

# StarWind Virtual SAN: Converged Infrastructure Configuration Guide for Microsoft Windows Server [Hyper-V], VSAN Deployed as a Windows Application using GUI

2024

**TECHNICAL PAPERS** 



StarWind Virtual SAN: Converged Infrastructure Configuration Guide for Microsoft Windows Server [Hyper-V], VSAN Deployed as a Windows Application using GUI



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#### **About StarWind**

StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company's core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind "Cool Vendor for Compute Platforms" following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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Applies To: Windows Server 2016, Windows Server 2019, Windows Server 2022

## Annotation

Relevant products

This guide applies to StarWind Virtual SAN and StarWind Virtual SAN Free (Version V8 (build 15260) and earlier).

Purpose

This document outlines how to configure a Microsoft Hyper-V Failover Cluster using StarWind Virtual SAN (VSAN), with VSAN running as a Windows application. The guide includes steps to prepare Hyper-V hosts for clustering, configure physical and virtual networking, and set up the StarWind VSAN and devices.

For more information about StarWind VSAN architecture and available installation options, please refer to the StarWind Virtual (VSAN) Getting Started Guide.

Audience

This technical guide is intended for storage and virtualization architects, system administrators, and partners designing virtualized environments using StarWind Virtual SAN (VSAN).

#### Expected result

The end result of following this guide will be a fully configured high-availability Windows Failover Cluster that includes virtual machine shared storage provided by StarWind VSAN.

### **Prerequisites**

StarWind Virtual SAN system requirements

Prior to installing StarWind Virtual SAN, please make sure that the system meets the requirements, which are available via the following link: https://www.starwindsoftware.com/system-requirements



Recommended RAID settings for HDD and SSD disks:

https://knowledgebase.starwindsoftware.com/guidance/recommended-raid-settings-for-h dd-and-ssd-disks/

Please read StarWind Virtual SAN Best Practices document for additional information: https://www.starwindsoftware.com/resource-library/starwind-virtual-san-best-practices

#### Solution diagram

The diagrams below illustrate the network and storage configuration of the solution:



2-node cluster





3-node cluster

Preconfiguring cluster nodes

1. Make sure that a domain controller is configured and the servers are added to the domain.

NOTE: Please follow the recommendation in KB article on how to place a DC in case of StarWind Virtual SAN usage.

2. Install Failover Clustering and Multipath I/O features, as well as the Hyper-V role on both cluster nodes. This can be done through the Server Manager (Add Roles and Features) menu item.

3. For a 2-node StarWind setup, configure network interfaces on each node to make sure that Synchronization and iSCSI/StarWind heartbeat interfaces are in different subnets and connected according to the network diagram above. In this document, 172.16.10.x and 172.16.20.x subnets are used for the Synchronization traffic, while



172.16.30.x and 172.16.40.x subnets are used for iSCSI/StarWind heartbeat traffic.

For a 3-node StarWind setup, configure the network interfaces on each node to make sure that the Synchronization and iSCSI/StarWind heartbeat interfaces are in different subnets and connected according to the network diagram above. In this document, 172.16.30.x, 172.16.40.x, subnets are used for the iSCSI/StarWind heartbeat traffic, while 172.16.20.x,172.16.21.x, 172.16.22.x subnets are used for the Synchronization traffic.

4. In order to allow iSCSI Initiators to discover all StarWind Virtual SAN interfaces, the StarWind configuration file (StarWind.cfg) should be changed after stopping the StarWind service on the node where it will be edited. Locate the StarWind Virtual SAN configuration file (the default path is "C:\Program Files\StarWind StarWind StarWind\StarWind.cfg") and open it via WordPad as Administrator. Find the *<iScsiDiscoveryListInterfaces value="0"/>* string and change the value from 0 to 1 (should look as follows: *<iScsiDiscoveryListInterfaces value="1"/>*). Save the changes and exit Wordpad. Once StarWind.cfg is changed and saved, the StarWind service can be restarted.

Enabling Multipath Support

5. Open the MPIO Properties manager: Start -> Windows Administrative Tools -> MPIO. Alternatively, run the following PowerShell command:

mpiocpl

6. In the Discover Multi-Paths tab, choose the Add support for iSCSI devices checkbox and click Add.



| MPIO Propertie | 25                     |             |                 | ×        |
|----------------|------------------------|-------------|-----------------|----------|
| MPIO Devices   | Discover Multi-Paths   | DSM Install | Configuration 9 | Snapshot |
| SPC-3 comp     | liant                  |             |                 |          |
| Device Ha      | rdware Id              |             |                 |          |
|                |                        |             |                 |          |
|                |                        |             |                 |          |
| Add sup        | port for iSCSI devices |             |                 |          |
| Add sup        | port for SAS devices   |             |                 | _        |
|                |                        |             | Add             |          |
| Others         |                        |             |                 |          |
| Device Ha      | rdware Id              |             |                 |          |
|                |                        |             |                 |          |
|                |                        |             |                 |          |
|                |                        |             | Add             |          |
|                |                        |             | Add             |          |
|                |                        |             |                 |          |
|                |                        |             | OK              | Cancel   |

- 7. When prompted to restart the server, click Yes to proceed.
- 8. Repeat the same procedure on the other server.

### **Installing File Server Roles**

Please follow the steps below if file shares configuration is required

# Scale-Out File Server (Sofs) For Application Data

1. Open Server Manager: Start -> Server Manager.



2. Select: Manage -> Add Roles and Features.

3. Follow the installation wizard steps to install the roles selected in the screenshot below:

| 📥 Add Roles and Features Wizard  |  | - 🗆 X  |
|--|--|--|
| Select server roles Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results | Select one or more roles to install on the selected server.<br>Roles  Active Directory Rights Management Services Device Health Attestation DHCP Server DNS Server Fax Server Fax Server Fax Server Fax Server   | DESTINATION SERVER<br>SW1.starwind.local<br>Description<br>File Server manages shared folders<br>and enables users to access files on<br>this computer from the network. |
|  | <ul> <li>✓ File and iSCSI Services</li> <li>✓ File Server</li> <li>BranchCache for Network Files</li> <li>Data Deduplication</li> <li>DFS Namespaces</li> <li>DFS Replication</li> <li>File Server Resource Manager</li> <li>File Server VSS Agent Service</li> <li>iSCSI Target Storage Provider (VDS and VSS</li> <li>Server for NFS</li> <li>Work Folders</li> <li>✓ Storane Service (Installed)</li> </ul> |  |

4. Restart the server after installation is completed and perform steps above on the each server.

### File Server For General Use With Smb Share

- 1. Open Server Manager: Start -> Server Manager.
- 2. Select: Manage -> Add Roles and Features.

3. Follow the installation wizard steps to install the roles selected in the screenshot below:



| 🚵 Add Roles and Features Wizard   |  | - 🗆 ×   |
|---|--|---|
| Select server roles   |  | DESTINATION SERVER<br>SW1.stanwind.local  |
| Before You Begin  | Select one or more roles to install on the selected server.  |   |
| Installation Type   | Roles  | Description   |
| Server Selection<br>Server Roles<br>Features<br>Confirmation<br>Results | Active Directory Rights Management Services     Device Health Attestation     DHCP Server     DNS Server     Fax Server     File and Storage Services (1 of 12 installed)     ✓ File and Storage Services     ✓ File Server     BranchCache for Network Files     Data Deduplication     DFS Namespaces     DFS Replication     File Server VSS Agent Service     iSCSI Target Storage Provider (VDS and VSS     Server for NFS     Work Folderr | File Server manages shared folders<br>and enables users to access files on<br>this computer from the network. |
|   | Storane Services (Installed)     V   |   |
|   | < <u>P</u> revious <u>N</u> ext >  | Install Cancel  |

4. Restart the server after installation is completed and perform steps above on each server.

### File Server For General Use With Nfs Share

- 1. Open Server Manager: Start -> Server Manager.
- 2. Select: Manage -> Add Roles and Features.

3. Follow the installation wizard steps to install the roles selected in the screenshot below:



| Add Roles and Features Wizard |  | - 🗆 ×   |
|-------------------------------|--|---|
| Confirmation Results          | Select one or more roles to install on the selected server.<br>Roles  Active Directory Rights Management Services Device Health Attestation DHCP Server DNS Server Fax Server File and Storage Services (1 of 12 installed)  File and Storage Services File Server BranchCache for Network Files | DESTINATION SERVER<br>SW1.stanwindJocal<br>Description<br>Server for NFS enables this<br>computer to share files with UNIX-<br>based computers and other<br>computers that use the network file<br>system (NFS) protocol. |
|                               | Data Deduplication     DFS Namespaces     DFS Replication     File Server Resource Manager     File Server VSS Agent Service     iSCSI Target Storage Provider (VDS and VSS     Server for NFS     Work Folders     Vork Folders     Storane Service (Installed)     <                           | Install Cancel  |

4. Restart the server after installation is completed and perform steps above on each server.

### Installing Starwind Vsan For Hyper-V

1. Download the StarWind setup executable file from the StarWind website: https://www.starwind.com/registration-starwind-virtual-san

2. Launch the downloaded setup file on the server to install StarWind Virtual SAN or one of its components. The Setup wizard will appear. Read and accept the License Agreement.



| 💿 Setup - StarWind Virtual SAN 🦳 🗌  | ×      |
|---|--------|
| License Agreement<br>Please read the following important information before continuing.   |        |
| Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.   |        |
| STARWIND® LICENSE AGREEMENT   | ^      |
| This StarWind License Agreement (the "Agreement") is a legal agreement<br>between the entity indicated on the signature page as 'Licensee' or the<br>licensee entity on whose behalf this Agreement is electronically executed<br>by the authorized user (the "Licensee") and StarWind Software, Inc., a<br>State of Delaware, USA corporation ("StarWind," and collectively with<br>Licensee, the "Parties" and each, (a "Party")), that is entered into as of<br>the date of acceptance hereof by both Parties hereto (the "Effective | ~      |
| <ul> <li>I accept the agreement</li> <li>○ I do not accept the agreement</li> </ul>   |        |
| <u>N</u> ext >  | Cancel |

3. Carefully read the information about the new features and improvements. Red text indicates warnings for users that are updating the existing software installations.

4. Select Browse to modify the installation path if necessary. Click on Next to continue.



| Setup - StarWind Virtual SAN   | _        |                 | ×    |
|--|----------|-----------------|------|
| Select Destination Location<br>Where should StarWind Virtual SAN be installed? |          |                 | Ð    |
| Setup will install StarWind Virtual SAN into the following fold                | ler.     |                 |      |
| To continue, click Next. If you would like to select a different folder,       | click Br | rowse.          |      |
| C:\Program Files\StarWind Software\StarWind                                    | E        | B <u>r</u> owse |      |
| At least 2.4 MB of free disk space is required.                                |          |                 |      |
| < <u>B</u> ack <u>N</u> ex   | t >      | Ca              | ncel |

5. Select the following components for the minimum setup:

- StarWind Virtual SAN Service. The StarWind Virtual SAN service is the "core" of the software. It can create iSCSI targets as well as share virtual and physical devices. The service can be managed from StarWind Management Console on any Windows computer that is on the same network. Alternatively, the service can be managed from StarWind Web Console deployed separately.
- StarWind Management Console. Management Console is the Graphic User Interface (GUI) part of the software that controls and monitors all storage-related operations (e.g., allows users to create targets and devices on StarWind Virtual SAN servers connected to the network).

NOTE: To manage StarWind Virtual SAN installed on a Windows Server Core edition with no GUI, StarWind Management Console should be installed on a different computer running the GUI-enabled Windows edition.



| Setup - StarWind Virtual SAN  | _             | ×      |
|---|---------------|--------|
| Select Components   |               |        |
| Which components should be installed?   |               |        |
| Which components should be installed:   |               |        |
| Select the components you want to install; clear the components you d install. Click Next when you are ready to continue. | o not want t  | o      |
| StarWind Virtual SAN Server   |               | $\sim$ |
| Service   | 170,8 MB      | ~      |
|   |               |        |
| Cloud Replicator for VTL  | 158,8 MB      |        |
| SPTD Driver (Alternative driver for exporting physical devices)   |               |        |
| StarWind Management Console   | 29,4 MB       |        |
| Configure user account for Web-access to Management Console   | 0,1 MB        |        |
| Integration Component Library   | 7,8 MB        |        |
| 🛄 🗹 PowerShell Management Library   | 2,6 MB        |        |
| SMI-S Agent   | 51.5 MB       | ×      |
| Current selection requires at least 207,3 MB of disk space.   |               |        |
| < <u>B</u> ack <u>N</u> ext >   | C             | ancel  |
| 6. Specify Start Menu Folder.   |               |        |
| Setup - StarWind Virtual SAN  | _             | ×      |
| Select Start Menu Folder<br>Where should Setup place the program's shortcuts?   |               |        |
| Setup will create the program's shortcuts in the following Start  | t Menu folder | r.     |
| To continue, click Next. If you would like to select a different folder, clic   | k Browse.     |        |
| StarWind Software\StarWind  | Browse        |        |
|   |               |        |

8. When the license key prompt appears, choose the appropriate option:

< <u>B</u>ack

7. Enable the checkbox if a desktop icon needs to be created. Click on Next to continue.

 $\underline{N}ext >$ 

Cancel



- request time-limited fully functional evaluation key.
- request FREE version key.
- relect the previously purchased commercial license key.
- 9. Click on the Browse button to locate the license file.
- 10. Review the licensing information.

11. Verify the installation settings. Click on Back to make any changes or Install to proceed with installation.

12. Enable the appropriate checkbox to launch StarWind Management Console right after the setup wizard is closed and click on Finish.

13. Repeat the installation steps on the partner node.

### **Select The Required Replication Mode**

The replication can be configured using Synchronous "Two-Way" Replication mode: Synchronous or active-active replication ensures real-time synchronization and load balancing of data between two or three cluster nodes. Such a configuration tolerates the failure of two out of three storage nodes and enables the creation of an effective business continuity plan. With synchronous mirroring, each write operation requires control confirmation from both storage nodes. It guarantees the reliability of data transfers but is demanding in bandwidth since mirroring will not work on high-latency networks.

### Synchronous "Two-Way" Replication

1. Right-click the recently created device and select Replication Manager from the shortcut menu.

2. Select the Add Replica button in the top menu.



| 式 Replication Manager for imagefile1 | ?    | × |
|--------------------------------------|------|---|
| Refresh Add Replica Remove Replica   |      |   |
| Replication Partner                  |      |   |
| Click to add replication partner     |      |   |
|                                      |      |   |
|                                      |      |   |
|                                      |      |   |
|                                      |      |   |
| PROPERTIES                           |      |   |
| Host Name                            |      |   |
| Target Name                          |      |   |
| Mode                                 |      |   |
| Priority                             |      |   |
| Synchronization Status               |      |   |
| Synchronization Channel              |      |   |
|                                      |      |   |
|                                      |      |   |
|                                      | Clos | e |

3. Select Synchronous "Two-Way" replication as a replication mode.



|   |   | ?                         | ×  |
|---|---|---------------------------|----|
| ~ | Replication Wizard  |                           |    |
|   | Replication Mode  |                           |    |
|   | Synchronous "Two-Way" Replication<br>Replication Partner must be connected to Client as Source Device as well, MPIO or<br>must be enabled, needs dedicated high Performance Network Connection for<br>Synchronization.  | n Client                  |    |
|   | Witness Node<br>Witness node doesn't contain user data. In case when Node Majority policy is set<br>Synchronous replication device and there are two storage nodes, Witness Node m<br>added to cluster to make number of nodes odd number and enable proper function<br>Node Majority policy. | for<br>hust be<br>hing of |    |
|   | Next  | Canc                      | el |

4. Specify a partner Host name or IP address and Port Number.

### **Selecting The Failover Strategy**

StarWind provides 2 options for configuring a failover strategy:

#### Heartbeat

The Heartbeat failover strategy allows avoiding the "split-brain" scenario when the HA cluster nodes are unable to synchronize but continue to accept write commands from the initiators independently. It can occur when all synchronization and heartbeat channels disconnect simultaneously, and the partner nodes do not respond to the node's requests. As a result, StarWind service assumes the partner nodes to be offline and continues operations on a single-node mode using data written to it.

If at least one heartbeat link is online, StarWind services can communicate with each other via this link. The device with the lowest priority will be marked as not synchronized and get subsequently blocked for the further read and write operations until the synchronization channel resumption. At the same time, the partner device on the



synchronized node flushes data from the cache to the disk to preserve data integrity in case the node goes down unexpectedly. It is recommended to assign more independent heartbeat channels during the replica creation to improve system stability and avoid the "split-brain" issue.

With the heartbeat failover strategy, the storage cluster will continue working with only one StarWind node available.

#### Node Majority

The Node Majority failover strategy ensures the synchronization connection without any additional heartbeat links. The failure-handling process occurs when the node has detected the absence of the connection with the partner.

The main requirement for keeping the node operational is an active connection with more than half of the HA device's nodes. Calculation of the available partners is based on their "votes".

In case of a two-node HA storage, all nodes will be disconnected if there is a problem on the node itself, or in communication between them. Therefore, the Node Majority failover strategy requires the addition of the third Witness node or file share (SMB) which participates in the nodes count for the majority, but neither contains data on it nor is involved in processing clients' requests. In case an HA device is replicated between 3 nodes, no Witness node is required.

