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TECHNICAL SUPPORT AND SERVICES

If you have questions about installing or using this software, check this and other documents first - you will find answers to most of your questions on the Technical Papers webpage or in StarWind Forum. If you need further assistance, please contact us.

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INTRODUCTION
CREATING AN HA DEVICE

1. Open a StarWind configuration file. The default path is C:\Program Files\StarWind Software\StarWind\StarWind.cfg.

2. Find the string "<!--<iScsiDiscoveryListInterfaces value="1"/> -->" and uncomment it (it should look in the following way: <iScsiDiscoveryListInterfaces value="1"/>).

3. Restart StarWind Service and repeat the same procedure on another StarWind HA node.

4. Launch StarWind Management Console: Start -> All Programs -> StarWind Software -> StarWind.
   **Note:** The StarWind Console icon appears in the system tray when the Console is launched. To open StarWind Management Console, double-click the icon or right-click it, and then select Start Management Console from the shortcut menu.

5. Select the server you want to provide with the iSCSI target device from the Console tree. Double-click the host to connect.

   **Note:** If you are prompted to enter login and password, specify “root” and “starwind”, respectively. These are the default login and password, but you can always change them later.

6. After connecting to StarWind Service, you can create devices and targets on the server. Open Add Device Wizard by one of the following ways:
   - Select Add Device from the Target menu.
   - Select Add Device from the Devices shortcut menu (right-click to open it).

7. Add Device Wizard appears. Please, follow the wizard's steps to create a new HA device.

8. Select High Availability Device.

   ![Add Device Wizard](image)

   9. Click Next to continue.
10. Click **Add** to add a new host.

![Add Device Wizard](image)

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

![Add Device Wizard](image)

12. Click **Next** to continue.

13. Specify the corresponding information in the **Target Alias** and **Target Name** text fields.

**Note:** The name must be unique. Under this name the device is declared to iSCSI initiators that are connected to **StarWind Service** over an IP network.
14. Click to specify a name and location of an HA virtual disk on the server. If you want to create a new virtual disk, select the Create New checkbox.

15. Click Next to continue.

16. Specify target and virtual disk parameters of the second node.

17. Specify target and virtual disk parameters of the third node.
18. Click **Next** to continue.

19. Configure data synchronization and Heartbeat channel parameters.

**Note:** At least one Heartbeat channel must be separated from the synchronization channel due to availability considerations.

20. Click **Next** to continue.
21. Specify cache parameters of the HA device.

![](image1.png)

22. Click **Next** to continue.

23. Select an initialization method of the HA device.

![](image2.png)

24. Check whether device parameters are correct. Click **Back** to make any changes. Click **Next** to continue.

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

   Follow the similar procedure to create the second HA device that will be used as a witness disk.
CONFIGURING HYPER-V SERVERS

Note: This document assumes that you have already configured Active Directory and two servers in the domain. It also assumes that you have enabled the Failover Clustering, Multipath I/O features and the Hyper-V role on the both servers. These configurations can be made using Server Manager (the Add Roles and Features option).

1. Launch Server Manager, select the Manage item, and click the Add Roles and Features option. Install the Hyper-V role, Multipath I/O and Failover Clustering features following the wizard’s steps.

Note: Restart the server after installation is completed.

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

3. Select a server from the server pool. Use a filter to find an appropriate server.

4. Click Next to continue.
5. Select the **Hyper-V** checkbox in the **Server Roles** section.

6. Click **Next** to continue.

7. Select **Failover Clustering** and **Multipath I/O** checkboxes in the **Features** section.

8. Click **Next** to continue.
9. Select network adapters for virtual switches in the **Virtual Switches** section.

![Virtual Switches](image1)

- **Before You Begin**
- **Installation Type**
- **Server Selection**
- **Server Roles**
- **Features**
- **Hyper-V**
  - **Virtual Switches**
  - **Migration**
  - **Default Stores**
  - **Confirmation**
  - **Results**

Virtual machines require virtual switches to communicate with other computers. After you install this role, you can create virtual machines and attach them to a virtual switch.

One virtual switch will be created for each network adapter you select. We recommend that you create at least one virtual switch now to provide virtual machines with connectivity to a physical network. You can add, remove, and modify your virtual switches later by using the Virtual Switch Manager.

**Network adapters:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>net</td>
<td>Intel(R) PRO/1000 MT Desktop Adapter</td>
</tr>
<tr>
<td>k2</td>
<td>Intel(R) PRO/1000 PT Dual Port Server Adapter</td>
</tr>
<tr>
<td>k1</td>
<td>Intel(R) PRO/1000 PT Dual Port Server Adapter</td>
</tr>
</tbody>
</table>

We recommend that you reserve one network adapter for remote access to this server. To reserve a network adapter, do not select it for use with a virtual switch.

10. Click **Next** to continue.

11. Select settings of VM live migration in the **Migration** section.

![Virtual Machine Migration](image2)

- **Before You Begin**
- **Installation Type**
- **Server Selection**
- **Server Roles**
- **Features**
- **Hyper-V**
  - **Virtual Switches**
  - **Migration**
  - **Default Stores**
  - **Confirmation**
  - **Results**

Hyper-V can be configured to send and receive live migrations of virtual machines on this server. Configuring Hyper-V now enables any available network on this server to be used for live migrations. If you want to dedicate specific networks for live migration, use Hyper-V settings after you install the role.

