White Paper

How to Configure iSCSI Initiator in VMware ESXi 6.x

Part Number: QSWP1603A
Published: May 2016
Edition: 1.0

Edition 1.0 (May 2016)

This edition applies to QSAN XCubeSAN Series. Note that this document was produced based on beta code and some screens may change when it becomes generally available.

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Configure iSCSI Initiator

Executive Summary

In this document, we will guide users to understand how to use the software iSCSI initiator in VMware® ESXi 6.x to connect to QSAN XCubeSAN dual controller system. We will also demonstrate the steps pertaining to how multipath I/O be configured with XCubeSAN for achieving the expected throughput.

Audience

This document is applicable for QSAN customers and partners who are familiar with QSAN products. Any settings which are configured with basic operations will not be detailed in this document. If there is any question, please refer to the user manuals of products, or contact QSAN support for further assistance.

Test Environment

Host

- OS: VMware ESXi server 6.0
- NICs:
  - VMnic2 (management)
  - VMnic0/VMnic1 (used for connecting to XS5216-D)

Storage

- QSAN XCubeSAN XS5216
  - Firmware Version: 1.0.0
  - iSCSI data port: 172.16.135.10/24 & 172.16.136.10/24
  - LUN Mapped: target0, LUN0, 3TB

Diagram

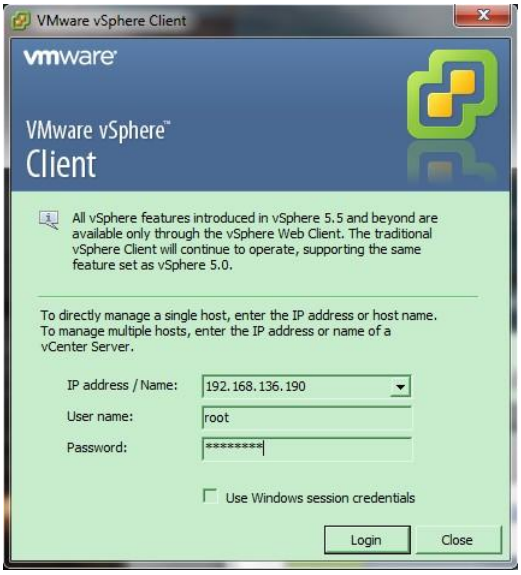
Figure 1 Test Diagram

Configuration Guide

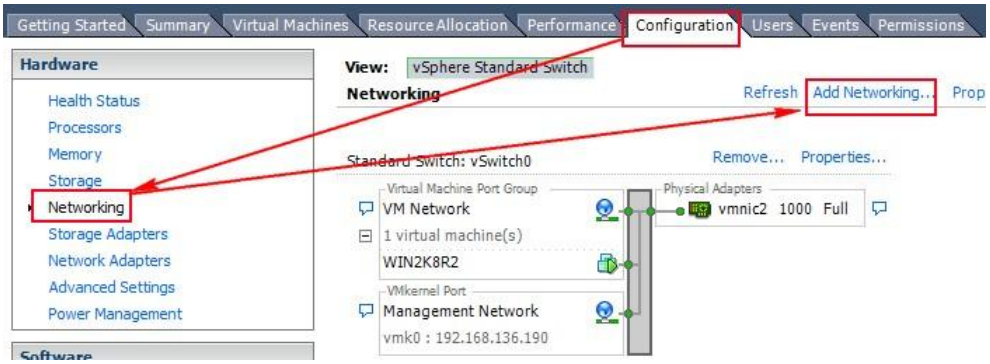
Logging iSCSI Target Using Software iSCSI Initiator

Users can either use VMware vSphere client or VMware Web client to configure the software iSCSI initiator. We are using VMware vSphere client to connect to the ESXi server directly as an example here.

1. Login the ESXi server from VMware vSphere Client.

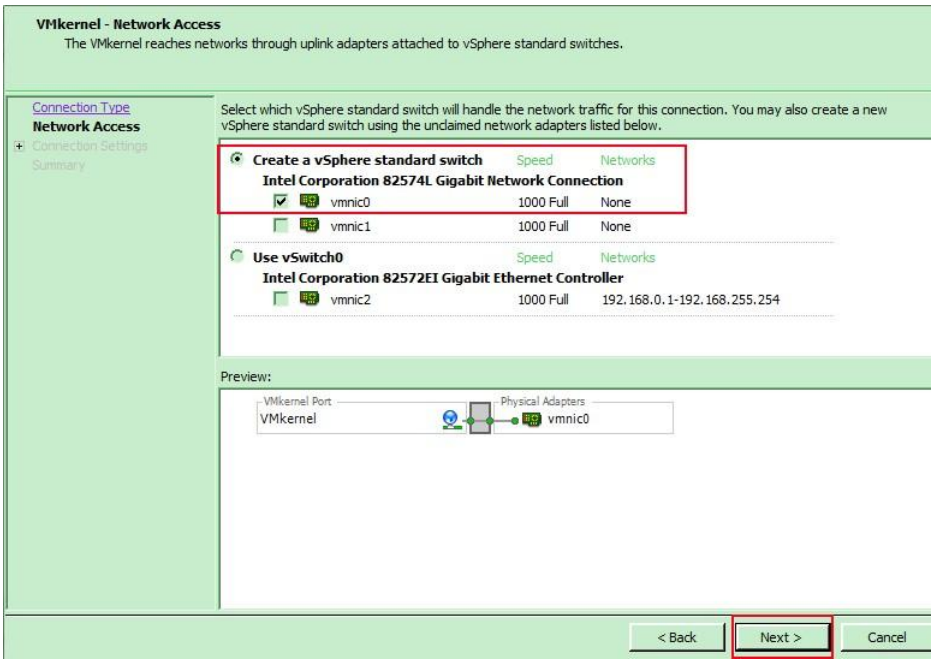


2. In Configuration tab, modify Networking setting to add a VMkernel network (It is the TCP/IP stack which handles traffic for ESXi server services, such as vMotion, iSCSI, and NFS).