With Node Majority failover strategy, failure of only one node can be tolerated. If two nodes fail, the third node will also become unavailable to clients' requests. Please select the required option:

### Heartbeat

1. Select Failover Strategy.



|   |   | ?  | ×     |
|---|---|--|-------|
| ← | Replication Wizard  |  |       |
|   | Failover Strategy   |  |       |
|   | Heartbeat   |  |       |
|   | Process node and communication failures u<br>(heartbeat). At least one synchronization of<br>proper failover processing. Loss of all com-<br>issue, so it's recommended to use client iso<br>channel. | using additional communication channel<br>or heartbeat channel must be functional for<br>munication channels may lead to split brain<br>CSI connection interfaces as heartbeat |       |
|   | Node Majority   |  |       |
|   | Process node and communication failures u<br>sees more than half of nodes including itse<br>configuring additional witness node. Does   | ising majority policy: node stays active while<br>If. In case of 2 storage nodes, requires<br>not require additional heartbeat channel.  | e it  |
|   |   |  |       |
|   |   |  |       |
|   |   |  |       |
|   |   | <u>N</u> ext Ca  | ancel |

2. Select Create new Partner Device and click Next.

3. Select a partner device Location.

4. Select Synchronization Journal Strategy and click Next.

NOTE: There are several options – RAM-based journal (default) and Disk-based journal with failure and continuous strategy, that allow to avoid full synchronization cases.

RAM-based (default) synchronization journal is placed in RAM. Synchronization with RAM journal provides good I/O performance in any scenario. Full synchronization could occur in the cases described in this KB:

https://knowledgebase.starwindsoftware.com/explanation/reasons-why-full-synchronizati on-may-start/

Disk-based journal placed on a separate disk from StarWind devices. It allows to avoid full synchronization for the devices where it's configured even when StarWind service is being stopped on all nodes. Disk-based synchronization journal should be placed on a separate, preferably faster disk from StarWind devices. SSDs and NVMe disks are recommended as the device performance is defined by the disk speed, where the journal is located. For example, it can be placed on the OS boot volume.



It is required to allocate 2 MB of disk space for the synchronization journal per 1 TB of HA device size with a disk-based journal configured with 2-way replication and 4MB per 1 TB of HA device size for 3-way replication.

#### Failure journal

The strategy provides good I/O performance, as a RAM-based journal, while all device nodes are in a healthy synchronized state. If a device on one node went into a not synchronized state, the disk-based journal activates and a performance drop could occur as the device performance is defined by the disk speed, where the journal is located. Fast synchronization is not guaranteed in all cases. For example, if a simultaneous hard reset of all nodes occurs, full synchronization will occur.

#### Continuous journal

The strategy guarantees fast synchronization and data consistency in all cases. Although, this strategy has the worst I/O performance, because of frequent write operations to the journal, located on the disk, where the journal is located.

|        |                         |  | ?       | ×  |
|--------|-------------------------|--|---------|----|
| ←      | Replication             | Wizard   |         |    |
|        | Synchroniza             | tion Journal Setup   |         |    |
|        | RAM     Synch     IO pe | -based journal<br>rronization journal placed in RAM. Synchronization with RAM journal provides<br>rformance in any scenario. | good    |    |
|        | O Disk<br>Synch         | based journal<br>pronization journal placed on disk.   |         |    |
|        | ۲                       | Failure journal<br>The strategy provides good IO performance while all device nodes are in a<br>state.                       | healthy |    |
|        | 0                       | <b>Continuous journal</b><br>The strategy guarantees fast synchronization and data consistency in all co                     | ases.   |    |
|        | Current Node            | My Computer\C\   |         |    |
|        | Partner Node            | My Computer\C\   |         |    |
|        |                         | <u>N</u> ext   | Canc    | el |
| 5. Cli | ick Change Ne           | etwork Settings.   |         |    |



|   |   | ?   | ×   |
|---|---|-----|-----|
| ÷ | Replication Wizard                                      |     |     |
|   | Network Options for Replication                         |     |     |
|   | Networks for Synchronization and Heartbeat              |     |     |
|   | Press "Change Network Settings" to configure Interfaces |     |     |
|   | Networks for Heartbeat                                  |     | _   |
|   | Press "Change Network Settings" to configure Interfaces |     |     |
|   | Change Network Settings                                 |     |     |
|   | ALUA preferred  |     |     |
|   | Change ALUA Settings                                    |     |     |
|   |   |     |     |
|   |   |     |     |
|   |   |     |     |
|   | <u>N</u> ext  | Can | cel |

6. Specify the interfaces for Synchronization and Heartbeat Channels. Click OK and then click Next.

| pecify Interfaces for Synchronization Channels |              |                       |           | $\times$ |
|--|--------------|-----------------------|-----------|----------|
| Select synchronization channel                 |              |                       |           |          |
| Interfaces                                     | Networks     | Synchronization and H | Heartbeat |          |
| - Host Name: 127                               | 7.0.0.1      |                       |           |          |
| 172.16.10.10                                   | 172.16.10.0  | <b>v</b>              |           |          |
| 172.16.20.10                                   | 172.16.20.0  |                       |           |          |
| 172.16.30.10                                   | 172.16.30.0  |                       |           |          |
| 172.16.40.10                                   | 172.16.40.0  |                       |           |          |
| 192.168.12.10                                  | 192.168.12.0 |                       |           |          |
| 🖃 Host Name: SW                                | 12           |                       |           |          |
| 172.16.10.20                                   | 172.16.10.0  |                       |           |          |
| 172.16.20.20                                   | 172.16.20.0  |                       |           |          |
| 172.16.30.20                                   | 172.16.30.0  |                       |           |          |
| 172.16.40.20                                   | 172.16.40.0  |                       |           |          |
| 192.168.12.20                                  | 192.168.12.0 |                       | <b>V</b>  |          |
|  |              |                       |           |          |
|  |              |                       |           |          |
|  |              |                       |           |          |
|  |              |                       |           |          |
| Allow Free Select T                            | nterfaces    |                       | OK Cancel |          |
| E Palon recodect i                             |              |                       |           |          |

7. In Select Partner Device Initialization Mode, select Synchronize from existing Device and click Next.

8. Click Create Replica. Click Finish to close the wizard. The successfully added device appears in StarWind Management Console.

9. Follow the similar procedure for the creation of other virtual disks that will be used as storage repositories.

# **Node Majority**

There are two ways to configure Witness for 2-nodes StarWind HA device, created with Node Majority Failover Strategy: File Share (SMB) as Witness and additional server as Witness Node.

- Creating HA device with File SHare(SMB) as Witness:



SMB Witness is a file, located on SMB share, which can be accessed by both nodes and help them to eliminate the split-brain issue in case of synchronization connection interruption between the nodes. To set up the SMB file share as a Witness for 2-nodes HA device with Node Majority Failover Strategy, perform the actions, described on this page:

https://www.starwindsoftware.com/help/ConfiguringFileShareSMBasWitness.html

- Creating HA device with Witness Node:
- 1. Select the Node Majority failover strategy and click Next.

|   |         |   | ?            | ×  |
|---|---------|---|--------------|----|
| ~ | Replic  | ation Wizard  |              |    |
|   | Failove | r Strategy  |              |    |
|   | 0       | Heartbeat<br>Process node and communication failures using additional communication channel<br>(heartbeat). At least one synchronization or heartbeat channel must be functiona<br>proper failover processing. Loss of all communication channels may lead to split br<br>issue, so it's recommended to use client iSCSI connection interfaces as heartbeat<br>channel. | l for<br>ain |    |
|   | ۱       | <b>Node Majority</b><br>Process node and communication failures using majority policy: node stays active sees more than half of nodes including itself. In case of 2 storage nodes, requires configuring additional witness node. Does not require additional heartbeat channe  | while it     |    |
|   |         | Next  | Cance        | el |

2. Choose Create new Partner Device and click Next.

3. Specify the partner device Location and modify the target name if necessary. Click Next. Select Synchronization Journal strategy and location and click Next.

4. In Network Options for Replication, press the Change network settings button and select the synchronization channel for the HA device.

5. In Specify Interfaces for Synchronization Channels, select the checkboxes with the appropriate networks and click OK. Then click Next.



6. Select Synchronize from existing Device as the partner device initialization mode.

7. Press the Create Replica button and close the wizard.

8. The added devices will appear in StarWind Management Console. Repeat the steps above to create other virtual disks if necessary.

#### Adding Witness Node

Witness node can be configured on a separate host or as a virtual machine in a cloud. It requires StarWind Virtual SAN service installed on it.

NOTE: Since the device created in this guide is replicated between 2 active nodes with the Node Majority failover strategy, a Witness node must be added to it.

1. Open StarWind Management Console, right-click on the Servers field and press the Add Server button. Add a new StarWind Server which will be used as the Witness node and click OK.

| 📑 Add new StarWind Server |    | ?      | ×  |
|---------------------------|----|--------|----|
| Host: witness-sw          |    | : 3261 |    |
| Advanced >>               | ОК | Cano   | el |

2. Right-click on the HA device with the configured Node Majority failover policy and select Replication Manager and press the Add Replica button.

3. Select Witness Node.



|   |         | ?   | $\times$ |
|---|---------|---|----------|
| ÷ | Replie  | cation Wizard   |          |
|   | Replica | ation Mode  |          |
|   | 0       | Synchronous "Two-Way" Replication<br>Replication Partner must be connected to Client as Source Device as well, MPIO on Client<br>must be enabled, needs dedicated high Performance Network Connection for<br>Synchronization  | 1        |
|   | 0       | Asynchronous "One-Way" Replication<br>Replica is used to store replicated Data, Data is stored as Snapshots, Client cannot<br>connect to Replication Partner, mount Snapshot from Replica to get Access to replicated<br>Data   |          |
|   | ۲       | Witness Node<br>Witness node doesn't contain user data. In case when Node Majority policy is set for<br>Synchronous replication device and there are two storage nodes, Witness Node must be<br>added to cluster to make number of nodes odd number and enable proper functioning of<br>Node Majority policy. |          |
|   |         | Next Cano   | el       |

4. Specify the Witness node Host Name or IP address. The default Port Number is 3261.



|                           |   | ?   | ×    |
|---------------------------|---|-----|------|
| - Replication Wizard      |   |     |      |
| Add Partner Node          |   |     |      |
| Specify Partner Host Name | e or IP Address where Replication Node would be created |     |      |
| Host Name or IP Address   | witness-sw ~  |     |      |
| Port Number               | 3261  |     |      |
|                           |   |     |      |
|                           |   |     |      |
|                           |   |     |      |
|                           |   |     |      |
|                           |   |     |      |
|                           |   |     |      |
|                           |   | 121 |      |
|                           | Next  | Car | icel |

5. In Partner Device Setup, specify the Witness device Location. Optionally, modify the target name by clicking the appropriate button.

6. In Network Options for Replication, select the synchronization channel with the Witness node by clicking the Change Network Settings button.

7. Specify the interface for Synchronization and Heartbeat and click OK.

8. Click Create Replica and then close the wizard.

9. Repeat the steps above to create other virtual disks if necessary. NOTE: To extend an Image File or a StarWind HA device to the required size, please check the article below:

https://knowledgebase.starwindsoftware.com/maintenance/how-to-extend-image-file-orhigh-availability-device/



### **Provisioning Starwind Ha Storage To Windows Server Hosts**

1. Launch Microsoft iSCSI Initiator: Start -> Windows Administrative Tools -> iSCSI Initiator. Alternatively, launch it using the command below in the command line interface:

iscsicpl

2. Navigate to the Discovery tab.

3. Click the Discover Portal button. The Discover Target Portal dialog appears. Type 172.16.30.10

| Discover Target Portal  | ×                            |  |  |
|---|------------------------------|--|--|
| Enter the IP address or DNS name and p want to add.   | ort number of the portal you |  |  |
| To change the default settings of the discovery of the target portal, dick the Advanced button. |                              |  |  |
| IP address or DNS name:   | Port: (Default is 3260.)     |  |  |
| 172.16.30.10  | 3260                         |  |  |
| Advanced  | OK Cancel                    |  |  |

Click the Advanced button.

4. Select Microsoft iSCSI Initiator as Local adapter and select Cluster Node 1 initiator IP address from the same subnet. Click OK twice to add the Portal.



| Microsoft iSCSI Initiator \<br>172. 16. 30. 40 \<br>172. 16. 30. 10 / 3260 \<br>Header digest<br>ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this                                      |  |
|---|--|
| Microsoft iSCSI Initiator \<br>172. 16. 30. 40 \<br>172. 16. 30. 10 / 3260 \<br>Header digest<br>ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this                                      |  |
| Microsoft iSCSI Initiator   IT2. 16.30.40   IT2. 16.30.10 / 3260   Header digest  ion security by providing authentication between a target and ame and CHAP secret that was configured on the target for this and the Arist block of the used on the target for this |  |
| 172.16.30.40 ~<br>172.16.30.10 / 3260 ~<br>Header digest<br>ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this<br>and the Trijke New York and the sector provide the target for this     |  |
| IT2. 16. 30. 10 / 3260 ~<br>Header digest<br>ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this  |  |
| Header digest<br>ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this  |  |
| Header digest   |  |
| ion security by providing authentication between a target and<br>ame and CHAP secret that was configured on the target for this   |  |
|   |  |
| n. 1991-05. com. microsoft: compute 1   |  |
|   |  |
| cation<br>specify an initiator secret on the Configuration page or use<br>e user authentication credentials<br>cate target credentials  |  |
|   | ation<br>specify an initiator secret on the Configuration page or use<br>user authentication credentials<br>ate target credentials |

5. Click the Discover Portal button once again.

6. In Discover Target Portal dialog, type in the iSCSI interface IP address of the partner node that will be used to connect the StarWind provisioned targets. Click Advanced.



| Discover Target Portal   | ×                                |  |  |
|--|----------------------------------|--|--|
| Enter the IP address or DNS name and po<br>want to add.  | ort number of the portal you     |  |  |
| To change the default settings of the discovery of the target portal, click the Advanced button. |                                  |  |  |
| IP address or DNS name:  | Port: (Default is 3260.)<br>3260 |  |  |
| Advanced   | OK Cancel                        |  |  |

7. Select Microsoft iSCSI Initiator as the Local adapter, select the Initiator IP in the same subnet as the IP address of the partner server from the previous step. Confirm the actions to complete the Target Portal discovery.



| eral IPsec   |  |  |  |
|--|--|--|--|
| Connect using  |  |  |  |
| ocal adapter:  | Microsoft iSCSI Initiator $\qquad \qquad \lor$   |  |  |
| initiator IP:  | 172.16.40.40 ~   |  |  |
| Target portal IP:  | 172.16.40.10 / 3260 ~  |  |  |
| CRC / Checksum   |  |  |  |
| Data digest  | Header digest  |  |  |
| Enable CHAP log of<br>CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w  | ation<br>nection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>ill default to the Initiator Name of the system unless another name is  |  |  |
| Enable CHAP log of<br>CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.                            | ation<br>providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>fill default to the Initiator Name of the system unless another name is<br>inn. 1991-05.com.microsoft:compute 1                       |  |  |
| Enable CHAP log of<br>CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.                            | ation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn. 1991-05.com.microsoft:compute1  |  |  |
| Enable CHAP log of<br>CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.<br>Name:<br>Target secret: | ation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn. 1991-05.com.microsoft:compute 1 |  |  |

8. Now, all the target portals are added on the first node.

9. To Discover Targets Portals from the second StarWind node, click the Discover Portal button once again, enter iSCSI IP address for the second StarWind Node (172.16.30.20). Click the Advanced button.



| Discover Target Portal  | ×                                |  |  |
|---|----------------------------------|--|--|
| Enter the IP address or DNS name and p<br>want to add.  | ort number of the portal you     |  |  |
| To change the default settings of the discovery of the target portal, dick the Advanced button. |                                  |  |  |
| IP address or DNS name:<br>172.16.30.20   | Port: (Default is 3260.)<br>3260 |  |  |
| Advanced  | OK Cancel                        |  |  |

10. Select Microsoft iSCSI Initiator as Local adapter and select Cluster Node 1 initiator IP address from the same subnet. Click OK twice to add the Portal.



| neral IPsec   |   |   |
|---|---|---|
| Connect using   |   |   |
| Local adapter:  | Microsoft iSCSI Initiator $\checkmark$  |   |
| Initiator IP:   | 172.16.30.40 🗸  |   |
| Target portal IP:   | 172.16.30.20 / 3260 🗸   |   |
| CRC / Checksum  |   |   |
| Data digest   | Header digest   |   |
| an initiator.<br>To use, specify the si<br>initiator. The name w<br>specified   | ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is  |   |
| an initiacor.<br>To use, specify the si<br>initiator. The name w<br>specified.<br>Name:   | ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>ign. 1991-05.com.microsoft:compute 1    | 1 |
| an initiator.<br>To use, specify the si<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:   | ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn.1991-05.com.microsoft:compute1      | ] |
| To use, specify the si<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:<br>Perform mutual au<br>To use mutual CHAP,<br>RADIUS.<br>Use RADIUS to ge | ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn. 1991-05.com.microsoft:compute1<br> | ] |

11. Click the Discover Portal button once again. In Discover Target Portal dialog, enter another iSCSI IP address of the second StarWind Node (172.16.40.20). Click the Advanced button.



| Discover Target Portal  | ×                                |  |  |
|---|----------------------------------|--|--|
| Enter the IP address or DNS name and p<br>want to add.  | port number of the portal you    |  |  |
| To change the default settings of the discovery of the target portal, dick the Advanced button. |                                  |  |  |
| IP address or DNS name:<br>172.16.40.20   | Port: (Default is 3260.)<br>3260 |  |  |
| Advanced  | OK Cancel                        |  |  |

