Dell PowerVault NX1950 configuration guide for VMware® ESX Server software

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1. Introduction

Dell™ PowerVault™ NX1950 is a unified network storage solution that simultaneously stores both file and application data while supporting a wide range of operating environments and communication protocols, including the iSCSI standard**.** The PowerVault NX1950 can be deployed as an integrated solution (Basic and High Availability configuration) packaged with a Dell PowerVault MD3000 Storage Array or as a Gateway connecting directly to existing Dell|EMC SAN.

This document provides instructions to setup an *NX1950 Integrated Basic Configuration* to provide iSCSI storage for usage with VMware ESX Server software. The PowerVault NX1950 integrated basic storage solution consists of single-node configuration running Microsoft® Windows® Unified Data Storage Server (WUDSS) 2003 operating system and is pre-configured from Dell with a PowerVault MD3000 Storage Array. Note that Dell supports only NX1950 integrated basic configuration with VMware ESX Server software storage using only the iSCSI protocol and not NFS. Dell does not support NX1950 integrated High Availability configuration with VMware ESX Server running on target hosts.

The Microsoft iSCSI software target functionality included as part of WUDSS uses the Windows TCP/IP network stack on NX1950 to provide block storage services to ESX server. The Microsoft iSCSI software target creates storage devices as iSCSI virtual disks, which are files in the virtual hard disk (VHD) format. These iSCSI virtual disks are assigned to specific iSCSI targets. Only the iSCSI virtual disks assigned to an iSCSI target (exported to the iSCSI target) are available to the iSCSI initiator running as part of VMware ESX server or inside a virtual machine. This storage can be used by ESX server to create VMFS datastores or used directly by virtual machines as block storage. This document covers NX1950 deployment instructions using the iSCSI initiator within VMware ESX Server and not a virtual machine. For instructions on using an iSCSI initiator inside a virtual machine, refer to your specific initiator and guest operating system documentation.

2. Architectural Setup

The following figure illustrates a typical setup for using NX1950 in an ESX Server farm. As a best practice, Dell recommends using dedicated Gigabit Ethernet network to handle iSCSI storage traffic.

