

VMware[®] ESX Server 3.0.0 with a PS Series Group Frequently Asked Questions

Abstract

This Frequently Asked Question report addresses common questions on how to use VMware ESX Server 3.0 with PS Series storage arrays from EqualLogic.

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FAQ Revision Information

The following table describes the release history of this FAQ.

Technical Report Revision		Change
1.0	09/2006	Initial release

This Frequently Asked Question (FAQ) file addresses VMware 3.0.0.

Prerequisites

Should you need to access the array you need the following:

- Laptop or server running Windows XP, Windows 2003 Server, or Windows 2003 R2.
- 1 CAT-5E Ethernet cable.
- Web browser, such as IE or Mozilla with Sun's Java, version 1.5 or higher.
- Serial port on your server / laptop. If you do not have one, you can use a USB-to-serial port converter cable.
- The serial port and null modem cables that ship with the array.
- A terminal emulation program. For example, you can use HyperTerminal or SecureCRT on Windows. Use the following settings:
 - 9600 baud
 - 1 stop bit
 - No parity
 - 8 data bits
 - No hardware flow control

VMware High Availability (HA)

The questions and answers in this section pertain to the VMware High Availability (HA) feature.

After a reboot I got the message, "error occurred during configuration of the HA Agent of the host."

In the Events tab, this message appears: "/opt/LGTOaam512/bin/ff_startup failed."

There are multiple possible causes for this problem.

• Legato Automated Availability Manager v5.12 could be generating the error. To fix the error in this case, put a 60 second delay in the */opt/LGTOaam512/bin/ff_startup.pl* file. Insert a "sleep 60" command just before the line that begins with *&start_agents* (@ARGV); (this function appears only once in the script, and should be near line 128).

sleep 60;

&start_agents (@ARGV);

After this is done, disable and re-enable HA on the cluster and wait until everything is configured. Make sure that the IP address lookup works correctly. To do so, run the

/opt/LGTOaam512/bin/ft_gethostbyname <name>

command on all the ESX hosts in the cluster. Confirm that the command returns the IP address and host name of each server.

For example:

/opt/LGTOaam512/bin/ft_gethostbyname larry-esx3

172.19.51.45 larry-esx3

Confirm that all the IP addresses are correct. There should be only one IP address for each VMware ESX server.

• Another possible cause of these messages involves Cisco switches. Ensure that "Portfast" is enabled on all ports used with the ESX server to resolve the problem.

VMware Software iSCSI Initiators

The questions and answers in this section have to do with the use of the software iSCSI initiator.

Existing volumes aren't visible to the Software Initiator.

Some possibilities causes of this problem are:

• When you enabled the Software initiator, it did not open the iSCSI port on the firewall.

To see if this is the problem, go to the **Configuration** tab and select **Security** profile. Scroll down and look for "*Software iSCSI Client*" and select the check box. Click **OK**.

acce	ssing services on remote hosts.				
	rovide access to a service or client, automatically when any of their port				ons will
start	Label	Incoming Ports	Outgoing Ports	Protocols	Daemon ٨
	Tivoli Storage Manager Agent	1500	1500	TCP	N/A
	SMB Client		137-139,445	TCP	N/A
ً	CIM Server	5988		TCP	N/A
ō	CommVault Static	8400-8403	8400-8403	TCP	N/A
ً	CIM Secure Server	5989		TCP	N/A
Ø	VMware License Client		27000,27010	TCP	N/A
ً	Symantec Backup Exec Agent	10000-10200		TCP	N/A
☑	Software iSCSI Client		3260	TCP	N/A
ً	Symantec NetBackup Agent	13732,13783,1372		TCP	N/A
	FTP Client		21	TCP	N/A
	EMC AAM Client	2050-5000,8042-8	2050-5000,8042-8045	TCP,UDP	N/A
	Telnet Client		23	TCP	N/A
<					>

- The discovery address has not been set.
 - 1. Go to the **Configuration** tab and select **Storage Adapters**
 - 2. Select the software initiator and select **Properties**

3. Select the Dynamic Discovery tab. The IP address of the array should be displayed. If not add it and try rescanning the storage adapters.