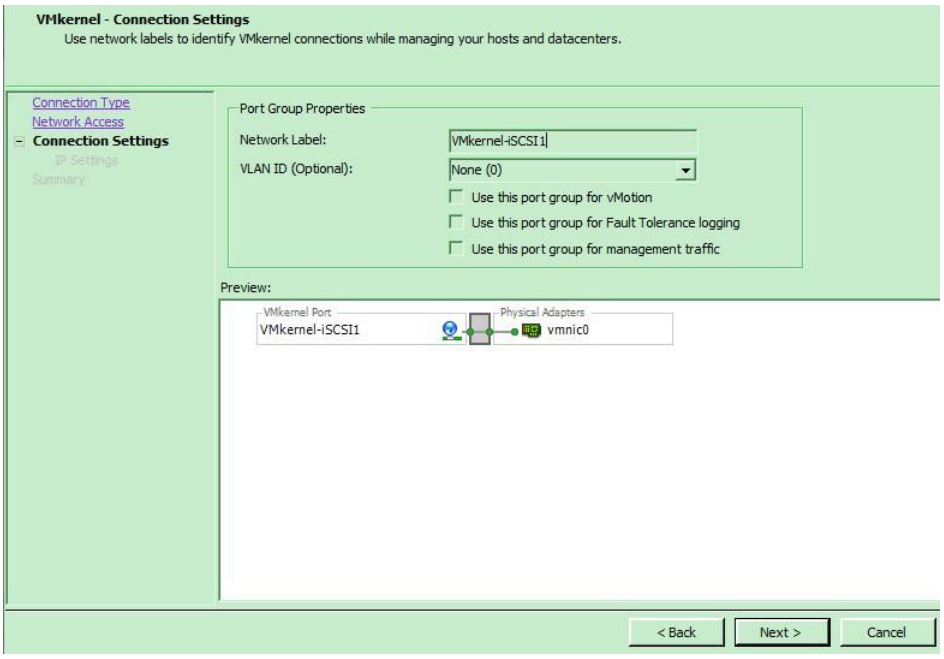


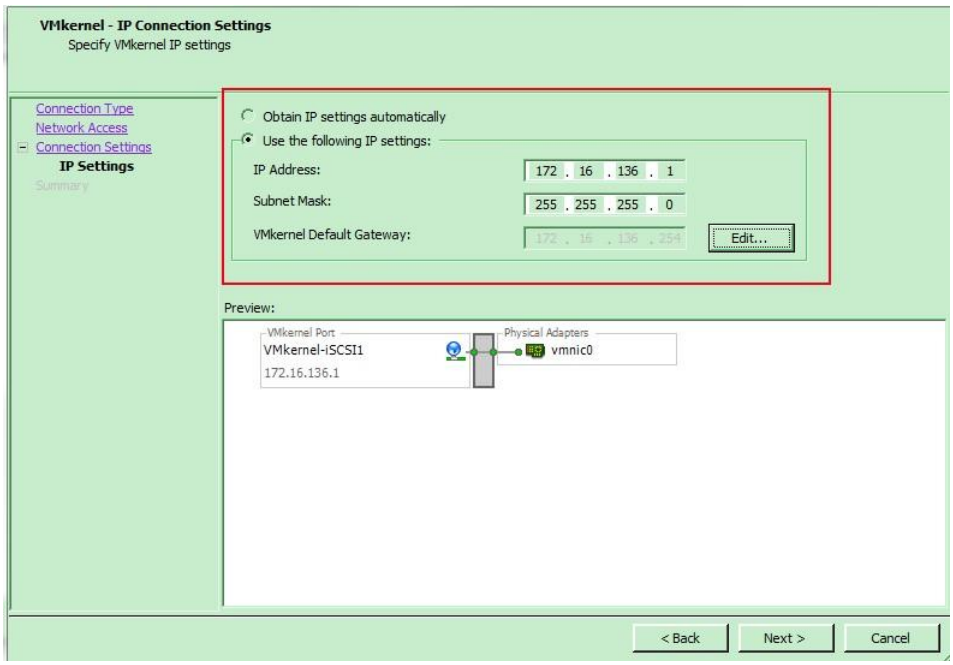
3. Make sure the VMkernel connection is selected.

4. Create the first virtual switch and make sure to choose the right network interface which is connected to the same network with XCubeSAN XS5216 iSCSI data port.