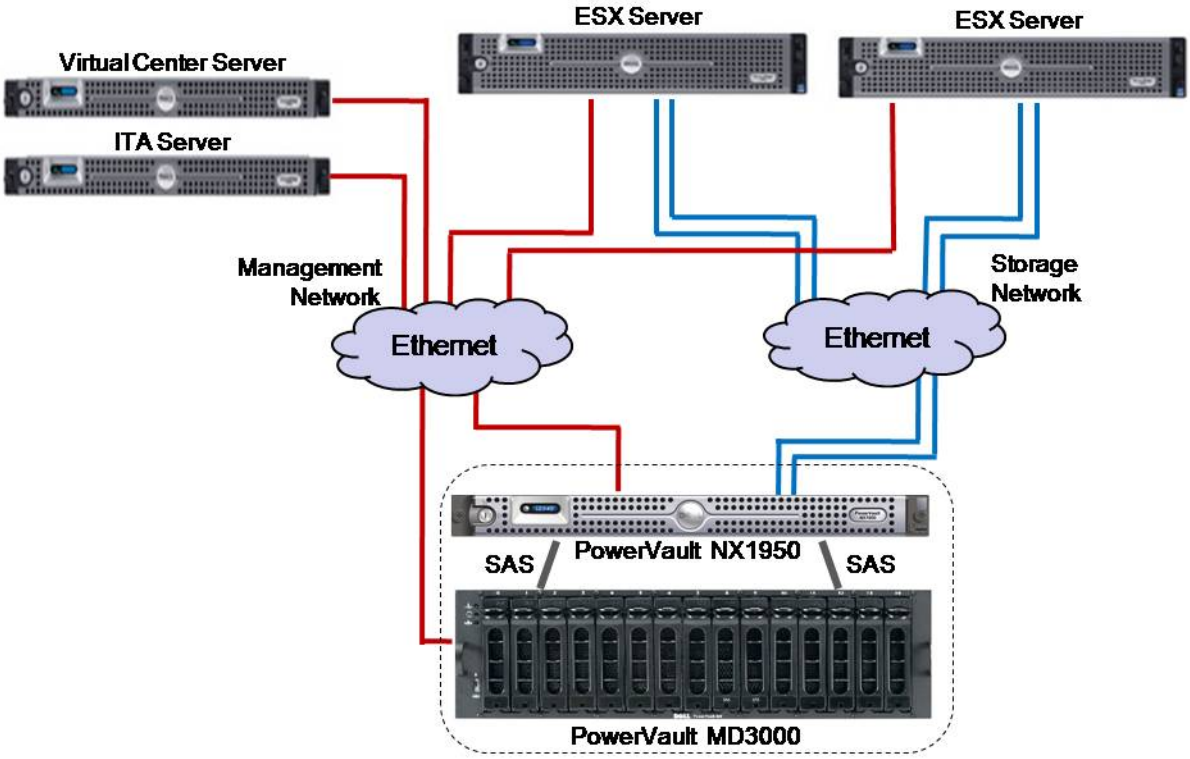

Figure 1: Typical NX1950 storage solution architecture for VMware ESX Server

3. iSCSI Connectivity Support

The following table lists the VMware ESX Server software and iSCSI initiators supported with PowerVault NX1950.

Operating System	Host Bus Adapter
VMware ESX Server 3.0.1	iSCSI software initiator with ESX Server
VMware ESX Server 3.0.2	iSCSI software initiator with ESX Server

4. PowerVault NX1950 storage setup and configuration

For information on storage configuration on NX1950, refer to NX1950 Deployment Guide at http://support.dell.com/support/edocs/stor-sys/pvnx1950/en/dg/dg_en.pdf

