DELL POWERVAULT MD32XX DEPLOYMENT GUIDE FOR VMWARE ESX4.1 SERVER SOFTWARE

PowerVault MD32xx Storage Array

www.dell.com/MD32xx



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TERMINOLOGY/GLOSSARY

- VD == virtual disk
- VM == virtual machine
- NIC == network interface card
- MPIO == Multi-Path I/O
- SAS == Serial Attached SCSI
- RDM == Raw Device Map
- DVS == Distributed Virtual Switch
- HA == high availability
- DRS == Distributed Resource Scheduler
- MRU == Most Recently Used
- WWN == World Wide Name

INTRODUCTION

The Dell[™] PowerVault[™] MD32xx storage solution consists of either a standard or high availability configuration. The standard(simplex) configuration has a single controller with four SAS In ports. It can be deployed to support up to 4 hosts non-redundantly. The high availability(duplex) configuration has dual controllers with four SAS In ports per controller for a total of eight SAS In ports. The dual controller option can connect up to 4 fully redundant hosts. This document provides instructions to setup the MD32xx SAS storage solution for use with VMware[®] ESX4.1 Server[™] software.

Generally, you can connect multiple hosts to a single local storage system. The actual number of hosts you connect varies depending on the type of storage device and topology you use.

When multiple hosts connect to the local storage unit, they access storage devices in the unshared mode. The unshared mode does not permit several hosts to access the same VMFS Datastore concurrently. However, a few SAS storage systems offer shared access to multiple hosts. This type of access permits multiple hosts to access the same VMFS Datastore on a LUN.

With the MD32xx this is accomplished with the use of Host Groups which in effect bypass the partition scheme, thus allowing multiple ESX hosts access to the same virtual disk.

Provisioning of storage on servers in a VM environment is a multi-step process starting with definition of the server names for host access. The SAS connection is then established from the storage subsystem. After which, detection and configuration are established as a two-way link with the associated ESX server(s), completing the SAS communication subsystem. The final step allocates the detected storage to the virtual machines (VMs), where all or part of the configured storage can be assigned to individual VMs. Connectivity between the storage array and the host server is provided by a Dell 6.0-Gbps SAS Host Bus Adapter (SAS 6Gb HBA).

IMPLEMENTING ESX4.1 ON THE MD32XX STORAGE ARRAY

This whitepaper addresses some of the new features in vSphere4 as well as showing examples of how to connect a vSphere4 environment to a Dell[™] PowerVault[™] SAS arrays.

This whitepaper goes into depth on configuration steps for connecting to a PowerVault™ SAS array.

New Features in vSphere4

MPIO – With ESX4.1 and vSphere4, customers can benefit from Multi-Path I/O from the ESX4.1 server and the SAS array. This allows for multiple connections to be concurrently used to allow for greater bandwidth. This is especially important for the PowerVault SAS

as each PowerVault member has multiple connections and now ESX4.1 can take full advantage of these connections.

Third Party MPIO Support – With ESX4.1 and vSphere4, VMware has provided an architecture that enables storage vendors to provide new and advanced intelligent integration.

Drivers for multi-path frameworks such as Microsoft Multi-Path IO (MPIO) and Linux Device Mapper (DM) are installed on host systems that access the storage array and provide I/O path failover.

SUPPORTED HARDWARE AND SOFTWARE

HARDWARE REQUIREMENTS

Refer to the following VMware website for a complete up-to-date list of the prerequisites for installing VMware ESX server. http://www.vmware.com/pdf/vsphere4/r41/vsp_41_esx_server_config.pdf

SUPPORTED OPERATING SYSTEMS FOR MD32XX ARRAY

ESX4.1 is the only supported VMware OS for MD32xx.

ARCHITECTURAL SETUP

The NIC ports serving SAS traffic on the ESX servers are teamed in order to re-route traffic in the event of an adapter failure.

SAS direct attached storage does not require a storage network to communicate with your host. All you need is a cable connected to the storage unit and a Dell HBA in your host. You will have a SAS HBA and a path (cable) to each controller. See below for example.



