Step-by-Step Guide

to

Switchless setup with Open-E DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Software Version: DSS ver. 7.00 up12, up16

Presentation updated: May 2015

To set up Active-Active iSCSI Failover and VMware HA-Cluster, perform the following steps:

Set up DSS V7 A-A iSCSI Failover:

1. Hardware configuration
2. Network Configuration
3. Configure the node-b and node-a
4. Create targets (node-a and node-b)
5. Configure Failover (node-a and node-b)
6. Start Failover Service

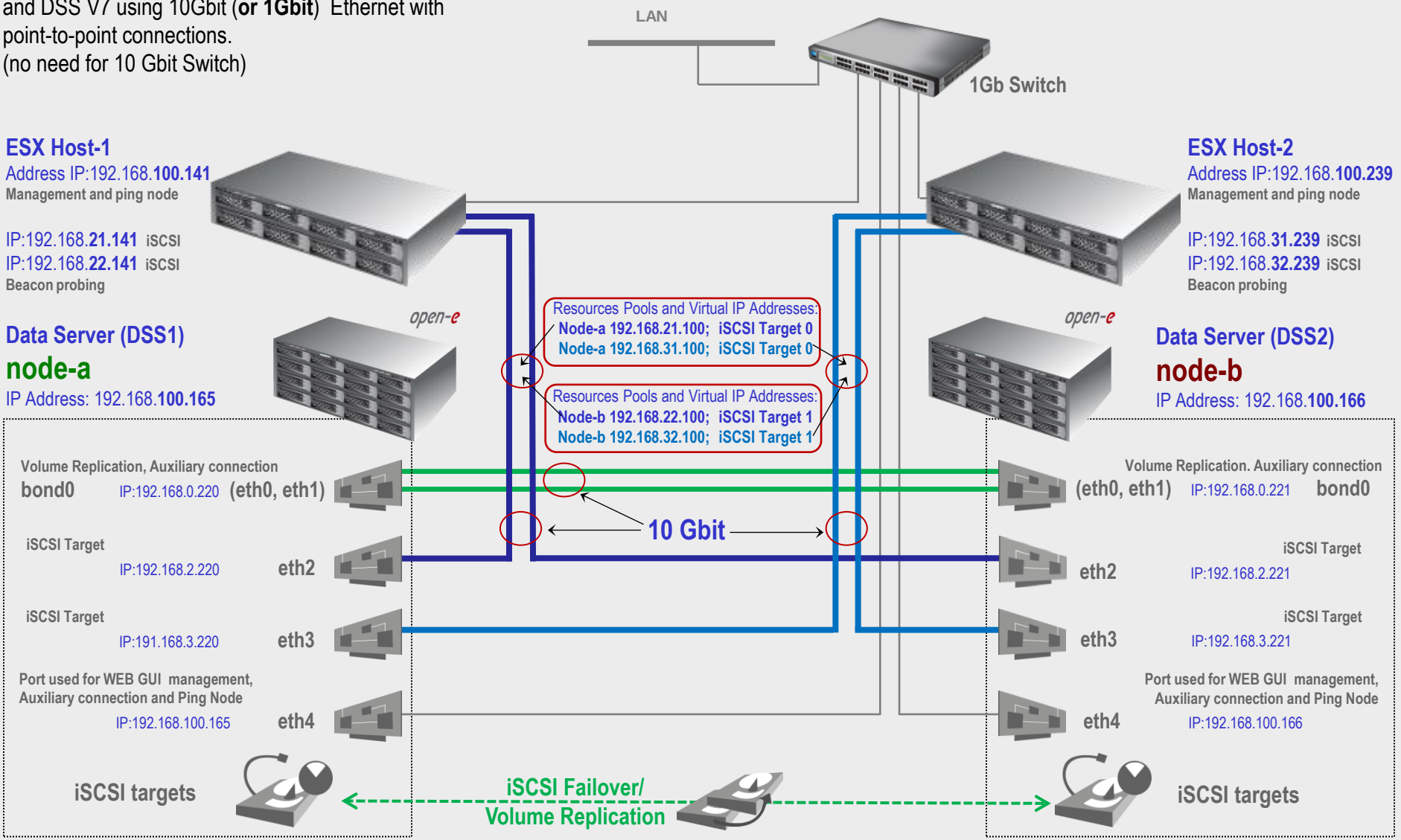
Configure VMware HA-Cluster:

7. Create Cluster
8. Adding Hosts
9. Configure networking
10. Configure Storage Adapters
11. Reconfigure for vSphere HA
12. HA Cluster – clear alarms

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Hardware Requirements:
High Available Cluster with VMware ESX 5.x or 6.x and DSS V7 using 10Gbit (**or 1Gbit**) Ethernet with point-to-point connections.
(no need for 10 Gbit Switch)

1. Hardware Configuration



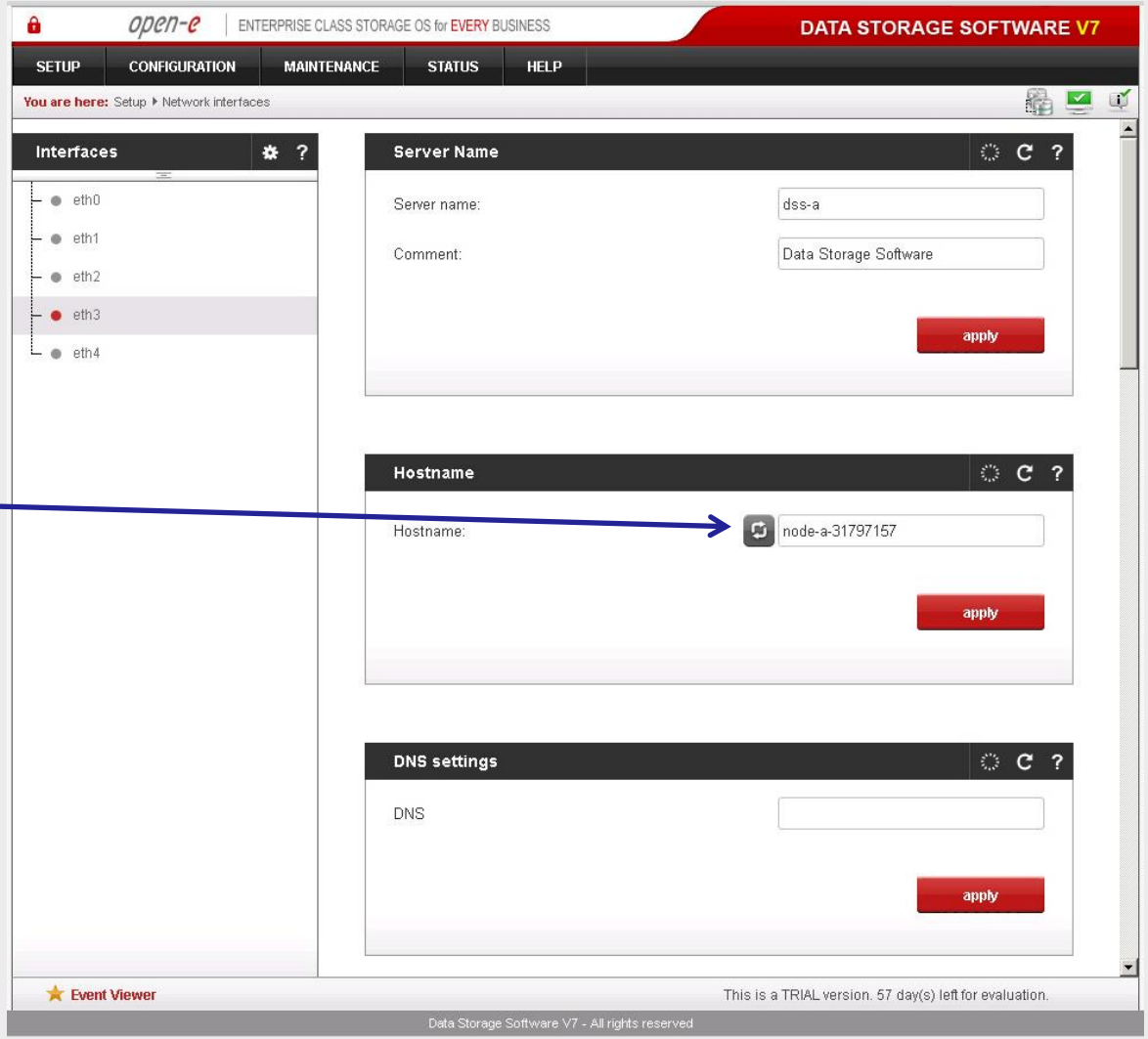
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

2. Network Configuration

After logging on to the Open-E DSS V7 (node-a), go to **SETUP** and choose the "**Network interfaces**" option.
In the **Hostname** box, replace the "dss" letters in front of the numbers with "node-a" server, in this example "**node-a-31797157**" and click the apply button (this will require a reboot).



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

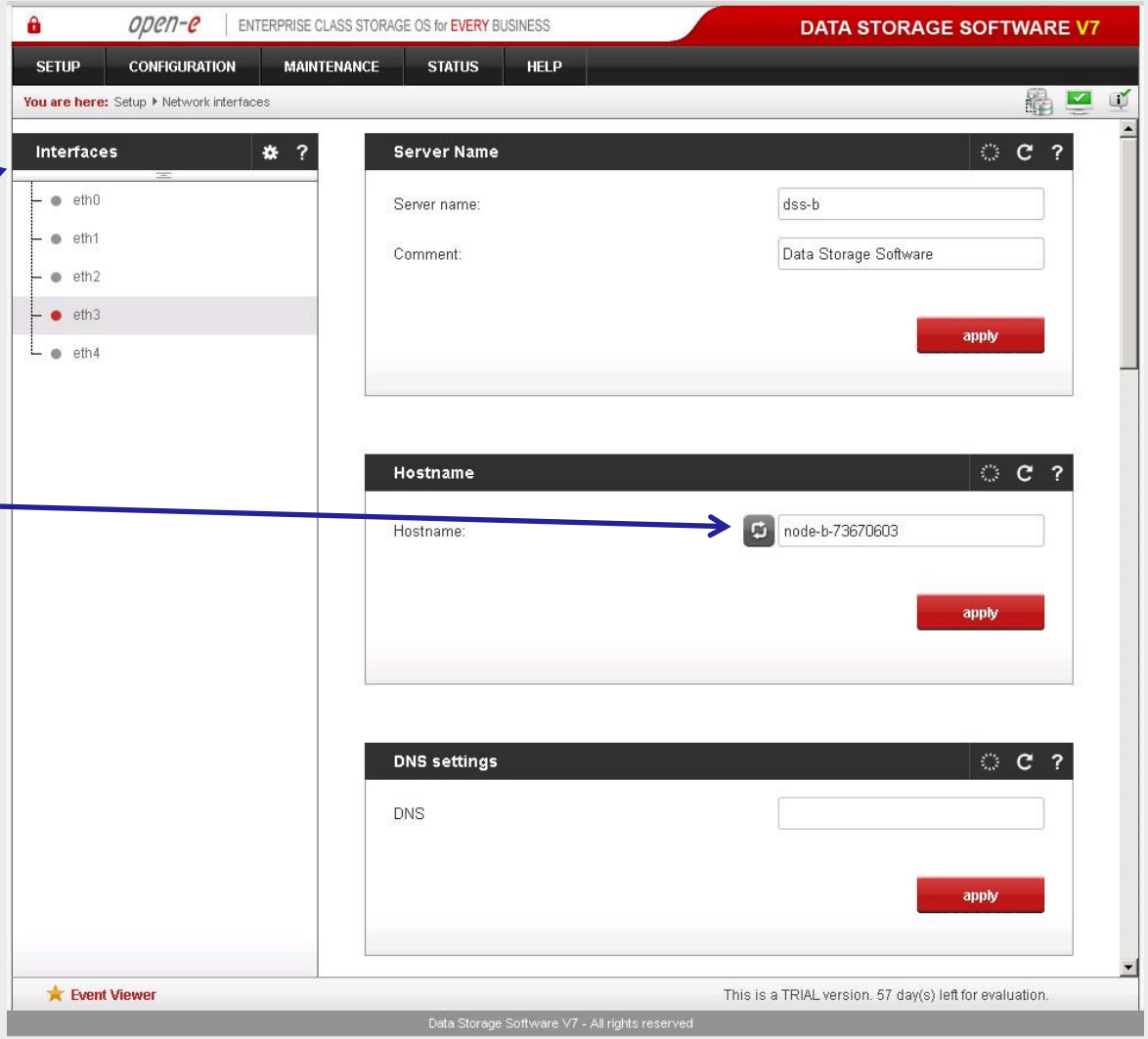
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

2. Network Configuration

Next, after logging on to the Open-E DSS V7 (node-b), go to **SETUP** and choose the "**Network interfaces**" option. You should do the same as for the "node-a". In the **Hostname** box, replace the "dss" letters in front of the numbers with "node-b" server, in this example "**node-b-73670603**" and click the apply button (this will require a reboot).



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

node-a

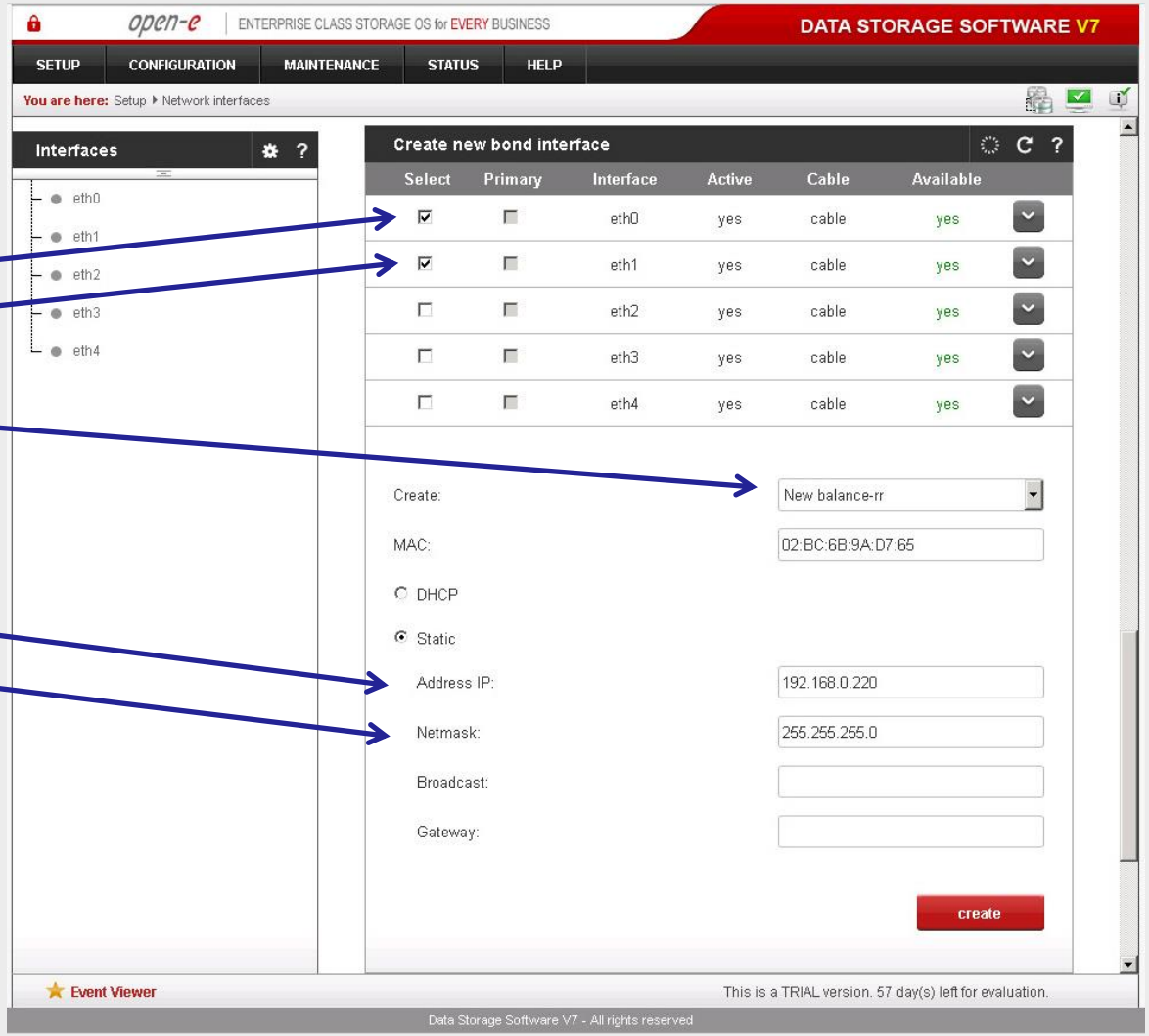
IP Address: 192.168.100.165

2. Network Configuration

Next, select **Interfaces** and in the "**Create new bond interface**" function check two boxes with **eth0** and **eth1**. Next, in the field **Create** select a bonding mode. In this example select **New balance-rr.**

In the field **Address IP** enter 192.168.0.220 and in the **Netmask** field enter 255.255.255.0 Afterwards, click the **create** button and confirm this action by clicking the **yes** button.

Perform the same set bonding on node-b with Address IP: 192.168.0.221



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

node-a

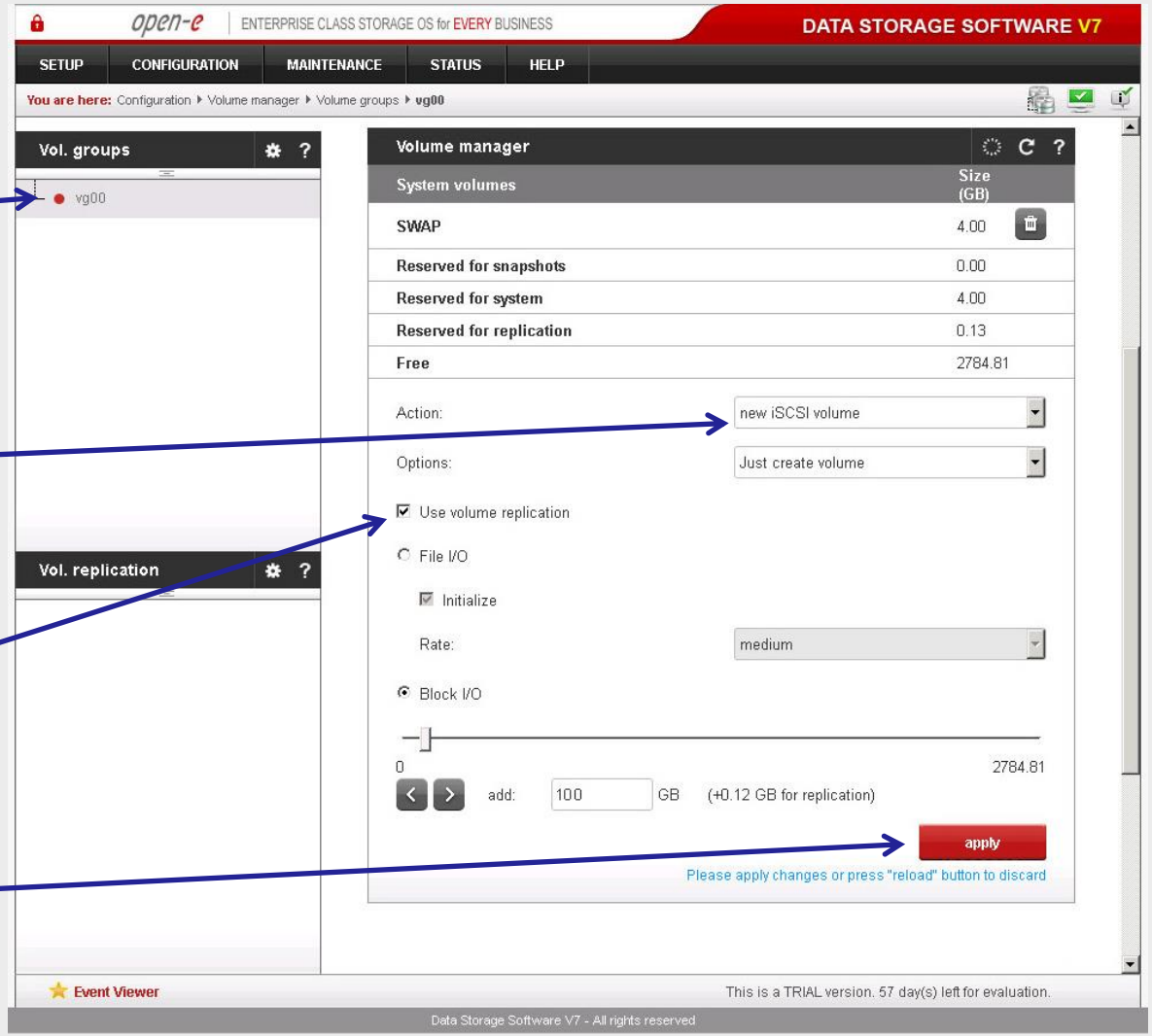
IP Address: 192.168.100.165

3. Configure the node-a

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size. Please set 2 logical volumes in the Active-Active option.

Next, check the box **Use volume replication.**

After assigning an appropriate amount of space for the iSCSI volume, click the apply button. The volumes must be the same size as the other node or you will not be able to create the Replication task.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

node-a

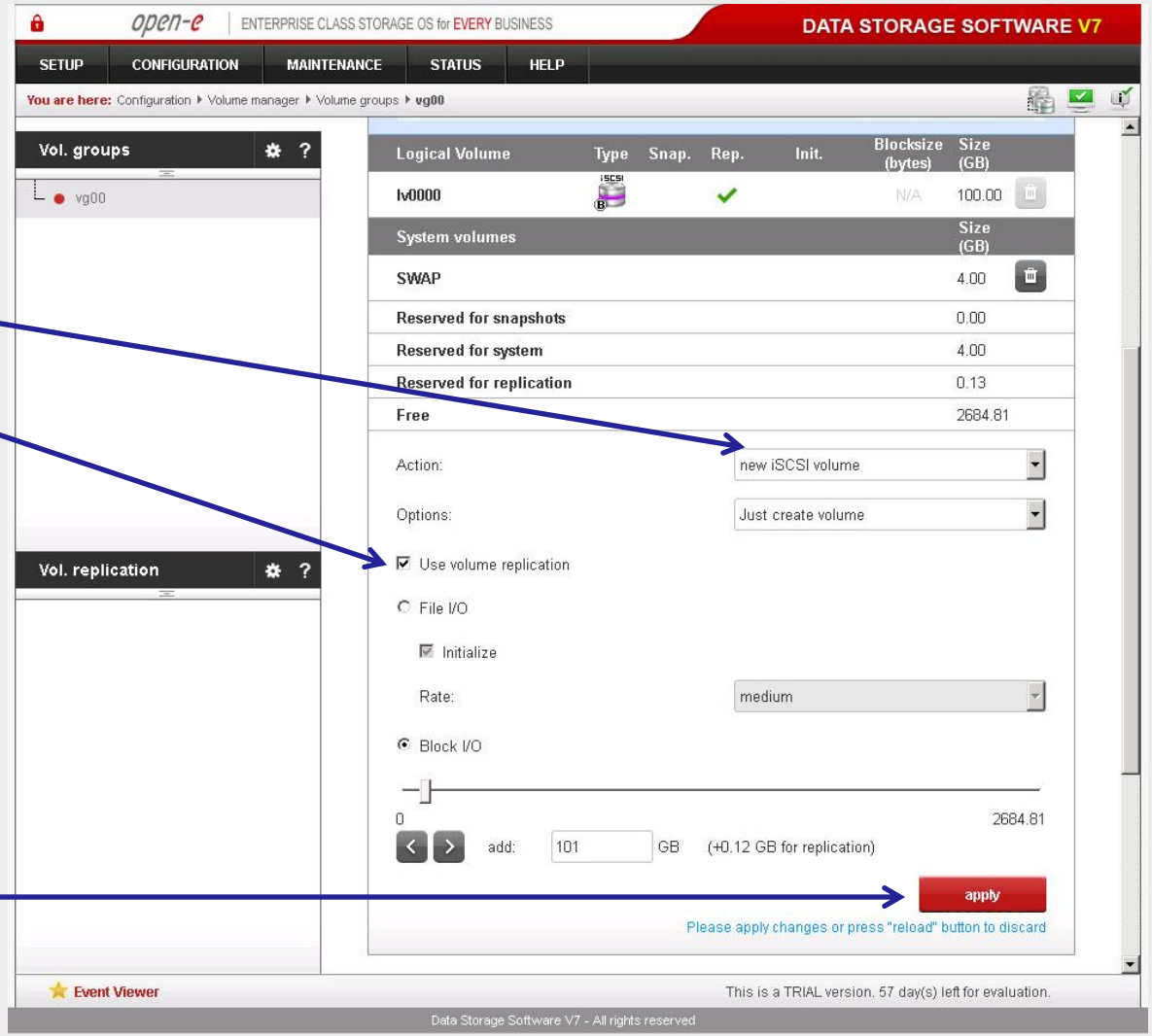
IP Address: 192.168.100.165

3. Configure the node-a

Set 2nd logical volume (**lv0001**), next, check the box **Use volume replication.**

After assigning an appropriate amount of space for the iSCSI volume, click the apply button.

Similarly, two logical volumes of the same sizes (100 and 101 GB) should be set on node-b.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

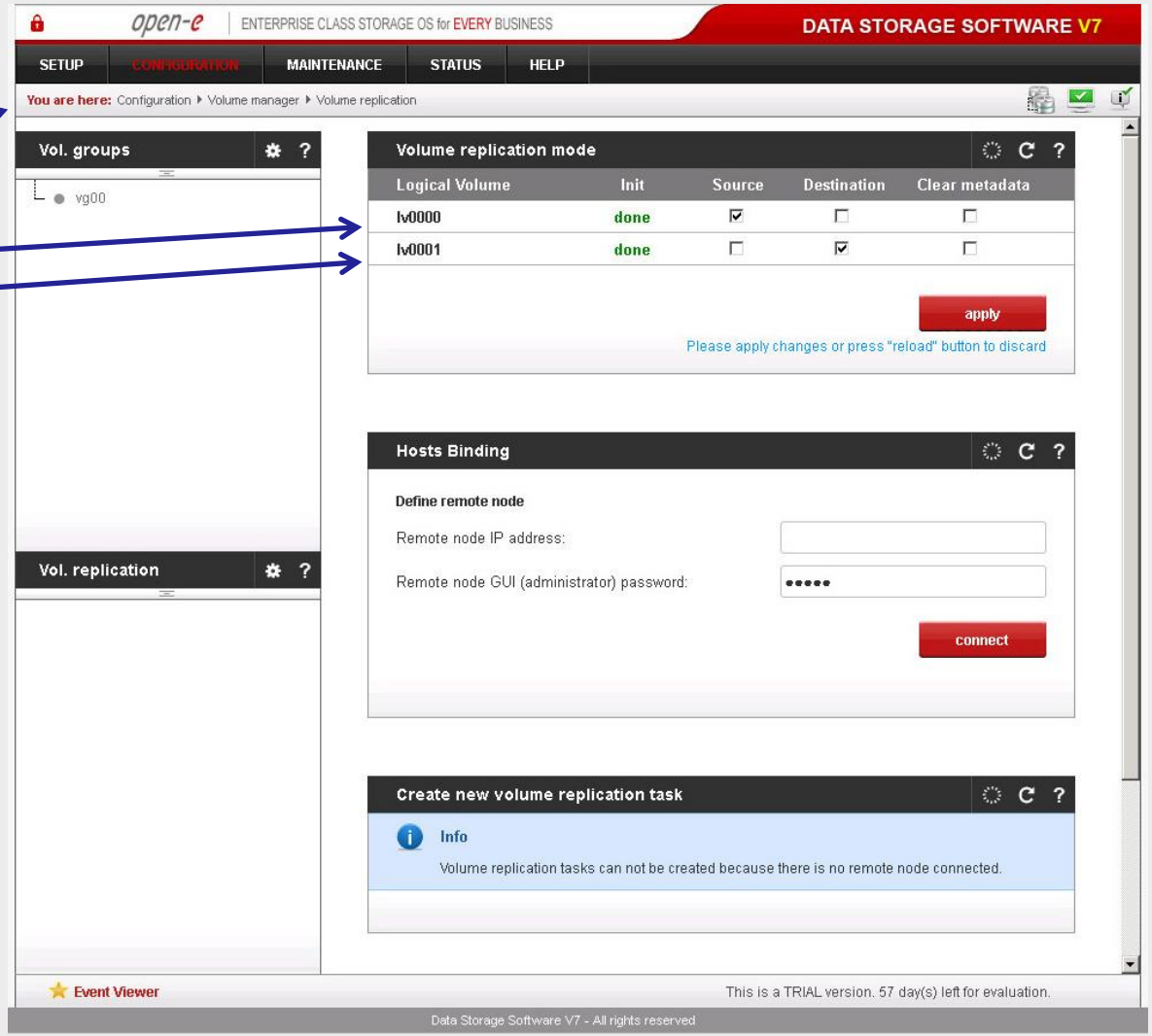
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

3. Configure the node-a

On the node-a, go to "**Volume replication**".
Within **Volume replication mode** function, check the **Destination** box for **lv0001** and check the **Source** box for **lv0000**.
Then, click the apply button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

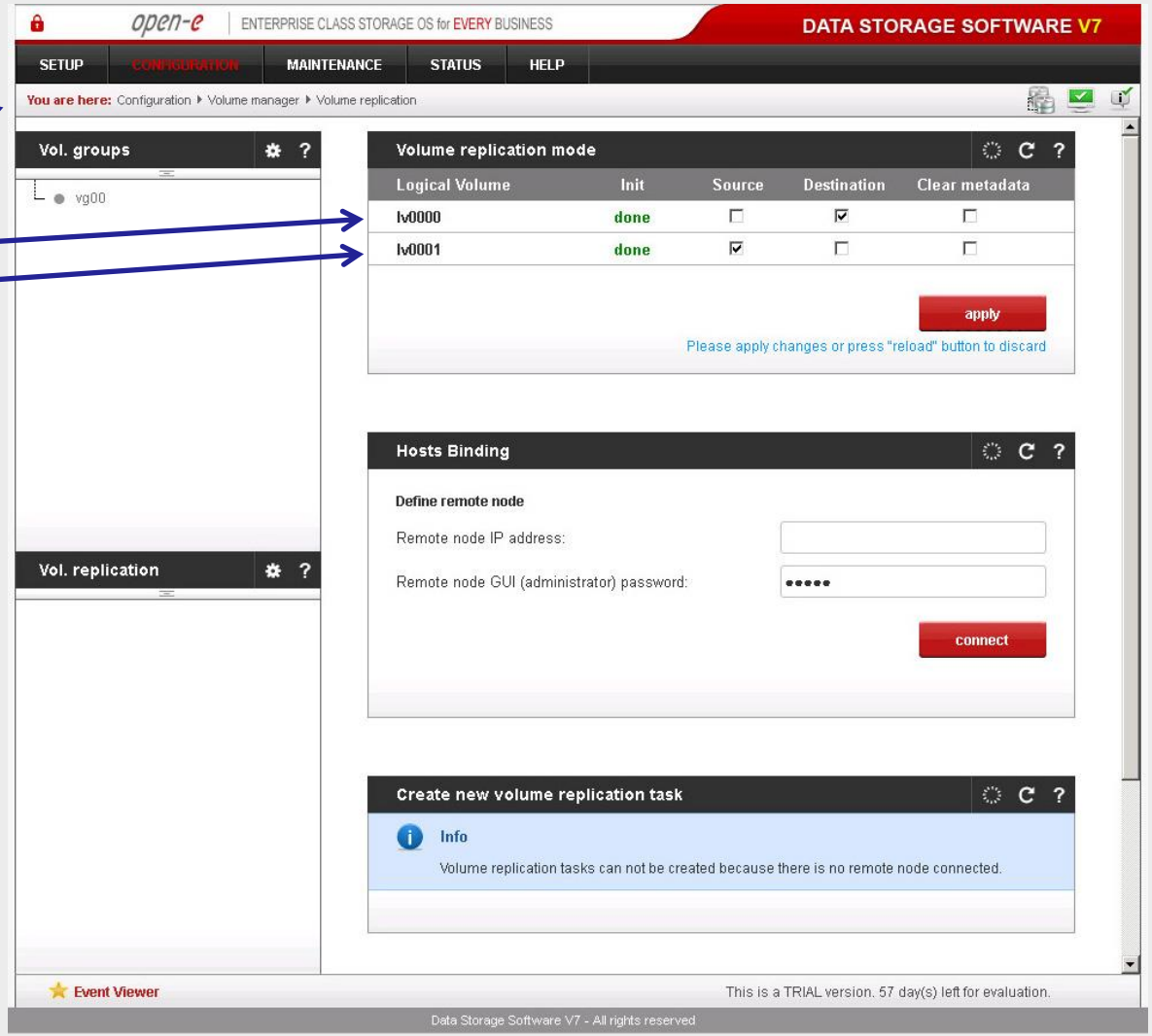
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

3. Configure the node-b

Now, on the node-b, go to "**Volume replication**".
Within **Volume replication mode** function, check the **Destination** box for **lv0000** and check the **Source** box for **lv0001**.
Then, click the apply button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

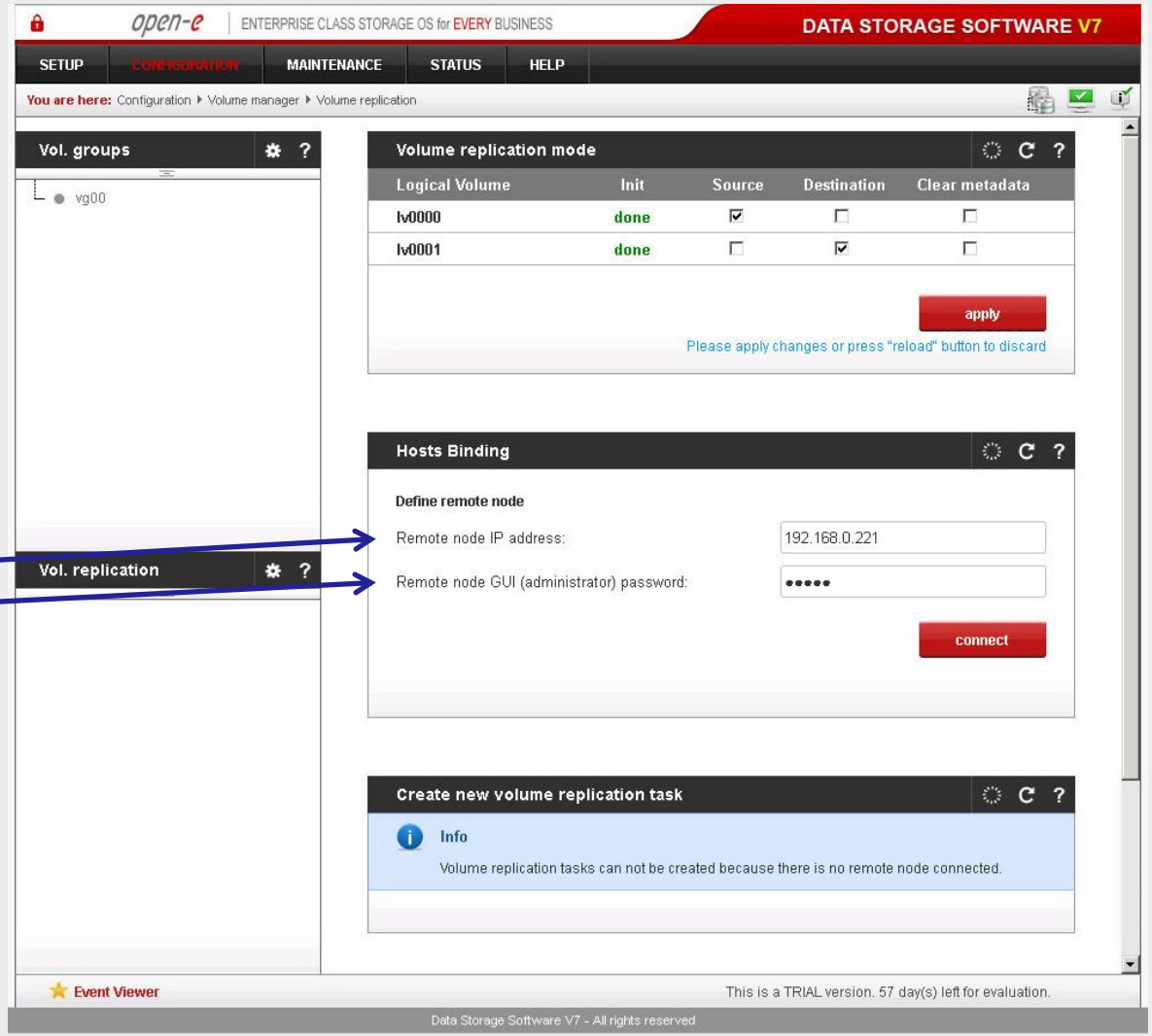
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