Select interface for storage requests: On the NX1950 server, open the Microsoft iSCSI Software Target console and select the appropriate network to service storage requests.

1. Open the Microsoft iSCSI Target Software from *Start->Administrative Tools->Microsoft iSCSI Software Target*
2. Right click on *Microsoft iSCSI Software Target* and click on *Properties*
3. Select the appropriate network interface to service storage requests.

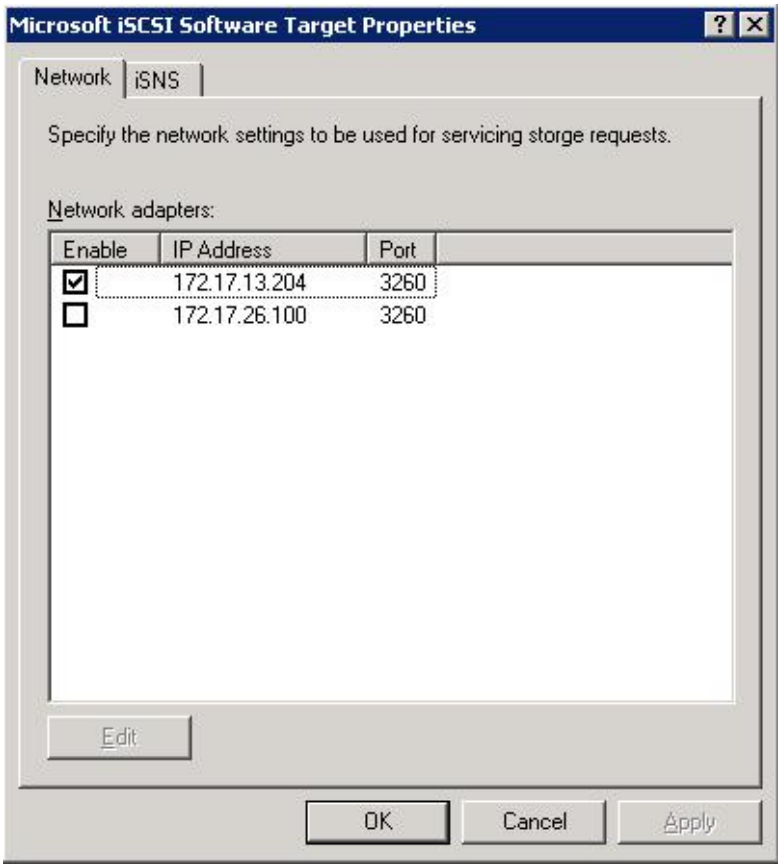

Figure 2: Network selection to serve storage requests

Note: Teaming of network ports that serve iSCSI storage requests on the NX1950 target system is not supported.

