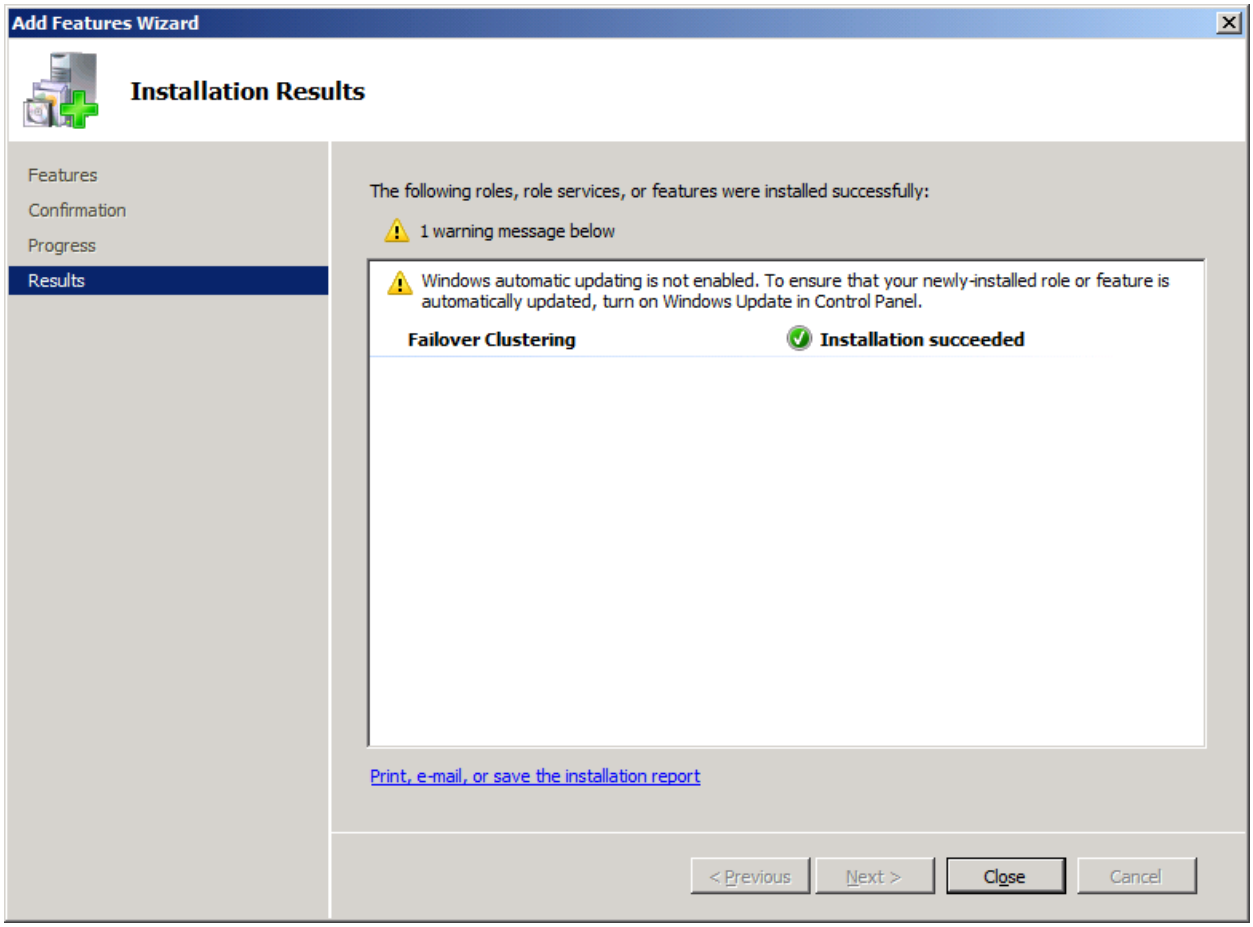


Press the **Install** button to install the **Failover Clustering** feature.

The installation of the Failover Clustering is going on.



If successful, the wizard will complete and show as the figure below.



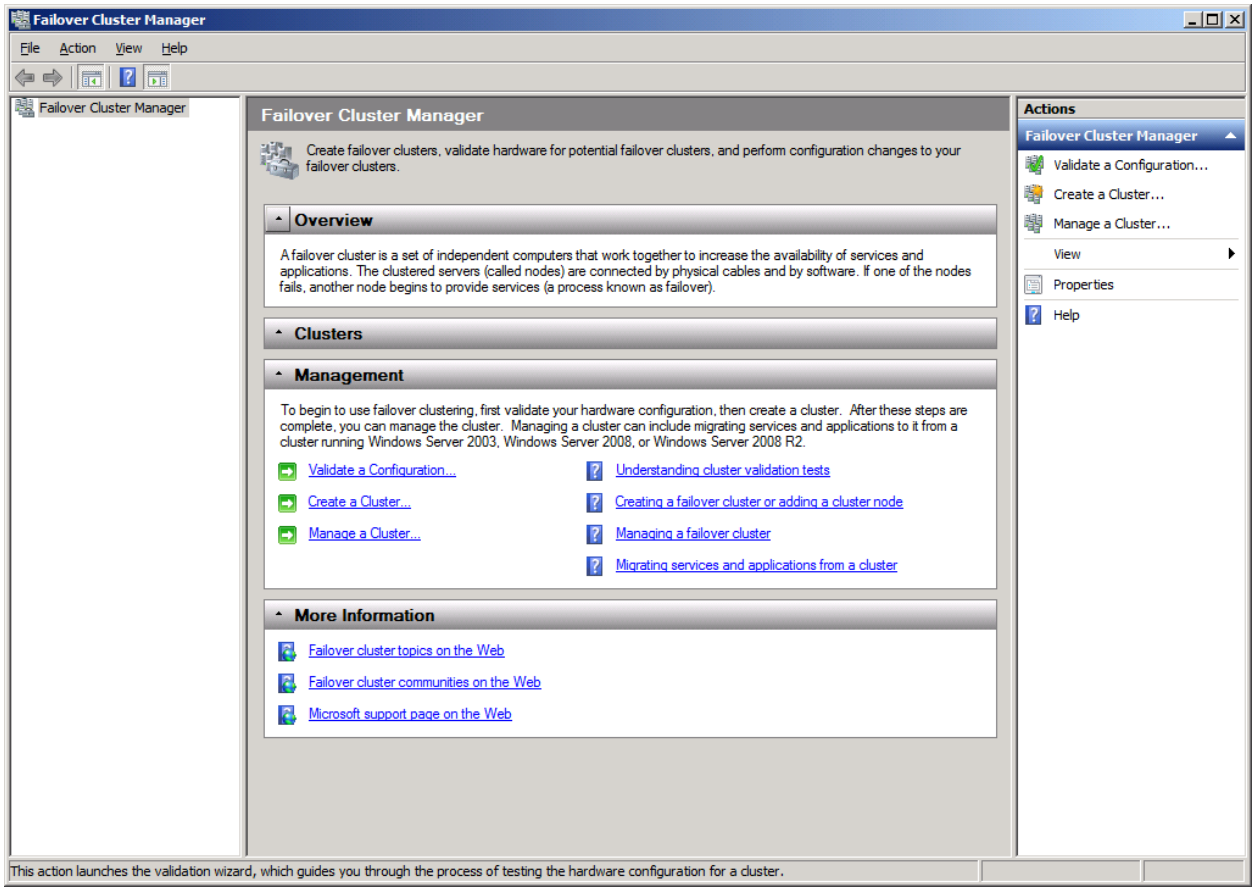
Press the **Close** button.