2	iSCSI Initiator (vmhba40) Prop	erties		
-	Seneral Dynamic Discovery Static Dis	covery CHAP Au	thentication	
	Send Targets Obtain information about target devic the SendTargets command.			ervers using
	iSCSI Server	Status		
	172.19.50.10:3260			
	-	Add	Edit	Remove
_			Close	Help

• The Access control for that volume doesn't include <u>both</u> the service console IP address and VMkernel IP address.

The iSCSI Discovery process for the Software initiator is done via the Service console port. The iSCSI session connection is done via the VMkernel network. Both networks must exist and must have access to the volume for VMotion, HA, and DRS to work with the volume.

Activities	Status Access	Snapshots I	Replication Scheduler			
▲ Volume esx-swinit			Access	Control List		
✓olume ♦ Modify volume settings	iSCSI access to	o the volume: rest	ricted			
<u>Create schedule</u> Clone volume	CHAP user 🔺	IP address	iSCSI initiator	Apply to	VDS policy	Add
Set volume offline	*	172.19.51.46	*	volume & snapshots	no	Modify
Set read-only	*	172.19.51.45	*	volume & snapshots	no	Delete
Delete volume	*	172.19.51.62	*	volume & snapshots	no	
Snapshots	*	172.19.51.64	*	volume & snapshots	no	
Modify snapshot settings						
Create snapshot						
Restore from snapshot						

NOTE: In this example, the software initiators and the service consoles for each node have access to this volume. This allows VMotion, HA and DRS to function with this volume.

The software initiator doesn't see new volumes or snapshots

The software iSCSI initiator doesn't always discover new targets. There are a few workarounds:

• Try rescanning for volumes several times.

• Go to the Software initiator properties and edit the Dynamic Discovery address, but do not change a value. Click the address then **OK**. Then click **Close**. **Rescan** several times.

🖉 Edit Send Targets Server 📃 🗆 🔀
Send Targets iSCSI Server: 172 18 0 100 Port: 3260 100 100 100
Authentication may need to be configured before a session can be established with any discovered targets.
OK Cancel Help

- Apply the hangup signal (HUP) to the vmkiscsid daemon.
 - **NOTE:** Only use the HUP signal with vmkiscsid. Any other signal, i.e. kill -9 can result in the iSCSI daemon crashing or hanging.
 - 1. Log in to the ESX server as root, using the console or an SSH client.

#killall -HUP vmkiscsid

- 2. Return to the Storage menu. Select 'Rescan' and see if the volume is now seen. If not, rescan a few more times.
- **NOTE:** Executing this command will not affect established iSCSI connections.

Volumes or snapshots STILL don't show up. What now?

On rare occasions we've observed that the /etc/vmkiscsi.conf file does not contain the discovery address. If so, edit the /etc/vmkiscsi.conf file and add:

DiscoveryAddress=<Group IP address>:3260

For example, if the Group IP address is 172.19.50.50, the command would look like this:

DiscoveryAddress=172.19.50.50:3260

Reboot the ESX server, then try rescanning for new storage.

The ESX Server hangs when you enable the Software iSCSI initiator

If you have CHAP enabled on existing volumes with no IP/IQN name restriction, the VMware Software iSCSI initiator will constantly attempt to log in to those volumes. Check the Access configuration on all volumes using CHAP.

Activities	Status Access	Snapshots Replication	i Scheduler	
olume esx3san			Access	Control List
me lodify volume settings	iSCSI access to th	e volume: restricted		
Create schedule Clone volume	CHAP user 🔺	IP address	iSCSI initiator	Apply to
Set volume offline	*	172.23.250.10	*	volume & snapshots
Set read-only	*	172.23.250.5		volume & snapshots
Delete volume	CHAP-user	*	*	volume & snapshots
pshots				
Modify snapshot settings				
Create snapshot	The second se	olume access control lis	.	
Restore from snapshot		ick a table heading to sort b		

In this example, the CHAP user entry above allows any IP address to discover the volume. However, if the VMware server isn't configured properly for CHAP it will constantly attempt to log in to that target. With multiple volumes configured this way it ties up the VMware ESX server indefinitely.