3. Configure the node-a

In the **Hosts binding** function, enter the IP address of node-b (in our example, this would be 192.168.0.221), enter node-b administrator password and click the apply button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

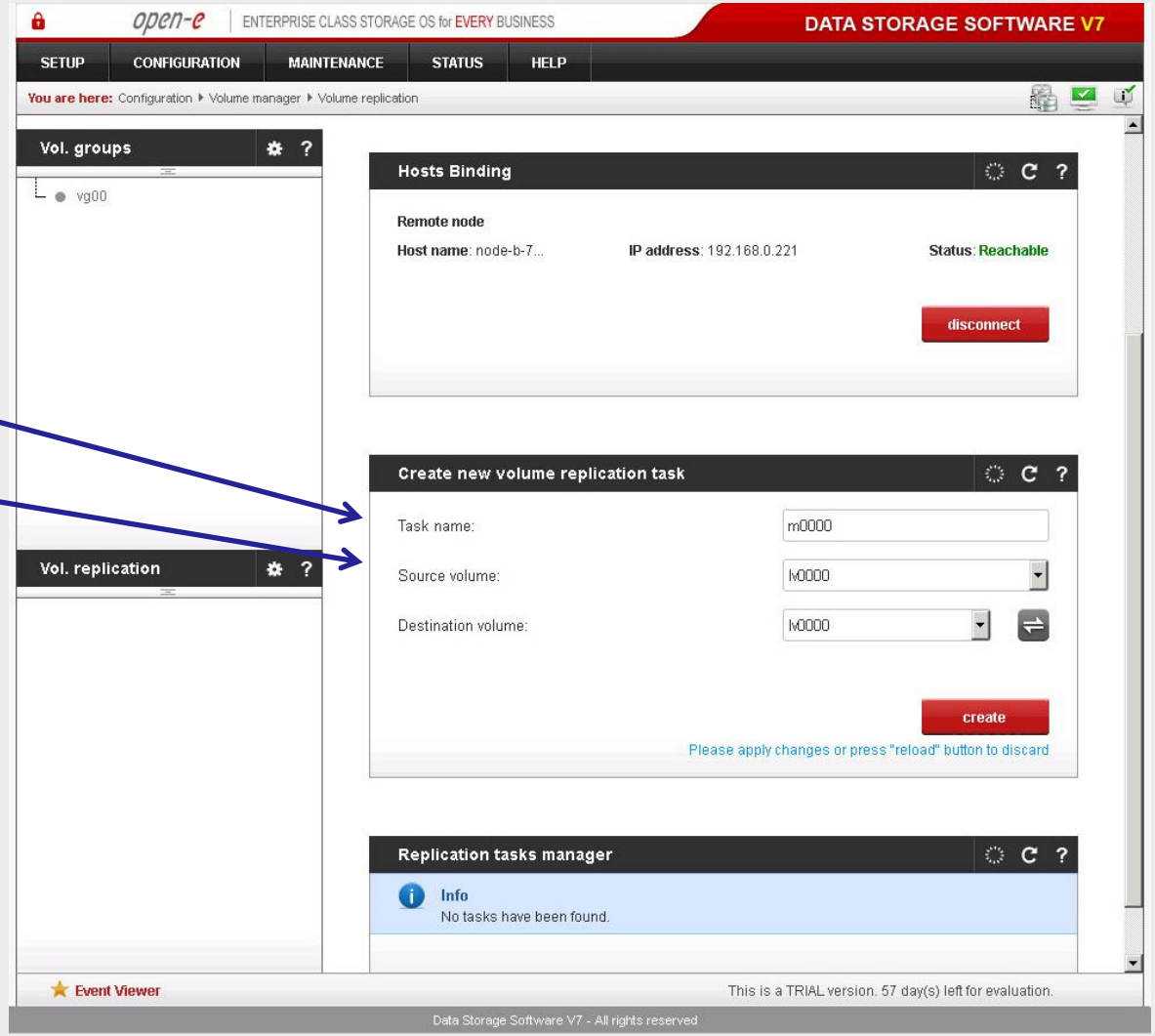
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

3. Configure the node-a

In the **Create new volume replication task**, enter the task name in the **Task name** field, then click on the ⇌ button.
In the **Destination volume** field, select the appropriate volume (in this example, **lv0000**).
Next, click the create button.



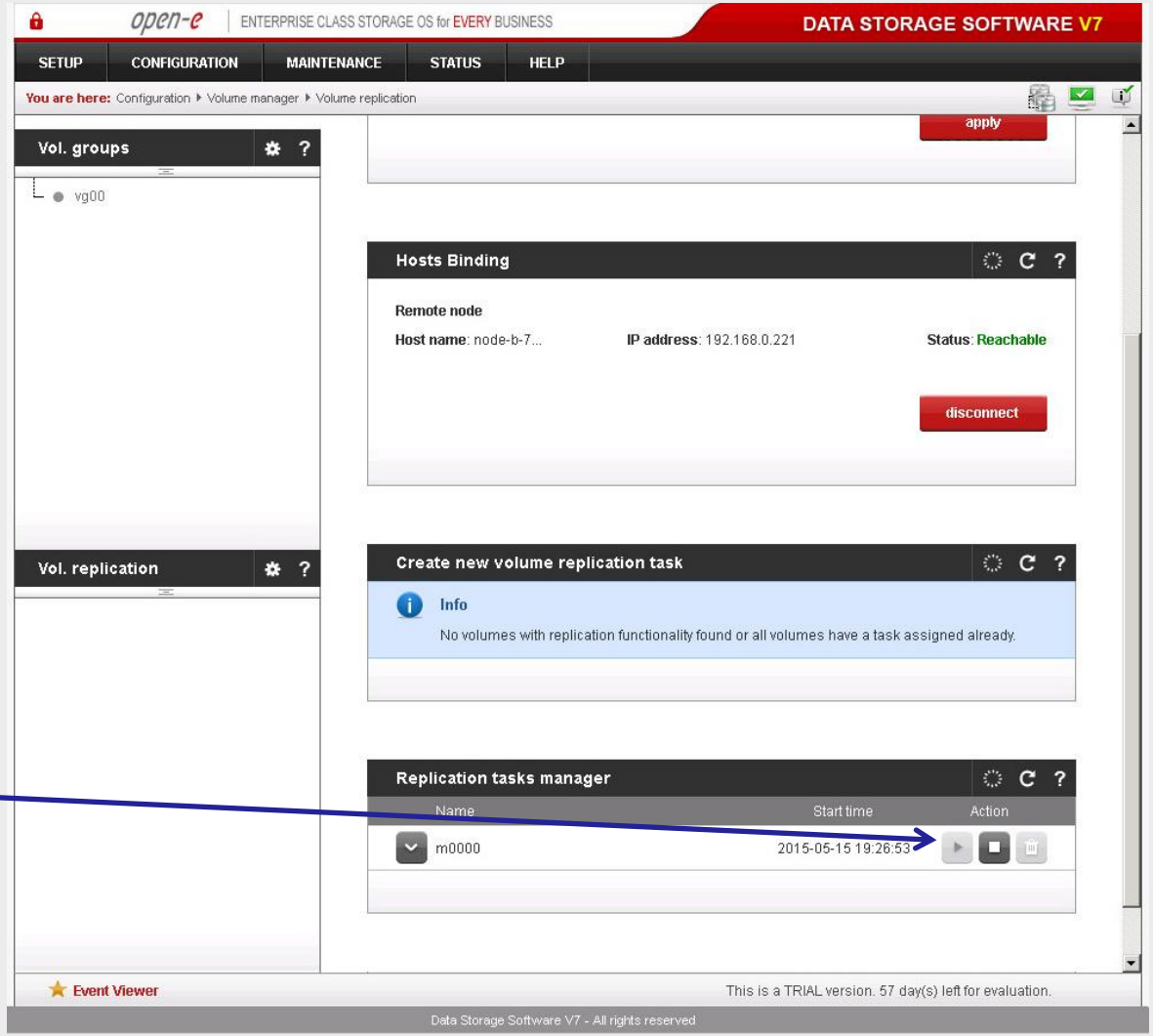
DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

node-a

IP Address: 192.168.100.165

3. Configure the node-a



Now, in the **Replication tasks manager** function, click the corresponding "play" button to start the Replication task on the node-a.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

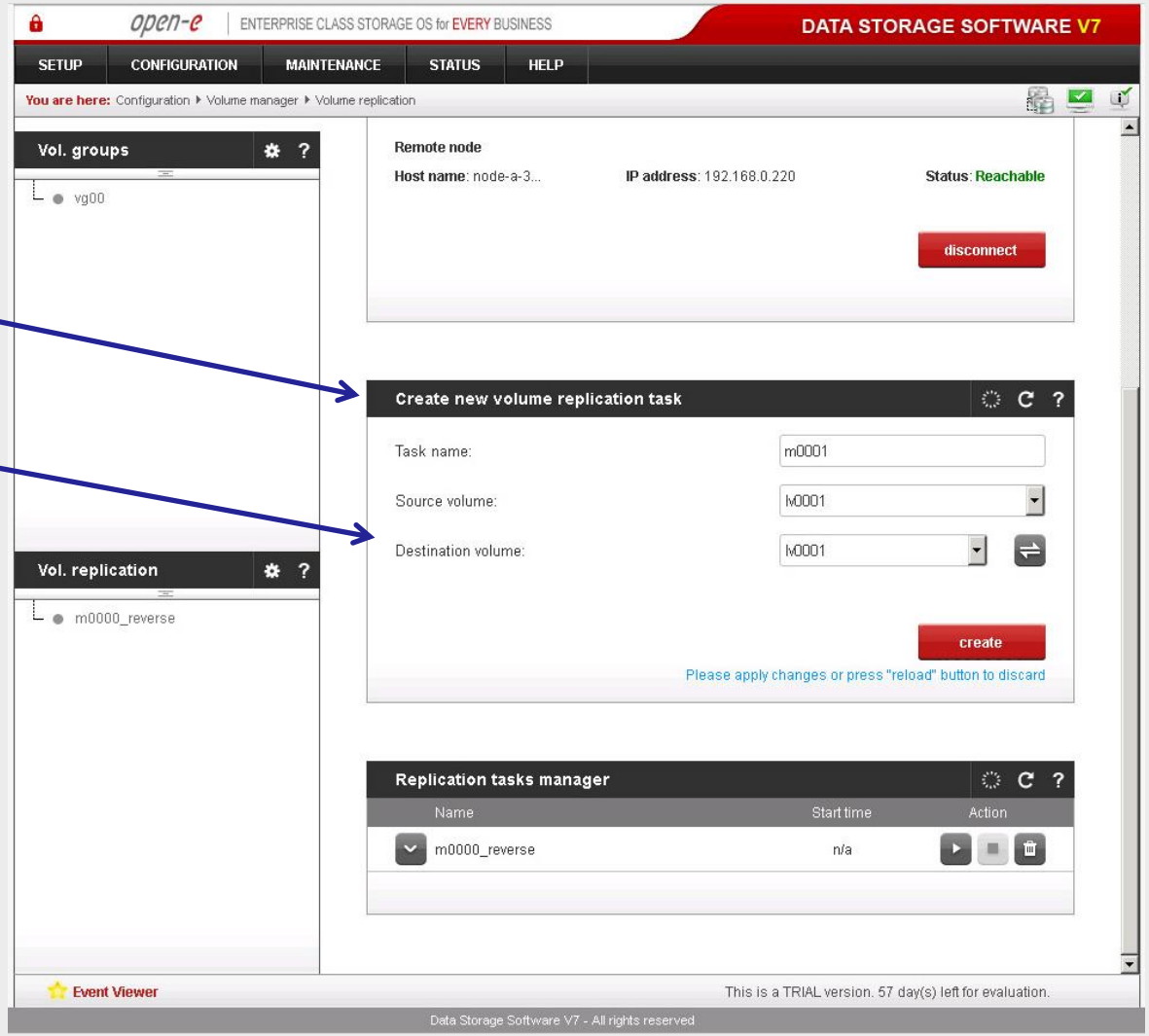
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

3. Configure the node-b

Next, go to the node-b.
Within **Create new volume replication task,** enter the task name in the **Task name** field, then click on the ⇌ button.
In the **Destination volume** field, select the appropriate volume (in this example, **lv0001**).



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

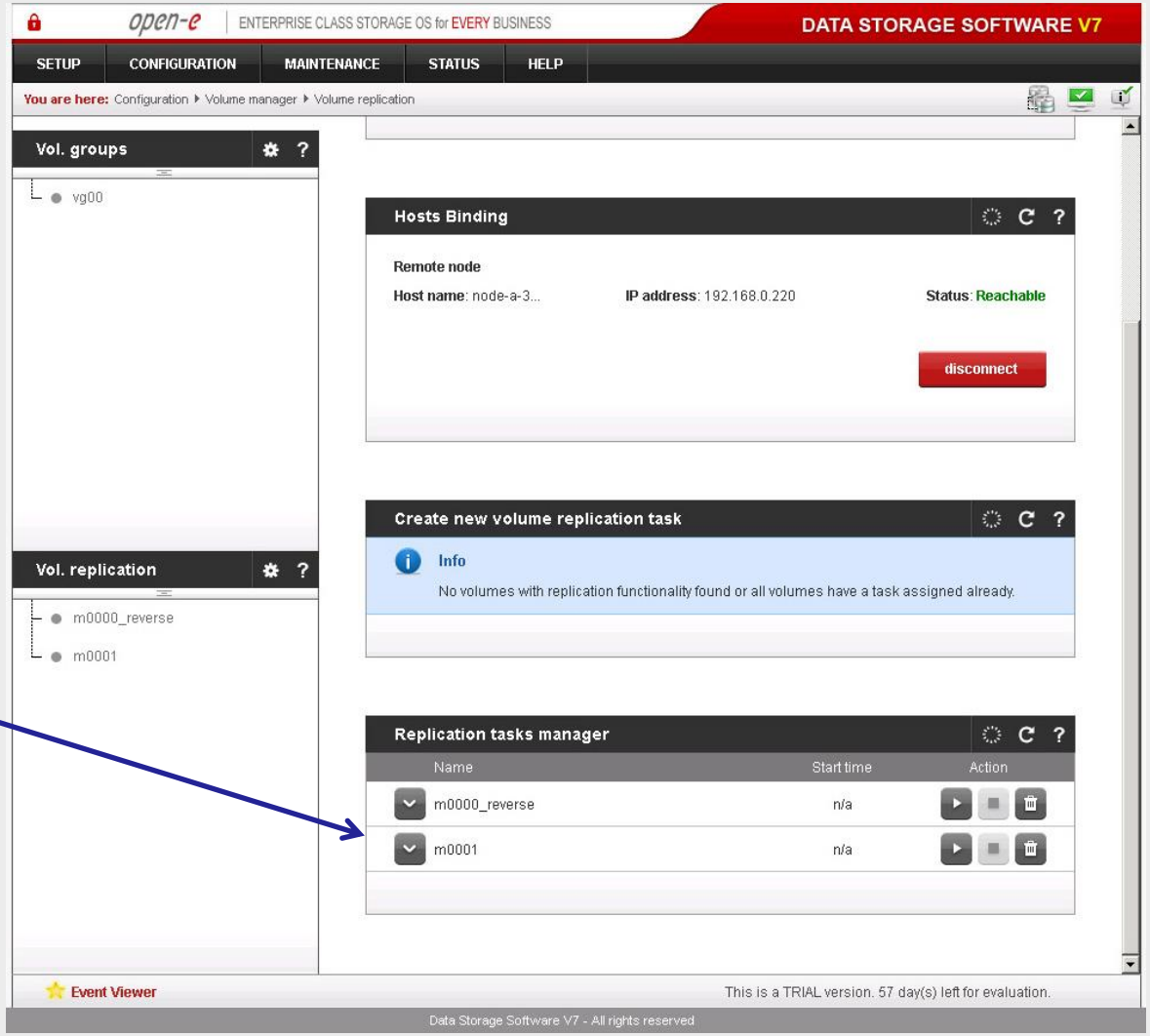
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

3. Configure the node-b

In the **Replication tasks manager** function, click the corresponding "**play**" button to start the Replication task on the node-b: **m0001**.
In this box you can find information about currently running replication tasks.
When a task is started a date and time will appear.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

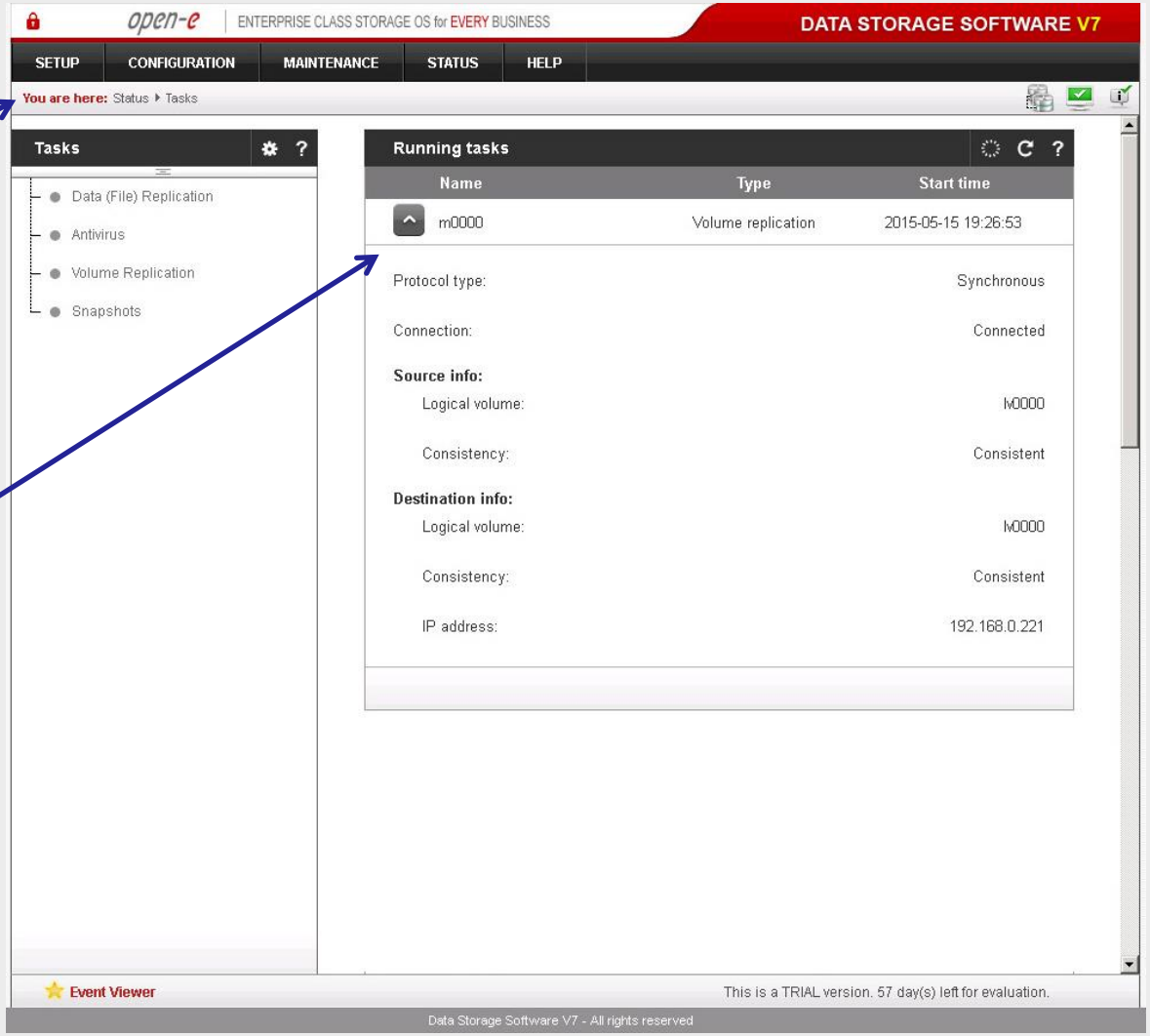
node-a

IP Address: 192.168.100.165

3. Configure the node-a

You can check the status of Volume Replication anytime in **STATUS** -> "**Tasks**" menu.

Click on the button, located next to a task name (in this case **m0000**) to display detailed information on the current replication task.



NOTE:

Please allow the replication task to complete (similar to above with status being "Consistent") before writing to the iSCSI Logical Volume.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

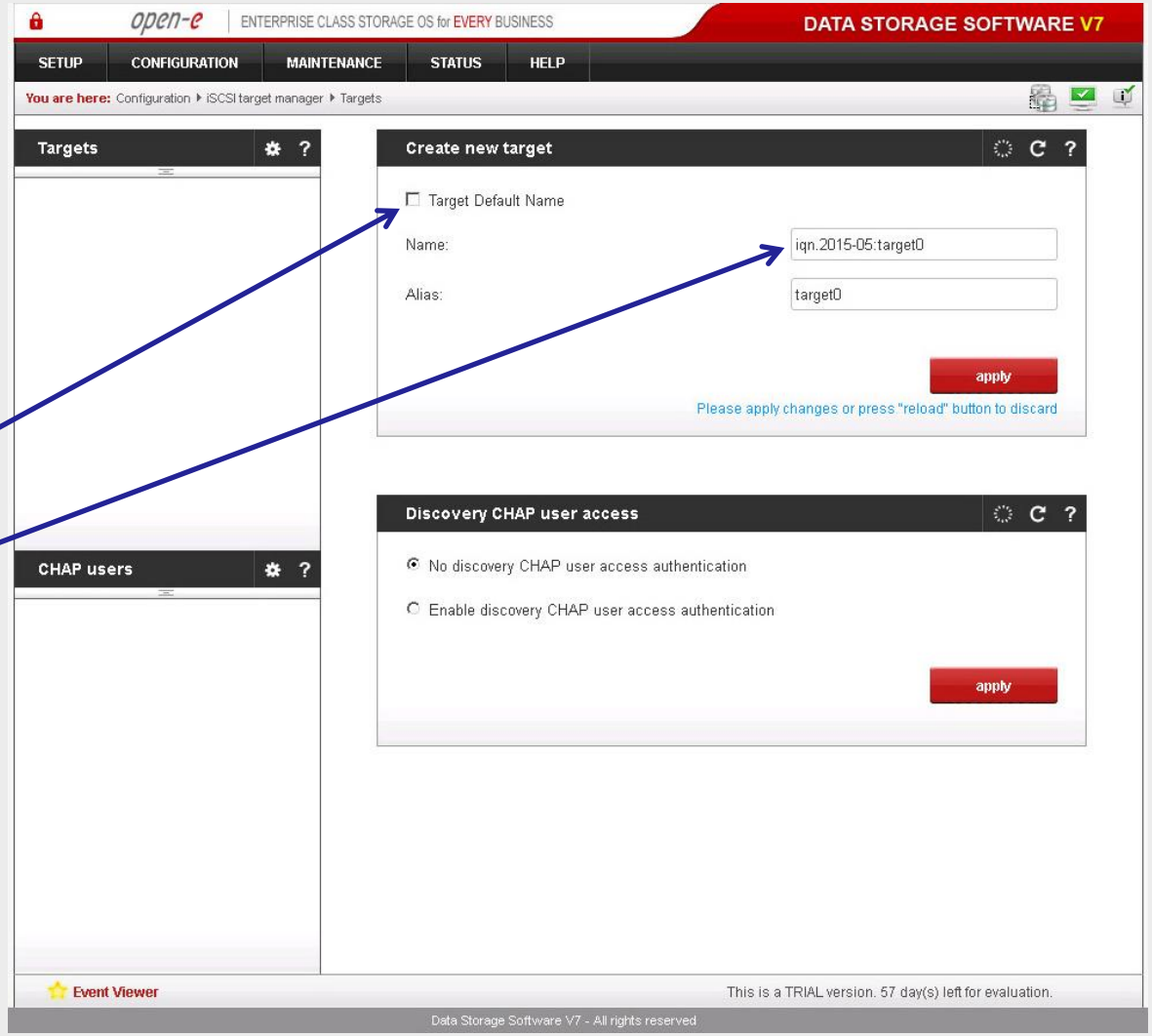
node-a

IP Address: 192.168.100.165

4. Create targets

Choose **CONFIGURATION**, "**iSCSI target manager**" and "**Targets**" from the top menu.

In the **Create new target** function, uncheck the box **Target Default Name**.
In the **Name** field, enter a name for the new target and click apply to confirm.



NOTE:
Both systems must have the same Target name.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

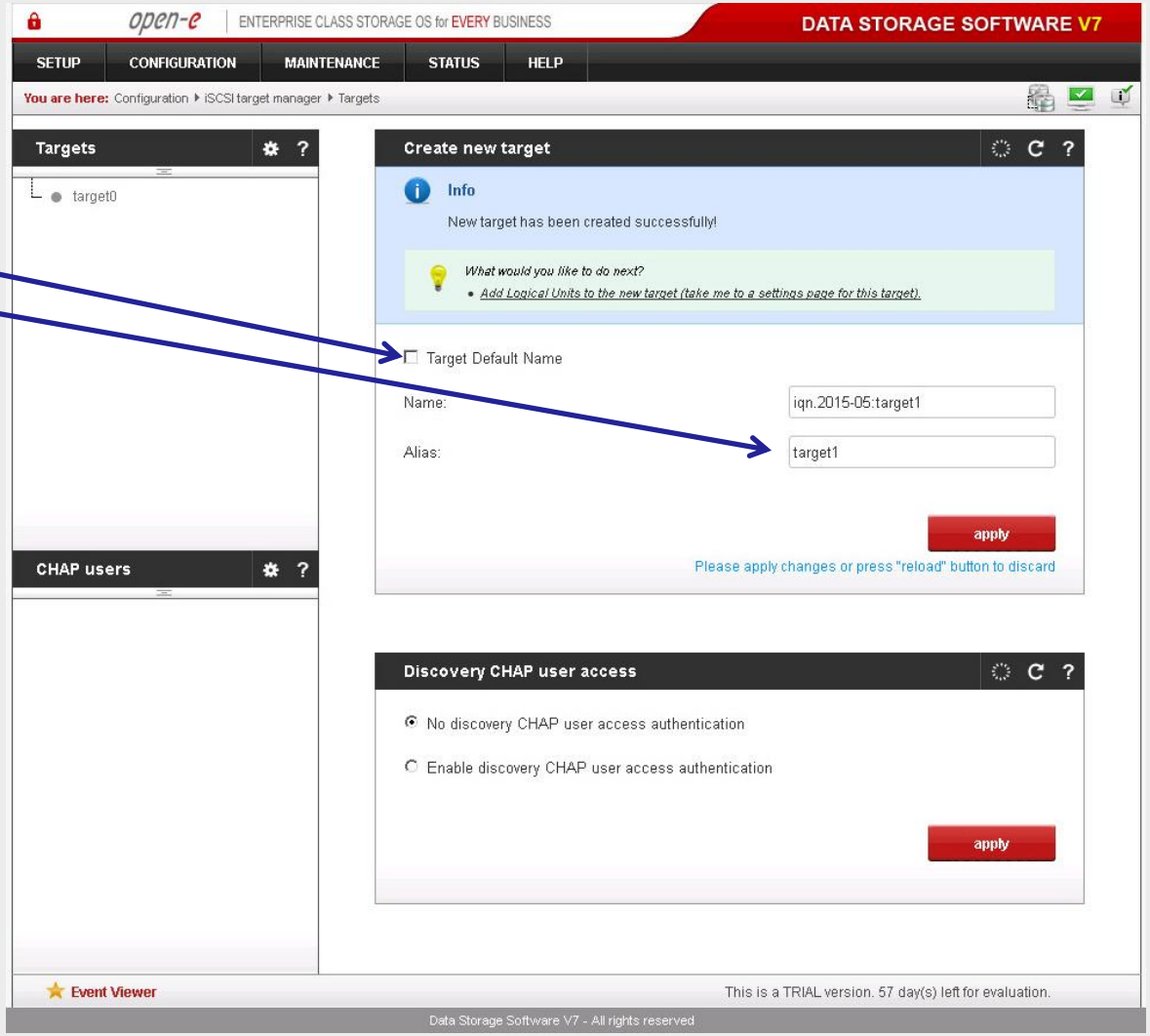
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

4. Create targets

Next, you must set the 2nd target. Within the **Create new target** function, uncheck the box **Target Default Name**.
In the **Name** field, enter a name for the 2nd new target and click apply to confirm.



NOTE:
Similar on node-a, please set at the node-b, also set two targets with the same Target name.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

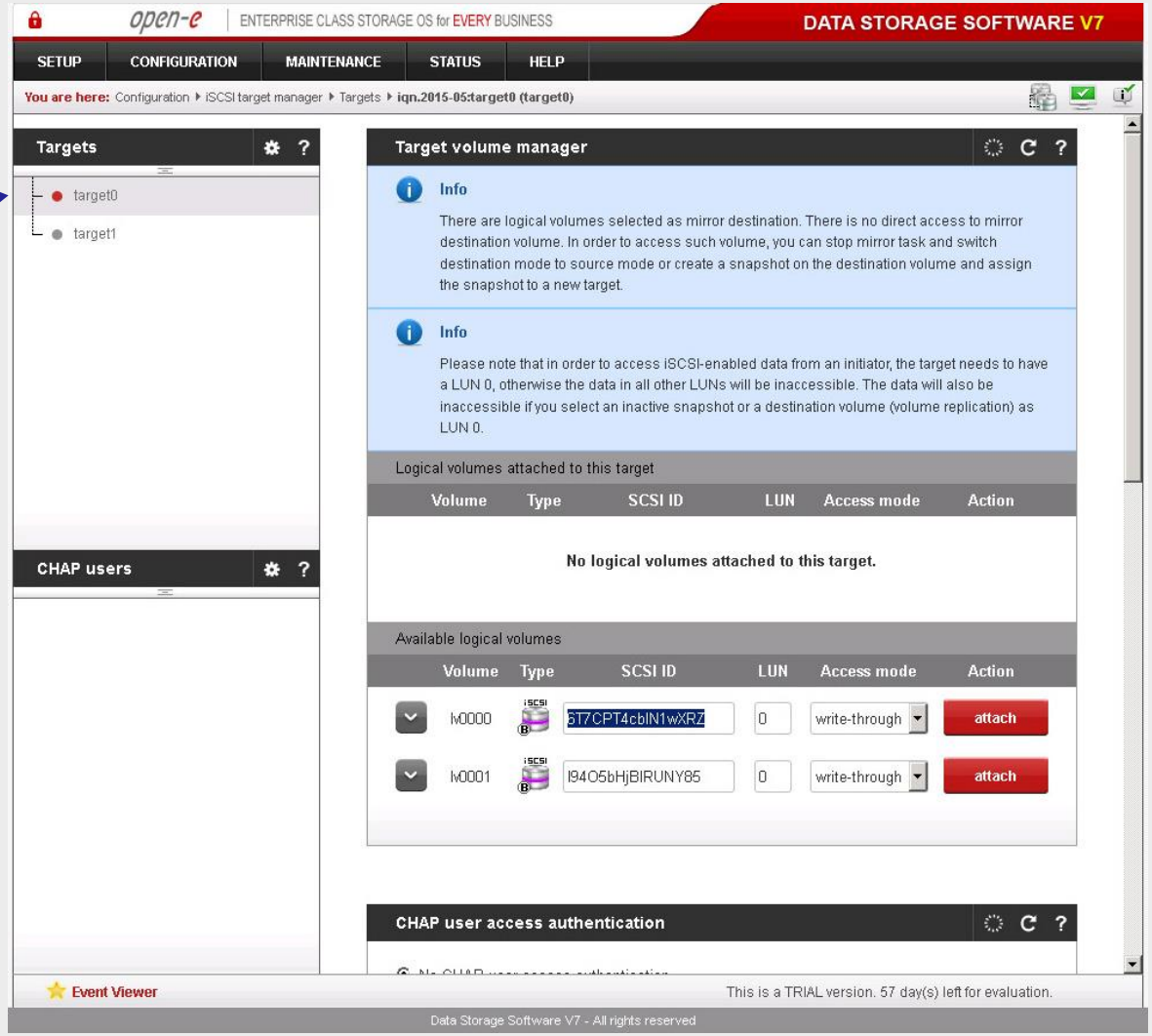
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

4. Create targets

After that, select **target0** within the **Targets** field.



NOTE:

Volumes on both sides must have the same SCSI ID and LUN# for example: lv0000 SCSI ID on node-a = lv0000 SCSI ID on node-b.

