

StarWind iSCSI SAN:

Providing HA Shared Storage for Scale-Out File Servers

July 2012

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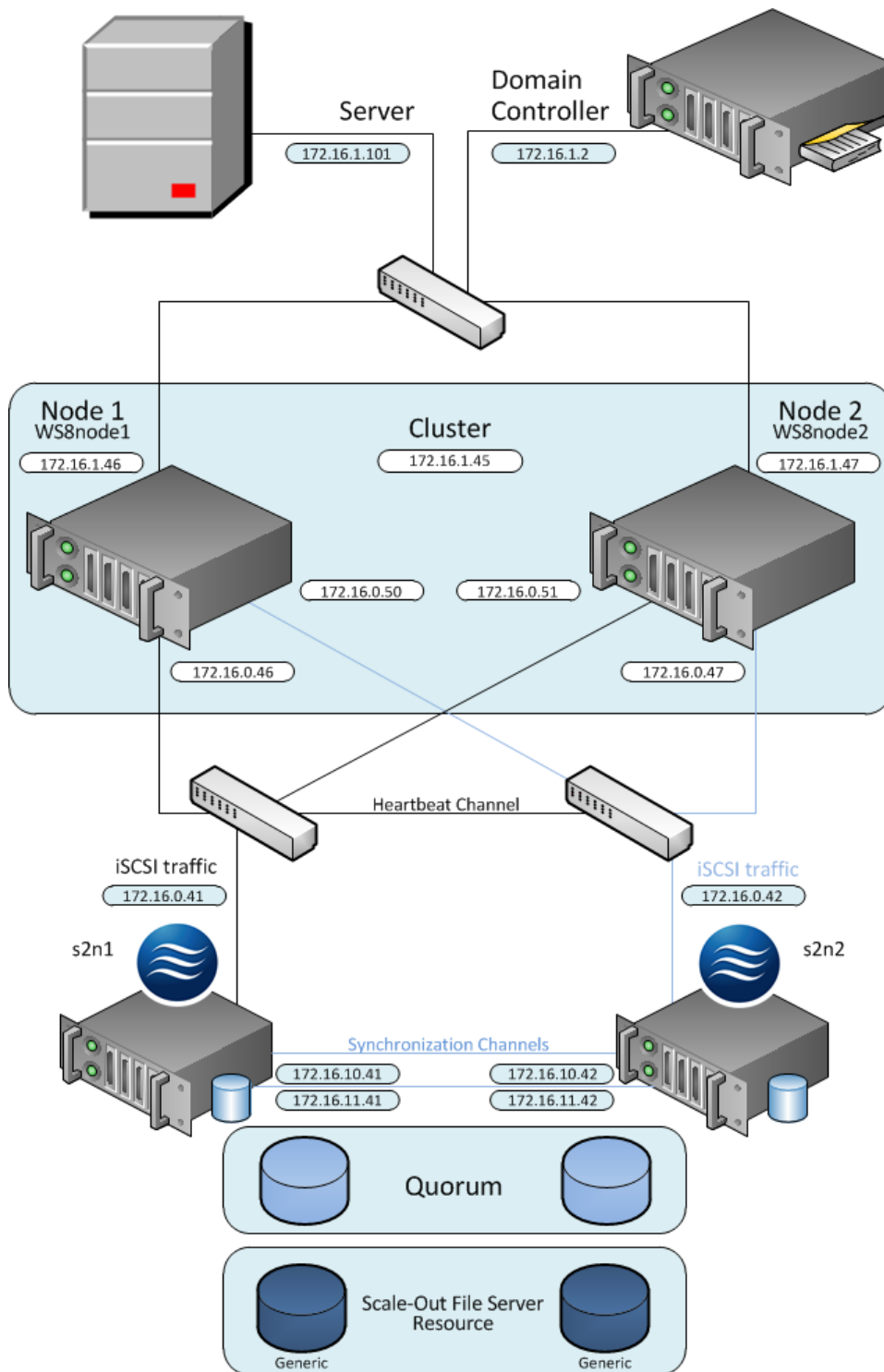
CONTENTS

INTRODUCTION	4
CONFIGURING SHARED STORAGE	5
CONFIGURING CLUSTER SERVERS	12
INSTALLING FEATURES AND FILE SERVER ROLE	12
CONNECTING TARGETS	16
INITIALIZING DISKS	19
CREATING A CLUSTER	22
CONFIGURING AND MANAGING SCALE-OUT FILE SERVERS	26
ADDING DISKS TO CLUSTER SHARED VOLUMES	26
CONFIGURING SCALE-OUT FILE SERVER ROLE	28
CREATING A CONTINUOUSLY AVAILABLE FILE SHARE ON A CLUSTER SHARED VOLUME.....	32
CONTACTS	38

INTRODUCTION

Scale-out File Server (SoFS) is a clustered file server that allows keeping server application data on file shares, making it accessible for end users. A SoFS provides SAN reliability and high availability of shared data.

StarWind iSCSI SAN ensures simple configuration of highly available shared storage for SoFS and delivers excellent performance and advanced data protection features.



CONFIGURING SHARED STORAGE

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

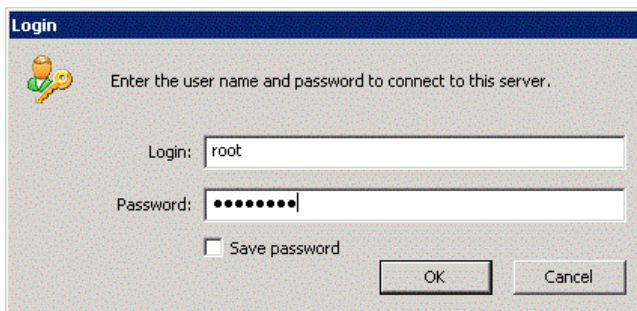
Note: The **StarWind Console icon** appears in the system tray, when the **Console** is running. To open **StarWind Management Console**, double-click the icon or right-click it. Then, select **Start Management Console** from the Shortcut menu.

2. From the Console tree, select the server you want to provide with the iSCSI target device.

3. Double-click the host to connect.

4. In the **Login** dialog that appears specify login and password in the corresponding text fields.

Note: The default login and password are “root” and “starwind”, respectively. You can change them later.



Note: Select the **Save password** checkbox to save a password.

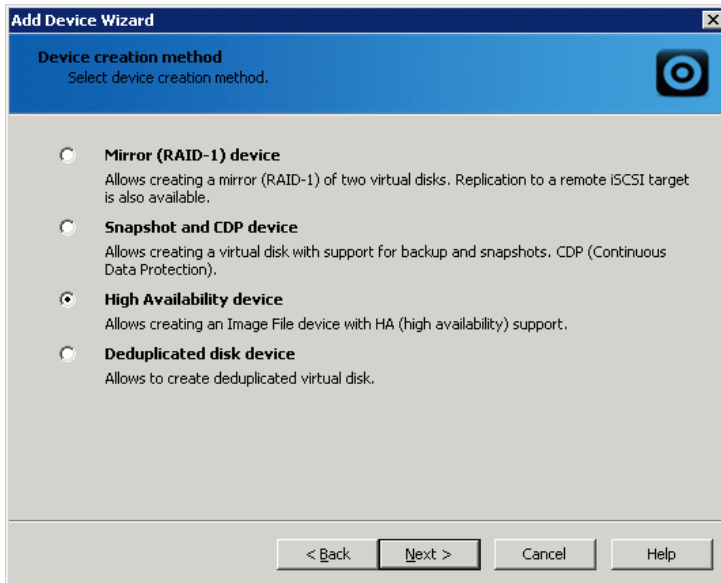
5. Click **OK** to continue.

6. Click **Add Target** on the toolbar.

7. **Add Device Wizard** appears. Please, follow the wizard's steps to complete creation of a new HA device.

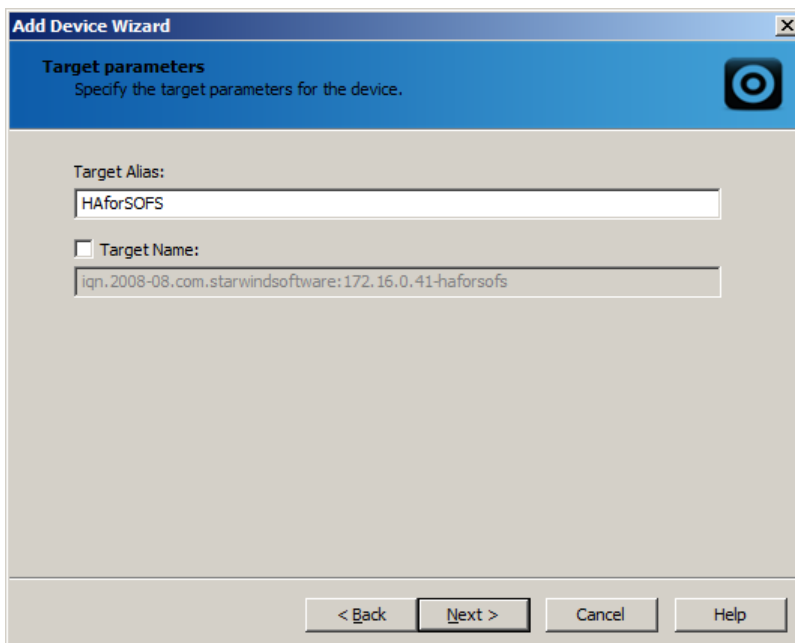
8. Go to **Hard Disk->Advanced Virtual->High Availability Device** to select the HA device type.

9. Click **Next** to continue.



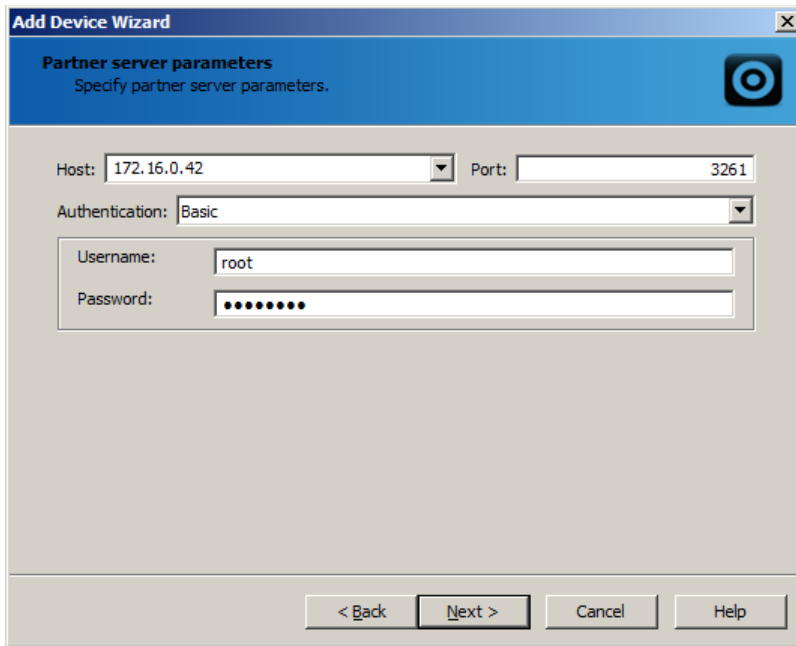
10. In the **Target Alias** and **Target Name** text fields, specify corresponding information. The name must be unique. Under this name the device is declared to the iSCSI initiators, connecting to the StarWind Service over an IP network.

11. Click **Next** to continue.

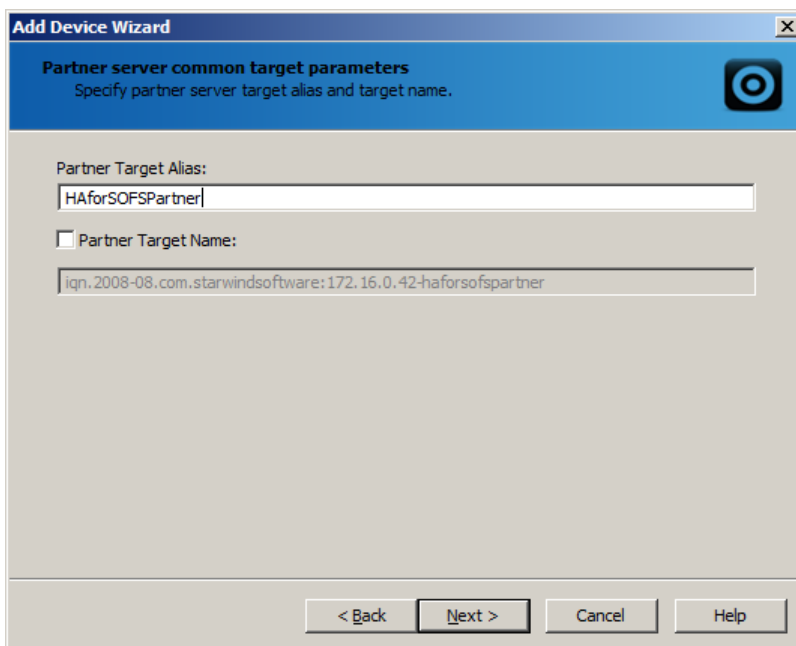


12. Specify the partner server parameters. Enter the server IP-address in the **Host** text field, and specify username and password for the StarWind Service in the corresponding text fields.

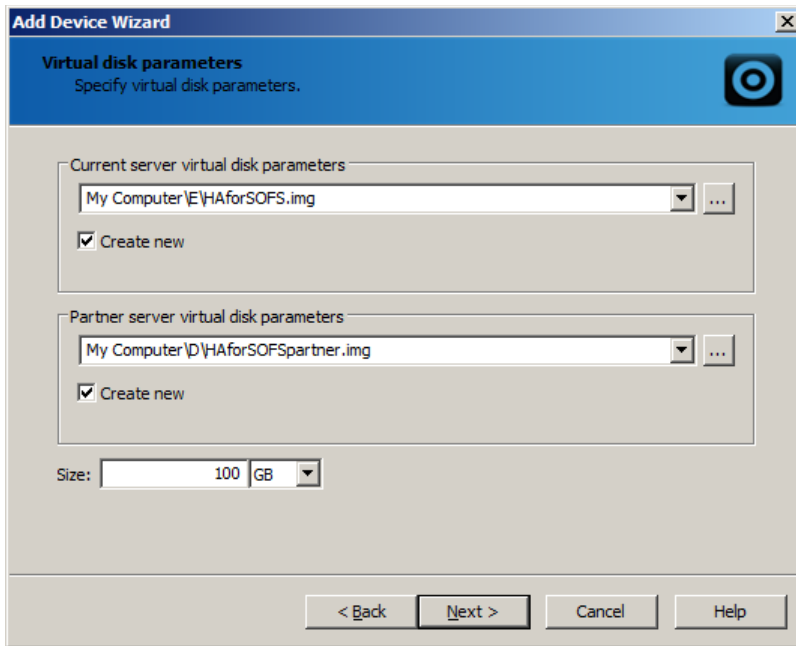
13. Click **Next** to continue.



14. In the **Partner Target Alias** and **Partner Target Name** text fields specify corresponding information.
15. Click **Next** to continue.

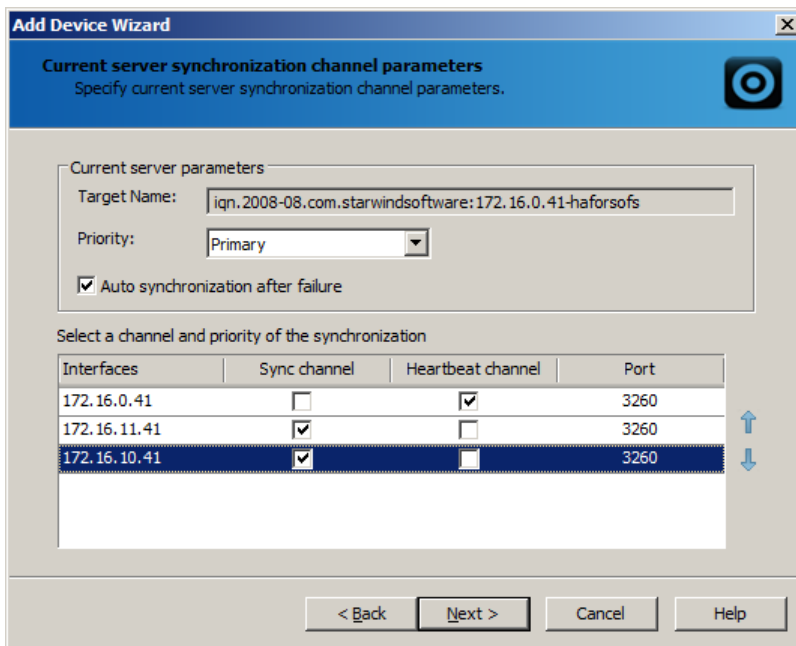


16. In the **Virtual disk parameters of the current server** field and the **Virtual disk parameters of the partner server** field specify name and location of HA virtual disks on the current and partner hosts, respectively. If you want to create new virtual disks, select the **Create new** checkbox.
17. Click **Next** to continue.



