

StarWind Virtual SAN

Compute and Storage Separated 2 Nodes with VMware vSphere

AUGUST 2014



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INTRODUCTION

Traditionally VMware requires having some sort of the shared storage to guarantee the data safety, allow the virtual machines migration, enables continuous application availability and eliminates any single point of failure within IT environment. VMware users have to choose between two options when choosing the shared storage:

- Hyper-Converged solutions, that allows sharing the same hardware resources for the application (i.e. hypervisor, database) and the shares storage, thus decreasing the TCO and achieving the outstanding performance results
- Compute and Storage separated solutions that keeps the compute and storage layers separately from each other, thus making the maintenance easier, increasing the hardware usage efficiency and allows building the system accurately for solving the task

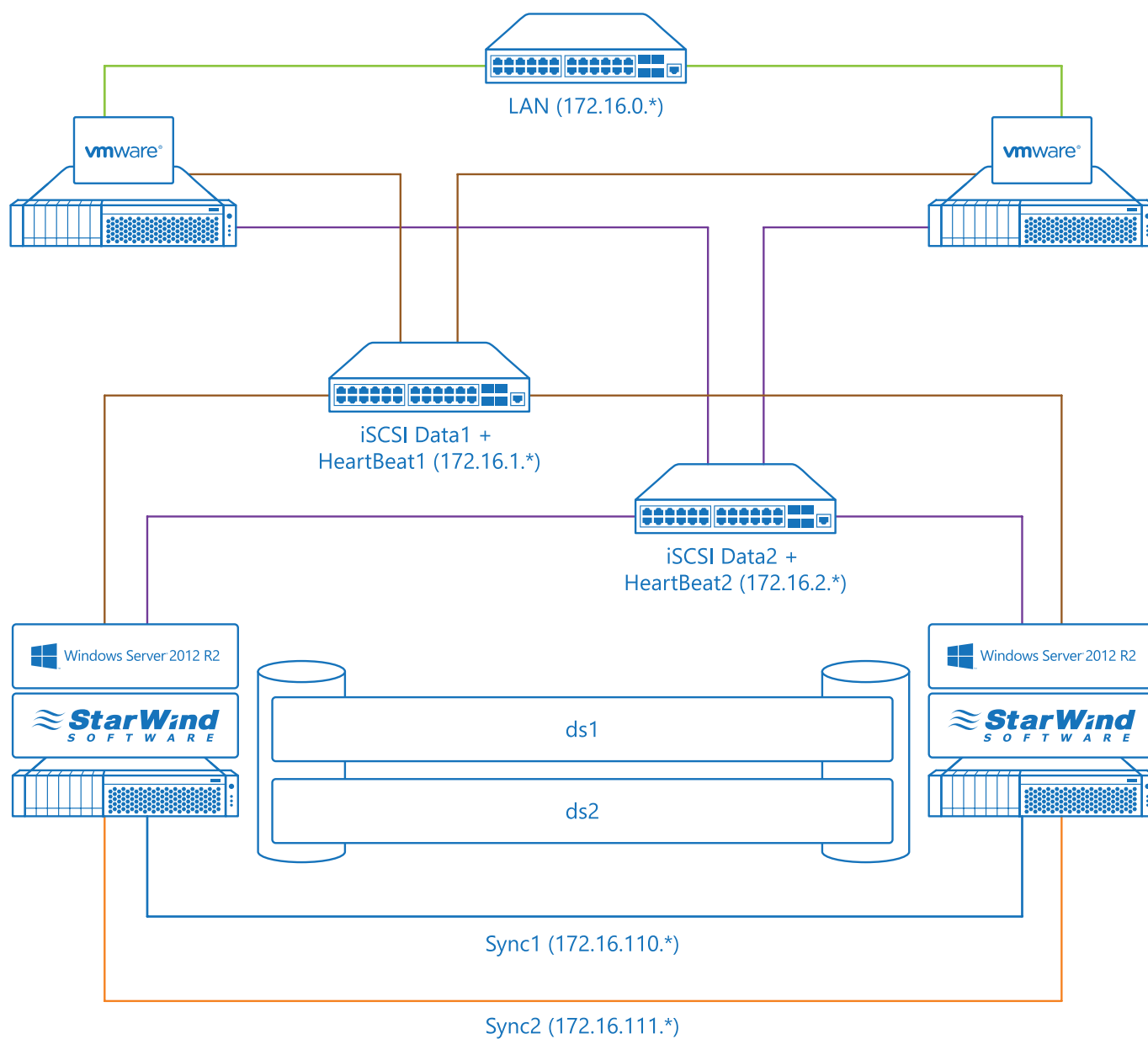
This guide is intended for experienced VMware and Windows system administrators and IT professionals who would like to configure **StarWind Virtual SAN** solution. It provides a step-by-step guidance on configuring a 2-node vSphere cluster using **StarWind Virtual SAN** to convert storage resources of the separated general purpose servers into a fault tolerant shared storage resource for ESXi.

A full set of up-to-date technical documentation can always be found [here](#), or by pressing the Help button in the StarWind Management Console.

For any technical inquiries please visit our [online community](#), [Frequently Asked Questions](#) page, or use the [support form](#) to contact our technical support department.

SOLUTION DIAGRAM

The diagram below illustrates the network and storage configuration of the resulting solution described in the guide.

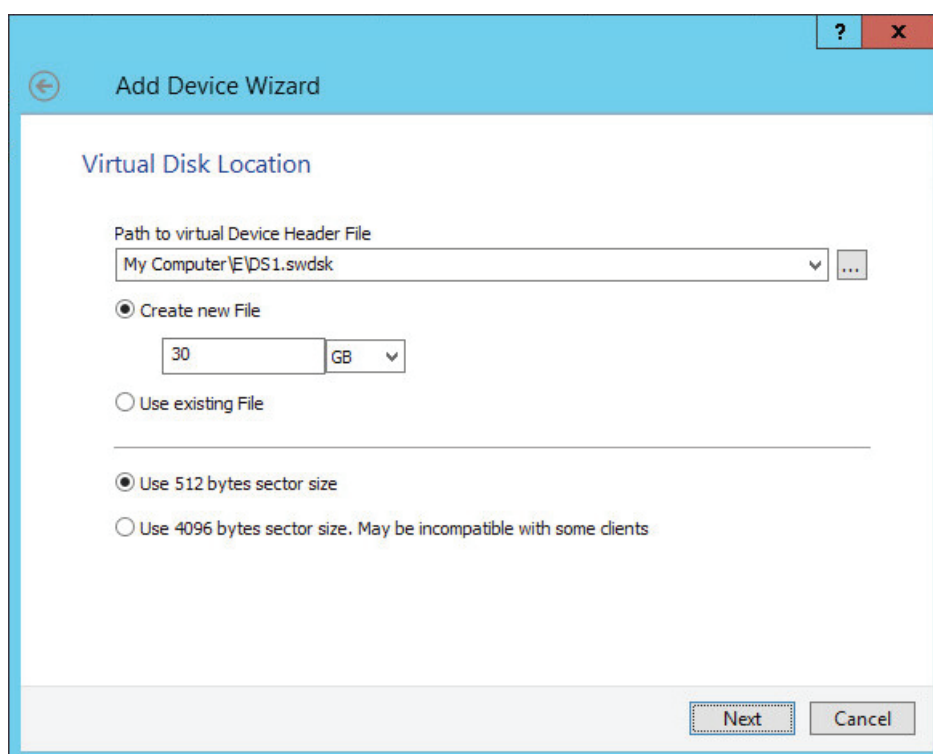


CREATING AN HA DEVICE

1. Launch **StarWind Management Console**.

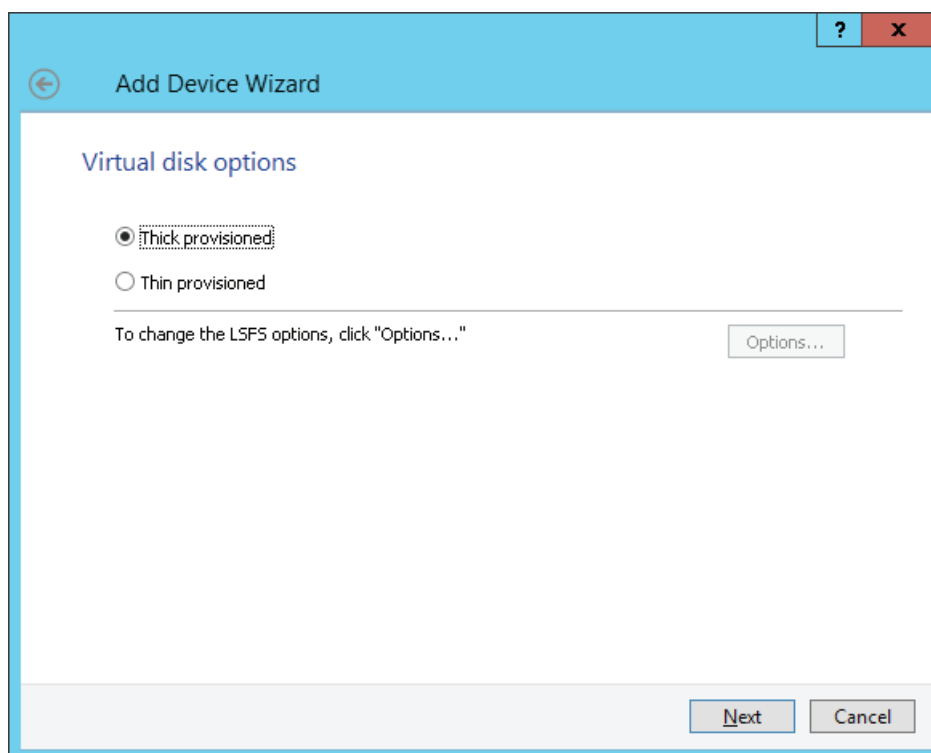
Note: When Console is launched, the StarWind Console icon appears in the system tray.