12. Select Microsoft iSCSI Initiator as Local adapter and select the Cluster Node 1 initiator IP address from the same subnet. Click OK twice to add the Portal.



| Connect using  |   |  |  |  |
|--|---|--|--|--|
| Local adapter: Microsoft iSCSI Initiator $\checkmark$  |   |  |  |  |
| Initiator IP: 172.16.40.40   |   |  |  |  |
| Target portal IP: 172.16.40.20 / 3260  |   |  |  |  |
| CRC / Checksum   |   |  |  |  |
| Data digest  | Header digest   |  |  |  |
| CHAP Log on inform<br>CHAP helps ensure co<br>initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.             | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is   |  |  |  |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.          | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is<br>ign. 1991-05.com.microsoft:compute 1 |  |  |  |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.<br>Name: | nation<br>connection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is<br>iqn.1991-05.com.microsoft:compute1  |  |  |  |

13. All target portals are successfully added to the Cluster Node 1.



| iSC | SCSI Initiator Properties   |                             |                             |                        |        |               |  |  |  |
|-----|---|-----------------------------|-----------------------------|------------------------|--------|---------------|--|--|--|
| Та  | rgets   | Discovery                   | Favorite Targets            | Volumes and Devices    | RADIUS | Configuration |  |  |  |
|     | Target portals  |                             |                             |                        |        |               |  |  |  |
|     | The system will look for Targets on following portals: Refresh  |                             |                             |                        |        |               |  |  |  |
|     | Address Port Adapter TP address   |                             |                             |                        |        |               |  |  |  |
|     | 172   | 16 20 10                    | 2260                        | Microsoft iSCSI Initia | tor    | 172 16 20 40  |  |  |  |
|     | 172   | 16 40 10                    | 3260                        | Microsoft iSCSI Initia | tor    | 172.16.40.40  |  |  |  |
|     | 172   | 16 30 20                    | 3260                        | Microsoft iSCSI Initia | tor    | 172 16 30 40  |  |  |  |
|     | 172.  | 16.40.20                    | 3260                        | Microsoft iSCSI Initia | itor   | 172.16.40.40  |  |  |  |
|     | 172.10.40.20 3200 Pilci 0501(13C311)//02101 172.10.40.40  |                             |                             |                        |        |               |  |  |  |
|     | To ad   | ld a target p               | ortal, click Discover       | Portal.                | Disc   | over Portal   |  |  |  |
|     | To re<br>then   | move a targ<br>click Remove | et portal, select the<br>e. | address above and      |        | Remove        |  |  |  |
|     | iSNS servers The system is registered on the following iSNS servers: Refresh Name   |                             |                             |                        |        |               |  |  |  |
|     | To add an iSNS server, dick Add Server.       Add Server         To remove an iSNS server, select the server above and then dick Remove.       Remove |                             |                             |                        |        |               |  |  |  |
|     | OK Cancel Apply   |                             |                             |                        |        |               |  |  |  |

14. Repeat the steps 1-13 on the partner node.

#### **Connecting Targets**

1. Launch Microsoft iSCSI Initiator on Cluster Node 1 and click on the Targets tab. The previously created targets should be listed in the Discovered Targets section. NOTE: If the created targets are not listed, check the firewall settings of the StarWind



Server as well as the list of networks served by the StarWind Server (go to StarWind Management Console -> Configuration -> Network).

2. Select a target discovered from the first StarWind Node and click Connect.

| iSCSI Initiator Pro                   | perties  |  |            |               | × |
|---------------------------------------|--|--|------------|---------------|---|
| Targets Discover                      | y Favorite Targets                                 | Volumes and Devices                        | RADIUS     | Configuration |   |
| Quick Connect                         |  |  |            |               |   |
| To discover and<br>DNS name of the    | log on to a target usir<br>e target and then click | ng a basic connection, t<br>Quick Connect. | ype the IP | address or    |   |
| Target:                               |  |  | Qu         | uick Connect  |   |
| Discovered targe                      | ets  |  |            |               |   |
|                                       |  |  |            | Refresh       |   |
| Name                                  |  |  | Status     |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | sw1-csv1                                   | Inactive   |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | sw1-csv2                                   | Inactive   |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | w 1-witness                                | Inactive   |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | w2-csv1                                    | Inactive   |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | w2-csv2                                    | Inactive   |               |   |
| iqn.2008-08.co                        | m.starwindsoftware:s                               | w2-witness                                 | Inactive   |               |   |
| To connect using click Connect.       | g advanced options, s                              | elect a target and then                    |            | Connect       |   |
| To completely di<br>then click Discon | sconnect a target, se<br>nect.                     | ect the target and                         |            | Disconnect    |   |
| For target prope<br>select the target | rties, including config<br>t and click Properties. | uration of sessions,                       |            | Properties    |   |
| For configuration<br>the target and t | n of devices associate<br>hen dick Devices.        | d with a target, select                    |            | Devices       |   |
|                                       |  |  |            |               |   |
|                                       |  | ОК   | Cance      | Apply         | r |

3. Enable checkboxes as shown in the image below. Click Advanced.



| Connect To Target   | ×    |  |  |  |  |
|---|------|--|--|--|--|
| Target name:  |      |  |  |  |  |
| iqn.2008-08.com.starwindsoftware:sw1-csv1   |      |  |  |  |  |
| Add this connection to the list of Favorite Targets.<br>This will make the system automatically attempt to restore the<br>connection every time this computer restarts. |      |  |  |  |  |
| Enable multi-path   |      |  |  |  |  |
| Advanced OK Car   | ncel |  |  |  |  |

4. Select Microsoft iSCSI Initiator in the Local adapter dropdown menu. In the Target portal IP, select the IP address of the first StarWind Node and Initiator IP address from the same subnet. Click OK twice to connect the target.


| IPsec  |   |  |
|--|---|--|
| Connect using  |   |  |
| Local adapter:   | Microsoft iSCSI Initiator $\checkmark$  |  |
| Initiator IP:  | 172.16.30.40 ~  |  |
| Target portal IP:  | 172.16.30.10 / 3260 $\checkmark$  |  |
| CRC / Checksum   |   |  |
| Data digest  | Header digest   |  |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the s<br>nitiator. The name v   | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is   |  |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the s<br>initiator. The name v<br>specified.                            | nation<br>onnection security by providing authentication between a target and<br>same name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is  |  |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the s<br>initiator. The name v<br>specified.<br>Name:                   | nation<br>onnection security by providing authentication between a target and<br>same name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is<br>iqn.1991-05.com.microsoft:compute1  |  |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the s<br>initiator. The name v<br>specified.<br>Name:<br>Target secret: | nation<br>onnection security by providing authentication between a target and<br>same name and CHAP secret that was configured on the target for this<br>will default to the Initiator Name of the system unless another name is<br>iqn. 1991-05.com.microsoft:compute1 |  |

- 5. To connect the same target via another subnet, select it once again and click Connect.
- 6. Enable checkboxes like in the image below and click Advanced.



| Connect To Target   | ×      |
|---|--------|
| Target name:  |        |
| iqn.2008-08.com.starwindsoftware:sw1-csv1   |        |
| Add this connection to the list of Favorite Targets.<br>This will make the system automatically attempt to restore the<br>connection every time this computer restarts. |        |
| ☑ Enable multi-path   |        |
| Advanced OK   | Cancel |

7. Select Microsoft iSCSI Initiator in the Local adapter text field.

8. In the Target portal IP select another IP address of the first StarWind Node and Initiator IP address from the same subnet. Click OK twice to connect the target.



| vanced Settings                                     | ?   | 2 |
|---|---|---|
| neral IPsec   |   |   |
| Connect using                                       |   |   |
| connect doing                                       |   |   |
| Local adapter:                                      | Microsoft iSCSI Initiator V   |   |
| Initiator IP:                                       | 172.16.40.40 ~  |   |
| Target portal IP:                                   | 172.16.40.10 / 3260 🗸   |   |
| CRC / Checksum                                      |   |   |
| Data digest   | Header digest   |   |
| Name:   | ian, 1991-05.com,microsoft;compute 1  |   |
|   |   |   |
| Target secret:                                      |   |   |
| Perform mutual au<br>To use mutual CHAP,<br>RADIUS. | r <b>thentication</b><br>either specify an initiator secret on the Configuration page or use<br><b>merate user authentication credentials</b> |   |
| Use RADIUS to au                                    | thenticate target credentials   |   |
|   |   |   |

9. Select the partner target discovered from the second StarWind node and click Connect.



| iSCSI Initi        | ator Prope                    | ties  |  |            |               | × |
|--------------------|-------------------------------|---|--|------------|---------------|---|
| Targets            | Discovery                     | Favorite Targets                              | Volumes and Devices                        | RADIUS     | Configuration |   |
| Quick C            | onnect                        |   |  |            |               |   |
| To disc<br>DNS na  | over and log<br>ame of the ta | ) on to a target usin<br>arget and then click | ig a basic connection, t<br>Quick Connect. | ype the IP | address or    |   |
| Target             | :                             |   |  | Qu         | uick Connect  |   |
| Discove            | ered targets                  |   |  |            |               |   |
|                    |                               |   |  |            | Refresh       |   |
| Name               |                               |   |  | Status     |               |   |
| iqn.20             | 08-08.com.                    | starwindsoftware:s                            | w1-csv1                                    | Connecte   | d             |   |
| iqn.20             | 08-08.com.                    | starwindsoftware:s                            | w1-csv2                                    | Inactive   |               |   |
| iqn.20             | 08-08.com.                    | starwindsoftware:s                            | w1-witness                                 | Inactive   |               |   |
| ign.20             | 08-08.com                     | starwindsoftware:s                            | w2-csv1<br>w2-csv2                         | Inactive   |               |   |
| ign.20             | 08-08.com.                    | starwindsoftware:s                            | w2-witness                                 | Inactive   |               |   |
| To con<br>click Co | nect using a                  | dvanced options, se                           | elect a target and then                    |            | Connect       |   |
| To com<br>then di  | pletely disco<br>ick Disconne | onnect a target, sel<br>ct.                   | ect the target and                         |            | Disconnect    |   |
| For tar            | get properti<br>the target ar | es, including configund click Properties.     | uration of sessions,                       |            | Properties    |   |
| For cor<br>the tar | nfiguration o<br>get and ther | f devices associated<br>n click Devices.      | d with a target, select                    |            | Devices       | ] |
|                    |                               |   |  |            |               |   |
|                    |                               |   |  |            |               |   |
|                    |                               |   |  |            |               |   |
|                    |                               |   |  |            |               |   |
|                    |                               |   | ОК   | Cancel     | <u>A</u> pply | , |

10. Enable checkboxes like in the image below and click Advanced.



| Connect To Target   | ×      |
|---|--------|
| Target name:  |        |
| iqn.2008-08.com.starwindsoftware:sw2-csv1   |        |
| Add this connection to the list of Favorite Targets.<br>This will make the system automatically attempt to restore the<br>connection every time this computer restarts. |        |
| Enable multi-path   |        |
| Advanced OK   | Cancel |

11. Select Microsoft iSCSI Initiator in the Local adapter text field.

12. In Target portal IP, select the IP address of the second StarWind Node and Initiator IP address from the same subnet. Click OK twice to connect the target.



| vanced Settings   | ?  | > |
|---|--|---|
| eneral IPsec  |  |   |
| Connectusing  |  |   |
| connect using   |  | _ |
| Local adapter:  | Microsoft iSCSI Initiator  | 1 |
| Initiator IP:   | 172.16.30.40   | - |
| Target portal IP:   | 172.16.30.20 / 3260  | / |
| CRC / Checksum  |  |   |
| Data digest   | Header digest  |   |
| specified.  | ign. 1991-05.com.microsoft:compute1  |   |
|   | · ·  |   |
| larget secret:  |  |   |
| Perform mutual au To use mutual CHAP, RADIUS. Use RADIUS to ge Use RADIUS to au | thentication<br>either specify an initiator secret on the Configuration page or use<br>nerate user authentication credentials<br>thenticate target credentials |   |
|   |  |   |

13. To connect the same target via another subnet, select it once again and click Connect.

14. Enable checkboxes like in the screenshot below and click Advanced.



| Connect To Target   | ×      |
|---|--------|
| Target name:  |        |
| iqn.2008-08.com.starwindsoftware:sw2-csv1   |        |
| Add this connection to the list of Favorite Targets.<br>This will make the system automatically attempt to restore the<br>connection every time this computer restarts. |        |
| Enable multi-path   |        |
| Advanced OK   | Cancel |

15. In the Target portal IP select another IP address of the second StarWind Node and Initiator IP address from the same subnet. Click OK twice to connect the target.



| neral TPsec  |  |   |
|--|--|---|
| IFSEC  |  |   |
| Connect using  |  |   |
| Local adapter:   | Microsoft iSCSI Initiator $\qquad \checkmark$  |   |
| Initiator IP:  | 172.16.40.40 🗸   |   |
| Target portal IP:  | 172.16.40.20 / 3260 🗸  |   |
| CRC / Checksum   |  |   |
| Data digest  | Header digest  |   |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>nitiator. The name w<br>specified.  | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is  |   |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>initiator. The name w<br>specified.   | ation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is   |   |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>initiator. The name w<br>specified.<br>Name:  | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn.1991-05.com.microsoft:compute1  | ] |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the so<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:  | nation<br>onnection security by providing authentication between a target and<br>ame name and CHAP secret that was configured on the target for this<br>vill default to the Initiator Name of the system unless another name is<br>iqn.1991-05.com.microsoft:compute1  | ] |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the si<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:  | ation onnection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this will default to the Initiator Name of the system unless another name is iqn.1991-05.com.microsoft:compute1   | ] |
| CHAP Log on inform<br>CHAP helps ensure of<br>an initiator.<br>To use, specify the sa<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:<br>Perform mutual au<br>To use mutual CHAP,<br>RADIUS.                       | anation connection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this will default to the Initiator Name of the system unless another name is iqn.1991-05.com.microsoft:compute1 uthentication either specify an initiator secret on the Configuration page or use  | ] |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>initiator. The name w<br>specified.<br>Name:<br>Target secret:<br>Perform mutual au<br>To use mutual CHAP,<br>RADIUS.                       | anation connection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this will default to the Initiator Name of the system unless another name is iqn.1991-05.com.microsoft:compute1 uthentication either specify an initiator secret on the Configuration page or use enerate user authentication credentials                                | ] |
| CHAP Log on inform<br>CHAP helps ensure co<br>an initiator.<br>To use, specify the sa<br>initiator. The name w<br>specified.<br>Name:<br>Perform mutual au<br>To use mutual CHAP,<br>RADIUS.<br>Use RADIUS to ge<br>Use RADIUS to au | anation connection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this will default to the Initiator Name of the system unless another name is iqn.1991-05.com.microsoft:compute1 uthentication either specify an initiator secret on the Configuration page or use enerate user authentication credentials uthenticate target credentials | ] |

16. Repeat steps 1-15 for all HA device targets.

After that, repeat the steps 1-17 on the Cluster node 2, specifying corresponding IP addresses. The result should look like in the picture below.



| iSCSI Initiator Properties  |   |            |               | × |
|---|---|------------|---------------|---|
| Targets Discovery Favorite Target   | s Volumes and Devices                           | RADIUS     | Configuration |   |
| Quick Connect<br>To discover and log on to a target u<br>DNS name of the target and then di | sing a basic connection, t<br>ck Quick Connect. | ype the IP | address or    |   |
| Target:   |   | Qu         | uick Connect  |   |
| Discovered targets  |   |            | Defreeh       |   |
| Name  |   | Status     | Refresh       |   |
| Name  |   | Status     |               |   |
| iqn.2008-08.com.starwindsoftware  | e:sw1-csv1                                      | Connecte   | d             |   |
| ign.2008-08.com.starwindsoftware  | :sw1-csv2                                       | Connecte   | d             |   |
| ign. 2008-08.com.starwindsoftware   | sisw1-witness                                   | Connecte   | -<br>-        |   |
| ign 2008 08 com starwindsoftware  | sw2-csv1  | Connecte   | d             |   |
| ign 2008-08 com starwindsoftware  | ::SWZ-CSVZ                                      | Connecte   | d             |   |
| To connect using advanced options,<br>click Connect.  | select a target and then                        |            | Connect       | ] |
| To completely disconnect a target, s then click Disconnect.                                 | elect the target and                            |            | Disconnect    |   |
| For target properties, including conf<br>select the target and click Properties             | iguration of sessions,<br>s.                    |            | Properties    |   |
| For configuration of devices associa<br>the target and then click Devices.                  | ted with a target, select                       |            | Devices       | ] |
|   |   |            |               |   |
|   | ОК  | Cance      | Apply         |   |

17. Initialize the disks and create partitions on them using the Disk Management snap-in. To create the cluster, the disk devices must be initialized and formatted on both nodes. NOTE: it is recommended to initialize the disks as GPT.



## **Creating A Failover Cluster In Windows Server**

NOTE: To avoid issues during the cluster validation configuration, it is recommended to install the latest Microsoft updates on each node.