5. iSCSI Software Initiator Configuration on ESX Server

This section lists the steps required to configure the software initiator on the VMware ESX Server. Connect to the ESX server/VirtualCenter using VI Client, and follow the below steps:

1. Select *Configuration->Storage Adapters* on the ESX server
2. Select iSCSI software adapter and click on *Properties.* The iSCSI initiator Properties window appears.

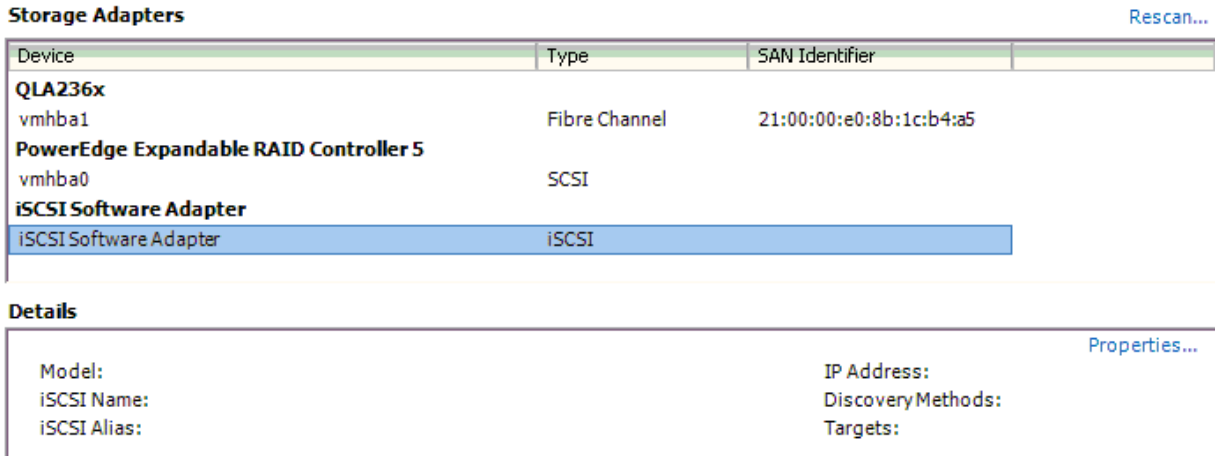

Figure 3: iSCSI software initiator tab on VI client

3. Under the general tab select Configure tab. Select the Enabled checkbox and click OK. Select Close.

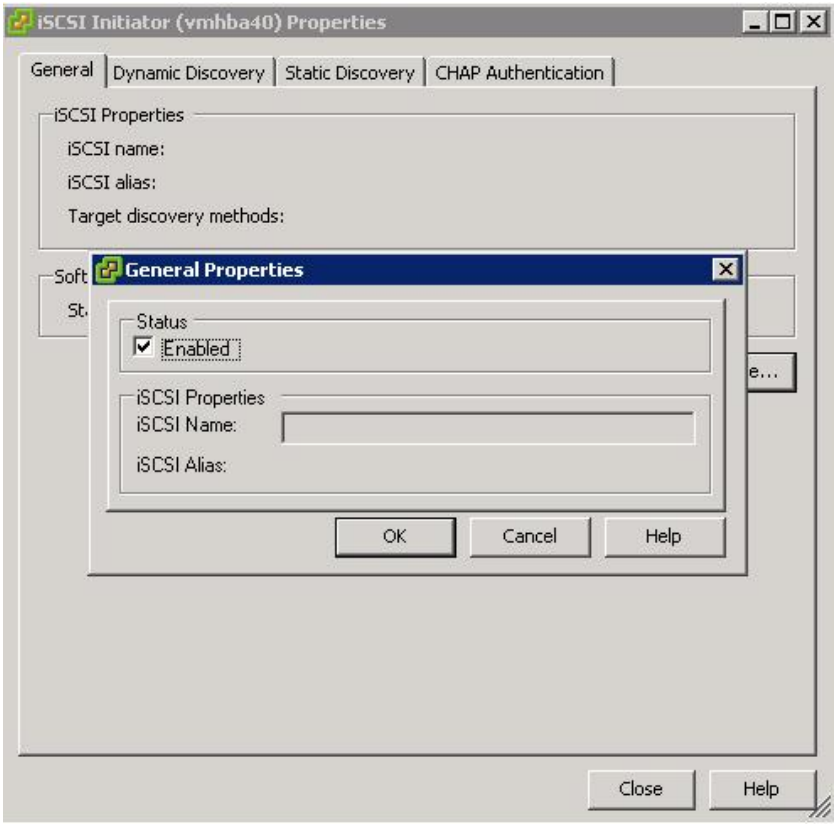

Figure 4: iSCSI software initiator properties window

4. Select iSCSI software adapter under storage. You should now see your iSCSI Target name listed.

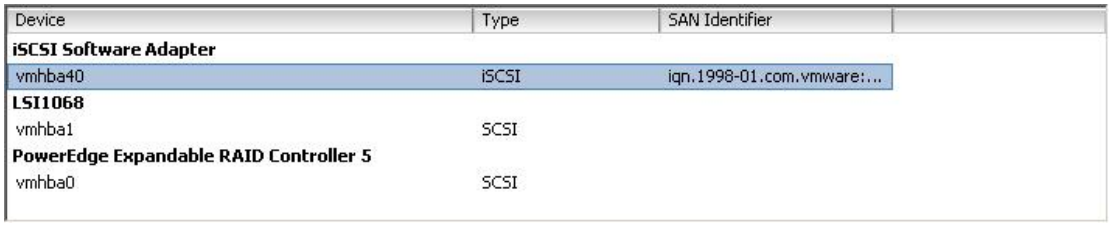

Figure 5: iSCSI software initiator after initial configuration

5. Select Properties under storage adapters. Select Dynamic Discovery. Select *Add*. Provide the IP address of the bridge configured on NX1950 and click OK.