In this case before clicking the **attach** button please copy the SCSI ID and LUN# from this node.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

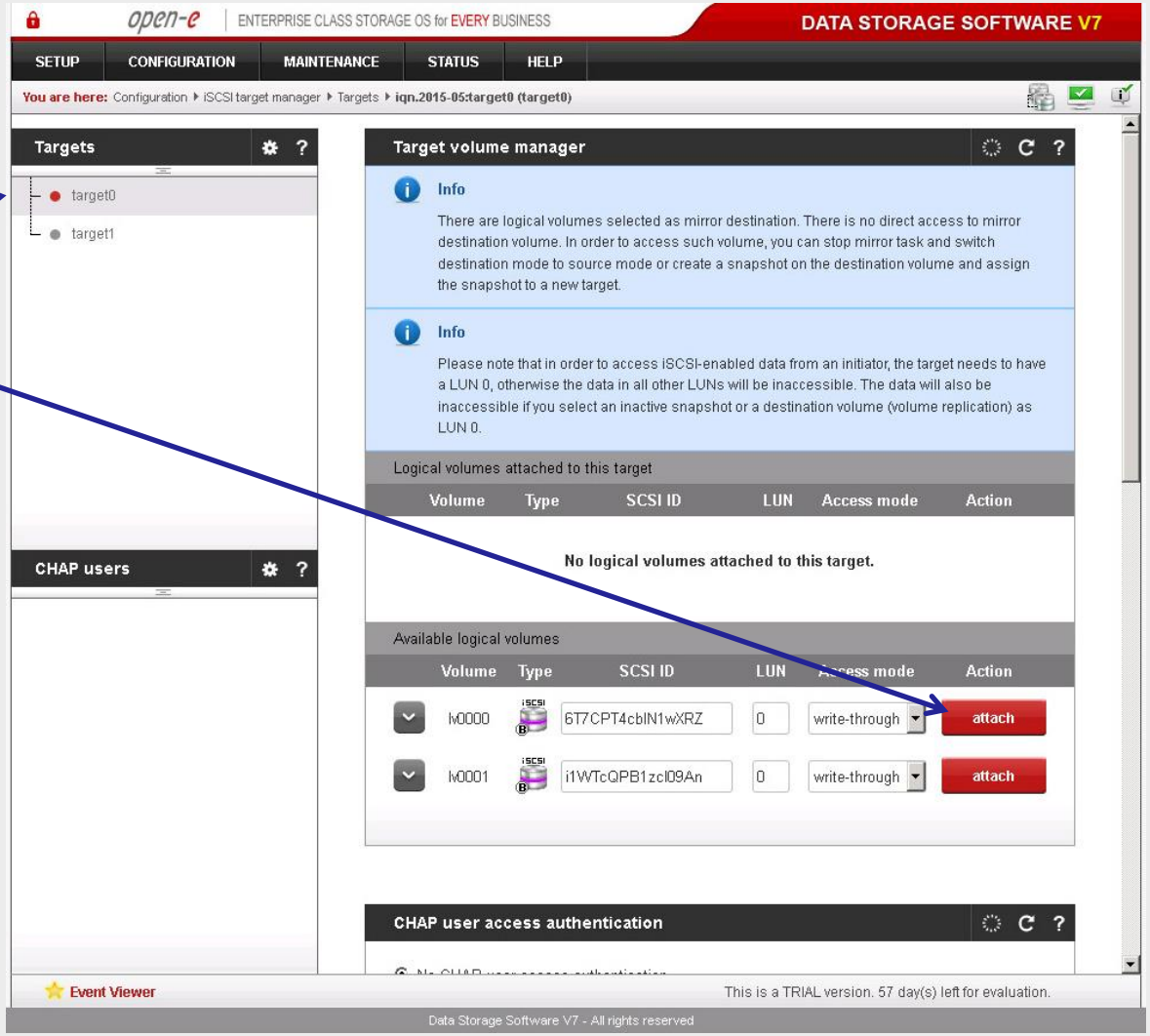
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

4. Create targets

After that, select **target0** within the **Targets** field and click **attach** button located under **Action.**



NOTE:

Volumes on both sides must have the same SCSI ID and LUN# for example: lv0000 SCSI ID on node-a = lv0000 SCSI ID on node-b.

In this case before clicking the **attach** button please paste the SCSI ID and LUN# (previously copied) from node-a .

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

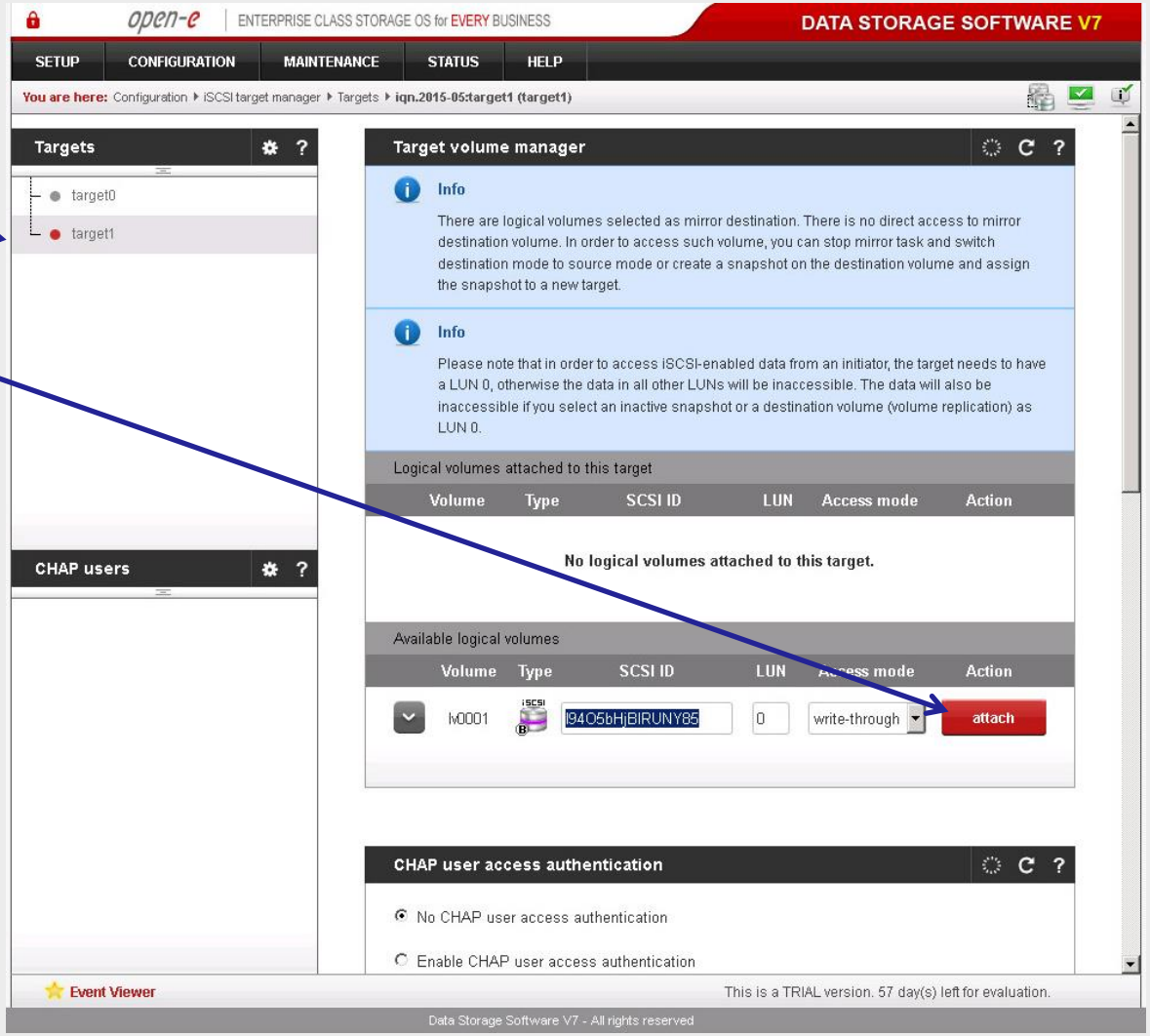
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

4. Create targets

After that, select **target1** within the **Targets** field and click **attach** button located under **Action.**



NOTE:

Before clicking the **attach** button again, please copy the SCSI ID and LUN# from this node.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

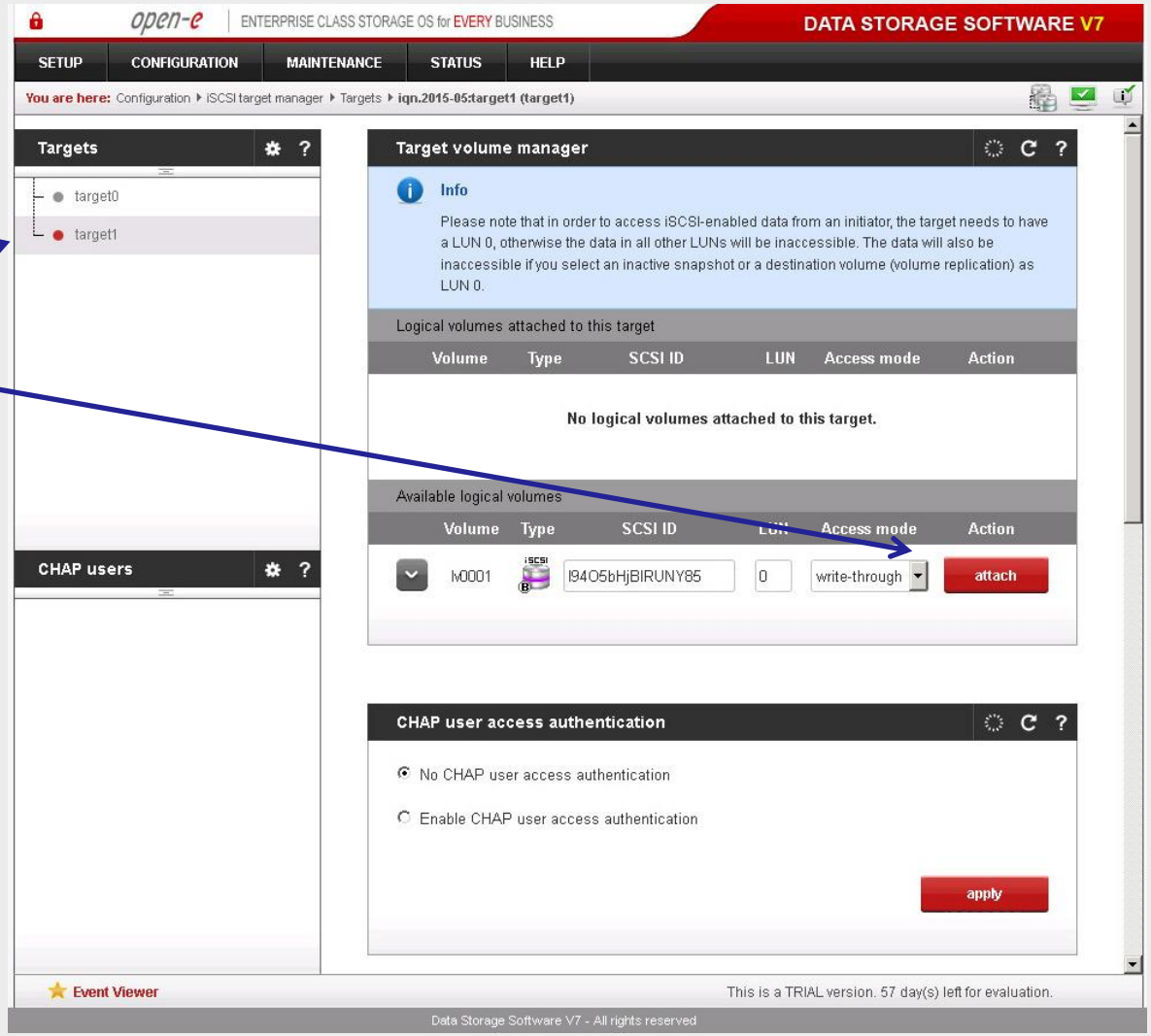
Data Server (DSS2)

node-b

IP Address: 192.168.100.166

4. Create targets

Next go to node-b, select **target1** within the **Targets** field and click **attach** button located under **Action.**



NOTE:

Before clicking the **attach** button again, please paste the SCSI ID and LUN# (previously copied) from the node-a.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

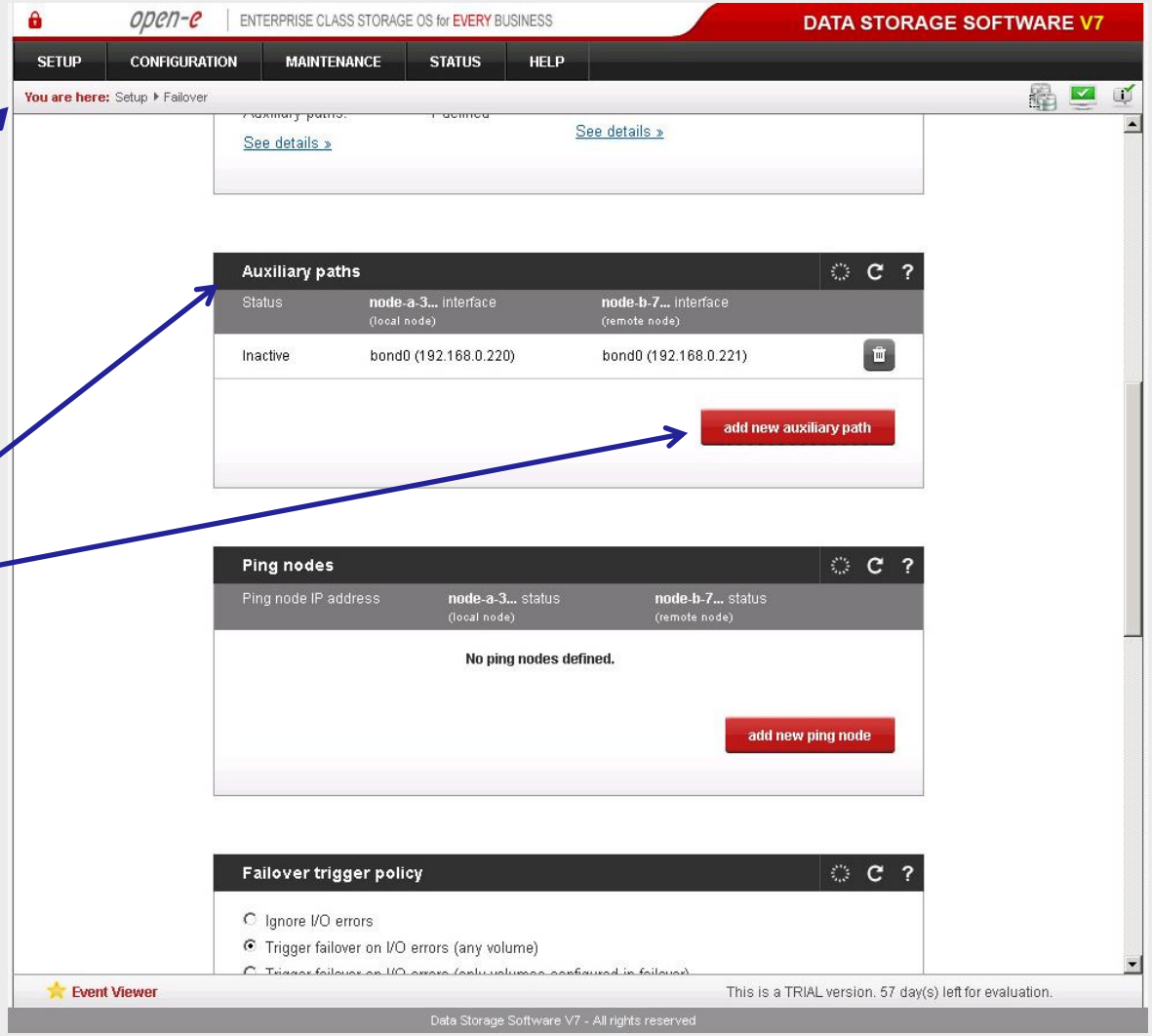
node-a

IP Address: 192.168.100.165

5. Configure failover

On the node-a, go to **SETUP** and select **"Failover".**

In the **Auxiliary paths** function, click the add new auxiliary path button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

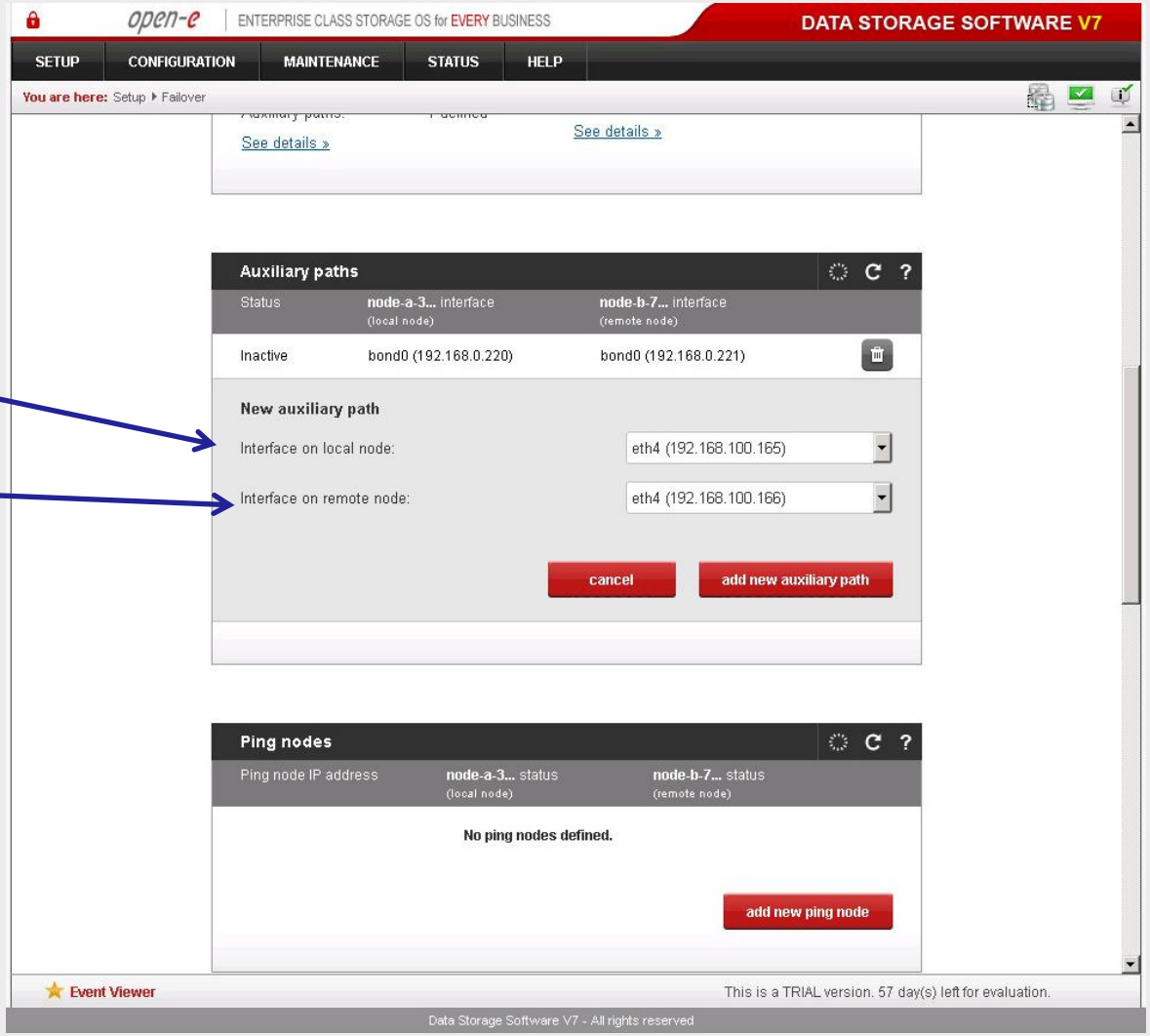
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

Next, select the **New auxiliary path** on the local and remote node and click the **add new auxiliary path** button.



IMPORTANT NOTE:

Switchless environment setup is different than one with a switch. Here, auxiliary paths cannot be set via iSCSI-export path. This is why the Volume Replication NICs should be selected and the GUI NICs.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

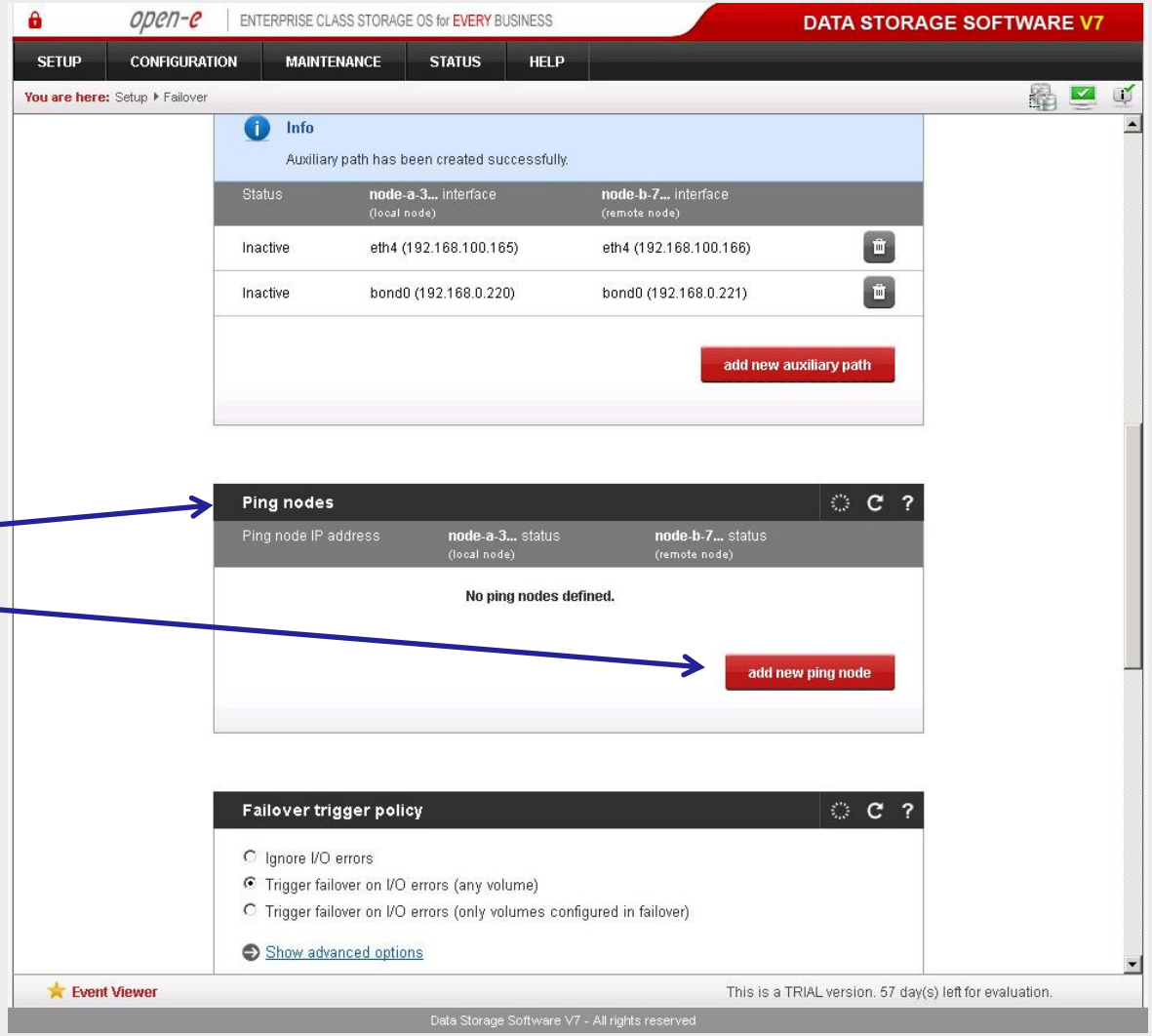
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

In the **Ping nodes** function, click the add new ping node button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

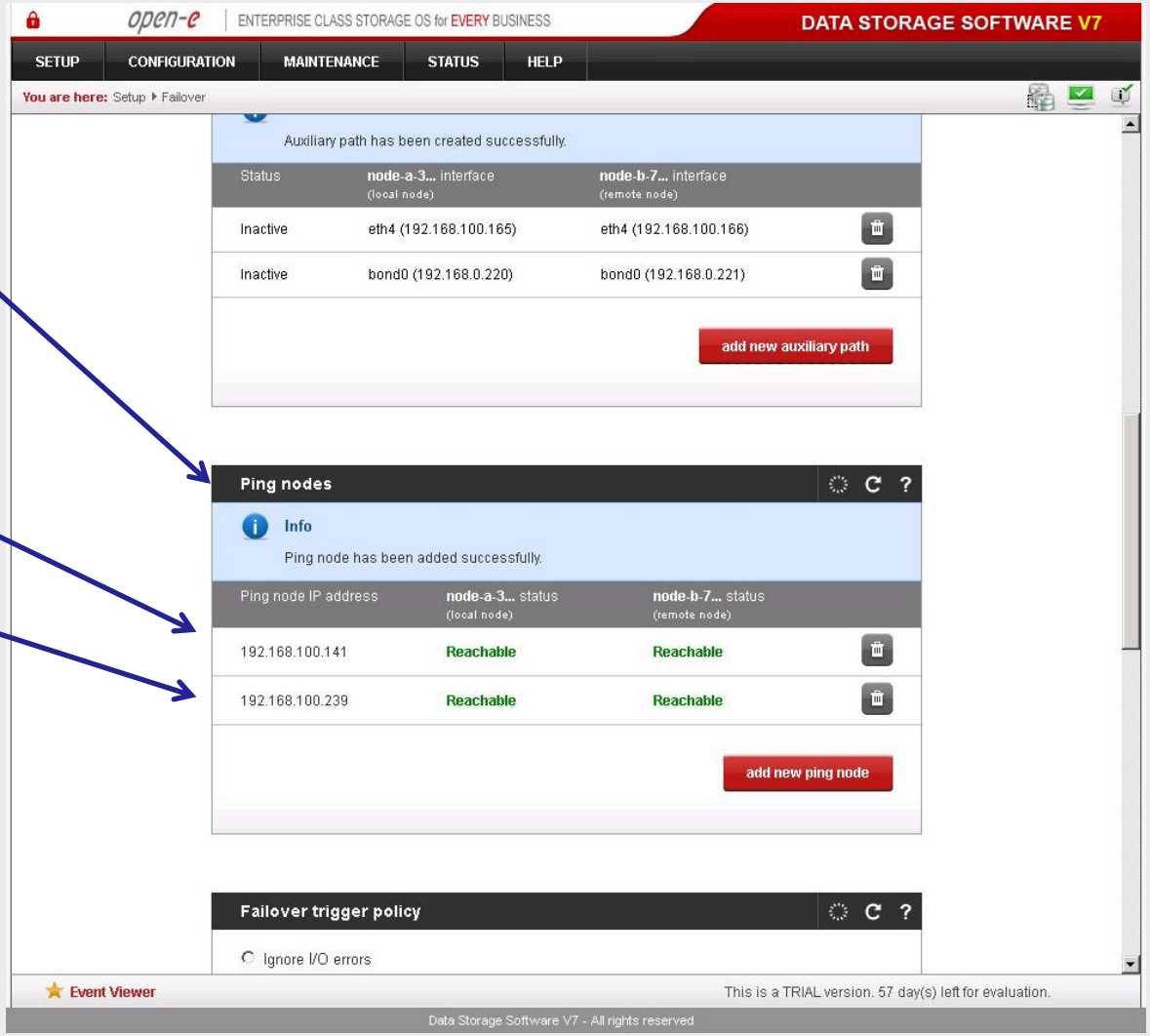
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

In the **Ping nodes** function, enter IP addresses of management ports both **ESX Hosts**.
In the **IP address** field enter IP address and click the **add new ping node** button (according to the configuration in the third slide).
In this example, IP address of the first ping node is: 192.168.100.141 and the second ping node: 192.168.100.239.



IMPORTANT NOTE:
Switchless environment setup is different than one with a switch. Here, ping nodes must be configured on the GUI NICs which are connected to a switch.

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

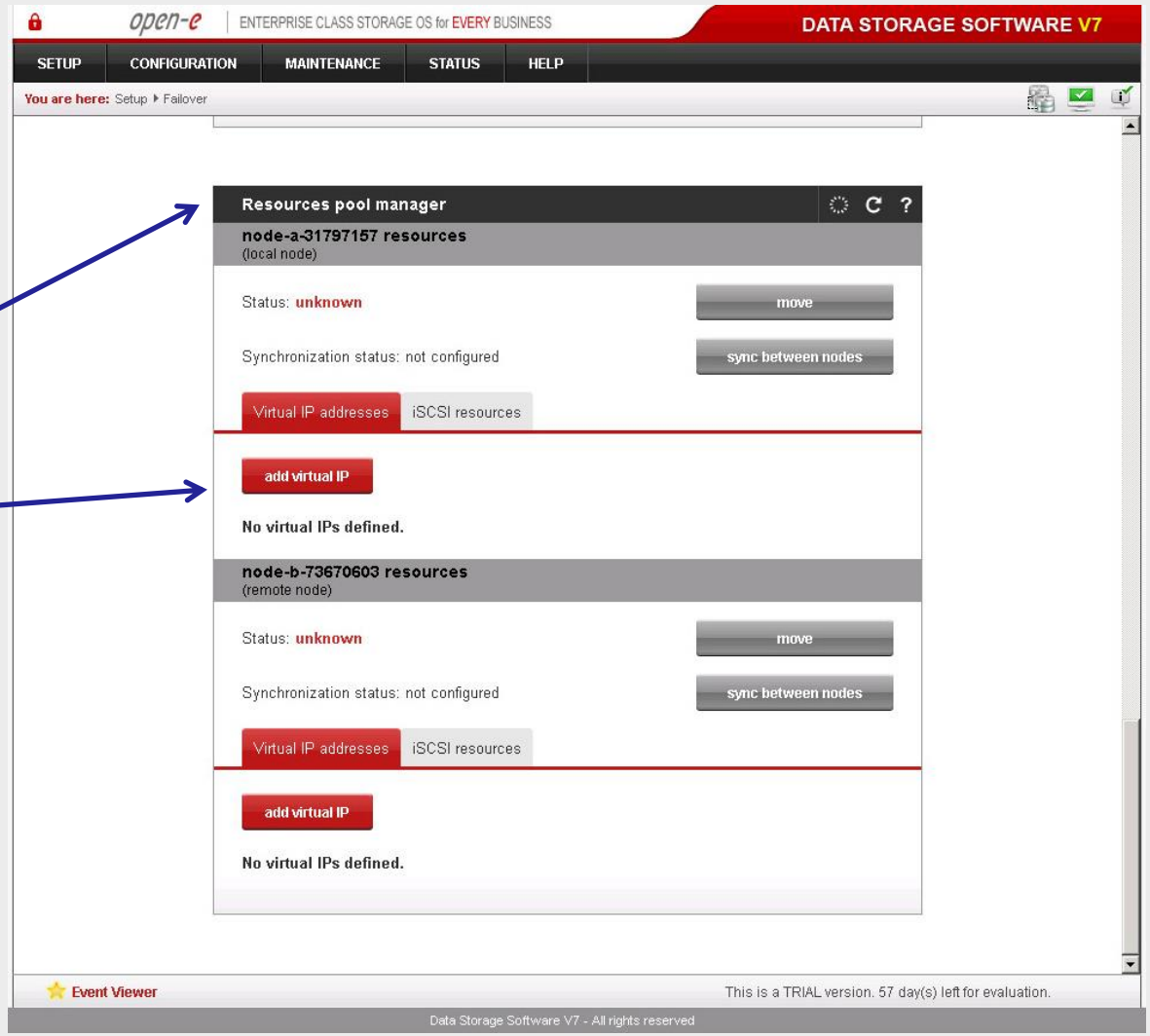
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

Next, go to the **Resources pool Manager** function (on node-a resources) and click the **add virtual IP** button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

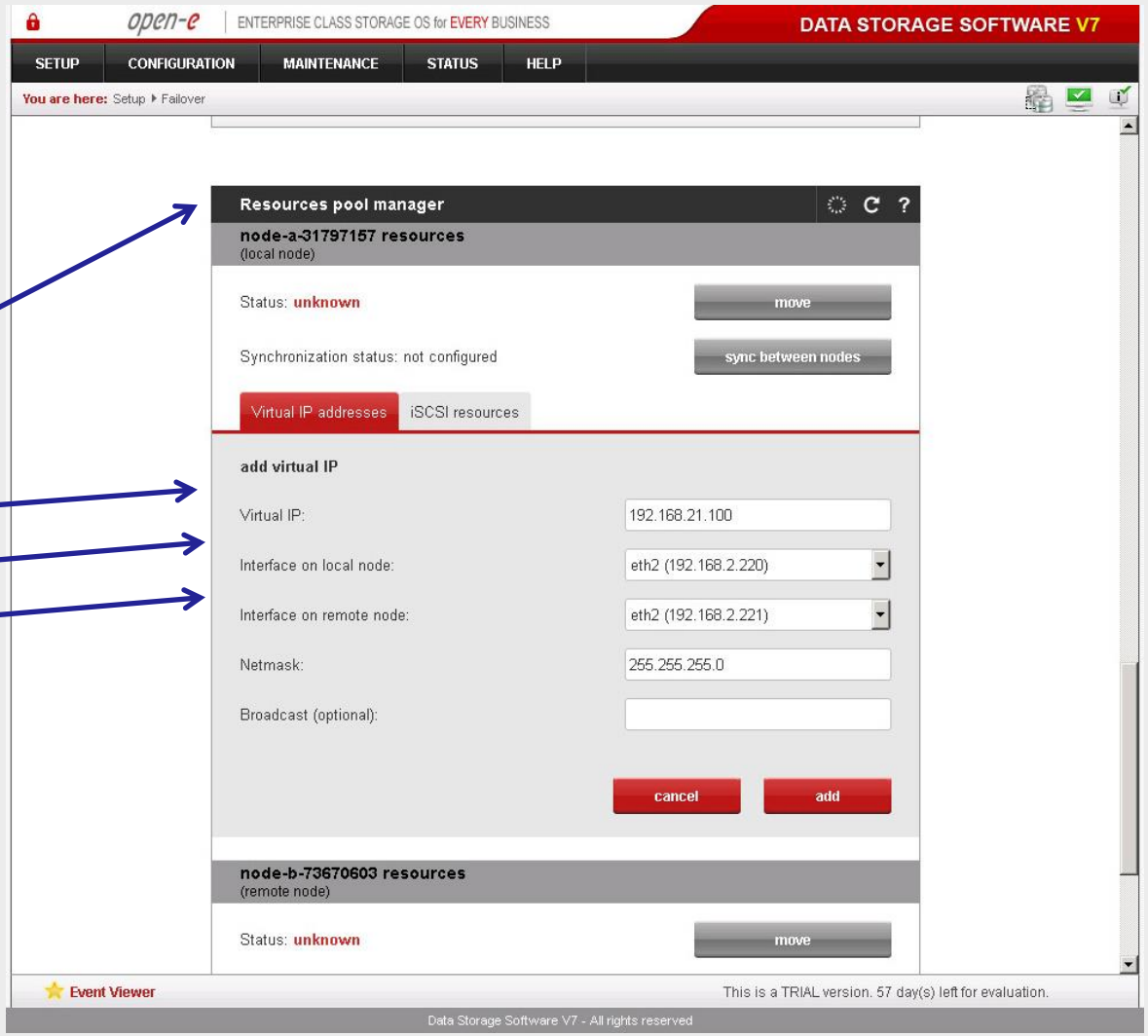
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

Enter the **Virtual IP,** (in this example 192.168.21.100 according to the configuration in the third slide) and select two appropriate interfaces on local and remote nodes that are in the same network. Then, click the **add** button. The **Virtual IP Address** must be a separate network from the NICs that are on the nodes. Having the Virtual IP on the same network of any of the nodes NIC's can cause routing issues in a failover event.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