CONNECTIONS TO A MD32xx SAS ARRAY

Steps:

Prerequisite: The SAS HBA(s) are already installed in the ESX server. The cables have been connected to the Array, and both the server and the array are powered on.

1) To verify that the SAS 6Gb HBA is correctly installed login to vCenter and select the ESX host. From the *Configuration* tab select *Storage Adapters*. You should see the Block SCSI HBA listed. Under details you will see Dell 6Gb SAS HBA adapter. Scroll down if necessary, there will be no devices or paths listed until after you have configured the MD32xx array.

Dell PowerVault MD32xx Configuration Guide for VMware ESX4.1 Server Software



Figure 1 Viewing Dell 6Gb SAS HBA

POWERVAULT MD32xx STORAGE SETUP AND CONFIGURATION

Create virtual disks on MD32xx using steps described in:

HTTP://SUPPORT.DELL.COM/SUPPORT/EDOCS/SYSTEMS/MD3200/MULTLANG/GSG/DAO BCC/GSG.PDF

After opening the Modular Disk Storage Manager and selecting the MD32xx storage array to be configured, select the *Mappings* tab.

Note: in the examples to follow the Storage array is an MD32xx with virtual disks already configured using the *Configure Storage* Array selection under the Setup Tab. The new ESX host being added is named "VMware_host1".

From the *Mappings* tab

STEP1: MANUALLY DEFINE HOSTS BY HIGHLIGHTING THE STORAGE ARRAY NAME AND

RIGHT CLICKING

Select Define -> Host

📅 AusSell910 - Power	ault Modular Disk Storage Ma	nager (Array Management)				
D¢2LL P	OWERVAULT MODULAR	DISK STORAGE MANAGER				
Storage Array View Ma	appings Disk Group Virtual Disk	RAID Controller Module Physical Dis	k Advanced Help			
AusSell910 🔽	Optimal					
Summary Logica	l Physical Mappings Setu) Support				
Topology		Defined Mappings				
🖃 🔽 Storage Array A	C-lloto	Virtual Disk Name	Accessible By	LUN	Virtual Disk Capacity	Туре
	Define	Host Group	ault Group	31		Access
Default Gr	Copy Manager					
Unassociate	View	Storage Partitionin	ig			
	Blink	•				
-	Configuration	•				
	Premium Features Physical Disk Security					
	Recovery Guru					
	Monitor Performance					
	Change	•				
	Synchronize RAID Controller Mo	dule Clocks				
	Manage Enclosure Alarm					
	Rename					
	Set Password					
	Exit					
-						
		1				

Figure 2 Defining the Storage Array Host Topology

STEP2: NAMING THE HOST

Select a name that matches the naming convention used for the environment that you are configuring. For example VMware_host1. Leave partitions enabled and select Next.

🗒 AusSell910 - Specify	Host Name (Define Host)	×
D¢LL		
	This wizard will help you define the hosts that will access the virtual disks in this storage array. You will define one host at a time. Defining a host is one of the steps required to let the storage array know which hosts are attached	
	to it and to allow access to the virtual disks.	
	Host name (30 characters maximum):	
	VMware_host1	
	Why would you use storage partitions?	
8	Do you plan to use storage partitions on this storage array?	
	Yes	
H	O No	
	Note: The wizard needs to know if you plan to use storage partitions so it can provide the proper steps to define the host. You can always go back and re-define the host if you change your answer.	
	Next > Cancel Help	

Figure 3 Naming the Host

STEP3: ADDING HOST PORT IDENTIFIERS

To add host port identifiers highlight the host that you just defined in the topology tree. Right click and select *Manage Host Port Identifiers*



Figure 4 Adding Host Port Identifiers

📅 AusSell910 - Power¥ault Modular Disk Storage Manager (Array Management)	
DELL POWERVAULT MODULAR DISK STORAGE MANAGER	
Storane Array View Mannings Disk Group, Virtual Disk, RATD Controller Module, Physical Disk, Advanced, Help,	
AusSell910 - Manage Host Port Identifiers	
Summary Logical Physical	
Topology	
How do I match a host port identifier to a host?	I Disk Capacity Type
Current Host Port Identifiers	Access
1 = LUN ? Show host port identifiers associated with:	
2 = LUN?	
Default Group Host port identifier information:	
Host Group VMware_h Host Port Identifier Alias / User Label Associated With Host	
Host VMware_host1 5a:4b:ad:b0:51:4d:87:01 VMware_host1_p VMware_host1	
Add Edit Replace Remove	
Close Heip	