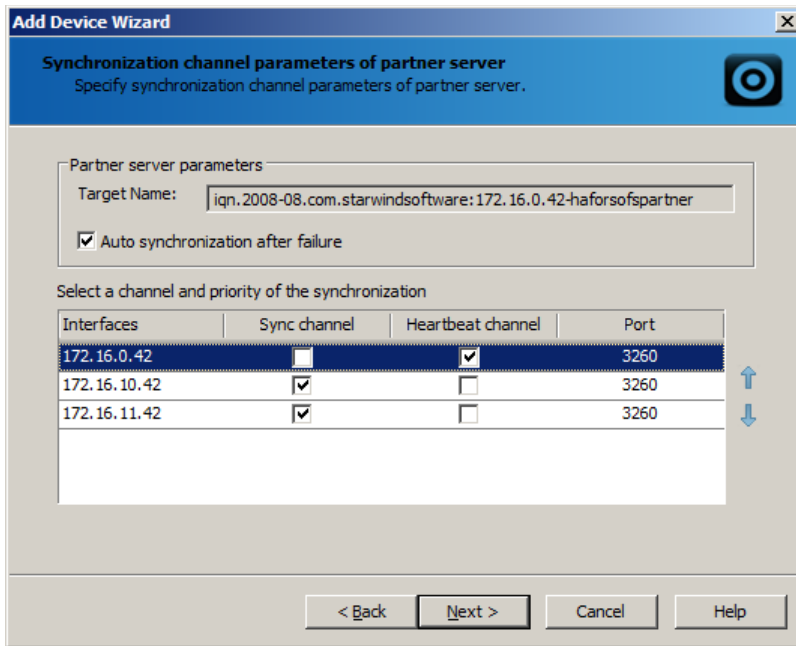
18. Configure the data synchronization and heartbeat channels parameters of the current server. You can also specify primary or secondary node priority.

19. Click **Next** to continue.



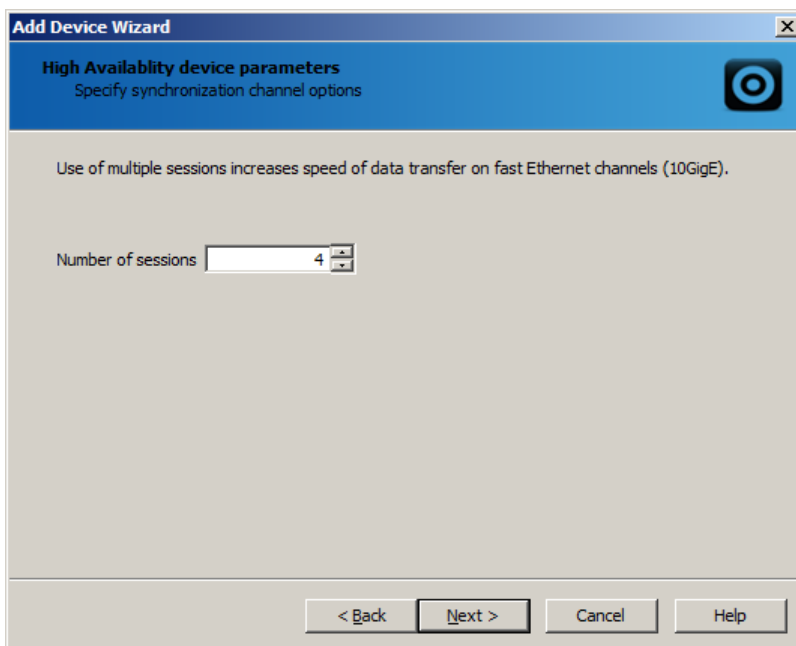
20. Specify synchronization channel parameters of the partner server.

21. Click **Next** to continue.



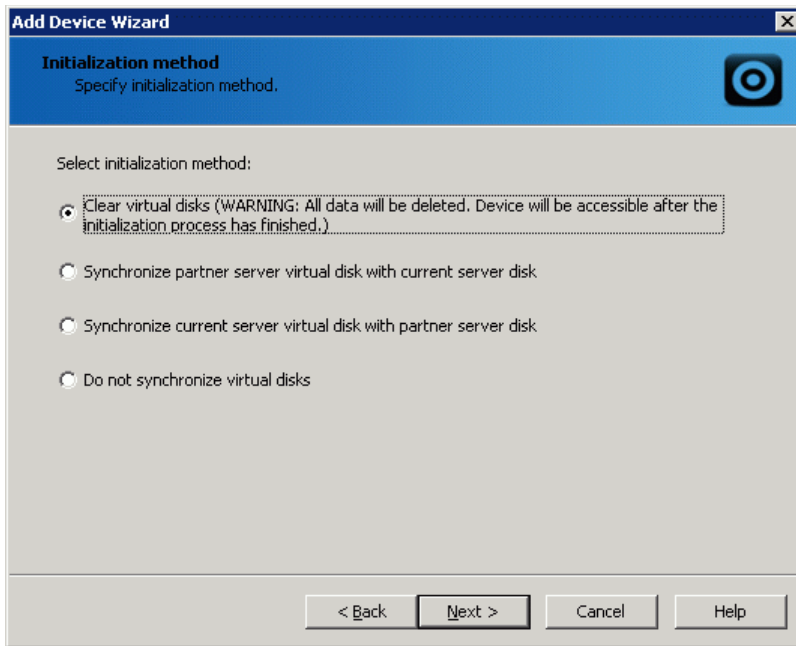
22. Specify number of iSCSI sessions in the synchronization channel.

23. Click **Next** to continue.



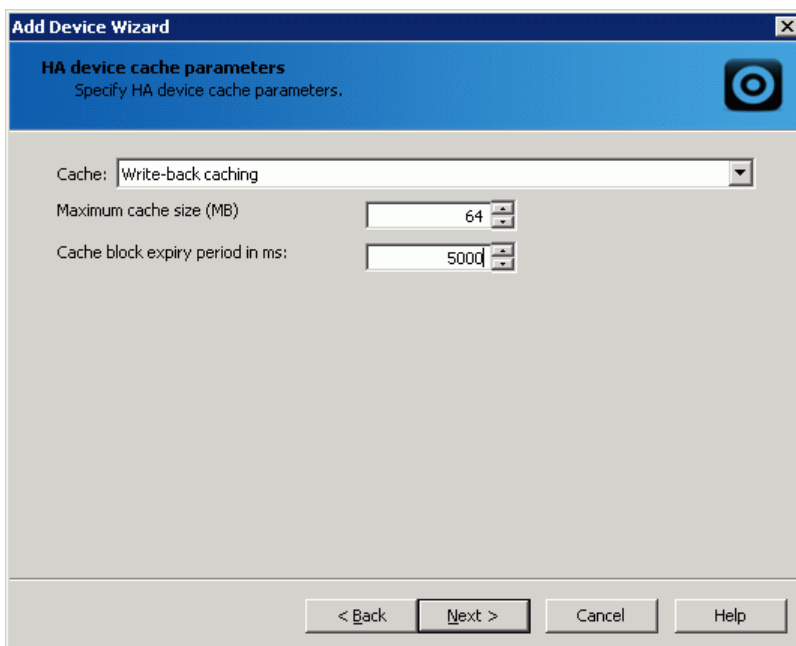
24. Select initialization method of the HA device.

25. Click **Next** to continue.



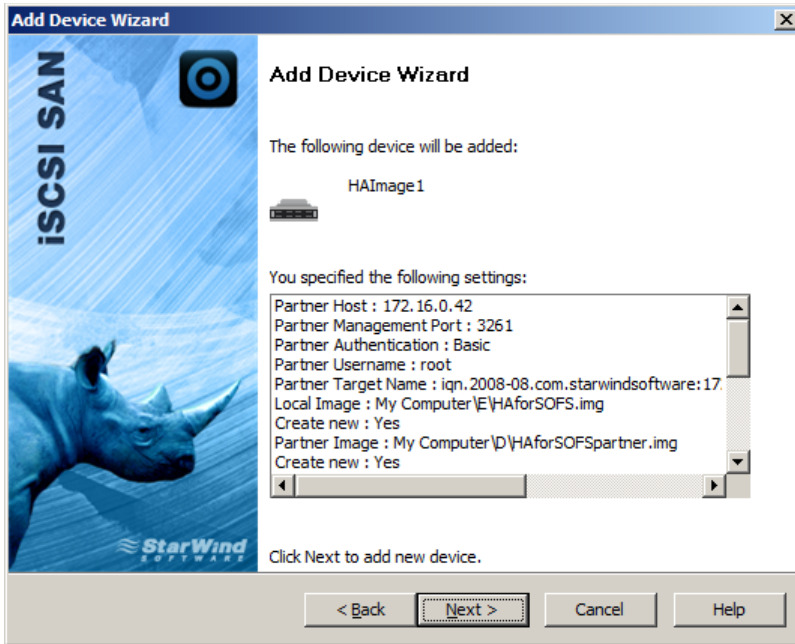
26. Specify cache parameters of the HA device.

27. Click **Next** to continue.

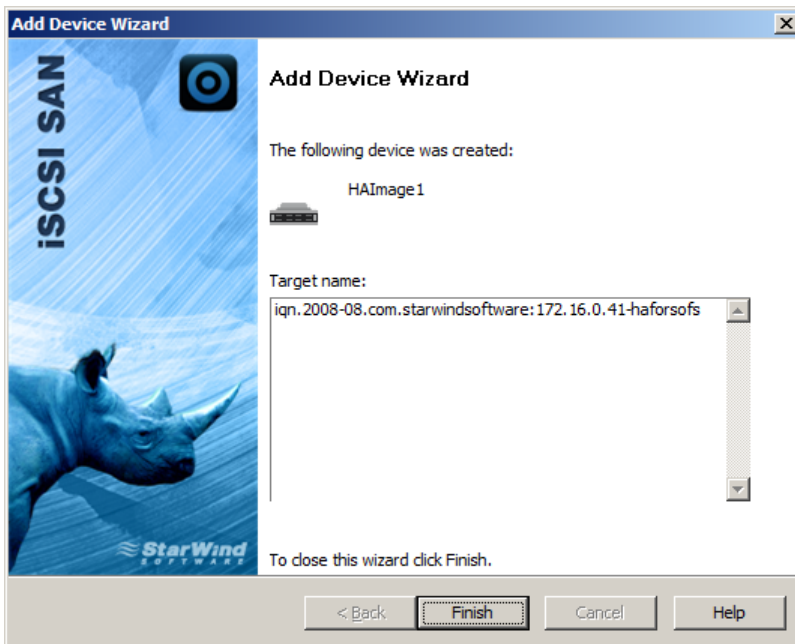


28. Check whether device parameters are correct. Click **Back** to make any changes.

29. Click **Next** to continue.



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



Follow the same procedure to create the second device that will be used as a quorum.

CONFIGURING CLUSTER SERVERS

Installing Features and File Server Role

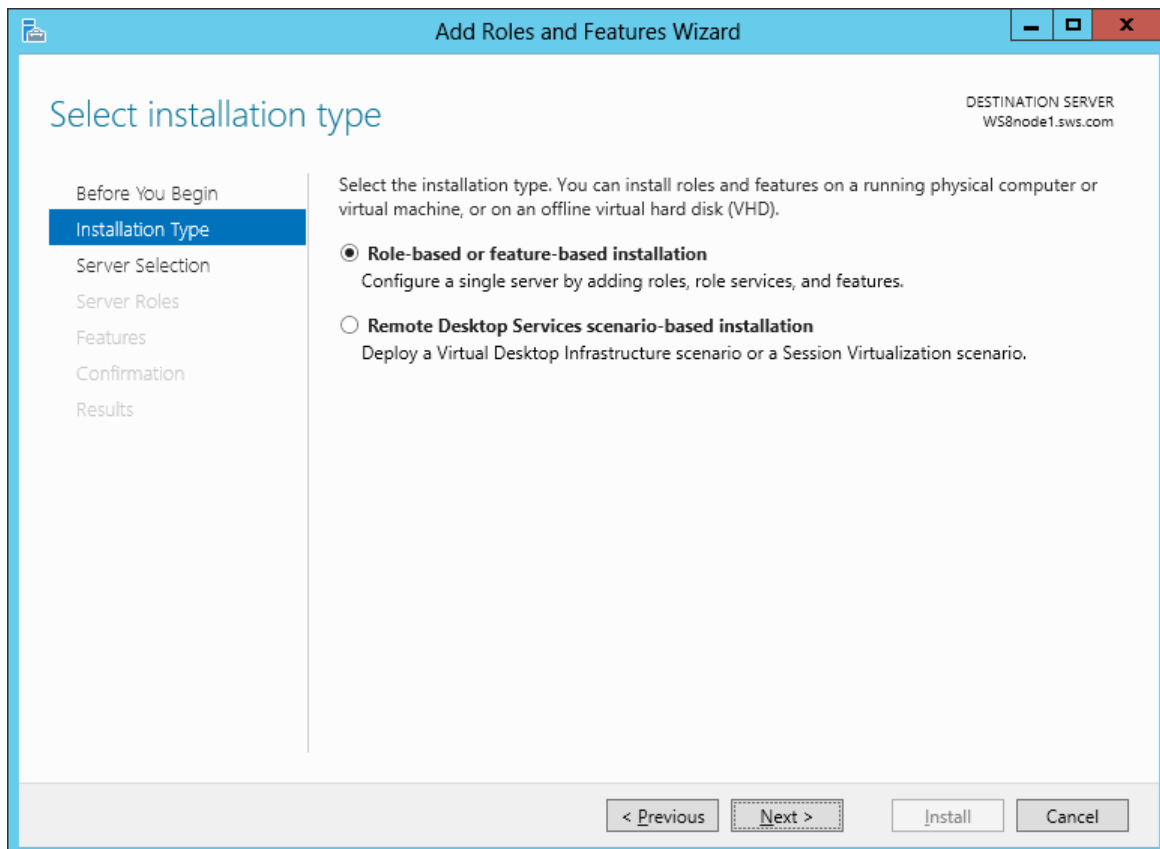
To set up cluster servers, you must have configured Active Directory and two servers on the domain. Moreover, you have to previously enable the Failover Clustering, Multipath I/O features and the File Server role on the both servers.

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

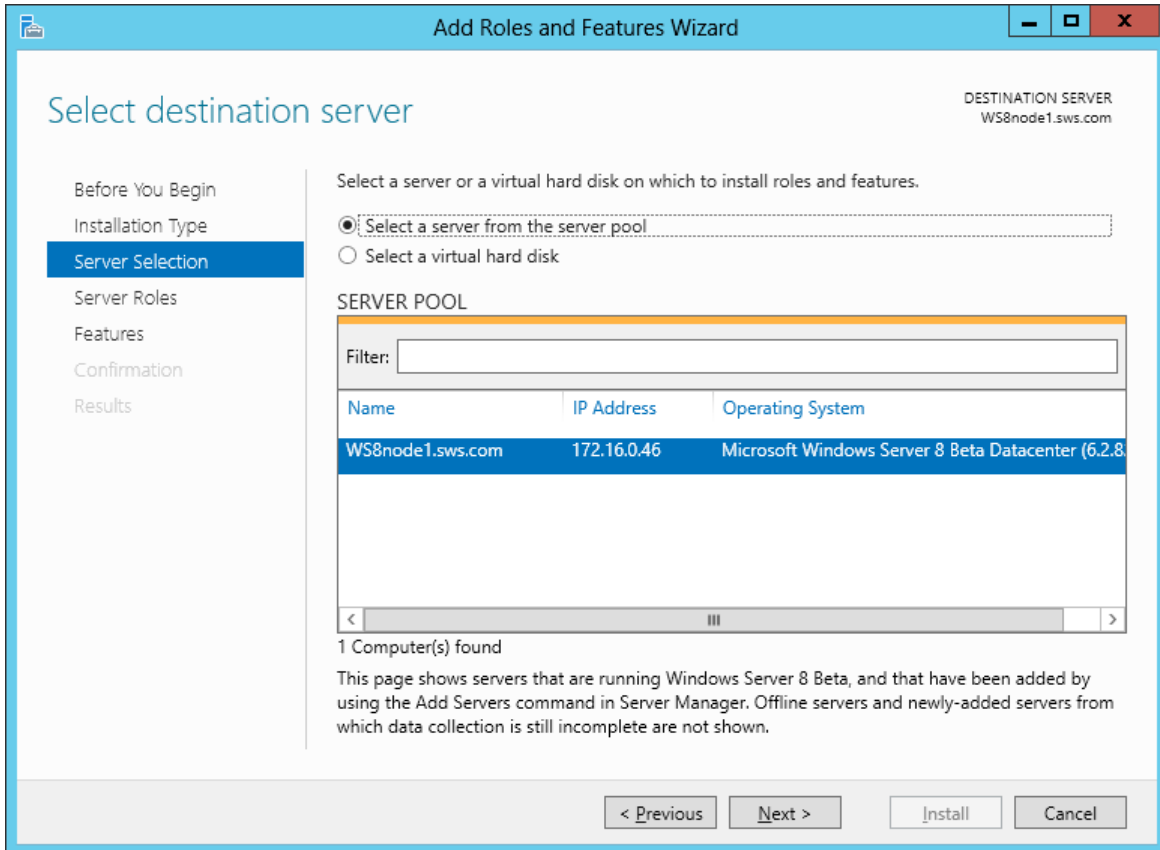
1. Launch **Server Manager**, select the **Manage** item and click the **Add Roles and Features** option. Install the **File Server** role, **Multipath I/O** and **Failover Clustering** features by following the wizard's steps.

Note: Restart the server after installation is completed.