- **Allow this server to send and receive live migrations of virtual machines**
- **Authentication protocol**
  - Select the protocol you want to use to authenticate live migrations.
  - Use Credential Security Support Provider (CredSSP)
    - This protocol is less secure than Kerberos, but does not require you to set up constrained delegation. To perform a live migration, you must be logged on to the source server.
  - Use Kerberos
    - This protocol is more secure but requires you to set up constrained delegation in your environment to perform tasks such as live migration when managing this server remotely.

If this server will be part of a cluster, do not enable migration now. Instead, you will configure the server for live migration, including specifying networks, when you create the cluster.

12. Click **Next** to continue.
13. Select location of virtual hard disk files in the **Default Stores** section.

Hyper-V uses default locations to store virtual hard disk files and virtual machine configuration files, unless you specify different locations when you create the files. You can change these default locations now, or you can change them later by modifying Hyper-V settings.

- Default location for virtual hard disk files: 
  - C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks

- Default location for virtual machine configuration files: 
  - C:\ProgramData\Microsoft\Windows\Hyper-V

14. Click **Next** to continue.
15. Select the corresponding checkbox to restart the server automatically, and click **Install**. Otherwise, click **Install** and restart server manually after the installation is completed.
CONNECTING TARGETS

To connect the previously created disks on all servers that will be added to the cluster:

1. Launch Microsoft iSCSI Initiator: Start > Administrative Tools > iSCSI Initiator. The iSCSI Initiator Properties window appears.

2. Navigate to the Discovery tab.

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

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

   **Note:** If 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).

5. Select each of the targets and click Connect to add them.
6. Select **Add this connection to the list of Favorite Targets** and **Enable multi-path** checkboxes in the **Connect to Target** dialog. Click **Advanced**.

7. Choose the **Microsoft iSCSI Initiator** option from the **Local adapter** drop-down list. From the **Target portal IP** choose the first portal IP. Click **OK**.

8. Select the same target and click **Connect** again. Perform the actions described in steps 6-7 of this section. This time specify another IP address as a target portal IP.
9. Click OK.

10. Repeat the actions described in the steps 5-8 for each target.


12. Go to the Discover Multi-Paths tab. Select the Add support for iSCSI devices checkbox and click Add.

13. When prompted to restart the server, click Yes to proceed. After the server restarts, initialize the disk and create partitions, as if it was a physical hard drive.
INITIALIZING DISKS

Note: The StarWind disks must be initialized and formatted, before you can use them as cluster disks.

Note: Changes made to the first node (e.g. initialization or partition) are applied to the second node as soon as it is brought online.

To initialize disks and create partitions:

1. Launch the Computer Management console.
2. Go to Storage -> Disk Management.
3. Right-click each disk and select Online Disk to bring it online.
4. Right-click each disk and select Initialize Disk. Follow the wizard’s instructions to initialize disks.
   
   Note: Select MBR (Master Boot Record) as a partition style.

5. Click OK to continue.

The Computer Management console should look as shown on the screenshot below.
To create partitions and format new disks:

1. Right-click each disk in the **Computer Management** window and select **New Simple Volume**.

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

The **Computer Management** window should look as shown on the screenshot below.
3. Carry out the same actions on other servers. You will not need to create partitions again. The **Computer Management** window should look as follows.
CREATING A CLUSTER

To validate a cluster:

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

2. Before creating a cluster, verify that your servers can be used for building a cluster. Click Validate a Configuration in the Actions section.

To create a cluster:

1. Click the Create a Cluster item in the Actions section of Failover Cluster Manager.
2. Specify servers to be clustered.

3. Click **Next** to continue.

4. Specify a cluster name.

   **Note:** If the cluster servers get IP addresses over DHCP, the entire cluster gets its IP address over DHCP as well. If the IP addresses are set statically, you will need to set a cluster IP address manually as well.

5. Click **Next** to continue.
6. Make sure that all settings are correct. Click Previous to make any changes. Click Next to continue.

7. When the cluster is created the system displays a report with all the corresponding information.

8. Click Finish to close the wizard.
After these actions, the **Failover Cluster Manager** window should look in the following way.
ENABLING CLUSTER SHARED VOLUMES

To enable Cluster Shared Volumes (CSV) that is required for work with Hyper-V virtual machines:

1. Open Failover Cluster Manager.
2. Go to Cluster->Storage -> Disks.
3. Right-click the needed disk and select Add to Cluster Shared Volumes.
CREATING A HA VIRTUAL MACHINE

To create a HA virtual machine:

1. Launch Failover Cluster Manager.

2. Right-click the Roles item and go to Virtual Machines -> New Virtual Machine.

3. Select a target cluster node where a VM will be created, and click OK.
4. Specify a name and location of the virtual machine.

5. Click Next to continue.

6. Define the memory size to be allocated to the virtual machine.

7. Click Next to continue.
8. Specify necessary network connection options or leave the default parameters unchanged.

9. Click **Next** to continue.

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

11. Click **Next** to continue.
12. Specify installation options of the operating system or leave the default parameters unchanged.

13. Click Next to continue.

14. Make sure that all parameters are correct. Click Previous to make any changes.

15. Click Finish.
16. Right-click the added virtual machine and click **Start**.

17. Make sure that the virtual machine is running and operating successfully.
LIVE MIGRATION OF A VIRTUAL MACHINE

To perform live migration of a virtual machine to another node:

1. Launch Failover Cluster Manager.

2. Right-click the needed virtual machine and go to Move -> Live Migration -> Select Node.

4. Click **OK** to continue. Make sure that the live migration was performed successfully. **Failover Cluster Manager** window should look as follows.
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