Configuring Failover Clustering

Validate a Configuration

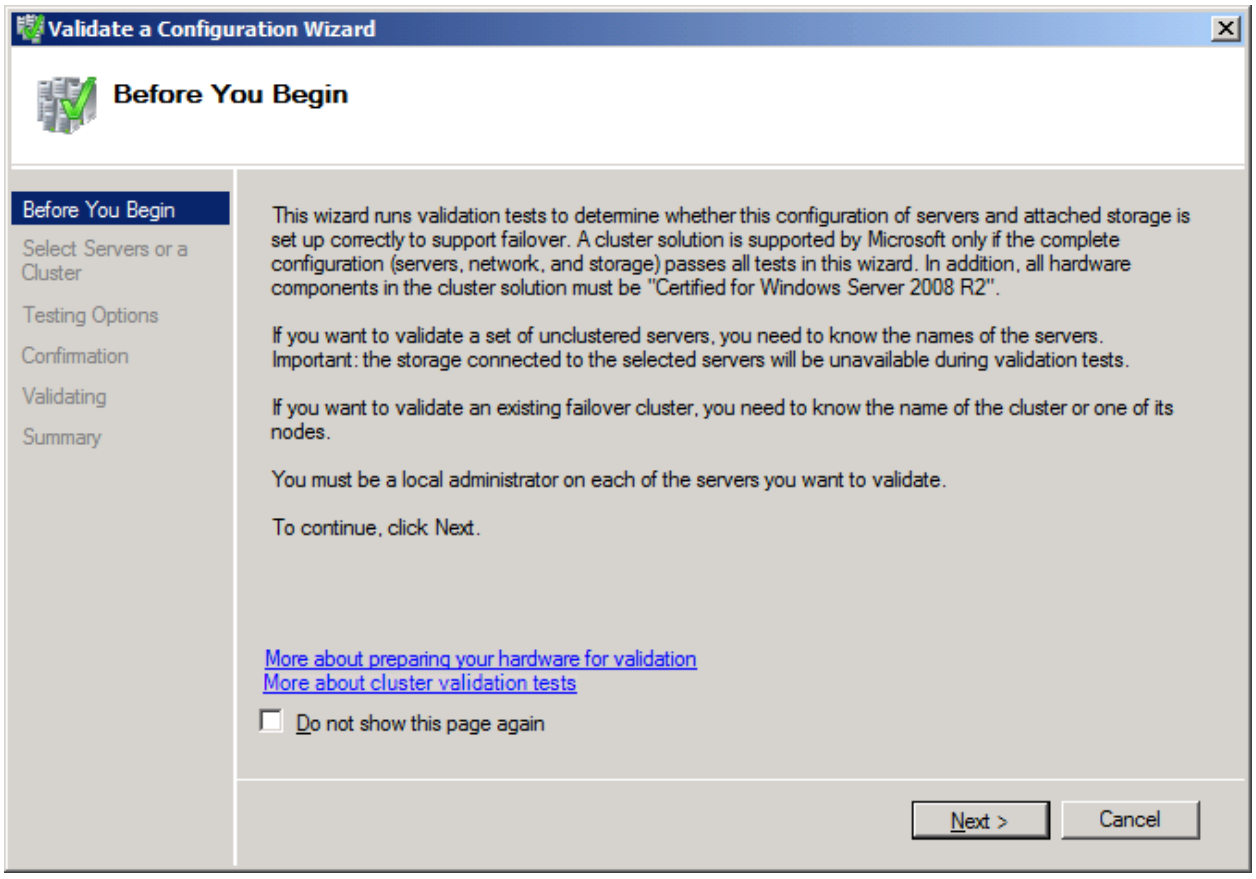
Node that this step is not necessary for creating a cluster, but it ensures that the configuration is suitable for failover clustering.

Launch to the **Windows Failover Cluster Manager** console in node 1 or node 2 machines.



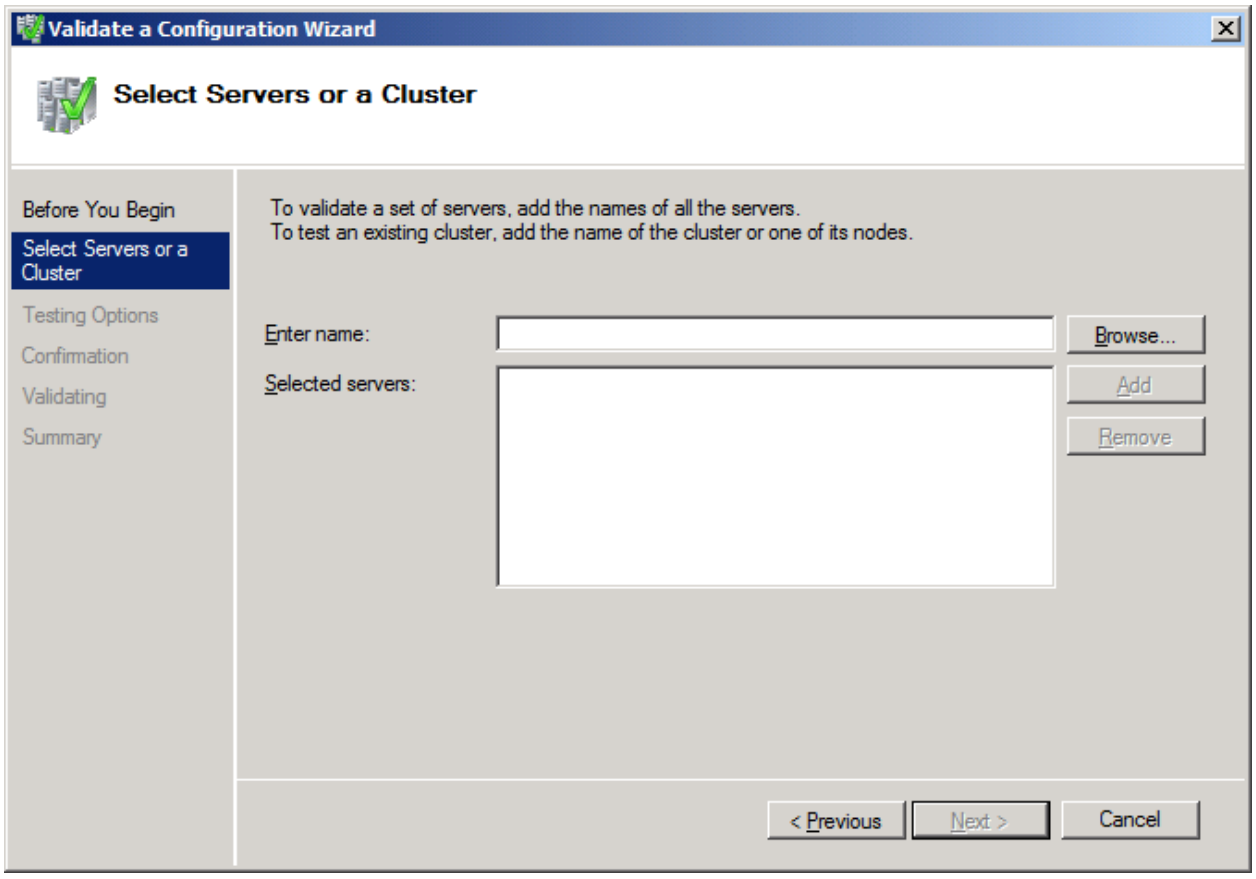
Click on the **Validate a Configuration…** link.

The **Validate a Configuration Wizard** appears.

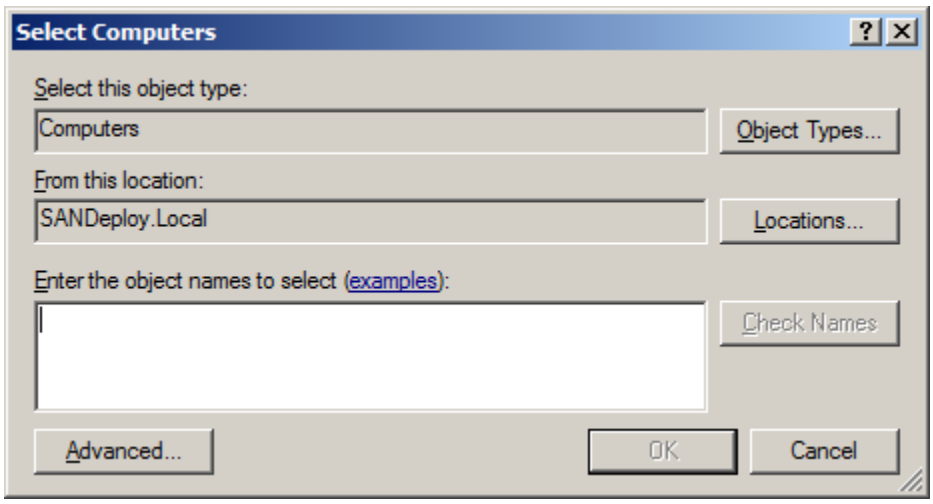


Press the **Next** button to continue.