2. To open **StarWind Management Console**, double-click the icon. You may also right-click the icon and click **Start Management Console** on the shortcut menu.
3. Select the server from the **Console tree**.
4. Double-click the hosts to connect it.
5. Open **Add Device Wizard** through one of the following ways:
 - Right-click a StarWind server and select **Add Device (advanced)** from the shortcut menu.
 - Select a StarWind server and click the **Add Device (advanced)** button on the toolbar.
6. As **Add Device Wizard** appears, follow the instructions to complete creation of a new image device.
7. Select **Hard disk device** as the type of a device to be created and click **Next** to continue.
8. Select the **Virtual disk** option as a disk device type and click **Next** to continue.
9. Specify a virtual disk location and its size. Alternatively, use the existing virtual disk.

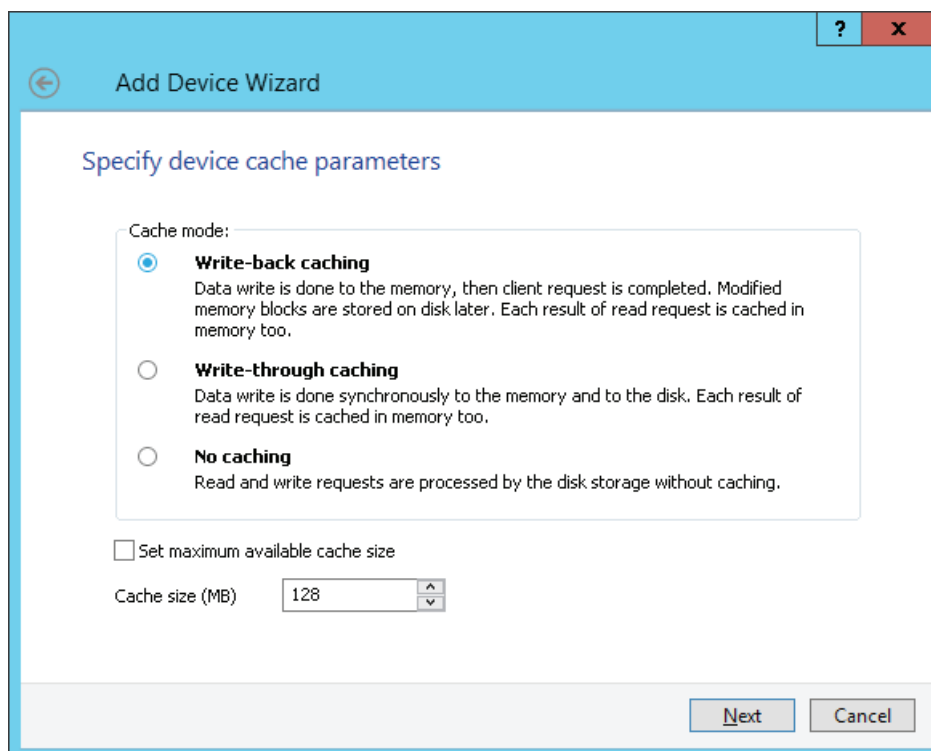


10. Click **Next** to continue

11. Select **Thick provisioned**.

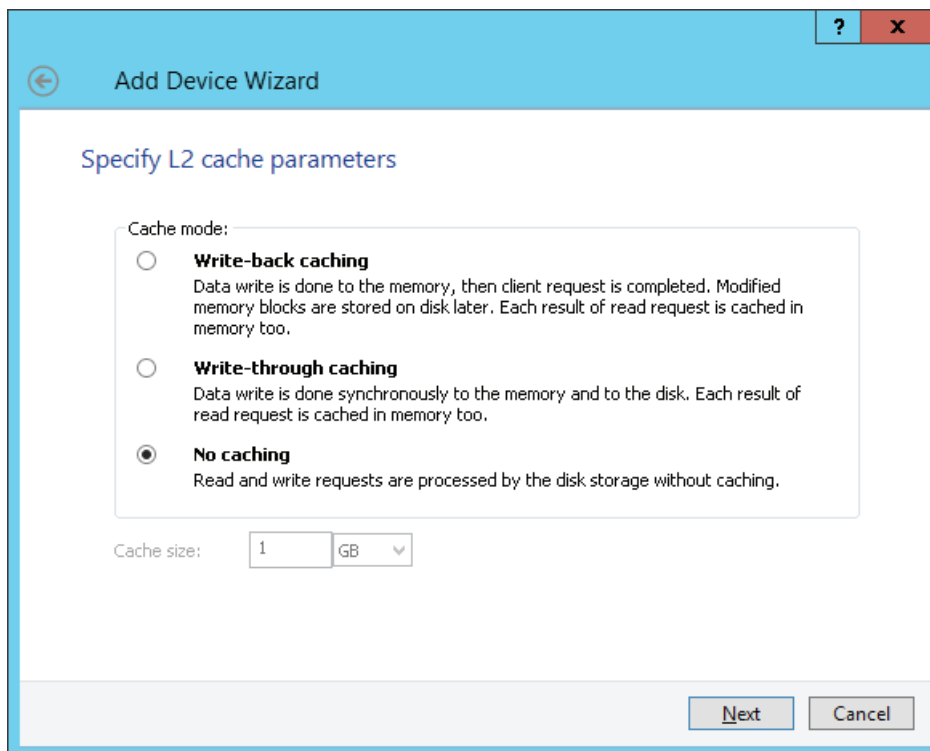


12. Define the caching policy and specify the cache size (in MB).



13. Click **Next** to continue.

14. Optionally define the L2 caching policy and the cache size.



The screenshot shows the 'Add Device Wizard' window with the 'Specify L2 cache parameters' step. It features three radio button options for 'Cache mode': 'Write-back caching', 'Write-through caching', and 'No caching'. The 'No caching' option is selected. Below these options is a 'Cache size' field with a value of '1' and a unit dropdown set to 'GB'. At the bottom right are 'Next' and 'Cancel' buttons.

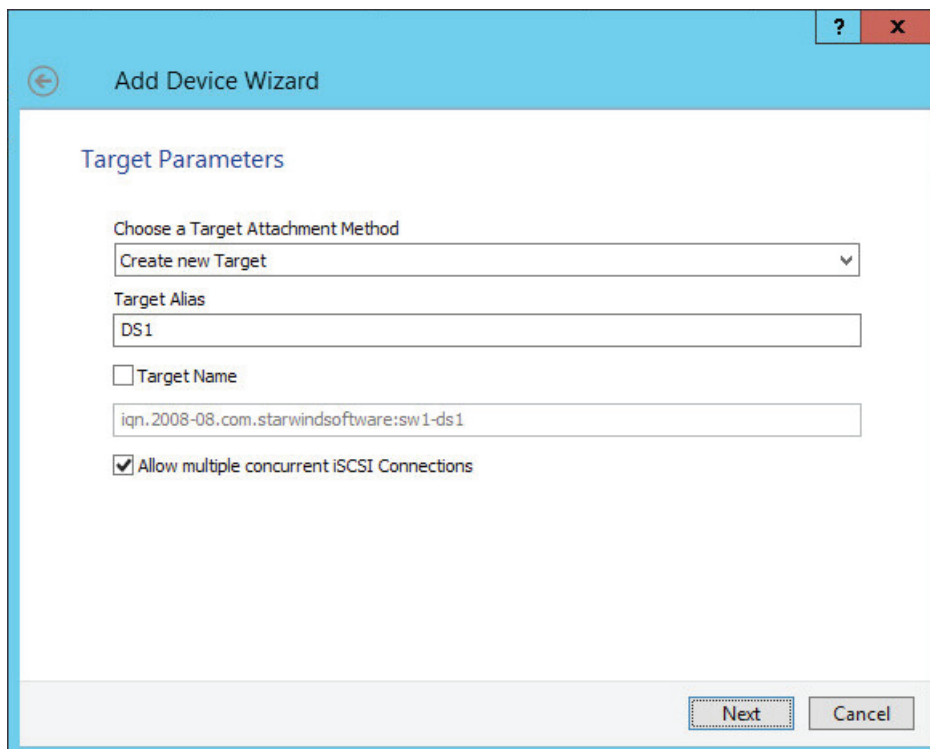
Cache mode:

- ☐ **Write-back caching**
Data write is done to the memory, then client request is completed. Modified memory blocks are stored on disk later. Each result of read request is cached in memory too.
- ☐ **Write-through caching**
Data write is done synchronously to the memory and to the disk. Each result of read request is cached in memory too.
- ☒ **No caching**
Read and write requests are processed by the disk storage without caching.

Cache size: 1 GB

Next Cancel

15. Click **Next** to continue.
16. Specify target parameters and select the **Allow multiple concurrent iSCSI connections (clustering)** checkbox to enable several clients to connect simultaneously to the target.



The screenshot shows the 'Add Device Wizard' window with the 'Target Parameters' step. It includes a dropdown for 'Choose a Target Attachment Method' set to 'Create new Target', a text field for 'Target Alias' with 'DS1', a checkbox for 'Target Name' which is unchecked, and a text field for the iSCSI Qualified Name (iqn.2008-08.com.starwindsoftware:sw1-ds1). The 'Allow multiple concurrent iSCSI Connections' checkbox is checked. At the bottom right are 'Next' and 'Cancel' buttons.