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

| 🚡 Server Manager   |                             |   | – 🗆 X   |
|--|-----------------------------|---|---|
| Server M   | anager • Dashboa            | ard 🛛 😴   🏲 Manage  | Tools View Help   |
| Dashboard  | WELCOME TO SERVER M         | IANAGER   | Cluster-Aware Updating<br>Component Services<br>Computer Management             |
| <ul> <li>■ Local Server</li> <li>■ All Servers</li> <li>■ File and Storage Services ▷</li> </ul> |                             | Configure this local server   | Defragment and Optimize Drives<br>Disk Cleanup<br>Event Viewer                  |
| 🖪 Hyper-V  | QUICK START                 | 2 Add roles and features  | Failover Cluster Manager<br>Hyper-V Manager<br>iSCSI Initiator                  |
|  | WHAT'S NEW                  | <ul><li>3 Add other servers to manage</li><li>4 Create a server group</li></ul> | Local Security Policy<br>Microsoft Azure Services<br>MPIO                       |
|  |                             | 5 Connect this server to cloud ser  | ODBC Data Sources (32-bit)<br>ODBC Data Sources (64-bit)<br>Performance Monitor |
|  | ROLES AND SERVER GRO        | zups  | Print Management<br>Resource Monitor<br>Services                                |
|  | Roles: 2   Server groups: 1 | Servers total: 1  | System Configuration<br>System Information<br>Task Scheduler                    |
|  | Services  Manageability     | Manageability   | Windows Firewall with Advanced Security<br>Windows Memory Diagnostic            |

2. Click the Create Cluster link in the Actions section of Failover Cluster Manager.

| 📲 Failover Cluster Manager |  | – 🗆 X                    |
|----------------------------|--|--------------------------|
| File Action View Help      |  |                          |
| 🗢 🔿 📰 👔 🖬                  |  |                          |
| 📲 Failover Cluster Manager | Failover Cluster Manager   | Actions                  |
|                            | Create failover clusters, validate hardware for potential failover clusters, and perform   | Failover Cluster Manager |
|                            | configuration changes to your failover clusters.   | Validate Configuration   |
|                            |  | Create Cluster           |
|                            |  | Connect to Cluster       |
|                            | A lanover cluster is a set of independent computers that work together to increase the<br>availability of server roles. The clustered servers (called nodes) are connected by physical<br>availability of server roles. The clustered servers (called nodes) are connected by physical<br>availability of server roles.          | View 🕨                   |
|                            | This process is known as failover.   | G Refresh                |
|                            |  | Properties               |
|                            | Clusters   | 🕐 Help                   |
|                            | Name Role Status   |                          |
|                            | No tens found.   |                          |
|                            | Management   |                          |
|                            | To begin to use failover clustering, first validate your hardware configuration, and then<br>create a cluster. After these steps are complete, you can manage the cluster. Managing a<br>cluster can include copying roles to it from a cluster running Windows Server 2016 or<br>supported previous versions of Windows Server. |                          |
|                            | Reade Cluster  |                          |
|                            | Connect to Cluster   |                          |
|                            |  |                          |
|                            | More Information   |                          |
|                            |  |                          |
|                            | Ealover cluster communities on the Web   |                          |
|                            | S Microsoft support page on the Web  |                          |
|                            |  | ~                        |
|                            |  |                          |



3. Specify the servers to be added to the cluster. Click Next to continue.

| 🚏 Create Cluster Wi                                      | zard                                    |   | × |
|--|---|---|---|
| Select Se  | ervers                                  |   |   |
| Before You Begin<br>Select Servers<br>Validation Warning | Add the names of all the                | servers that you want to have in the cluster. You must add at least one server. |   |
| Access Point for<br>Administering the<br>Cluster         | Enter server name:<br>Selected servers: | Compute 1 starwind local  |   |
| Confirmation   |   | Compute2.starwind.local   | _ |
| Creating New Cluster                                     |   | Remov   | e |
| Summary  |   |   |   |
|  |   |   |   |
|  |   |   |   |
|  |   | < Previous Next > Cance   |   |

4. Validate the configuration by running the cluster validation tests: select Yes... and click Next to continue.

| 🚏 Create Cluster Wi                                      | zard  | × |
|--|---|---|
| Validation   | n Warning   |   |
| Before You Begin<br>Select Servers<br>Validation Warning | For the servers you selected for this cluster, the reports from cluster configuration validation tests appear to be missing or incomplete. Microsoft supports a cluster solution only if the complete configuration (servers, network and storage) can pass all the tests in the Validate a Configuration wizard. |   |
| Access Point for<br>Administering the<br>Cluster         | Do you want to run configuration validation tests before continuing?  |   |
| Confirmation   |   |   |
| Creating New Cluster                                     | Yes When I click Next nun configuration validation tests and then return to the process of creating.  |   |
| Summary  | • the cluster.  |   |
|  | No. I do not require support from Microsoft for this cluster, and therefore do not want to run the validation tests. When I click Next, continue creating the cluster.  |   |
|  | More about cluster validation tests   |   |
|  | < Previous Next > Cancel  | ] |



5. Specify Cluster Name.

NOTE: If the cluster servers get IP addresses over DHCP, the cluster also gets its IP address over DHCP. If the IP addresses are set statically, set the cluster IP address manually.

| 🚏 Create Cluster W   | izard                                       |   |  |   | × |
|--|---|---|--|---|---|
| Access F   | oint for Admini                             | stering the Clu                               | uster  |   |   |
| Before You Begin   | Type the name you                           | ı want to use when ac                         | lministering the cluster.                                |   |   |
| Select Servers   | Cluster Name:                               | Production                                    |  |   |   |
| Access Point for<br>Administering the<br>Cluster<br>Confirmation | The NetBIOS n<br>automatically.<br>address. | ame is limited to 15 c<br>For each network to | haracters. One or more IPv<br>be used, make sure the net | 4 addresses could not be configured<br>work is selected, and then type an | 1 |
| Creating New Cluster   |   | Networks                                      |  | Address   | ٦ |
| Summary  |   |   | 192.168.12.0/23  | 192.168.12.86   |   |
|  |   |   |  |   |   |
|  |   |   |  |   |   |
|  |   |   |  |   |   |
|  |   |   |  |   |   |
|  |   |   |  |   |   |
|  |   |   | < Previous   | Next > Cancel   |   |

6. In Confirmation, make sure that all settings are correct. Click Previous to make any changes or Next to proceed.

NOTE: If checkbox Add all eligible storage to the cluster is selected, the wizard will add all disks to the cluster automatically. The device with the smallest storage volume will be assigned as a Witness. It is recommended to uncheck this option before clicking Next and add cluster disks and the Witness drive manually.

7. The process of the cluster creation starts. Upon the completion, the system displays the summary with the detailed information. Click Finish to close the wizard.



| Preate Cluster Wizard                 |  |  |  |  |  |
|---------------------------------------|--|--|--|--|--|
| Confirmat                             | lion   |  |  |  |  |
| Before You Begin<br>Select Servers    | You are ready to create a cluster.<br>The wizard will create your cluster with the following settings: |  |  |  |  |
| Validation Warning                    | Cluster  |  |  |  |  |
| Access Point for<br>Administering the | Production   |  |  |  |  |
| Cluster                               | Node   |  |  |  |  |
| Confirmation                          | Compute2.starwind.local  |  |  |  |  |
| Creating New Cluster                  | Compute 1.starwind local   |  |  |  |  |
| Summary                               | Cluster registration   |  |  |  |  |
|                                       | DNS only   |  |  |  |  |
|                                       | Add all eligible storage to the cluster.   |  |  |  |  |
|                                       | To continue, click Next.   |  |  |  |  |
|                                       |  |  |  |  |  |
|                                       |  |  |  |  |  |
|                                       | < Previous Next > Cancel   |  |  |  |  |

#### Adding Storage to the Cluster

1. In Failover Cluster Manager, navigate to Cluster -> Storage -> Disks. Click Add Disk in the Actions panel, choose StarWind disks from the list and confirm the selection.

| 🏙 Failover Cluster Manager         |                          |  |                    |  |  |     | - 🗆 ×    |
|------------------------------------|--------------------------|--|--------------------|--|--|-----|----------|
| File Action View Help              |                          |  |                    |  |  |     |          |
| 🗢 🔿 🙍 🖬 👔                          |                          |  |                    |  |  |     |          |
| 📲 Failover Cluster Manager         | Disks (0)                |  |                    |  | Actions                                  |     |          |
| Production.starwind.local          | Search                   |  | P                  | Queries 🔻 🖶 👻 😒                            | Disks                                    |     | <b>_</b> |
| Roles                              | Name                     | Status   | Assigned To        | Owner Nod                                  | 🛃 Add Disk                               |     |          |
| 🗸 🛃 Storage                        | Add Disks to a Cluster   |  |                    |  |  | ×   | •        |
| Disks Pools                        | Select the disk or disks | that you want to add.                              |                    |  |  |     | •        |
| Networks                           | Available disks:         |  |                    |  |  |     |          |
| 🗓 Cluster Events                   | Resource Name            | Disk Info  | Capacity           | Signature/Id                               |  |     |          |
|                                    | Cluster Disk 1           | Disk 2 on node COMPUTE2                            | 10.0 GB            | {e39d4ecf-18f8-40cf-1                      | 885f-2668ccca70d5}                       |     |          |
|                                    | Cluster Disk 2           | Disk 3 on node COMPUTE2<br>Disk 4 on node COMPUTE2 | 6.00 GB<br>1.00 GB | {e9b0e0ba-0a84-4b0f<br>{f01687c6-14ed-47ec | -938c-19d469ded08<br>-918f-161c1b60a05a} |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  | OK Can                                   | cel |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
|                                    |                          |  |                    |  |  |     |          |
| This action enables you to add a d | lisk to the cluster.     |  |                    |  |  |     |          |



2. To configure the cluster witness disk, right-click on Cluster and proceed to More Actions -> Configure Cluster Quorum Settings.

3. Follow the wizard and choose the Select the quorum witness option. Click Next.



| Configure Cluster Quo   | rum Wizard  | × |
|---|---|---|
| Select Quoru  | Im Configuration Option   |   |
| Before You Begin       Se         Select Quorum       O         Select Quorum       Witness         Configure Cluster       O         Quorum Settings       O         Summary       O | elect a quorum configuration for your cluster. Use default quorum configuration The cluster determines quorum management options, including the quorum witness. Select the quorum witness You can add or change the quorum witness. The cluster determines the other quorum management options. Advanced quorum configuration You determine the quorum management options, including the quorum witness. allover Cluster Quorum and Witness Configuration Options |   |

4. Select Configure a disk witness. Click Next.

| 體 Configure Cluster Quorum Wizard  |  |  |  |
|--|--|--|--|
| Select Qu  | Jorum Witness  |  |  |
| Before You Begin<br>Select Quorum<br>Configuration Option<br>Select Quorum                                 | Select a quorum witness option to add or change the quorum witness for your cluster configuration. As a best practice, configure a quorum witness to help achieve the highest availability of the cluster.                   |  |  |
| Witness<br>Configure Storage<br>Witness<br>Confirmation<br>Configure Cluster<br>Quorum Settings<br>Summary | Adds a quorum vote of the disk witness O Configure a file share witness Adds a quorum vote of the file share witness O Configure a cloud witness Adds a quorum vote of the cloud witness O Do not configure a quorum witness |  |  |
|  | Failover Cluster Quorum and Witness Configuration Options         < Previous   |  |  |

5. Select the Witness disk to be assigned as the cluster witness disk. Click Next and



press Finish to complete the operation.

| Configure Cluster                     | Quorum Wizard         |  |                             |  | ×  |
|---------------------------------------|-----------------------|--|-----------------------------|--|----|
| Configure                             | e Storage Witnes      | s  |                             |  |    |
| Before You Begin                      | Select the storage vo | olume that you want                        | to assign as the disk witne | ess.                                   |    |
| Select Quorum<br>Configuration Option |                       |  |                             |  |    |
| Select Quorum<br>Witness              | Name                  | Status                                     | Node                        | Location                               |    |
| Configure Storage<br>Witness          | □                     | <ul> <li>Online</li> <li>Online</li> </ul> | Compute1<br>Compute1        | Available Storage<br>Available Storage |    |
| Confirmation                          | 🗹 🗉 🔠 Witness         | Online                                     | Compute 1                   | Available Storage                      |    |
| Configure Cluster<br>Quorum Settings  |                       |  |                             |  |    |
| Summary                               |                       |  |                             |  |    |
|                                       |                       |  |                             |  |    |
|                                       |                       |  |                             |  |    |
|                                       |                       |  |                             |  |    |
|                                       |                       |  | < Previo                    | us Next > Canc                         | el |

6. In Failover Cluster Manager, right-click the disk and select Add to Cluster Shared Volumes.

| 📲 Failover Cluster Manager  |  |  |   |                             |          |  | _ | × |
|---|--|--|---|-----------------------------|----------|--|---|---|
| File Action View Help   |  |  |   |                             |          |  |   |   |
| 🗢 🏟 🙍 🖬 🚺 🖬   |  |  |   |                             |          |  |   |   |
| <ul> <li>Failover Cluster Manager</li> <li>Production.starwind.local</li> <li>Roles</li> <li>Nodes</li> </ul> | Disks (3)<br>Search<br>Name  | Status   | P<br>Assigned To  | Queries 👻 🔛 💌<br>Owner Node | ✓<br>Dis | Actions<br>Disks<br>Add Disk   |   | - |
| Wodes<br>✓ Storage<br>Disks<br>Pools<br>■ Enclosures<br>Wetworks<br>U Cluster Events                          | 걘 CSV1<br>컖 CSV2<br>퍦 Witness  | <ul> <li>Online</li> <li>Online</li> <li>Online</li> <li>Online</li> </ul> | Bring Online     Bring Online     Take Offline     Add to Cluster Shared     Information Details     Information Details     Replication     More Actions     Remove     Properties | Volumes                     |          | Move Available Storage View     Refresh     Help CSV1     Bring Online     Take Offline     Add to Cluster Shared Volumes     Information Details     Desc. Give Leave |   | • |
|   | <ul> <li>CSV1</li> <li>Volumes (1)</li> <li>CSV1 (E)</li> <li>WTFS 991 GB fn</li> <li>Volumes</li> </ul> | ee of 9.97 GB  |   |                             | >        | Show Chick Prents     Replication     More Actions     Remove     Properties     Help  |   | • |

7. If renaming of the cluster shared volume is required, right-click on the disk and select Properties. Type the new name for the disk and click Apply followed by OK.



| Failover Cluster Manager  |                    |                   |           | Cluster Disk 1 Properties X - C  |
|---|--------------------|-------------------|-----------|--|
| File Action View Help   |                    |                   |           |  |
| 🗢 🔿 🙋 📅 🚺   |                    |                   |           | General  |
| <ul> <li>Failover Cluster Manager</li> <li>Production.starwind.local</li> </ul> | Disks (3)          |                   |           | Name:         CSV2           Type:         Physical Disk   |
| 📷 Roles   | 500/07             |                   |           | Status: Online   |
| Nodes   | Name               | Status            | Assigned  | ned Disk   |
| V Storage   | Cluster Disk 1     | Online            | Cluster S | r Se Available Storage   |
| Disks   | Eluster Disk 2     | Online            | Disk Wit  | Mit With State Back Back I and State |
| Enclosures  | 📇 Cluster Disk 3   | 🕥 Online          | Cluster S | r 9 Blough Country 1 No 2010 ESh   |
| Networks  |                    |                   |           | Chulusterstorage volume 1 No 3.37 GI   |
|   |                    |                   |           | isk 1  |
|   |                    |                   |           | g Online   |
|   |                    |                   |           | Offline  |
|   |                    |                   |           | mation Details   |
|   | ~~~~               |                   |           | w Critical Events  |
|   | v 🧏 Cluster Disk 1 |                   |           | < > e  |
|   |                    |                   |           | ication  |
|   | Volumes (1)        |                   |           | e Actions  |
|   | CSV2 (C:\Cluster   | rStorage\Volume1) |           | OK Cancel Apply ove from Cluster S   |
|   | CSVFS 9.92 GB      | free of 9.97 GB   |           |  |
|   |                    |                   |           | 🕐 Help   |
|   | Volumes            |                   |           |  |
| Disks: Cluster Disk 1   |                    |                   |           |  |

8. Perform the steps 6-7 for any other disk in Failover Cluster Manager. The resulting list of disks will look similar to the screenshot below.

| 職 Failover Cluster Manager                                     |           |        |                        |                 |     |                          | - | × |
|--|-----------|--------|------------------------|-----------------|-----|--------------------------|---|---|
| File Action View Help  |           |        |                        |                 |     |                          |   |   |
| 🗢 🔿 🙍 📰 🚺  |           |        |                        |                 |     |                          |   |   |
| 📲 Failover Cluster Manager                                     | Disks (3) |        |                        |                 |     | Actions                  |   |   |
| <ul> <li>Production.starwind.local</li> <li>Release</li> </ul> | Search    |        | <i>۹</i>               | Queries 🔻 🔛 🔻 🤇 | •   | Disks                    |   | • |
| Nodes  | Name      | Status | Assigned To            | Owner Node      | Dis | 🛃 Add Disk               |   |   |
| 🗸 🛃 Storage  | 📇 CSV1    | Online | Cluster Shared Volume  | Compute2        |     | 🍰 Move Available Storage |   | • |
| E Pools  | 📇 CSV2    | Online | Cluster Shared Volume  | Compute 1       |     | View                     |   | • |
| Enclosures   | 📇 Witness | Online | Disk Witness in Quorum | Compute1        |     | Q Refresh                |   |   |
| Networks   |           |        |                        |                 |     | ? Help                   |   |   |
| Uuster Events  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  | <         |        |                        |                 | >   |                          |   |   |
|  |           |        |                        |                 | =   |                          |   |   |
|  | *         |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
|  |           |        |                        |                 |     |                          |   |   |
| Disks:   |           |        |                        |                 |     |                          |   |   |

**Configuring Cluster Network Preferences** 

1. In the Networks section of the Failover Cluster Manager, right-click on the network from the list. If required, set its new name to identify the network by its subnet. Apply the change and press OK.