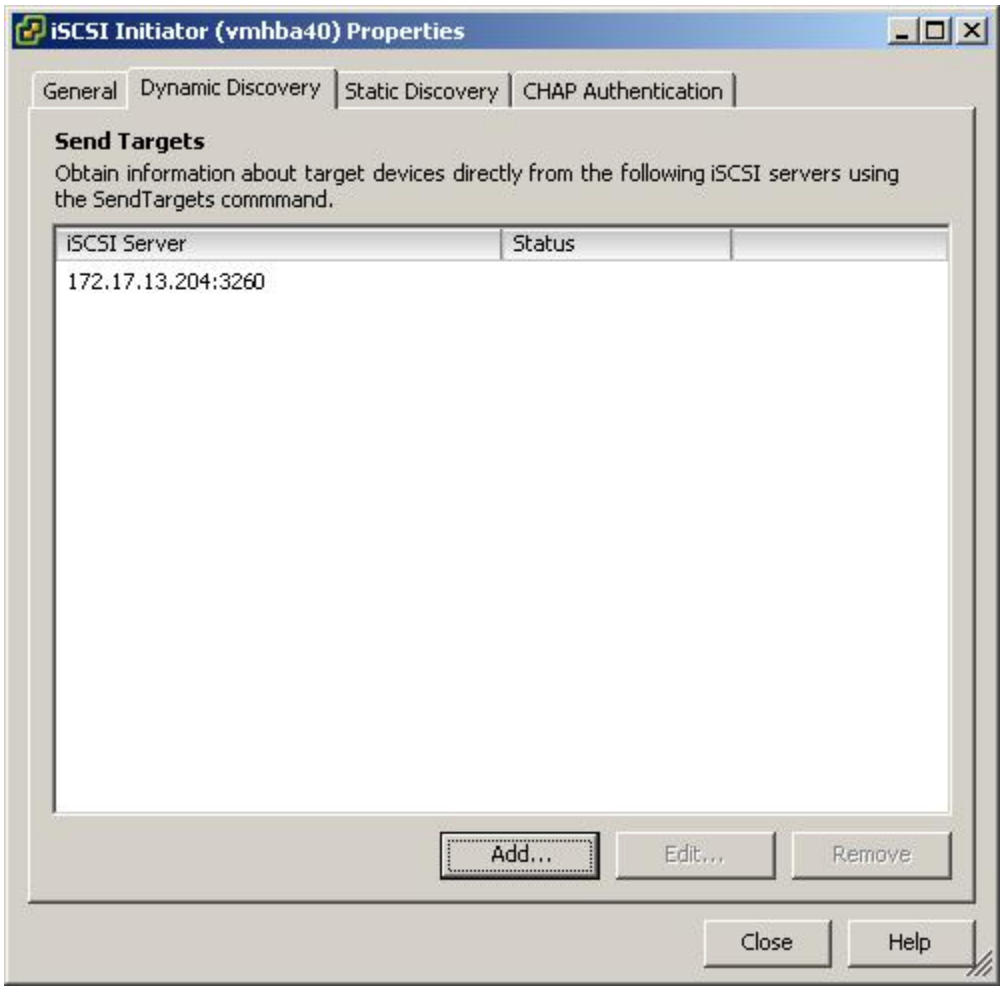

Figure 6: iSCSI software initiator properties window

6. Click *Close*.

6. iSCSI Target and Virtual Disk Configuration on NX1950

6.1 Create iSCSI Target

Follow the below steps to create an iSCSI target on the NX1950. Open the Microsoft iSCSI Target Software from *Start->Administrative Tools->Microsoft iSCSI Software Target*

1. Right click *iSCSI Targets* and select *Create iSCSI target*. Welcome to create iSCSI Target screen appears. Select Next.
2. Create iSCSI Target: Provide a name and description for the iSCSI and select *Next*.