Choose a Target Attachment Method

Create new Target

Target Alias

DS1

☐ Target Name

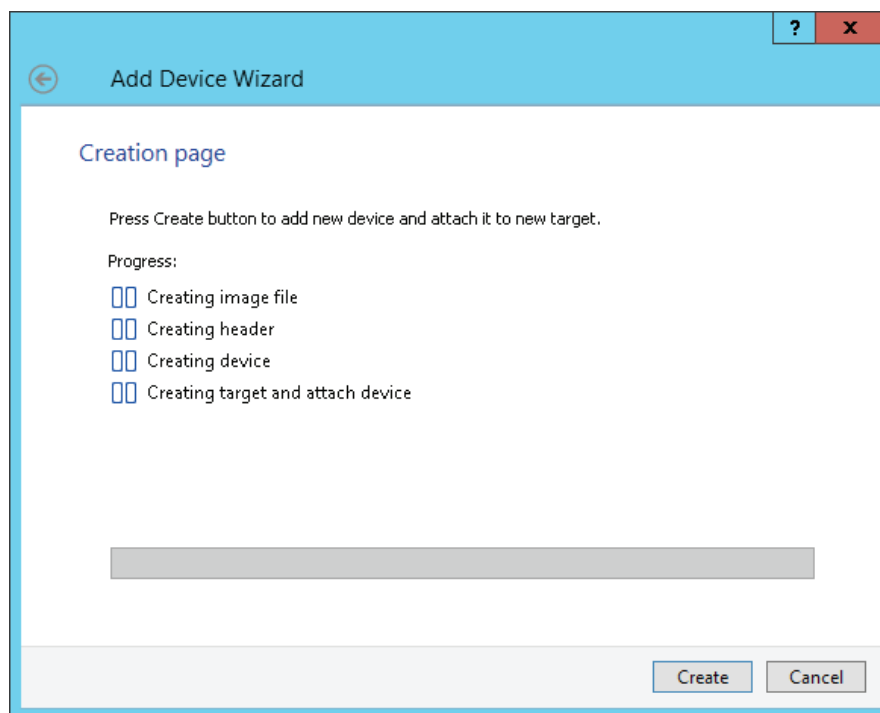
iqn.2008-08.com.starwindsoftware:sw1-ds1

☒ Allow multiple concurrent iSCSI Connections

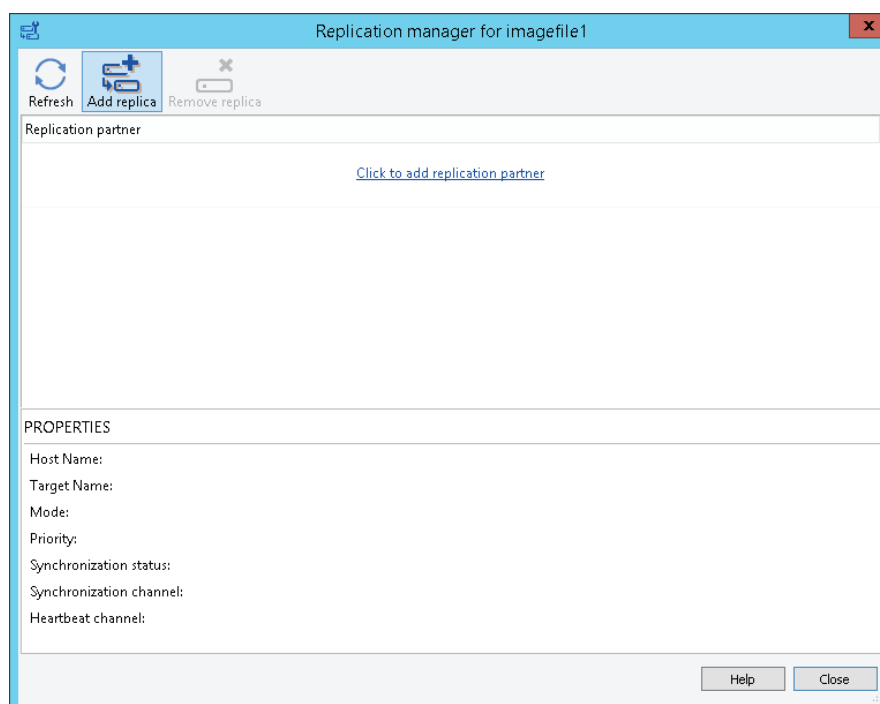
Next Cancel

17. Click **Next** to continue.

18. Click **Create** to add a new device and attach it to the target.

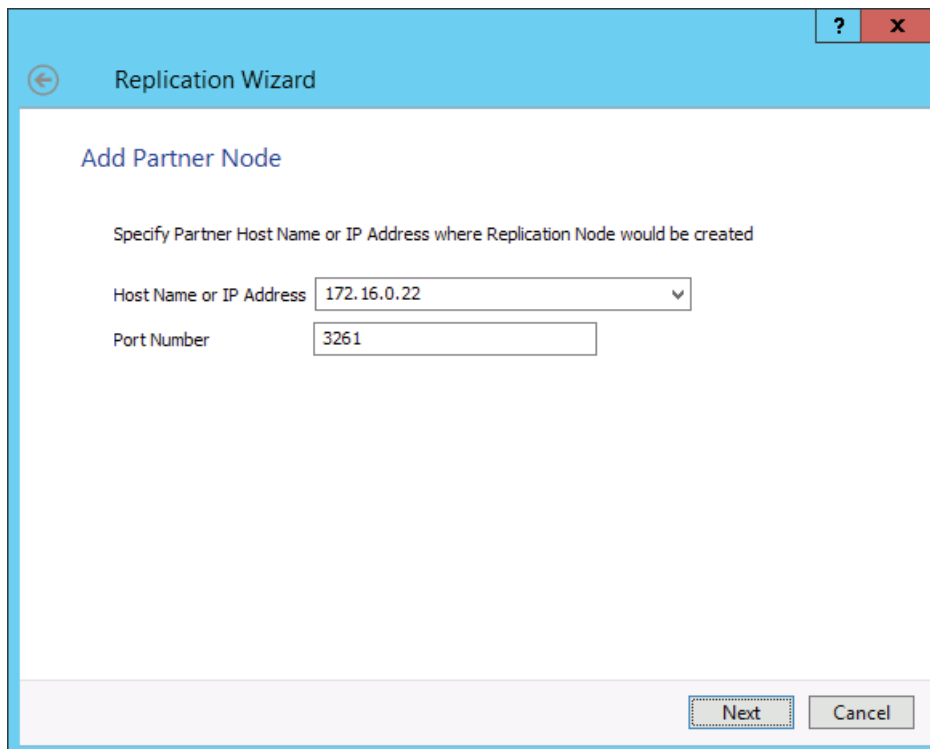


19. Click **Finish** to close the wizard.
20. Right-click the needed device and select **Replication Manager** from the shortcut menu.
21. As **Replication Manager** is opened, click **Add replica** or the **Click to add replication partner** link.



22. Select **Synchronous two-way replication** as a replication mode.
23. Click **Next** to proceed.

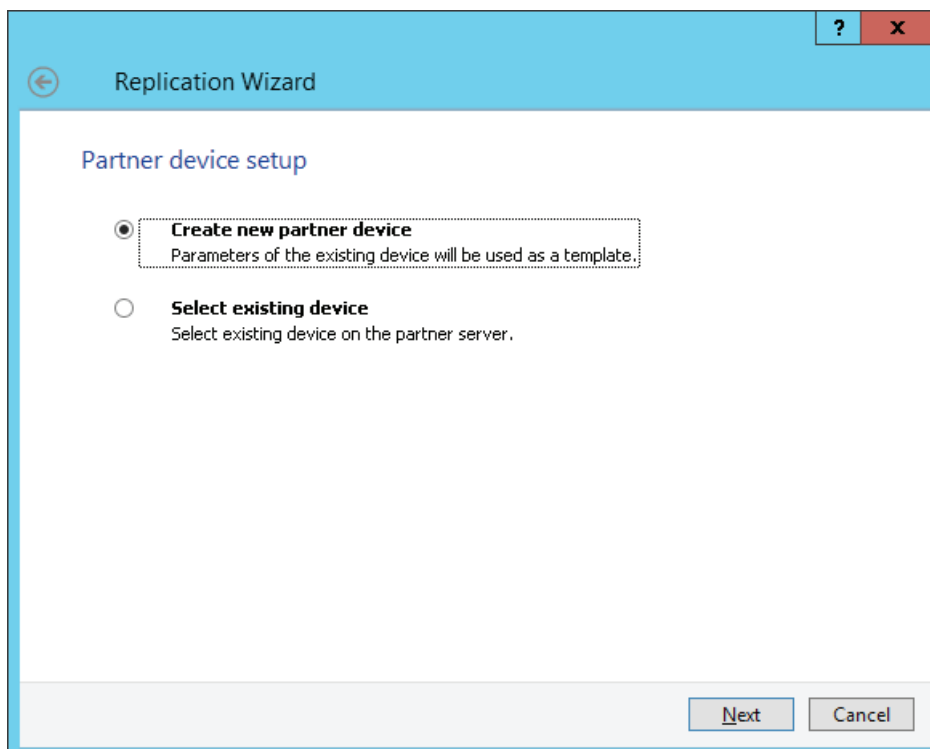
24. Specify a partner hostname, IP address and port number.



The screenshot shows the 'Replication Wizard' window with the 'Add Partner Node' step. The window has a blue title bar with a back arrow, a question mark, and a close button. The main area is white with a blue header 'Add Partner Node'. Below it, the text 'Specify Partner Host Name or IP Address where Replication Node would be created' is displayed. There are two input fields: 'Host Name or IP Address' with the value '172.16.0.22' and a dropdown arrow, and 'Port Number' with the value '3261'. At the bottom right, there are 'Next' and 'Cancel' buttons.

25. Click **Next** to proceed.

26. Create a new partner device or select an existing device.



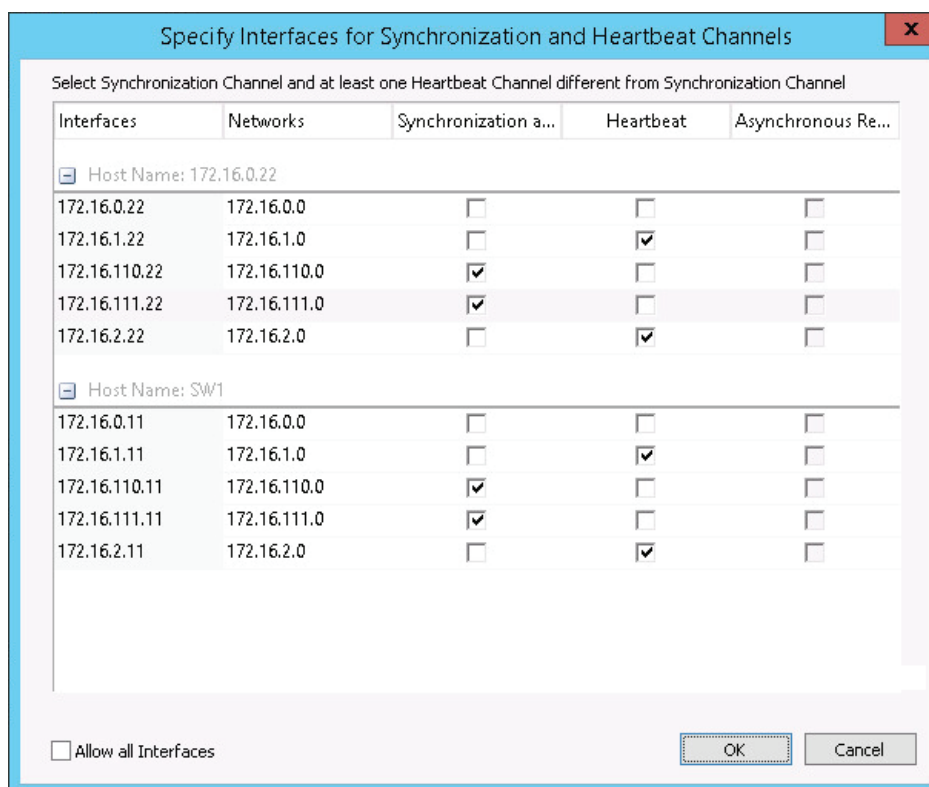
The screenshot shows the 'Replication Wizard' window with the 'Partner device setup' step. The window has a blue title bar with a back arrow, a question mark, and a close button. The main area is white with a blue header 'Partner device setup'. Below it, there are two radio button options: 'Create new partner device' (selected) with a subtext 'Parameters of the existing device will be used as a template.', and 'Select existing device' with a subtext 'Select existing device on the partner server.'. At the bottom right, there are 'Next' and 'Cancel' buttons.