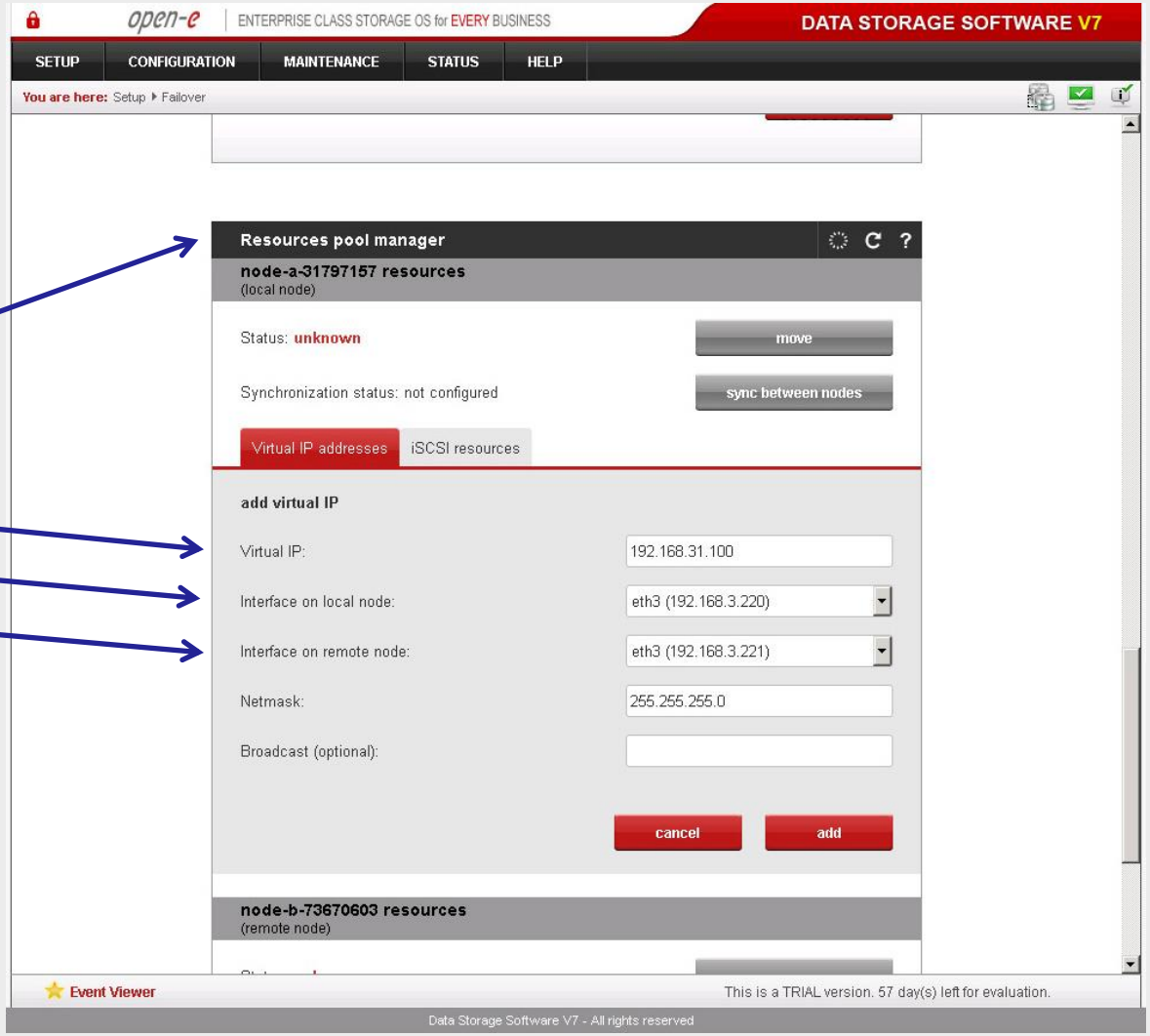
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

Now, still on node-a resources (local node) enter the next Virtual IP address. Click **add virtual IP** enter **Virtual IP,** (in this example 192.168.31.100), and select two appropriate interfaces on the local and remote nodes. Then, click the **add** button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

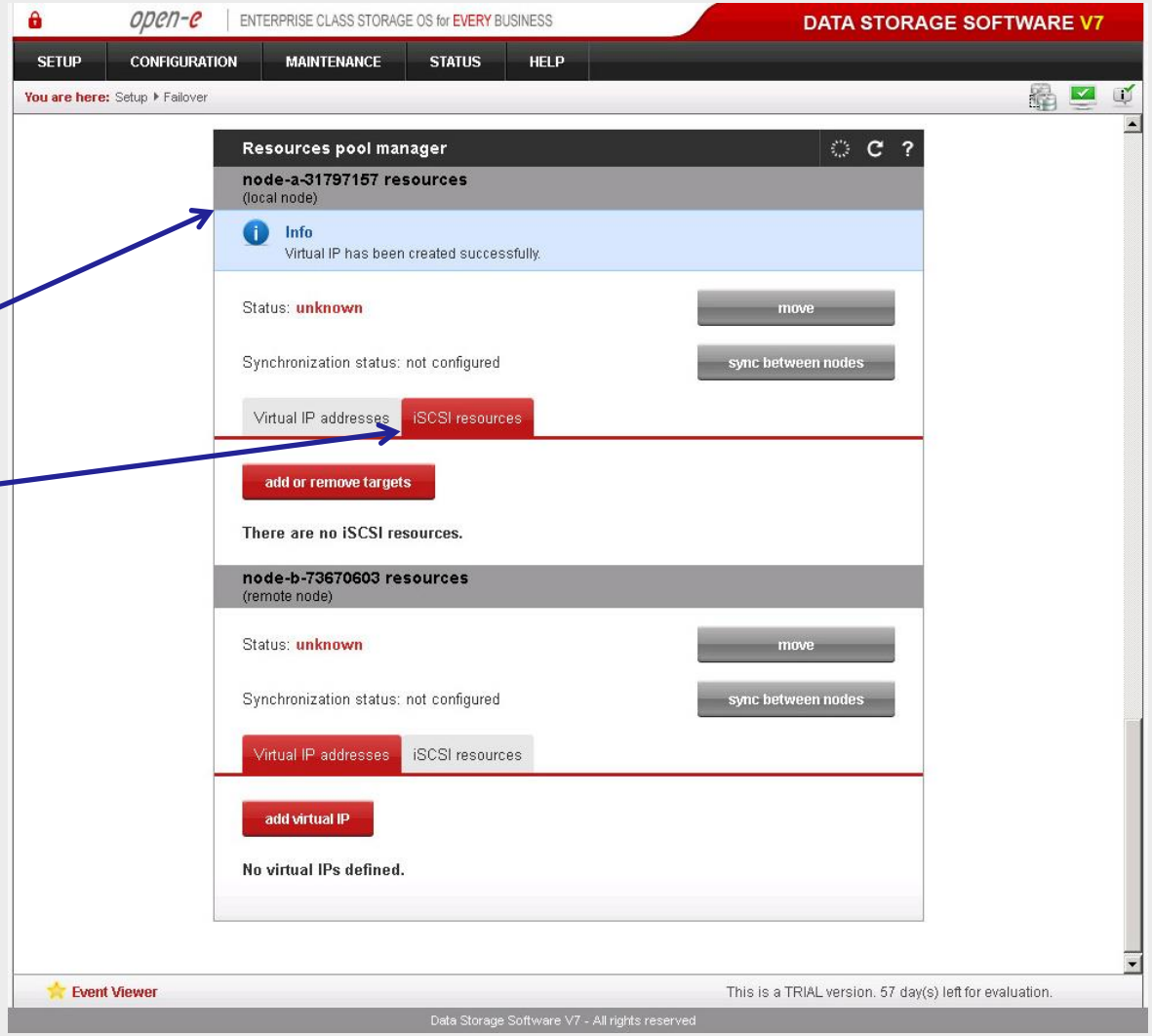
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

When you are finished with setting the virtual IP, go to the **iSCSI resources** tab on the **local node** resources and click the **add or remove targets** button.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

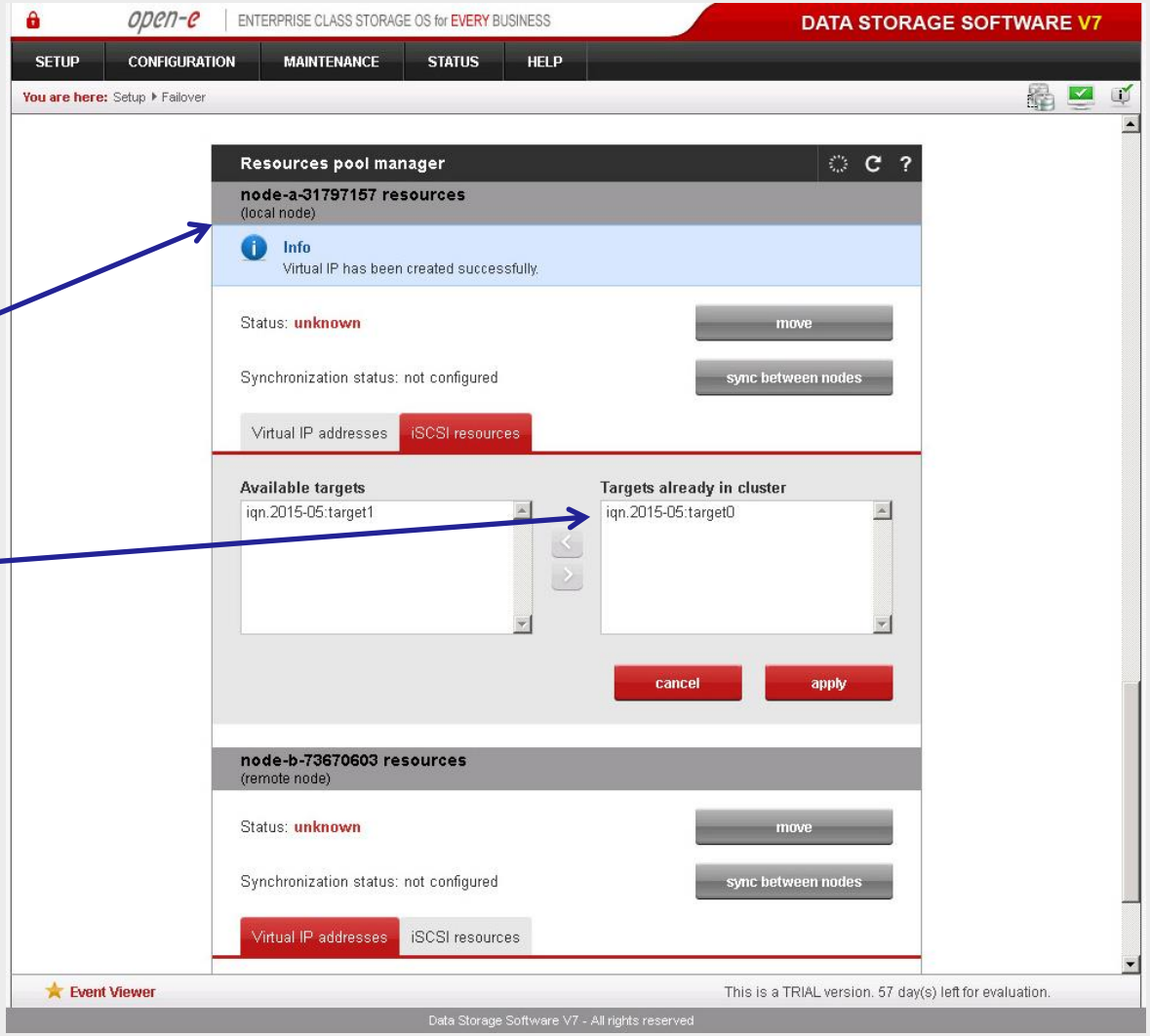
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

After moving the target "**iqn.2015-05:target0"** from the **available targets** to **Targets already in cluster**, click the apply button.



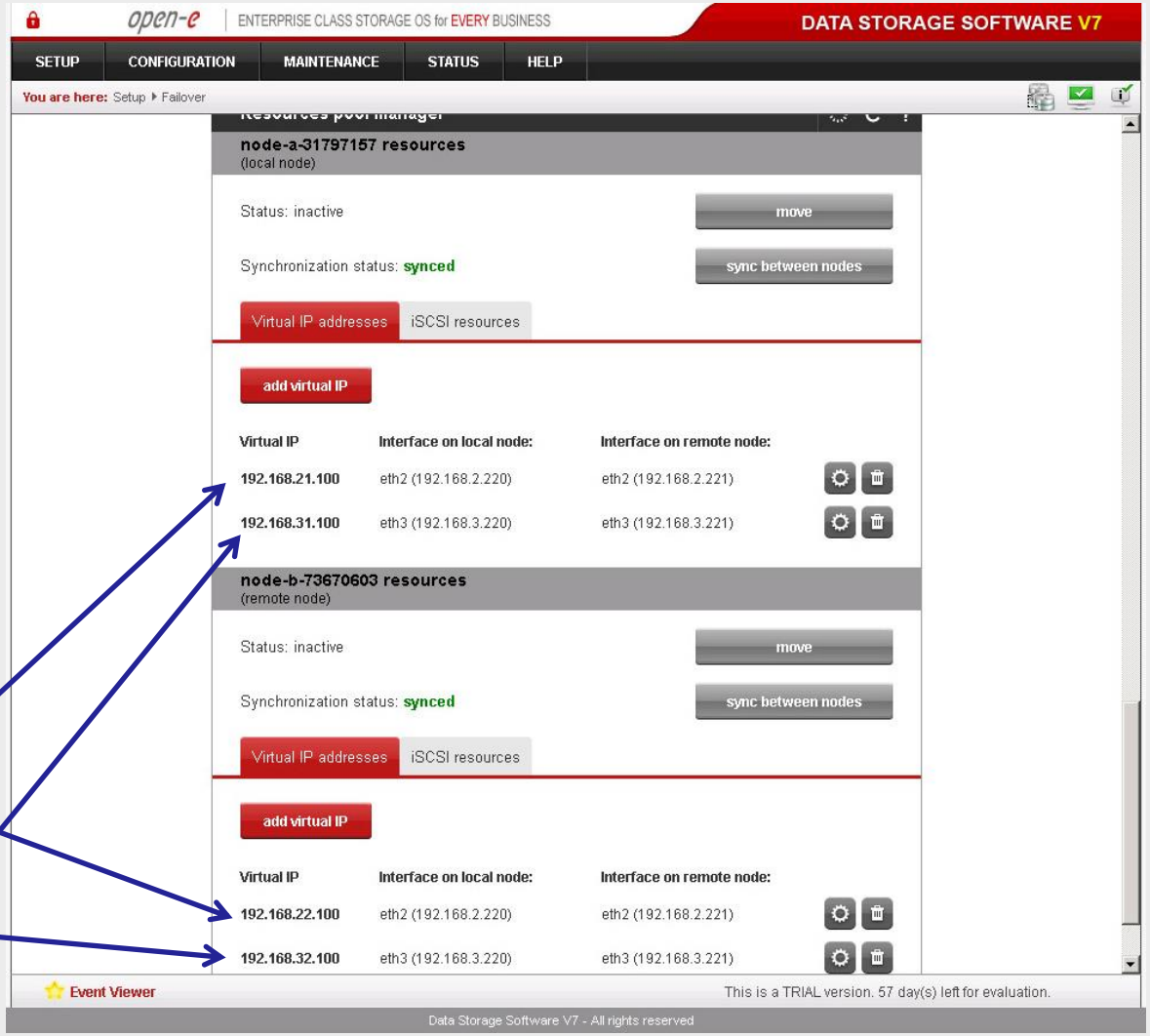
DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover



Now you have 4 **Virtual IP** addresses configured on two interfaces (eth2, eth3).

IMPORTANT NOTE:

Switchless environment setup is different than one with a switch.

The first ESX host will have assigned subnet **21** to access Target**0** and subnet **22** to access Target**1**

The second ESX host will have assignet subnet **31** to access Target**0** and subnet **32** to access Target**1**

DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

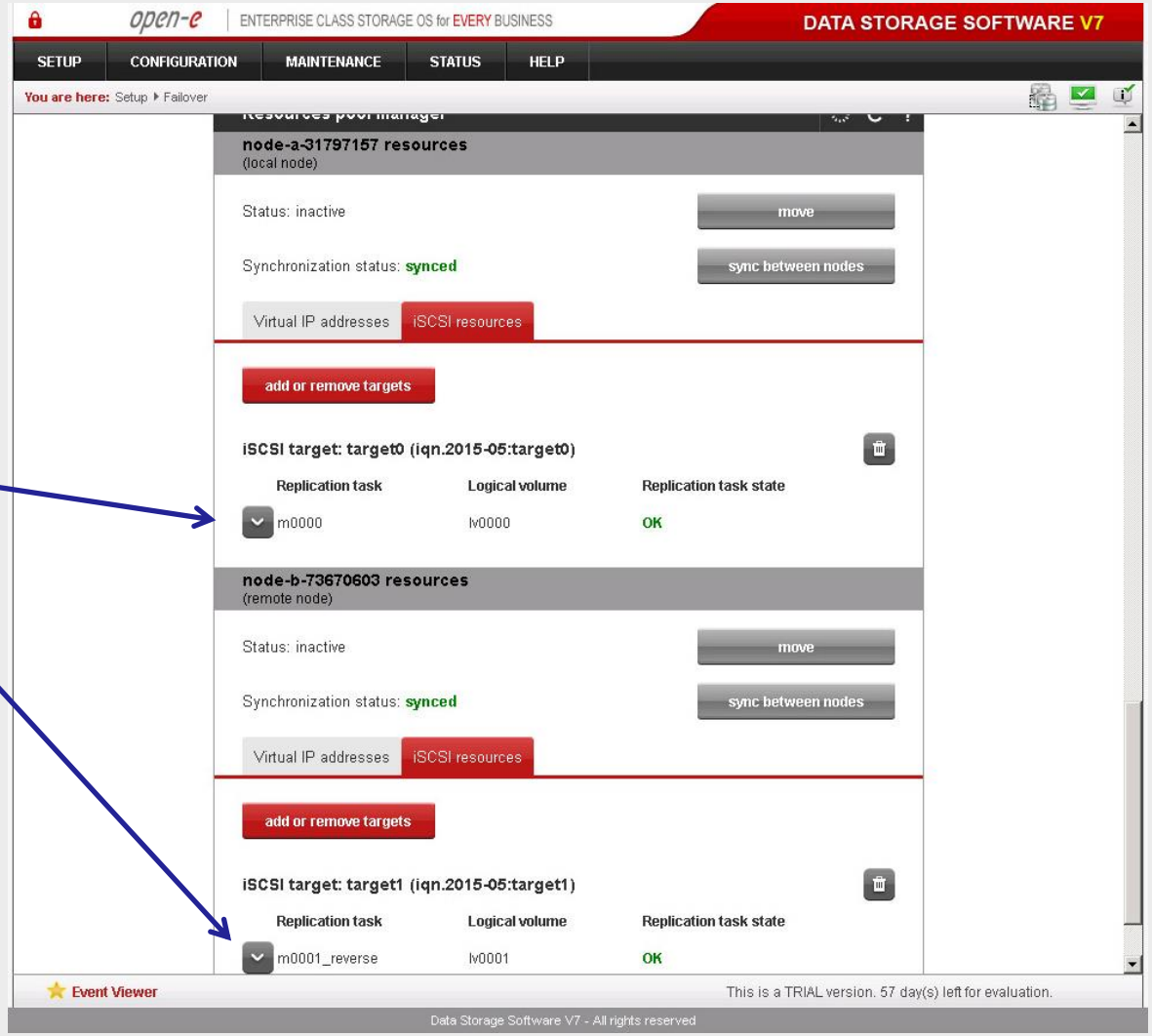
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

5. Configure failover

In iSCSI resources both targets are configured.



DSS V7 Active-Active iSCSI Failover Storage Cluster and VMware HA

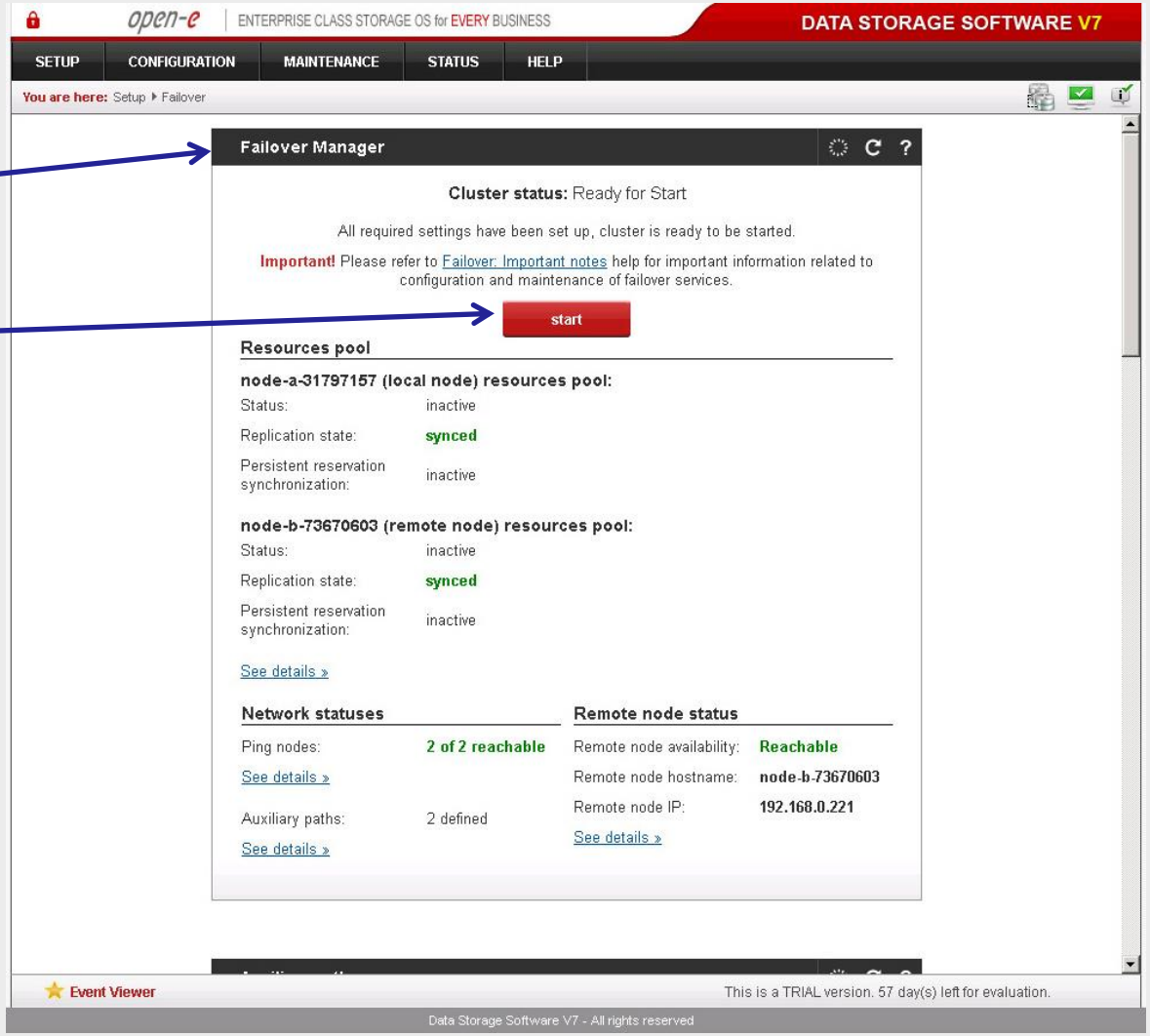
Data Server (DSS1)

node-a

IP Address: 192.168.100.165

6. Start Failover Service

Scroll to the top of the **Failover Manager** function.
At this point, both nodes are ready to start the Failover.
In order to run the Failover service, click the **start** button and confirm this action by clicking the **start** button again.



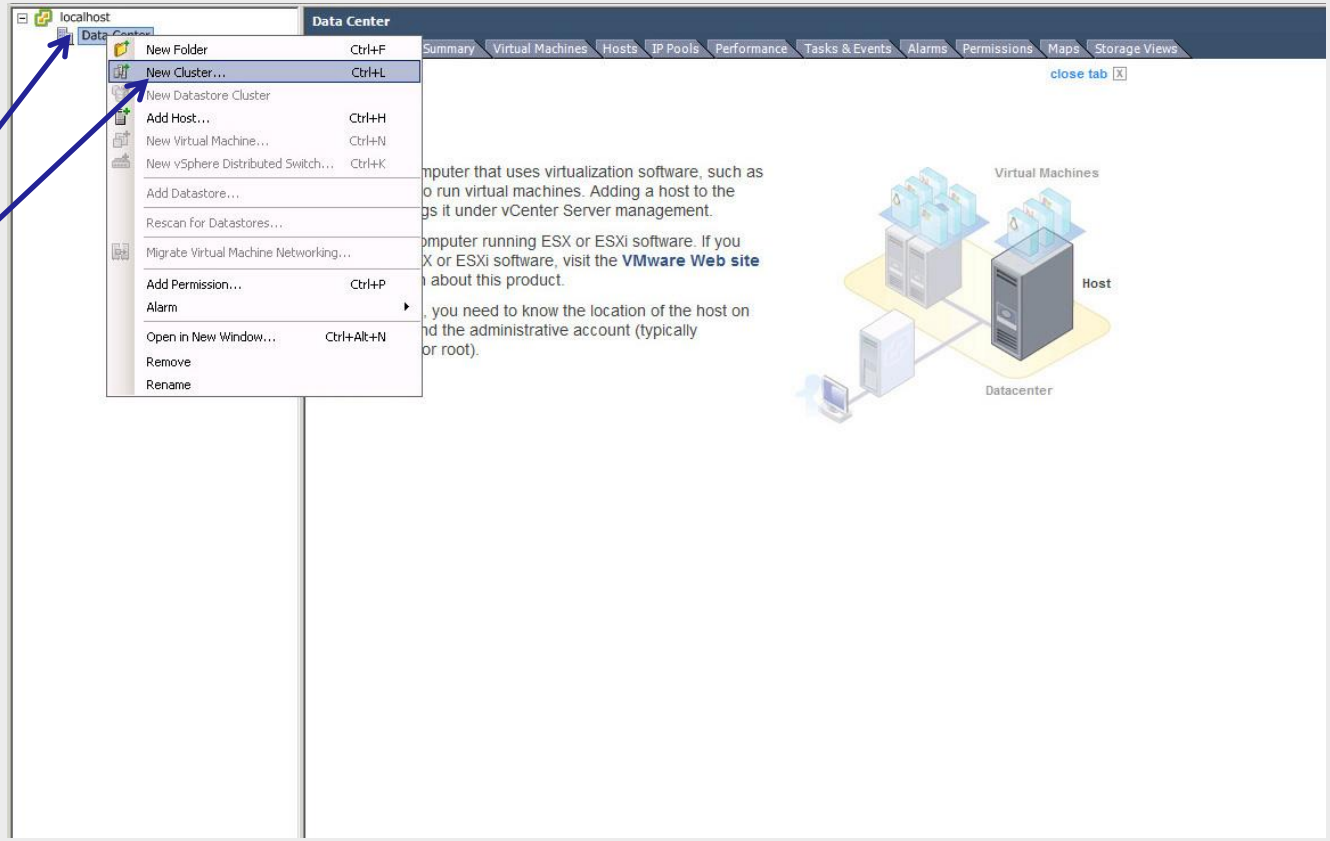
NOTE:
If the start button is grayed out, the setup has not been completed.

The configuration of Active-Active iSCSI Failover is now complete.

Configure VMware HA-Cluster

7. Create a new Cluster

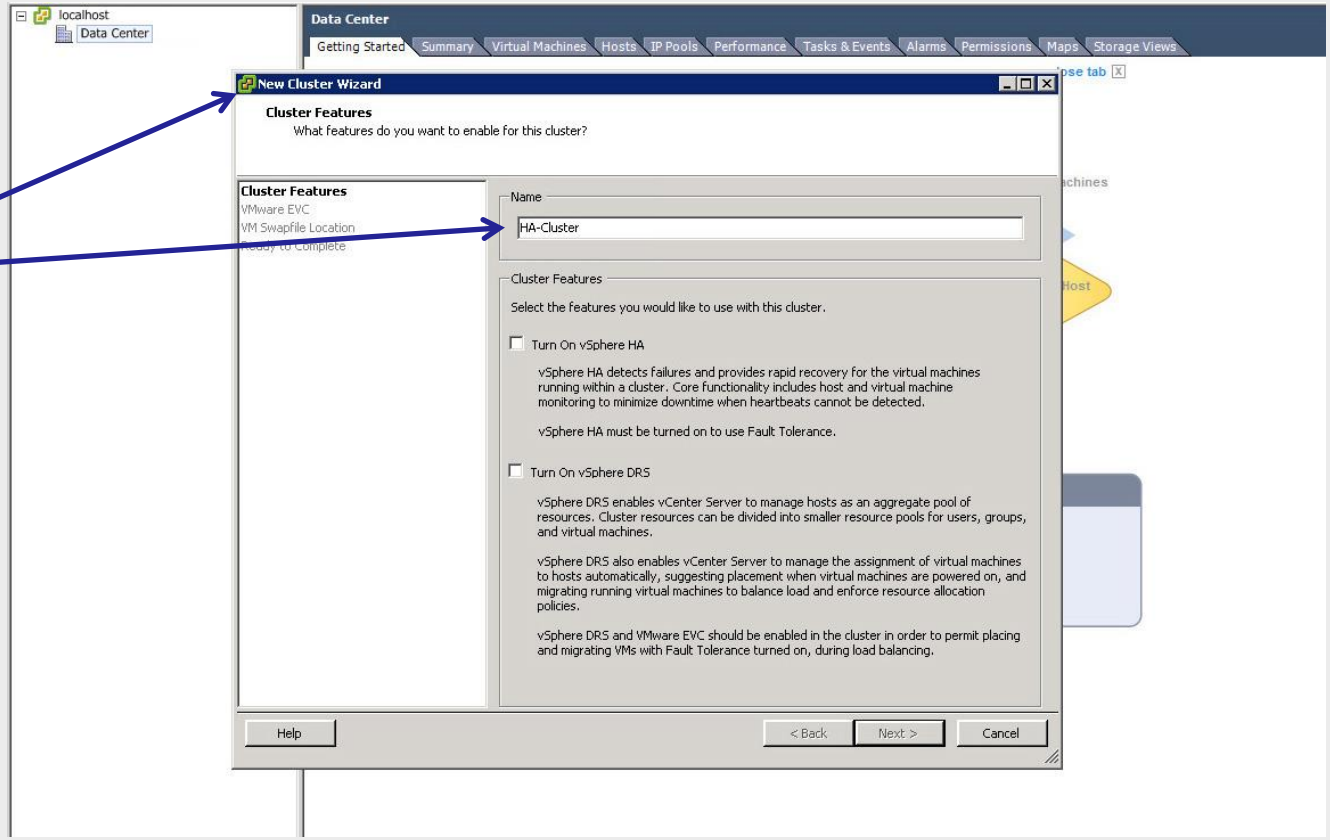
In **vCenter Server**, please click right mouse on **Data Center.** Next, please select **New Cluster** from the context menu.



Configure VMware HA-Cluster

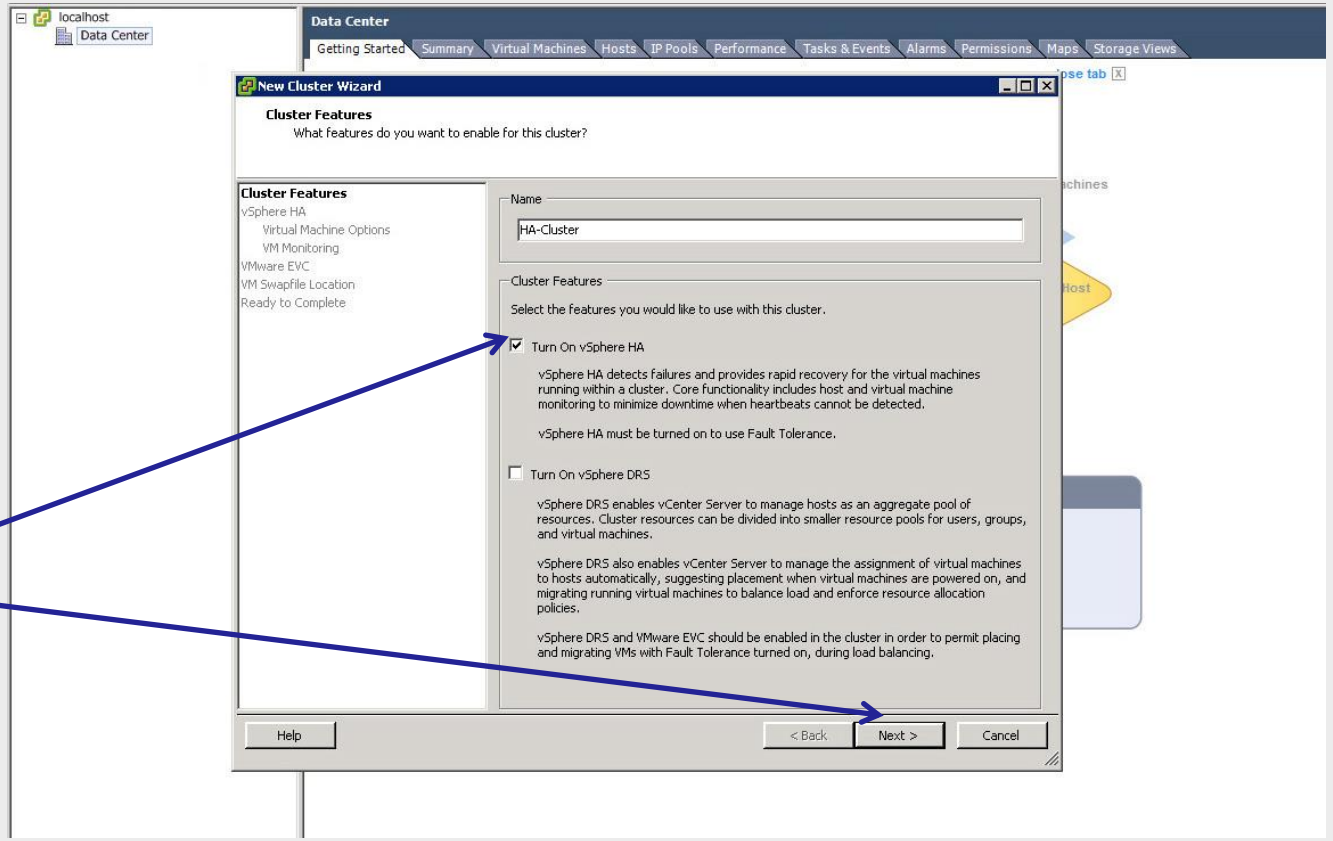
7. Create a new Cluster

In **New Cluster Wizard** window, please enter the name of new cluster.
(in this example **HA-Cluster)**



Configure VMware HA-Cluster

7. Create a new Cluster

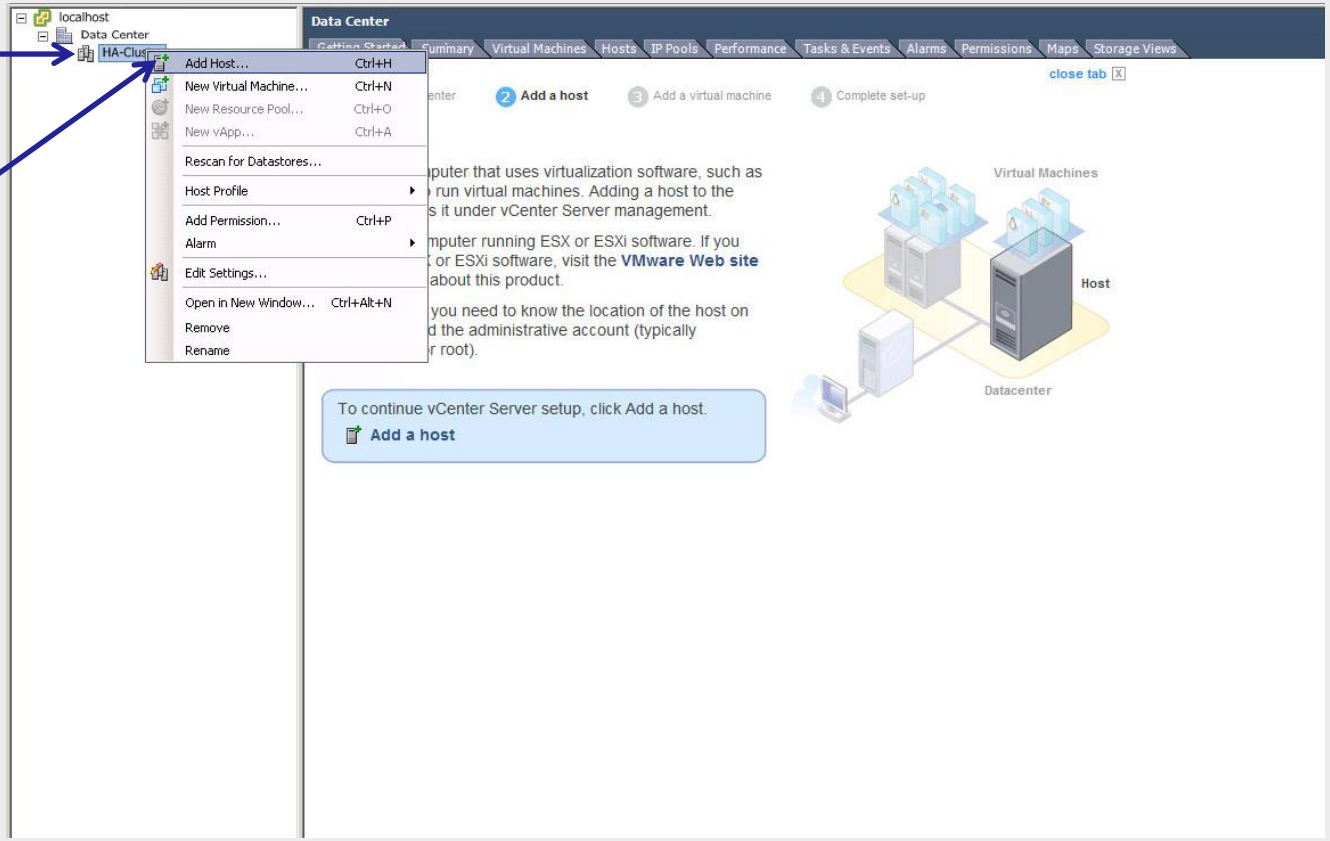


Check box **Turn On vSphere HA** end click **Next** buttons to complete the Wizard.