NOTE: Please double-check that cluster communication is configured with redundant networks:

https://docs.microsoft.com/en-us/windows-server/failover-clustering/smb-multichannel



| 闊 Failover Cluster Manager  |   | – 🗆 X                   |
|-----------------------------|---|-------------------------|
| File Action View Help       |   |                         |
| 🗢 🄿 🞽 📰 🚺                   |   |                         |
| 📲 Failover Cluster Manager  | Networks (3)  | Actions                 |
| V Production.starwind.local | Search P Queries V 🕁 V  | Networks                |
| Nodes                       | N   | Live Migration Settings |
| 🗸 📙 Storage                 | iSCSI Properties X  | View 🕨                  |
| Disks                       | General   | Q Refresh               |
| Enclosures                  |   | 7 Help                  |
| Metworks                    | iSCSI   | iscsi                   |
| Cluster Events              | Name:   | Information Details     |
|                             | iscsi   | B Show Critical Events  |
|                             | <ul> <li>Allow cluster network communication on this network</li> </ul> | Properties              |
|                             | Allow clients to connect through this network                           | 2 Help                  |
|                             | Do not allow cluster network communication on this network              |                         |
|                             |   |                         |
|                             |   |                         |
|                             | Status: Up  |                         |
|                             | Subnets: 172.16.30.0/24   |                         |
|                             | <   |                         |
|                             |   |                         |
|                             | ~   |                         |
|                             |   |                         |
|                             |   |                         |
|                             | OK Cancel Apply   |                         |
|                             |   |                         |
|                             |   |                         |
|                             |   |                         |
|                             |   |                         |
|                             |   |                         |
|                             | Summary Network Connections   |                         |
| Networks: iSCSI             |   |                         |

2. Rename other networks as described above, if required.

| 🍓 Failover Cluster Manager      |                    |              |                    |                   |                         | <br>x c  |
|---------------------------------|--------------------|--------------|--------------------|-------------------|-------------------------|----------|
| File Action View Help           |                    |              |                    |                   |                         |          |
| 🗢 🔿 🖄 📰 👔                       |                    |              |                    |                   |                         |          |
| 📲 Failover Cluster Manager      | Networks (3)       |              |                    |                   | Actions                 |          |
| ✓ iii Production.starwind.local | Search             |              | P Quer             | es <b>v L v</b> v | Networks                | •        |
| Roles                           | Name               | Status       | Chuster Lien       | Information       | Live Migration Settings |          |
| ✓ A Storage                     |                    | Status<br>Un | None               | Infolitiation     | View                    | •        |
| Disks                           | III iSCSI2         | () Up        | None               |                   | Refrech                 |          |
| Pools                           | Nanagement         | 🐨 🖓          | Cluster and Client |                   |                         |          |
| Networks                        |                    | 0 -          |                    |                   | Пер                     |          |
| Cluster Events                  |                    |              |                    |                   | iscsi                   | <b>^</b> |
|                                 |                    |              |                    |                   | hformation Details      |          |
|                                 |                    |              |                    |                   | B Show Critical Events  |          |
|                                 |                    |              |                    |                   | Properties              |          |
|                                 |                    |              |                    |                   | 📝 Help                  |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 | 1                  |              |                    |                   |                         |          |
|                                 | ×                  |              |                    | /                 |                         |          |
|                                 | 👻 🚺 iSCSI          |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 | Subnets: 172.1     | 6.30.0/24    |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 |                    |              |                    |                   |                         |          |
|                                 | Summary Network Co | nnections    |                    |                   |                         |          |
| Networks: iSCSI                 |                    |              |                    |                   |                         |          |

3. In the Actions tab, click Live Migration Settings. Uncheck the synchronization network,



while the iSCSI network can be used if it is 10+ Gbps. Apply the changes and click OK.

| 💐 Failover Cluster Manager   |  |           | - 🗆 X   |
|--|--|-----------|---|
| File Action View Help  |  |           |   |
| <ul> <li> A static ver Cluster Manager </li> <li> Faliover Cluster Manager </li> <li> Roles Nodes Disks Pools Enclosures Networks Cluster Events </li> </ul> | Networks (3)<br>Search<br>Name<br>Si ISCSI<br>Si ISCSI<br>Management<br>Subnets: 172.16<br>Summary Network Com | ies V V V | Actions         Networks         Ive Migration Settings         View         Refresh         Help         SCSI         Information Details         Bow Critical Events         Properties         If Help |

The cluster configuration is completed and it is ready for virtual machines deployment. Select Roles and in the Action tab, click Virtual Machines -> New Virtual Machine. Complete the wizard.

## **Configuring File Shares**

Please follow the steps below if file shares should be configured on cluster nodes.

#### **Configuring The Scale-Out File Server Role**

- 1. To configure the Scale-Out File Server Role, open Failover Cluster Manager.
- 2. Right-click the cluster name, then click Configure Role and click Next to continue.



| 📲 Failover Cluster Manage     | r                                     |   | – 🗆 ×                     |
|-------------------------------|---------------------------------------|---|---------------------------|
| File Action View Hel          | p                                     |   |                           |
| 🗢 🔿 🙍 🖬 📓 🖬                   |                                       |   |                           |
| 📲 Failover Cluster Manage     | Cluster Production.starwind           | nd.local  | ^ Actions                 |
| Production.stary              | Configure Role                        | a Developing  | Production.starwind.local |
| Nodes                         | Validate Cluster                      | ered miss and 2 nodes   | len Configure Role        |
| > 📇 Storage                   | View Validation Report                | al Networks: Cluster Network 2. Cluster Network 3. Cluster Network 1. Cluster Network 4   | ¥ Validate Cluster        |
| Networks                      | Add Node                              | Subnets: 3 IPv4 and 1 IPv6  | View Validation Report    |
| Egi Cluster Even              | Class Connection                      | tical: 52, Error: 16, Warring: 5  | P Add Node                |
|                               | close connection                      |   | Close Connection          |
|                               | Reset Recent Events                   |   | Reset Recent Events       |
|                               | More Actions >                        | sectic clustered role, add one or more servers (nodes) or conv roles from a cluster running Windows Server 2016 or supported previous versions of Windows Server. | More Actions              |
|                               | View >                                | Fallover cluster topics on the Web  | View +                    |
|                               | Refresh                               |   | Refresh                   |
|                               | Properties                            |   | Properties                |
|                               | Help                                  |   | Help                      |
|                               | E Consecutivase Obrania"              |   | Name: Production          |
|                               |                                       |   | 録 Bring Online            |
|                               | Navigate                              |   | Take Offline              |
|                               | The Pales                             | Madea     Managa     Maturate     Maturate     Maturate   | Information Details       |
|                               | le noies                              | (*) INDES (*) SUBJE (*) INDES (*) UNDER CONTRACT  | Show Critical Events      |
|                               |                                       |   | More Actions              |
|                               | <ul> <li>Cluster Core Reso</li> </ul> | sources   | × Remove                  |
|                               | Name                                  | Status Information  | Properties                |
|                               | Server Name                           |   | 👔 Help                    |
|                               | Name: Production                      | () Online   |                           |
|                               | IP Address: 192.16                    | 168.12.86 🕐 Onîne   |                           |
| < >                           | Cluster Infrastructure                |   | ~ I                       |
| This action enables you to se | lect a role that you can configure t  | e for high availability.  |                           |

3. Select the File Server item from the list in High Availability Wizard and click Next to continue.

| 🧱 High Availability  | Nizard  |                | >   | × |
|--|---|----------------|---|---|
| Select Ro  | ble   |                |   |   |
| Before You Begin<br>Select Role  | Select the role that you want to configure for high a   | availability:  |   |   |
| File Server Type<br>Client Access Point<br>Select Storage<br>Confirmation<br>Configure High<br>Availability<br>Summary | DFS Namespace Server<br>DHCP Server<br>Distributed Transaction Coordinator (DTC)<br>File Server<br>Generic Application<br>Generic Script<br>Generic Service<br>Hyper-V Replica Broker<br>CSSI Target Server | ~              | Description:<br>A File Server provides a central location<br>on your network where files are shared<br>for use by users or by applications. |   |
|  |   | < <u>P</u> re- | vious <u>N</u> ext > Cancel   |   |

4. Select Scale-Out File Server for application data and click Next.



| High Availability  | r Wizard<br><b>ver Type</b>   | × |
|--|---|---|
| Before You Begin<br>Select Role  | Select an option for a clustered file server:   |   |
| File Server Type<br>Client Access Point<br>Confirmation<br>Configure High<br>Availability<br>Summary | <ul> <li>Use this option to provide a central location on your network for users to share files or for server applications that open and close files frequently. This option supports both the Server Message Block (SMB) and Network File System (NFS) protocols. It also supports Data Deduplication, File Server Resource Manager, DFS Replication, and other File Services role services.</li> <li>Scale-Out File Server for application data         Use this option to provide storage for server applications or virtual machines that leave files open for extended periods of time. Scale-Out File Server client connections are distributed across nodes in the cluster for better throughput. This option supports the SMB protocol. It does not support the NFS protocol, DFS Replication, or File Server Resource Manager.     </li> </ul> |   |
|  | More about clustered file server options          < Previous  |   |

5. On the Client Access Point page, in the Name text field, type the NetBIOS name that will be used to access a Scale-Out File Server.



| 🧞 High Availability  | Wizard  | $\times$ |
|--|---|----------|
| Client Ac  | cess Point  |          |
| Before You Begin<br>Select Role<br>File Server Type                              | Type the name that clients will use when accessing this clustered role:          Name:       FileServer | ]        |
| Client Access Point<br>Confirmation<br>Configure High<br>Availability<br>Summary | (1) The NetBIOS name is limited to 15 characters. All networks were configured automatically.           |          |
|  |   |          |
|  | < <u>P</u> revious <u>N</u> ext > Cancel  | ]        |

Click Next to continue.

6. Check whether the specified information is correct. Click Next to continue or Previous to change the settings.



| 🧱 High Availability             | Nizard   |                         | ×  |
|---------------------------------|--|-------------------------|----|
| Confirmat                       | tion   |                         |    |
| Before You Begin<br>Select Role | You are ready to configure high availability for a | File Server.            |    |
| File Server Type                | Distributed Network Name                           |                         | ^  |
| Client Access Point             | 192.168.12.0                                       | FileServer              |    |
| Confirmation                    | OU   |                         |    |
| Availability                    | CN=Computers,DC=starwind,DC=local                  |                         |    |
| Summary                         |  |                         |    |
|                                 |  |                         |    |
|                                 |  |                         |    |
|                                 |  |                         | ~  |
|                                 | To continue, click Next.                           |                         |    |
|                                 |  |                         |    |
|                                 |  | < Previous Next > Cance | el |

7. Once the installation is finished successfully, the Wizard should now look like the screenshot below.

Click Finish to close the Wizard.



| 🧱 High Availability \           | Nizard  | × |
|---------------------------------|---|---|
| Summary                         |   |   |
| Before You Begin<br>Select Role | High availability was successfully configured for the role.   | _ |
| Client Assess Deint             | Distributed Network Name  |   |
| Client Access Point             | FileServer  |   |
| Confirmation                    | OU  |   |
| Configure High<br>Availability  | CN=Computers,DC=starwind,DC=local   |   |
| Comment                         | Subnet  |   |
| Summary                         | 192.168.12.0  |   |
|                                 | To view the report created by the wizard, click View Report.<br>To close this wizard, click Finish. |   |
|                                 | <u>F</u> inish  | ] |

8. The newly created role should now look like the screenshot below.

| 職 Failover Cluster Manager    |                              |                  |                       |            |          |             |   |                            |                           | - a × |
|-------------------------------|------------------------------|------------------|-----------------------|------------|----------|-------------|---|----------------------------|---------------------------|-------|
| File Action Yiew Help         | •                            |                  |                       |            |          |             |   |                            |                           |       |
| 🗢 🔿 🙍 📅 📓 🛅                   |                              |                  |                       |            |          |             |   |                            |                           |       |
| Failover Cluster Manage       | Roles (1)                    |                  |                       |            |          |             |   |                            | Actions                   |       |
| Production.starwind     Roles | Search                       |                  |                       |            |          |             |   | P Queries 🔻 🔜 👻 😪          | Roles                     |       |
| Nodes                         | Name                         | Status           | Туре                  | Owner Node | Priority | Information | ] |                            | 😽 Configure Role          |       |
| V 📇 Storage                   | Rie Server                   | <li>Running</li> | Scale-Out File Server | SW1        | Medium   |             |   |                            | Virtual Machines          | •     |
| Pools                         |                              |                  |                       |            |          |             |   |                            | Create Empty Role         |       |
| Enclosures                    |                              |                  |                       |            |          |             |   |                            | View                      | •     |
| Networks                      |                              |                  |                       |            |          |             |   |                            | Refresh                   |       |
| Es cluster crents             |                              |                  |                       |            |          |             |   |                            | 🛛 Help                    |       |
|                               |                              |                  |                       |            |          |             |   |                            | FileServer                |       |
|                               |                              |                  |                       |            |          |             |   |                            | 🗘 Start Role              |       |
|                               |                              |                  |                       |            |          |             |   |                            | 😳 Stop Role               |       |
|                               |                              |                  |                       |            |          |             |   |                            | Add File Share            |       |
|                               |                              |                  |                       |            |          |             |   |                            | 1 Move                    | •     |
|                               |                              |                  |                       |            |          |             |   |                            | 🐞 Change Startup Priority | •     |
|                               |                              |                  |                       |            |          |             |   |                            | 🚯 Information Details     |       |
|                               |                              |                  |                       |            |          |             |   |                            | Show Critical Events      |       |
|                               |                              |                  |                       |            |          |             |   |                            | Add Storage               |       |
|                               |                              |                  |                       |            |          |             |   |                            | Add Resource              | •     |
|                               |                              |                  |                       |            |          |             |   |                            | More Actions              | •     |
|                               |                              |                  |                       |            |          |             |   |                            | 🗙 Remove                  |       |
|                               |                              |                  |                       |            |          |             |   |                            | Properties                |       |
|                               |                              |                  |                       |            |          |             |   |                            | 🛛 Help                    |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               | * in Heserver                |                  |                       |            |          |             |   | Preferred Owners: Any noge |                           |       |
|                               | Status:                      | Running          |                       |            |          |             |   |                            |                           |       |
|                               | Priority:                    | Medium           |                       |            |          |             |   |                            |                           |       |
|                               | Owner Node:                  | SW1              |                       |            |          |             |   |                            |                           |       |
|                               | IP Addresses:                | 192 168 12 85    |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               |                              |                  |                       |            |          |             |   |                            |                           |       |
|                               | Summer Resources             | Shares           |                       |            |          |             |   |                            |                           |       |
| `````                         | Constituting a second case . |                  |                       |            |          |             |   |                            | 1                         |       |

NOTE: If the role status is Failed and it is unable to Start, please, follow the next steps:

| 🖏 Failover Cluster Manager      |                                    |               |                       |            |          |             |  | -                         | σ× |
|---------------------------------|------------------------------------|---------------|-----------------------|------------|----------|-------------|--|---------------------------|----|
| File Action View Help           |                                    |               |                       |            |          |             |  |                           |    |
| 🗢 🌩 🖄 📰 📓 📼                     |                                    |               |                       |            |          |             |  |                           |    |
| Failover Cluster Manage         | Roles (1)                          |               |                       |            |          |             |  | Actions                   |    |
| Production.starwind     Poler   | Search                             |               |                       |            |          |             | 🔎 Queries 🔻 🔛 👻  | Roles                     |    |
| Nodes                           | Name                               | Status        | Туре                  | Owner Node | Priority | Information |  | Nonfigure Role            |    |
| 🗸 📇 Storage                     | B FileServer                       | 🔞 Failed      | Scale-Out File Server | SW1        | Medium   |             |  | Virtual Machines          | •  |
| Pools                           |                                    |               |                       |            |          |             |  | Treate Empty Role         |    |
| Enclosures                      |                                    |               |                       |            |          |             |  | View                      | •  |
| Networks     III Cluster Functs |                                    |               |                       |            |          |             |  | Refresh                   |    |
| tig cluster events              |                                    |               |                       |            |          |             |  | 👔 Help                    |    |
|                                 |                                    |               |                       |            |          |             |  | FileServer                |    |
|                                 |                                    |               |                       |            |          |             |  | 🔅 Start Role              |    |
|                                 |                                    |               |                       |            |          |             |  | 🗘 Stop Role               |    |
|                                 |                                    |               |                       |            |          |             |  | Add File Share            |    |
|                                 |                                    |               |                       |            |          |             |  | Move Move                 | ,  |
|                                 |                                    |               |                       |            |          |             |  | 🐞 Change Startup Priority | •  |
|                                 |                                    |               |                       |            |          |             |  | 🚯 Information Details     |    |
|                                 |                                    |               |                       |            |          |             |  | Show Critical Events      |    |
|                                 |                                    |               |                       |            |          |             |  | Add Storage               |    |
|                                 |                                    |               |                       |            |          |             |  | Add Resource              | •  |
|                                 |                                    |               |                       |            |          |             |  | More Actions              | ,  |
|                                 |                                    |               |                       |            |          |             |  | × Remove                  |    |
|                                 |                                    |               |                       |            |          |             |  | Properties                |    |
|                                 |                                    |               |                       |            |          |             |  | I Help                    |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 | v III. ElaConus                    |               |                       |            |          |             | Preferred Ourserr: Any pode  |                           |    |
|                                 | · III · III · III · III            |               |                       |            |          |             | The office of the second secon |                           |    |
|                                 | Status:                            | Running       |                       |            |          |             |  |                           |    |
|                                 | Priority:                          | Medium        |                       |            |          |             |  |                           |    |
|                                 | Owner Node:<br>Olient Access Name: | FileServer    |                       |            |          |             |  |                           |    |
|                                 | IP Addresses:                      | 192.168.12.85 |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |
| < >>                            | Summary Resources S                | ihares        |                       |            |          |             |  |                           |    |
|                                 |                                    |               |                       |            |          |             |  |                           |    |