27. Click **Next**.

28. Click **Change network settings...**

29. Specify interfaces for synchronization and Heartbeat channels.

Note: At least one Heartbeat channel must be separated from a synchronization channel due to availability consideration.



Specify Interfaces for Synchronization and Heartbeat Channels

Select Synchronization Channel and at least one Heartbeat Channel different from Synchronization Channel

Interfaces	Networks	Synchronization a...	Heartbeat	Asynchronous Re...
Host Name: 172.16.0.22				
172.16.0.22	172.16.0.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.1.22	172.16.1.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
172.16.110.22	172.16.110.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.111.22	172.16.111.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.2.22	172.16.2.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Host Name: SW1				
172.16.0.11	172.16.0.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.1.11	172.16.1.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
172.16.110.11	172.16.110.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.111.11	172.16.111.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
172.16.2.11	172.16.2.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

☐ Allow all Interfaces

OK Cancel

30. Click **OK**.

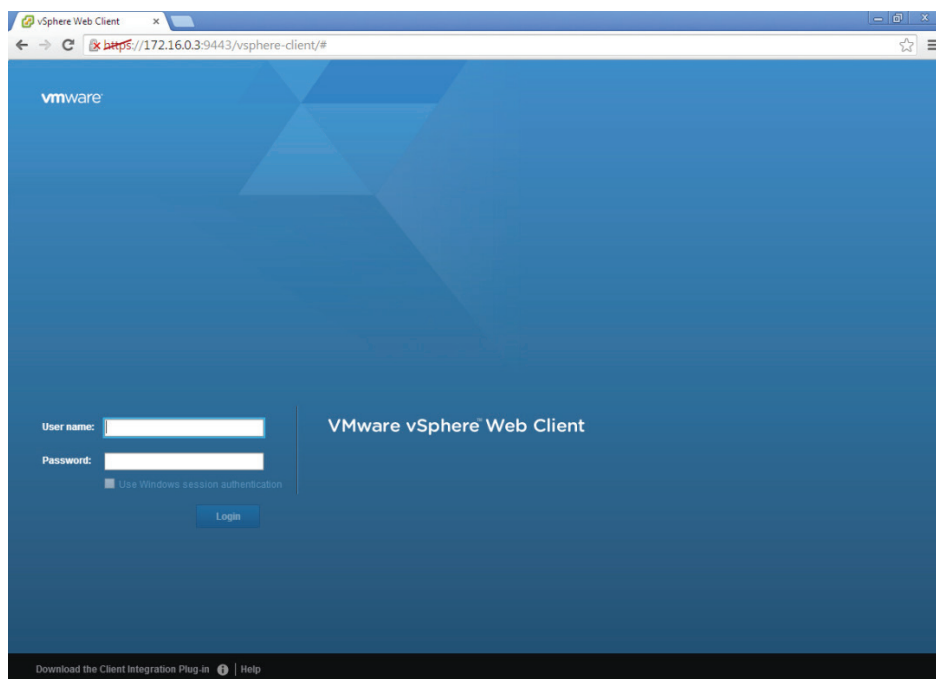
31. Click **Create Replica**.

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

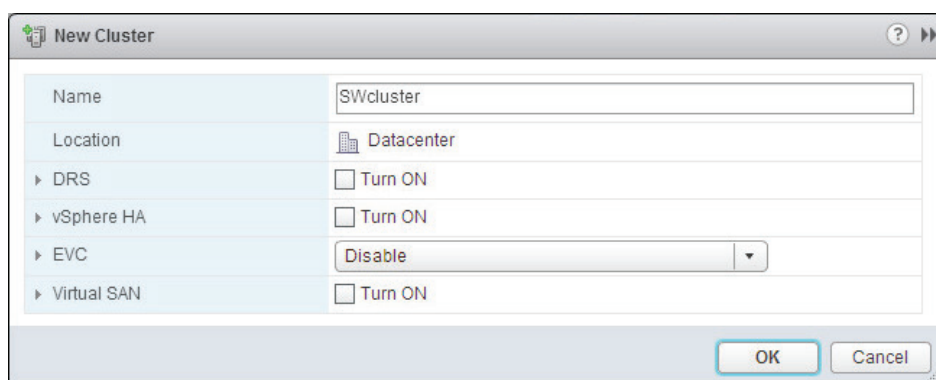
33. Create one more thick provisioned virtual hard drive with configured synchronous replication.

CONFIGURING ESX SEVERS

1. Launch web browser and the address of **VMware vSphere Client**.
2. Enter login and password.

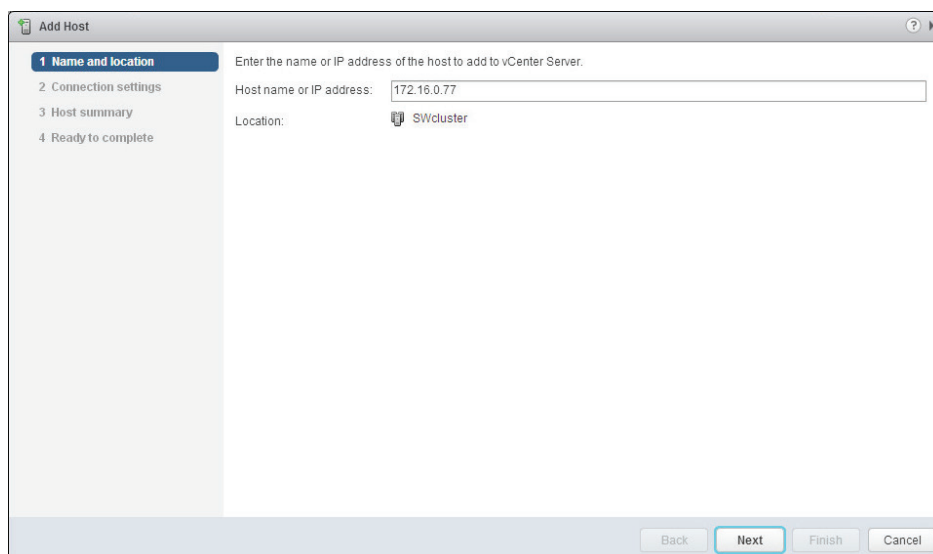


3. Click **Login** to enter.
4. Click the **Hosts and Clusters** icon from the **Inventory** panel of the **vSphere Client** window.
5. Right-click an existing datacenter and select **New Cluster**. If needed, first click **New Datacenter** to create a new datacenter.
6. The **New Cluster Wizard** appears. Specify a name of the cluster.

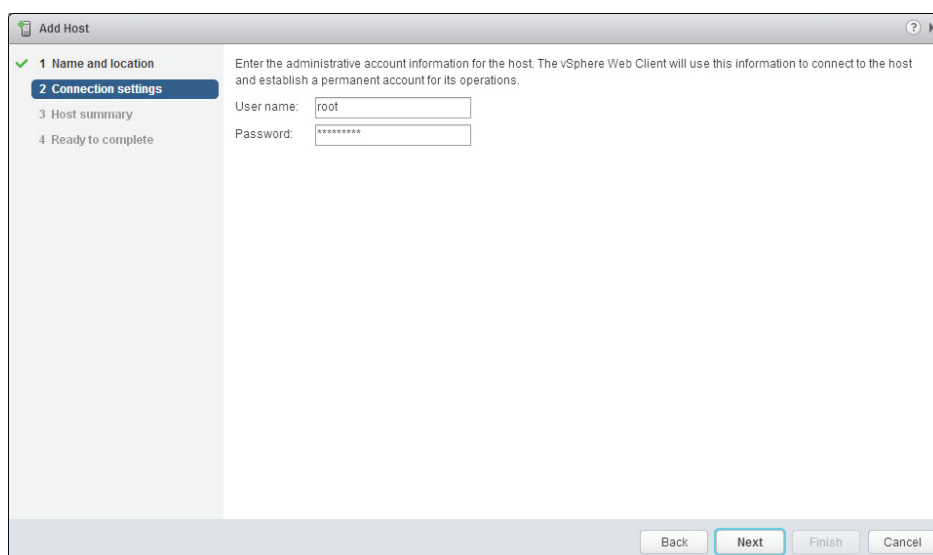


7. Keep on clicking **OK**.
8. Right-click the cluster to add a host and select **Add Host** from the shortcut menu.

9. **Add Host Wizard** appears. Specify a host name or IP address.