Configure VMware HA-Cluster

8. Adding a Hosts

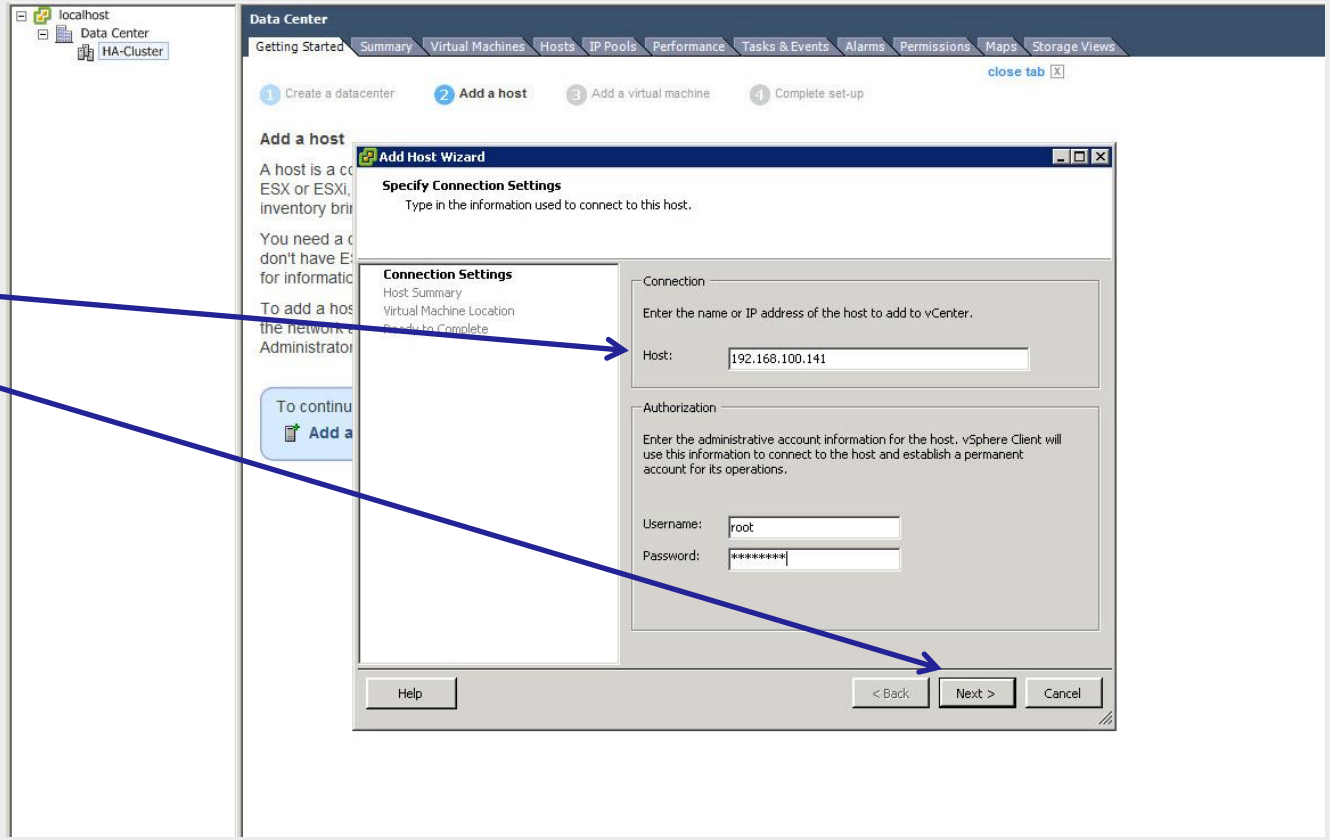
Next, right-mouse click on **HA-Cluster** and select **Add Host** from the context menu.



Configure VMware HA-Cluster

8. Adding a Hosts

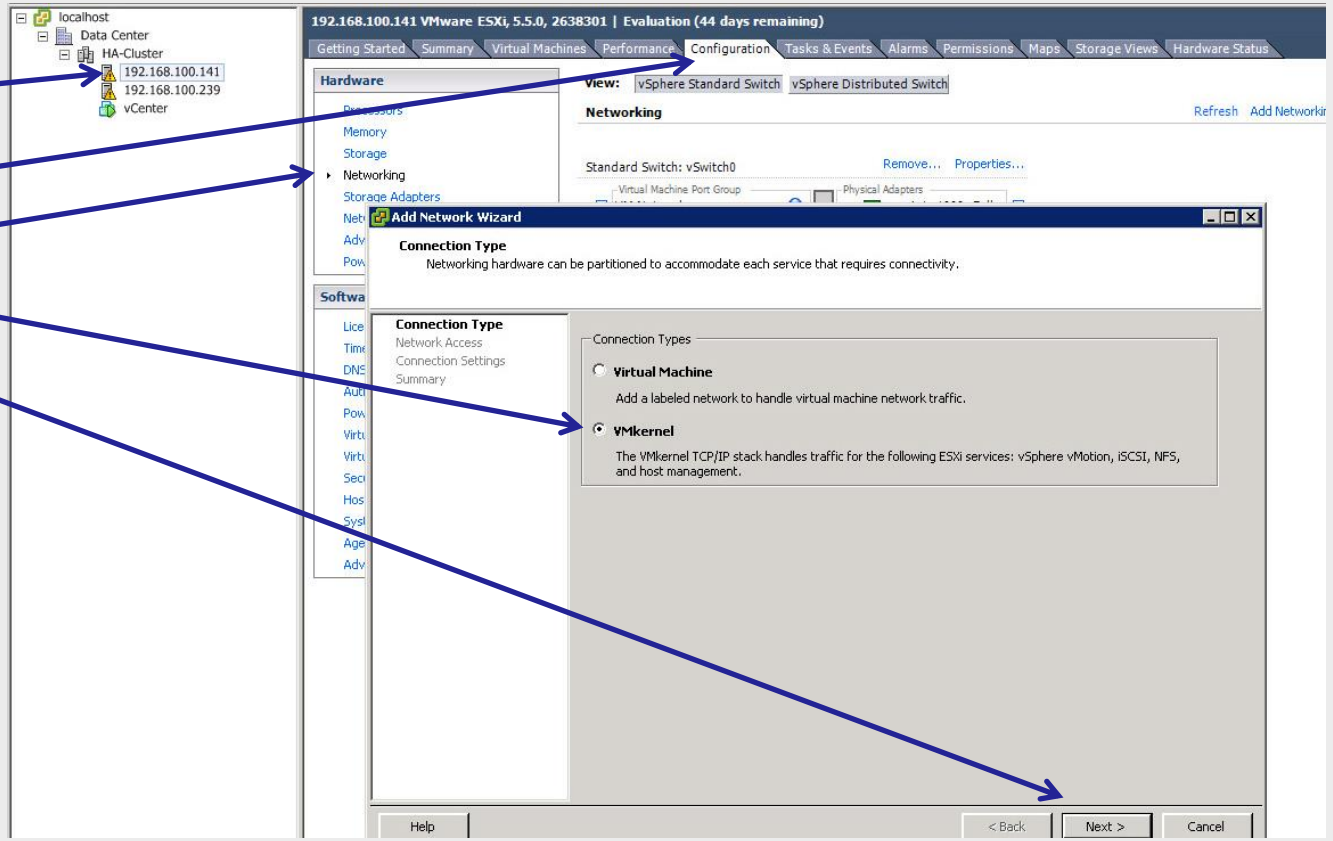
Next, enter the IP address of the ESX Host-1 in the field **Host** and enter username and password.
Click **Next** button.
Repeat the same for the second host.
In this example the first ESX Host IP address: 192.168.100.141 and second Host IP:192.168.100.239



Configure VMware HA-Cluster

9. Configure networking

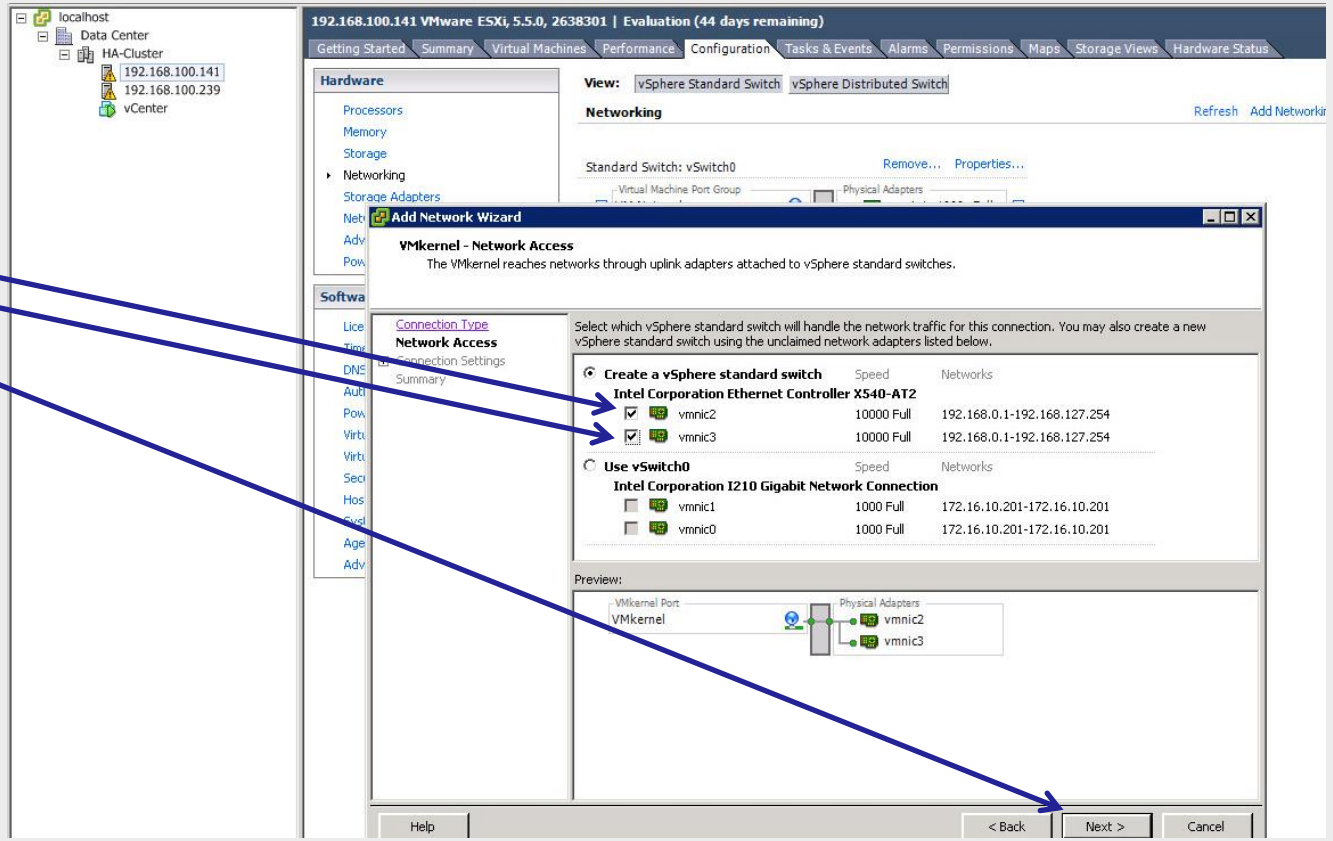
After adding hosts, please click on the first host icon **192.168.100.141** on left branch, and go to **Configuration** tab, then select **Networking**.
In the **Add Network Wizard** window, select **VMkernel** and click on Next button.



Configure VMware HA-Cluster

9. Configure networking

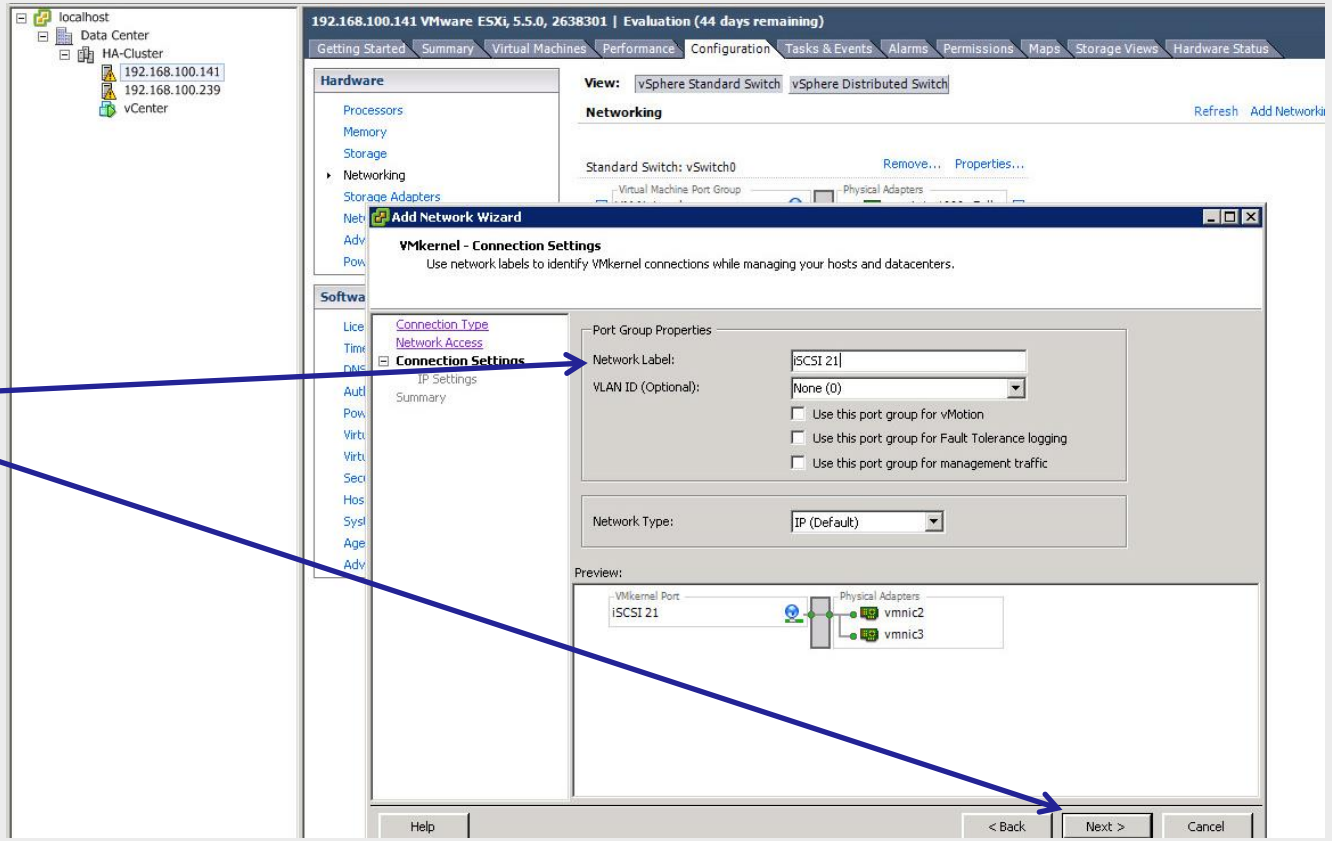
Next, select both **vmnic** 10Gbit ports and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

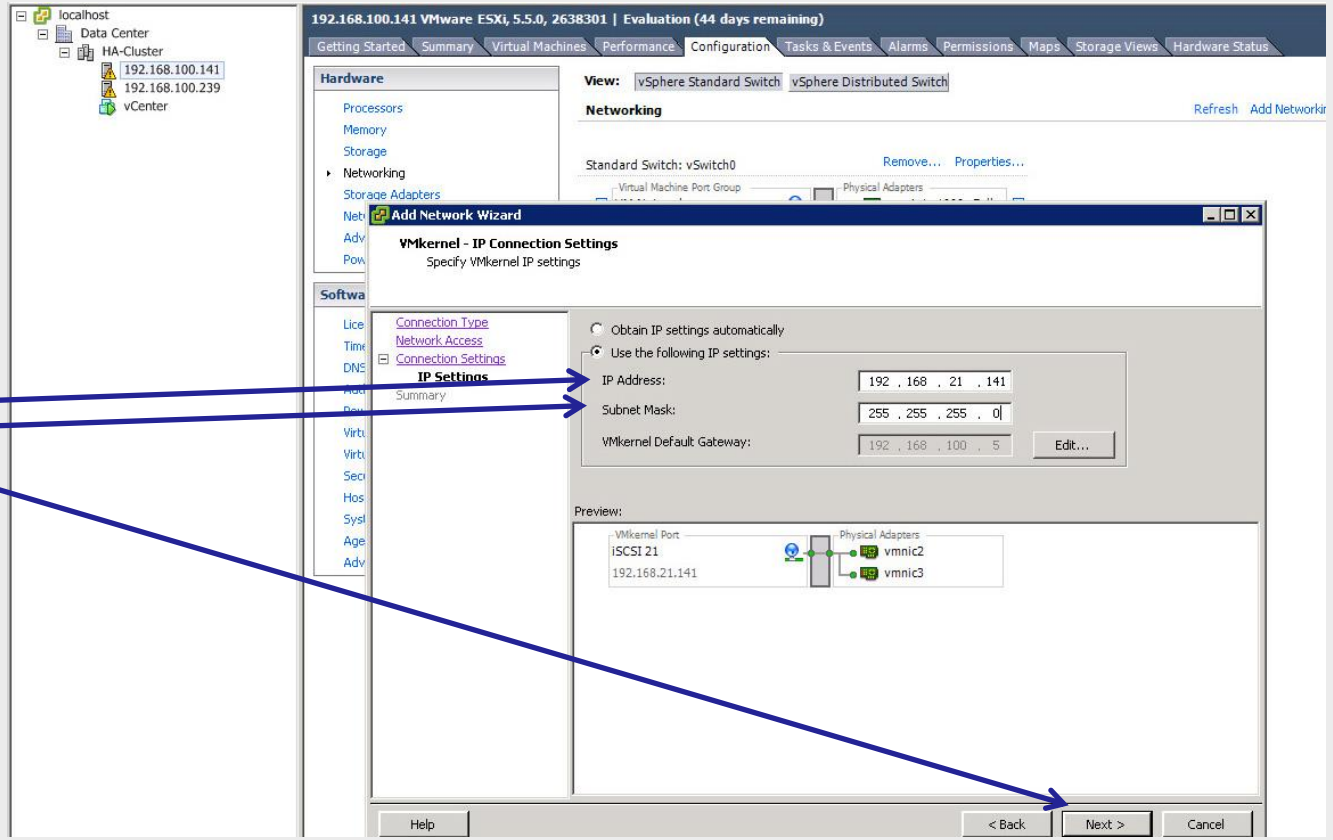
In Connection Settings, in the field **Network Label** enter **iSCSI 21** and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

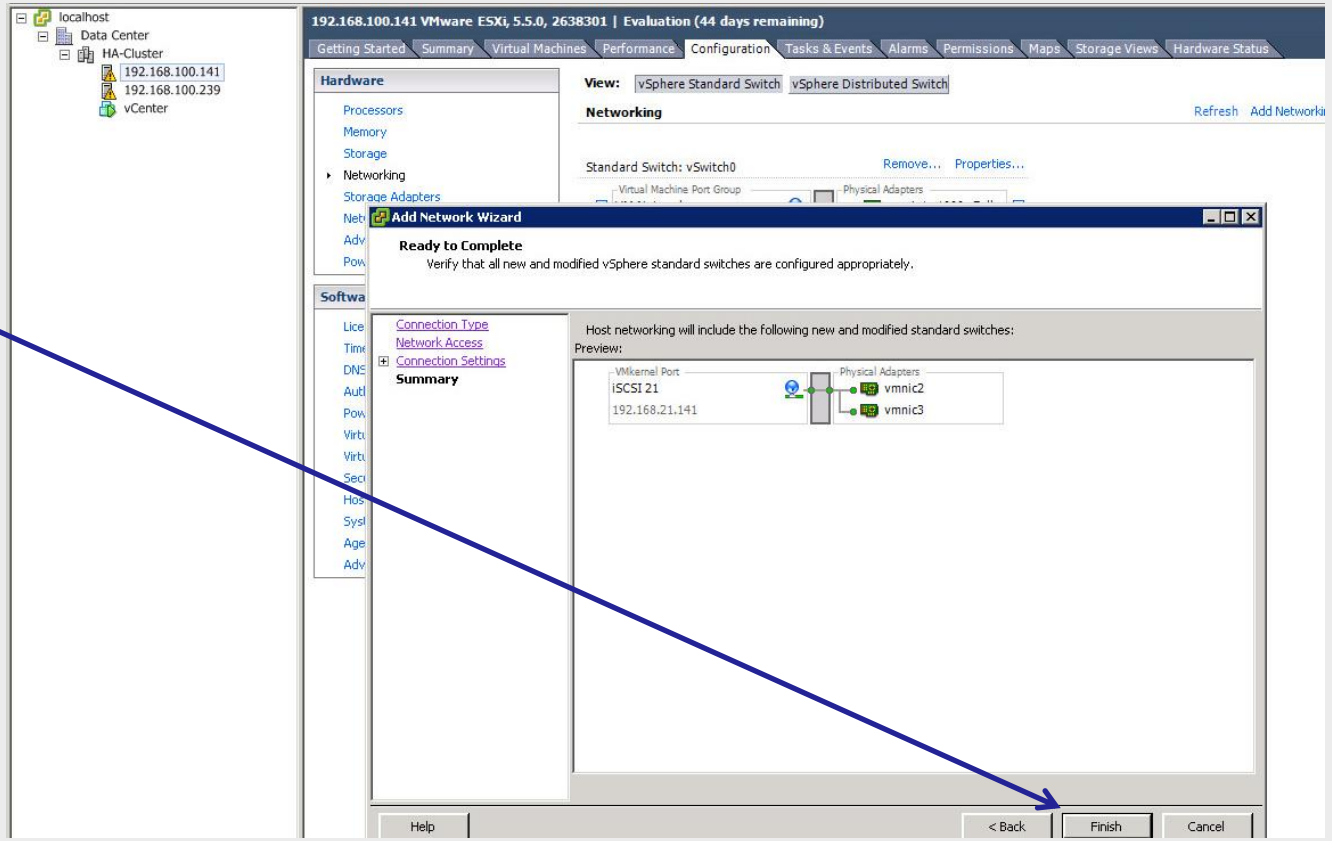
Enter IP address, subnet mask and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

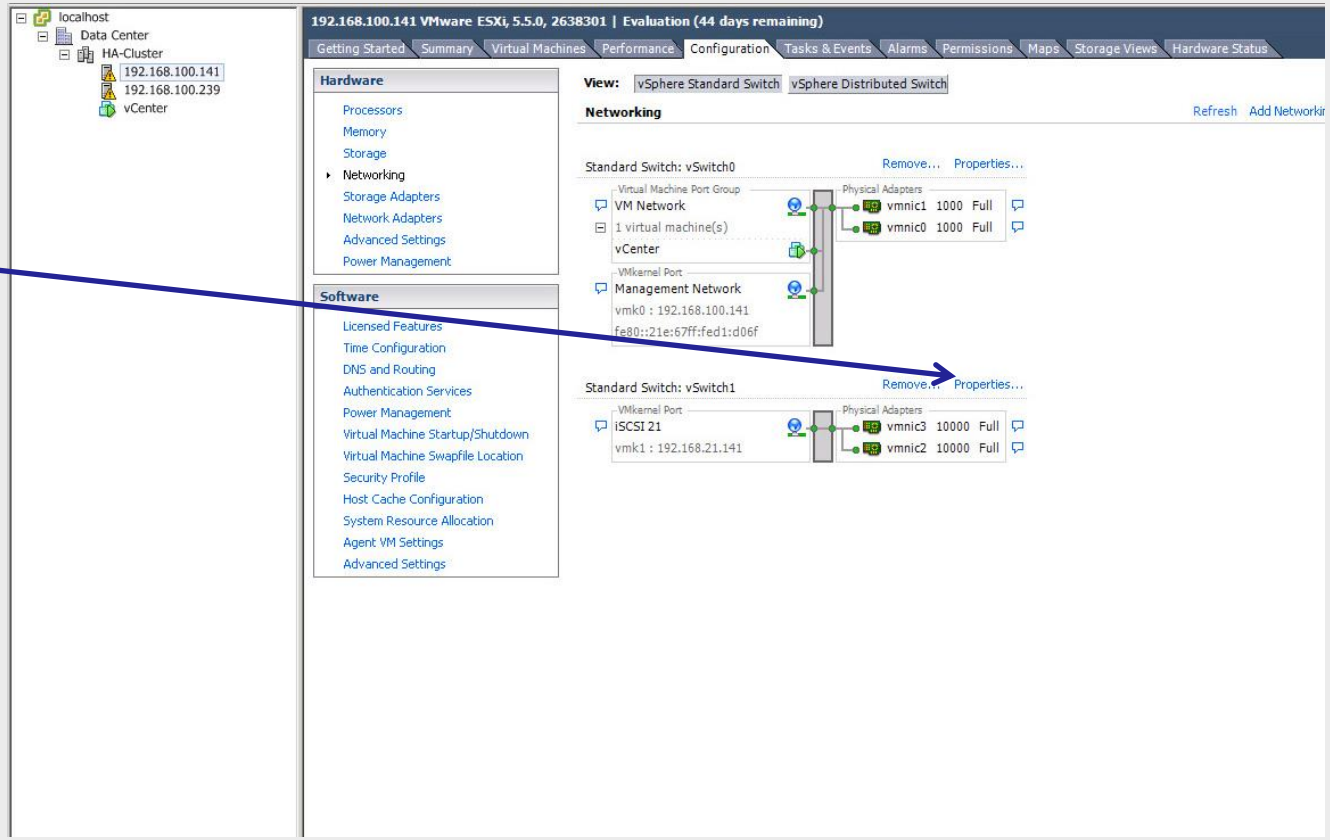
To complete the wizard, click on **Finish** button.



Configure VMware HA-Cluster

9. Configure networking

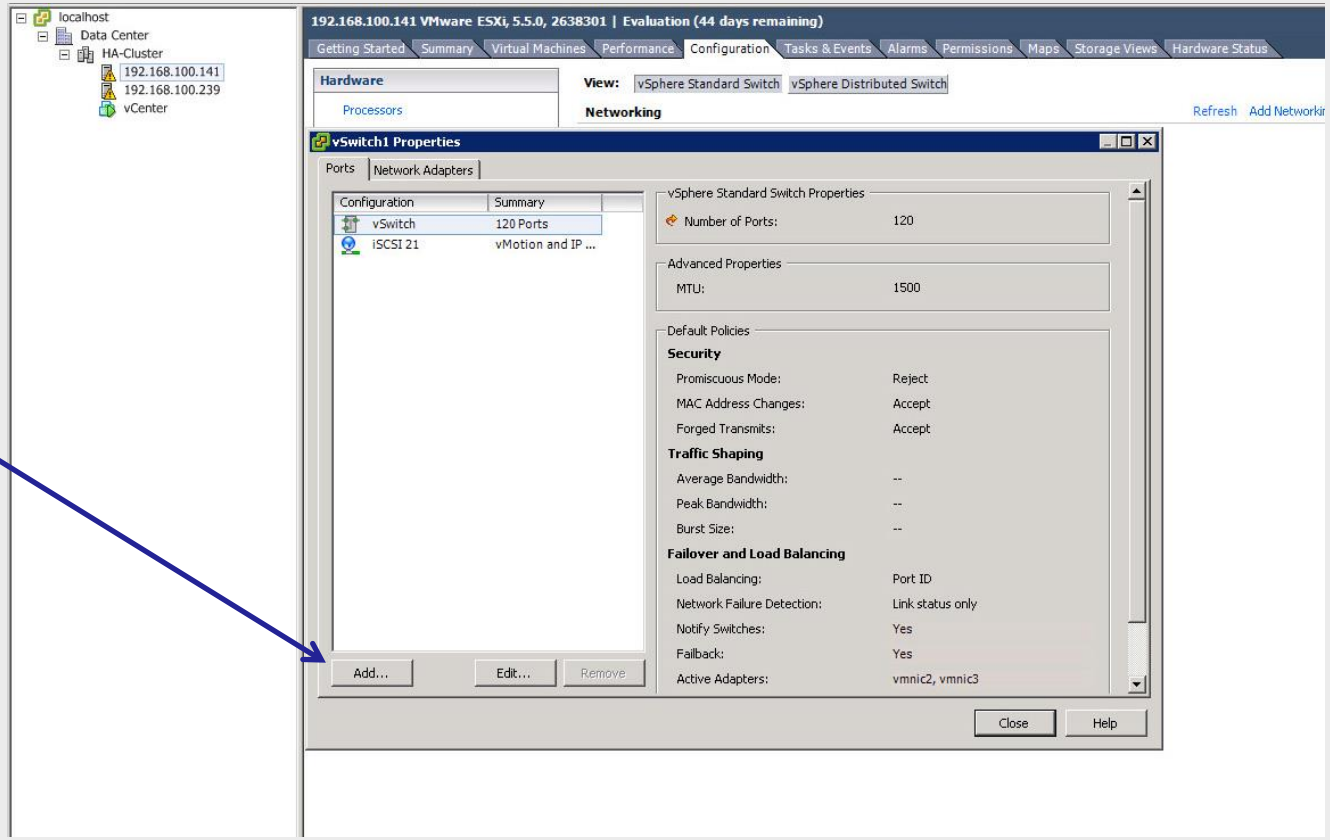
Next click on **Properties**



Configure VMware HA-Cluster

9. Configure networking

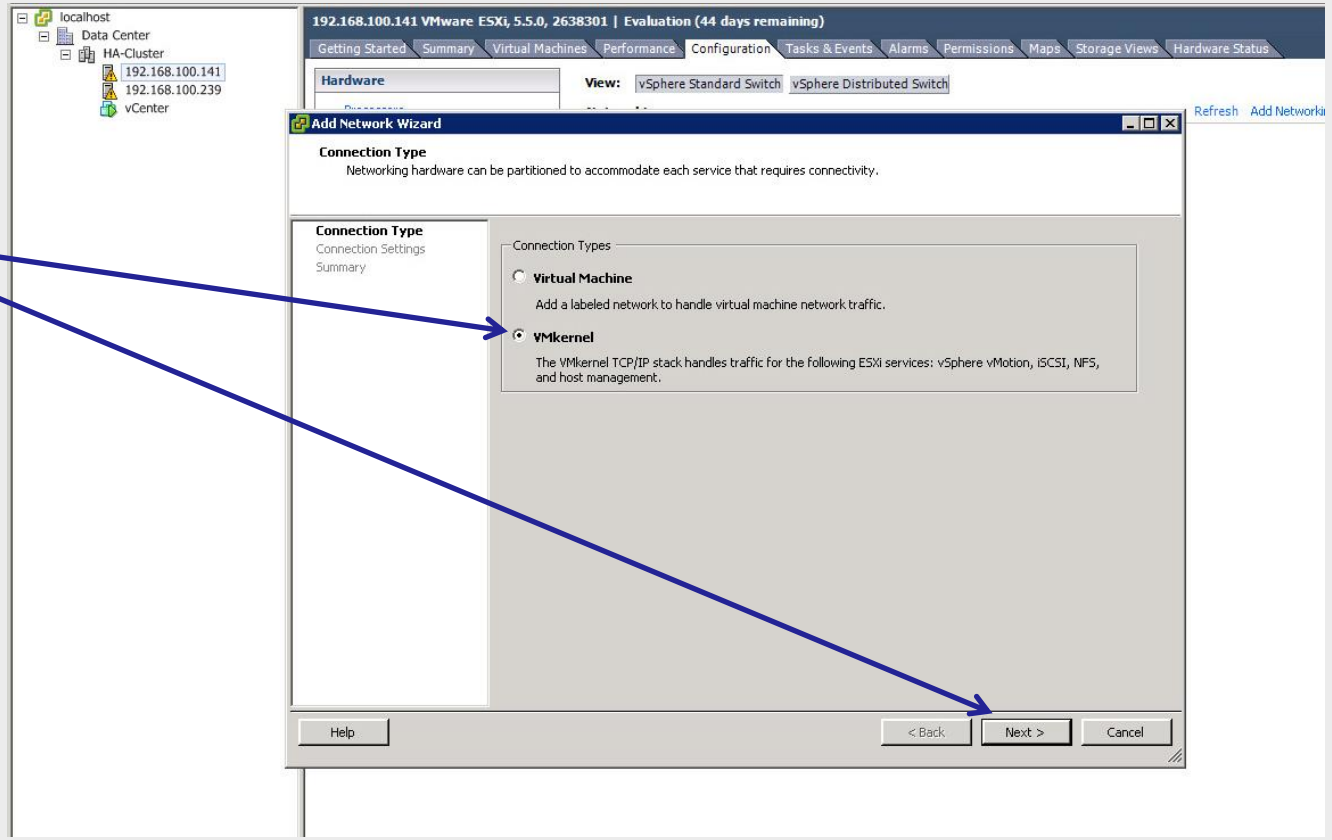
In **vSwitch1 Properties** click on **Add** button.