In the Manage Host Port Identifiers window select Add

Figure 5 Managing a Host Port Identifier

STEP4: ENTER AN ALIAS FOR THIS HOST PORT IDENTIFIER AND THEN SELECT ADD

Use the pull down to select a Host Port Identifier.

🔂 AUSSELL7 - vSphere Client
File Edit View Inventory Administration Plug-ins Help
💽 💽 🛕 Home 🕨 👸 Inventory 👂 👸 Hosts and Clusters
□
Resource Allocation Performance Configuration Tasks & Events Alarms Permissions M AusSell910 - PowerVault Modular Disk Storage Manager (Array Management)
DOWERVAULT MODULAR DISK STORAGE MANAGER
Storage Array View Mappings Disk Group Virtual Disk RAID Controller Module Physical Disk Advanced Help
AusSell910 Cptmal Summary Logical Ptv AusSell910 - Add Host Port Identifiers Copology AusSell910 - Add Host Port Identifier to a host: Topology Choose a method for adding a host port identifier to a host: Image: Intervention of the intervention of th
Add Cancel Help

Figure 6 Creating Alias for a Host Port Identifier

STEP5: SELECTING HOST PORT IDENTIFIERS

Each port on the Dell 6Gb SAS HBA has a unique WWN that is used for the SAS connection. Using the pull down select the host port identifier. In this example because we are using both controllers there will be two Identifiers, one for each port on the HBA.

📅 AusSell910 - Specify Host Port Identifiers (Define Hos	t)	×
DELL		
The host communicates with the storage array through its host b port has a unique host port identifier. In this step, select or creat list to be associated with host VMware_Host1.	us adapters (HBAs) or its iSCSI initiators w æ an identifier, give it an alias or user labe	here each physical I, then add it to the
How do I match a host port identifier to a host?		
Choose a method for adding a host port identifier to a host:		
$\ensuremath{ \bullet }$ Add by selecting a known unassociated host port identifier		
Known unassociated host port identifier:		
- Select Identifier -	_	Refresh
- Select Identifier -		
C 5a:4b:ad:b0:51:4d:87:00		
5a;4b;ad;b0;51;4d;87;01		
ļ		
Alias (30 characters maximum):		
Add V Remove 🛦		
Host port identifiers to be associated with the host:		
Host Port Identifier	Alias / User Label	
	< Back Next >	Cancel Help

Figure 7 Selecting Host Port Identifiers

STEP6: ENTERING HOST PORT ALIAS

An alias is used in the topology tree to identify the port. Add a unique alias for this host port such as the one below, then select *Add*

📆 AusSell910 - Specify Host Port Identifiers (Define Hos	t)	×
D&LL		
The host communicates with the storage array through its host b port has a unique host port identifier. In this step, select or crea list to be associated with host VMware_host1.	us adapters (HBAs) or its iSCSI initiators where each physical te an identifier, give it an alias or user label, then add it to the	•
How do I match a host port identifier to a host?		
Choose a method for adding a host port identifier to a host:		
$\label{eq:selecting}$ Add by selecting a known unassociated host port identifier		
Known unassociated host port identifier:		
5a:4b:ad:b0:51:4d:87:01	Refresh	
C Add by creating a new host port identifier		
New host port identifier (16 characters required):		
Allas (30 characters maximum):		
Add ▼ Remove ▲		
Host port identifiers to be associated with the host:		
Host Port Identifier	Alias / User Label	
	< Back Next > Cancel He	lp

Figure 8 Entering Host Port Alias

The host port screen will be similar to the one below. Select *Next* to continue.