Activities	Status Access	Snapshots Replication	n Scheduler	
⊾ Volume esx3san		9. WA	Access	Control List
Modify volume settings	iSCSI access to th	e volume: restricted		
Create schedule Clone volume	CHAP user 🔺	IP address	iSCSI initiator	Apply to
Set volume offline	*	172.23.250.10	*	volume & snapshots
Set read-only		172.23.250.5	*	volume & snapshots
Delete volume	CHAP-user	172.23.25.90		volume & snapshots
napshots				
Modify snapshot settings				

To correct this, add an IP address or iSCSI initiator name to the CHAP Access Control record. Restart the ESX server and the problem should be resolved.

How do I establish multiple iSCSI sessions to the array?

You will need to create multiple volumes on the EQL array. Then use the NIC teaming feature to utilize multiple NICs on your VMkernel switch. This will establish a unique connection for each volume, which the EQL array can then load balance. Go to Configuration -> Networking -> Properties. Edit the VMkernel switch. Select NIC Teaming. Enable Load Balancing.

/Mkernel Pro	operties					
	×.		,			
eneral Security	/ Traffic Shaping	NIC Tea	iming			
Policy Excepti	ons					
Load Balancin	q:	•	Route based or	the origina	ating virtual po	rt ID 🔻
	verDetection:				arang virtaar por	
Network Fallo	ver Detection:	V	Link Status only			
Notify Switche	es:	~	Yes			•
Rolling Failov	er:		No			-
Failover Orde						
🗍 Override v	Switch failover or	der:				
	nd standby adapt					
situation, star	idby adapters acti	vate in th	e order specified	below.		
Name	Speed	Netv	vorks		Mor	/e Up
Active Adap	ters					
vmnic0	1000 Full	172.	172.19.0.1-172.19.63.254			e Down
vmnic5	1000 Full	172.	19.0.1-172.19.63	.254		
Standby Ada	-					
Unused Ada	pters					
, —Adapter Det	ails					
No adapte	rselected					
Driver:						
Location:						
			OK		Cancel	Help

VMware VMotion

The questions and answers in this section have to do with the use of VMotion.

I can't migrate a VM to a new host, whether the VM is powered up or down.

I get the message: "A general system error occurred: Unknown failure migrating from another host"

Summany Performance Tasks & Events	Alarms	Console F	² ermissi	ons Maps	
Name	Tar	pet	Sta	Name, Ti	arget or Status contains: Initiated by
Relocate Virtual Machine storage	ra.	VistaBeta2	0	Completed	Administrator
Reconfigure Virtual Machine	8	VistaBeta2	۲	Completed	Administrator
Migrate Virtual Machine	日	VistaBeta2	8	A general system error occured: Unknown failure migrating from another	Administrator
Migrate Virtual Machine	6	VistaBeta2		A general system error occured: Unknown failure migrating from another	Administrator
Answer Virtual Machine Question	B	VistaBeta2	۲	Completed	Administrator

NOTE: You should only use Static IP addresses when installing ESX, never use DHCP.

This problem can be caused by a number of issues. Here are some possible solutions:

• Check DNS Settings

🕗 DNS and Routing Configuration							
DNS Configuration Routing							
Host Identification	moe-esx3						
Name: Domain:	dev.equallogic.com						
Changes will not take effect until the system is restarted.							
C Obtain DNS server address automa	atically						
Service console network adapter:							
Use the following DNS server address	ess						
Preferred DNS server:	172 . 16 . 20 . 96						
Alternate DNS server:	172 . 16 . 1 . 27						
Look for hosts in the following domains	s						
dev.equallogic.com							
Example: site.com site.org site.net							
ОК	Cancel Help						

• Add the name and IP address of the DNS server into the /etc/hosts file of each ESX server:

[root@esxbottom root]# cat /etc/hosts

127.0.0.1 localhost.localdomain localhost

172.16.25.100 esxbottom.selab.equallogic.com esxbottom

172.16.25.110 setop.selab.equallogic.com setop

• Confirm that the VMkernel Default Gateway is correctly set.