Configure VMware HA-Cluster

9. Configure networking

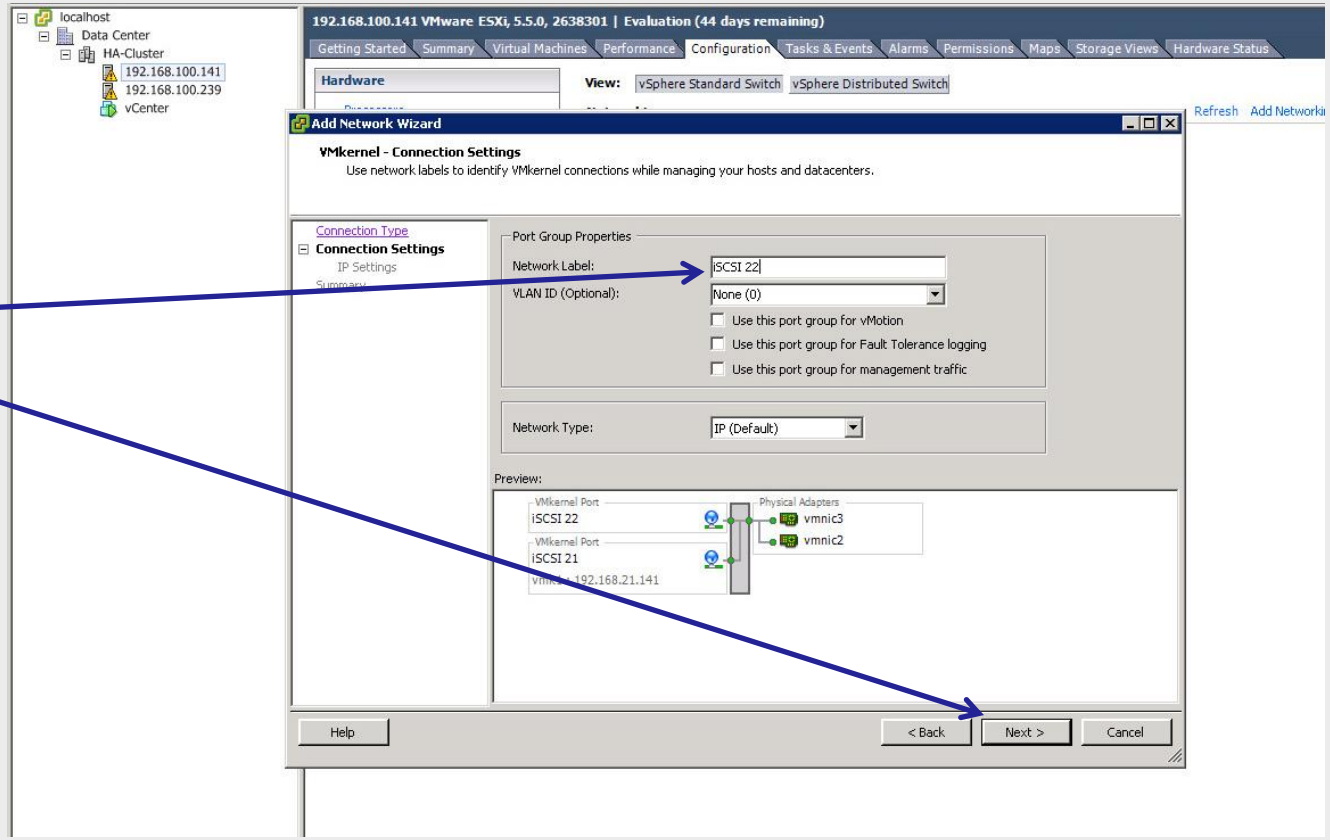
Next, select **VMkernel** and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

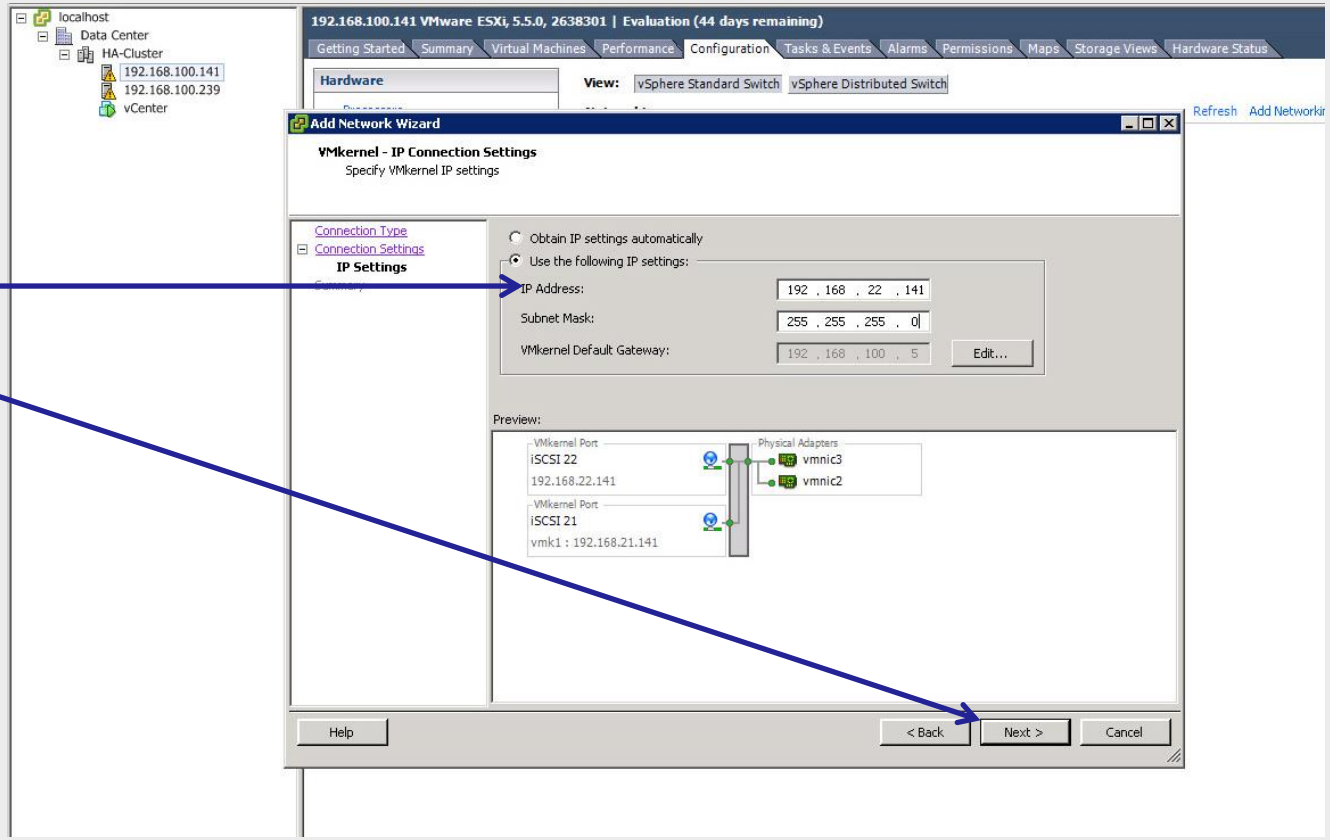
In Network Label field please enter iSCSI 22 and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

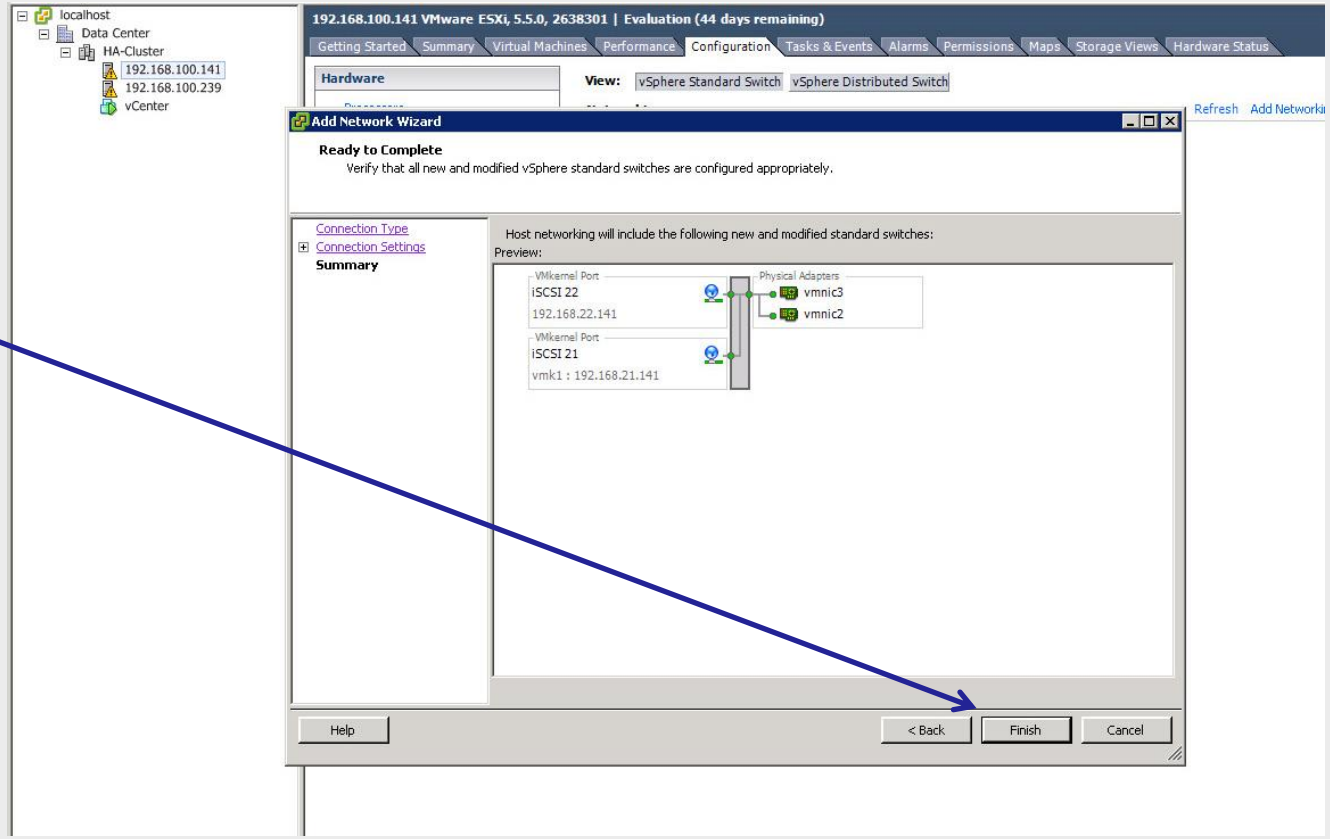
Enter IP address, subnet mask and click on **Next** button.



Configure VMware HA-Cluster

9. Configure networking

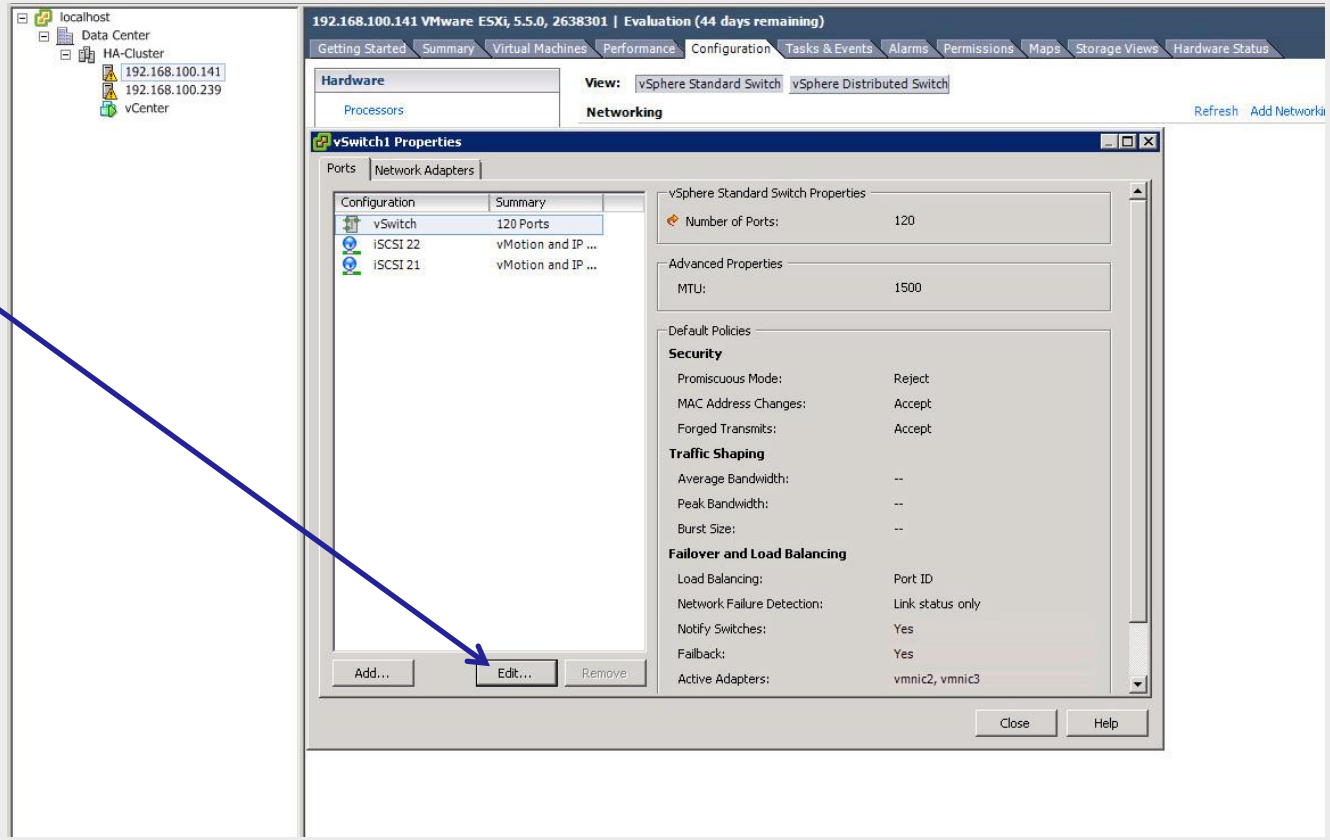
To complete the wizard, click on **Finish** button.



Configure VMware HA-Cluster

9. Configure networking

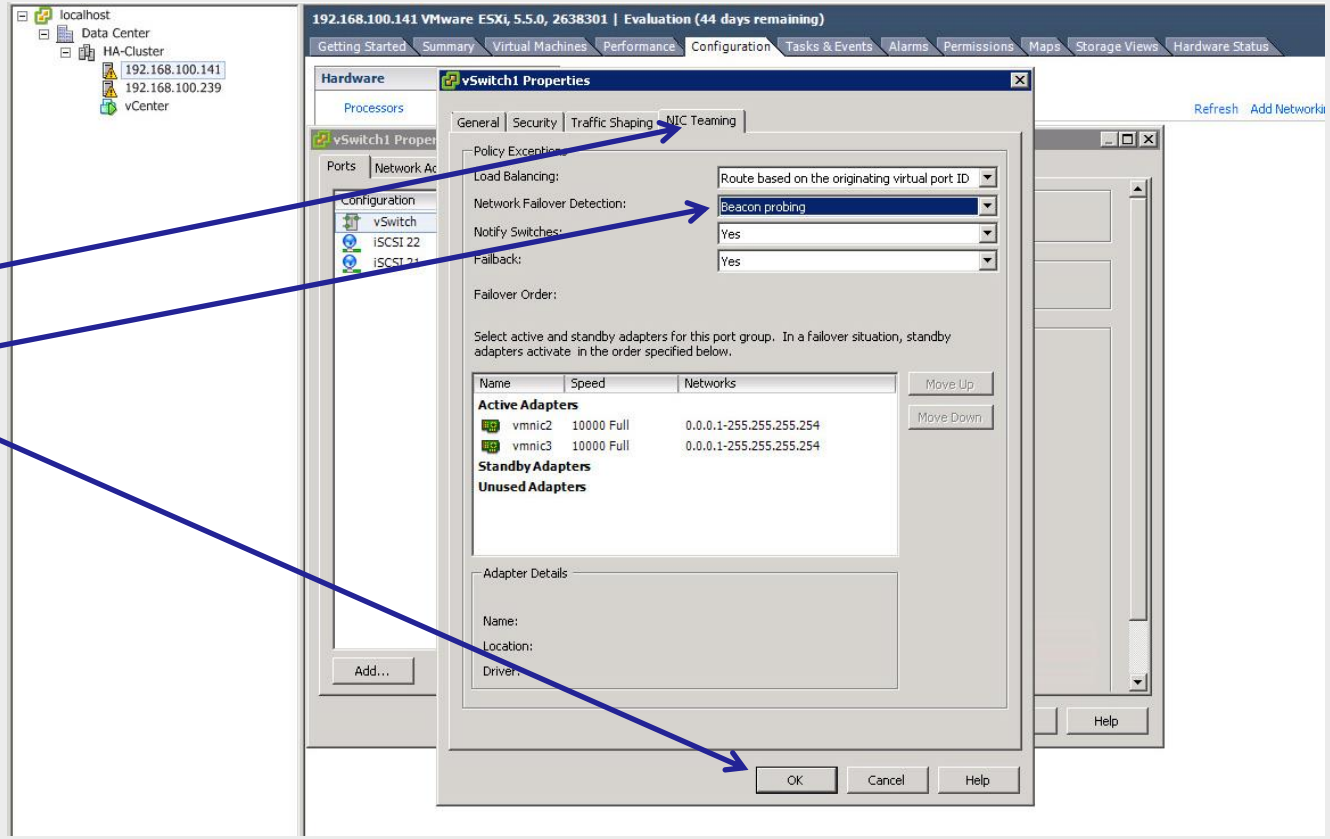
In **vSwitch1 Properties**, click the **Edit** button.



Configure VMware HA-Cluster

9. Configure networking

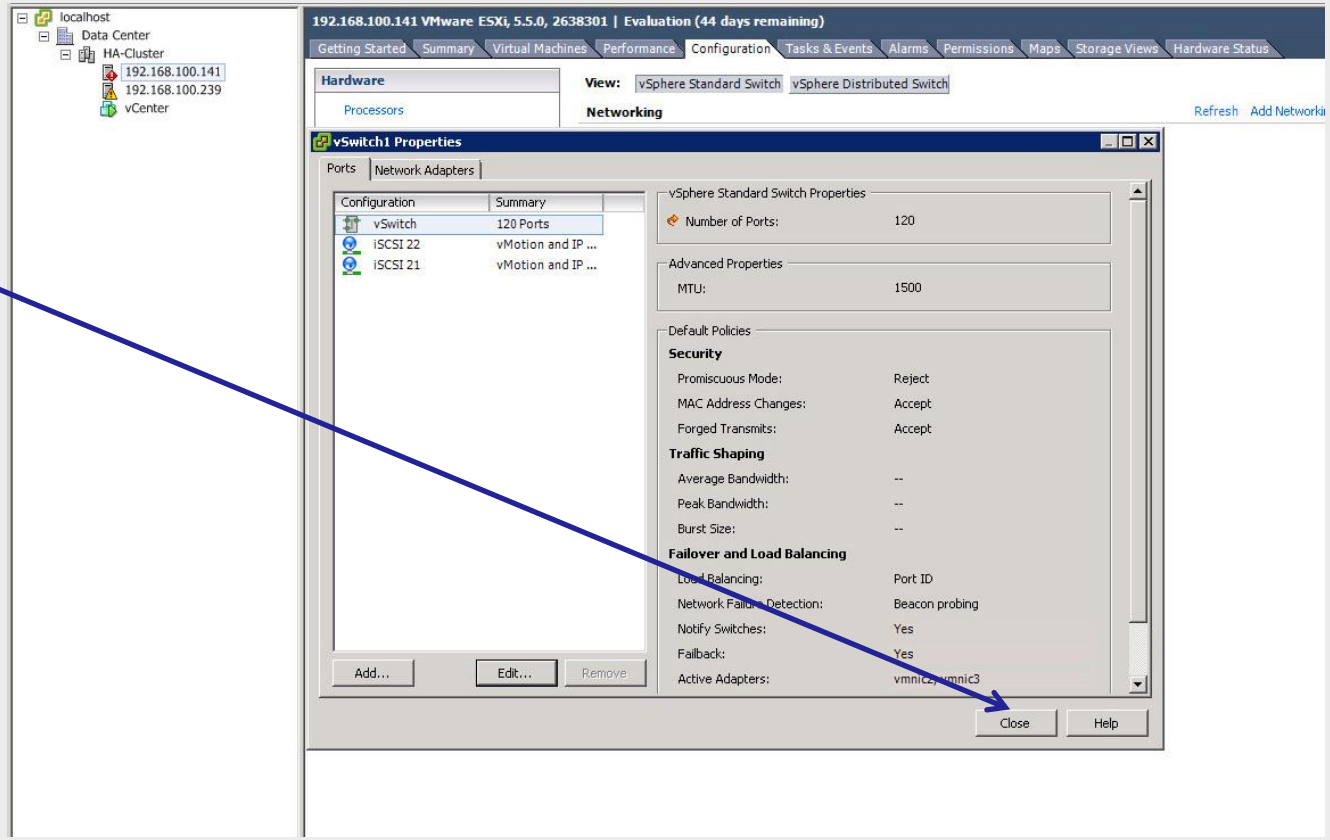
Next, click **NIC Teaming** tab, select **Beacon probing** and click **OK** button.



Configure VMware HA-Cluster

9. Configure networking

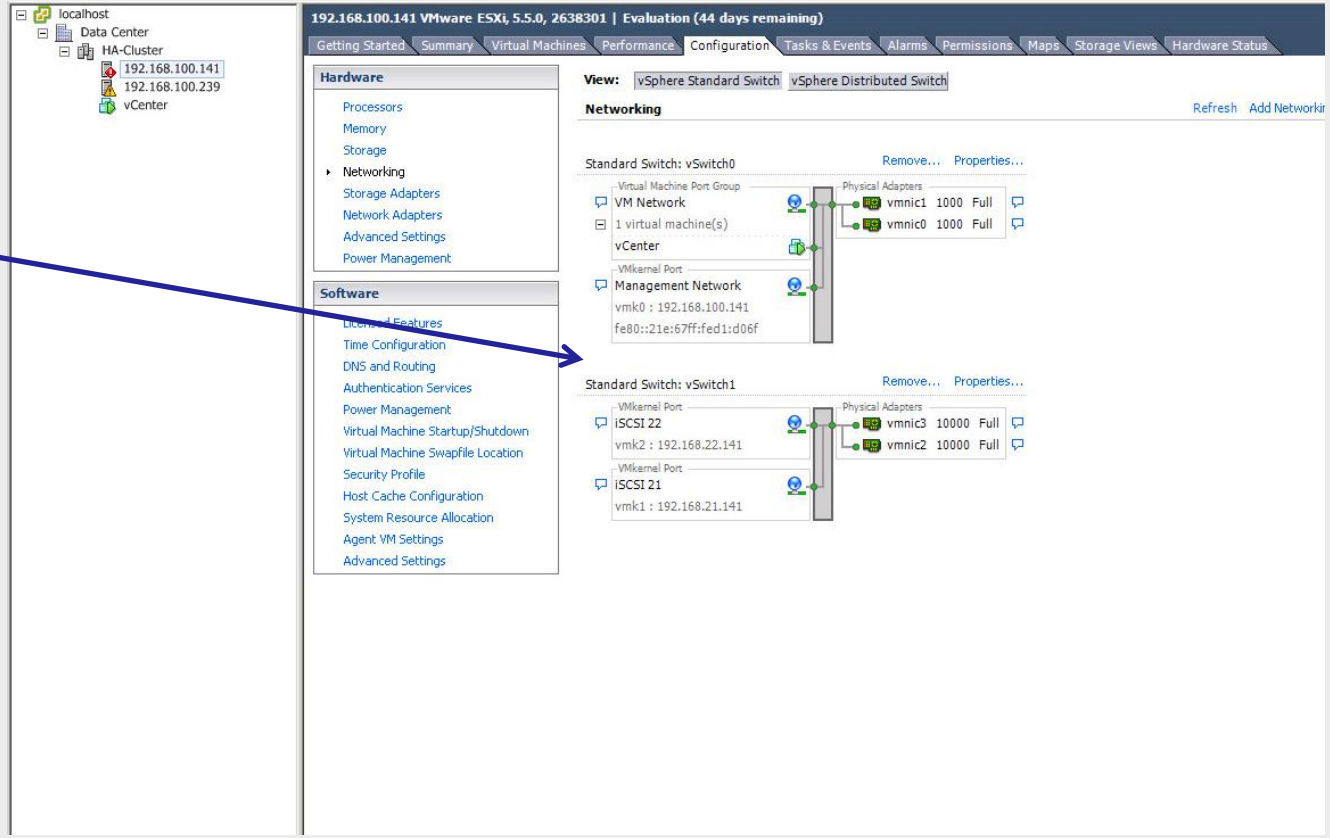
Now, click on **Close** button.



Configure VMware HA-Cluster

9. Configure networking

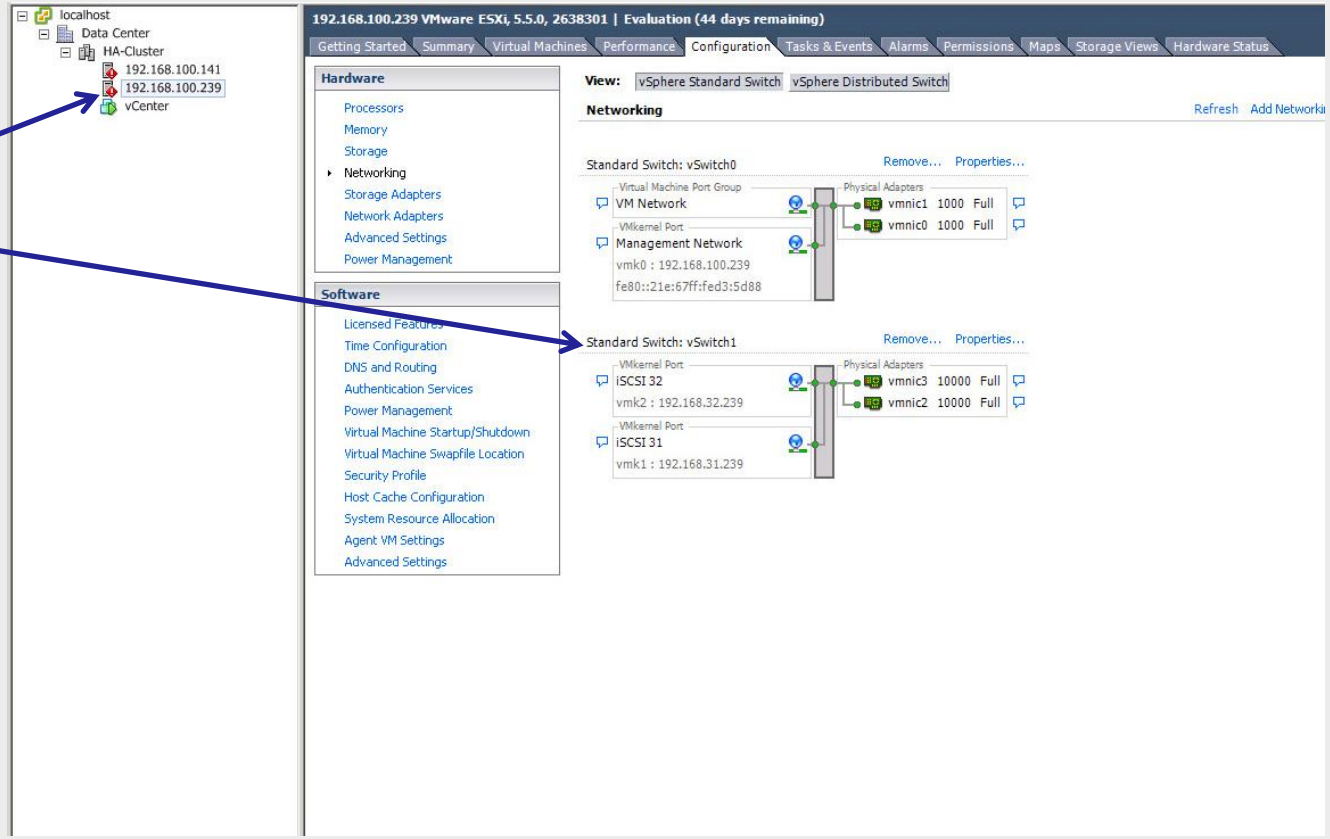
View of completed network configuration.



Configure VMware HA-Cluster

9. Configure networking

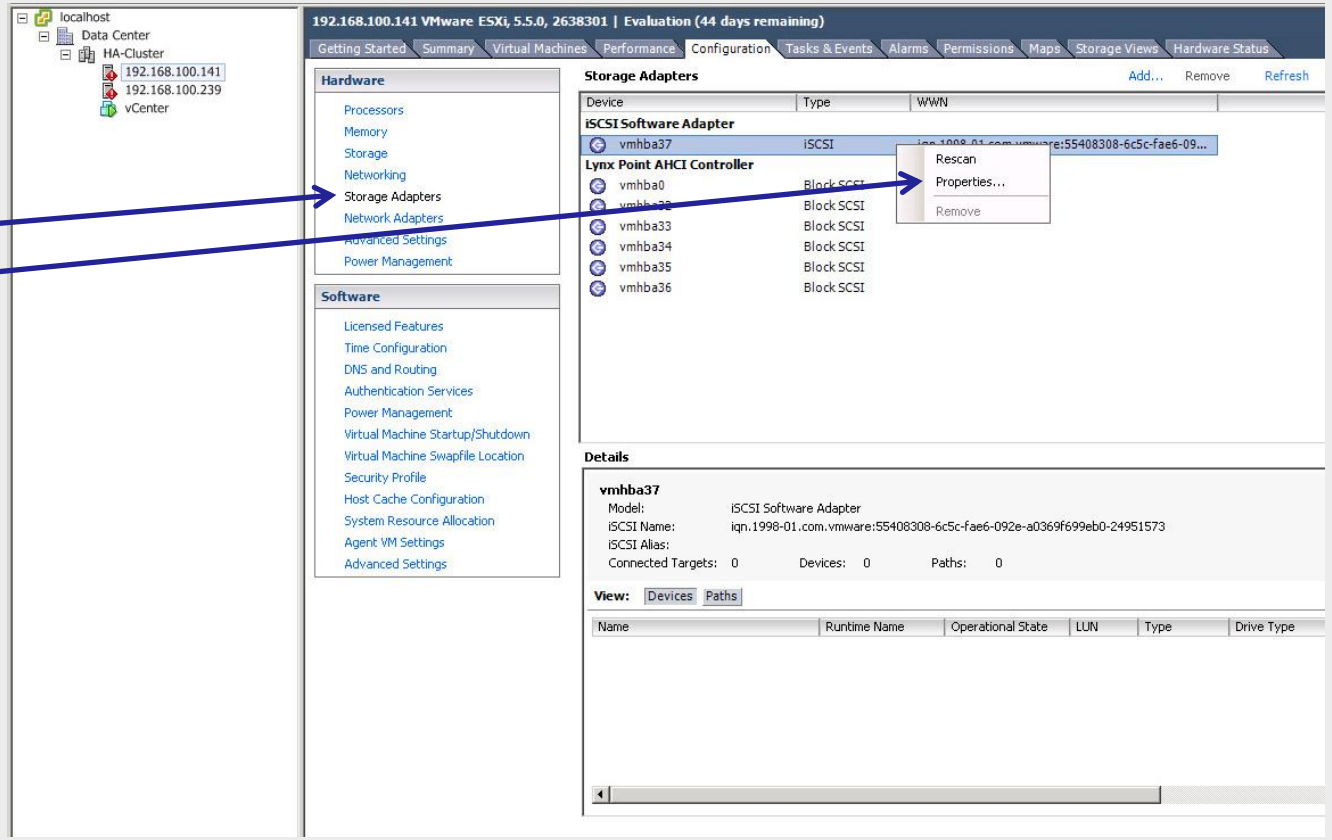
Repeat the same procedure to configure the second host.