🕎 AusSell910 - Specify Host Port Identifiers (Define Host	:)	×
D&LL		
The host communicates with the storage array through its host by port has a unique host port identifier. In this step, select or creat list to be associated with host VMware_host1.	us adapters (HBAs) or its iSCSI initiators w e an identifier, give it an alias or user labe	where each physical el, then add it to the
How do I match a host port identifier to a host?		
Choose a method for adding a host port identifier to a host:		
$\ensuremath{\textcircled{\bullet}}$ Add by selecting a known unassociated host port identifier		
Known unassociated host port identifier:		
5a:4b:ad:b0:51:4d:87:01	•	Refresh
C Add by creating a new host port identifier		
New host port identifier (16 characters required):		
Alias (30 characters maximum):		
1		
Add 🔻 Remove 🛦		
Host port identifiers to be associated with the host:		
Host Port Identifier	Alias / User Label	
5a:4b:ad:b0:51:4d:87:01	VMware_host1_port1	
	< Back Next >	Cancel Help

Figure 9 Host Port Identifier

STEP7: SELECT VMWARE AS THE HOST TYPE

🗒 AusSell910 - Specify Host Type (Define Host)	×
DELL	
In this step, you must indicate the host type (operating system) of the host. This information will be used to determine how a request will be handled by the storage array when the host reads and writes data to the virtual disks.	
Note: For some host types, there may be several choices provided in the list.	
Host type (operating system): Select from list- Linux VMWARE Windows	
< Back Next > Cancel Help	<u>,</u>

Figure 10 Selecting Host Type

If you intend to use advanced VMware features such as VMotion then this host will share access with other ESX servers and you will have to create a Host Group. We will create a host group for this example.

📅 AusSell910 - Host Group Question (Define Host)	×
DELL	
What is a host group?	
Question:	
Is the host you are defining part of a cluster of multiple hosts (a host group) that v storage partition on the storage array?	vill share access to the same virtual disks in a
Yes - this host will share access to the same virtual disks with other hosts.	
\bigcirc No - this host will NOT share access to the same virtual disks with other hosts.	
If you select Yes, you will be taken to a screen to specify a name for the group of	hosts.
If you select No, you will be taken to a preview screen. If you need to define a ho Group option.	st group later, you can use the Define Host
< Bac	k Next > Cancel Help

Figure 11 Host Group Question

STEP8: HOST GROUP NAME

Enter a host group name that is appropriate for your environment. For this example we used VMware_Group1

🖶 AusSell910 - Specify Host Group (Define Host)		×
DELL		
What is a host group?		
Because you specified on the previous screen that the host you other hosts, you must indicate the name of the host group that t	are defining will share access to virtua his host will be associated with.	l disks with one or more
You can either (1) manually enter a new host group name or (2) you will be shown the hosts currently associated with it.	select an existing host group. If you s	elect an existing one,
Enter name (30 characters maximum)		
VMware_Group1		
C Select existing host group	Associated hosts in host g	roup:
-Select from list-	Name	Host Type
	< Back Next >	Cancel Help

Figure 12 Host Group Name

STEP9: PREVIEW DEFINE HOST

If all of the information is correct for your environment select Finish.

🐺 AusSell910 - Preview (Define Host)		×
DØLL		
You have defined your host as follows. If you are g host definition to a script file and use it as a template subsequent host definitions using the command line	oing to be defining a lot of additional hosts, you e. You can then make appropriate changes to th or script editor.	i can save the current ie script file for
Should I save the host definition to a script?		Save As Script
Host group: VMware_hostgroup_1		
Host name:	VMware host1	
Host type:	VMWARE	
Host port identifier:	5a:4b:ad:b0:51:4d:87:01	
Alias:	VMware_host1_port1	
Associated host group:	VMware_hostgroup_1	
	< Back Finish	Cancel Help

Figure 6 Preview (Define Host)

STEP10: CREATION SUCCESSFUL

Select No at this time. You can add additional Hosts after you have finished configuring the current host.