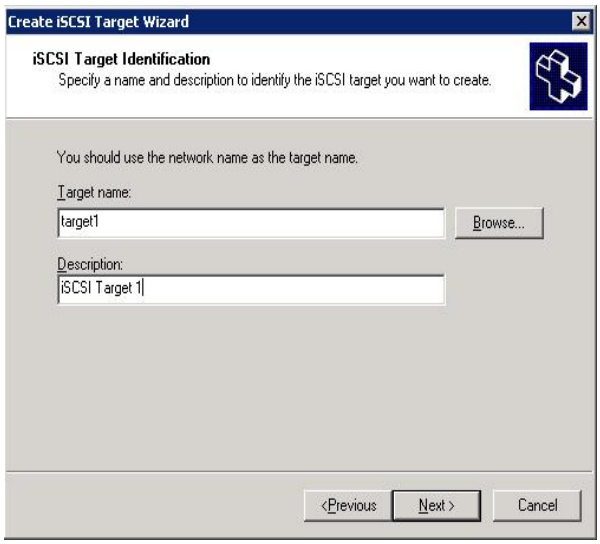

Figure 7: iSCSI target creation wizard

3. Identify iSCSI Initiator: Select the iSCSI initiator IQN name from the ESX Server host. Select Next to continue.

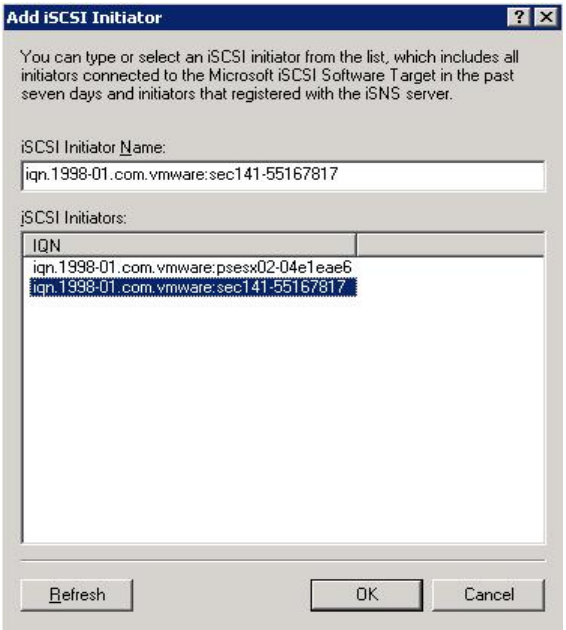

Figure 8: iSCSI initiator selection wizard

4. Select *Finish* to complete the target creation.

6.2 Create Virtual Disks

1. Right click newly created iSCSI target and select *Create Virtual Disk for iSCSI Target*. The create virtual disk wizard appears next.
2. Create virtual disk: The virtual disk is created as a file residing on a formatted storage volume (preferably formatted as an NTFS file system volume). On the create virtual disk wizard, browse to this partition and specify a name for the virtual disk. Select *Next*.

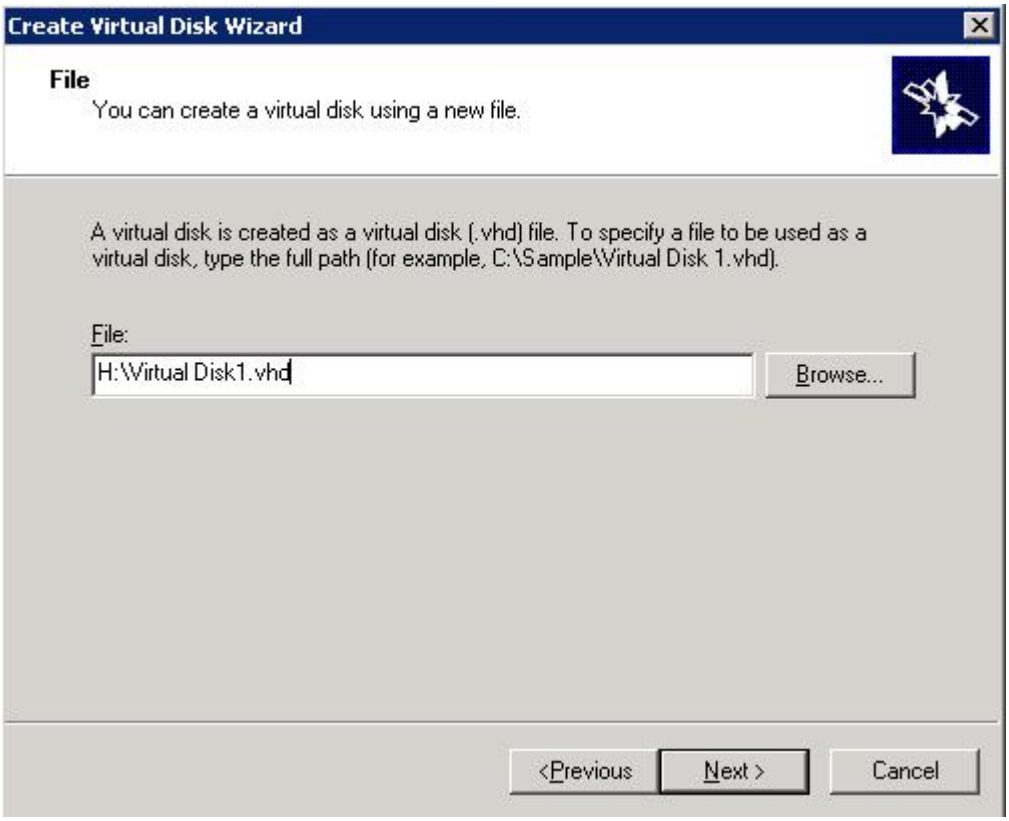

Figure 9: Create virtual disk wizard

3. Specify the size (in MB) of the virtual disk and click *Next*.
4. Provide a description for the virtual disk and click *Next.*
5. Specify the iSCSI target that you want to attach the virtual disk to. Select the newly created iSCSI target name and click *Add*. Click *OK and* then click *Next* and then *Finish* to complete creation of virtual disk.
6. The iSCSI target should now appear under iSCSI targets and the virtual disk should show with status as idle.