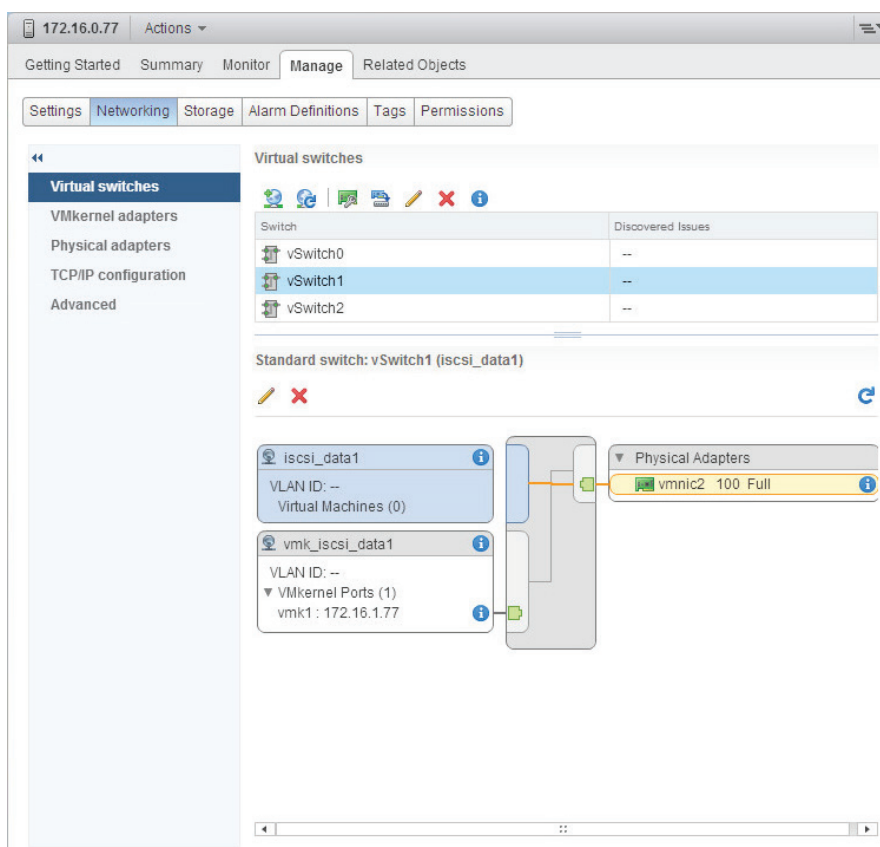
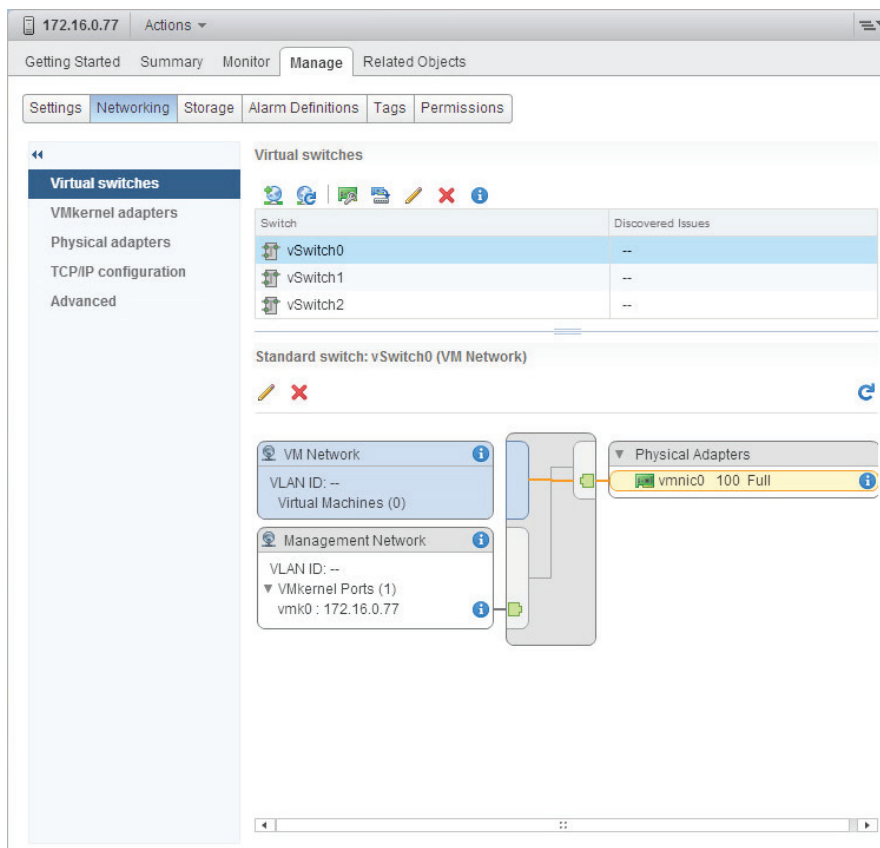


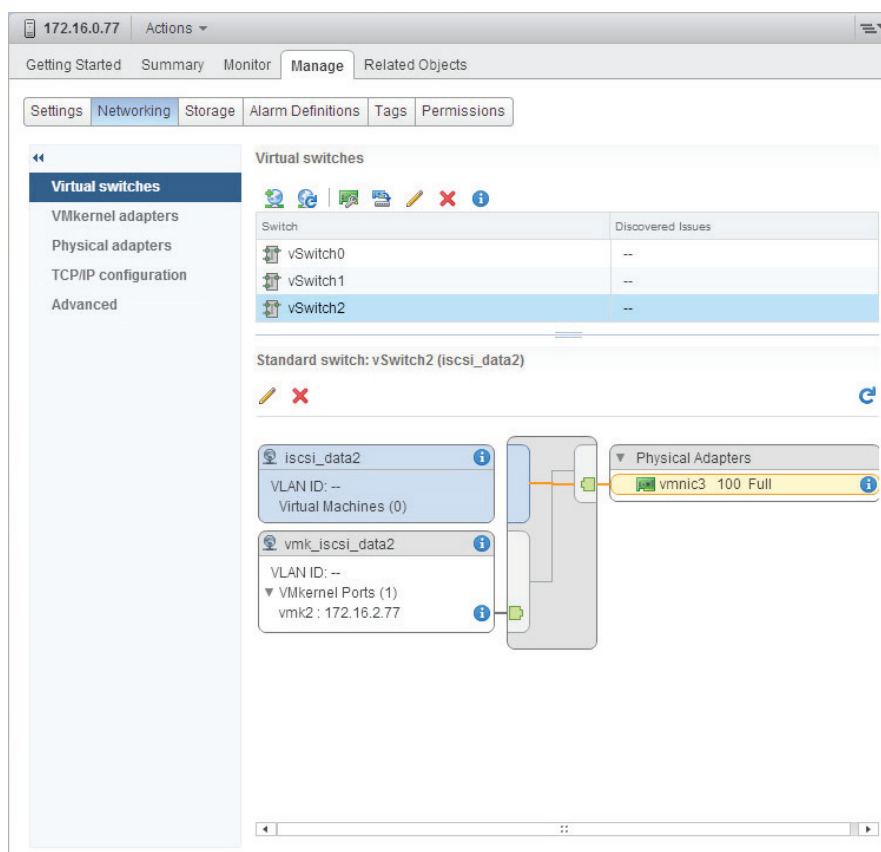
10. Enter username and password. Click **Next** to continue.



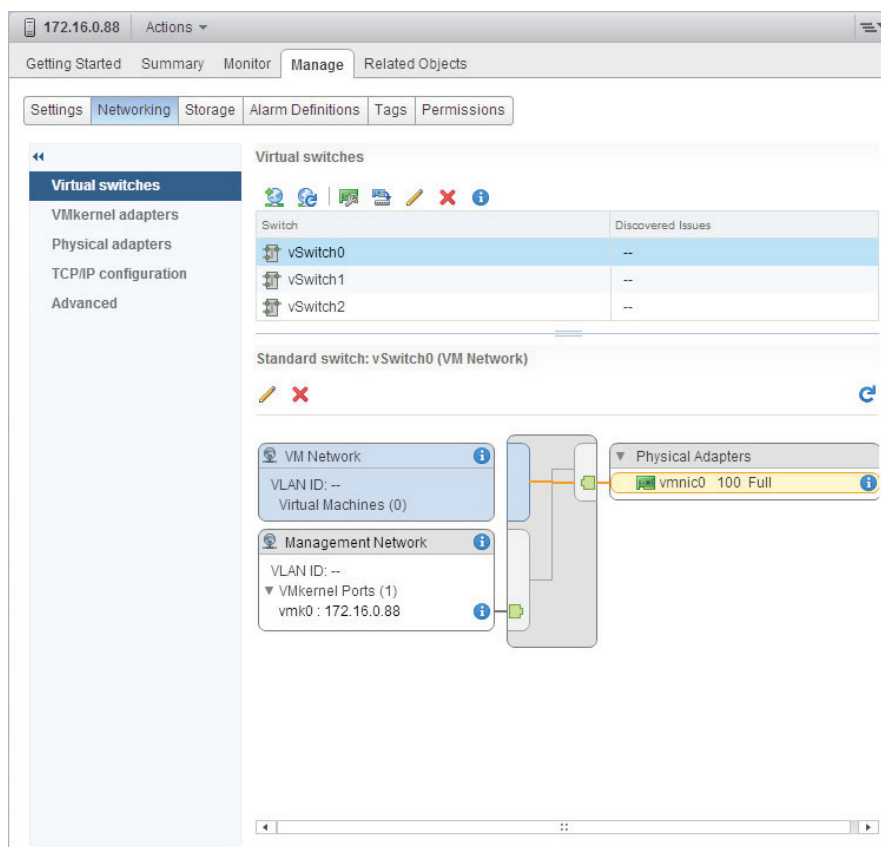
11. Check whether the specified information is correct and click **Next** to continue.
12. Assign the license key to the host.
13. Click **Next** to continue.
14. Click **Finish** to close the wizard.
15. Follow the same procedure for another host.
16. Select a host.