Figure 7 Topology Creation Successful

📅 AusSell910 - Power¥ault Modular I	Disk Storage Manager (Array Management)				
	T MODULAR DISK STORAGE MANA	GER			
Channess America Did. Ch	una (Saturd Diele DATO Controller Mediale Dhuri				
Storage Array View Mappings Disk Gr	oup virtual Disk RAID Controller Module Physi	cai Diski Advancedi Help			
AusSell910 🗹 Optimal	📅 AusSell910 - Manage Host Port Identifier	s	×	1	
Summary Logical Physical					
Topology					
Storage Array AusSell910	How do I match a host port identifier to a host?			l Disk Capacity	Туре
	Current Host Port Identifiers				Access
	Show host port identifiers associated with:				
	VMware_host1		•		
	Host port identifier information:				
	Host Port Identifier	Alias (Liser Label	Associated With Host		
Host Group Wiware_ht	5a:4b:ad:b0:51:4d:87:01	VMware_host1_p	VMware_host1		
Host VMware_host1	5a:4b:ad:b0:51:4d:87:00	VMware_host1_p	VMware_host1		
Unassociated Host Port Ider					
	Add Edit Replace	Remove			
	Clos				
-				_	

The topology is now defined with both Host Port Identifiers

Figure 15 Topology Defined

STEP11: DEFINE MAPPINGS FOR LUNS

Note: In this example the Disk Groups and Virtual Disks have already been created using the wizard under the Setup Tab.

In the topology tree expand the *Undefined Mappings* and highlight one of the Virtual Disks. Right Click and select *Define Additional Mappings*.



Figure 8 Selecting a Virtual Disk for mapping

Remember that the virtual disk is assigned to the host group and not the host. For this example we selected the host group that was defined in the previous steps.

Storage Array View Mappings Disk Grou	TRANSLOID - DATE Constantion Module Industry National Industry Industry	<u> ا</u>	
AusSell910 Copinal Summary Logical Physical Ma Topology Copology C	Use this option to define an additional virtual disk-to-LUN mapping. You can map the virtual disk to the default group or to a host group or a host in an existing storage partition. If you want to create a new storage partition, use the Define Storage Partition option instead. For more information, refer to the online help. Host group or host: -Select from listSelect from list- Default Group Host Group VMware_hostgroup_1 Host VMware_host1 Virtual Disk:	irtual Disk Capacity	Туре
	Virtual Disk Name Virtual Disk Capacity		

Figure 9 Selecting the Host Group

🕎 AusSell910 - Power¥ault Modular Disl	(Storage Manager (Array Management)		_ 🗆 ×
	MODULAR DISK STORAGE MANAGER		
Storage Array View Mappings Disk Group	Advand Nath Controlled Medicine Deviced Date Advanced Table	L	
Storage Array View Mappings Disk Group Aus Sell910 Optimal Summary Logical Physical Map Topology Undefined Mappings Undefined Mappings Undefined Mappings 2 = LUN ? Default Group Host Group VMware_host1 Host VMware_host1 Unassociated Host Port Identifie	Virtual Disk: Virtual Disk Name Virtual Disk Capacity Output Virtual Disk Capacity Output Ou	irtual Disk Capacity	Туре
	Add Close Help		
- 🔀 🗍 😰 😌			

STEP12: ASSIGN THE OTHER VIRTUAL DISK TO THE SAME HOST GROUP.

Figure 10 Assigning additional virtual disks

After the virtual disks are assigned notice that the host group and its associated hosts are no longer under the default group in the topology. This completes the configuration.

╦ AusSell910 - Power¥ault Modular Disk Storage Ma	anager (Array Managemenl	e)			
	DISK STORAGE MAN	AGER			
Storage Array View Mappings Disk Group Virtual Disk	RAID Controller Module Phy	sical Disk Advanced Help			
AusSell910 🔽 Optimal					
Summary Logical Physical Mappings Setu	ip Support				
Topology	Defined Mappings				
Storage Array AusSell910	Virtual Disk Name	Accessible By	LUN	Virtual Disk Capacity	Туре
	1	Host Group VMware_host	0	50.000 GB	Standard
	2 2	Host Group VMware_host	1	30.000 GB	Standard
Default Group	Access	Host Group VMware_host	31		Access
Unassociated Host Port Identifiers					
Host Group VMWare_hostgroup_I					
Host VMware_host1					

Figure 11 Completed Topology with Assigned Virtual Disks

CONNECT TO THE ESX SERVER/VCENTER USING VI CLIENT AND FOLLOW THE STEPS BELOW.