Configure VMware HA-Cluster

10. Configure Storage Adapters

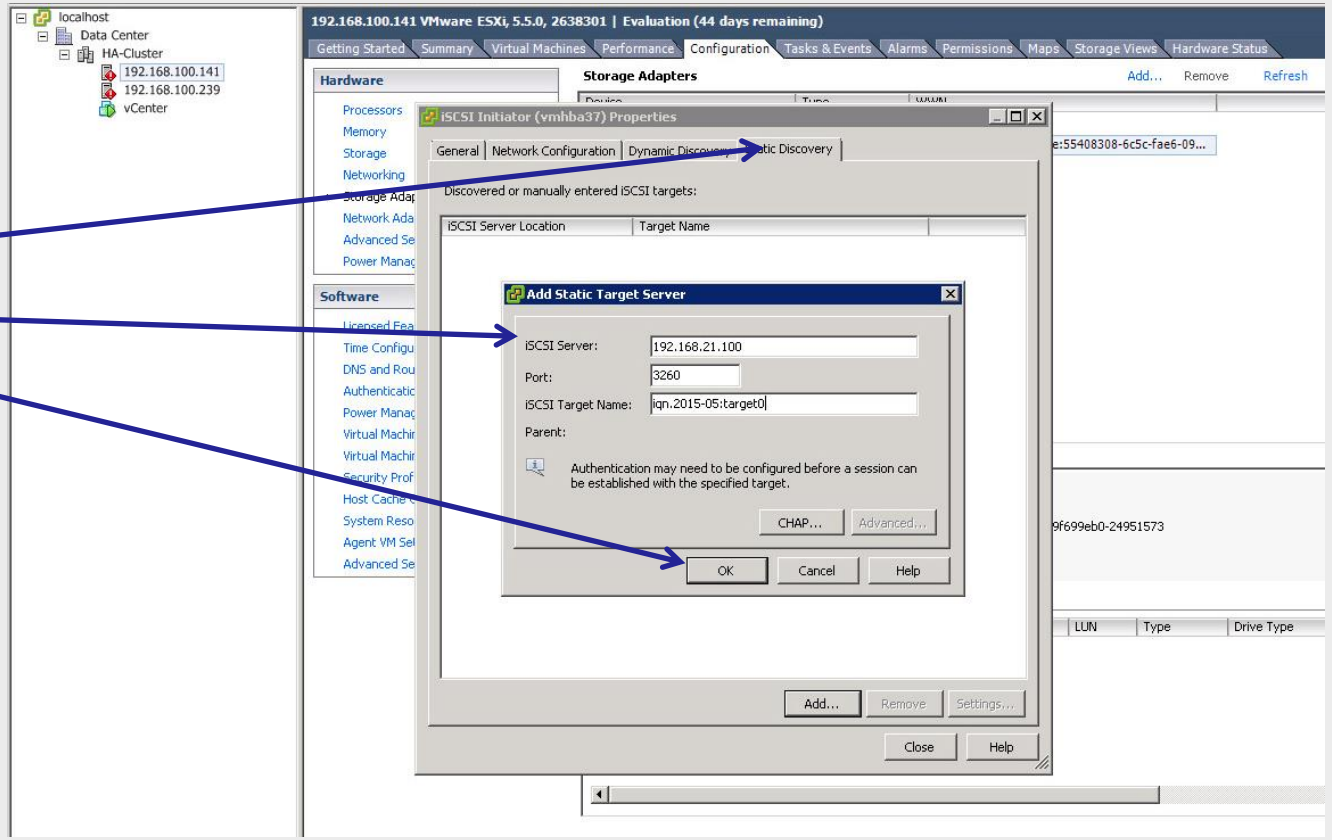
Next, click on **Storage Adapters**, select iSCSI Software Adapter, right-mouse-click and select **Properties**.



Configure VMware HA-Cluster

10. Configure Storage Adapters

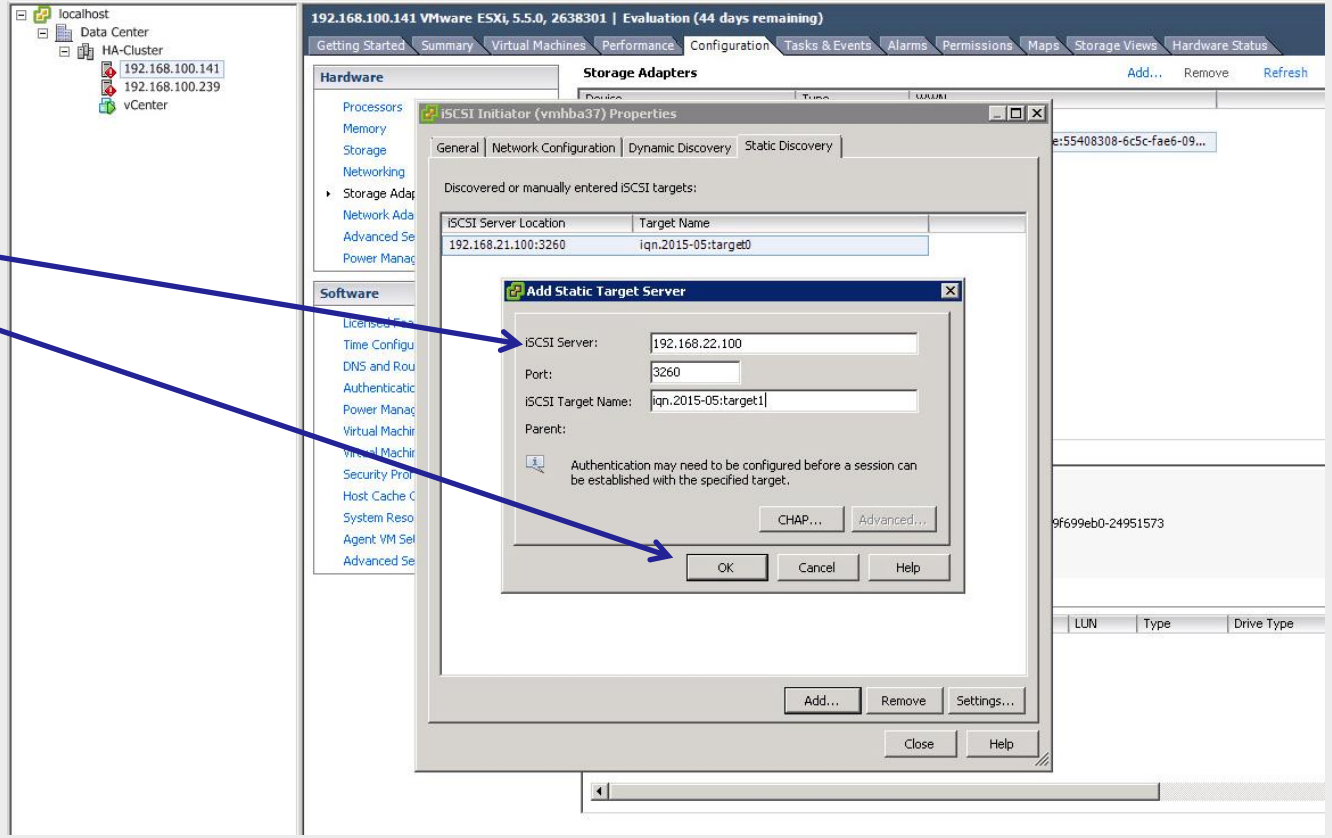
In **iSCSI Initiator (vmhba37) Properties** select **Static Discovery** tab. Next, click on **Add,** enter IP address and the iSCSI Target Name and click **OK** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

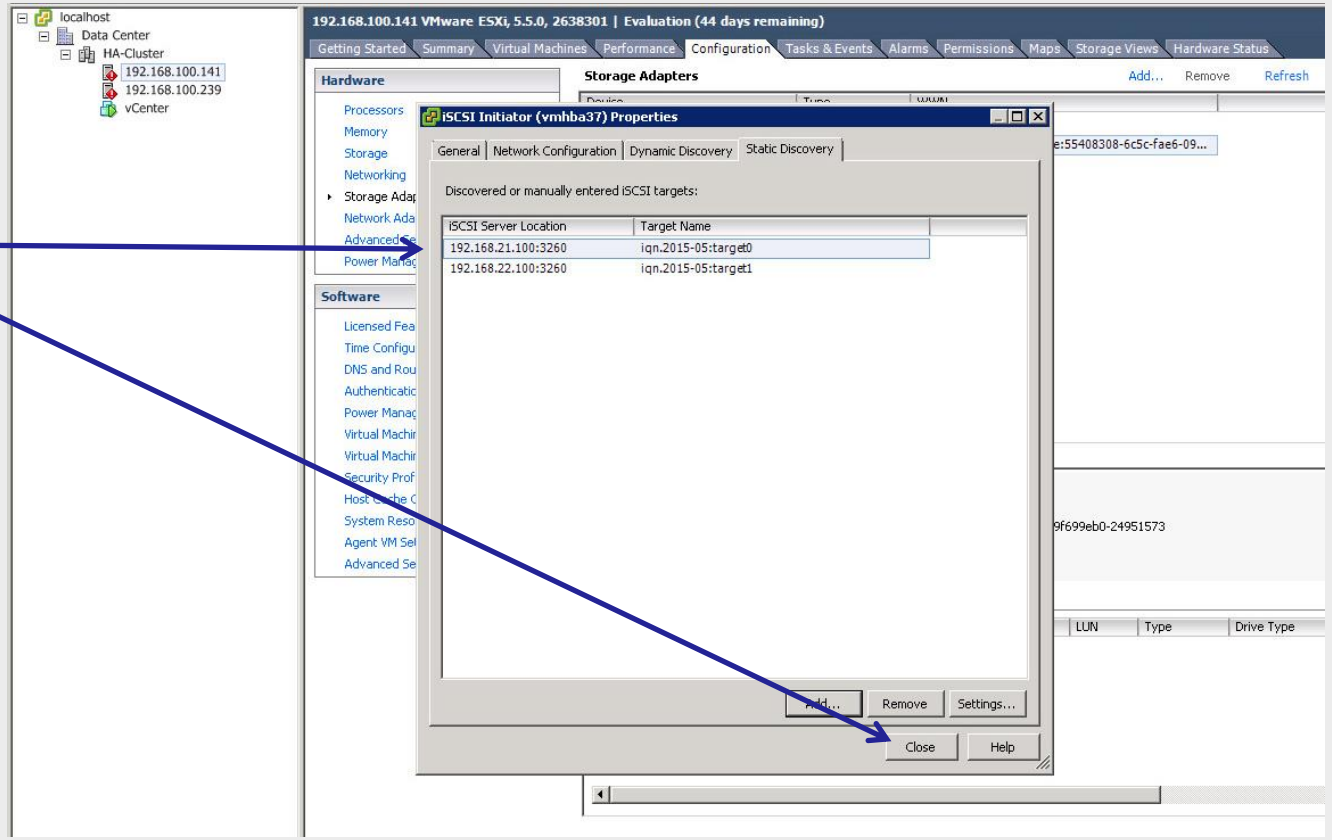
Next, configure second iSCSI Target, and click **OK** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

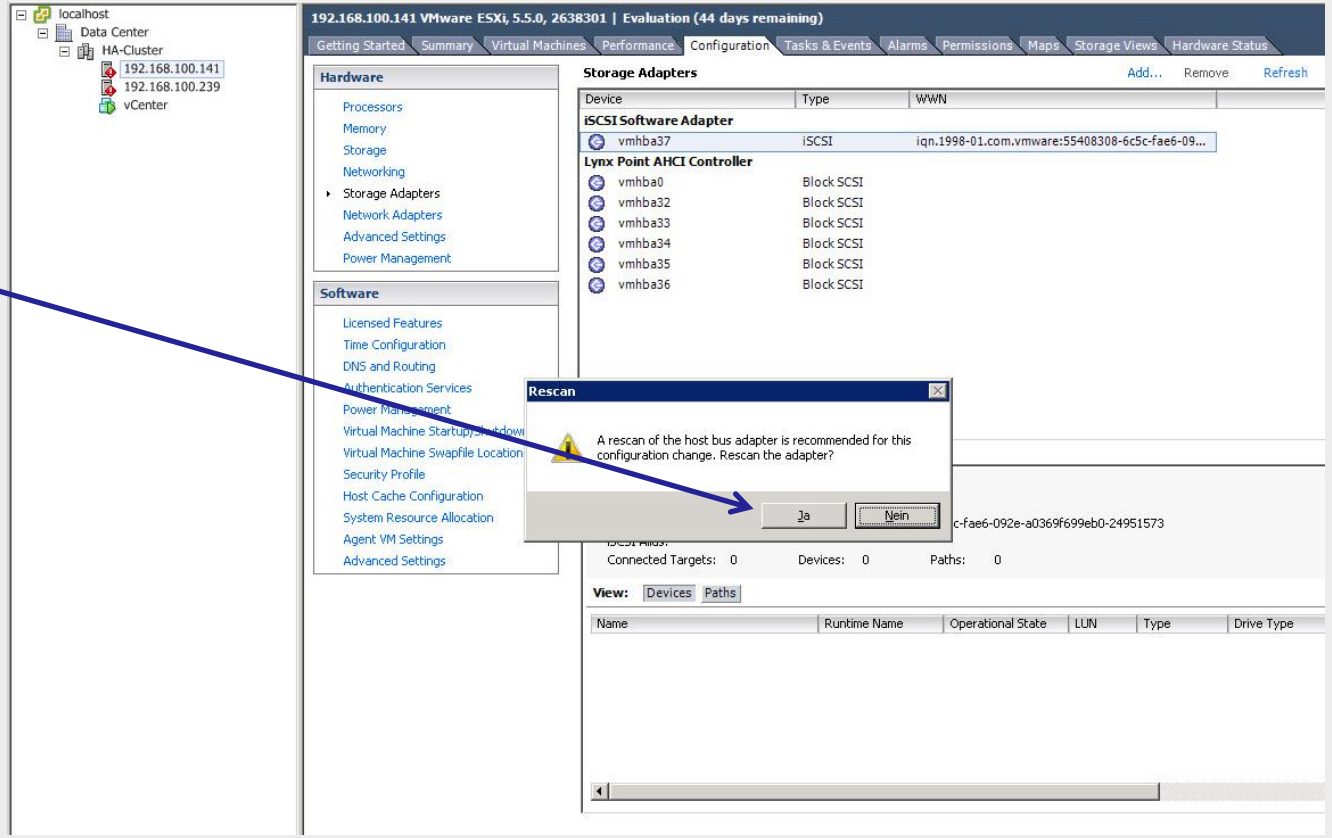
To complete the initiator settings, click **Close** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

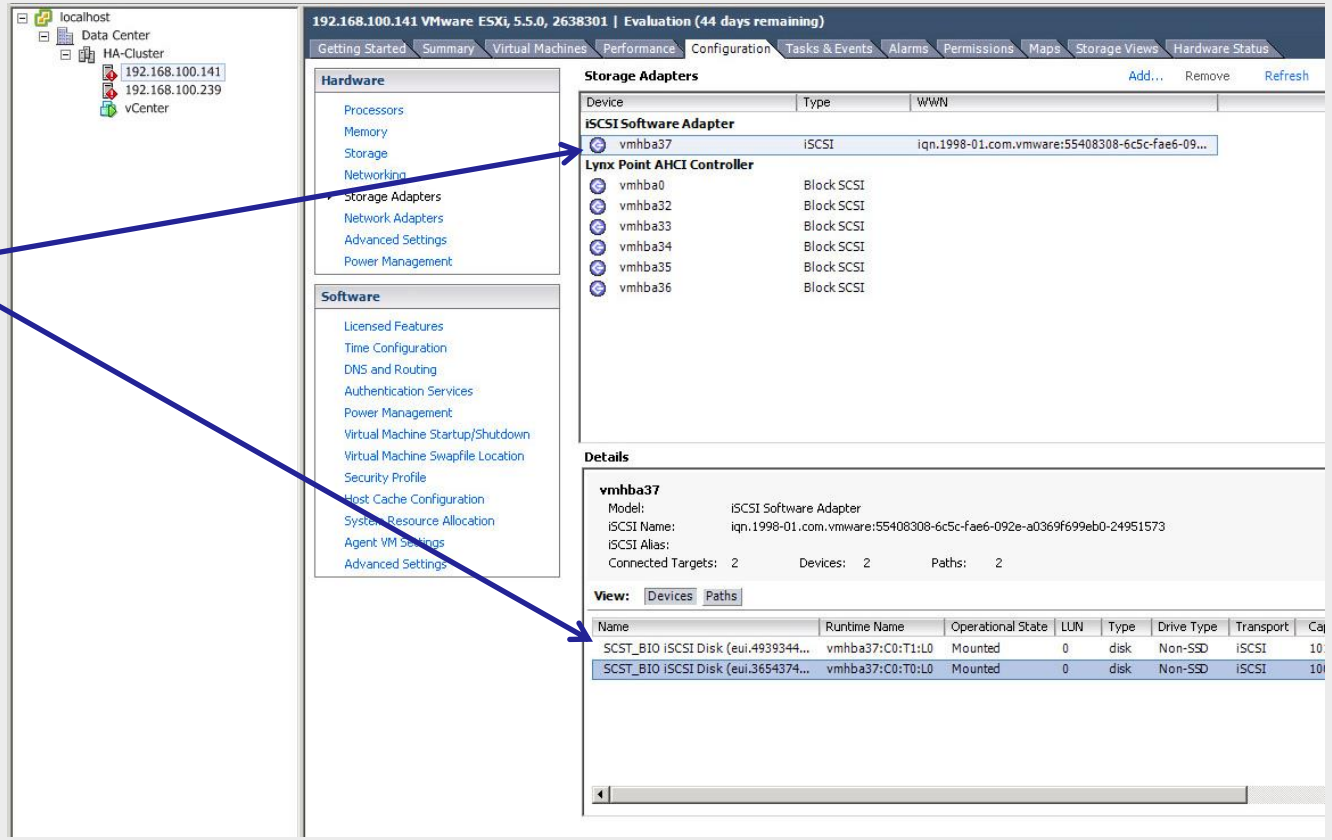
Next, click **Yes** button in order to rescan the adapter.



Configure VMware HA-Cluster

10. Configure Storage Adapters

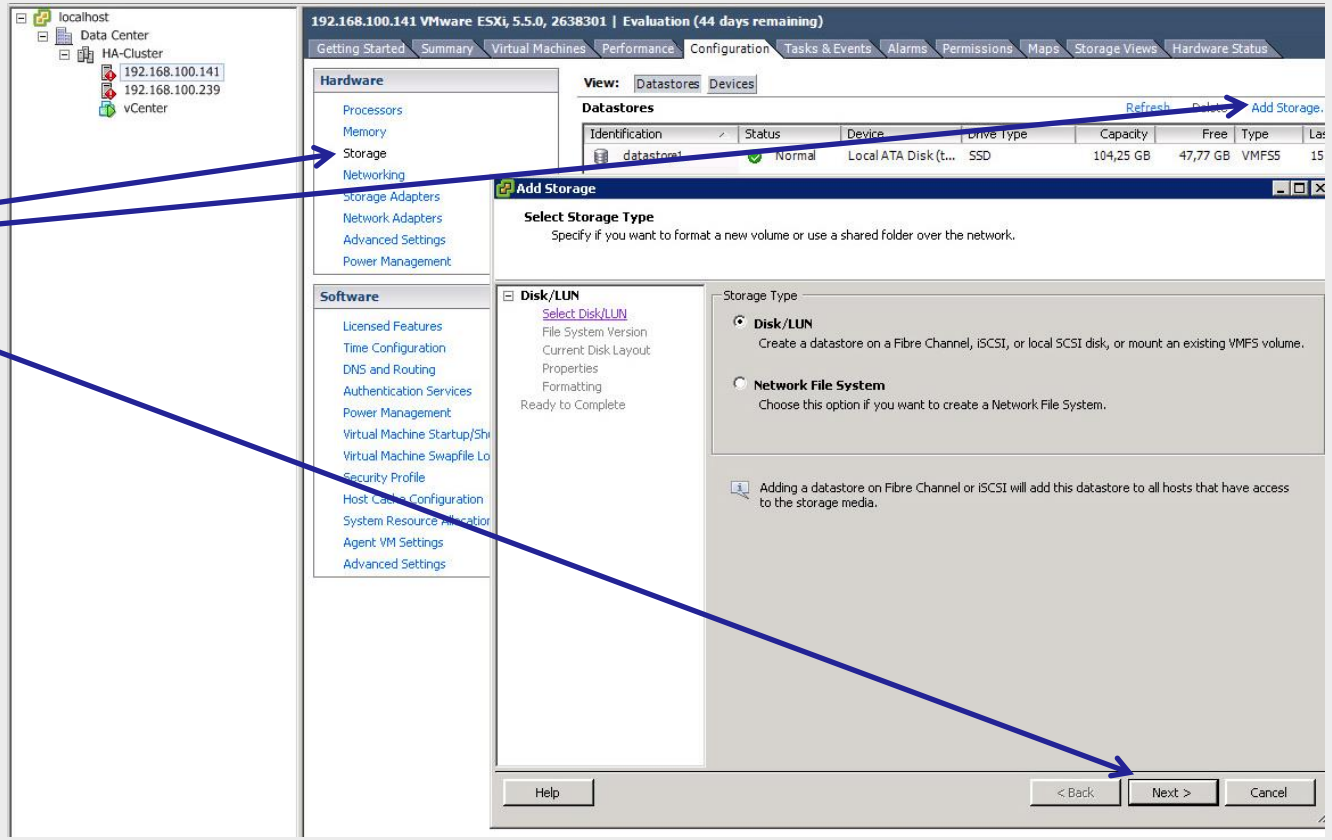
After rescaning, the **iSCSI Software Adapter** will show two iSCSI devices that is the DSS V7 targets.



Configure VMware HA-Cluster

10. Configure Storage Adapters

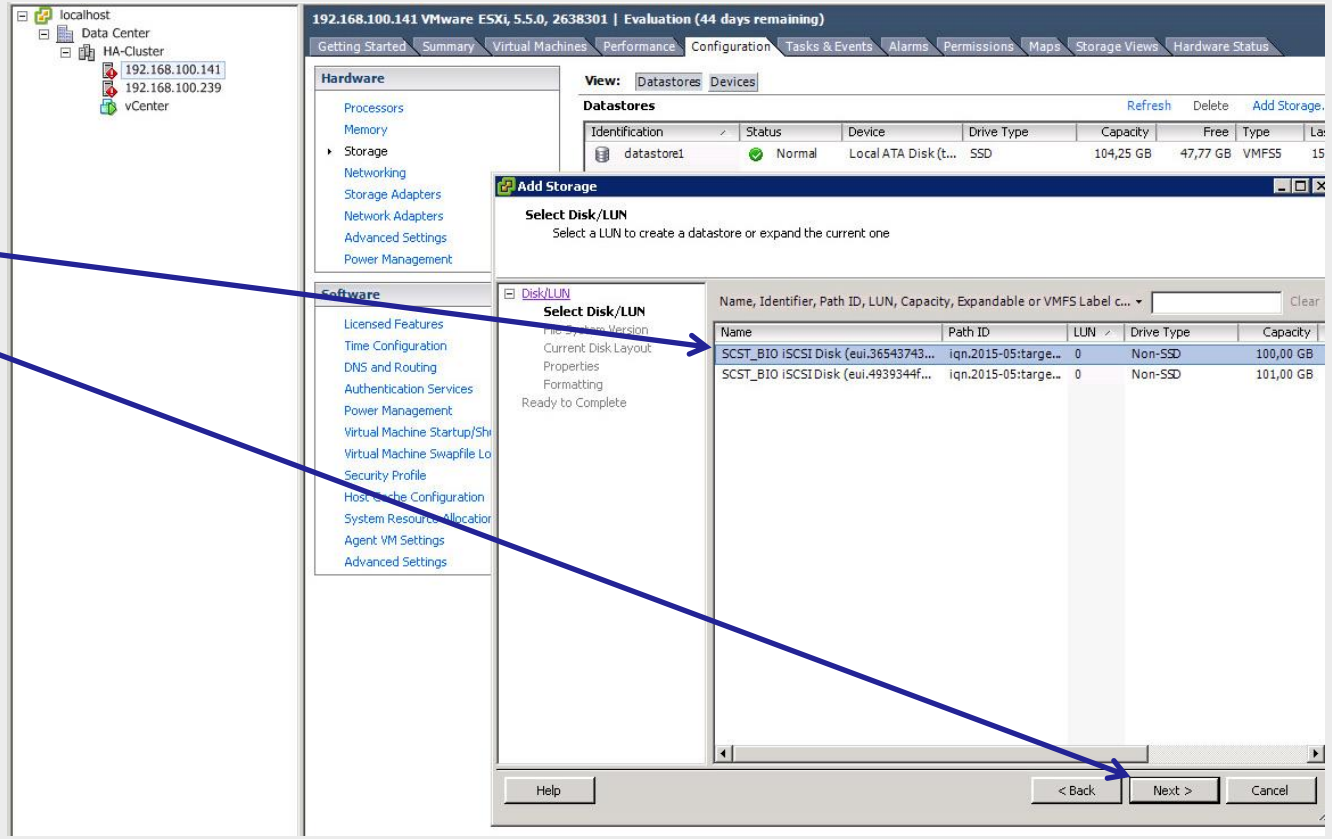
Next, select **Storage** and click on **Add Storage**. In **Add Storage** window click on **Next** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

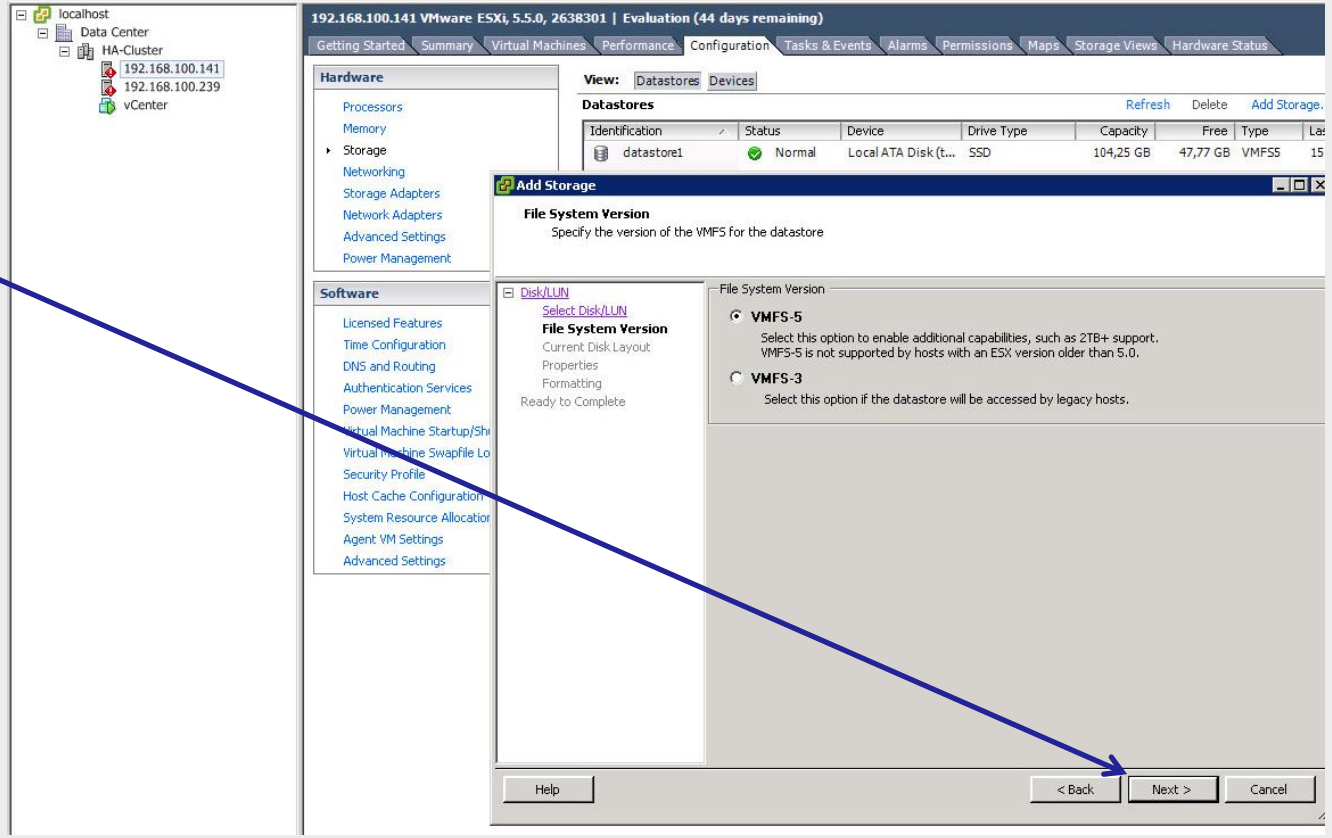
Next, select the first target and click **Next** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

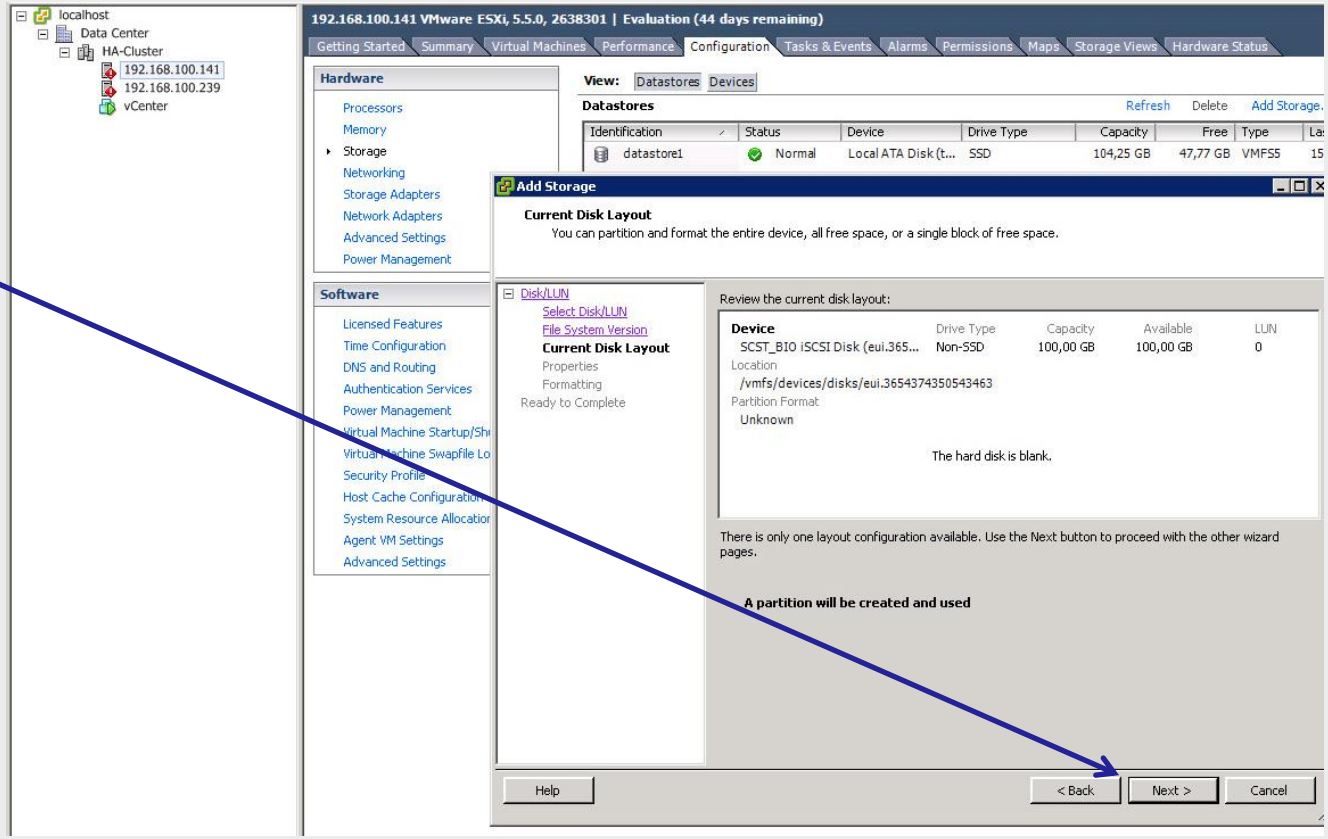
Click **Next** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

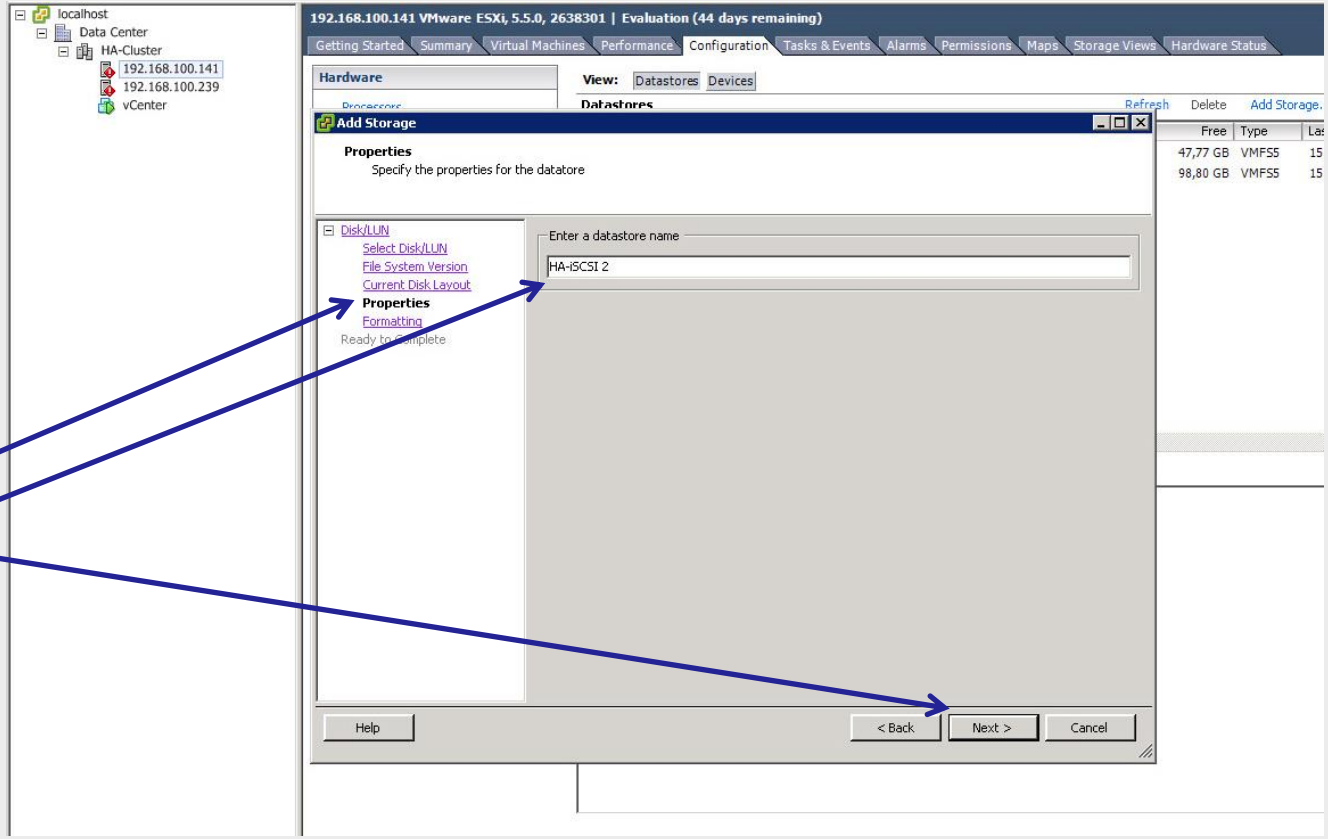
In **Current Disk Layout** click Next button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