7. Configure iSCSI storage on ESX Server

Connect to the ESX Server/VirtualCenter using VI Client and follow the steps below.

1. Go to the configuration tab and select *Storage Adapters*. Select the iSCSI Software Adapter and click *Rescan*. The newly created iSCSI target and LUN should be visible from the ESX server. The status of the virtual disk as shown on NX1950 Microsoft iSCSI target software should now show as *"In Use."*

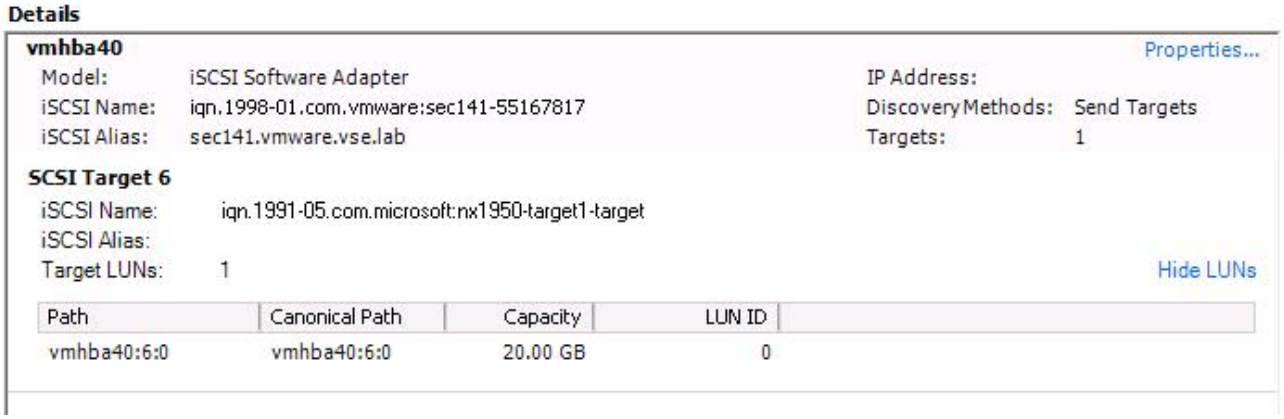

Figure 10: iSCSI target and LUNs as visible through VI client

2. Go to the configuration tab and select *Storage*. Click on *Add Storage*, select *Disk/Lun* and click *Next*. Select the newly added storage and click *Next*.
3. Select the newly created iSCSI LUN and click *Next*.
4. Review the disk layout and click *Next.*
5. Provide a name for the VMFS datastore and click *Next.*
6. Select the appropriate block size and capacity for the VMFS datastore and click *Next.*
7. Review the disk layout and click *Finish* to create the VMFS datastore. The new datastore is now ready to be used for storing virtual machine images.

8. References

1. Dell PowerVault NX1950 support documents: http://support.dell.com/support/edocs/software/PVNX1950/
2. Drivers download page for NX1950: http://support.dell.com/support/downloads/driverslist.aspx?os=WX64&osl=EN&catid=-1&impid=-1&servicetag=&SystemID=PWV_NX_1950&hidos=WNET&hidlang=en
3. VMware Virtual Infrastructure 3 Documentation: http://www.vmware.com/support/pubs/vi_pubs.html
4. Dell|VMware alliance home page: www.dell.com/vmware
5. Microsoft Widows Unified Storage Data Storage Server: http://www.microsoft.com/windowsserversystem/storage/wudss.mspx