17. Select the **Manage** tab and choose the **Networking** item. Configure your Virtual switches like on screens below





18. Follow the same procedure for another host. On second host Configure your Virtual switches as shown below:



172.16.0.88 Actions

Getting Started Summary Monitor **Manage** Related Objects

Settings **Networking** Storage Alarm Definitions Tags Permissions

Virtual switches

- VMkernel adapters
- Physical adapters
- TCP/IP configuration
- Advanced

Virtual switches

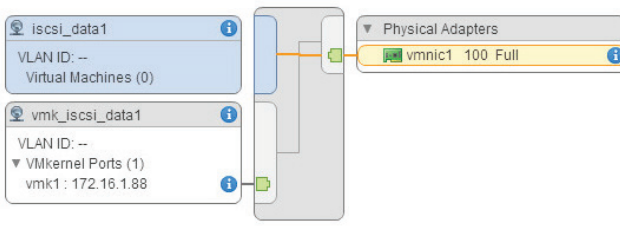
Switch	Discovered Issues
vSwitch0	--
vSwitch1	--
vSwitch2	--

Standard switch: vSwitch1 (iscsi_data1)

iscsi_data1
VLAN ID: --
Virtual Machines (0)

vmk_iscsi_data1
VLAN ID: --
VMkernel Ports (1)
vmk1 : 172.16.1.88

Physical Adapters
vmnic1 100 Full



172.16.0.88 Actions

Getting Started Summary Monitor **Manage** Related Objects

Settings **Networking** Storage Alarm Definitions Tags Permissions

Virtual switches

- VMkernel adapters
- Physical adapters
- TCP/IP configuration
- Advanced

Virtual switches

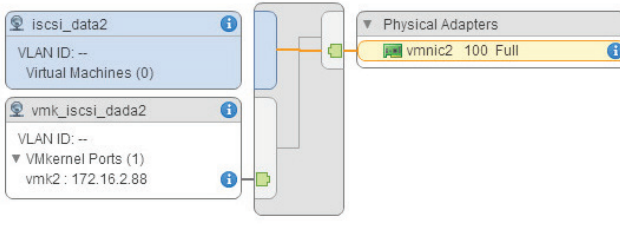
Switch	Discovered Issues
vSwitch0	--
vSwitch1	--
vSwitch2	--

Standard switch: vSwitch2 (iscsi_data2)

iscsi_data2
VLAN ID: --
Virtual Machines (0)

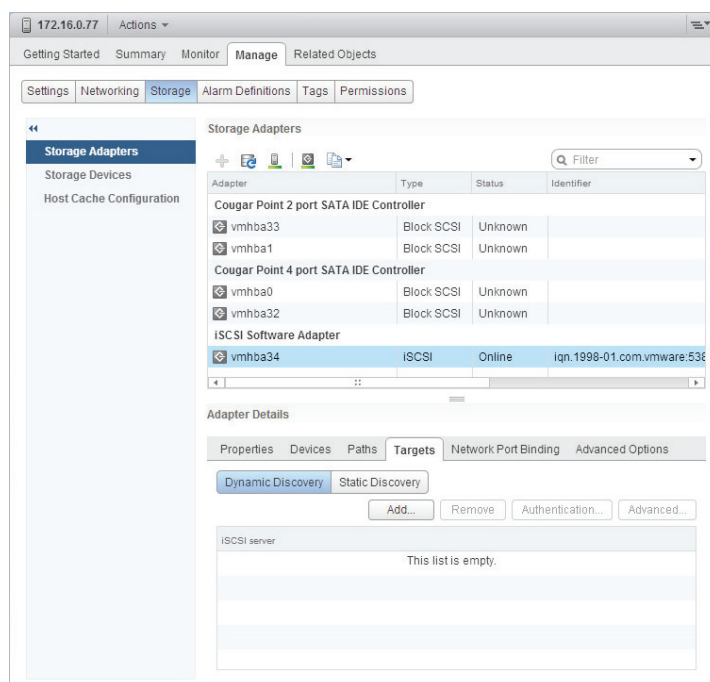
vmk_iscsi_dada2
VLAN ID: --
VMkernel Ports (1)
vmk2 : 172.16.2.88

Physical Adapters
vmnic2 100 Full

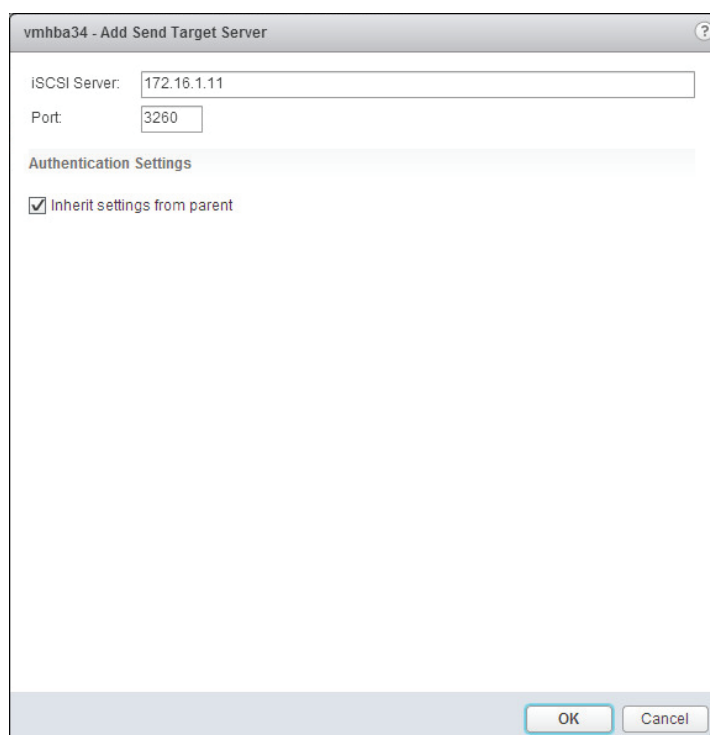


Configuring the iSCSI Initiator

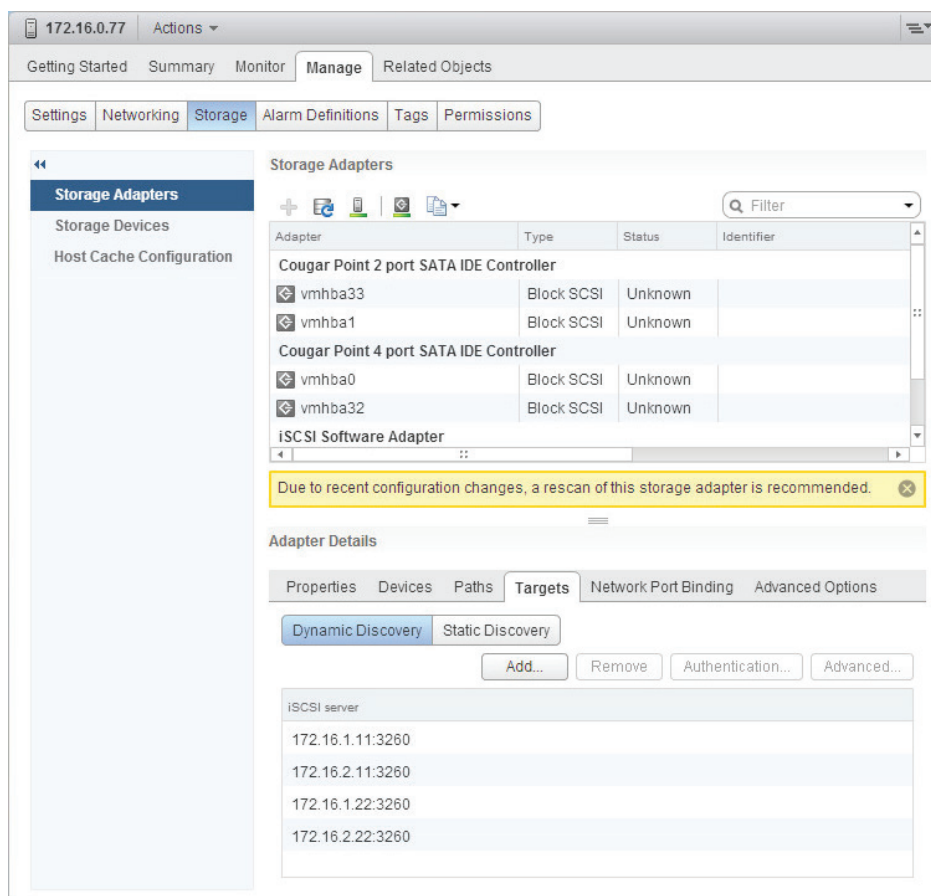
1. Select a host.
2. Click the **Manage** tab and select the **Storage** inset and **Storage Adapters** item.
3. Click **Add** and select **Add Software iSCSI Adapter**. Click **OK**.
4. The list of the available storage adapters appears. Select **iSCSI Software Adapter**. Open **Targets**.



5. Click the **Add...** button. Enter IP address of StarWind node. Click **OK**.



6. Do same for each StarWind server by clicking **Add** and specifying the server IP address.



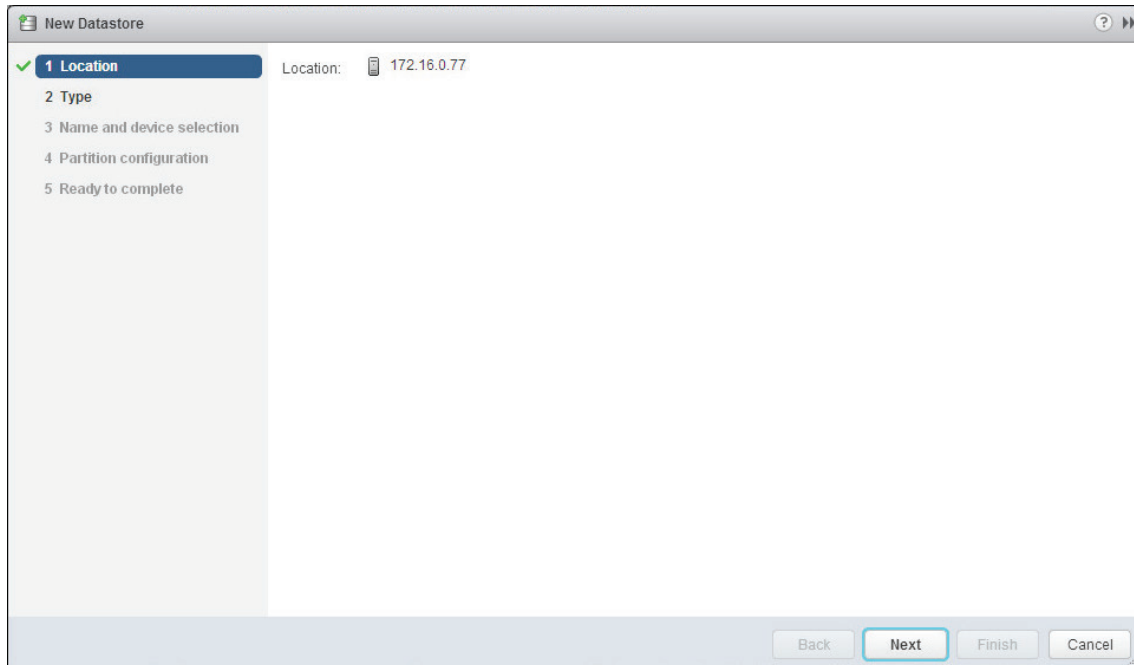
7. Click **Rescan**. In the Rescan dialog click **OK**.