STEP1: GO TO THE CONFIGURATION TAB

Select *Storage Adapters*. Select the Block SCSI adapter (Dell 6Gb SAS HBA) and click *Rescan*. (Do not scan for New VMFS Volumes at this time)

🛃 AUSSELL7 - vSphere Client			_ _ _ ×
File Edit View Inventory Administration	n Plug-ins Help		
🔄 💽 🏫 Home 🕨 🚑 Invent	ory 🕨 🛐 Hosts and Clusters		Search Inventory
AUSSELL7 AustinSellWith	92.168.128.202 ¥Mware E5Xi, 4.	1.0, 260247	••••••••••••••••••••••••••••••••••••••
🖃 🐻 192.168.128.202	Getting Started 🔪 Summary 🔪 Virtua	al Machines Resource Allocation Performance Co	onfiguration Tasks & Events Alarms Permissions Maps Storage Views 🛛 🖉 🖻
₩ vm1	Hardware	Storage Adapters	Refresh Rescan All
	Processors	Device Type	WWN
	Memory	Vmhba34 ISCSI	I iqn.1998-01.com.vmware:localhost:397162638:34
	Storage	escan	ign.1998-01.com.vmware:localhost:397162638:36
	Networking	cscon	iqn.1998-01.com.vmware:localhost:397162638:37
	Storage Adapters	Scan for New Storage Devices	
	Advanced Settings	Rescan all host bus adapters for new storage devices.	▼
	Power Management	Restanning an adapters can be slow.	
	Software		
1 16	Soleware	Scan for New VMFS Volumes	
	Licensed Features	Rescan all known storage devices for new VMFS volume: have been added since the last scan. Rescanning known	n o
	DNS and Routing	storage for new file systems is faster than rescanning for	or new
	Authentication Services	stel agei	LUN Type Transport Capacity
	Power Management		
	Virtual Machine Startup/Sh	OK Cancel	Halp
	Virtual Machine Swaphile Li		
	System Resource Allocation		
	Advanced Settings		
			N 7 . N
Recent Tasks			Name, Larget or Status contains:
Name Target	Status	Details Initiated by VCenter Server	Requested Start Ti Start Time Completed Time
AUSS	CLL7 S Completed	viviware vicen 💕 AUSSELL7	11/13/2010 11:00:01 11/13/2010 11:08:02 11/13/2010 11:10:09
, 🤄 Tasks 💇 Alarms			License Period: 83 days remaining Administrator

Figure 12 Rescanning for MD3200 LUNS

🕜 AUSSELL7 - vSphere Client - 🗆 × File Edit View Inventory Administration Plug-ins Help 💽 💽 🏠 Home 🕨 🚮 Inventory 🕨 🗊 Hosts and Clusters 🔊 🗸 Search Inventory Q 🗗 🧭 🔡 😣 🔯 🍕 aussell7 192.168.128.202 ¥Mware ESXi, 4.1.0, 260247 A 1 1 AustinSellWith
 192.168.128.202 Getting Started Summary Virtual Mad Resource Allocation Performance Configuration Tasks & Events Alar ns Maps 👘 vm1 👘 vm2 Refresh Rescan All. Storage Adapters Hardware Device Type WWN Processors vmhba34
vmhba35
vmhba36
vmhba37 iSCSI ign.1998-01.com.vmware:localhost:397162638:34... Memory iSCSI ign.1998-01.com.vmware:localhost:397162638:35... Storage iSCSI ign.1998-01.com.vmware:localhost:397162638:36... Networking ign.1998-01.com.vmware:localhost:397162638:37... iSCSI . Storage Adapters Dell 6Gbps SAS HBA Adapter Network Adapters O vmhba2 Block SCSI -Advanced Settings Power Management Software vmhha2 Model: Dell 6Gbps SAS HBA Adapter Licensed Features Targets: 2 Paths: 4 Devices: 2 Time Configuration View: Devices Paths DNS and Routing Authentication Services Name Runtime Name LUN Type Transport Capacity Power Management DELL Serial Attached SCSI Disk (na... vmhba2:C0:T0:L0 0 Block Adapter 50.00 GB disk Virtual Machine Startup/Shutdown DELL Serial Attached SCSI Disk (na... vmhba2:C0:T0:L1 disk Block Adapter 30.00 GB Virtual Machine Swapfile Location Security Profile System Resource Allocation Advanced Settings • ► Recent Tasks Name, Target or Status contains: -Initiated by VCenter Server Requested Start Ti... 🗢 Start Time Details Name Target Status Comple ed Tim Rescan all HBAs
 Check new notifications 192.168.128.202 11/19/2010 11:12:43 ... 11/19/2010 11:12:43 ... In Progress Administrator AUSSELL7 AUSSELL7 Completed VMware vCen. 11/19/2010 11:08:01 ... 11/19/2010 11:08:02 ... 11/19/2010 11:10:09 .. - 🊰 Tasks 💇 Alarms 🗌 License Period: 83 days remaining Administrator