- open Active Directory Users and Computers
- enable the Advanced view if it is not enabled
- edit the properties of the OU containing the cluster computer object (in this case Production)
- open the Security tab and click Advanced
- in the appeared window, press Add (the Permission Entry dialog box opens), click Select a principal
- in the appeared window, click Object Types, select Computers, and click OK
- enter the name of the cluster computer object (in this case Production)

| elect User, Computer, Service Account, or Group                    |              |
|--|--------------|
| Select this object type:   |              |
| User, Computer, Group, or Built-in security principal              | Object Types |
| rom this location:   |              |
| starwind.local   | Locations    |
| Enter the object name to select ( <u>examples</u> ):<br>Production | Check Names  |
|  | Check Maines |
|  |              |
|  |              |

 go back to Permission Entry dialog, scroll down, and select Create Computer Objects,



| Delete aCSResourceLimits objects      | Delete msKds-ProvRootKey objects             |  |
|---------------------------------------|--|--|
| Create applicationVersion objects     | Create msKds-ProvServerConfiguration objects |  |
| Delete applicationVersion objects     | Delete msKds-ProvServerConfiguration objects |  |
| Create certificationAuthority objects | Create MSMQ Queue Alias objects              |  |
| Delete certificationAuthority objects | Delete MSMQ Queue Alias objects              |  |
| Create Computer objects               | Create ms-net-ieee-80211-GroupPolicy objects |  |
| Delete Computer objects               | Delete ms-net-ieee-80211-GroupPolicy objects |  |
| Create Contact objects                | Create ms-net-ieee-8023-GroupPolicy objects  |  |
| Delete Contact objects                | Delete ms-net-ieee-8023-GroupPolicy objects  |  |
| Create document objects               | Create msPKI-Enterprise-Oid objects          |  |
| Delete document objects               | Delete msPKI-Enterprise-Oid objects          |  |
| Create documentSeries objects         | Create msPKI-Key-Recovery-Agent objects      |  |
| Delete documentSeries objects         | Delete msPKI-Key-Recovery-Agent objects      |  |
| Create Group objects                  | Create msPKI-PrivateKeyRecoveryAgent objects |  |
| Delete Group objects                  | Delete msPKI-PrivateKeyRecoveryAgent objects |  |
| Create groupOfUniqueNames objects     | Create msPrint-ConnectionPolicy objects      |  |
| Delete groupOfUniqueNames objects     | Delete msPrint-ConnectionPolicy objects      |  |
| Create groupPolicyContainer objects   | Create msSFU30DomainInfo objects             |  |
| Delete groupPolicyContainer objects   | Delete msSFU30DomainInfo objects             |  |
| Create InetOrgPerson objects          | Create msSFU30MailAliases objects            |  |
| Delete InetOrgPerson objects          | Delete msSFU30MailAliases objects            |  |
| Create IntelliMirror Group objects    | Create msSFU30NetId objects                  |  |
| Delete IntelliMirror Group objects    | Delete msSFU30NetId objects                  |  |
| Create IntelliMirror Service objects  | Create msSFU30NetworkUser objects            |  |
| Delete IntelliMirror Service objects  | Delete msSFU30NetworkUser objects            |  |

- click OK on all opened windows to confirm the changes
- open Failover Cluster Manager, right-click SOFS role and click Start Role

Configuring File Share

To Add File Share:

- open Failover Cluster Manager
- expand the cluster and then click Roles
- right-click the file server role and then press Add File Share
- on the Select the profile for this share page, click SMB Share Applications and then click Next



| Select Profile | File share profile:                       | Description:  |
|----------------|---|---|
| Share Location | SMB Share - Quick<br>SMB Share - Advanced | This profile creates an SMB file share with settings<br>appropriate for Hyper-V, certain databases, and other |
| Other Settings | SMB Share - Applications                  | server applications.  |
|                | NFS Share - Quick                         |   |
| Confirmation   | NFS Share - Advanced                      |   |
|                |   |   |
|                |   |   |

5. Select a CSV to host the share. Click Next to proceed.



| Select Profile | Ser | ver:                                   |                    |              |             |                              |         |   |
|----------------|-----|--|--------------------|--------------|-------------|------------------------------|---------|---|
| Share Location | S   | erver Name                             | Status             | Cluster      | Role        | Owner Node                   |         |   |
| Share Name     | F   | ileServer                              | Online             | Scale-C      | )ut File    |                              |         |   |
| Other Settings |     |  |                    |              |             |                              |         |   |
| Permissions    |     |  |                    |              |             |                              |         |   |
| Confirmation   |     |  |                    |              |             |                              |         |   |
|                |     |  |                    |              |             |                              |         |   |
|                | Sha | are location:                          |                    |              |             |                              |         |   |
|                | ۲   | Select by volume:                      |                    |              |             |                              |         |   |
|                |     | Volume                                 | Free Space         | Capacity     | File Syster | n                            |         | _ |
|                |     | C:\ClusterStorage\Volume1              | 5.92 GB            | 5.97 GB      | CSVFS       |                              |         |   |
|                |     | C:\ClusterStorage\Volume2              | 9.91 GB            | 9.97 GB      | CSVFS       |                              |         |   |
|                |     | The location of the file share volume. | will be a new fold | ler in the \ | Shares dire | ctory <mark>on the</mark> se | elected |   |

6. Type in the file share name and click Next.



| 🖀 New Share Wizard |                      |                                     | _  |       | × |
|--------------------|----------------------|-------------------------------------|----|-------|---|
| Specify share nam  | е                    |                                     |    |       |   |
| Select Profile     | Share name:          | Share                               |    |       |   |
| Share Location     |                      |                                     |    |       |   |
| Share Name         | Share description:   |                                     |    |       |   |
| Other Settings     |                      |                                     |    |       |   |
| Permissions        |                      |                                     |    |       |   |
| Confirmation       | Local path to share: |                                     |    |       |   |
| Results            | C:\ClusterStorage\\  | /olume1\Shares\Share                |    |       |   |
|                    | 1 If the folder doe  | s not exist, the folder is created. |    |       |   |
|                    | Remote path to sha   | re:                                 |    |       |   |
|                    | \\FileServer\Share   |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      |                                     |    |       |   |
|                    |                      | < Previous Next > Crea              | te | Cance |   |

7. Make sure that the Enable Continuous Availability box is checked. Click Next to proceed.



| New Share Wizard   | – 🗆 X   |
|--|---|
| Configure share  | e settings  |
| Select Profile<br>Share Location<br>Share Name<br>Other Settings<br>Permissions<br>Confirmation<br>Results | <ul> <li>Enable access-based enumeration</li> <li>Access-based enumeration displays only the files and folders that a user has permissions to access. If a user does not have Read (or equivalent) permissions for a folder, Windows hides the folder from the user's view.</li> <li>Enable continuous availability</li> <li>Continuous availability features track file operations on a highly available file share so that clients can fail over to another node of the cluster without interruption.</li> <li>Allow caching of share</li> <li>Caching makes the contents of the share available to offline users. If the BranchCache for Network Files role service is installed, you can enable BranchCache on the share.</li> <li>Enable BranchCache on the file share</li> <li>BranchCache enables computers in a branch office to cache files downloaded from this share, and then allows the files to be securely available to other computers in the branch.</li> <li>Encrypt data access</li> <li>When enabled, remote file access to this share will be encrypted. This secures the data against unauthorized access while the data is transferred to and from the share. If this box is checked and grayed out, an administrator has turned on encryption for the entire server.</li> </ul> |
|  | < <u>P</u> revious <u>N</u> ext > <u>C</u> reate Cancel   |

8. Specify the access permissions for the file share.



| Select Profile<br>Share Location<br>Share Name<br>Other Settings<br>Permissions | If this shar<br>remote ma<br>Permission<br>permission<br>Share perm<br>Folder per | e will be used for Hyper-V, y<br>anagement of the Hyper-V h<br>ns to access the files on a sha<br>ns, and, optionally, a central<br>nissions: Everyone Full Cont<br>missions: | rou may need to e<br>ost.<br>are are set using a<br>access policy.<br>rol | nable constrained delegation to enable<br>combination of folder permissions, sha                            |
|---|---|---|---|---|
| Confirmation<br>Results   | Type<br>Allow<br>Allow<br>Allow   | Principal<br>BUILTIN\Users<br>BUILTIN\Users<br>CREATOR OWNER  | Access<br>Special<br>Read & execu<br>Full Control                         | Applies To<br>This folder and subfolders<br>This folder, subfolders, and files<br>Subfolders and files only |
|   | Allow<br>Allow<br>Allow   | NT AUTHORITY\SYSTEM<br>BUILTIN\Administrators<br>BUILTIN\Administrators   | Full Control<br>Full Control<br>Full Control                              | This folder, subfolders, and files<br>This folder, subfolders, and files<br>This folder only                |
|   | Custor  | ize permissions   |   |   |

NOTE:

- for the Scale-Out File Server for Hyper-V, all Hyper-V computer accounts, the SYSTEM account, and all Hyper-V administrators must be provided with the full control on the share and file system
- for the 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

9. Check whether specified settings are correct. Click Previous to make any changes or click Create to proceed.

| Select Profile               | Confirm that the following   | are the correct settings, and then click Create.            |
|------------------------------|--|---|
| Share Location<br>Share Name | SHARE LOCATION   | EileSeover  |
| Other Settings               | Cluster role:  | Scale-Out File Server                                       |
| Permissions                  | Local path:  | C:\ClusterStorage\Volume1\Shares\Share                      |
| Confirmation<br>Results      | SHARE PROPERTIES<br>Share name:<br>Protocol:<br>Access-based enumeration:<br>Caching:<br>BranchCache:<br>Encrypt data:<br>Continuous availability: | Share<br>SMB<br>Disabled<br>Disabled<br>Disabled<br>Enabled |

10. Check the summary and click Close to close the Wizard.



| 🚟 New Share Wizard |                       |                   | - 0         | ×    |
|--------------------|-----------------------|-------------------|-------------|------|
| View results       |                       |                   |             |      |
| Select Profile     | The share was success | fully created.    |             |      |
| Share Location     | Task                  | Progress          | Status      |      |
| Share Name         | Create SMB share      |                   | Completed   |      |
| Other Settings     | Set SMB permissions   |                   | Completed   |      |
| Permissions        |                       |                   |             |      |
| Confirmation       |                       |                   |             |      |
| Results            |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       |                   |             |      |
|                    | 1                     |                   |             |      |
|                    |                       |                   |             |      |
|                    |                       | < Previous Next > | > Close Car | ncel |

To Manage Created File Shares:

- open Failover Cluster Manager
- expand the cluster and click Roles
- choose the file share role, select the Shares tab, right-click the created file share, and select Properties:

| 🍓 Failover Cluster Manager    |                   |                                   |                   |                         |                                      |  |                            | -                         | - 0 × |
|-------------------------------|-------------------|-----------------------------------|-------------------|-------------------------|--------------------------------------|--|----------------------------|---------------------------|-------|
| File Action View Help         | •                 |                                   |                   |                         |                                      |  |                            |                           |       |
| 🗢 🔿 🙇 🚾 🖬 🖬                   |                   |                                   |                   |                         |                                      |  |                            |                           |       |
| Failover Cluster Manage       | Roles (1)         |                                   |                   |                         |                                      |  |                            | Actions                   |       |
| Production.starwind     Roles | Search            |                                   |                   |                         |                                      |  | 🔎 Queries 🔻 🔜 👻 😪          | Roles                     | •     |
| Nodes                         | Name              | Status Type                       | Ow                | mer Node Priority       | Information                          |  |                            | 89 Configure Role         |       |
| V 📇 Storage                   | RieServer         | Running Scale-Ou                  | ut File Server SW | V1 Medium               |                                      |  |                            | Virtual Machines          | •     |
| Pools                         |                   |                                   |                   |                         |                                      |  |                            | ma Create Empty Role      |       |
| Enclosures                    |                   |                                   |                   |                         |                                      |  |                            | View                      | •     |
| Networks                      |                   |                                   |                   |                         |                                      |  |                            | Refresh                   |       |
| tig close creas               |                   |                                   |                   |                         |                                      |  |                            | 🛛 Help                    |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | FileServer                | •     |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🔅 Start Role              |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | 😳 Stop Role               |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🛗 Add File Share          |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | Move                      | •     |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🕸 Change Startup Priority | •     |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🚯 Information Details     |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | B Show Critical Events    |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🚖 Add Storage             |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | Add Resource              | •     |
|                               |                   |                                   |                   |                         |                                      |  |                            | More Actions              | •     |
|                               |                   |                                   |                   |                         |                                      |  |                            | 🗙 Remove                  |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | Properties                |       |
|                               |                   |                                   |                   |                         |                                      |  |                            | 👔 Help                    |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               | 500               |                                   |                   |                         |                                      |  |                            |                           |       |
|                               | FileServer        | r                                 |                   |                         |                                      |  | Preferred Owners: Any node |                           |       |
|                               | Shares (2)        |                                   |                   |                         |                                      |  |                            |                           |       |
|                               | Name              | Path                              | Protocol          | Continuous Availability | Remarks                              |  |                            |                           |       |
|                               | CusterStorageS    | C:\OusterStorage                  | SMB               | No                      | Cluster Shared Volumes Default Share |  |                            |                           |       |
|                               |                   | C:\UusterStorage\Volume1\Shares\S | mane SMB          | Yes                     |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
|                               |                   |                                   |                   |                         |                                      |  |                            |                           |       |
| (                             | Summary Resources | Shares                            |                   |                         |                                      |  | ]                          |                           |       |
|                               |                   | -Commission                       |                   |                         |                                      |  |                            | 1                         |       |

# **Configuring The File Server For General Use Role**

NOTE: To configure File Server for General Use, the cluster should have available storage

- 1. To configure the File Server for General Use role, open Failover Cluster Manager.
- 2. Right-click on the cluster name, then click Configure Role and click Next to continue.

| 🝓 Failover Cluster Manag              | er                                    |   |              |   |   |   |                           | - |  | × |
|---------------------------------------|---------------------------------------|---|--------------|---|---|---|---------------------------|---|--|---|
| File Action View He                   | lp                                    |   |              |   |   |   |                           |   |  |   |
| 🗢 🏟 🖄 🖬 📓 🖬                           | 11 m                                  |   |              |   |   |   |                           |   |  |   |
| 📲 Failover Cluster Manag              | Cluster Production.starwind           | l.local   |              |   |   | ^ | Actions                   |   |  |   |
| Production.starv     Production.starv | Configure Role                        | or Droduction   |              |   |   |   | Production.starwind.local |   |  | • |
| Nodes                                 | Validate Cluster                      | ered roles and 2 nodes.   |              |   |   |   | igure Role                |   |  |   |
| > 📇 Storage                           | View Validation Report                | al  |              | Networks: Cluster Network 2, Cluster                  | Network 3, Cluster Network 1, Cluster Network 4 |   | Walidate Cluster          |   |  |   |
| Networks                              | Add Node                              |   |              | Subnets: 3 IPv4 and 1 IPv6 🛛 🕅 View Validation Report |   |   |                           |   |  |   |
| en concercercer                       | Close Connection                      | tical: 52. Error: 16. Warning: 5  |              |   |   |   |                           |   |  |   |
|                                       |                                       |   |              |   |   |   | Close Connection          |   |  |   |
|                                       | Reset Recent Events                   |   |              |   |   | 1 | Reset Recent Events       |   |  |   |
|                                       | More Actions >                        | s > pecific clustered role, add one or more servers (nodes), or copy roles from a cluster running Windows Server 2016 or supported previous versions of Windows Server. |              |   |   |   | More Actions              |   |  | • |
|                                       | View >                                |   | View         |   |   |   | •                         |   |  |   |
|                                       | Refresh                               |   |              |   |   |   | Q Refresh                 |   |  |   |
|                                       | Properties                            |   |              |   |   |   | Properties                |   |  |   |
|                                       | Help                                  |   |              |   |   |   | 👔 Help                    |   |  |   |
|                                       | E Casici Aware Opubling               |   |              |   |   |   | Name: Production          |   |  |   |
|                                       |                                       |   |              |   |   |   | 🙀 Bring Online            |   |  |   |
|                                       | <ul> <li>Navigate</li> </ul>          |   |              |   |   |   | 🙀 Take Offline            |   |  |   |
|                                       | Roles                                 | Nodes   | Storage      | Networks  | Cluster Events                                  |   | 🚯 Information Details     |   |  |   |
|                                       |                                       |   |              |   |   |   | Show Critical Events      |   |  |   |
|                                       |                                       |   |              |   |   | 1 | More Actions              |   |  | • |
|                                       | Cluster Core Reso                     | ources  |              |   |   | , | 🗙 Remove                  |   |  |   |
|                                       | Name                                  |   | Status Ir    | formation   |   |   | Properties                |   |  |   |
|                                       | Server Name                           |   | 001          |   |   |   | 👔 Help                    |   |  |   |
|                                       | B Address 102.16                      | 20 10 00  | Online       |   |   |   |                           |   |  |   |
|                                       | Cluster Infrastructure                | N. 16.00  | Con Con Mile |   |   |   |                           |   |  |   |
| < >                                   | BLUI III III                          |   | <b>A</b>     |   |   | ~ |                           |   |  |   |
| This action enables you to s          | elect a role that you can configure t | for high availability.  |              |   |   |   |                           |   |  |   |