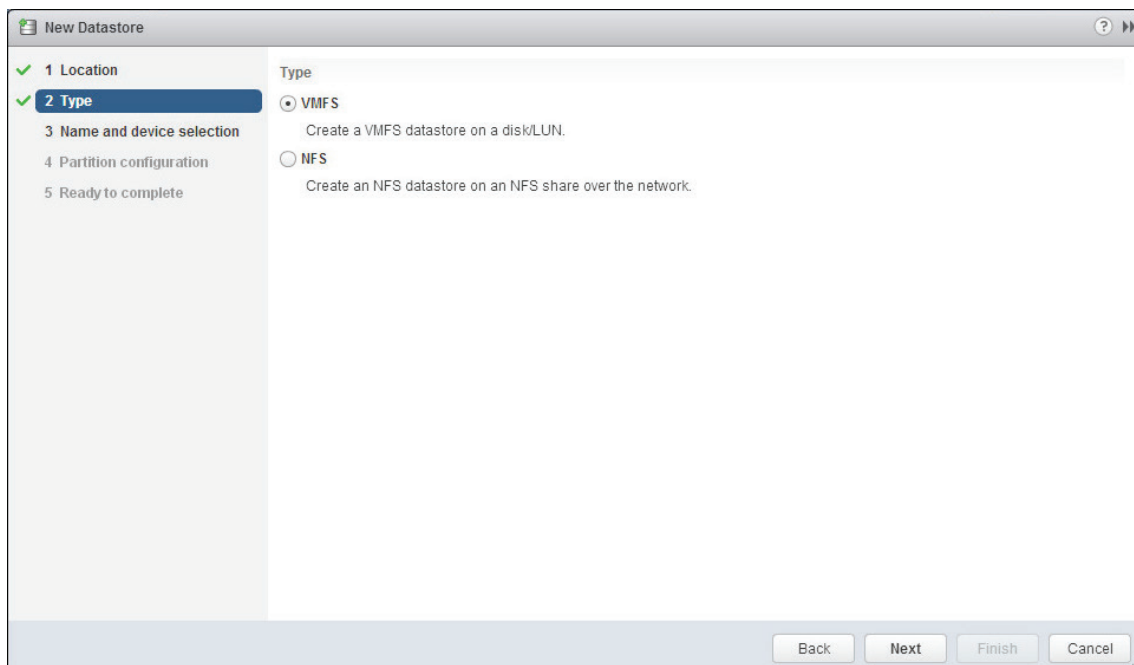
8. Repeat the same procedure for another cluster host.

Setting up a Datastore

1. Right Click on host and select **New datastore**.
2. New Datastore wizard appears.

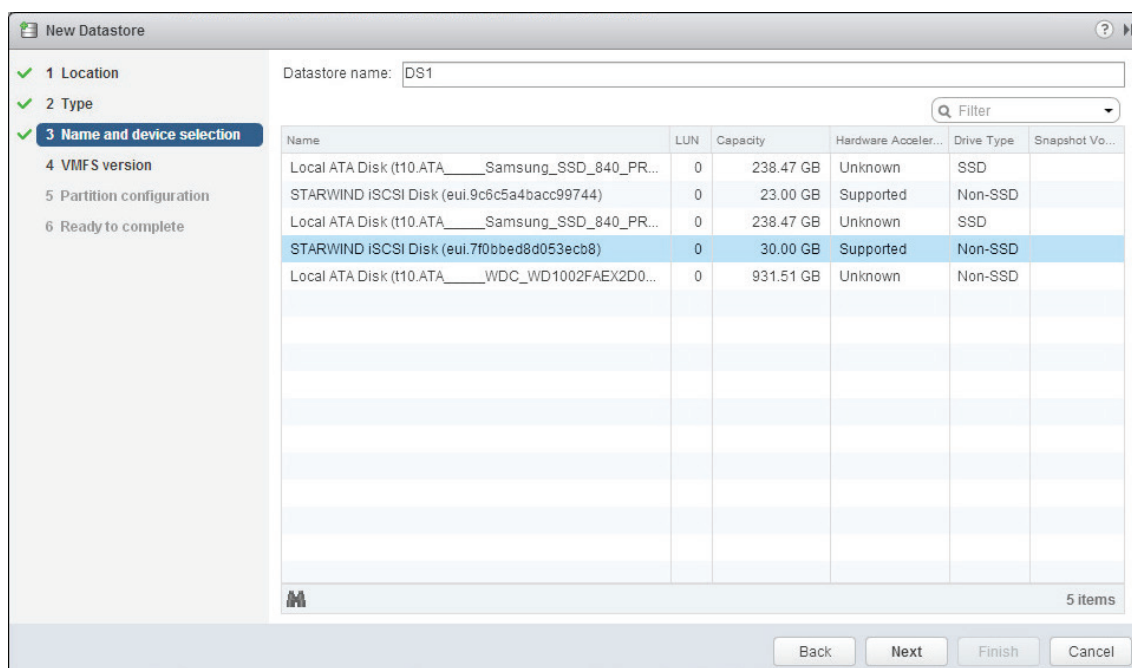


3. Select **VMFS**.



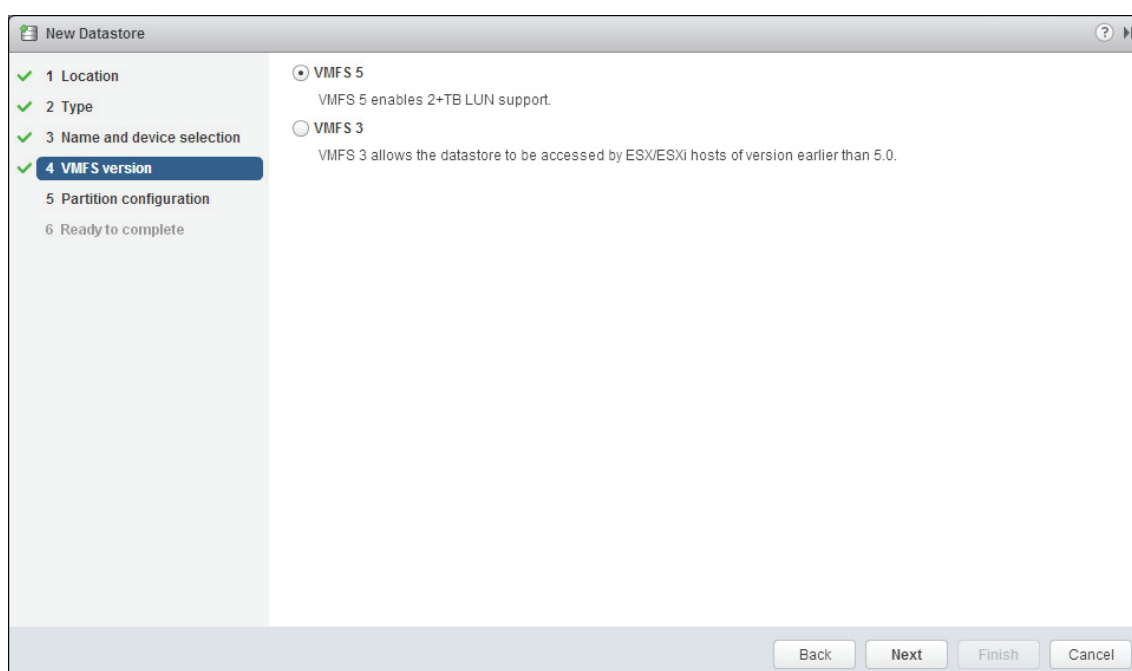
4. Click **next**.

5. Enter name of datastore (i.e. DS1) and device for datastore.



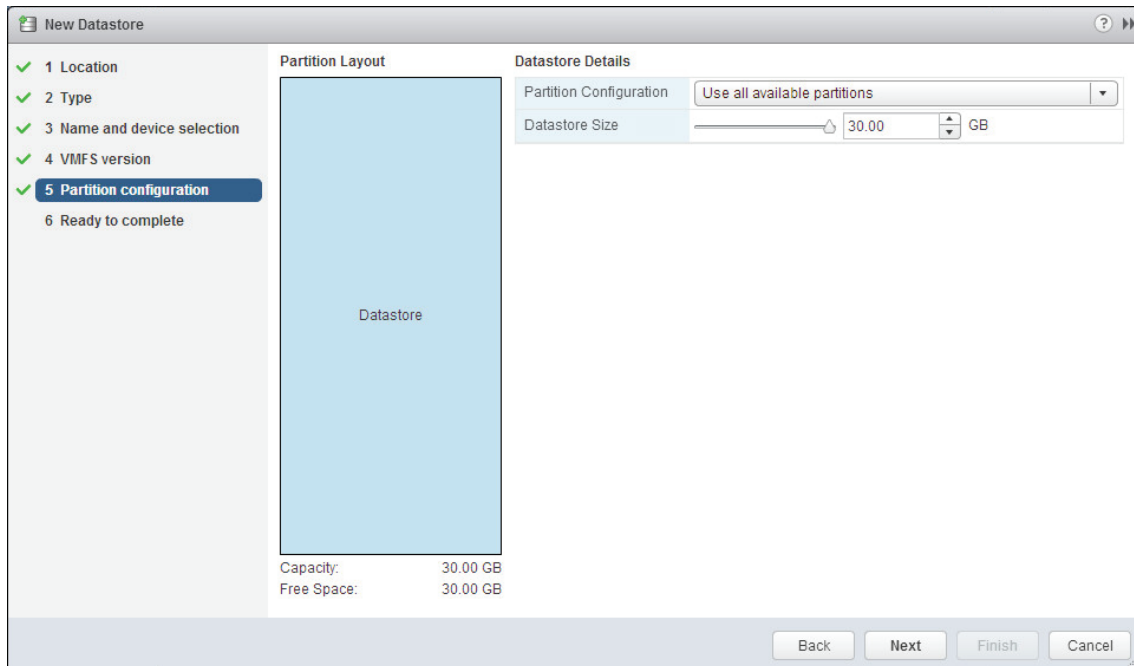
6. Click **next**.