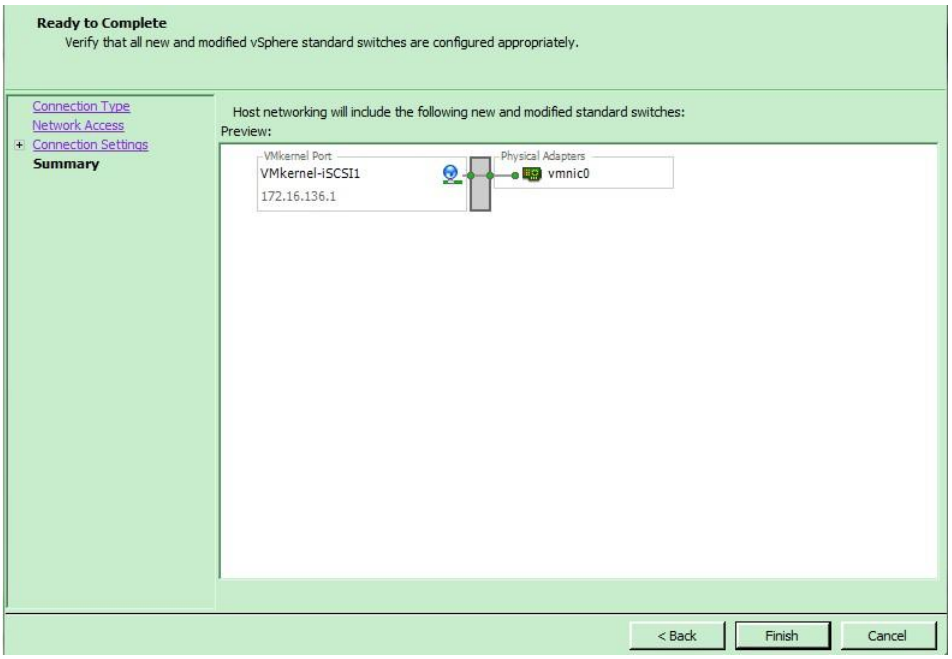


5. Specify Network Label and setup a proper VMkernel network IP which is used to connect to the iSCSI data port of XCubeSAN XS5216.