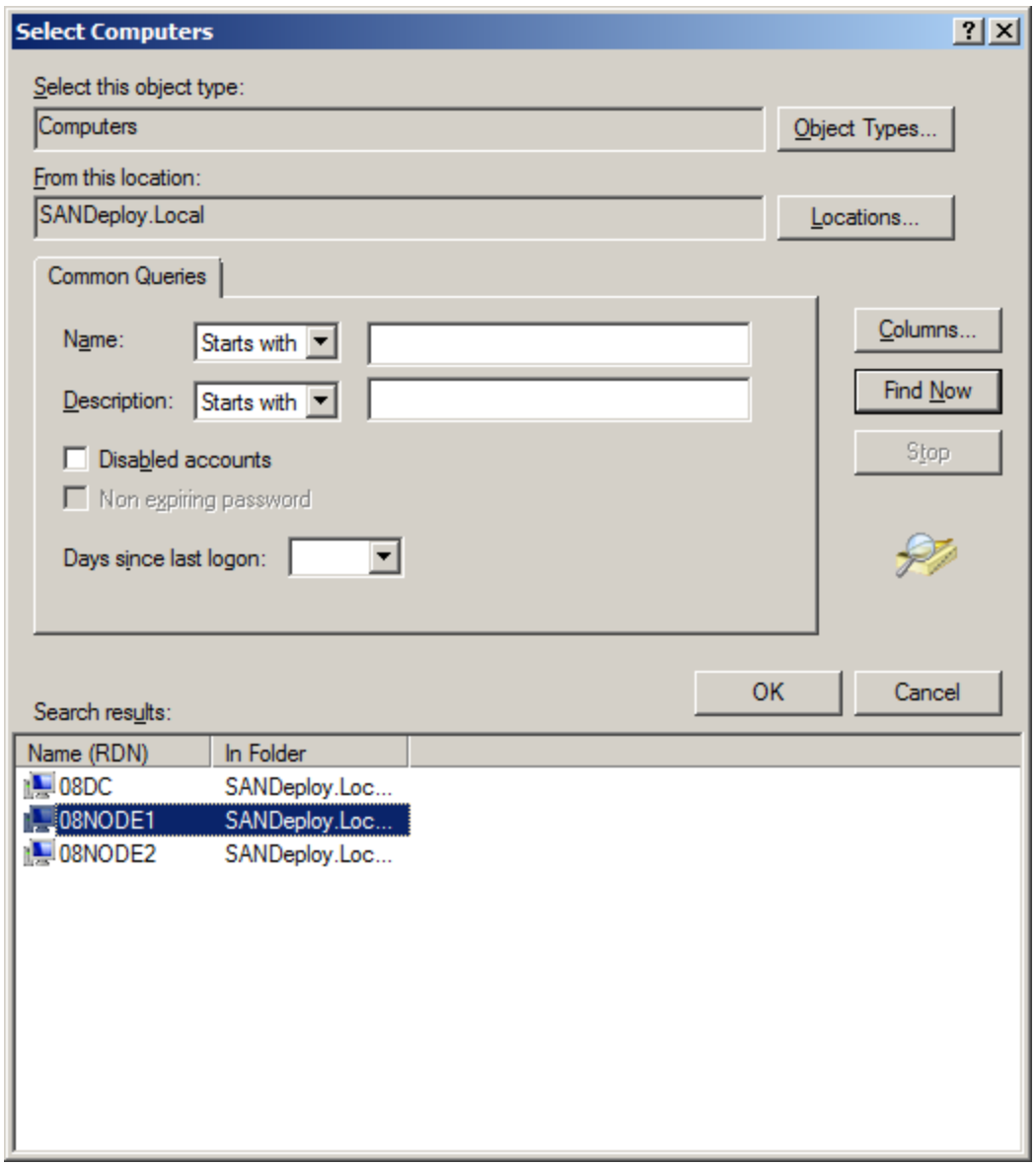
Add nodes to the cluster.



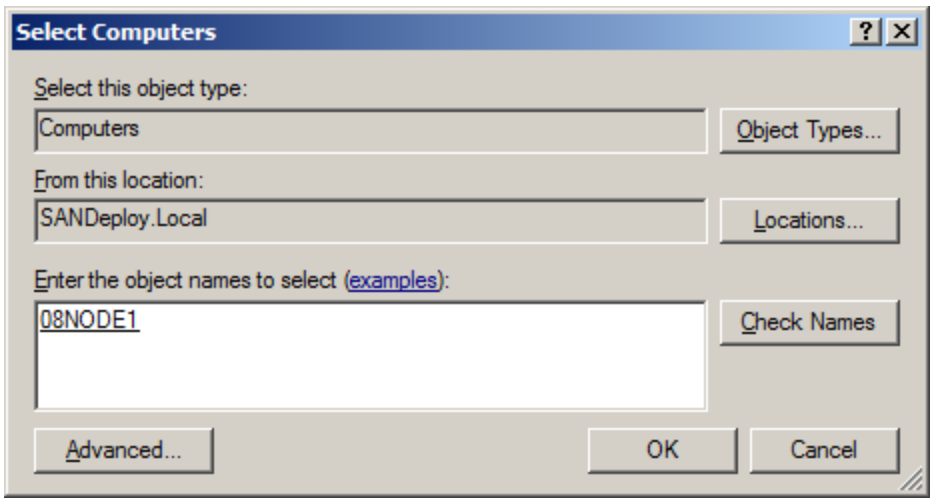
Press the **Browse** button, the Select **Computers dialog** appears.



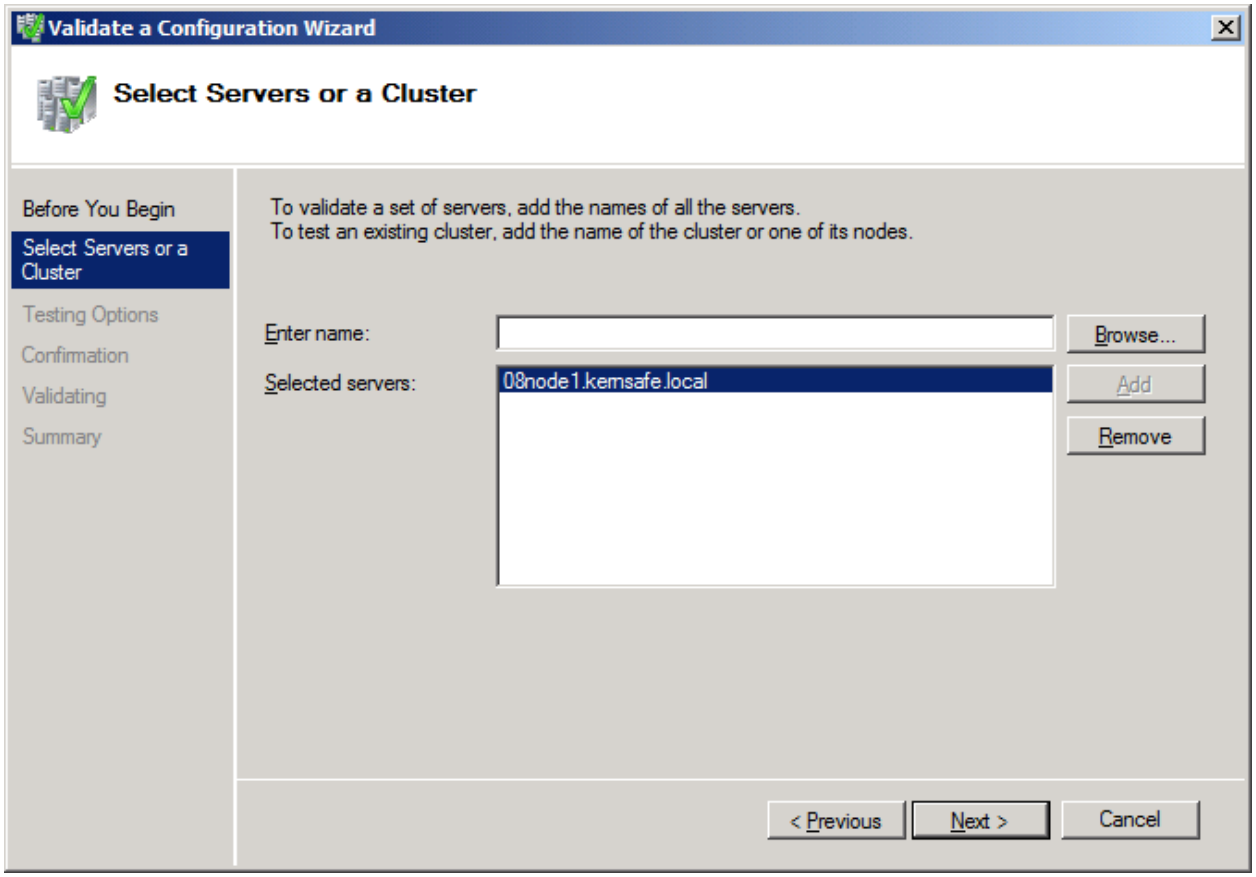
Press the **Advanced…** button.