VMkernel Properties			X
General Security Traffic Shaping	NIC Termine		
Port Properties			[
Network Label:	VMkernel		
VLAN ID (Optional):	None		
VMotion:	✓ Enabled		
- IP Settings			
IP Address:	172 · 19 · 51 · 62		
Subnet Mask:	255 . 255 . 0 . 0		
VMkernel Default Gateway:	172 . 19 . 0 . 1	Edit	

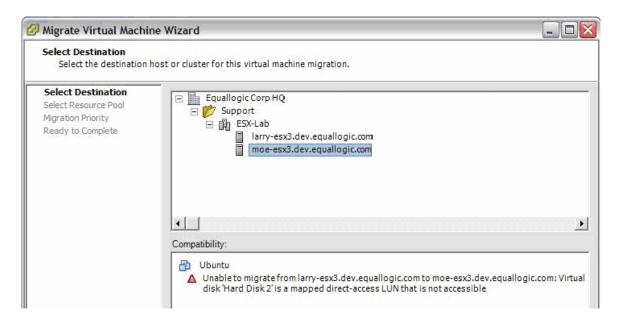
VMotion works when the VM is turned off, but not when it is powered on

With the VM powered off, check the CDROM settings in the VM configuration. Try setting it to **Client Device** and **Passthru** mode. Power up the VM and try again.

🕝 NetBSDv3 - Virtual Machine I	Properties	
Hardware Options Resources		ESX 3.0 virtual machine
Hardware Options Resources Hardware Memory CPUs Floppy Drive 1 CD/DVD Drive 1 Network Adapter 1 Network Adapter 2 SCSI Controller 0 Hard Disk 1	Summary 256 MB 1 Client Device Client Device Public Network Lab Network LSI Logic Virtual Disk	ESX 3.0 virtual machine Device Status Connected - dient unknown Connect at power on Device Type Client Device Note: To disconnect this device, click the Disconnect DVD/CD-ROM button in the toolbar. Host Device Datastore ISO file Browse
Add Remove		Mode Passthrough IDE (recommended) Connect exclusively to this virtual machine Emulate IDE Virtual Device Node © IDE (0:0) CD/DVD Drive 1
Help		OK Cancel

The System Can't VMotion with a Mapped SAN LUN

When you try to move a virtual machine that has a mapped direct-access LUN, the error message shown here appears:



• Make sure the ACL for the volume includes the server you're migrating to.

Activities	Status Access	Snapshots Replica	tion Scheduler			
Volume dw-vmdas			Acces	s Control List		
ume Modify volume settings	iSCSI access to	the volume: restricted	I			
Create schedule Clone volume	CHAP user	IP address 📥	iSCSI initiator	Apply to	VDS policy	📑 Add
Set volume offline	*	172.19.51.45	*	volume & snapshots	no	Modif
Set read-only	*	172.19.51.46	*	volume & snapshots	no	T Delete
Delete volume	*	172.19.51.62	*	volume & snapshots	no	
pshots	*	172.19.51.64	*	volume & snapshots	no	
Modify snapshot settings						
Create snapshot						
Restore from snapshot						
lication						
Configure replication						

NOTE: In this example, the software initiator is being used. Each node needs an ACL entry for the Service console and the VMKernel Port.

Accessing VMware ESX Server

The questions and answers in this section have to do with getting access to the VMware ESX Server.

I can't SSH login to the root account on my VMware ESX server

By default, root is not allowed SSH access as allowing direct root access could compromise system security. The best practice is to create a non-root user account that you can use to login with SSH, then switch to the root user with the 'su -' command.

VMware Virtual Machines

The questions and answers in this section have to do with the use of virtual machines.

I don't know how to get my VM images into the inventory

Follow these steps to move a virtual machine image into the inventory:

- 1. Go to the **Configuration Tab** and select **Storage**.
- 2. Select the volume where the VM images are stored. Right-click that volume and in the shortcut menu that appears, select **Browse Datastore...**

