Dell PowerVault MD3000i Configuration Guide for VMware ESX Server Software

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1. Introduction

The Dell[™] PowerVault[™] MD3000i storage solution consists of a standard or high availability configuration. The standard model has a single controller with two 1GbE ports. It can be deployed to support up to 16 hosts non-redundantly. The high availability model has dual controllers with two 1GbE ports per controller for a total of four 1GbE ports. The dual controller option can connect up to 16 fully redundant hosts. This document provides instructions to setup the MD3000i iSCSI storage solution for usage with VMware® ESX Server[™] software.

The Dell PowerVault MD3000i iSCSI storage array contains four Ethernet ports through which the VD can be accessed affording both redundancy and availability of data. Provisioning of storage on servers in a VM environment is a multiple step process starting with definition of the server names for host access. The iSCSI connection is then established from the storage subsystem, and after detection and configuration is established as a two way link with the associated ESX server(s), completing the iSCSI communication subsystem. The final step allocates the detected storage to the individual virtual machines (VM's), where all or part of the configured storage can be assigned to individual VM's.

2. Architectural Setup

The following figure illustrates a typical high availability setup for using the MD3000i in an ESX Server farm. As a best practice, Dell recommends using a separate Gigabit Ethernet network switch to handle iSCSI storage traffic. Two servers are connected to two switches. Each switch has a path to the MD3000i via the two dual port controllers. In this base HA configuration, the servers, switches, and MD3000i ports share the same subnet. The NIC ports serving iSCSI traffic on the ESX servers are teamed.



3. iSCSI Connectivity Support

Operating System	Host Bus Adapter		
VMware ESX Server 3.5	iSCSI software initiator with ESX Server		

4. PowerVault MD3000i Storage Setup and Configuration

Create virtual disks on MD3000i using steps described in: http://support.dell.com/support/edocs/systems/md3000i/en/IG/PDF/IGbk0HR.pdf.

After opening the Modular Disk Storage Manager and selecting the MD3000i storage array to be configured, select the *Configure* tab.

Note: in the examples to follow the Storage array "sg23_training" is an MD3000i with virtual disks already configured using the Create Virtual Disks selection. The new server being added to an existing host group is named "Valhalla".

From the Configure tab

- 1. Select Configure Host Access (Manual).
- 2. Enter the host name for the server which has the ESX Server software is installed.
- 3. Select *Linux* as the host type.

From the next screen, specify the iSCSI Initiator by selecting the *New* button (lower right on screen). On the *Enter New iSCSI Initiator* screen enter a name for the iSCSI initiator name. The label is auto-populated from the server name.

🥃 Enter New iSCSI Initiator	×								
D€¢LL™									
Enter the name and label of the iSCSI initiator you are defining.									
i <u>S</u> ⊂SI initiator name:									
valhalla									
iS⊆SI initiator label (required - max 30 characters):									
valhalla0									
Didd Capcel									

Figure 2: iSCSI Initiator Window

Host Group configuration starts from the following screen titled "Configure Host Access (Manual) – Specify Host Group". For ESX servers supporting VMotion, HA, and DRS, a host group must be defined so the MD3000i storage subsystem has a configured iSCSI path to each of the hosts.

- Select "Yes: This host will share access to the same virtual disks with other hosts"
- If a new host group is desired select the radio button for that option and enter in a name for your host group using standard host naming conventions (e.g. no spaces etc).
- Should you already have one or more host groups assigned, select the radio button enabling selection from a drop down list of existing host groups. This option is to be used when configuring the second, third, etc. host in a group. Once the host group is selected previously configured hosts for that host group will be displayed. Note that

these are shown as Linux hosts even though they are configured as ESX servers.

Selecting *Next* provides a Confirmation screen in which the new server being configured is shown and the other previously configured associated hosts are named. For the first server configured in a new host group there will be no associated hosts listed under the *Associated host group*.

Modular Disk Storage Manager			
D&LL™	N	Aodular Disk Storag	e Manager
Storage array: Sg23_training	New Remove 🚰 Initial Setup Ta	All arrays optimal 🧲	Help Exit
Summary Configure	is iSCSI Support		
Configure > Configure Host Access (Manual)			
Configure Host Access (Manual)	- Confirm Host Definition	Wiew Frequent	ly Asked Questions
		•	
The host will be created as shown below if you proceed.			
Host definition:			
Host name:	valhalla		
Host type:	Linux		
iSCSI initiator label/name:	valhalla0/valhalla		
Associated host group:	TrainRack Hosts		
Associated host:	Aurora		
Associated host:	Odyssey		
· · · · · · · · · · · · · · · · · · ·			
< Back Finish Cancel			

Figure 3: Modular Disk Storage Manager Configure Tab

Select *Finish* confirming the new host definition. This initiates the wizard configuration of the new host.

On completion,

- Select Yes to proceed to the next host you wish to configure, or
- Select *No* to end the configuration wizard.