2. Select **Role-based or feature-based installation** as an installation type and click **Next** to continue.



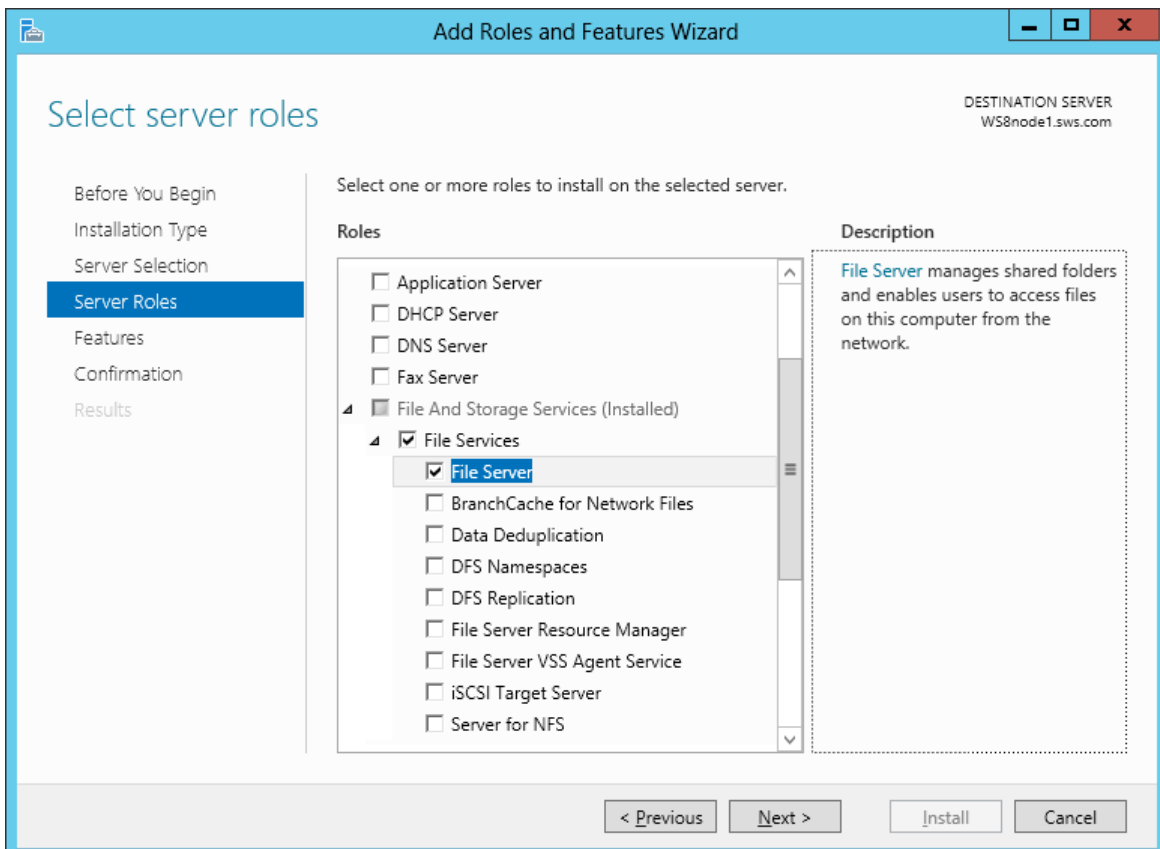
3. Select a server from the server pool to install roles and features. Use a filter to find appropriate server.



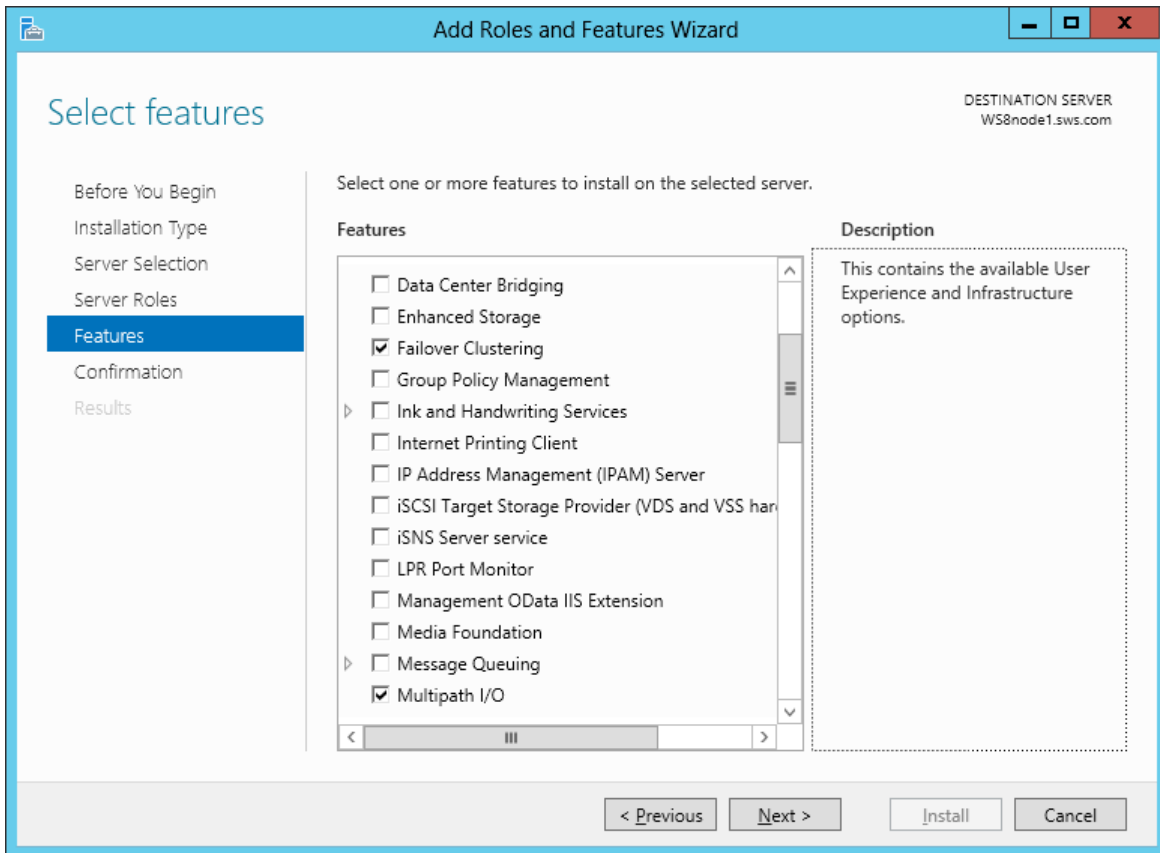
4. Click **Next** to continue.

5. In the **Roles** section, select the **File Services** and **File Server** checkboxes.

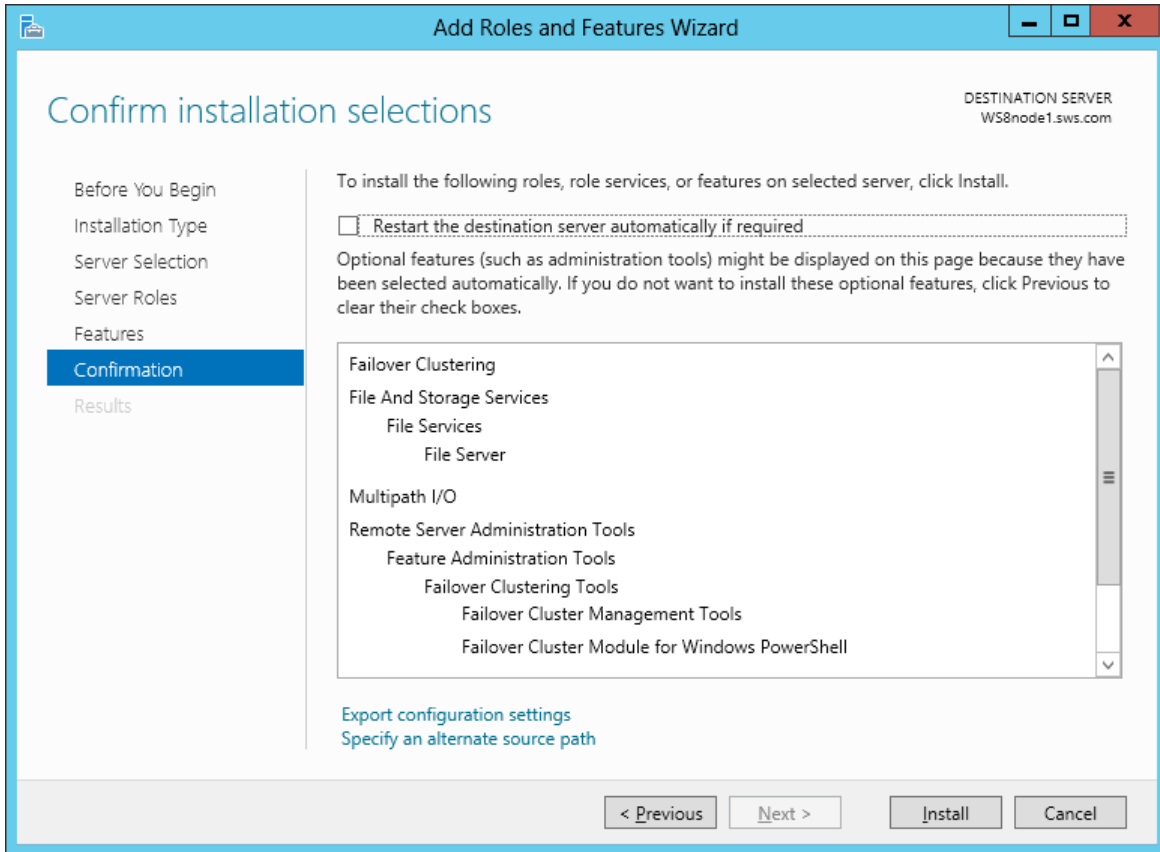
6. Click **Next** to continue.



7. In the **Features** section select **Failover Clustering** and **Multipath I/O** checkboxes.
8. Click **Next** to continue.



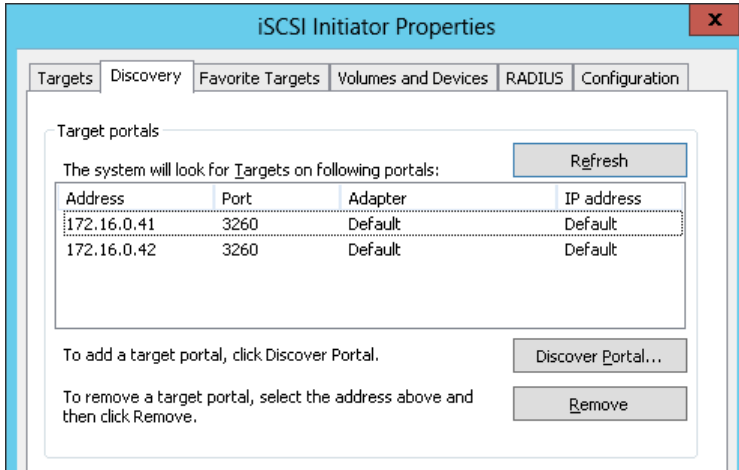
9. Select the checkbox to restart server automatically and click **Install**. Otherwise, click **Install** and restart server manually after the installation is completed.



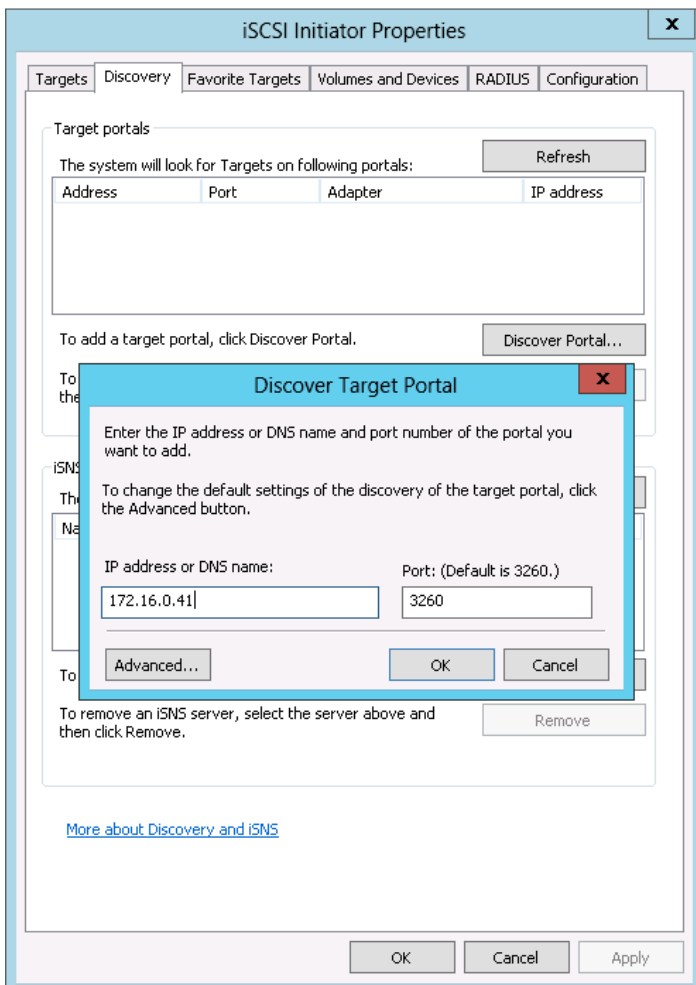
Connecting Targets

You will need to connect the previously created disks to all of the servers which will be added to the cluster.

1. Launch **Microsoft iSCSI Initiator**. The **iSCSI Initiator Properties** window appears.
2. Navigate to the **Discovery** tab.



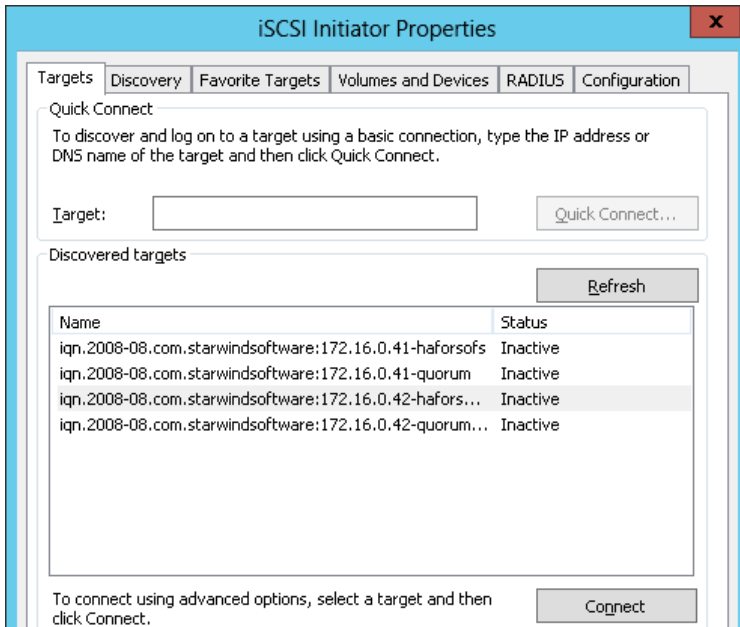
3. Click **Discover Portal**. Enter IP address of each StarWind server in the appropriate field of the **Discover Target Portal** dialog. Click **OK**.



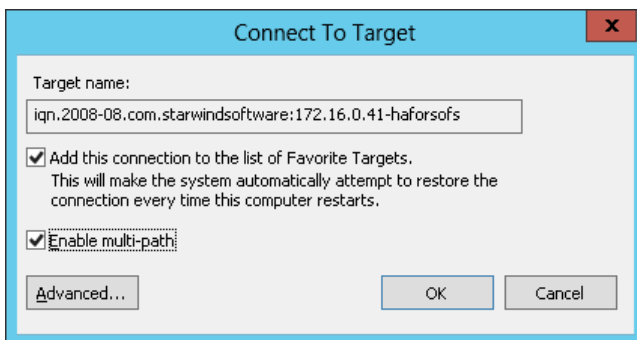
4. Click the **Targets** tab. The previously created targets are listed in the **Discovered Targets** section.

Note: If 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**.

5. Select each of the targets and clicking **Connect** to add them.

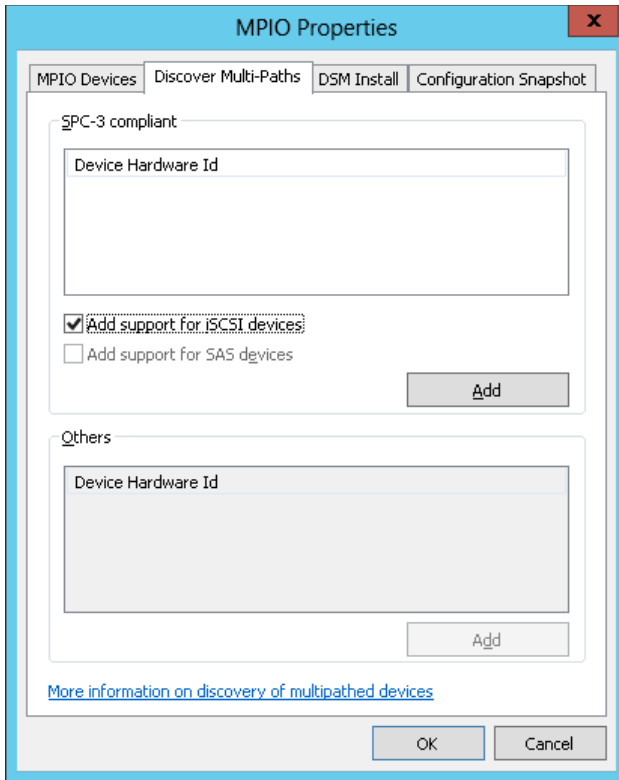


6. In the **Connect to Target** dialog that appears select **Add this connection to the list of Favorite Targets** and **Enable multi-path** check boxes. This is necessary to automatically reconnect to the targets upon client restart. Click **OK**.