After the scan completes the newly created LUNs will be visible from the ESX server.

Figure 13 Viewing the new Devices

STEP2: SELECT THE PATH TAB TO VIEW THE AVAILABLE PATHS.

Depending on how many LUNs have been configured, verify there is, at least, one active and one standby path to each LUN. In this setup example, because we have both ports assigned, we can verify there are two active and two standby paths.



Figure 14 Viewing Paths

STEP3: CREATING A DATASTORE FROM THE MD32xx LUNS

This is the same as creating a Data Store with any local disk. Begin by selecting Storage under Hardware and then select *Add Storage*.



Figure 23 Creating a Datastore

Because SAS is considered a local SCSI disk the storage type is Disk/LUN

🛃 AUSSELL7 - vSphere Client			
File Edit View Inventory Admin	istration Plug-ins Help		
🖸 💽 🔥 Home 🕨 🚮	Inventory 🕨 🎁 Hosts and Cluster	s Se	arch Inventory
AUSSELL7 AUSSELL7 AUSTSCHWith AUSTSCHWith AUSTSCHWith AUSTSCHWith Win1 Win2	Inventory () () Hosts and Luster Add Storage Select Storage Type Specify if you want to forma Disk/LUN Select Disk/LUN Current Disk Layout Properties Formatting Ready to Complete	S S Image: the new volume or use a shared folder over the network. Storage Type Image: Disk/LUN Create a datastore on a Fibre Channel, ISCSI, or local SCSI disk, or mount an existing VMFS volume Image: Network File System Choose this option if you want to create a Network File System. Image: Adding a datastore on Fibre Channel or ISCSI will add this datastore to all hosts that have access to the storage media.	Add Storage Rescan Al Vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13:
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- Sasks @ Alarms		License Per	iod: 83 davs remaining Administrator

Figure 15 SAS as a Disk/LUN

STEP4: SELECT ONE OF THE LUNS FROM THE MD32XX TO CREATE A DATASTORE

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Search 1						
🗗 🨅 🔡 😣 🔯 🔮	Add Storage					
	Select Disk/LUN Select a LUN to create a dat	astore or expand the current one				
	Disk/LUN Select Disk/LUN	Name, Identifier, Path ID, LUN, Capacity	y, Expandable or VMFS	Label c	•	Clear
	Current Disk Layout	Name	Path ID	LUN 🛆	Capacity VM	FS Label Harc
	Properties	DELL Serial Attached SCSI Disk (naa	vmhba2:C0:T0:L0	0	50.00 GB	Unkr
	Ready to Complete	DELL Serial Attached SCSI Disk (naa	vmhba2:C0:T0:L1	1	30.00 GB	Unkr
	<u> </u>					
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Figure 25 Selecting a LUN to create a Datastore

STEP5: SELECT NEXT TO CREATE A VMFS PARTITION

This screen displays the information about the disk layout.