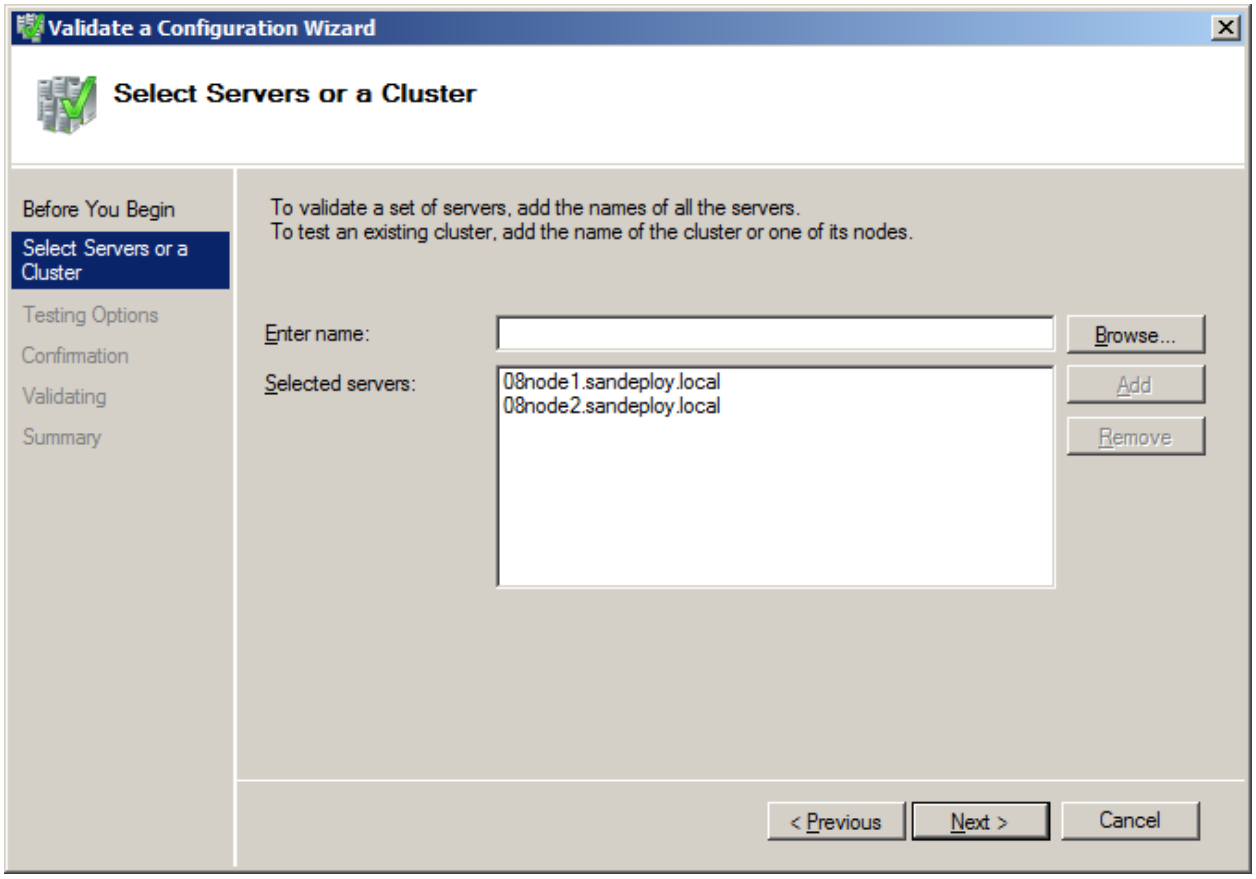
Select the **08NODE1** item and then press the **OK** button to add.



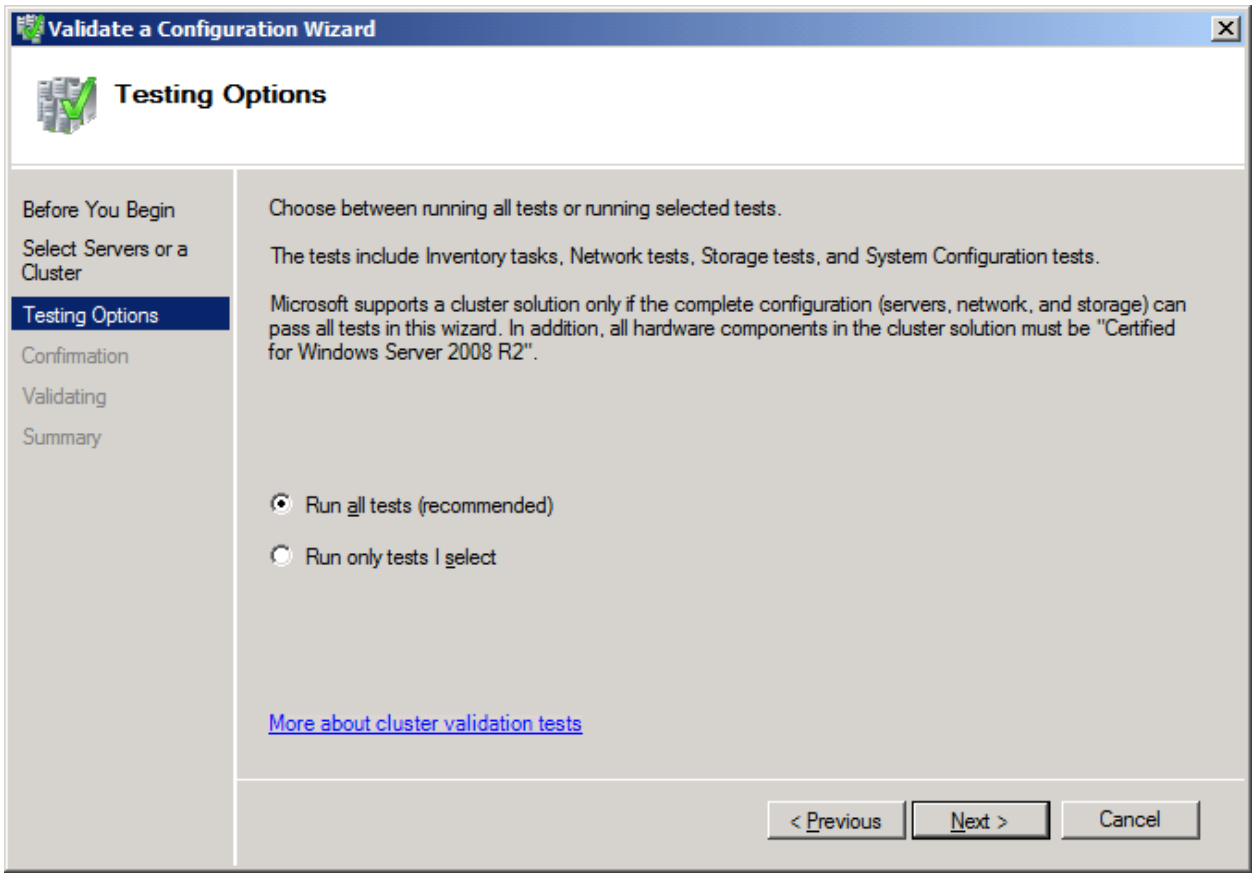
Press the **OK** button.



Press the **Browse…** button and add **08NODE2** by through the same way.