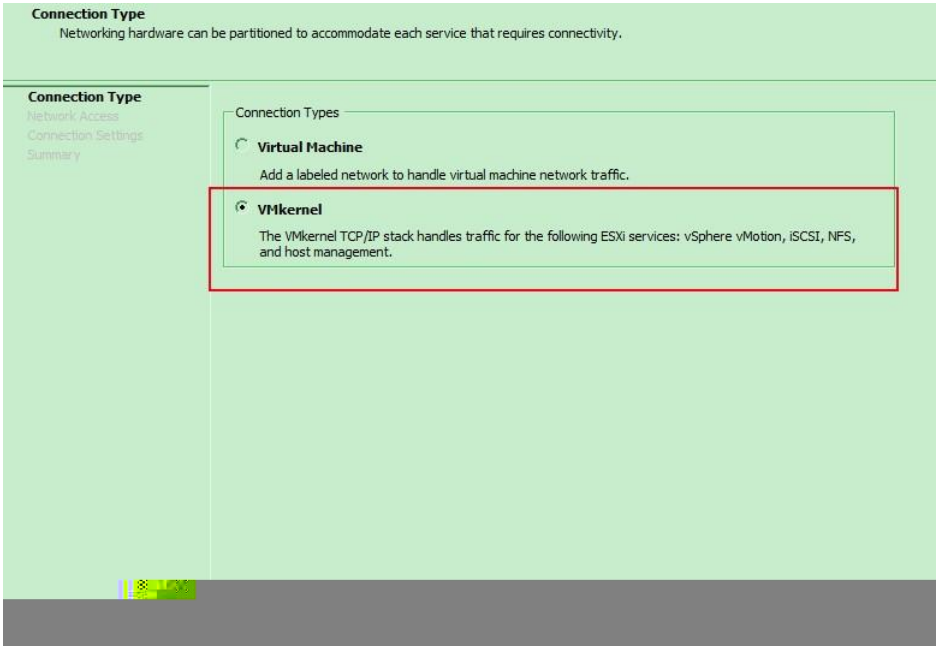


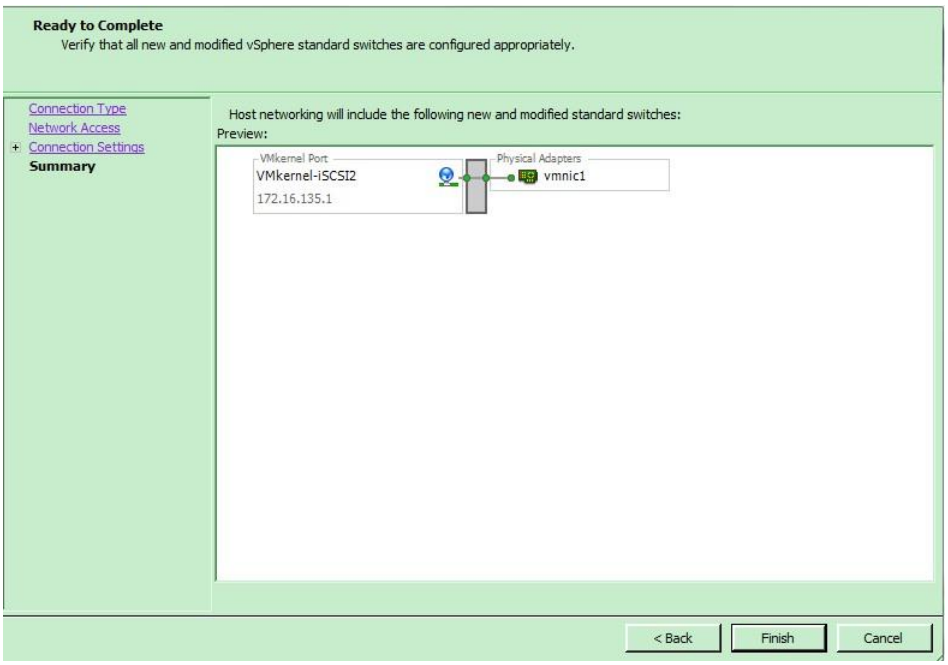


6. Check all configurations are correct, and then click Finish button.

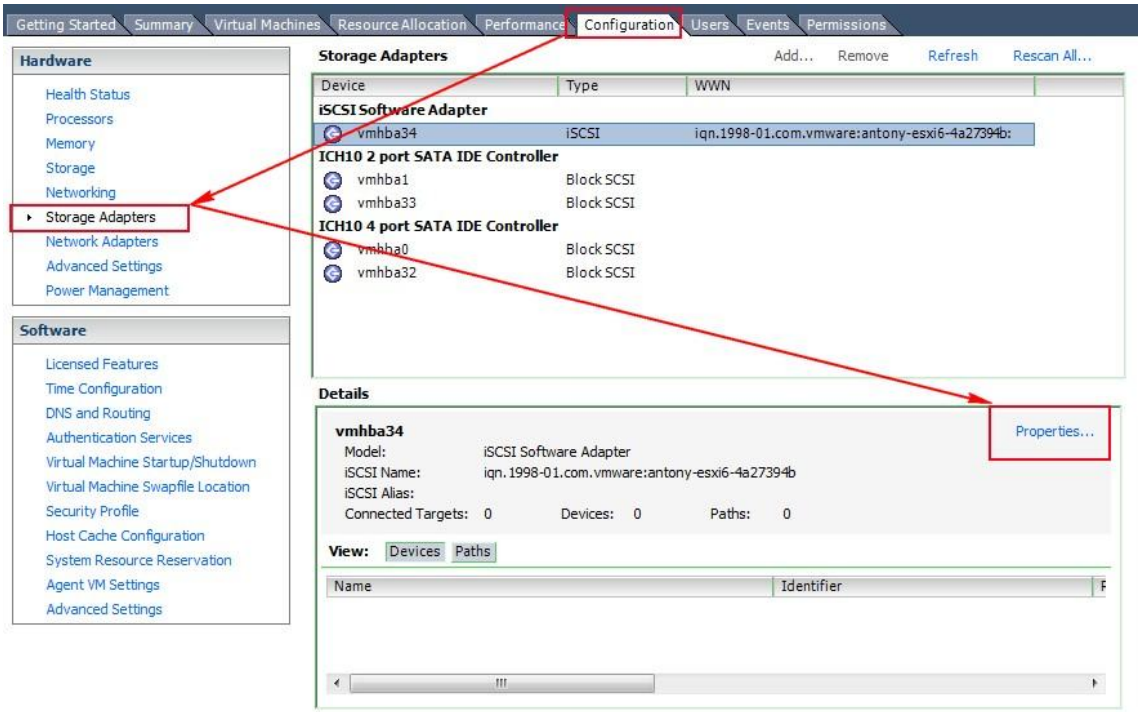


7. In order to create a multipath I/O session to the iSCSI target, it's necessary to add another VMkernel network, and we suggest to add another vSwitch for separating the network segment and preventing getting user confused