7. Open the **MPIO manager** by clicking **Start -> Administrative Tools -> MPIO**.

8. Go to the **Discover Multi-Paths** tab. Select the **Add support for iSCSI devices** check box and click **Add**.



9. When prompted to restart the server, click **Yes** to proceed. After the server is restarted, initialize the disk and create partitions, as if it were physical hard drive.

Note: The procedures performed on the first server are automatically shown on the second one.

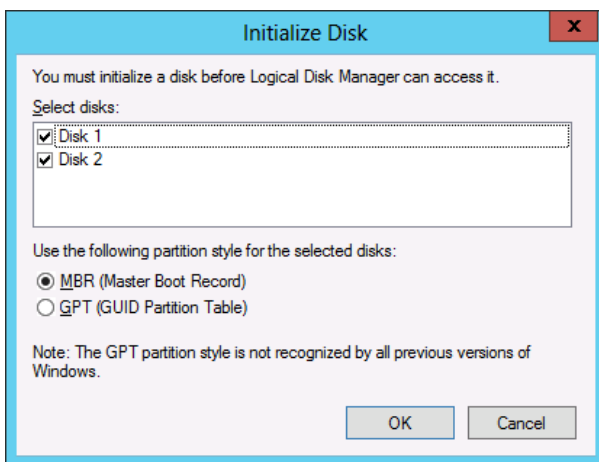
Initializing Disks

The **StarWind** disks must be initialized and formatted, before they can be utilized as cluster disks.

To initialize disks and create partitions:

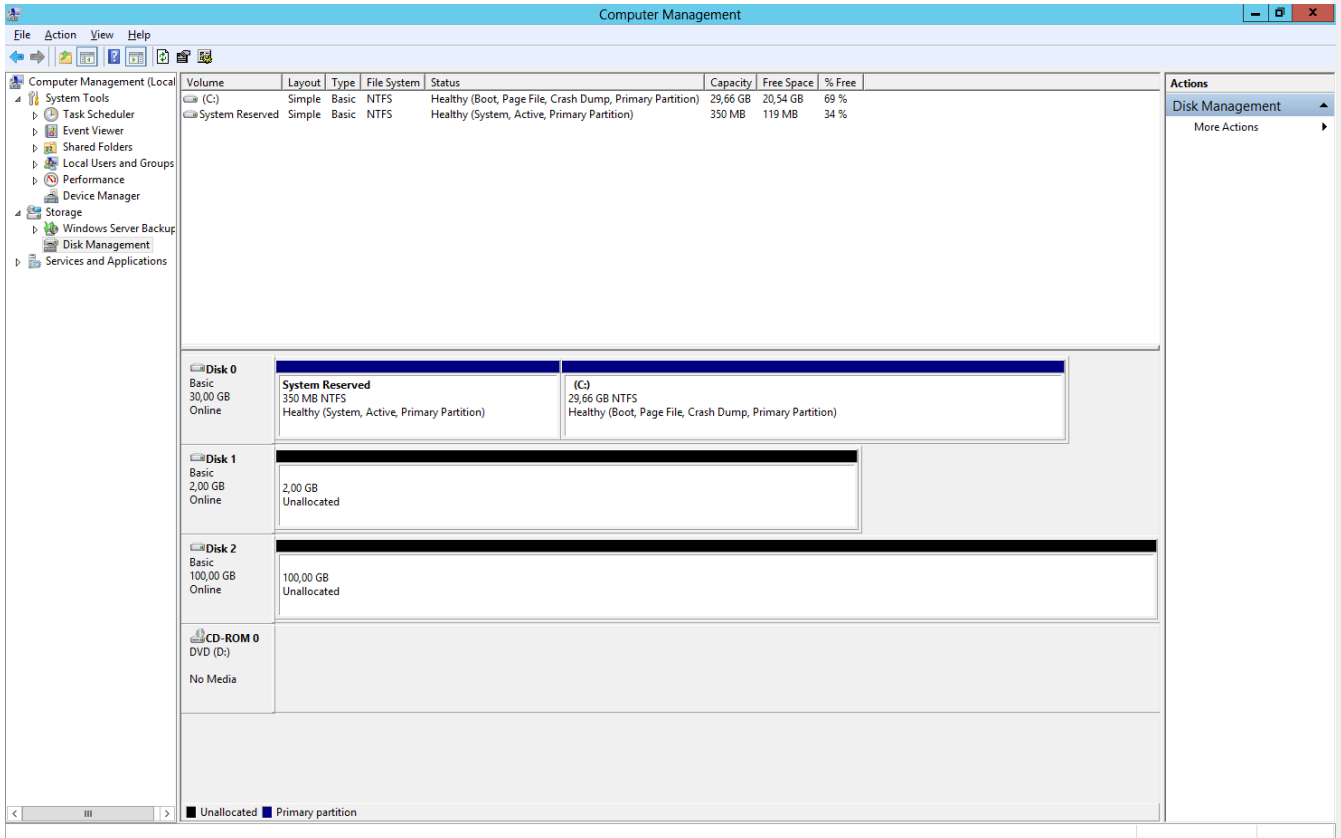
1. Launch the **Computer Management** console.
2. Select the **Disk Management** item.
3. Right-click each disk and select **Online Disk** to bring it online.
4. Right-click each disk and select **Initialize Disk** to initialize it. Follow the wizard to initialize disks.

Note: Select MBR (Master Boot Record) as a partition style.



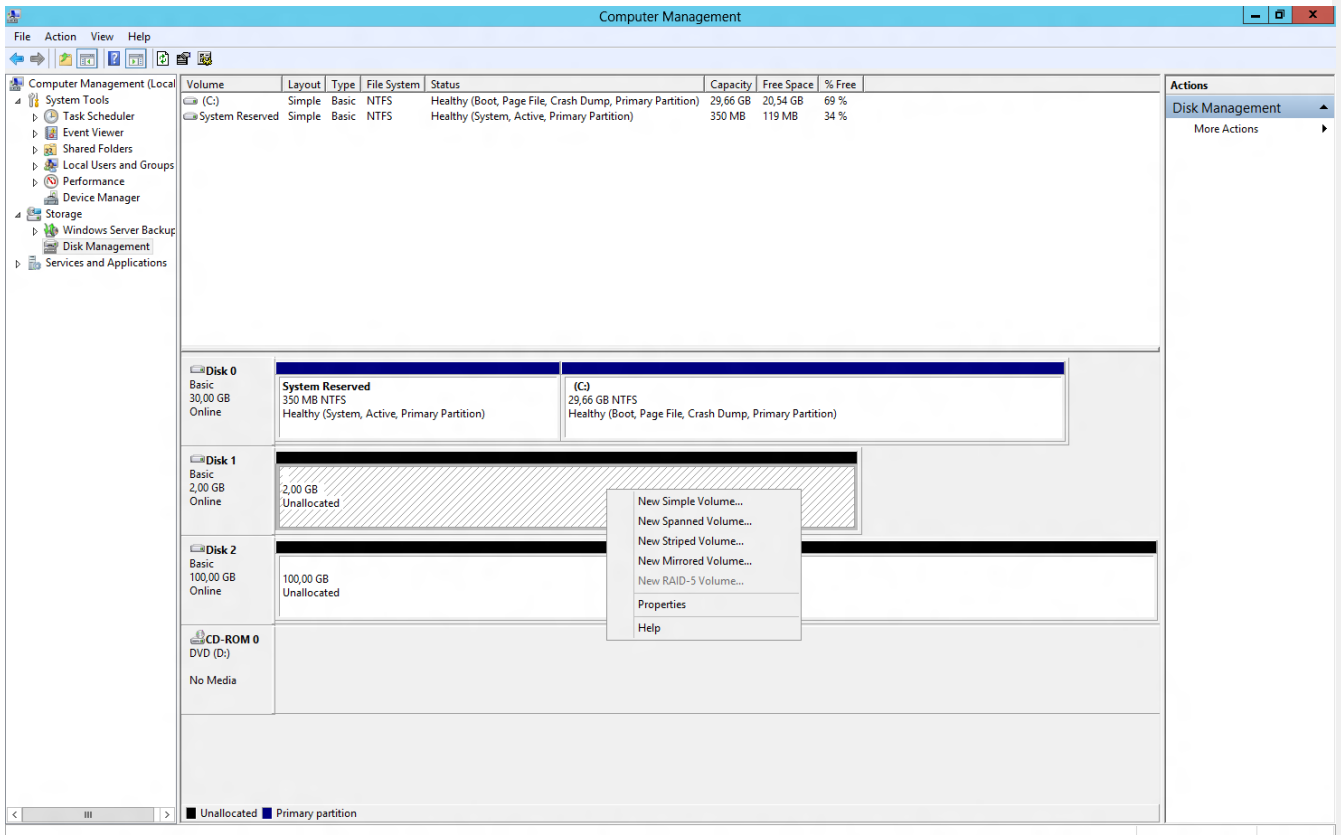
5. Click **OK** to continue.

The **Computer Management** console will look as shown in the screenshot below.



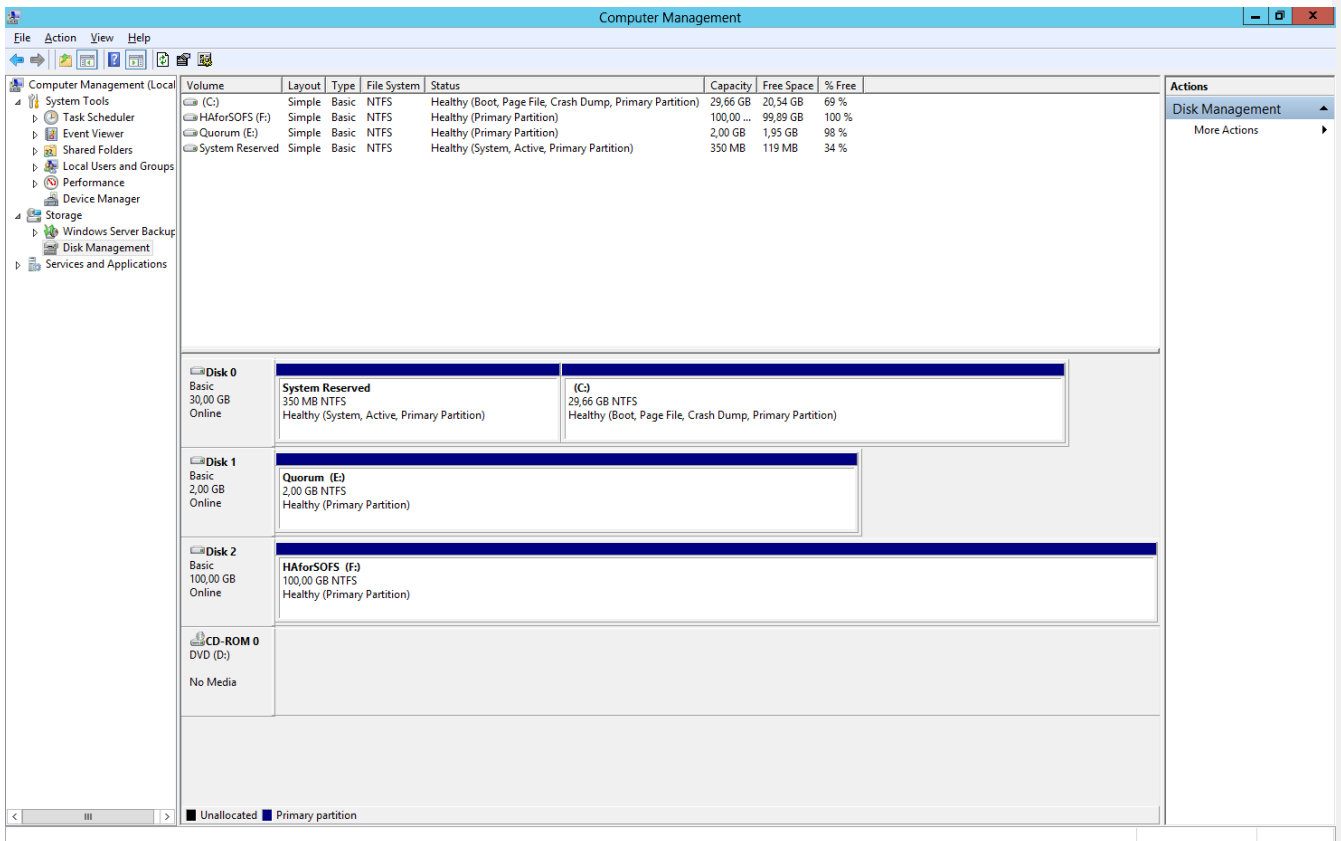
To create partitions and format the new disks:

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

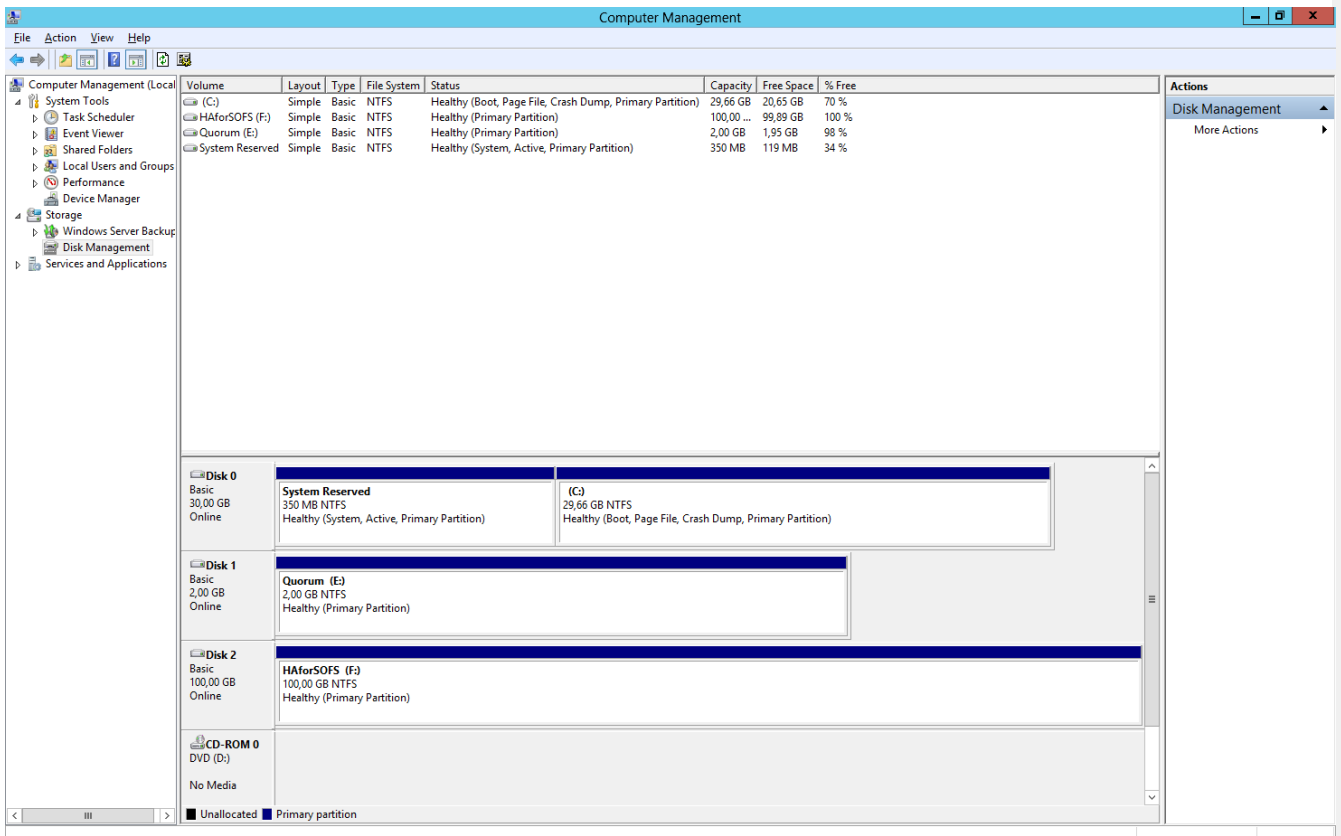


2. Follow the wizard's instructions to create partitions.

The **Computer Management** window will look as shown in the screenshot below.