Helpful Hint: Record the MD3000i IP address for later configuration

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->Security Profile on the ESX server.

lardware	Security Profile			
Processors	Firewall		Refresh	Properties.
Memory	Incoming Connections			
Storage	CIM Secure Server	5989 (TCP)		
Networking	CIM SLP	427 (UDP,TCP)		
Charles Adapters	CIM Server	5988 (TCP)		
Storage Adapters	SSH Server	22 (TCP)		
Network Adapters	Outgoing Connections			
- Amore	VCB	443,902 (TCP)		
uitware	VMware VirtualCenter Agent	902 (UDP)		
Licensed Features	CIM SLP	427 (UDP,TCP)		
Time Configuration	VMware License Client	27000,27010 (TCP)		
DNS and Routing	Software ISCSI Client	3260 (TCP)		
Virtual Machine Startun/Shutdown	Vietual Machine Delegate (Eur	veriment all		Edit
Virtual Machine ScarcepyShaceown				Eult,
Vircual Machine Swapnie Cocación	change this setting	iles using these credentials. The host	: must be in maintenan	ce mode to
Security Profile	Liser Name:	root		
System Resource Allocation				
Advanced Settings				

Figure 4: Security Profile Configuration Tab

2. Click on *Properties*. The *Firewall Properties* box appears.

i di ice	efault, remote clients are prevented fr issing services on remote hosts.	om accessing services on	this host, and local clients	are prevented I	rom
) p itoi	rovide access to a service or client, o matically when any of their ports are o	heck the corresponding b pened and stop when all	oox. Unless configured oth of their ports are closed.	erwise, daemons	s will start
	Label	Incoming Ports	Outgoing Ports	Protocols	Daemon
eq	uired Services				
ec	ure Shell				
1	SSH Server	22		TCP	Running _
	SSH Client		22	TCP	N/A
im	ple Network Management Prot	ocol			
	SNMP Server	161	162	UDP	N/A
ng	rouped				
	Software iSCSI Client		3260	TCP	N/A
2	VMware VirtualCenter Agent		902	UDP	N/A
1	VCB		443,902	TCP	N/A
2.	Active Director Kerberos		464.88	TCP	N/A
_					
					Options

Figure 5: Firewall Properties Window

- Check Software iSCSI Client.
 Select Configuration->Storage Adapters on the ESX server.
 Select iSCSI software adapter and click on Properties.

Storage Adapters			Rescan
Device	Туре	SAN Identifier	
QLA236x			
vmhba1	Fibre Channel	21:00:00:e0:8b:1c:b4:a5	
PowerEdge Expandable RAID Controller 5			
vmhba0	SCSI		
iSCSI Software Adapter			
iSCSI Software Adapter	iSCSI		
Details			
			Properties
Model:		IP Address:	
iSCSI Name:		Discovery Methods:	
iSCSI Alias:		Targets:	



- 6. The iSCSI initiator Properties window appears.
- 7. Under the general tab select Configure tab. Select the *Enabled* checkbox and click *OK*. Select Close.

iSCSI In	itiator (vmhba40) Pro	perties				_ 0
General -ISCSI F ISCSI ISCSI Targe	Dynamic Discovery Stat roperties name: alias: et discovery methods:	ic Discovery	CHAP Authe	ntication		
Soft	General Properties Status ✓ Enabled iSCSI Properties iSCSI Name: iSCSI Alias:	OK	Can	cel	Help	× • • • • •
				Clo	ise	Help

Figure 7: iSCSI software initiator properties window

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

Device	Туре	SAN Identifier
iSCSI Software Adapter		
vmhba40	iSCSI	ign.1998-01.com.vmware:
L5I1068		
vmhba1	SCSI	
PowerEdge Expandable RAID Con	troller 5	
vmhba0	SCSI	

Figure 8: iSCSI software adapter after initial configuration

9. Select Properties under storage adapters. Select Dynamic Discovery. Select *Add*. Provide the IP address of the MD3000i and click OK. There may be a slight delay before the process completes.

iSCSI I	nitiator (vmhba40) Properties				
General Send T Obtain i	Dynamic Discovery argets information about tar diargets command	Static Discovery	CHAP Aut	hentication following iS) CSI serve	ers using
iSCSI S	5erver		Status			1
		A	dd	Edit		Remove
					Close	Help

Figure 9: iSCSI software initiator properties window

10. Click Close.

6. Configure iSCSI storage on ESX Server

Connect to the ESX server/Virtual Center 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.

vmhba40						Properties
Model:	iSCSI	Software Adapter			IP Address:	
iSCSI Name:	CSI Name: iqn.1998-01.com.vmware:sec141-55167817			Discovery Methods:	Send Targets	
iSCSI Alias:	iSCSI Alias: sec141.vmware.vse.lab			Targets:	1	
SCSI Target 6						
iSCSI Name:	ign	1991-05.com.microsoft	:nx1950-target1-target			
iSCSI Alias:						
Target LUNs:	1					Hide LUNs
Path		Canonical Path	Capacity	LUN ID		
		vmhba40:6:0	20.00 GB	0		

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.

7. References

- 1. Dell PowerVault MD3000i support documents: http://support.dell.com/support/edocs/systems/md3000i/
- Drivers download page for MD3000i: <u>http://support.dell.com/support/downloads/driverslist.aspx?c=us&cs=555&l=en&s=biz&Se</u> rviceTag=&SystemID=PWV_MD3000I&os=NAA&osl=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

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