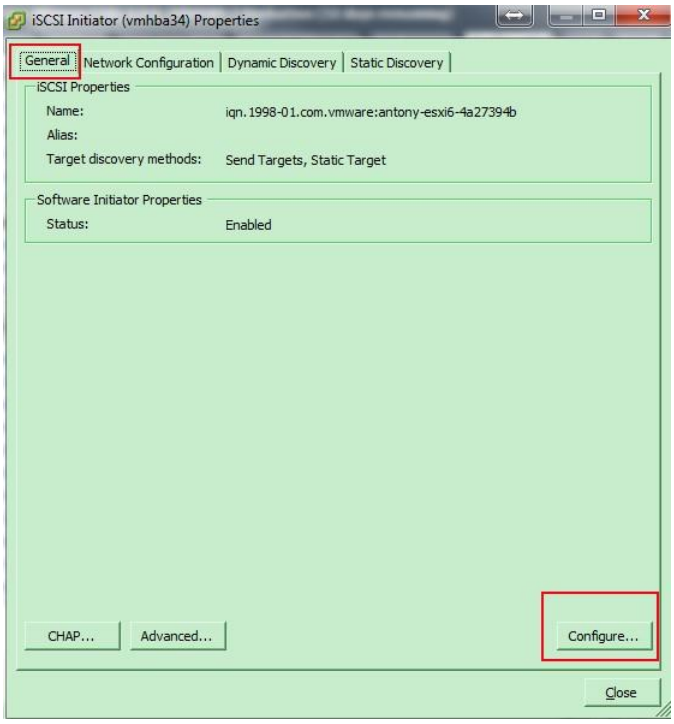




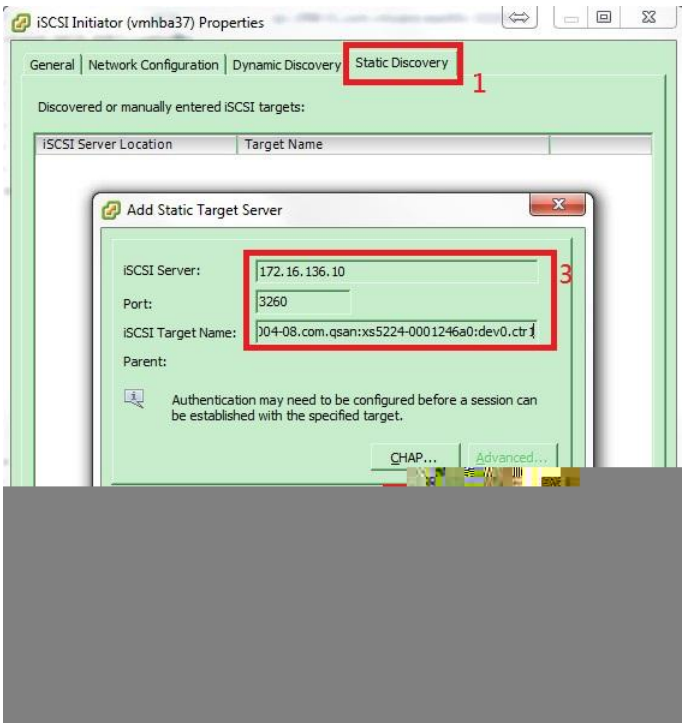
8. In Configuration tab, select Storage Adapters to list all available storage adapters. Choose iSCSI Software HBA and click Properties to modify the settings.

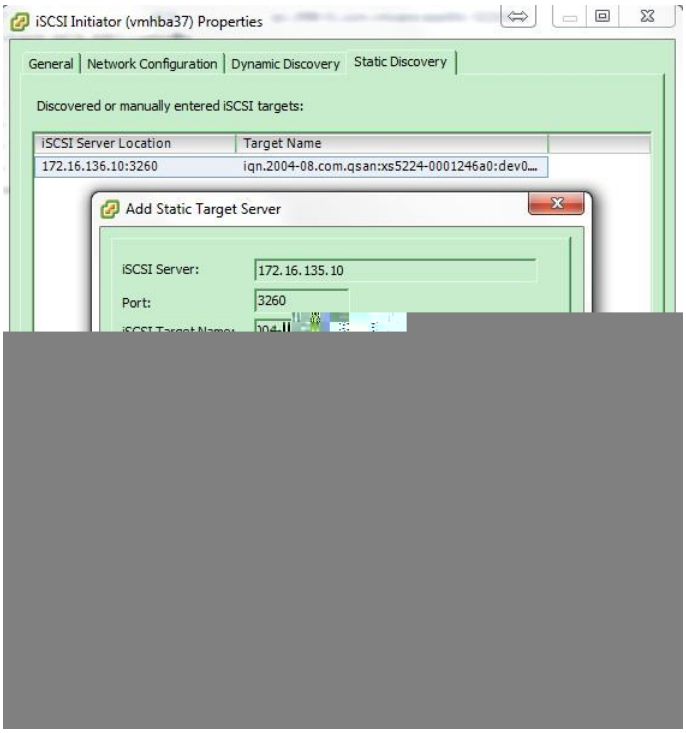


9. In iSCSI initiator Properties, select General tab and click Configure to enable iSCSI initiator.



10. Next, please add another VMkernel port (default is one only) into the iSCSI initiator, so that the multipath session can be created smoothly.
11. Go to Static Discovery tab, click Add button to set iSCSI target IP, here is iSCSI data port of XCubeSAN XS5216.

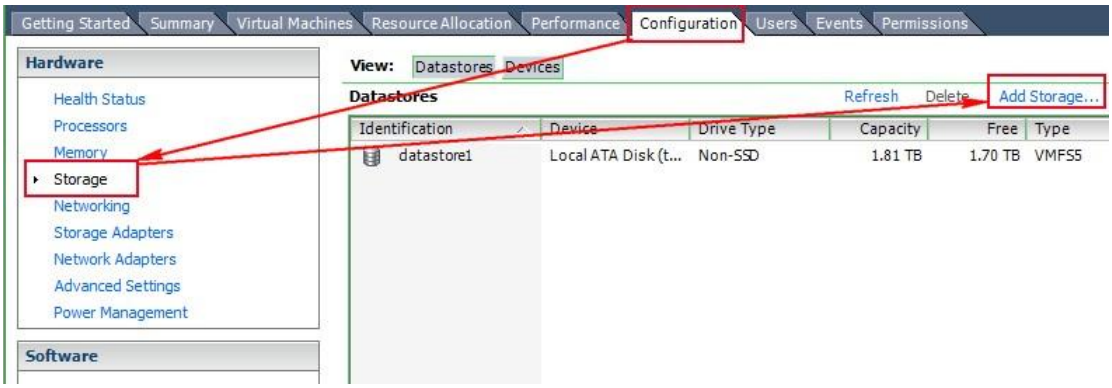




NOTE:

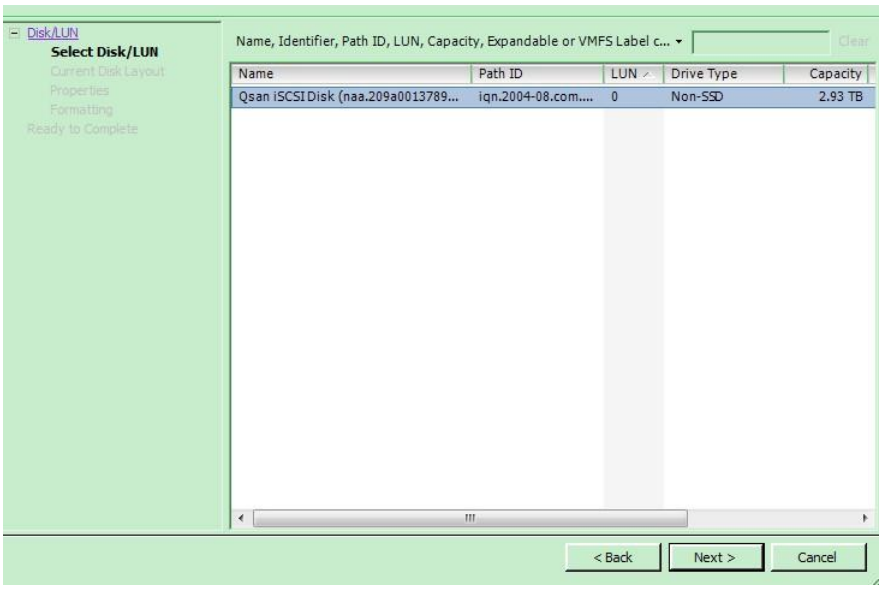
The iSCSI target iqn can be found on web UI. Remember that the iqn is different if you are connecting to the iSCSI data port of controller1 and controller2 from ESXi server.

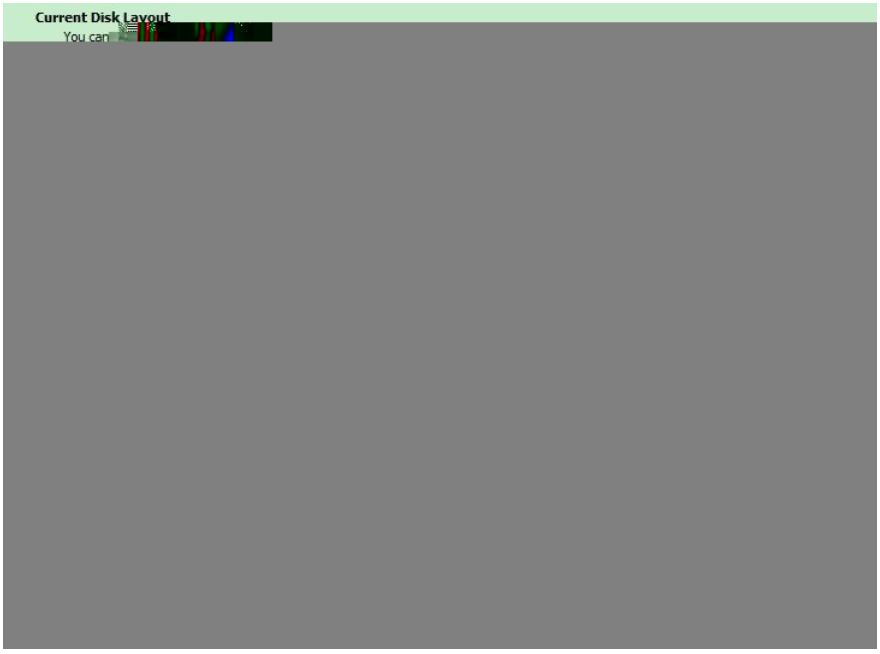
12. A Rescan window will pop up after the configuration is finished, click Yes button to rescan all devices.



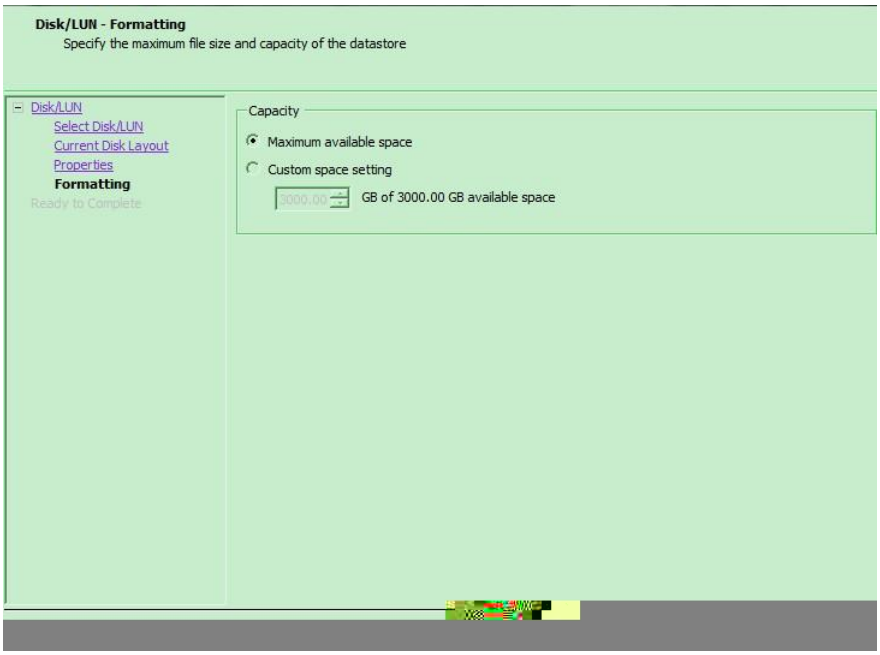
2. Select Disk/LUN, and click Next button.