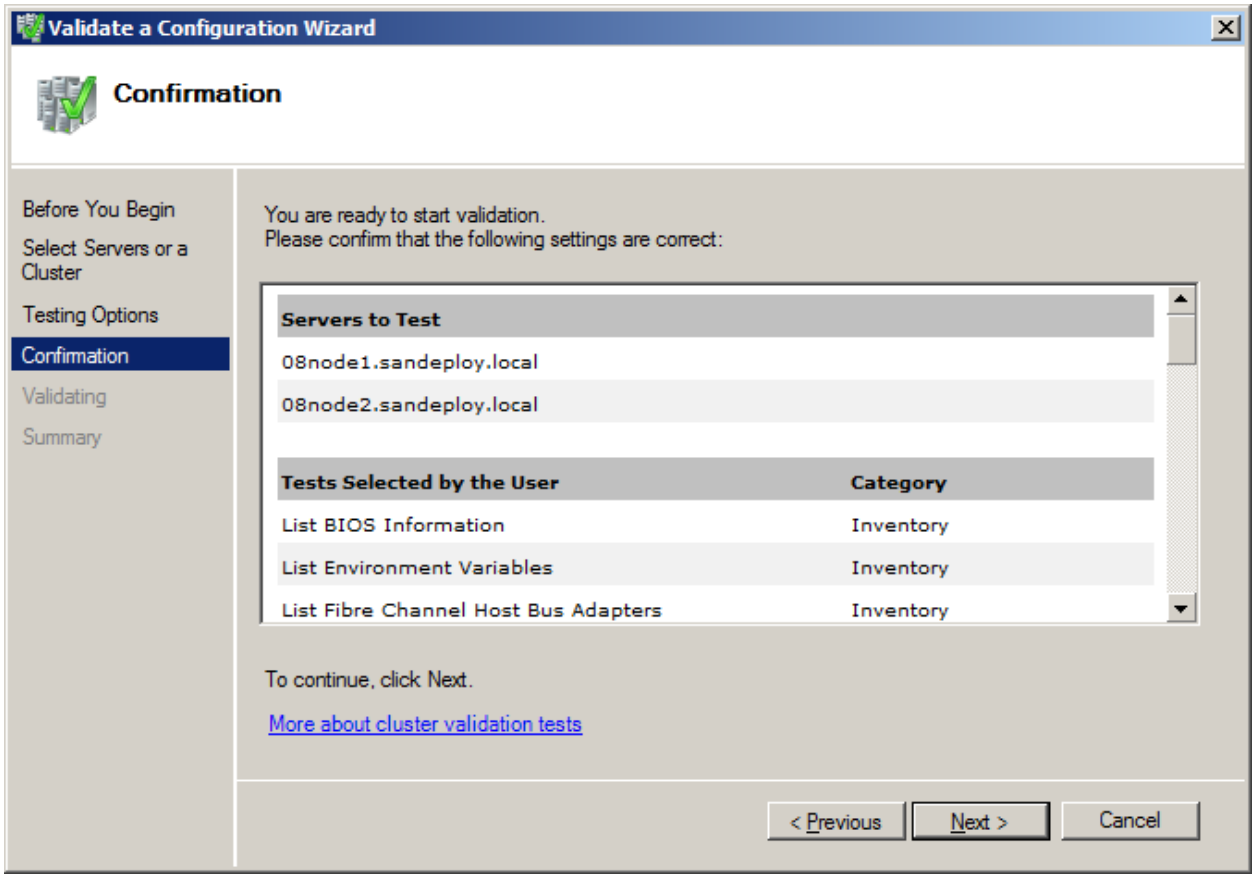


Press the **Next** button to continue.



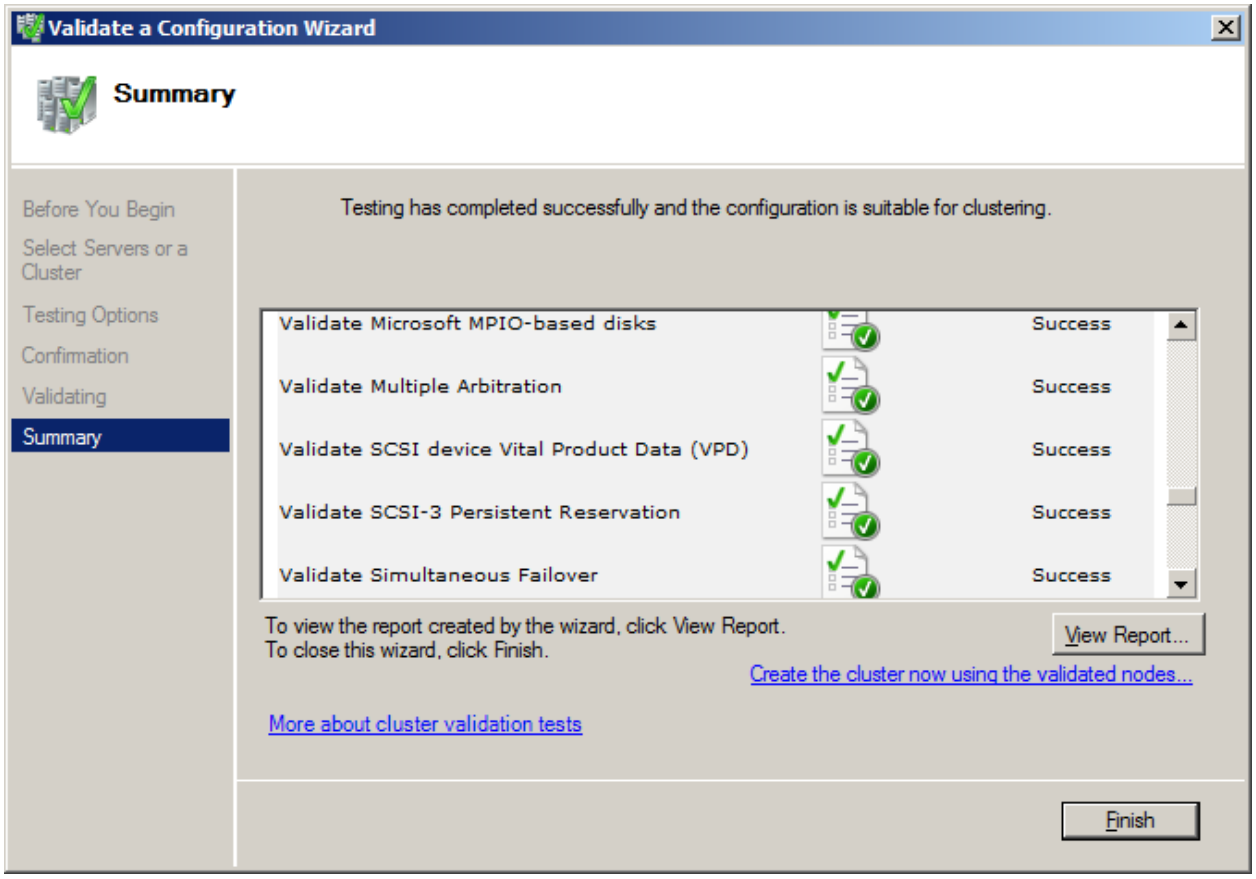
Select **Run all tests (recommended).**

Press the **Next** button to continue.



Press the **Next** button to continue.

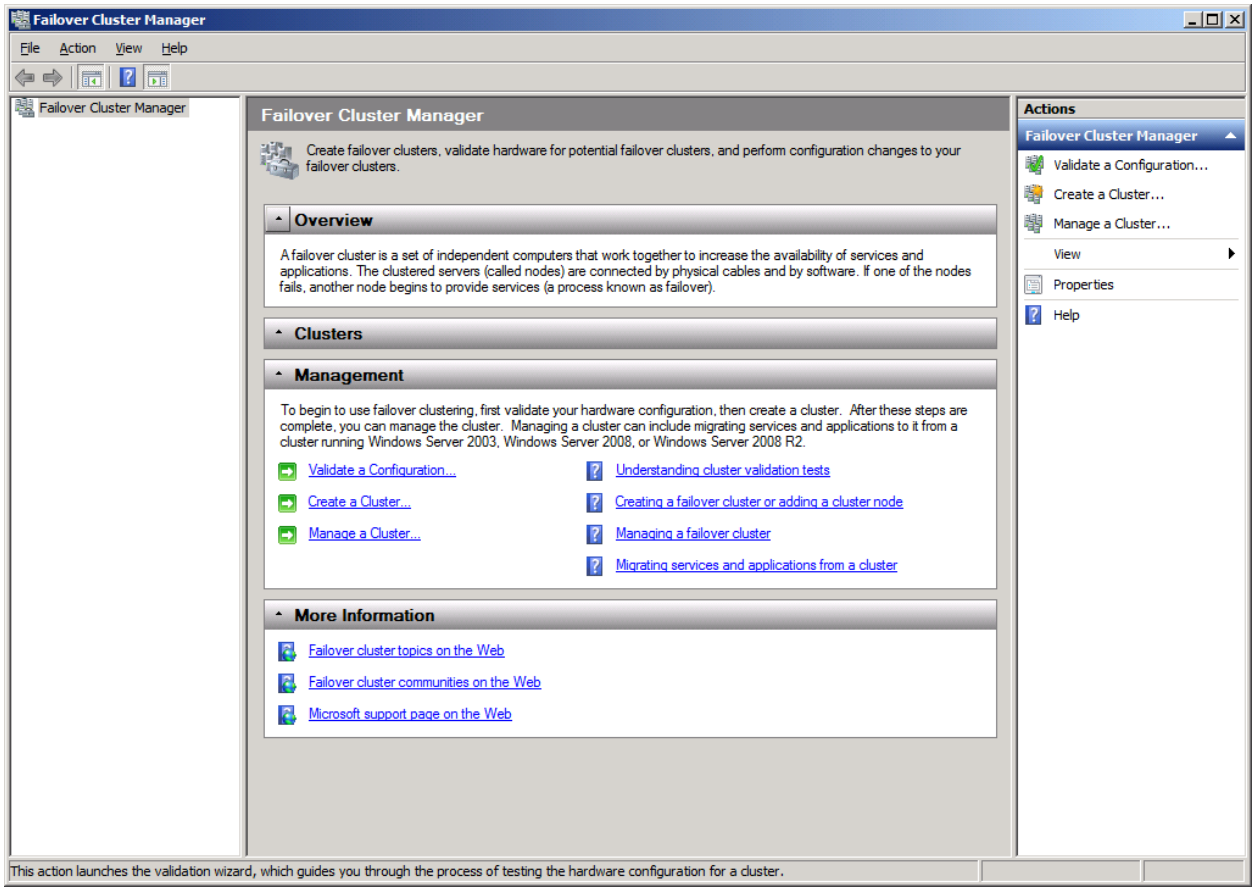
If successful, all the tests include **SCSI-3 Persistent Reservation** are valid and shown as the figure below.