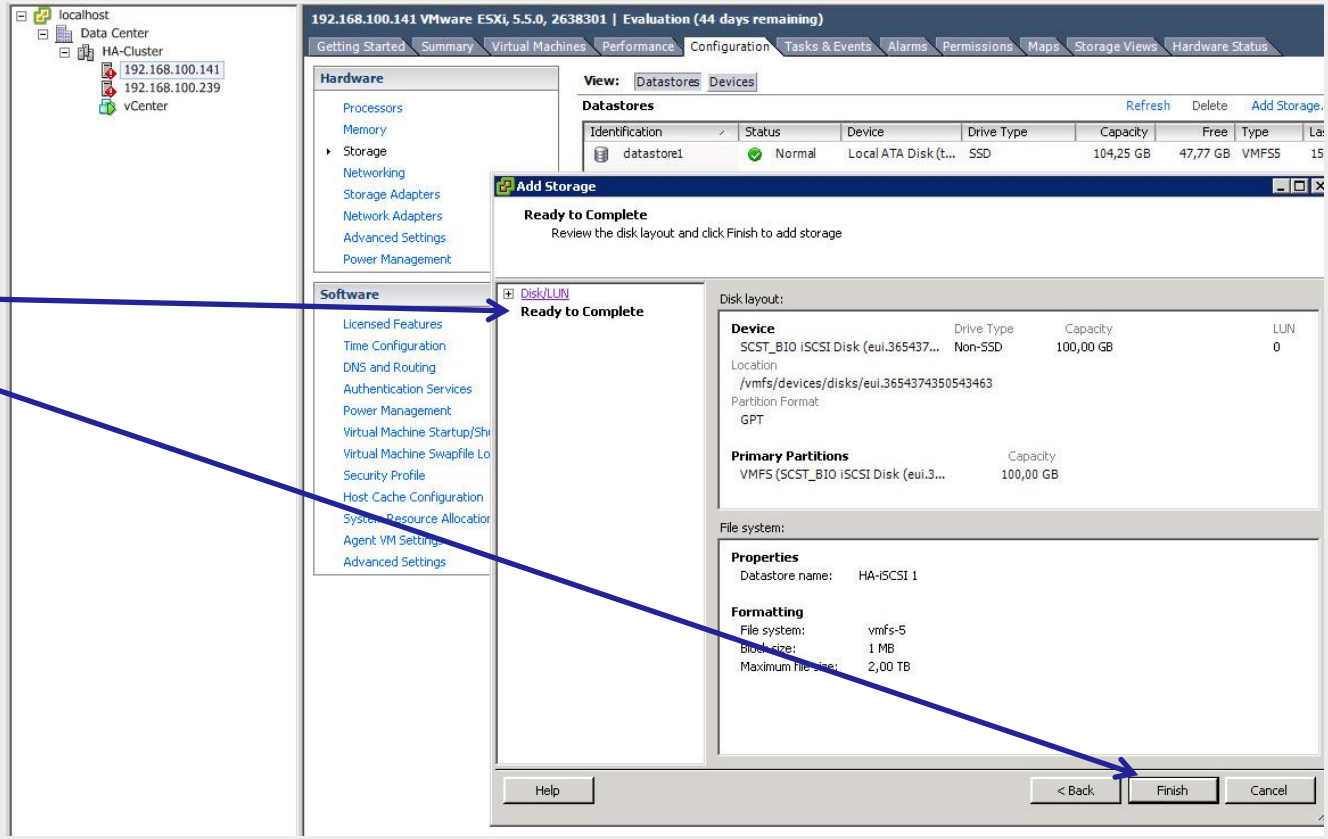
In **Properties** please enter a datastore name, and click **Next** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

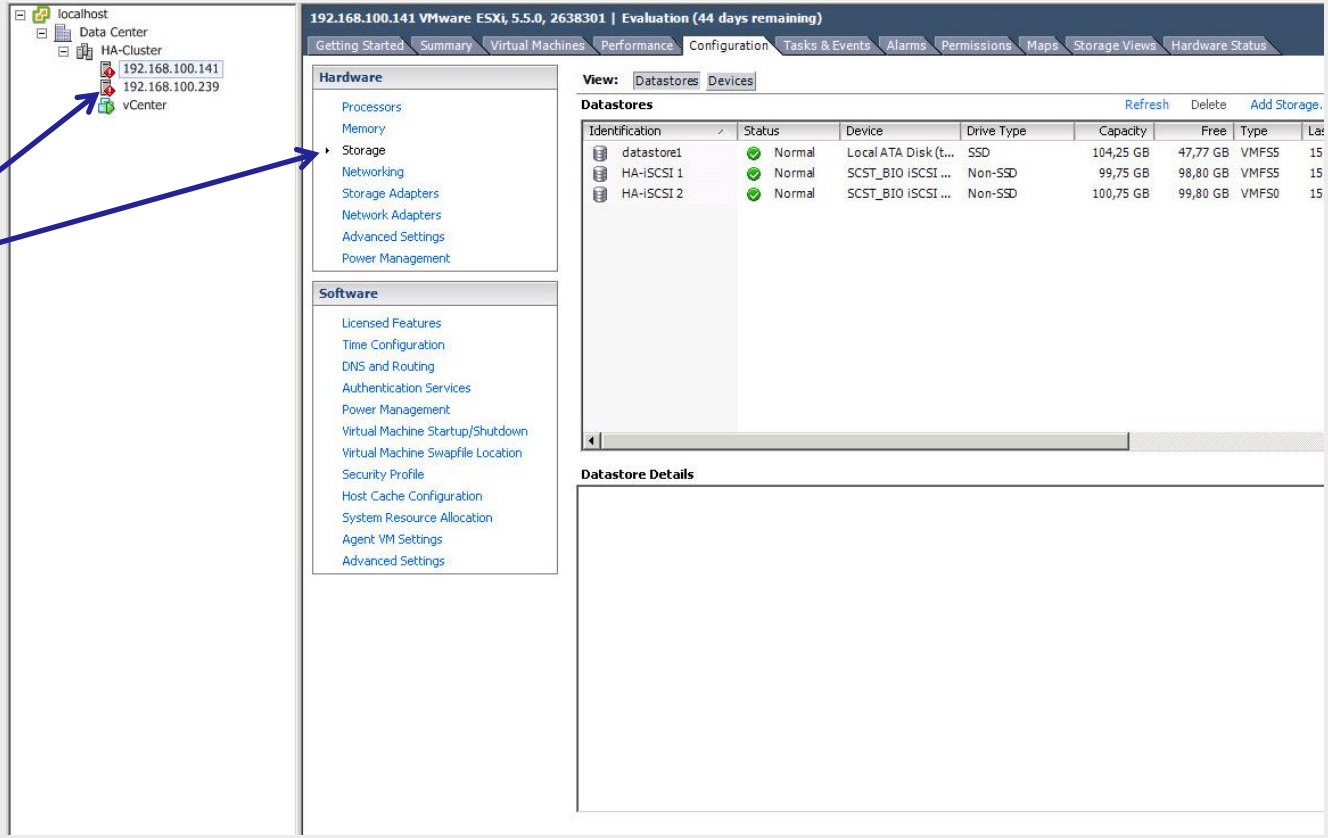
To complete, click **Finish** button.



Configure VMware HA-Cluster

10. Configure Storage Adapters

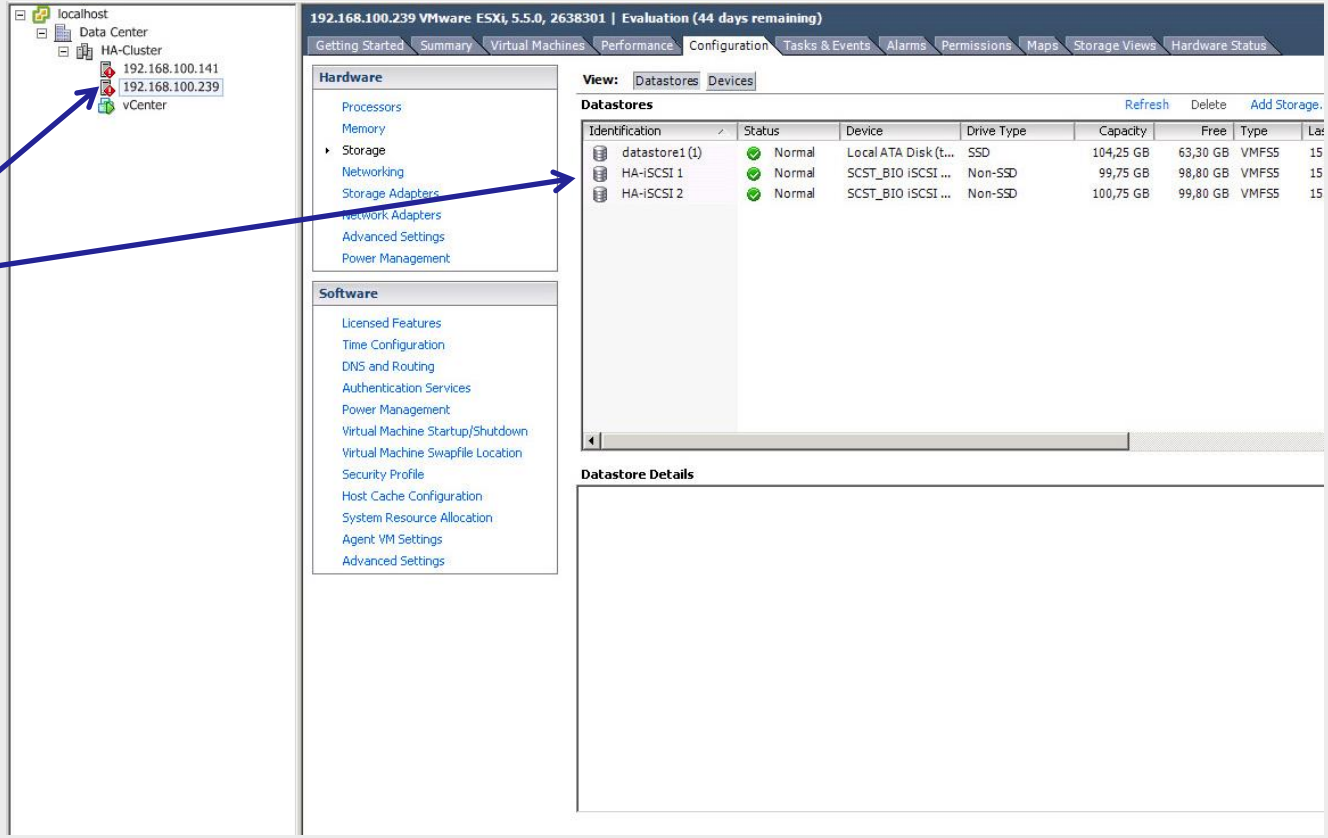
Go to second Host and select **Storage**.



Configure VMware HA-Cluster

10. Configure Storage Adapters

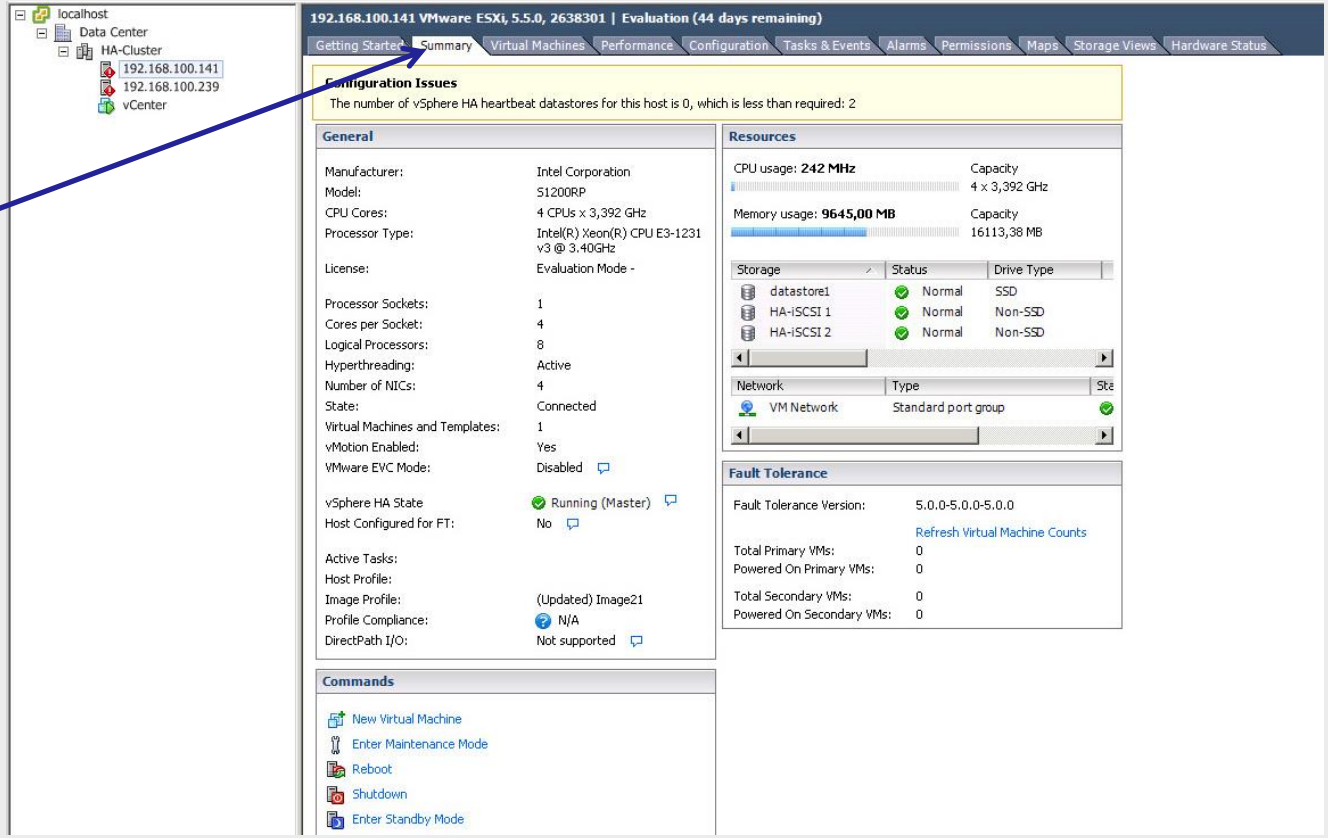
Both Datastores must appear on the second host automatically.



Configure VMware HA-Cluster

10. Configure Storage Adapters

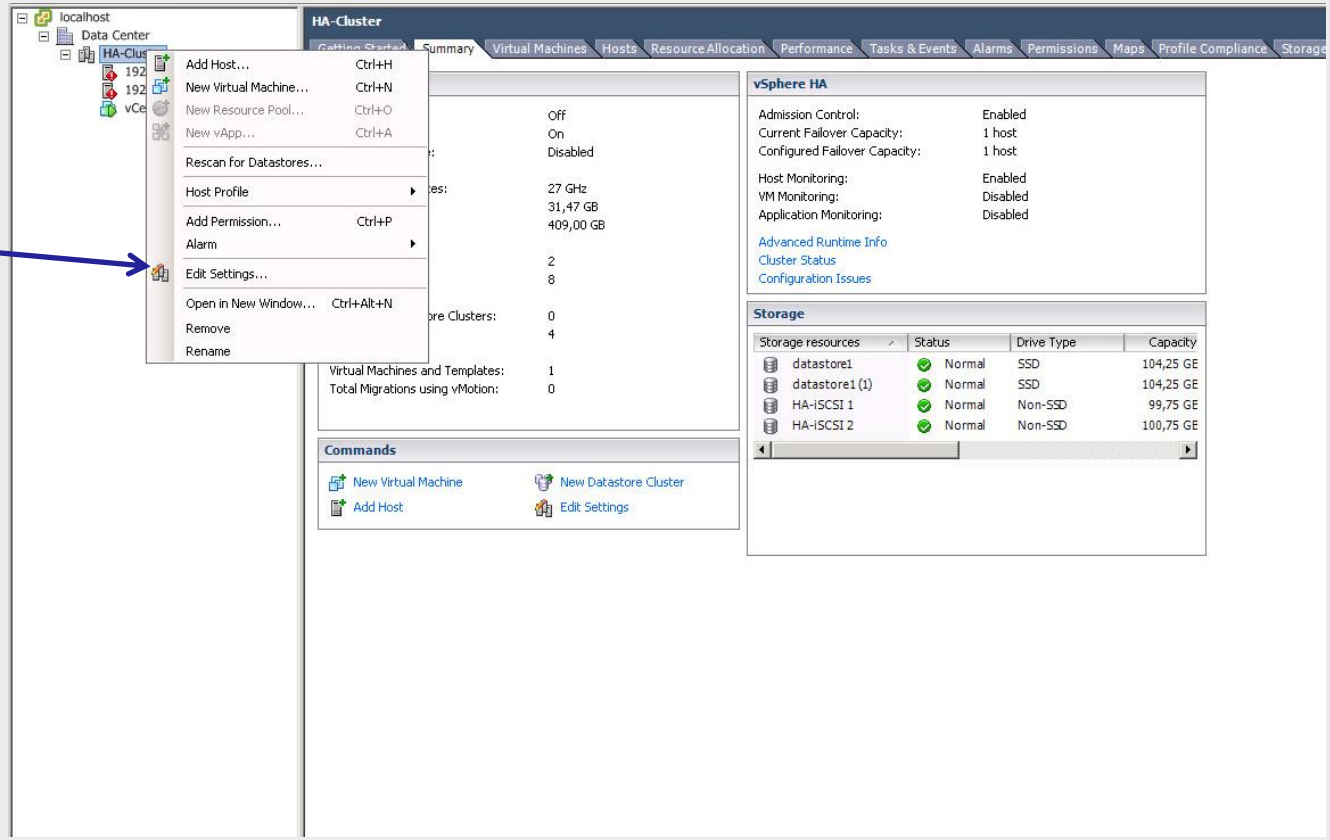
Next, select **Summary** tab. Configuration issues are shown here, if any.



Configure VMware HA-Cluster

11. HA-Cluster Settings

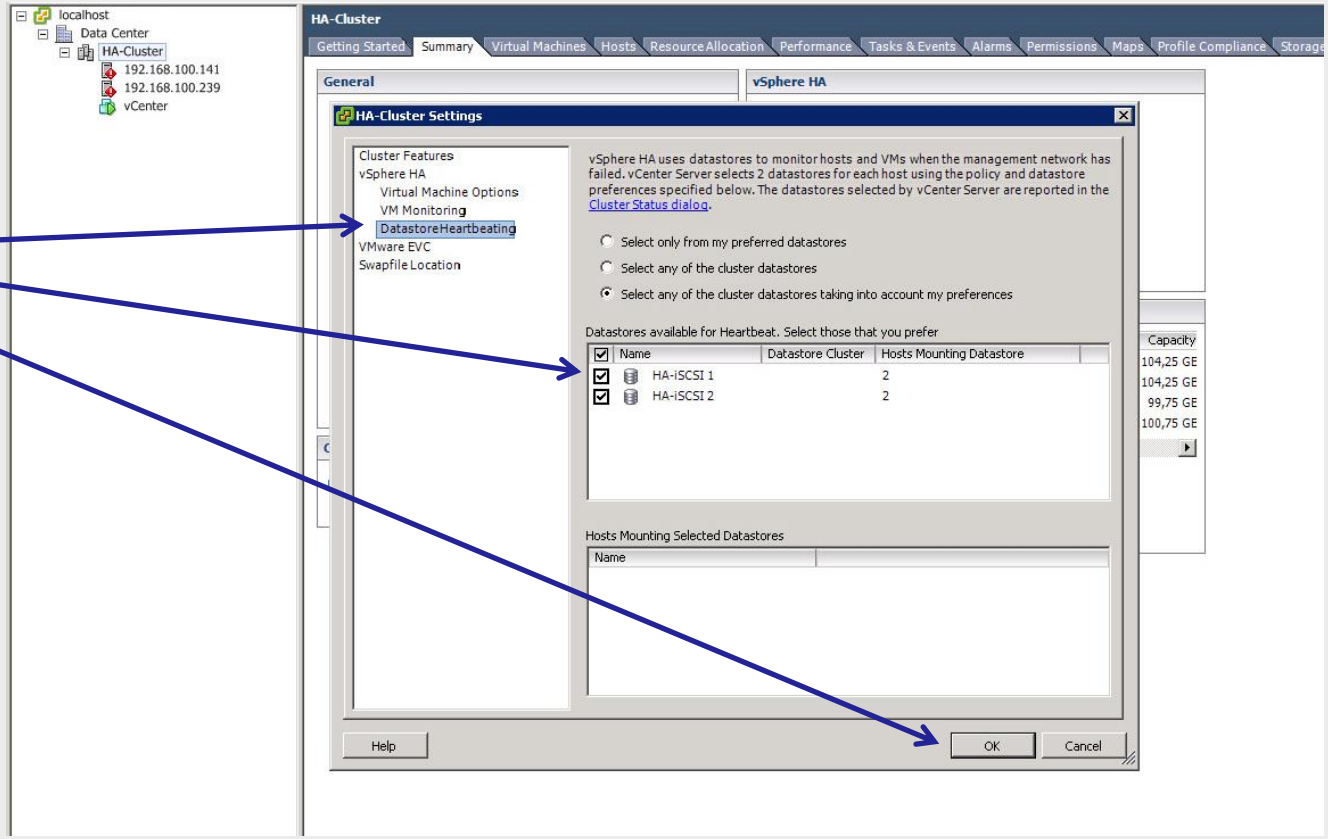
Next, select HA-Cluster icon, right-mouse-click and select **Edit Settings**



Configure VMware HA-Cluster

11. HA-Cluster Settings

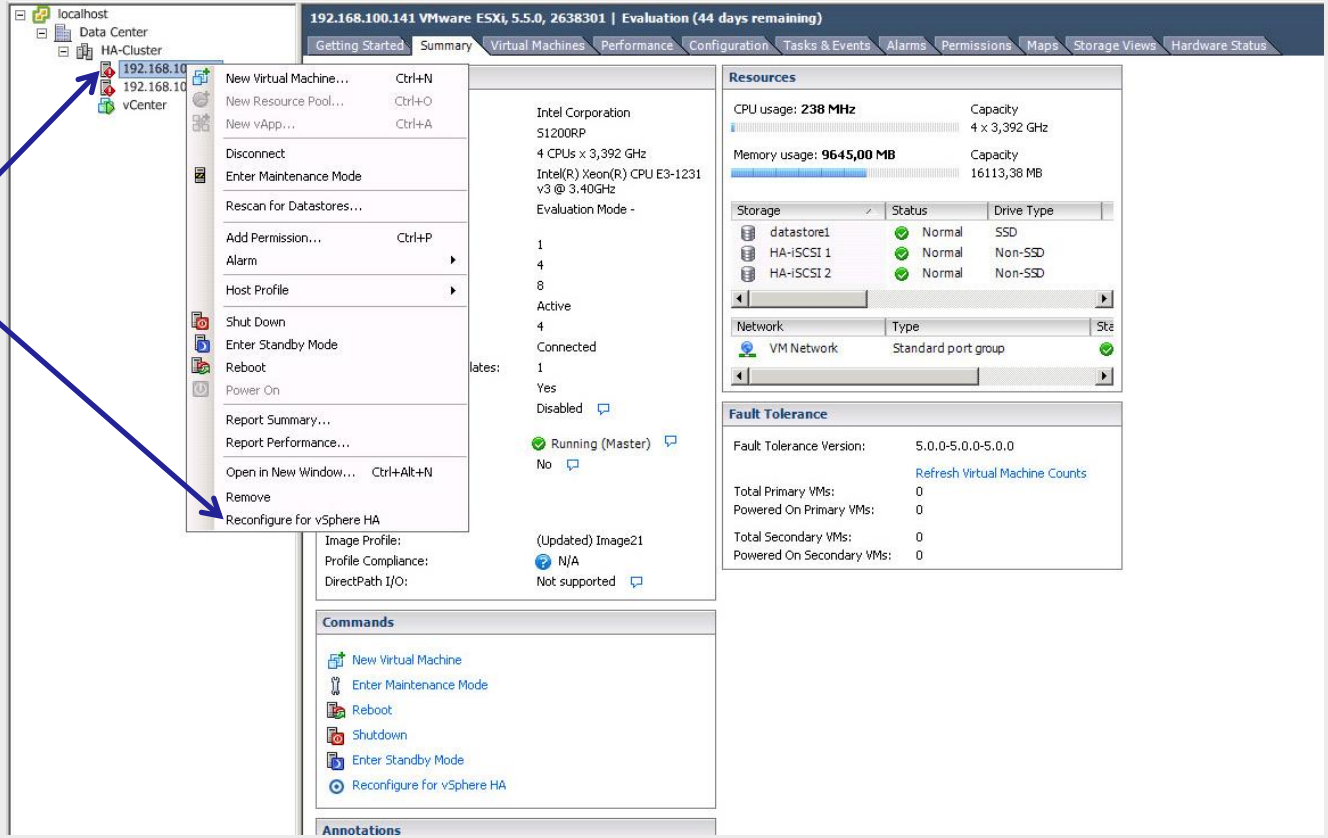
In **HA-Cluster Settings** window, select **DatastoreHeardbeating** and check both datastores and click **OK** button.



Configure VMware HA-Cluster

11. Reconfigure for vSphere HA

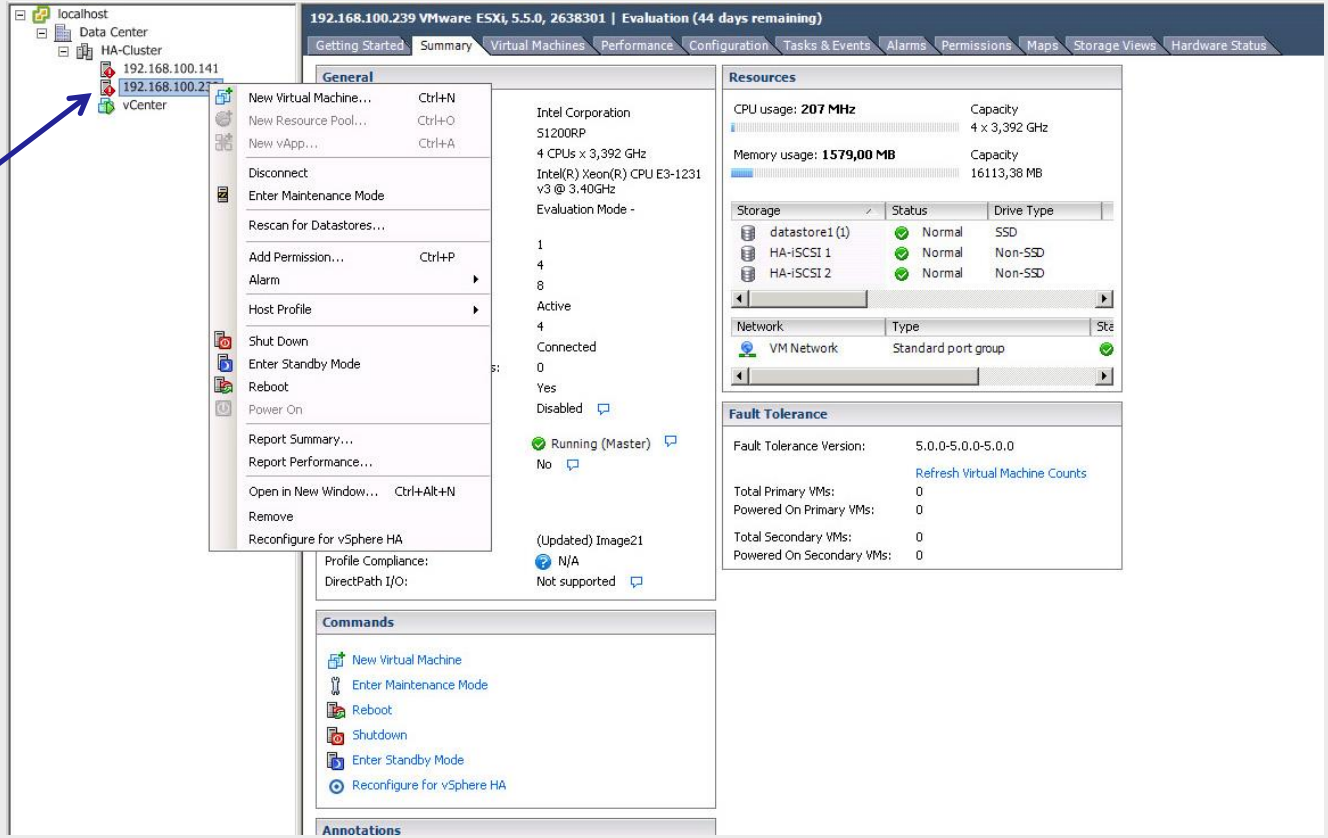
Right-mouse-click on the first Host icon (192.168.100.141). Select **Reconfigure for vSphere HA**.



Configure VMware HA-Cluster

11. Reconfigure for vSphere HA

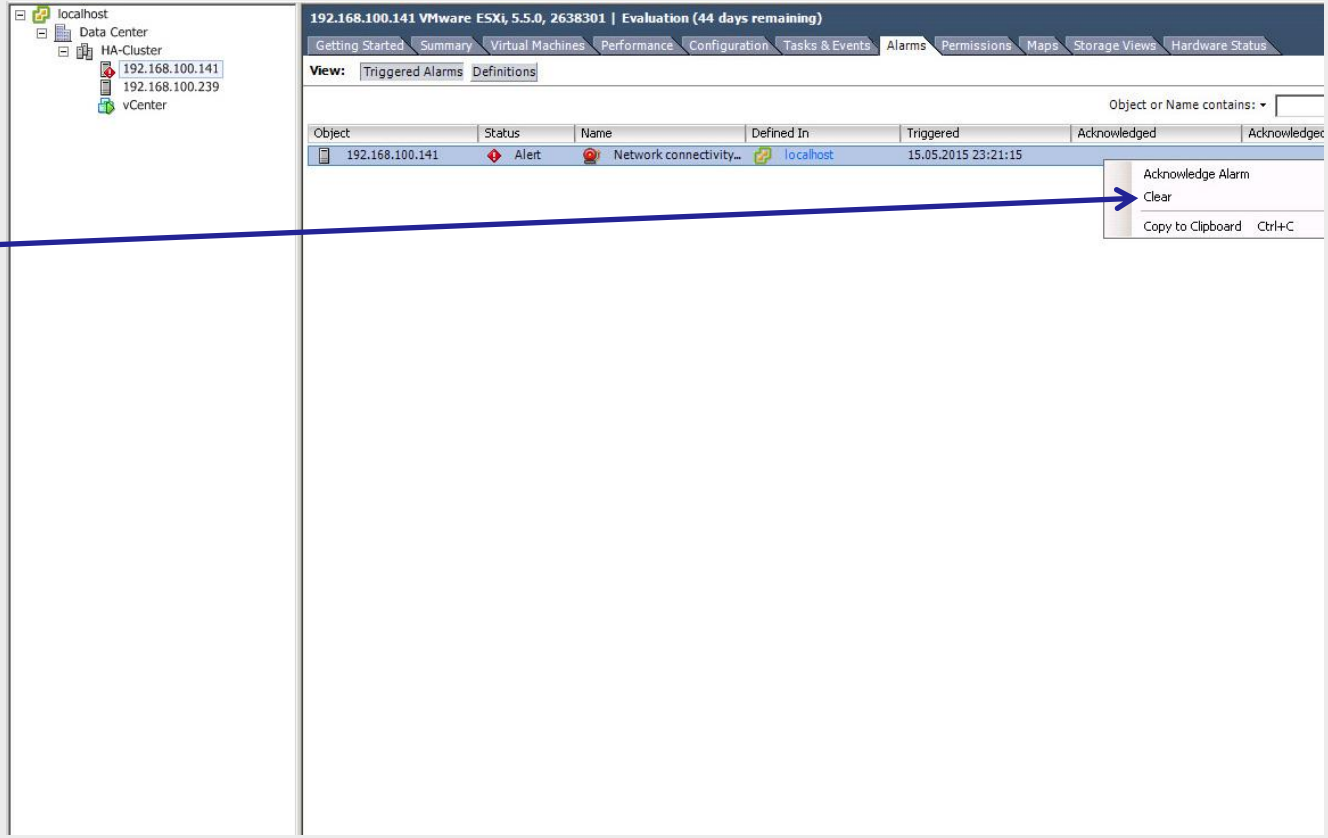
Repeat the same procedure for the second Host (192.168.100.239).



Configure VMware HA-Cluster

12. HA-Cluster Configuration

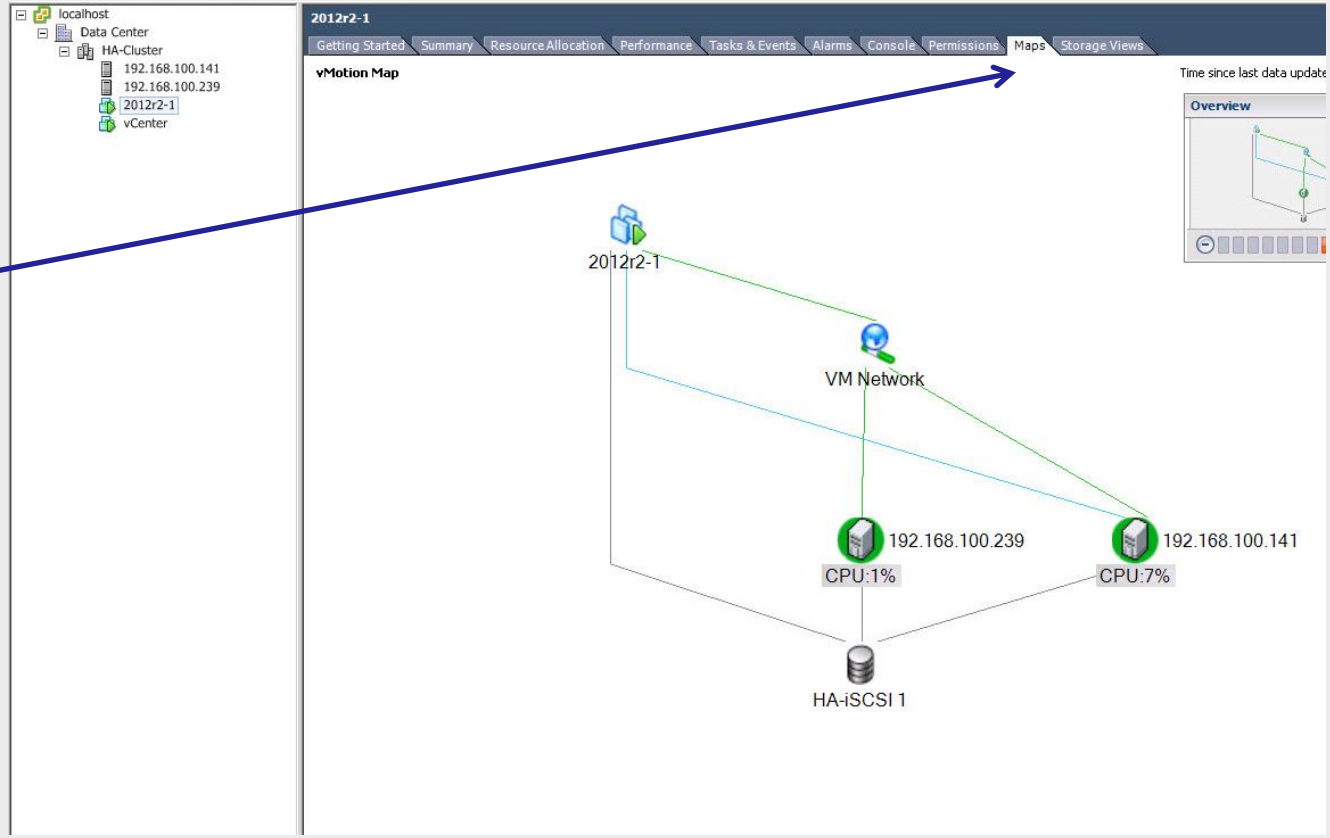
In order to clear alarms, in the **Alarms** tab select one, right-mouse-click and select **Clear**.



Configure VMware HA-Cluster

12. HA-Cluster Configuration

HA cluster configuration is complete.



Thank you!

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