3. Select Qsan iSCSI Disk, and click Next button.





4. Enter a name for the new datstore, and click Next button.
5. Click Next button.



6. Check all settings, then click Finish button.
7. A new storage is added under Datastores of the ESXi server. The ESXi server provides settings to the multipath I/O. We can select the iSCSI storage and click Properties to modify the settings.
8. Select Manage Paths button.
9. In Manage Paths window, it will display how many paths connect to this LUN and what path is active now. The policy is in Fixed mode by default, it can be modified by the drop-down menu. There are three types available, Fixed, Most Recently Used, and Round Robin. The difference between Fixed and Most Recently Used is that Fixed will make the active path to failback once the preferred path is restored from a failure status, but Most Recently Used policy will keep the active path stay in used. Fixed and Most Recently Used policies will use only one path to transfer the iSCSI network traffic at the same time, whereas Round Robin policy will use all available paths to transfer the data. Remember to click Change button for applying the setting.

NOTE:

For more details, please refer to the Best Practice document - BP-Best Configuration to maximize performance in ESXi environment.

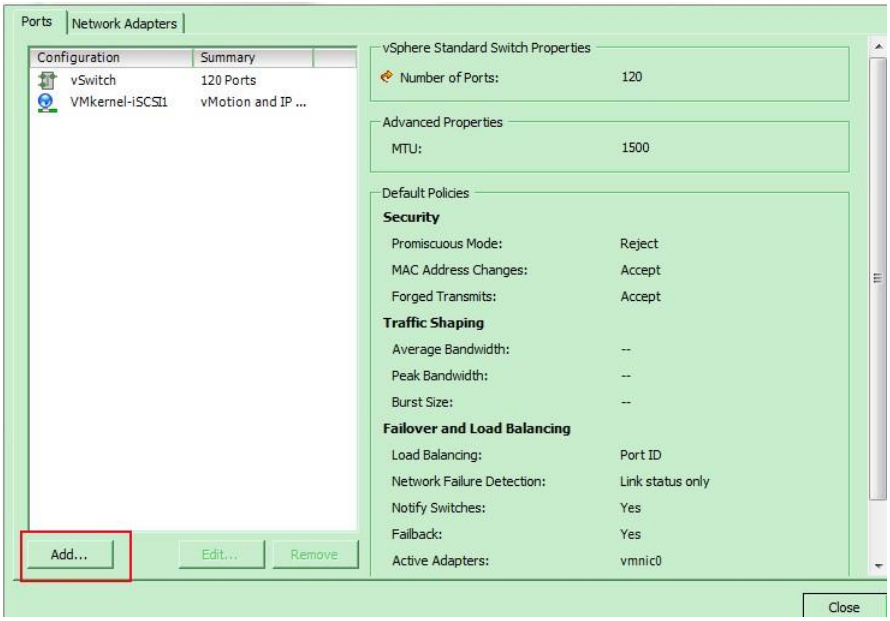
Add a New HDD to the Created Guest OS Using the Added Datastore

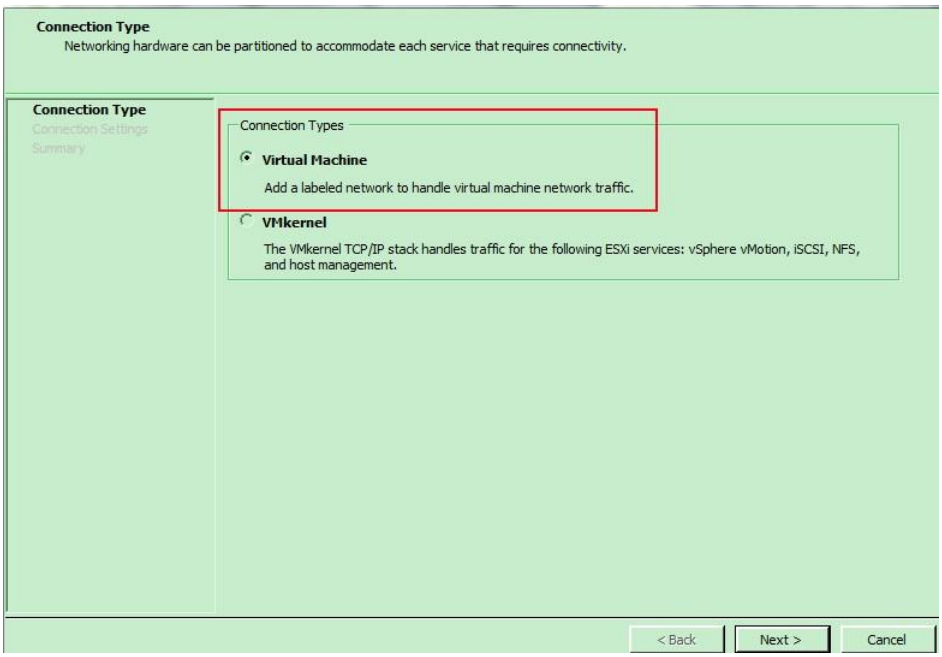
1. Now the datastore can be added as a virtual disk of guest OS. Right click on the guest OS and select Edit Settings.