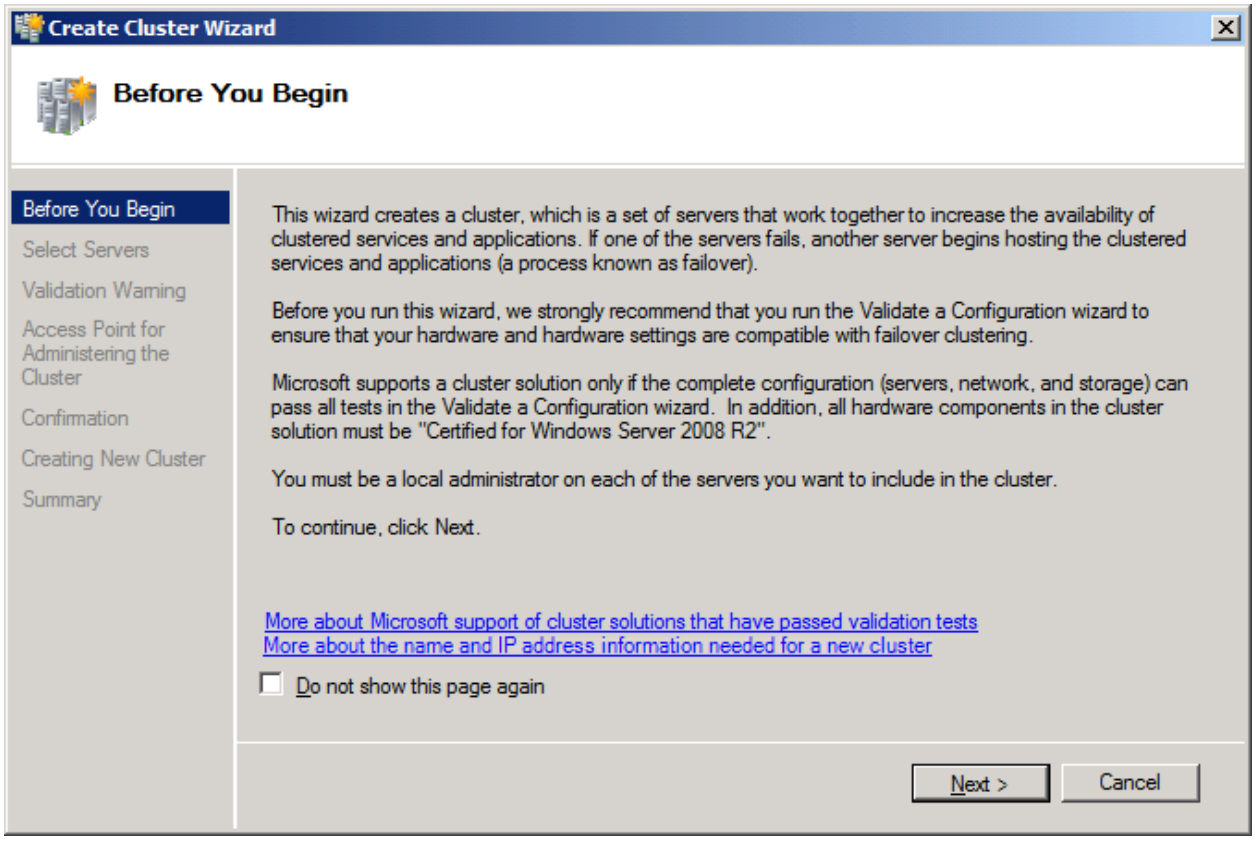
Press the **Finish** button to complete configuration validation.

Create a Failover Cluster

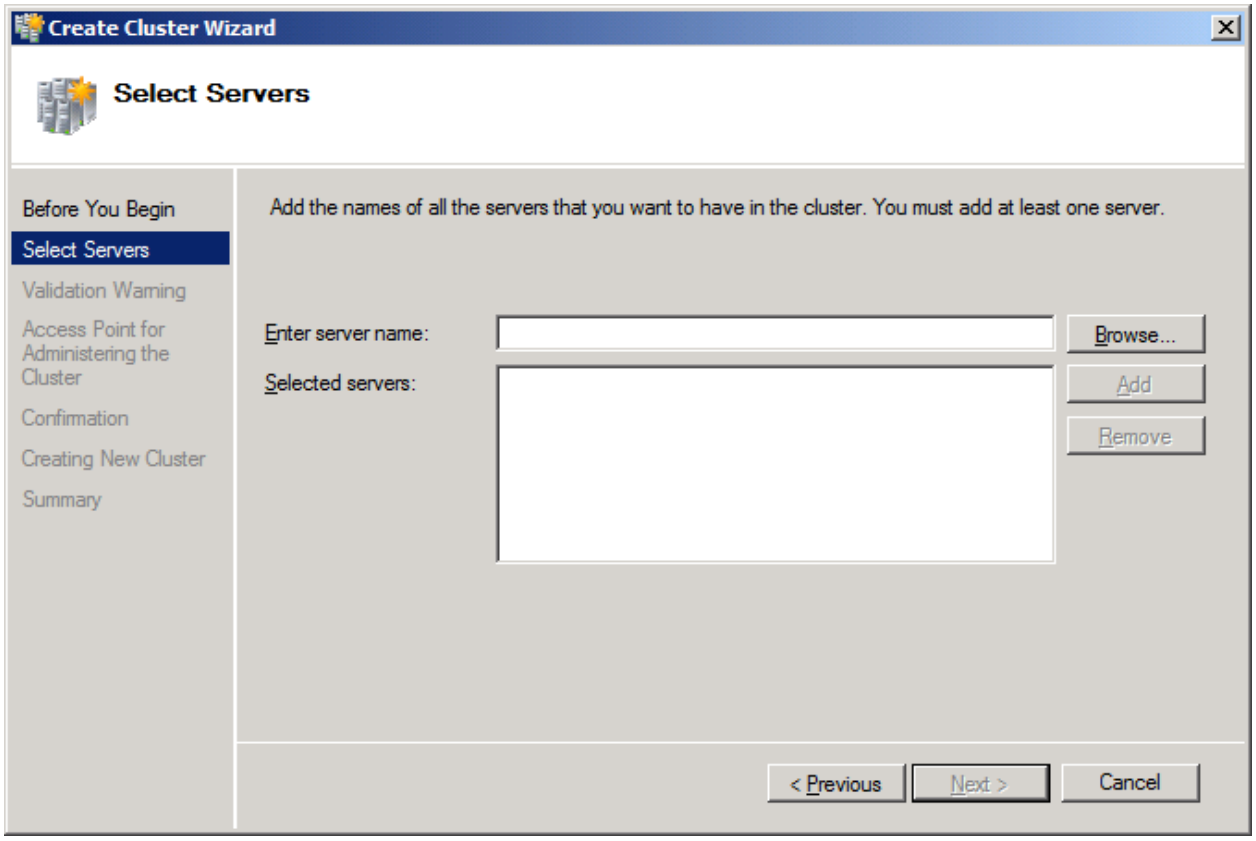
Click on the **Create a Cluster…** item in the **Actions** panel of **Failover Cluster Manager**.