3. Select the File Server item from the list in High Availability Wizard and click Next to continue.



| Righ Availability Wizard   |   |               |   |   |  |  |
|--|---|---------------|---|---|--|--|
| Select Ro  | ble   |               |   |   |  |  |
| Before You Begin<br>Select Role  | Select the role that you want to configure for high a   | availability: |   |   |  |  |
| File Server Type<br>Client Access Point<br>Select Storage<br>Confirmation<br>Configure High<br>Availability<br>Summary | DFS Namespace Server<br>DFCP Server<br>Distributed Transaction Coordinator (DTC)<br>File Server<br>Generic Application<br>Generic Script<br>Generic Service<br>Hyper-V Replica Broker<br>Cordinator (DTC)<br>Generic Service<br>Hyper-V Replica Broker<br>Cordinator Server | ▲             | Description:<br>A File Server provides a central location<br>on your network where files are shared<br>for use by users or by applications. | ] |  |  |

4. Select File Server for general use and click Next.



| igh Availability   | Wizard   | × |
|--|--|---|
| File Serv  | er Type  |   |
| Before You Begin   | Select an option for a clustered file server:  |   |
| Select Role  | <u>Fi</u> le Server for general use  |   |
| File Server Type<br>Client Access Point<br>Select Storage<br>Confirmation<br>Configure High<br>Availability<br>Summary | Use this option to provide a central location on your network for users to share files or for server applications that open and close files frequently. This option supports both the Server Message Block (SMB) and Network File System (NFS) protocols. It also supports Data Deduplication, File Server Resource Manager, DFS Replication, and other File Services role services. |   |
|  | < <u>P</u> revious <u>N</u> ext > Cancel   |   |

5. On the Client Access Point page, in the Name text field, type the NETBIOS name that will be used to access the File Server and IP for it.


| igh Availability                      | Wizard  |   |  |  | × |
|---------------------------------------|---|---|--|--|---|
| Client Ac                             | cess Point  |   |  |  |   |
| Before You Begin                      | Type the name that o                              | lients will use when                        | accessing this clustered role:                             |  |   |
| Select Role<br>File Server Type       | N <u>a</u> me:                                    | FileServer                                  |  |  | ] |
| Client Access Point<br>Select Storage | The NetBIOS nan<br>automatically. For<br>address. | ne is limited to 15 d<br>or each network to | haracters. One or more IPv4<br>be used, make sure the netw | addresses could not be configured<br>ork is selected, and then type an |   |
| Confirmation                          |   | Networks                                    |  | Address  | ] |
| Availability                          |   |   | 192.168.12.0/24  | 192.168.12.85  |   |
| Summary                               |   |   |  |  |   |
|                                       |   |   |  |  |   |
|                                       |   |   |  |  |   |
|                                       |   |   | < <u>P</u> revious   | <u>N</u> ext > Cancel  |   |

Click Next to continue.

6. Select the Cluster disk and click Next.



| 🧱 High Availability   | Wizard  |  |  |                   | ×      |
|---|---|--|--|-------------------|--------|
| Select St   | orage   |  |  |                   |        |
| Before You Begin<br>Select Role<br>File Server Type                         | Select only the storage vo<br>You can assign additional | olumes that you want t<br>storage to this cluste | to assign to this clustered role<br>red role after you complete th | e.<br>iis wizard. |        |
| Client Access Point   | Name  | Status   |  |                   |        |
| Select Storage<br>Confirmation<br>Configure High<br>Availability<br>Summary | Volume: (G)   | Online     File System: NTFS                     | 9.91 GB free of 9.97 GB  |                   |        |
|   |   |  | < <u>P</u> revious   | <u>N</u> ext >    | Cancel |

7. Check whether the specified information is correct. Click Next to proceed or Previous to change the settings.



| 🧞 High Availability V           | Vizard  |                          | × |
|---------------------------------|---|--------------------------|---|
| tonfirmat 🏷                     | ion   |                          |   |
| Before You Begin<br>Select Role | You are ready to configure high availability for a File | Server.                  |   |
| File Server Type                | Network Name  |                          | ^ |
| Client Access Point             | 192.168.12.85   | FileServer               |   |
| Select Storage                  | OU  |                          |   |
| Confirmation                    | CN=Computers,DC=starwind,DC=local                       |                          |   |
| Configure High<br>Availability  | Storage   |                          |   |
| Summary                         | CSV2  |                          |   |
|                                 |   |                          |   |
|                                 |   |                          | ~ |
|                                 | To continue, click Next.                                |                          |   |
|                                 |   |                          |   |
|                                 |   | < Previous Next > Cancel |   |

8. Once the installation has been finished successfully, the Wizard should now look like the screenshot below.

Click Finish to close the Wizard.



| 🧓 High Availability \           | Nizard  | × |
|---------------------------------|---|---|
| ty Summary                      |   |   |
| Before You Begin<br>Select Role | High availability was successfully configured for the role.   |   |
| Client Assess Deint             | Distributed Network Name  |   |
| Client Access Point             | FileServer  |   |
| Confirmation                    | OU  |   |
| Configure High<br>Availability  | CN=Computers,DC=starwind,DC=local   |   |
| Commonly                        | Subnet  |   |
| Summary                         | 192.168.12.0  |   |
|                                 | To view the report created by the wizard, click View Report.<br>To close this wizard, click Finish. |   |
|                                 | <u> </u>  |   |

9. The newly created role should now look like the screenshot below.

| N   |  |            |            |          |             |  |                             |                           |   |
|---|--|------------|------------|----------|-------------|--|-----------------------------|---------------------------|---|
| alp   |  |            |            |          |             |  |                             |                           | _ |
| d   |  |            |            |          |             |  |                             |                           |   |
| Roles (1)   |  |            |            |          |             |  |                             | Actions                   |   |
| Search  |  |            |            |          |             |  | 🔎 Queries 🔻 🔛 👻 😪           | Roles                     |   |
| Name  | Status   | Type       | Owner Node | Priority | Information |  |                             | 😽 Configure Role          |   |
| Rie Server  | Running  | FileServer | SW1        | Medium   |             |  |                             | Virtual Machines          |   |
|   |  |            |            |          |             |  |                             | treate Empty Role         |   |
|   |  |            |            |          |             |  |                             | View                      |   |
|   |  |            |            |          |             |  |                             | Refresh                   |   |
|   |  |            |            |          |             |  |                             | 🛐 Help                    |   |
|   |  |            |            |          |             |  |                             | FileServer                |   |
|   |  |            |            |          |             |  |                             | 🔆 Start Role              |   |
|   |  |            |            |          |             |  |                             | 😳 Stop Role               |   |
|   |  |            |            |          |             |  |                             | Add File Share            |   |
|   |  |            |            |          |             |  |                             | Move                      |   |
|   |  |            |            |          |             |  |                             | 😵 Change Startup Priority |   |
|   |  |            |            |          |             |  |                             | 🚯 Information Details     |   |
|   |  |            |            |          |             |  |                             | Show Critical Events      |   |
|   |  |            |            |          |             |  |                             | Add Storage               |   |
|   |  |            |            |          |             |  |                             | Add Resource              |   |
|   |  |            |            |          |             |  |                             | More Actions              |   |
|   |  |            |            |          |             |  |                             | 🗙 Remove                  |   |
|   |  |            |            |          |             |  |                             | Properties                |   |
|   |  |            |            |          |             |  |                             | 😰 Help                    |   |
|   |  |            |            |          |             |  |                             |                           |   |
|   |  |            |            |          |             |  |                             |                           |   |
| v III. File Server  |  |            |            |          |             |  | Preferred Owners: Any pode  |                           |   |
| Y 🕌 FileServer  | r  |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| Y FileServer  | r<br>Running   |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe.     Status:     Priority:     Orace Made:  | Furning<br>Medum   |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam                                 | Furning<br>Medium<br>SW1<br>re: FieServer  |            |            |          |             |  | Preferred Owners: Arry node |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses:               | Furning<br>Medun<br>SW1<br>re: FleServer<br>192.168.12.85  |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses:               | Running<br>Madum<br>SW1<br>FileServer<br>192.168.12.85   |            |            |          |             |  | Preferred Owmens: Any:node  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses:               | Running<br>Medium<br>SW1<br>ee: FleServer<br>192.168.12.85   |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses:               | r<br>Running<br>Medum<br>SW1<br>sW1<br>sW1<br>sW1<br>sW1<br>sW1<br>sW1<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2<br>sW2 |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe     FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses: | Running<br>Modum<br>SW1<br>se: FleServer<br>192.168.12.85  |            |            |          |             |  | Preferred Owners: Any node  |                           |   |
| FileServe<br>Status:<br>Priority:<br>Owner Node:<br>Client Access Nam<br>IP Addresses:                    | Running<br>Medum<br>SW1<br>te: FleServer<br>192.168.12.85  |            |            |          |             |  | Preferred Owners: Any mode  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Olient Access Nam     IP Addresses:               | Rurning<br>Medium<br>SW1<br>sc: FieServer<br>192.168.12.85   |            |            |          |             |  | Preferred Owners: Any mode  |                           |   |
| FileServe     Status:     Priority:     Owner Node:     Client Access Nam     IP Addresses:               | Running<br>Madaum<br>SW1<br>SW1<br>Er Felserver<br>192,168,12.85   |            |            |          |             |  | Perferred Owners: Any mode  |                           |   |

NOTE: If the role status is Failed and it is unable to Start, please, follow the next steps:

• open Active Directory Users and Computers



- enable the Advanced view if it is not enabled
- edit the properties of the OU containing the cluster computer object (in this case Production)
- open the Security tab and click Advanced
- in the appeared window, press Add (the Permission Entry dialog box opens), click Select a principal
- in the appeared window, click Object Types, select Computers, and click OK
- enter the name of the cluster computer object (in this case Production)

| Select User, Computer, Service Account, or Group      |    | ×            |
|---|----|--------------|
| Select this object type:                              |    |              |
| User, Computer, Group, or Built-in security principal |    | Object Types |
| From this location:                                   |    |              |
| starwind.local  |    | Locations    |
| Enter the object name to select ( <u>examples</u> ):  |    |              |
| Production  |    | Check Names  |
|   |    |              |
|   |    |              |
| Advanced  | OK | Cancel       |

 go back to Permission Entry dialog, scroll down, and select Create Computer Objects

| mission Entry for Computers           |  |  | > |
|---------------------------------------|--|--|---|
| Delete aCSResourceLimits objects      | Delete msKds-ProvRootKey objects             |  |   |
| Create applicationVersion objects     | Create msKds-ProvServerConfiguration objects |  |   |
| Delete applicationVersion objects     | Delete msKds-ProvServerConfiguration objects |  |   |
| Create certificationAuthority objects | Create MSMQ Queue Alias objects              |  |   |
| Delete certificationAuthority objects | Delete MSMQ Queue Alias objects              |  |   |
| Create Computer objects               | Create ms-net-ieee-80211-GroupPolicy objects |  |   |
| Delete Computer objects               | Delete ms-net-ieee-80211-GroupPolicy objects |  |   |
| Create Contact objects                | Create ms-net-ieee-8023-GroupPolicy objects  |  |   |
| Delete Contact objects                | Delete ms-net-ieee-8023-GroupPolicy objects  |  |   |
| Create document objects               | Create msPKI-Enterprise-Oid objects          |  |   |
| Delete document objects               | Delete msPKI-Enterprise-Oid objects          |  |   |
| Create documentSeries objects         | Create msPKI-Key-Recovery-Agent objects      |  |   |
| Delete documentSeries objects         | Delete msPKI-Key-Recovery-Agent objects      |  |   |
| Create Group objects                  | Create msPKI-PrivateKeyRecoveryAgent objects |  |   |
| Delete Group objects                  | Delete msPKI-PrivateKeyRecoveryAgent objects |  |   |
| Create groupOfUniqueNames objects     | Create msPrint-ConnectionPolicy objects      |  |   |
| Delete groupOfUniqueNames objects     | Delete msPrint-ConnectionPolicy objects      |  |   |
| Create groupPolicyContainer objects   | Create msSFU30DomainInfo objects             |  |   |
| Delete groupPolicyContainer objects   | Delete msSFU30DomainInfo objects             |  |   |
| Create InetOrgPerson objects          | Create msSFU30MailAliases objects            |  |   |
| Delete InetOrgPerson objects          | Delete msSFU30MailAliases objects            |  |   |
| Create IntelliMirror Group objects    | Create msSFU30NetId objects                  |  |   |
| Delete IntelliMirror Group objects    | Delete msSFU30NetId objects                  |  |   |
| Create IntelliMirror Service objects  | Create msSFU30NetworkUser objects            |  |   |
| Delete IntelliMirror Service objects  | Delete msSFU30NetworkUser objects            |  |   |

• click OK on all opened windows to confirm the changes



• open Failover Cluster Manager, right-click File Share role and click Start Role

## **Configuring Smb File Share**

To Add SMB File Share

- 1. Open Failover Cluster Manager.
- 2. Expand the cluster and then click Roles.
- 3. Right-click the File Server role and then press Add File Share.

4. On the Select the profile for this share page, click SMB Share – Quick and then click Next.

| Select Profile | File share profile:      | Description:  |
|----------------|--------------------------|---|
| Share Location | SMB Share - Quick        | This basic profile represents the fastest way to create a       |
| Share Name     | SMB Share - Advanced     | Windows-based computers.  |
| Other Settings | SMB Share - Applications | Suitable for general file charing                               |
|                | NFS Share - Advanced     | <ul> <li>Advanced options can be configured later by</li> </ul> |
|                |                          | using the Properties dialog                                     |
|                |                          |   |

5. Select available storage to host the share. Click Next to continue.



| Server Name           | <b>C</b> • •  |  |   |   |
|-----------------------|---|--|---|---|
|                       | Status  | Cluster Role   | Owner Node  |   |
| FileServer            | Online  | File Server  |   |   |
|                       |   |  |   |   |
|                       |   |  |   |   |
|                       |   |  |   |   |
|                       |   |  |   |   |
| Share location:       |   |  |   |   |
| Select by volume:     |   |  |   |   |
| Volume                | Free Space  | Capacity File Sys  | tem   |   |
| G:                    | 9.91 GB   | 9.97 GB NTFS   |   |   |
|                       |   |  |   |   |
| The location of the f | ile share will be a new fol   | der in the \Shares d   | irectory on the se  | lected  |
| un luna a             |   |  |   |   |
|                       | FileServer Share location:  Share location:  Select by volume: G: G: The location of the file | FileServer     Online       Share location:     •       • Select by volume:     •       Volume     Free Space       G:     9.91 GB | FileServer     Online     File Server       Share location: <ul> <li>Select by yolume:</li> <li>Volume</li> <li>Free Space</li> <li>Capacity</li> <li>File System</li> <li>G:</li> <li>9.91 GB</li> <li>9.97 GB</li> <li>NTFS</li> <li>The location of the file chare will be a new folder in the \Sharer displayers</li> </ul> | FileServer     Online     File Server       Share location:     •       Select by volume:       Volume     Free Space       G:     9.91 GB       9.97 GB     NTFS |

6. Type in the file share name and click Next.

| new Share Wizard  |                                   |                                     | -   |       | × |
|-------------------|-----------------------------------|-------------------------------------|-----|-------|---|
| Specify share nar | ne                                |                                     |     |       |   |
| Select Profile    | Share n <u>a</u> me:              | Share                               |     |       |   |
| Share Location    |                                   |                                     |     |       | _ |
| Share Name        | Share <u>d</u> escription:        |                                     |     |       |   |
| Other Settings    |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   | Local path to share:              |                                     |     |       |   |
| Results           | G:\Shares\Share If the folder doe | s not exist, the folder is created. |     |       |   |
|                   | Remote path to sha                | re:                                 |     |       |   |
|                   | \\FileServer\Share                |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   |                                     |     |       |   |
|                   |                                   | < <u>P</u> revious <u>N</u> ext >   | ate | Cance | ł |

7. Make sure that the Enable Continuous Availability box is checked. Click Next to

continue.

| ᡖ New Share Wizard                     |  | -  |  | ×        |
|--|--|--|--|----------|
| Configure share s                      | settings   |  |  |          |
| Select Profile                         | Enable access-based enumeration  |  |  |          |
| Share Location                         | Access-based enumeration displays only the files and folders that a user ha<br>access. If a user does not have Read (or equivalent) permissions for a folder<br>folder from the user's view.   | s permis<br>, Windo  | sions to<br>ws hides                         | the      |
| Other Settings                         | ✓ Enable continuous availability   |  |  |          |
| Permissions<br>Confirmation<br>Results | Continuous availability features track file operations on a highly available fil<br>clients can fail over to another node of the cluster without interruption.<br>Allow caching of share<br>Caching makes the contents of the chare available to offline users. If the Brit  | e share  | so that                                      |          |
|  | Network Files role service is installed, you can enable BranchCache on the si<br>Enable BranchCache on the file share  | hare.  |  |          |
|  | BranchCache enables computers in a branch office to cache files downlo<br>share, and then allows the files to be securely available to other compute<br><u>Encrypt</u> data access<br>When enabled, remote file access to this share will be encrypted. This secur<br>unauthorized access while the data is transferred to and from the share. If the<br>and grayed out, an administrator has turned on encryption for the entire se | ers in the<br>ers in the<br>es the d<br>his box i<br>rver. | om this<br>e branch<br>ata agair<br>s checke | ist<br>d |
|  | < <u>P</u> revious <u>N</u> ext > <u>Creat</u>   | te   | Cance  | 4        |