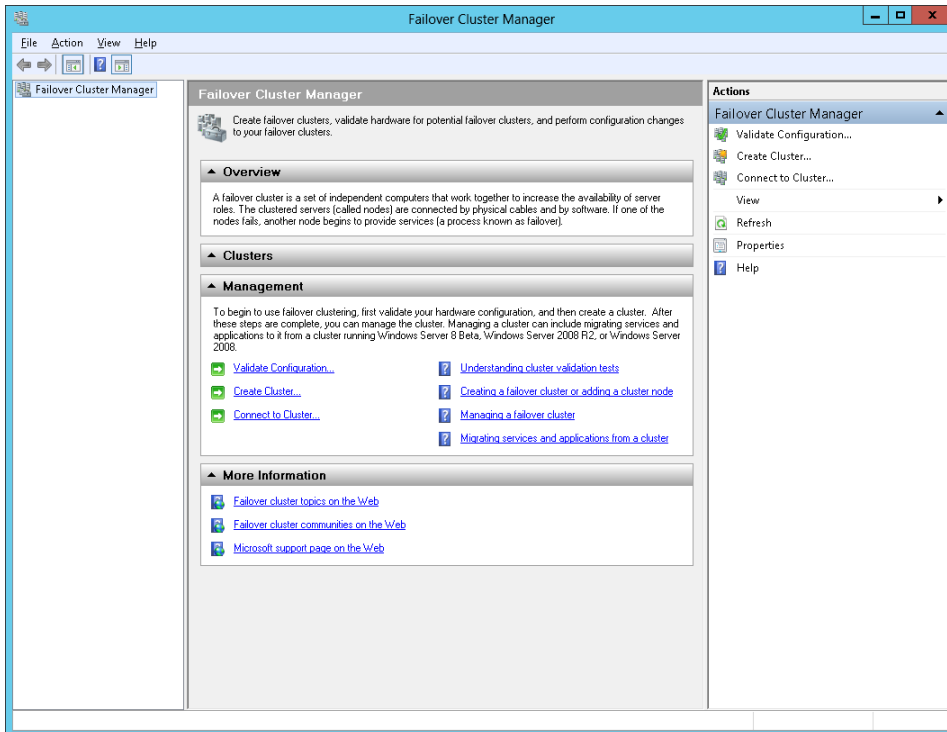
The same actions need to be made on the other servers, except that creating partitions will no longer be necessary.



Creating a Cluster

To validate a cluster:

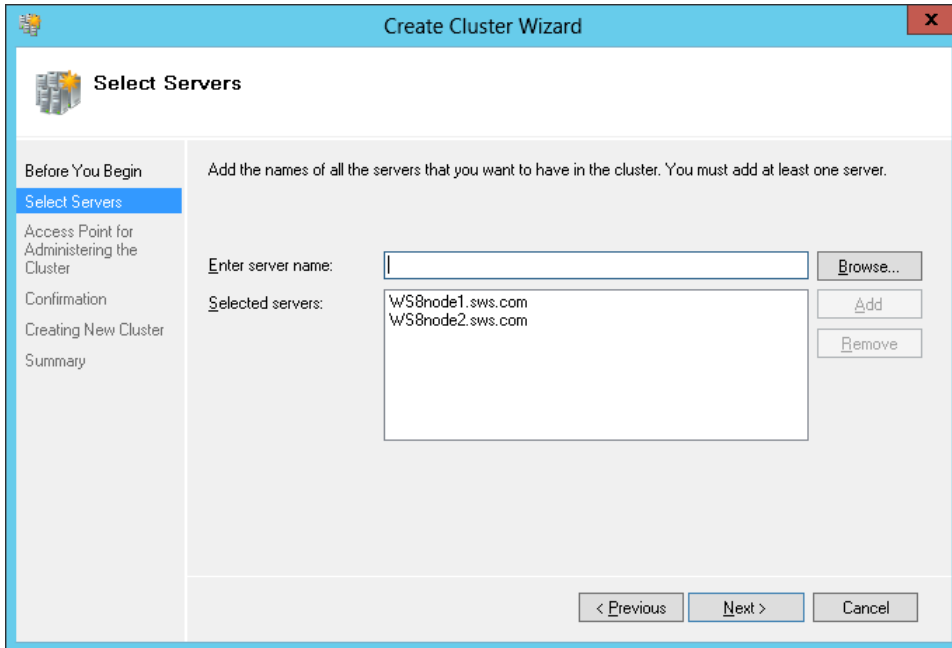
1. Open **Server Manager**. Select the **Failover Cluster Manager** item in **Tools** menu.



2. Before creating a cluster, you will need to validate your configuration. In the **Actions** section, click **Validate Configuration** to verify whether your servers are suitable for building a cluster. After completion of validation process you will returned to the **Failover Cluster Manager** window.

To create a cluster:

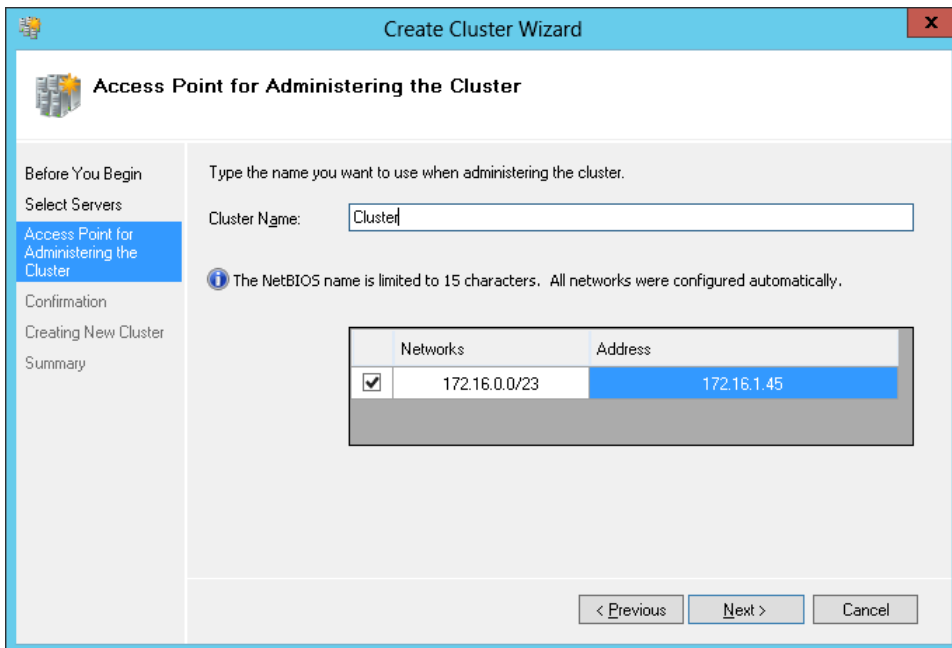
1. Click the **Create a Cluster** item in the **Actions** section of the **Failover Cluster Manger**.
2. Specify the servers that will be included into the cluster.
3. Click **Next** to continue.



4. Specify the cluster name.

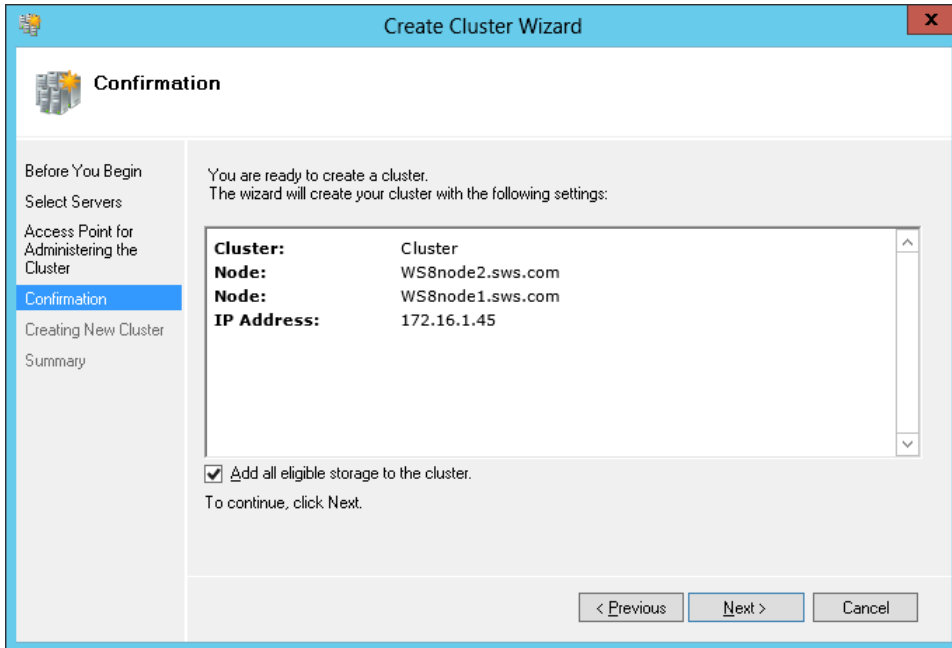
Note: If the cluster servers get IP addresses over DHCP, the cluster gets its IP address over DHCP as well. If the IP addresses are set statically, you need to set an IP address for the cluster as well.

5. Click **Next** to continue.

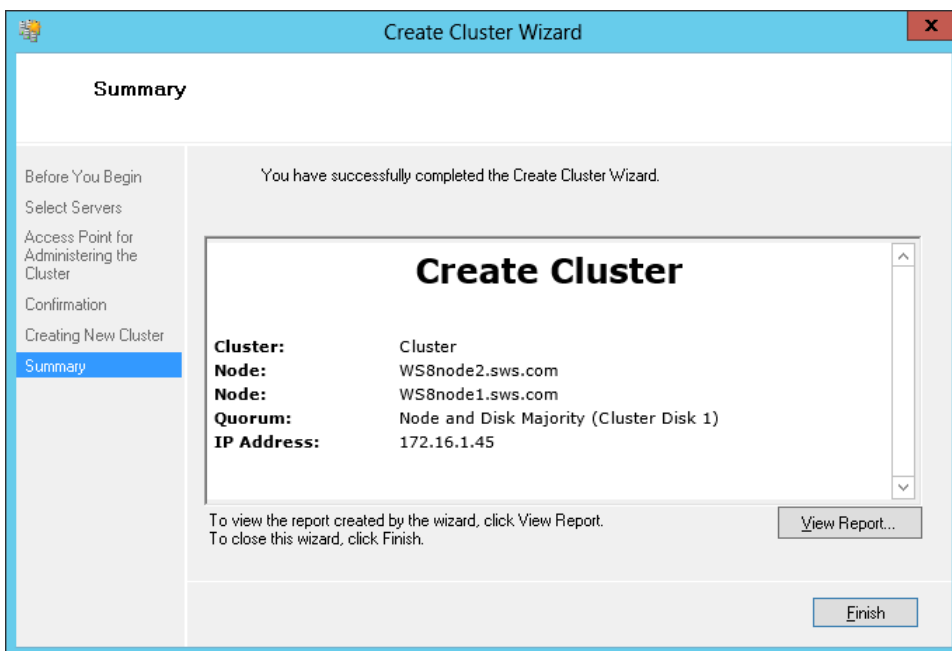


6. Make sure that all of the previously defined options are correct. Click **Previous** to make any changes.

7. Click **Next** to continue.

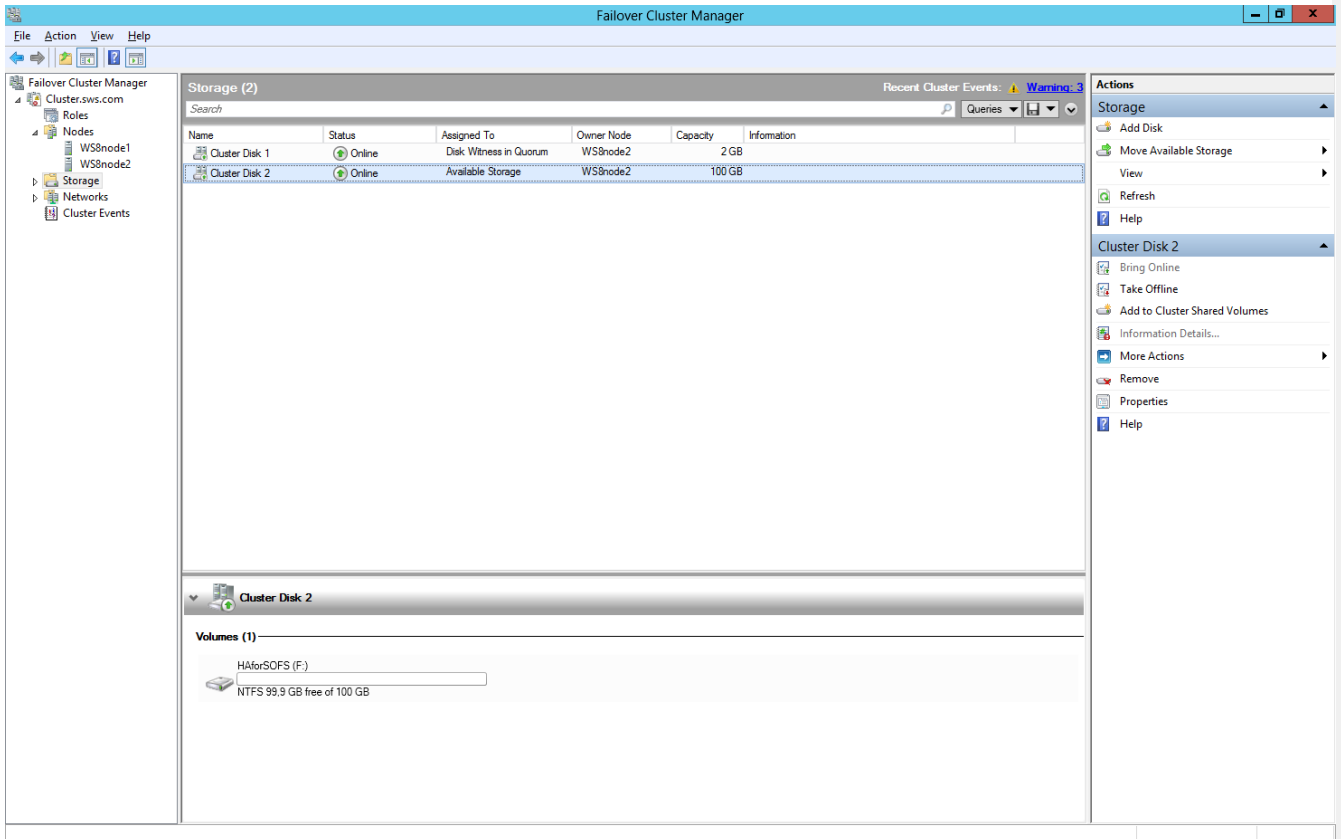


8. The process of creating the cluster begins. As creation of the cluster is completed, read the report.



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

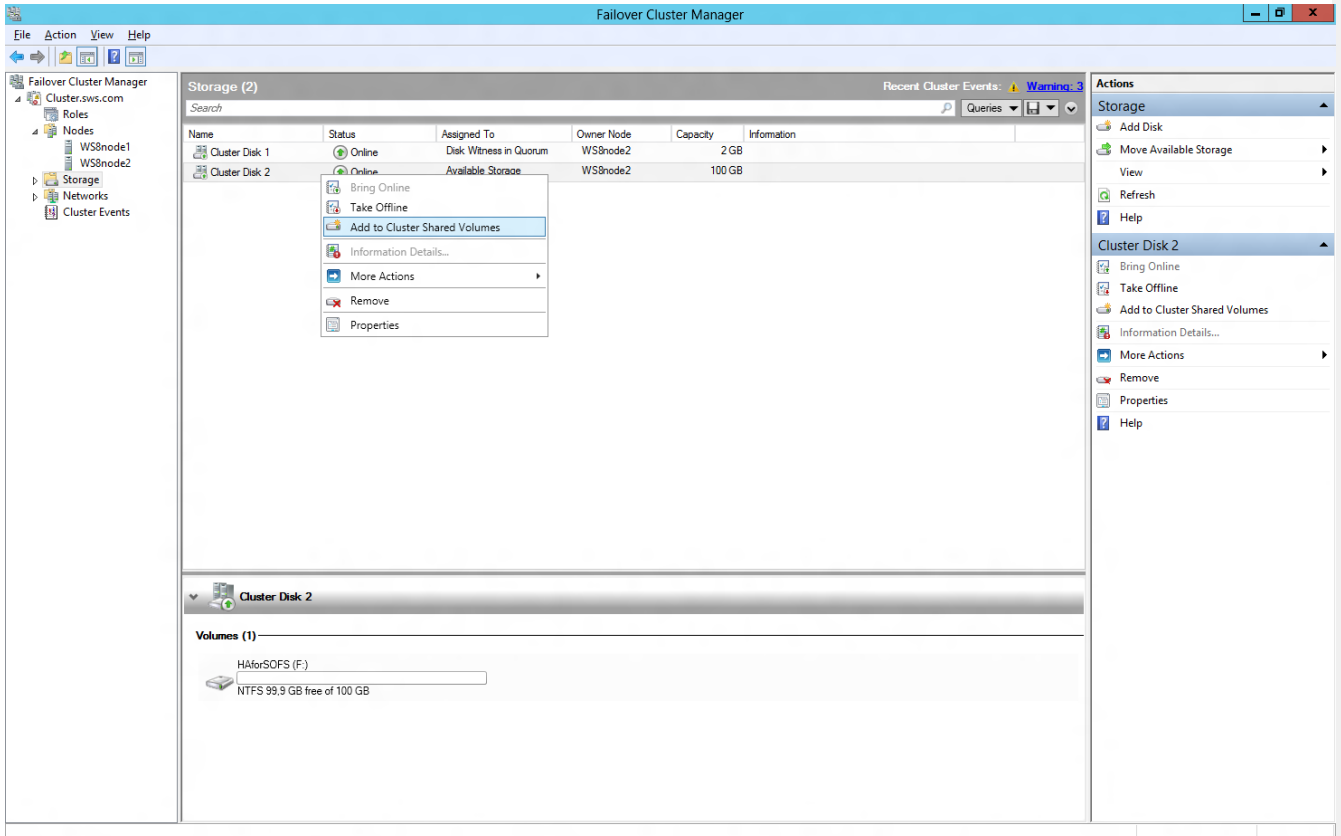
After these actions, the **Failover Cluster Manager** window appears.