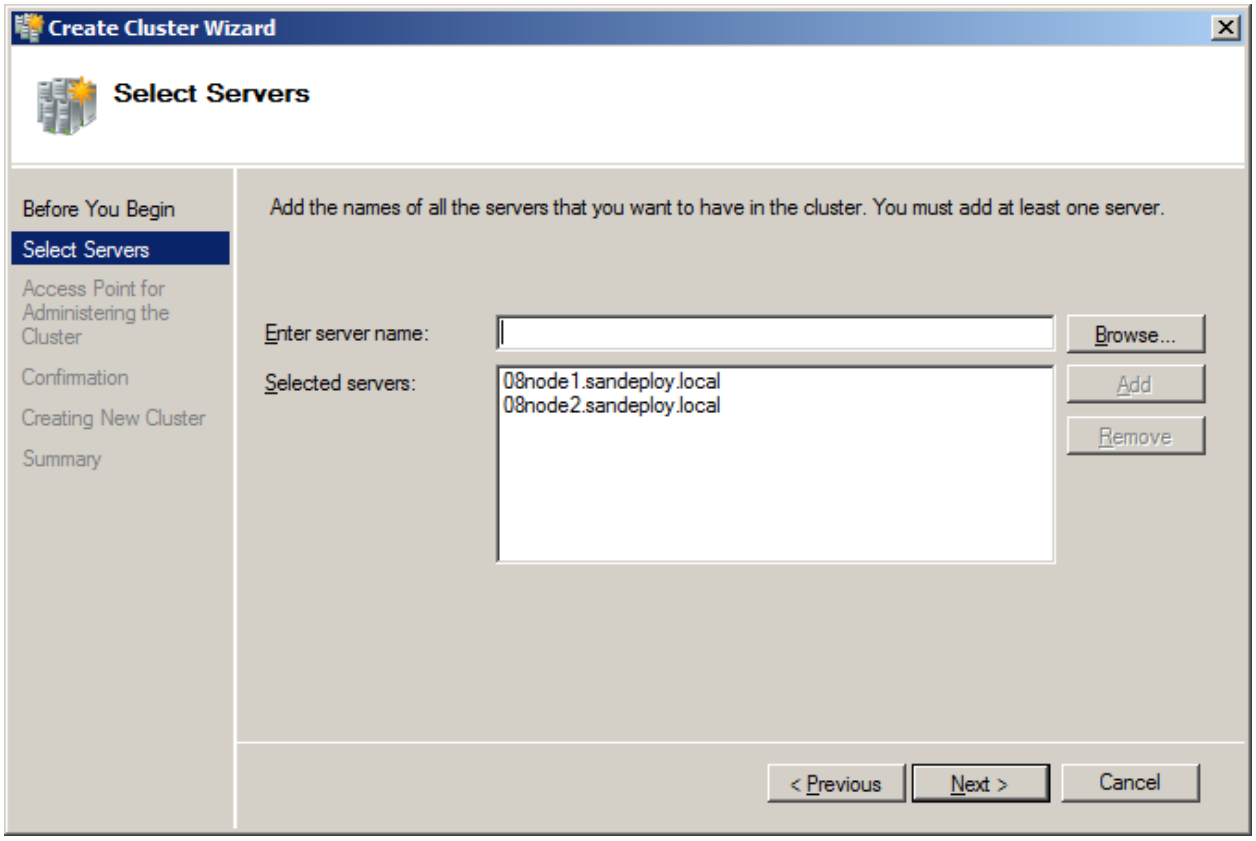
The Create **Cluster Wizard** appears.



Press the **Next** button to continue.

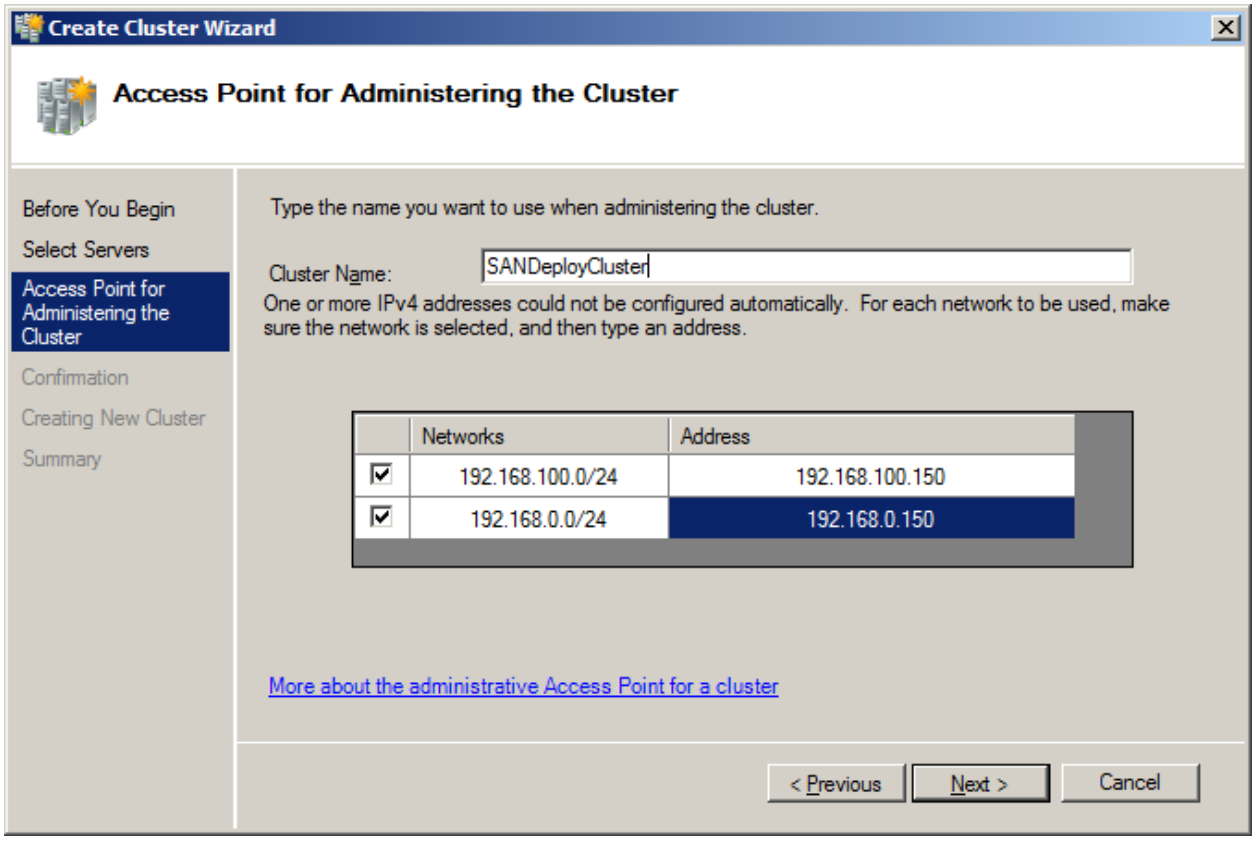


Press the **Browse… button** and the **Add** button to add nodes to this cluster.



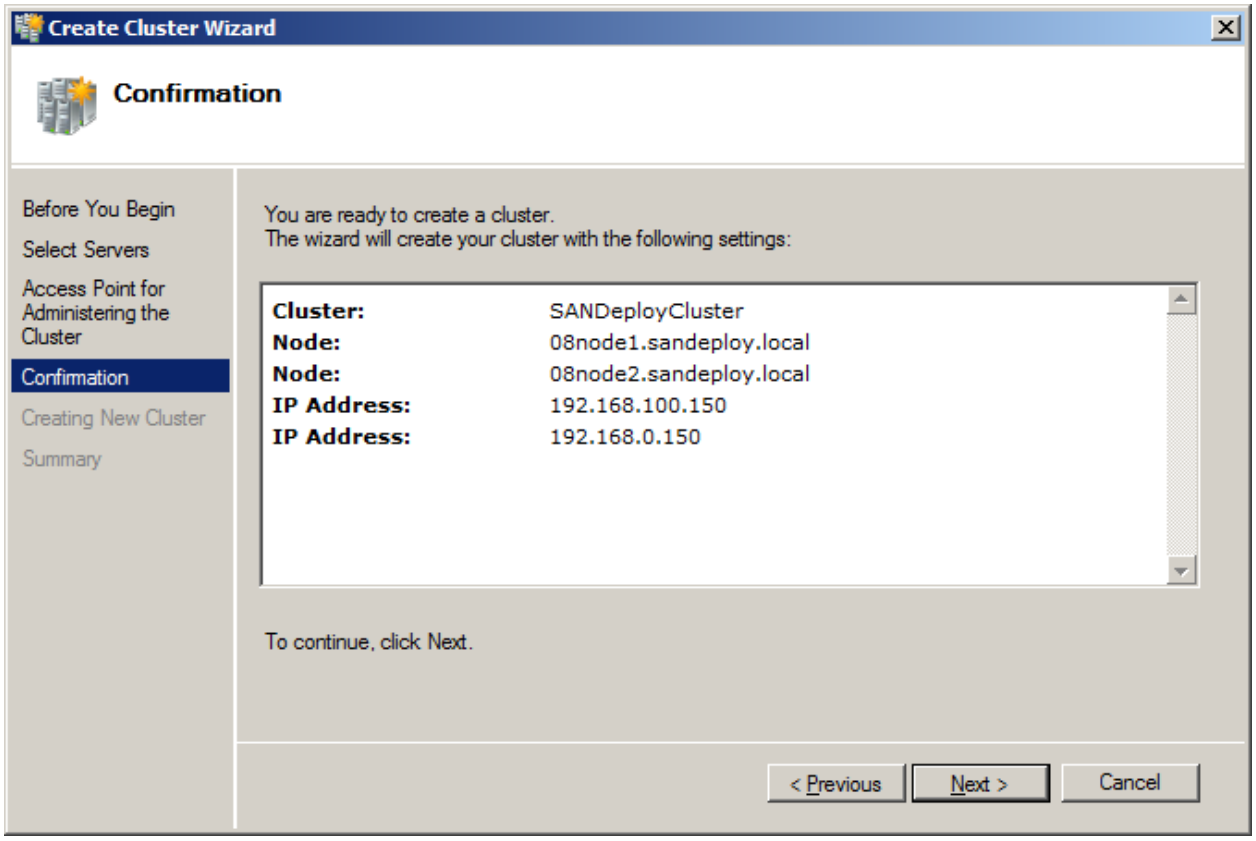
Press the **Next** button to continue.