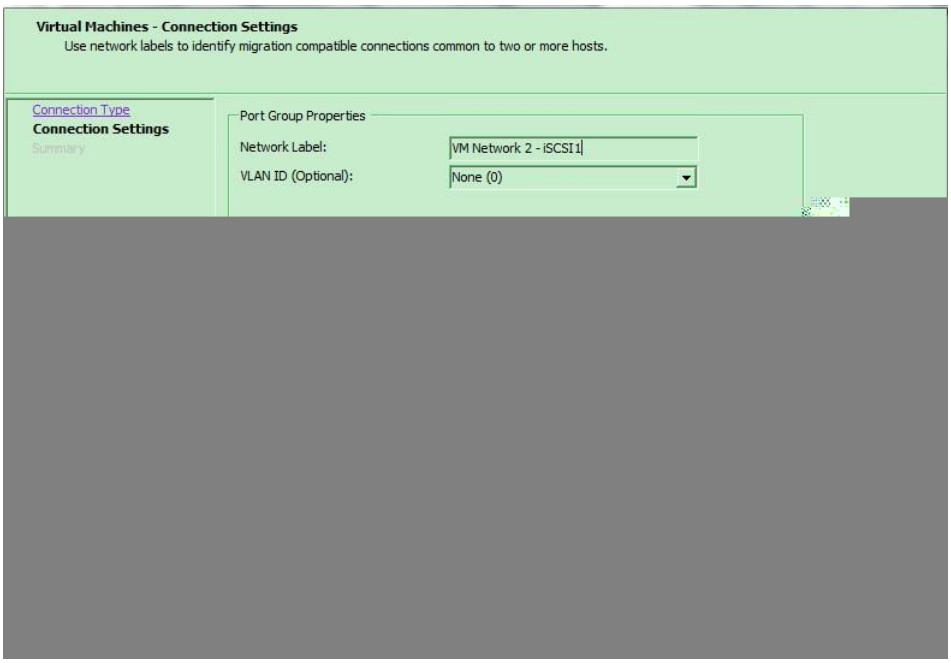
4. Choose Create a new virtual disk, and click Next button.
5. Select Specify a datastore or datastore cluster, and click Browse button.

6. Select iSCSI storage on XS5216, and click OK button.

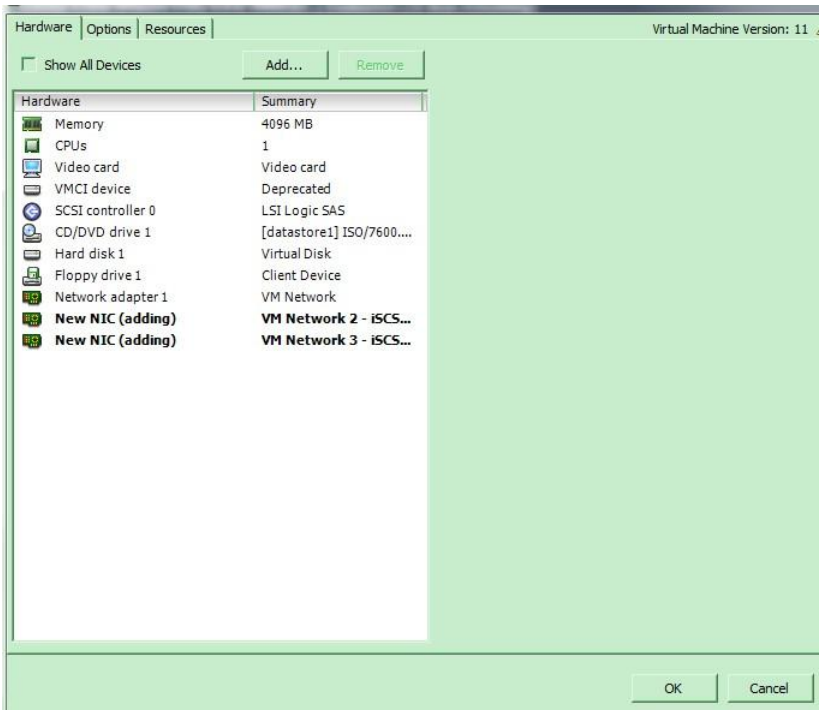
7. Leave all settings by default, click Next button.
8. Check all settings, then click Finish button.
9. Done







5. And so on for the other vSwitch, there will be another 2 VM port group available for VM guest OS.
6. Add 2 more Ethernet NIC to the created guest OS, using the VM port group that is created.



7. Configure the new added 2 NICs on the guest OS, so that the guest OS can ping to iSCSI data port on the XS5216, and log in the iSCSI target.
8. Done.

Conclusion

QSAN XCubeSAN series products provide Active-Active dual controller and support ALUA, user don't have to pre-configure any option on XCubeSAN system to achieve the redundancy between ESXi server and XCubeSAN, just make sure the multipath I/O session is well-configured and the failover/back mechanism will automatically be executed once one of controllers gets failed.

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- XCubeSAN Series
- AegisSAN Q500 Series
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- AegisSAN V100 Series

Reference

VMware Documentations

- https://www.vmware.com/support/pubs/

Obsolete QSAN White Paper

- QWP200802-P150C-Connect_P150C_with_iSCSI_initiator_in_ESX3.5.pdf
- QWP200917-P300H-Connect_P300H_with_iSCSI_initiator_in_ESX4.0.pdf