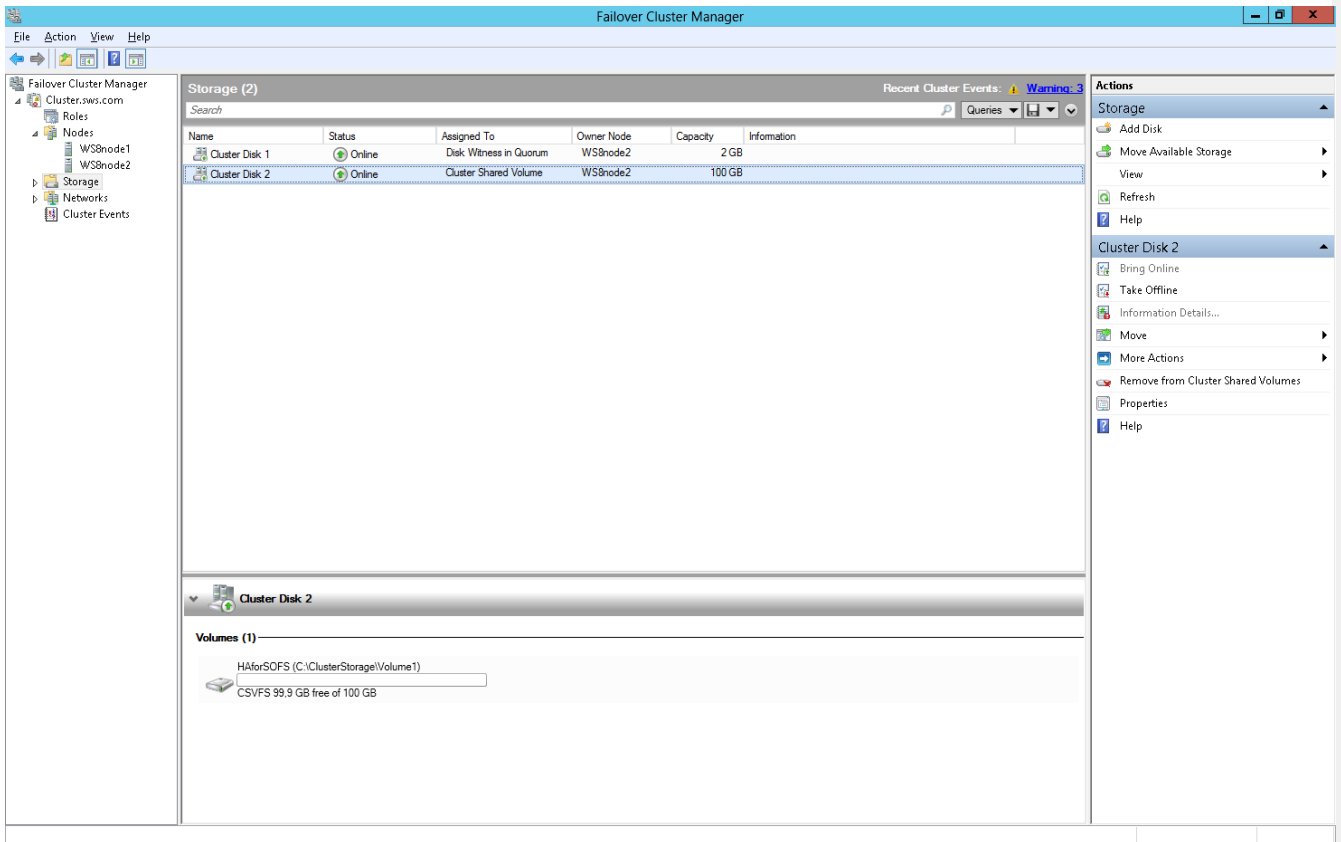
CONFIGURING AND MANAGING SCALE-OUT FILE SERVERS

Adding Disks to Cluster Shared Volumes

1. Right-click the disk assigned to **Available Storage** (see the **Assigned To** column), and click **Add to Cluster Shared Volumes**.



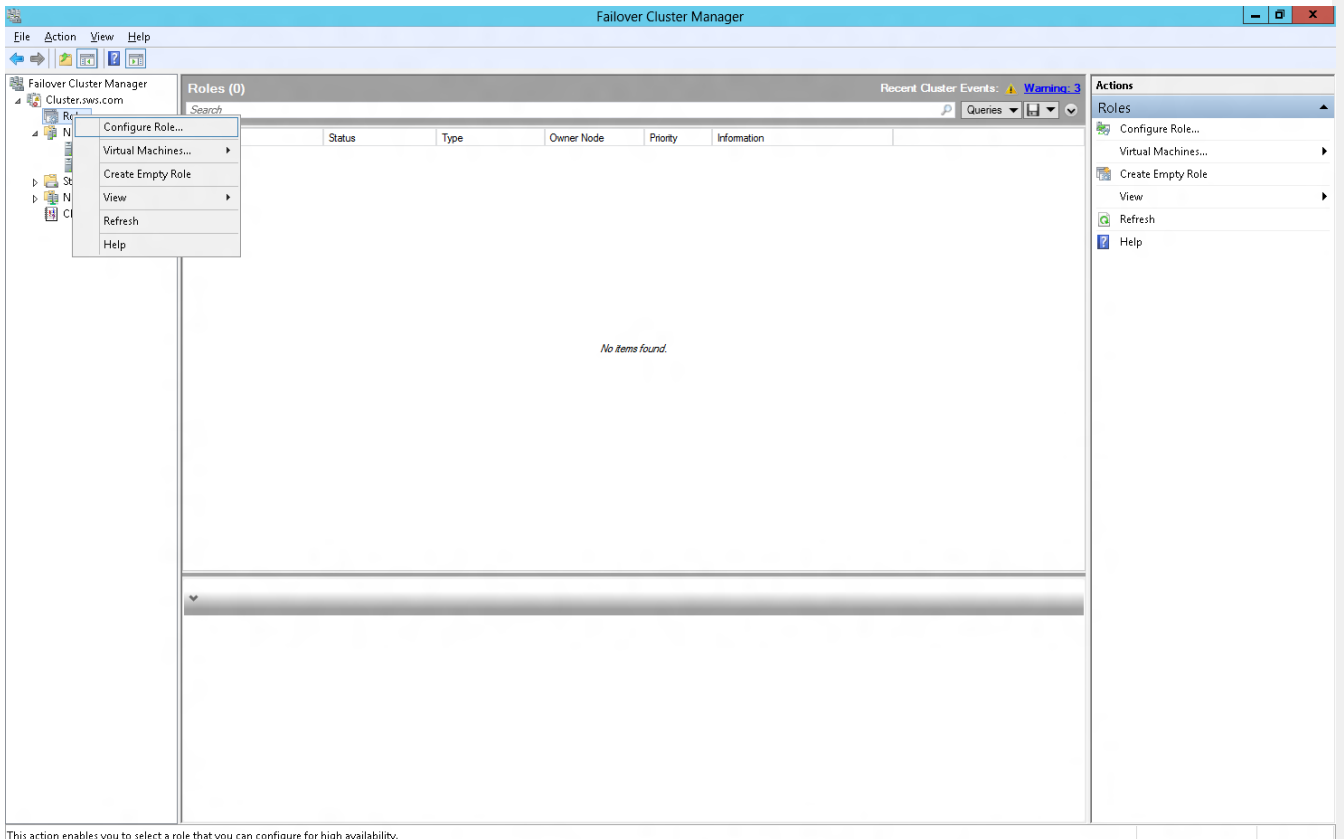
2. The disk will be displayed as a CSV at the **Failover Cluster Manager** window as shown in the screenshot below.



Configuring Scale-Out File Server Role

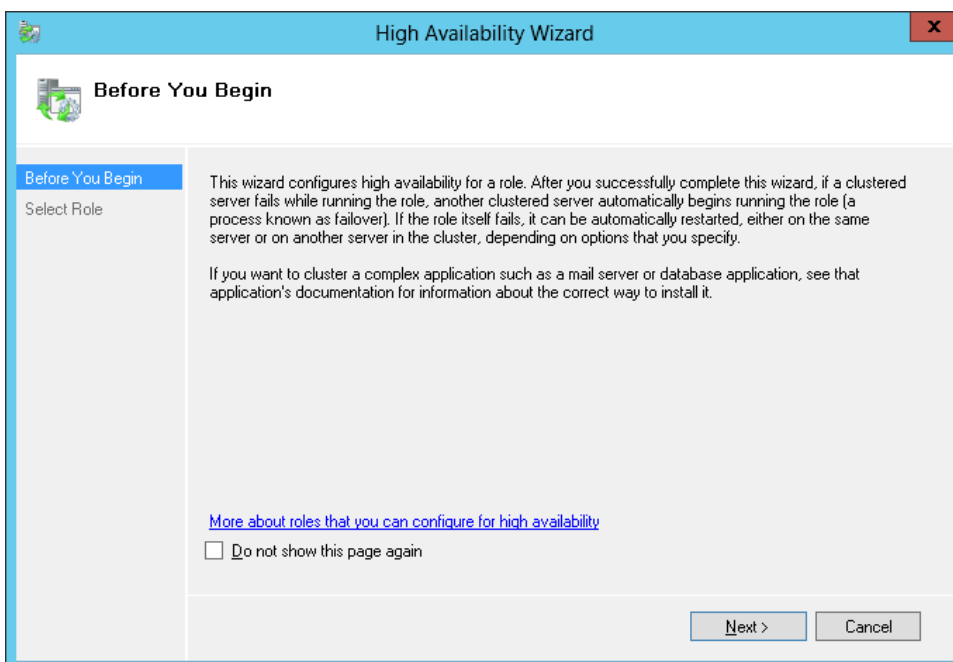
To configure Scale-Out File Server role:

1. Launch **Failover Cluster Manager**.
2. Right-click the **Role** item and click **Configure Role. High Availability Wizard** appears.

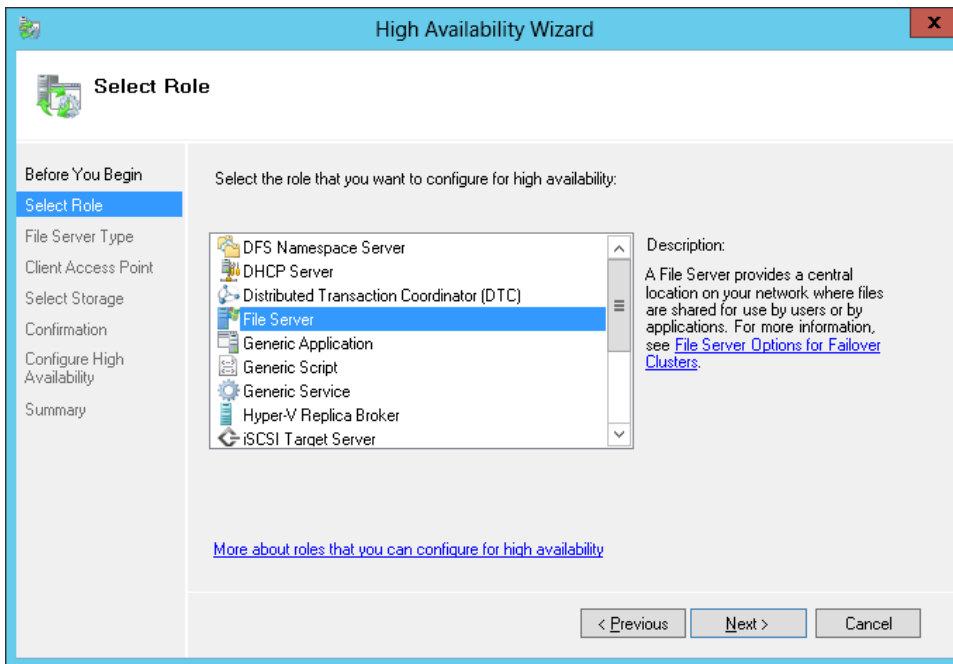


This action enables you to select a role that you can configure for high availability.

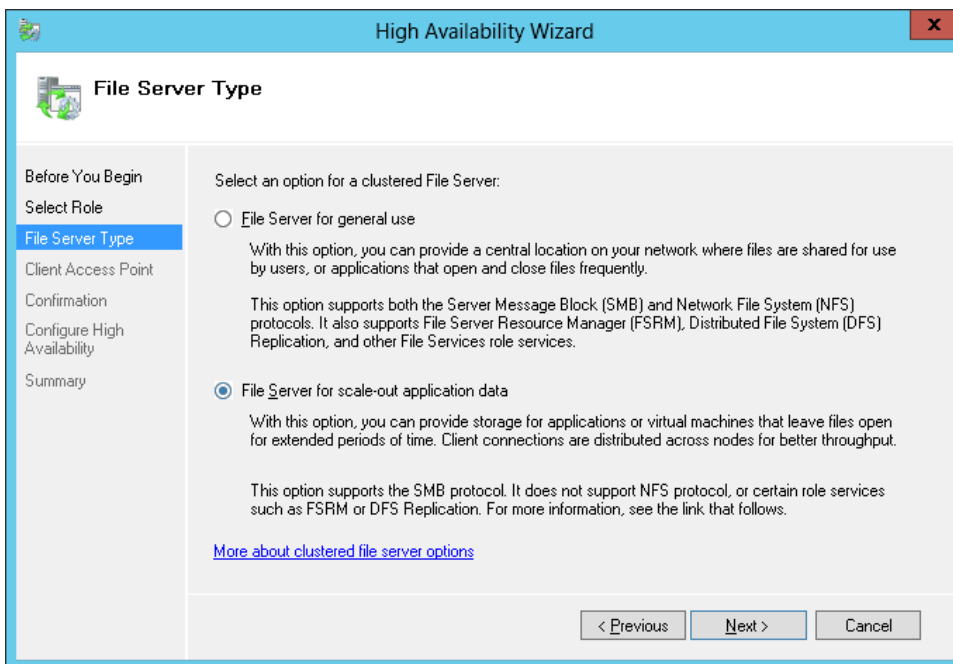
3. Read the **Before You Begin** page appears. Click **Next**.



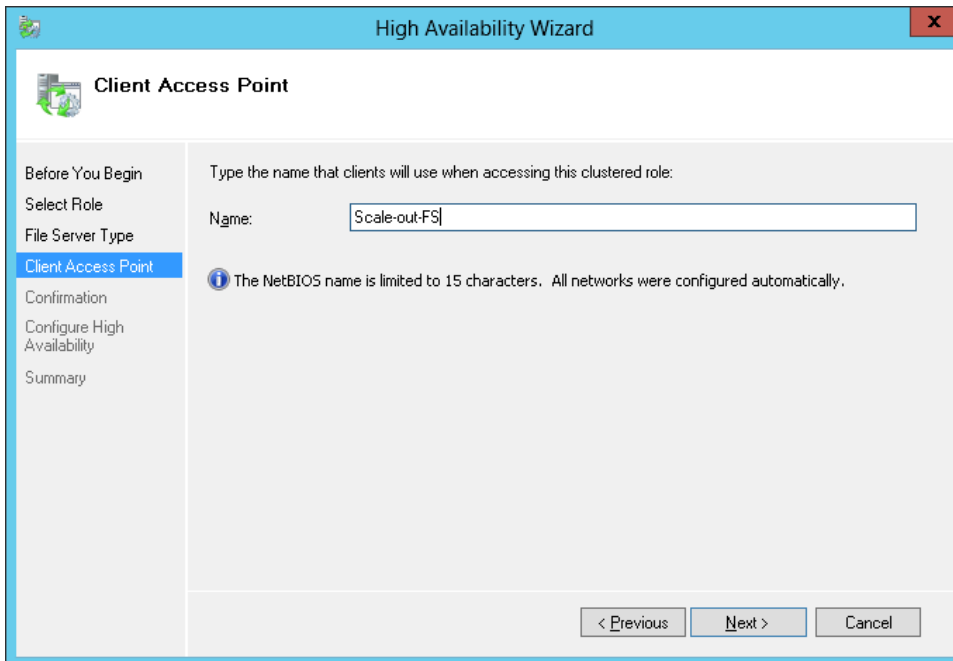
4. On the **Select Role** page, choose **File Server** and click **Next**.