8.Specify the access permissions for the file share.

| New Share Wizard                 | sions to co              | ontrol access   |                                       | - 0                                |       |
|----------------------------------|--------------------------|---|---------------------------------------|------------------------------------|-------|
| Select Profile<br>Share Location | Permission<br>permission | is to access the files on a sha<br>is, and, optionally, a central | are are set using a<br>access policy. | combination of folder permissions, | share |
| Share Name                       | Share perm               | nissions: Everyone Full Cont                                      | rol                                   |                                    |       |
| Other Settings                   | <u>F</u> older per       | missions:   |                                       |                                    |       |
| Permissions                      | Туре                     | Principal   | Access                                | Applies To                         |       |
| Confirmation                     | Allow                    | BUILTIN\Users   | Special                               | This folder and subfolders         |       |
|                                  | Allow                    | BUILTIN\Users   | Read & execu                          | This folder, subfolders, and files |       |
|                                  | Allow                    | CREATOR OWNER   | Full Control                          | Subfolders and files only          |       |
|                                  | Allow                    | NT AUTHORITY\SYSTEM   | Full Control                          | This folder, subfolders, and files |       |
|                                  | Allow                    | BUILTIN\Administrators  | Full Control                          | This folder, subfolders, and files |       |
|                                  | Allow                    | BUILTIN\Administrators  | Full Control                          | This folder only                   |       |
|                                  | <u>C</u> ustom           | ize permissions   |                                       |                                    |       |
|                                  |                          | < 1   | Previous <u>N</u> e                   | xt > Create Ca                     | ancel |



9. Check whether specified settings are correct. Click Previous to make any changes or Next/Create to continue.

| Select Profile                                 | Confirm that the following   | are the correct settings, and then click Create.            |
|--|--|---|
| Share Location<br>Share Name<br>Other Settings | SHARE LOCATION<br>Server:  | FileServer<br>Scale-Out File Server                         |
| Permissions                                    | Local path:  | C:\ClusterStorage\Volume1\Shares\Share                      |
| Confirmation                                   | SHARE PROPERTIES   |   |
|  | Share name:<br>Protocol:<br>Access-based enumeration:<br>Caching:<br>BranchCache:<br>Encrypt data:<br>Continuous availability: | Share<br>SMB<br>Disabled<br>Disabled<br>Disabled<br>Enabled |

10. Check the summary and click Close.



| New Share Wizard |                       |                                   | - 🗆 ×        |  |
|------------------|-----------------------|-----------------------------------|--------------|--|
| View results     |                       |                                   |              |  |
| Select Profile   | The share was success | fully created.                    |              |  |
|                  | Task                  | Progress                          | Status       |  |
| Share Name       | Create SMB share      |                                   | Completed    |  |
|                  | Set SMB permissions   |                                   | Completed    |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
| Results          |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  |                       |                                   |              |  |
|                  | 22                    |                                   |              |  |
|                  |                       | < <u>P</u> revious <u>N</u> ext > | Close Cancel |  |

To manage created SMB File Shares

- 11. Open Failover Cluster Manager.
- 12. Expand the cluster and click Roles.

13. Choose the File Share role, select the Shares tab, right-click the created file share, and select Properties.

|   |                               |                |                                      |                |                                   |  |                         | Actions           |
|---|-------------------------------|----------------|--------------------------------------|----------------|-----------------------------------|--|-------------------------|-------------------|
| Search  |                               |                |                                      |                |                                   |  | D Guartes * Li * *      | Roles             |
| Nere  | Status                        | Tare           | Owner Node                           | Presty         | Monaton                           |  |                         | R) Configure Rate |
| E HeSever   | (1) Ranneg                    | File Server    | SW1                                  | Medum          |                                   |  |                         | Virtual Machines- |
|   |                               |                |                                      |                |                                   |  |                         | Create Empty Rale |
|   |                               |                |                                      |                |                                   |  |                         | Varu              |
|   |                               |                |                                      |                |                                   |  |                         | 🚊 fatien          |
|   |                               |                |                                      |                |                                   |  |                         | Help              |
|   |                               |                |                                      |                |                                   |  |                         | Gare              |
|   |                               |                |                                      |                |                                   |  |                         | X Stop Sharing    |
|   |                               |                |                                      |                |                                   |  |                         | i Reliesh         |
|   |                               |                |                                      |                |                                   |  |                         | Poperies          |
|   |                               |                |                                      |                |                                   |  |                         | Halp              |
|   |                               |                |                                      |                |                                   |  | Reduced Deserve Are and |                   |
| · I Below   |                               |                |                                      |                |                                   |  |                         |                   |
| v 🔡 HisSover  |                               |                |                                      |                |                                   |  |                         |                   |
| • 🛃 Referre   |                               |                |                                      |                |                                   |  |                         |                   |
| v Bitasavar   | Ann<br>Cù                     |                | danol Continues                      | us Auslishiky  | Females<br>Outer Outer & Daw      |  |                         |                   |
| v ∰ RicSover<br>Street (2)<br>Jose<br>Jose          | Anin<br>G.)<br>G. Staare Chan | 5.<br>23       | danosi Condinuosi<br>H2 No<br>TS Tea | ur husfability | Remains<br>Cluster Default Share  |  |                         |                   |
| v BaSaver<br>Version (2)<br>Laver<br>J 05<br>J then | Adn<br>G1<br>G1Saver:Gaus     | 54<br>53<br>16 | daced Continues<br>42 No<br>75 Tes   | ye Avadability | Renaha<br>Cuater Defaul Share     |  |                         |                   |
| v Bin Saver   | An<br>G<br>G Staar Gan        | 84<br>53<br>19 | daosi Continues<br>48 No<br>15 Nat   | ur Auslahiky   | Research<br>Cluster Default Share |  |                         |                   |
| v RisSarvar<br>Vener<br>2 05<br>2 Hom               | Patr<br>G<br>L Danar (Dans    | 5.<br>3        | daosi Continuos<br>43 No<br>75 Yee   | u Auslability  | Results<br>Custor Default Share   |  |                         |                   |
| Y ReServer<br>Verens (2)<br>Mane<br>2 03<br>2 Date  | An<br>Gi<br>Gi Dawrithan      | 5.<br>32<br>19 | davod Conditivan<br>Hã No<br>IS Yea  | un Austichtiky | Renats<br>Cuter Diffuil Stare     |  |                         |                   |
| v   | An<br>S)<br>G-Dawriban        | 94<br>33<br>19 | dacol Continuo<br>All No<br>TS Tea   | u Ausfohiky    | Renate<br>Dualer Dafwill Share    |  |                         |                   |



## **Configuring Nfs File Share**

To Add NFS File Share

- 1. Open Failover Cluster Manager.
- 2. Expand the cluster and then click Roles.
- 3. Right-click the File Server role and then press Add File Share.

4. On the Select the profile for this share page, click NFS Share – Quick and then click Next.

| New Share Wizard   |   | - 🗆 X   |
|--|---|---|
| New Share Wizard<br>Select the profil<br>Select Profile<br>Share Location<br>Share Name<br>Other Settings<br>Permissions<br>Confirmation | File share profile:<br>SMB Share - Quick<br>SMB Share - Advanced<br>SMB Share - Applications<br>NFS Share - Quick<br>NFS Share - Advanced | Description:<br>This profile creates an SMB file share with settings<br>appropriate for Hyper-V, certain databases, and other<br>server applications. |
|  |   |   |
|  | [   | < Previous Next > Create Cancel   |

5. Select available storage to host the share. Click Next to continue.



| Owner Node                |
|---------------------------|
|                           |
|                           |
|                           |
|                           |
|                           |
|                           |
|                           |
|                           |
| ystem                     |
|                           |
|                           |
| directory on the selected |
|                           |
| 5                         |

6. Type in the file share name and click Next.

| New Share Wizard  | :   |
|-------------------|---|
| Specify share n   | ame   |
| Select Profile    | Share name: Share   |
| Shara Nama        | Local path to share:  |
|                   | G:\Shares\Share   |
| Share Permissions | If the folder does not exist, the folder is created. <u>Bemote path to share:</u> |
|                   | FileServer:/Share   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   |   |
|                   | Decision Netter Control Const   |
|                   | < <u>Previous</u> <u>Next</u> > <u>Create</u> Cancel                              |

7. Specify the Authentication. Click Next and confirm the message in pop-up window to

continue.

| seenj aarneni     |   |
|-------------------|---|
| Select Profile    | Specify the authentication methods that you want to use for this NFS share. |
| Share Location    | Keekana of authentication   |
| Share Name        | Kerberg v5 authentication/Keb5)   |
| Authentication    | Katharas v5 authentication and intentity (KebS)                             |
| Share Permissions | Kerberos vo autnentication and integrity(Krb5i)                             |
|                   | Kerberos v5 authentication and p <u>r</u> ivacy(Krb5p)                      |
|                   | No server authentication  |
|                   | ✓ No server authentication (AUTH_SYS)                                       |
|                   | ✓ Enable unmapped user access   |
|                   | Allow unmapped user access by UID/GID                                       |
|                   | Allow anonymous access  |
|                   |   |
|                   |   |
|                   |   |
|                   |   |

8. Click Add and specify Share Permissions.

|                   | <b>T</b> 1            |   |                      |  |            |
|-------------------|-----------------------|---|----------------------|--|------------|
| Select Profile    | permissions on a file | the share permissions in the<br>share are determined by tak | ing into considerat  | wn below. The fina<br>ion both the share | permission |
| Share Location    | and the NTFS permis   | sion entries. The more restric                              | ctive permissions ar | e then applied.                          |            |
| Share Name        | Name                  | Permissions   | Root Access          | Encoding                                 |            |
| Authentication    |                       |   |                      |  | (          |
| Share Permissions |                       |   |                      |  |            |
| Permissions       |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |
|                   |                       |   |                      |  |            |



| Grant permissions to access th<br>netgroup. Select the access ar | ne NFS sh<br>nd langua | hare to a host, client grou<br>age encoding for the shar | p, or<br>e. |
|--|------------------------|--|-------------|
| O <u>H</u> ost:  |                        |  |             |
| Netgroup:  |                        |  |             |
|  |                        |  | Ý           |
| Client group:  |                        |  |             |
|  |                        |  | Ŷ           |
| All <u>Machines</u>  |                        |  |             |
| Language encoding:   |                        | Share permissions:                                       |             |
| ANSI   | ~                      | No Access  | Ý           |
| Allow <u>r</u> oot access (not rec                               | ommend                 | ed)  |             |

9. Specify the access permissions for the file share.

| Select Profile<br>Share Location<br>Share Name<br>Other Settings | Sions to co<br>Permission<br>permission<br>Share perr<br><u>F</u> older per | ontrol access<br>to access the files on a shi<br>is, and, optionally, a central<br>missions: Everyone Full Cont<br>missions: | are are set using a<br>access policy.<br>rol                            | combination of folder permissions, shar  |
|--|---|--|---|--|
| Permissions  | Туре  | Principal  | Access  | Applies To   |
| Confirmation<br>Results  | Allow<br>Allow<br>Allow<br>Allow<br>Allow<br>Allow                          | BUILTIN\Users<br>BUILTIN\Users<br>CREATOR OWNER<br>NT AUTHORITY\SYSTEM<br>BUILTIN\Administrators<br>BUILTIN\Administrators   | Special<br>Read & execu<br>Full Control<br>Full Control<br>Full Control | This folder, subfolders<br>This folder, subfolders, and files<br>Subfolders and files only<br>This folder, subfolders, and files<br>This folder, subfolders, and files<br>This folder only |



10. Check whether specified settings are correct. Click Previous to make any changes or click Create to continue.

| Select Profile<br>Share Location<br>Share Name<br>Authentication<br>Share Permissions | Confirm that the SHARE LOCATI<br>Server:<br>Cluster role:<br>Local path: | ne following are the correct setting<br>DN<br>FileServer<br>File Server<br>G:\Shares\Share | gs, and then click Create. |
|---|--|--|----------------------------|
| Permissions   | SHARE PROPER   | TIES   |                            |
| Confirmation  | Share name:  | Share  |                            |
|   | Protocol:  | NFS  |                            |
|   |  |  |                            |
|   |  |  |                            |

11. Check a summary and click Close to close the Wizard.



| New Share Wizard |                       |                                 |              | × |
|------------------|-----------------------|---------------------------------|--------------|---|
| View results     |                       |                                 |              |   |
| Select Profile   | The share was success | fully created.                  |              |   |
|                  | Task                  | Progress                        | Status       |   |
| Share Name       | Create NFS share      | L                               | Completed    |   |
|                  | Set NFS permissions   |                                 | Completed    |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
| Results          |                       |                                 |              |   |
| ·/               |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              |   |
|                  |                       |                                 |              | 1 |
|                  |                       | < <u>P</u> revious <u>N</u> ext | Close Cancel |   |

To manage created NFS File Shares:

- open Failover Cluster Manager
- expand the cluster and click Roles
- choose the File Share role, select the Shares tab, right-click the created file share, and select Properties

| Concerne         Reas         Tape         Owene Usion         Procession   |   |                          |          |  |                     |                             |                  | Actions           |
|---|---|--------------------------|----------|--|---------------------|-----------------------------|------------------|-------------------|
| New     New     New     User Use     New     New     New     New  | Search  |                          |          |  |                     |                             | D Queres *       | Li 🛪 🗢 Roles      |
| Induce         On large         Marine         Mari  | Nere  | Status                   | Tare     | Overer Node                              | Printy              | information                 |                  | RE Configure Rate |
| V   | E HeSever   | (1) Ranning              | He Sever | SMI                                      | Medure              |                             |                  | Virtual Machines  |
|   |   |                          |          |  |                     |                             |                  | Create Empty Rale |
|   |   |                          |          |  |                     |                             |                  | Vatur             |
| • Maxwell           Maxwell         Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell           Maxwell         Maxwell           Maxwell |   |                          |          |  |                     |                             |                  | di fatish         |
| V   |   |                          |          |  |                     |                             |                  | Help              |
|   |   |                          |          |  |                     |                             |                  | (Aser             |
| V   |   |                          |          |  |                     |                             |                  | 💥 Stop Sharing    |
| V         Present           V   |   |                          |          |  |                     |                             |                  | if Relieph        |
| Note:         Note:           Note: 00::         Note::           Note: 00::         Note::           Note::         Note::           Note:::         Note::   |   |                          |          |  |                     |                             |                  | Popertes          |
| V         Default         Polency Drives, 200,000           Tomas         Anno.         Controls Andelly, Results           Other         Anno.         Controls Andelly, Results           Off         Anno.         Controls Andelly, Results           Off         Anno.         Controls Andelly Ser           Off         Anno.         Controls Andelly Ser           Off         Anno.         Anno.   |   |                          |          |  |                     |                             |                  | E Halp            |
| Image: Stream         Annual Contracts Andel Art, Amarks         Stream   |   |                          |          |  |                     |                             |                  |                   |
| lene Pair Antonio Controva Audality Renata<br>⊉ 01 G.\ 248 Ko Cuar Chuid Dava<br>⊉ Ben G. Share/Gea AlS No  | · I. Hickory  | ,                        |          |  |                     |                             | Pedaned Darve    | 7. Jay 100        |
| J 01 6 50 40 00 000 000 000 000 000 000 000 00  | * 📳 Findare   |                          |          |  |                     |                             | Performed Derive | n Any note        |
| J Beer G Usev Gua NS Na   | v 📑 ReServe   | *                        |          |  |                     |                             | Professed Conver | n Anursola        |
|   | v Rosever   | r<br>Ann<br>G)           |          | Pedacol Cover                            | in, out Ausfahlity  | none<br>Jac Del Des         | Padents Dana     | n Anu sook        |
|   | v File Server                                       | Petr<br>G)<br>G-DawrDan  |          | Pedacol Conten<br>1948 No<br>1955 Tea    | n, out Auslahiky    | ennin<br>Jaar Daha Basa     | Podered Onro     | n Ansanda         |
|   | v Passave<br>Viewski (7)<br>Views<br>2 05<br>2 Dans | r<br>Men<br>G'SawrChus   |          | Petanosi Corello<br>2048 No<br>1975 Tele | m.cost Passiability | events<br>Later Onted Taxes | Palance Some     | te Annute         |
|   | v <mark>∰o</mark> HisSow<br>Nore<br>⊉ 05<br>⊉ Her   | Pen<br>p.<br>GibserCles  |          | Pateopi Code<br>Sala No<br>1955 Tea      | m.ever Persibility  | mente<br>Lader Ontal Date   | Fidered Some     | n Bernolt         |
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## Conclusion

Following this guide, the Failover Cluster was deployed and configured with StarWind Virtual SAN (VSAN) running in Windows application on each host. As a result, a virtual shared storage "pool" accessible by all cluster nodes was created for storing highly available virtual machines.



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