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	Å	
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→ W AustinSelWith → AustinSelWith → 192.166.128.202 → vm1 → vm2	Current Disk Layout You can partition and format Select Disk/LUN Current Disk Layout Properties Formating Ready to Complete	Review the current disk layout: Add Storage Rescan Al Device Capacity Available LUN DEL Serial Attached SCSI Disk (naa.684 50.00 GB 0 omfs3 11/19/2010 11:13: /vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13:
		The hard disk is blank.
		There is only one layout configuration available. Use the Next button to proceed with the other wizard pages. A partition will be created and used
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🔄 Tasks 🞯 Alarms		License Period: 83 days remaining Administrator

Figure 16 VMFS Partition

STEP6: ENTER A DATASTORE NAME AND SELECT *NEXT*

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	Add Storage Properties Specify the properties for th Select Disk/LUN Select Disk/LUN Current Disk Layout Properties Formating Ready to Complete	e datatore Enter a datastore name MD3200 data store lun 0		A 1 1 Ins Maps Storage Views Add Storage Rescan All Type Last Update vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13: vmfs3 11/19/2010 11:13:
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🖉 Tasks 💇 Alarms			License Period: 8	3 days remaining Administrator

Figure 17 Datastore name

STEP7: ADJUST THE MAXIMUM FILE SIZE AS NEEDED.

For this example we used the maximum capacity. Select *Next* when finished.

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	🛃 Add Storage	
AustinSelWith	Disk/LUN - Formatting Specify the maximum file size	and capacity of the datastore
	Disk/LUN Select Disk/LUN Current Disk Layout Properties Formatting Ready to Complete	Maximum file size Add Storage Rescan All Large files require large block size. The minimum disk space used by any file is equal to the file system Vinfs3 11/19/2010 256 GB , Block size: 1 MB Infs3 11/19/2010 11:13: Capacity Capacity Infs Infs Infs
		Maximize capacity \$0.00 Image: GB Properties
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Rescan all HBAs Check new notifications	192.168.128.202	Administrator AUSSEL 11/19/2010 11:12:43 11/19/2010 11:12:43 11/19/2010 11:13:37 VMware vCen AUSSELL7 11/19/2010 11:08:01 11/19/2010 11:08:02 11/19/2010 11:10:09
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Figure 18 Maximum File Size

STEP8: REVIEW THE DISK LAYOUT AND CLICK *FINISH* **TO ADD STORAGE**

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		File system: Properties Datastore name: MD3200 data store lun 0 Formatting File system: VMF5-3 Biock size: 1 MB Maximum file size: 256 GB		Properties
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Figure 19 Disk Layout

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AUSSELL7 AustinSellWith MustinSellWith Must	192.168.128.202 VMware E5Xi, 4.1.0, 2 Getting Started Summary Virtual Ma	60247 hines Resource Allocation Performance Configuration	A A Tasks & Events Alarms Permissions Maps Storage Views
vm1	Hardware	View: Datastores Devices	
	Processors	Datastores	Refresh Delete Add Storage Rescan All
	Memory	Identification A Status Device	e Capacity Free Type Last Update
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	Network Adapters	🔋 MD3200 data store lun 0 🥏 Normal DELL	Serial Attac 49.75 GB 49.24 GB vmfs3 11/19/2010 5
	Advanced Settings		
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The new storage is completed and ready to use with VMs.

Figure 30 Configuration Completed

CLUSTERING WITH ESX4.1 / CREATING DRS CLUSTERS

Refer to the following VMware website for a complete up-to-date list of the prerequisites for clustering with ESX4.1 server. http://www.vmware.com/pdf/vsphere4/r40/vsp_40_mscs.pdf

CONTACT INFORMATION

<u>HTTP://SUPPORT.DELL.COM/SUPPORT/TOPICS/GLOBAL.ASPX/SUPPORT/PRODUCT_SUPPORT/PRODUCT_SUPPORT</u> <u>CENTRAL?C=US&CS=555&L=EN&S=BIZ**References**</u>

VMware vSphere 4.1 Documentation:

http://www.vmware.com/support/pubs/vs_pages/vsp_pubs_esxi41_e_vc41.html

Dell/VMware alliance home page:

http://www.dell.com/vmware