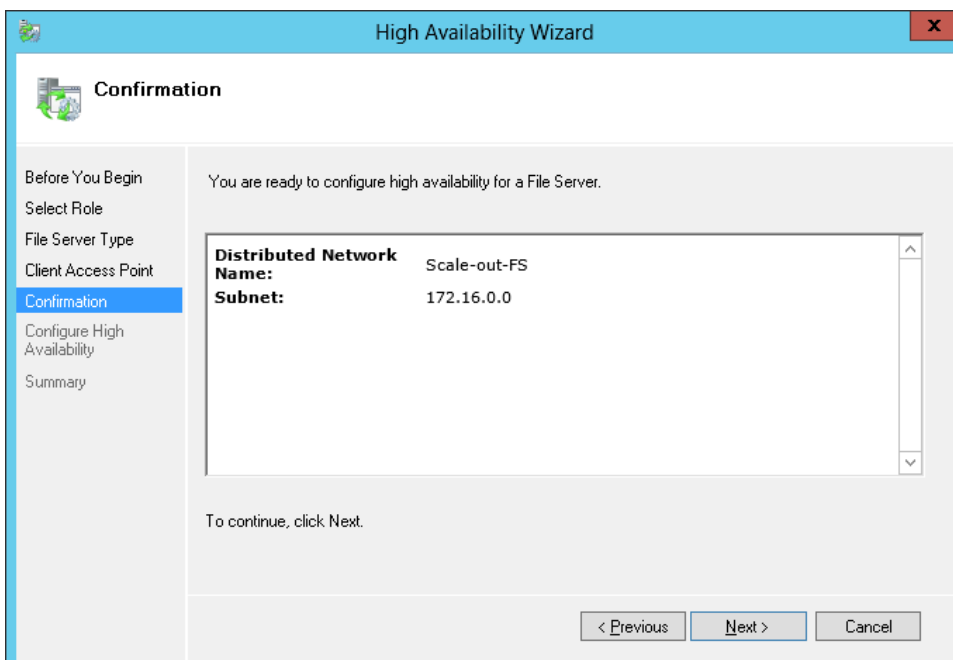
5. Select **File Server for scale-out application data** and click **Next**.



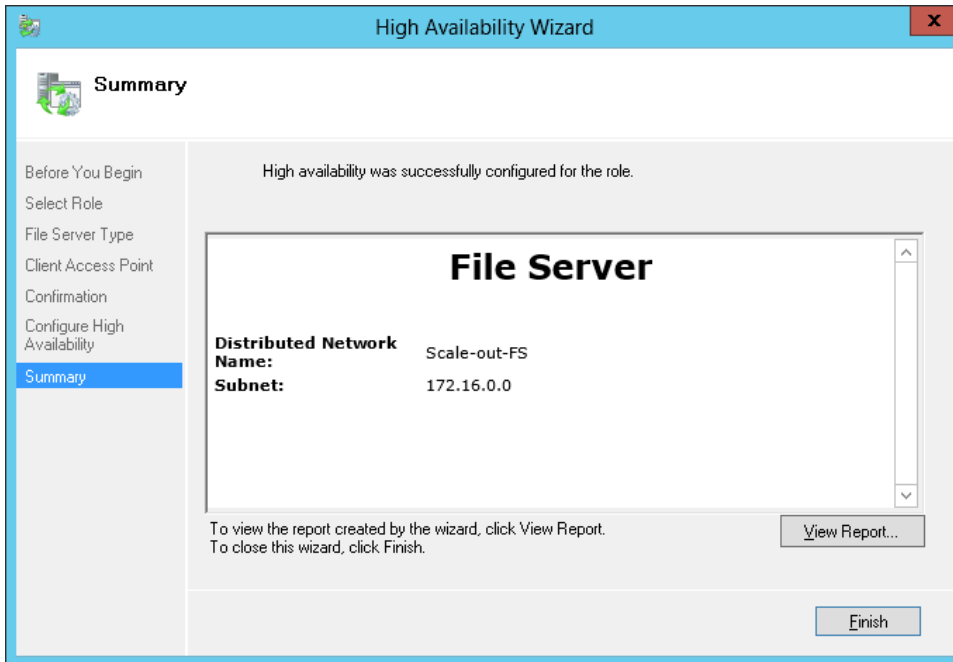
6. On the **Client Access Point** page, in the **Name** text field type a NETBIOS name that will be used to access Scale-Out File Server.
7. Click **Next** to continue.



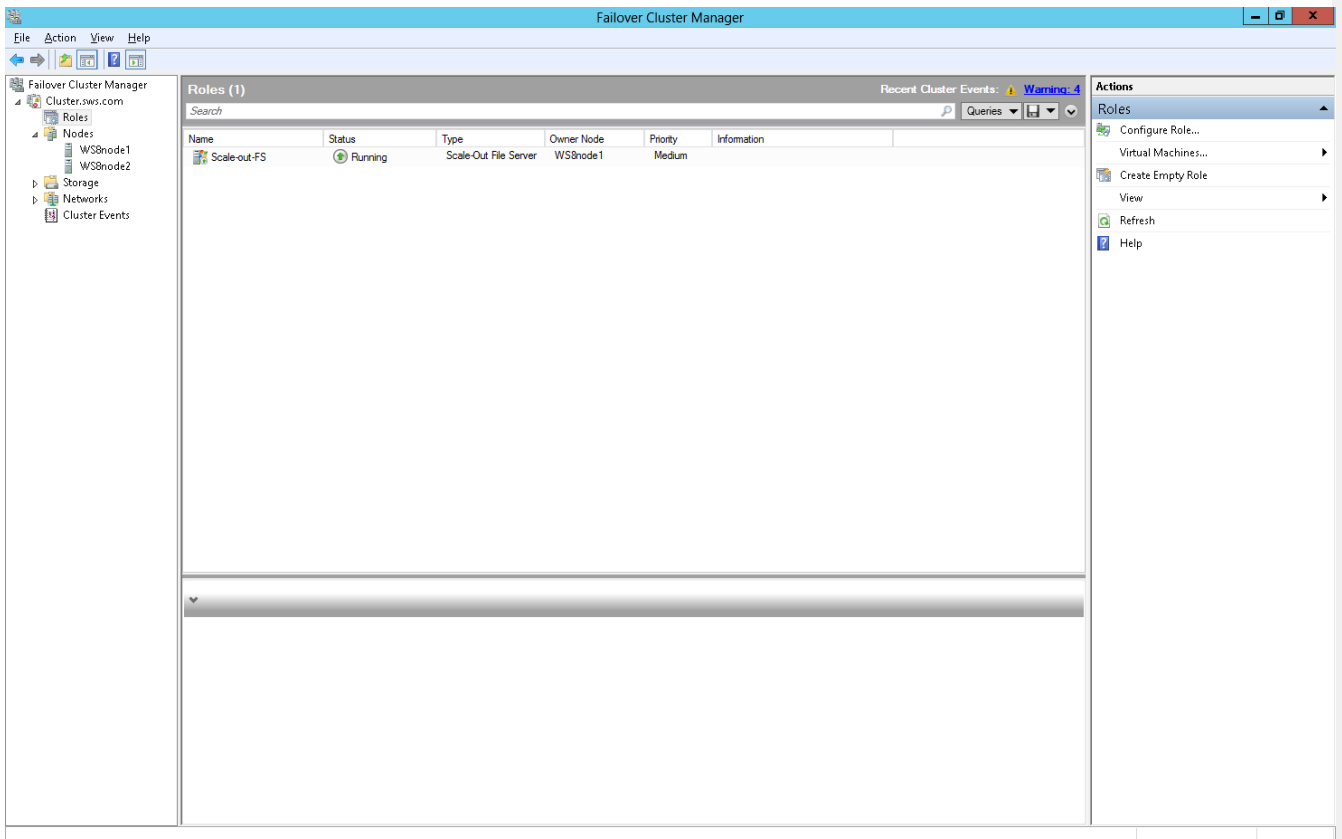
8. On the **Confirmation** page check the selected settings.
9. Click **Next** to continue or **Previous** to make any changes.



10. Review the information on the **Summary** page and click **Finish**.



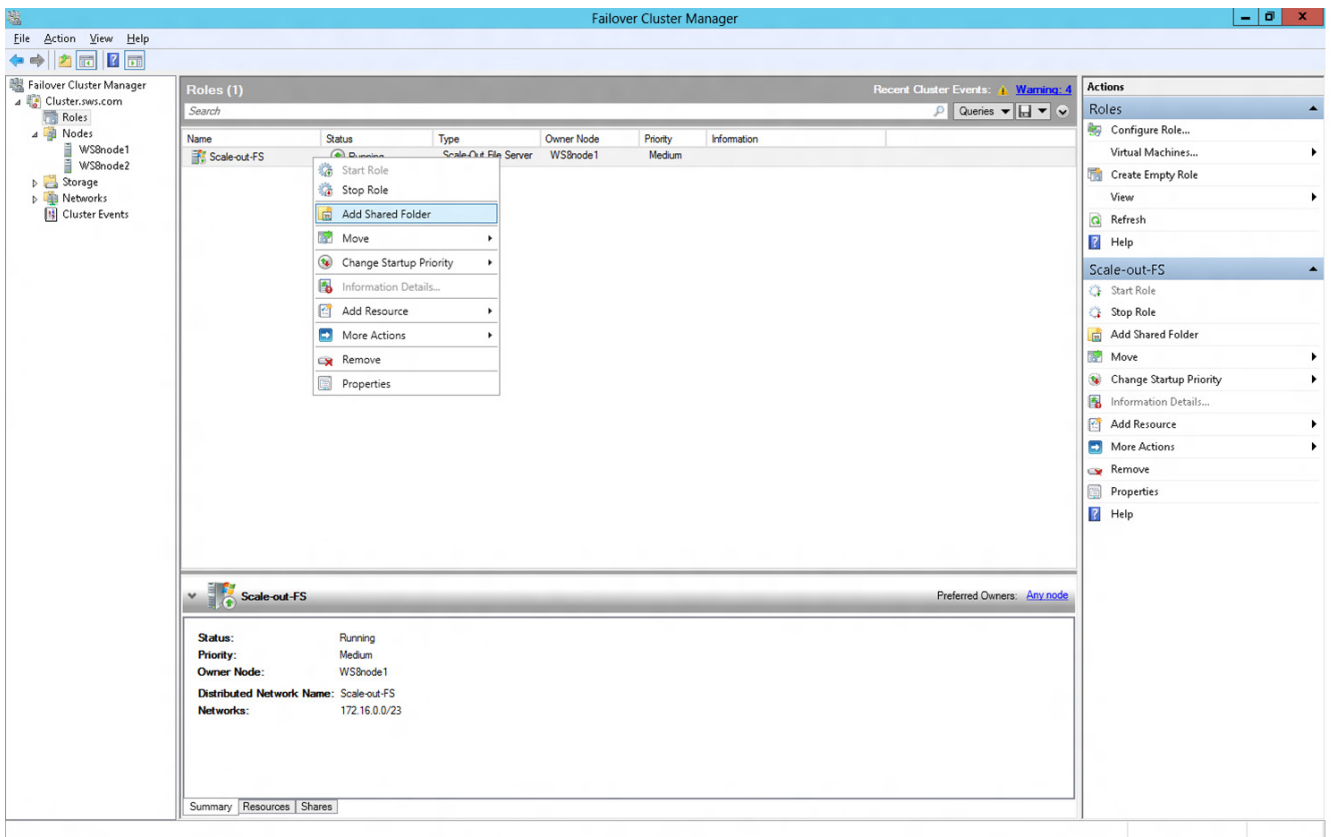
11. When you are finished, the **Failover Cluster Manager** window should look as shown in the screenshot below.



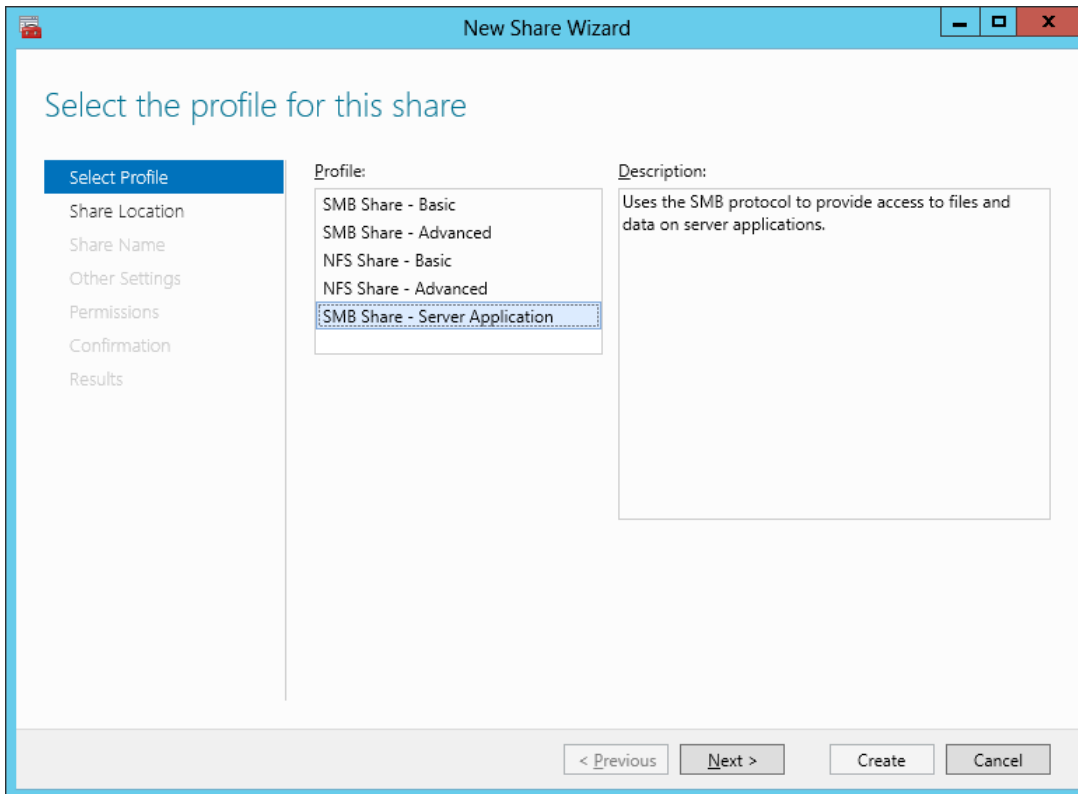
Creating a Continuously Available File Share on a Cluster Shared Volume

To create a continuously available file share on the cluster shared volume:

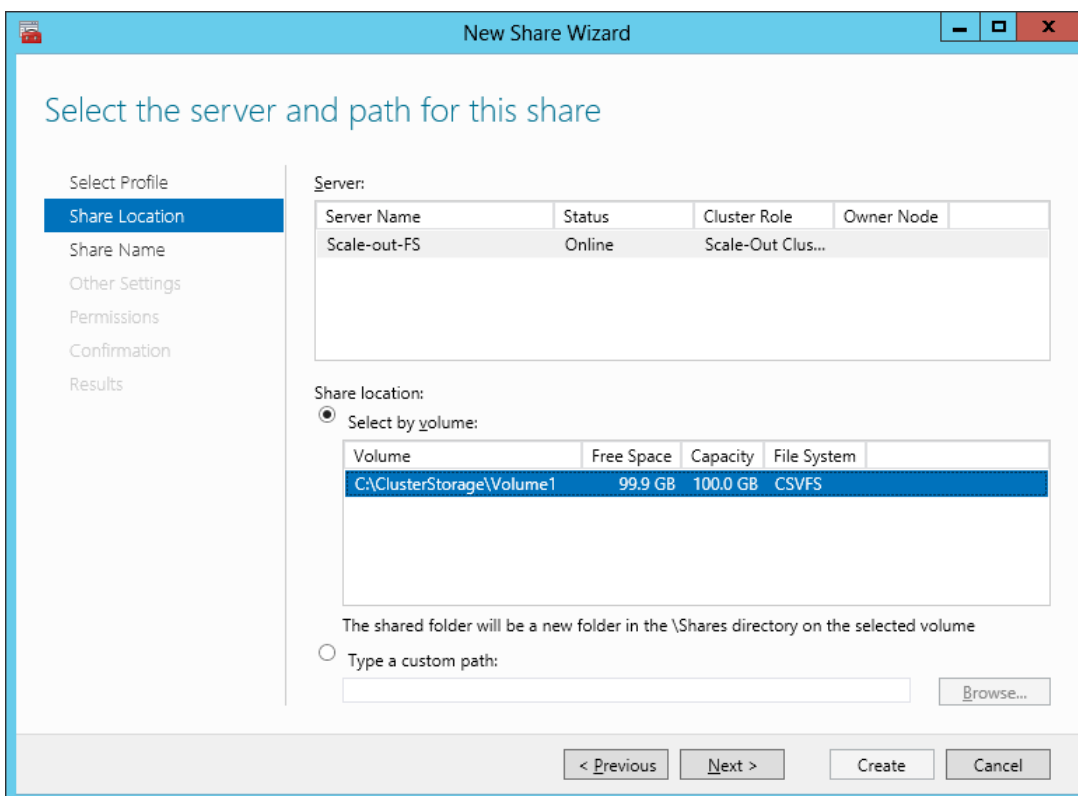
1. Launch the **Failover Cluster Manager**.
2. Select the **Roles** item.
3. Right-click a previously created file server role and select **Add Shared Folder**.