7. Select **VMFS 5**



8. Click **next**.

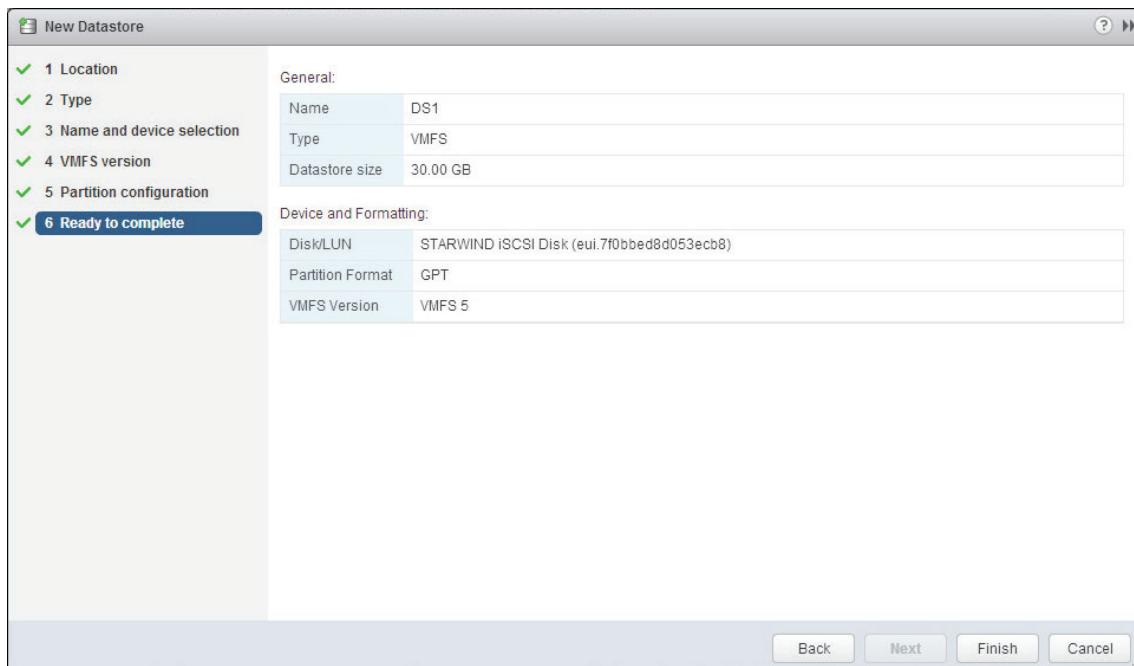
9. Enter datastore size.



The screenshot shows the 'New Datastore' wizard at the 'Partition configuration' step. The left sidebar lists steps 1 through 6, with step 5 'Partition configuration' selected. The main area is divided into 'Partition Layout' and 'Datastore Details'. 'Partition Layout' shows a large blue rectangle labeled 'Datastore'. Below it, 'Capacity: 30.00 GB' and 'Free Space: 30.00 GB' are displayed. 'Datastore Details' shows 'Partition Configuration' set to 'Use all available partitions' and 'Datastore Size' set to '30.00 GB'. At the bottom are 'Back', 'Next', 'Finish', and 'Cancel' buttons.

10. Click **next**.

11. Verify the settings. Click **Finish**.

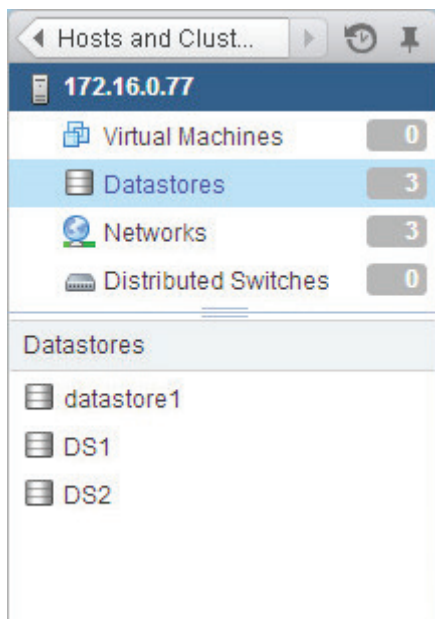


The screenshot shows the 'New Datastore' wizard at the 'Ready to complete' step. The left sidebar lists steps 1 through 6, with step 6 'Ready to complete' selected. The main area is divided into 'General' and 'Device and Formatting' sections. 'General' shows 'Name: DS1', 'Type: VMFS', and 'Datastore size: 30.00 GB'. 'Device and Formatting' shows 'Disk/LUN: STARWIND iSCSI Disk (eui.7f0bbcd8d053ecb8)', 'Partition Format: GPT', and 'VMFS Version: VMFS 5'. At the bottom are 'Back', 'Next', 'Finish', and 'Cancel' buttons.

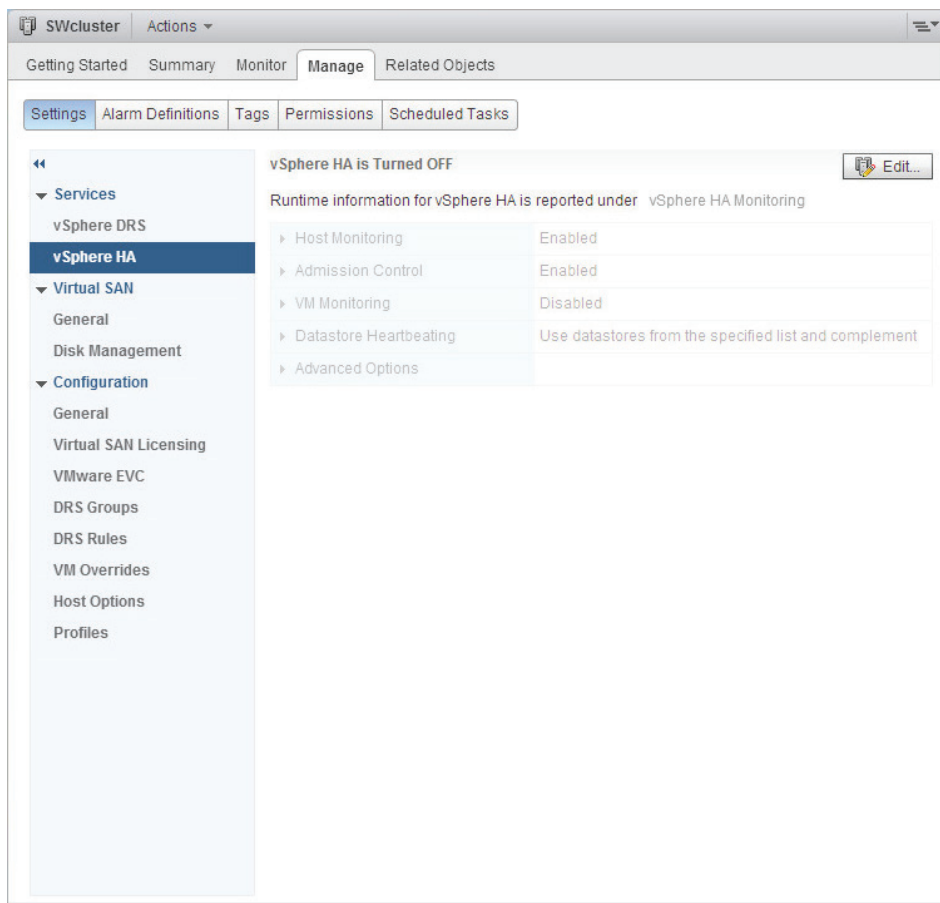
12. Check another host for a new datastore. If a new datastore is not listed among the existing datastores, click **Rescan All**.



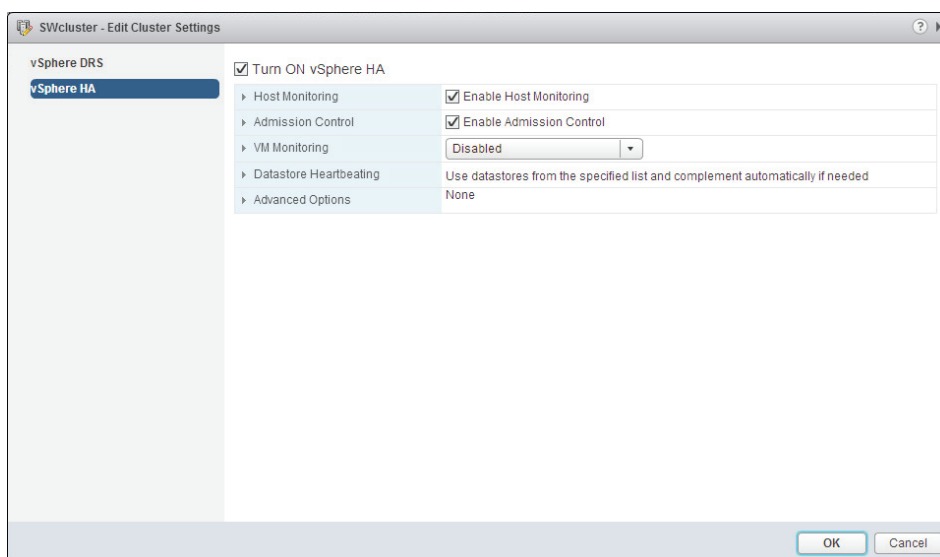
13. On other host add another Datastore (DS2) in the same way and check first host for a new datastore.



14. To add the HA feature select the cluster and open **Manage -> Settings -> vSphere HA**. Click **Edit...** button.



15. In the **Cluster Settings** window select the **Turn ON vSphere HA** checkbox.



16. Click **OK**.

CONTACTS

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