Specify IP address for the cluster.



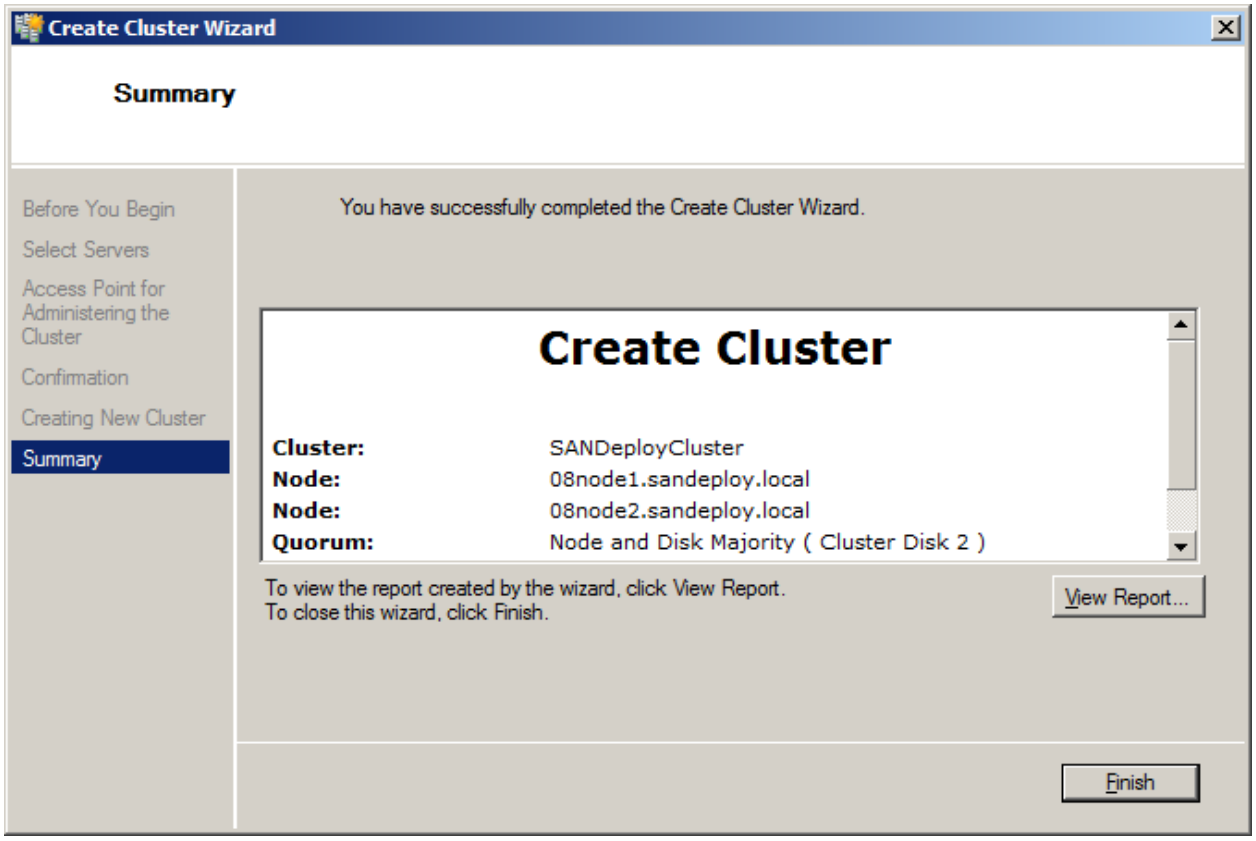
Type an IP address in the **Address** field.

Press the **Next** button to continue.

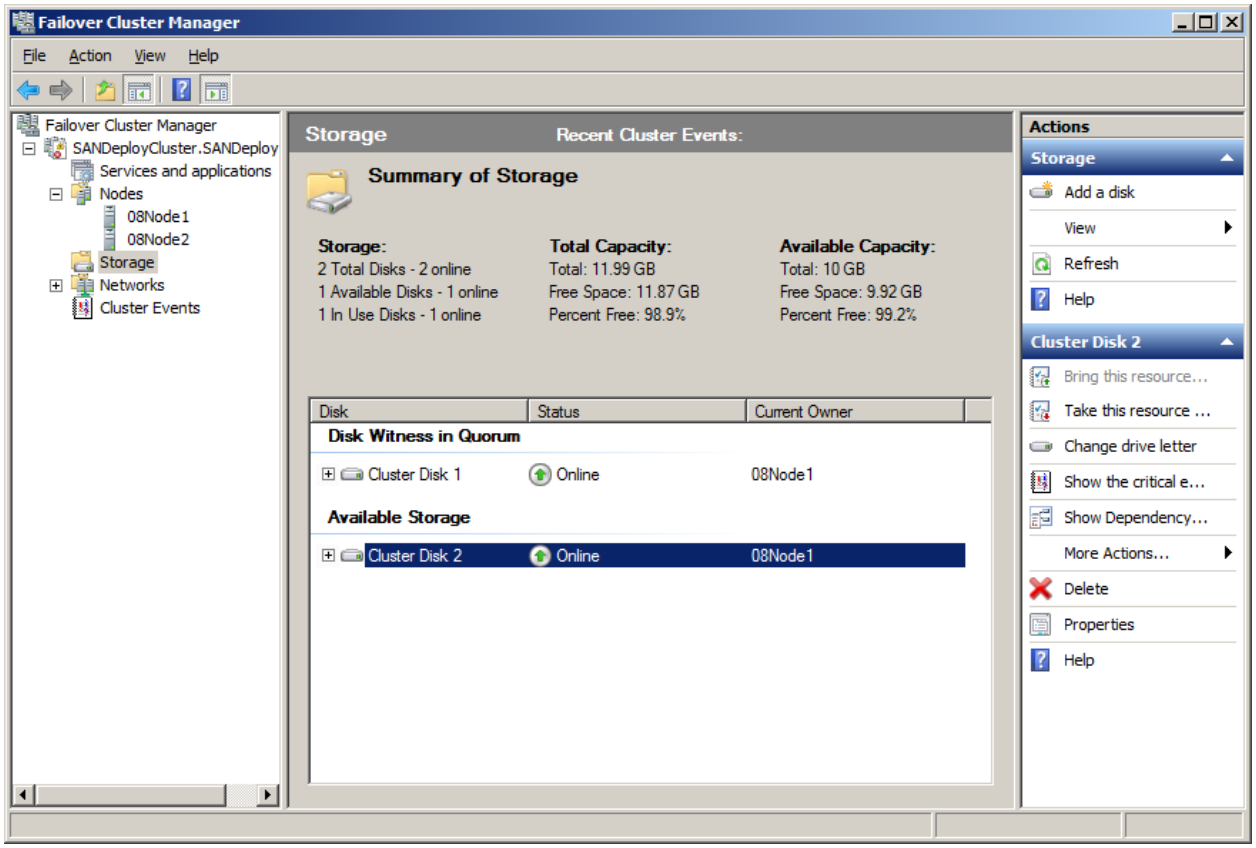


Press the **Next** button to continue or press the **Previous** button if any changes are needed.

If successful, the **Create Cluster Wizard** complete as shown in the figure below.



Press the **Finish** button to continue.



Now the creation of the cluster is completed, expand the cluster node and select the Storage node, it will shown as the figure below, both cluster disk are shown online.

Contact

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