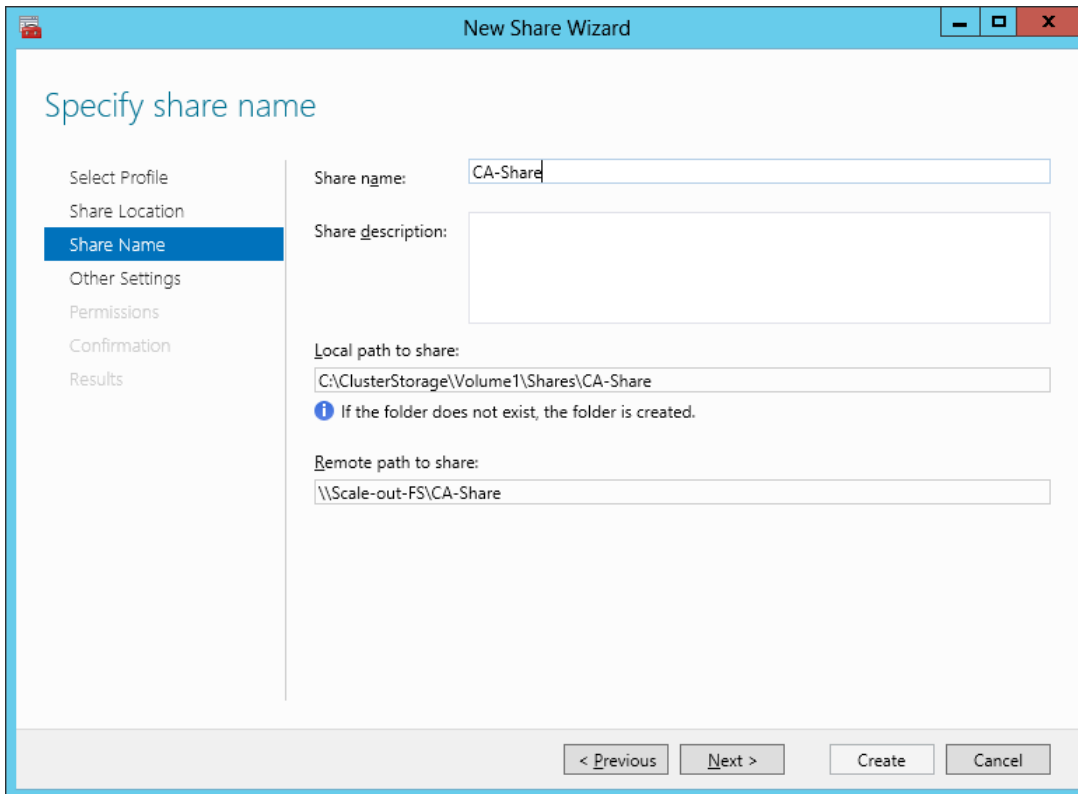
4. From the list of profiles select **SMB Share — Server Application**.
4. Click **Next**.



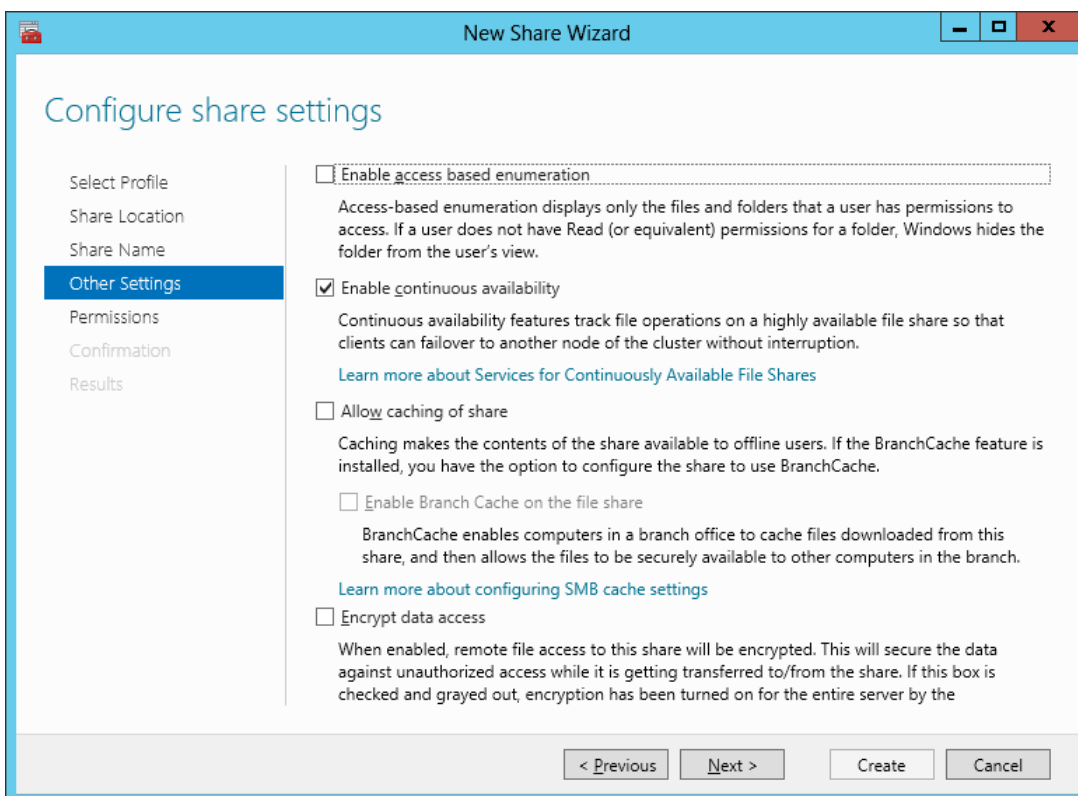
5. Select a CSV volume to host the share.
6. Click **Next**.



7. Enter a share name and verify the path to the share.
8. Click **Next**.



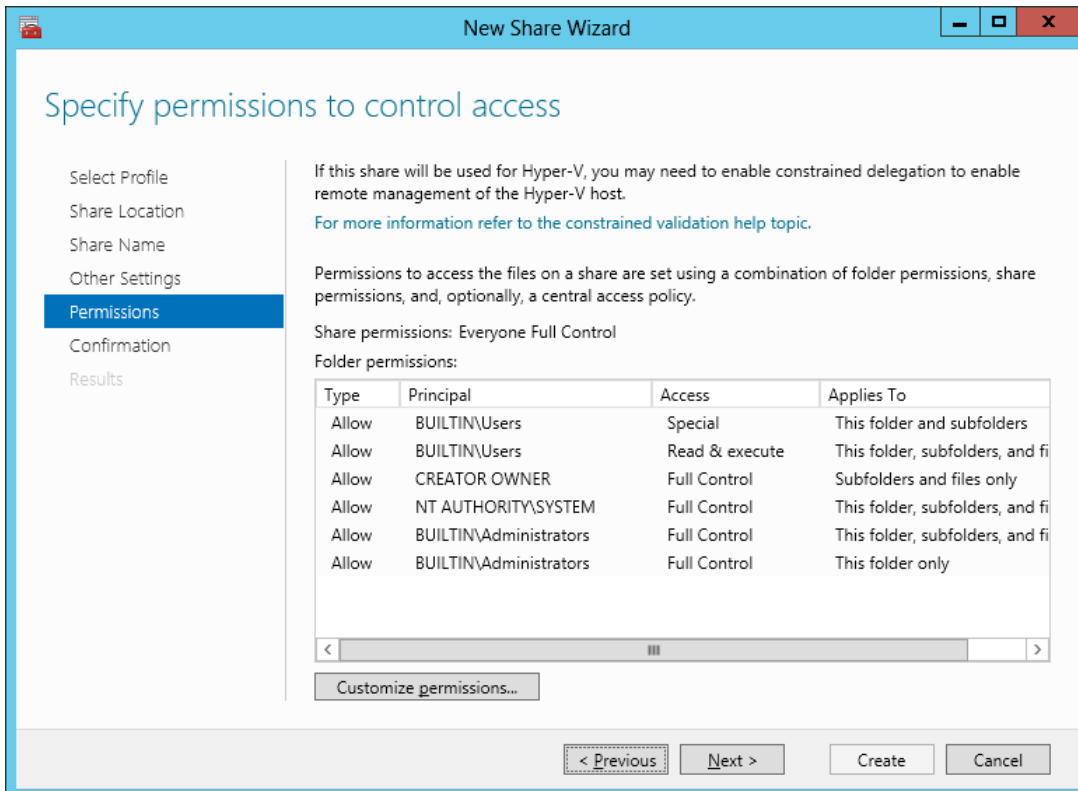
9. Ensure the **Enable Continuous Availability** checkbox is selected.
10. Click **Next**.



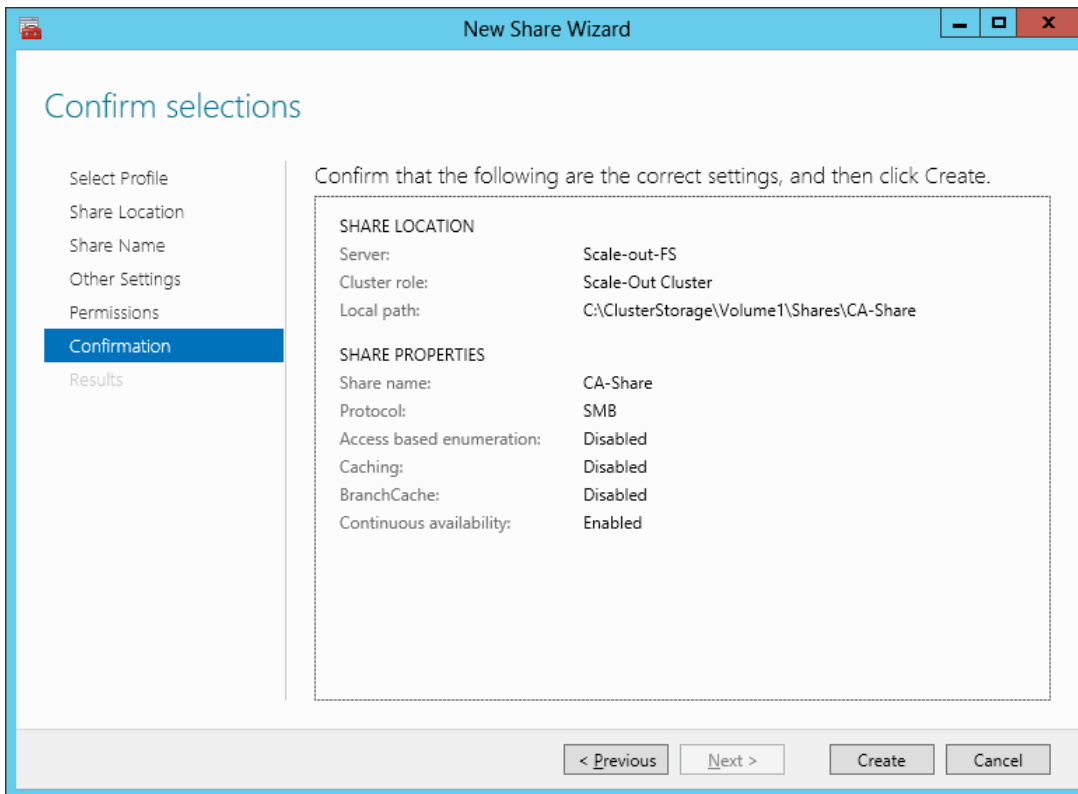
11. On the **Specify permissions to control access** page, click **Customize permissions** and grant the following permissions:

- If you are using this Scale-Out File Server file share for Hyper-V, all Hyper-V computer accounts, the SYSTEM account, and all Hyper-V administrators must be granted full control on the share and the file system.
- If you are using Scale-Out File Server on Microsoft SQL Server, the SQL Server service account must be granted full control on the share and the file system.

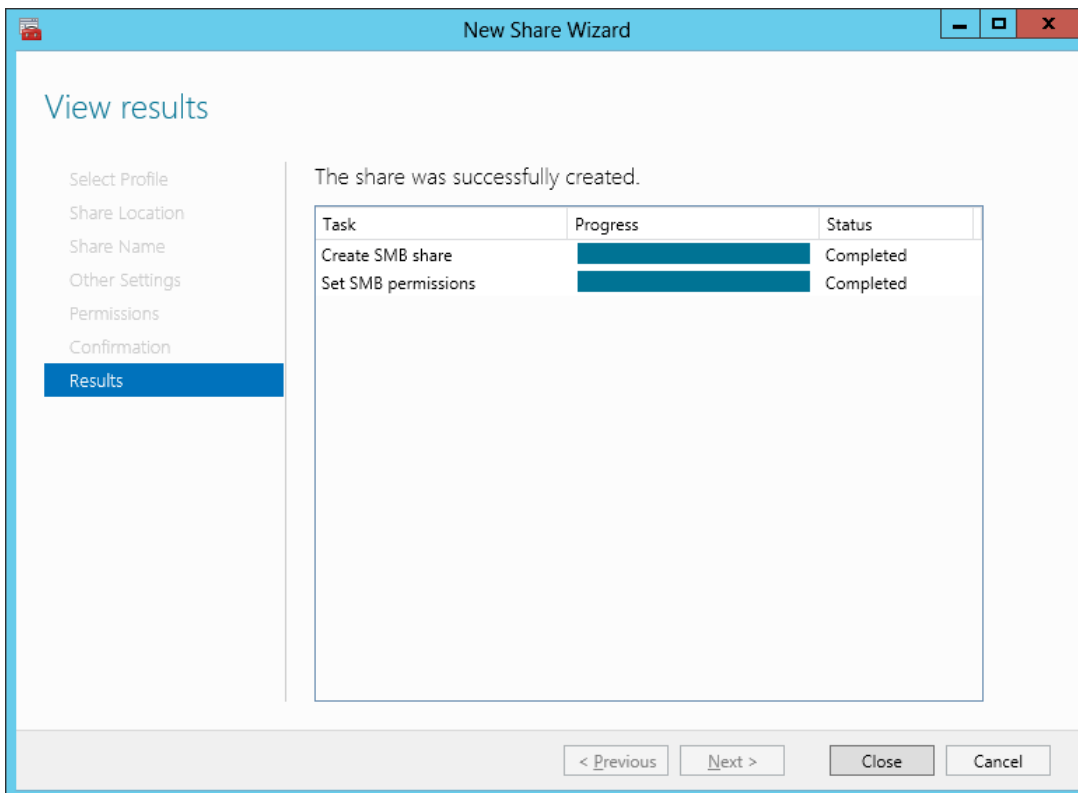
12. Click **Next** to continue.



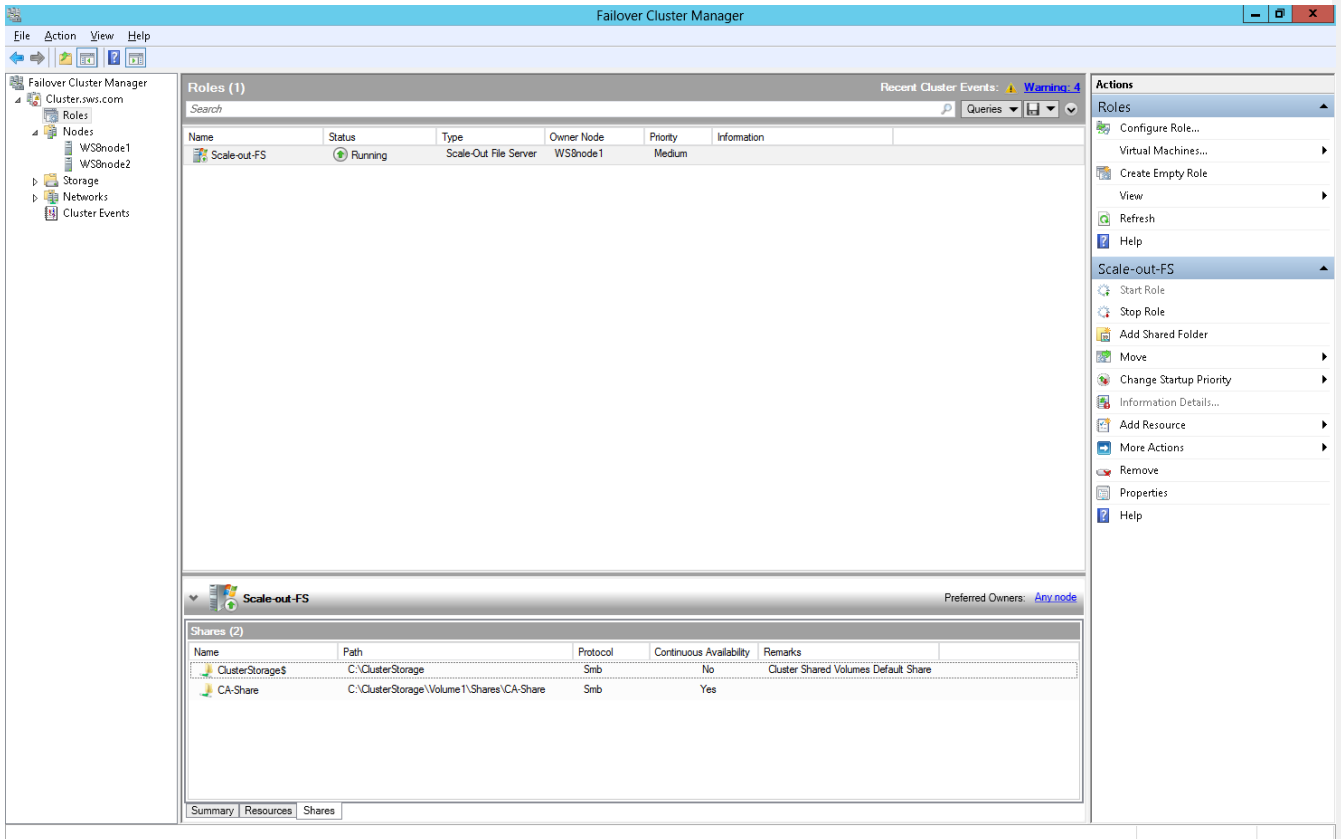
13. On the **Confirm selections** page review the settings and click **Create**. To make any changes, click **Previous**.



14. Review results on the last page and click **Close**.



The **Failover Cluster Manager** should look as shown in the screenshot below.



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