Summary Virtual Machines	Perform	ance Configuration	Tasks & E	vents Alarms Pe	ermissions Maps			
Hardware		Storage	Storage					
Processors Memory		Identification		Device	Capacity	Free	Туре	
		ESX3SAN		vmhba0:2:0:1	399.75 GB	215.64 GB	vmfs3	
 Storage (SCSI, SAN, and N 	IEC)	🔋 larry-boo	t-vol	vmhba0:0:0:6	32.25 GB	31.64 GB	vmfs3	
	15)	ESX-SWIr	iit-Vol0	vmhba40:1:0:1	49.75 GB	44.14 GB	vmfs3	
Networking		BackupSt	orage	vmhba0:3:0:1	99.75 GB	99.14 GB	vmfs3	
Storage Adapters								
atastore Browser - [ESX3S	AN]							
Б X 🖉								
rs Search	[ESX3	35AN] /						
21	Nam	1e	Size	Туре	Modified		Path	
🛯 💋 Centos-v43		Centos-v43		Folder			[ESX3SAN]	Centos-v43
Utils		Utils		Folder			[ESX3SAN]	Utils
💆 FedoraCore5		FedoraCore5		Folder			[ESX3SAN]	FedoraCore5
💋 Win2K3-R2-ENT		Win2K3-R2-ENT		Folder			[ESX3SAN]	Win2K3-R2-EN
isoimages		isoimages		Folder			[ESX3SAN]	isoimages
LongHornBeta2		LongHornBeta2		Folder			[ESX3SAN]	LongHornBeta
NetBSDv3		NetBSDv3		Folder			[ESX3SAN]	NetBSDv3
NW65-esx		NW65-esx		Folder			[ESX3SAN]	NW65-esx
RHELv3up7		RHELv3up7		Folder			[ESX3SAN	RHELv3up7
Sol 10up 2b8		RHELv4up3		Folder			[ESX3SAN	RHELv4up3
Sol1002200		Sol10up2b8		Folder			[ESX3SAN]	Sol10up2b8
SuSE-SLES 10		Sol11b43		Folder			[ESX3SAN]	Sol11b43
SuSE-SLES9sp3		SuSE-SLES10		Folder			[ESX3SAN]	SuSE-SLES10
Ubuntu		SuSE-SLES9sp3		Folder			-	SuSE-SLES9sp
VistaBeta2		Ubuntu		Folder			[ESX3SAN]	
vm-icn1		VistaBeta2		Folder				VistaBeta2
W2K3-std		vm-icn1		Folder			[ESX3SAN]	•
Win2K3-ent		W2K3-std		Folder				W2K3-std
Win2k-pro		Win2K3-ent		Folder			-	Win2K3-ent
Win2K-svr		Win2k-pro		Folder			-	Win2k-pro
0 Sol11b44		Win2K-pro Win2K-svr		Folder			-	Win2K-pro
		Sol11b44		Folder				Sol11b44
		.fbh.sf	6619136		7/10/2006 10:39:	14 AM	[ESX3SAN]	
		.fdc.sf	6494617					-
			2556559		7/10/2006 10:39:		[ESX3SAN]	
		.pbc.sf			7/10/2006 10:39:		[ESX3SAN]	
		.sbc.sf	2603663		7/10/2006 10:39:		[ESX3SAN	
		.vh.sf	4194304	File	7/10/2006 10:39:	14 AM	[ESX3SAN]	

- 3. Double-click the directory folder containing the VM you wish you register.
- 4. Right-click the .vmx file for the virtual machine. In the shortcut menu that appears, select **Add to inventory**. The virtual machine will now be available as part of the inventory.

[ESX	35AN] NW65-esx				
Nan	ne	Size	Туре	Modified	Path
Ð	NW65-esx.vmx		Virtual Machine	7/13/2006 2:54:39 PM	[ESX3SAN] NW65-esx
	NW65-esx.vmxf	Add to Inv	· · ·	7/15/2006 1:09:51 PM	[ESX3SAN] NW65-esx
	NW65-esx.vmsd	Delete fro	m Disk	7/3/2006 1:07:30 PM	[ESX3SAN] NW65-esx
	NW65-esx-flat.vmdk	4294967	File	7/3/2006 4:33:52 PM	[ESX3SAN] NW65-esx
<u>æ</u>	NW65-esx.vmdk	4294967	Virtual Disk	7/3/2006 4:10:18 PM	[ESX3SAN] NW65-esx
A state	NW65-esx.nvram	8664	Non-volatile memory file	7/3/2006 4:33:53 PM	[ESX3SAN] NW65-esx
	NW65-esx.vmx.ori	1435	File	7/3/2006 3:05:14 PM	[ESX3SAN] NW65-esx

Follow these steps to create a non-root user account that you can use to log in to the server with SSH:

- 1. Using the Virtual Center Client, log in to the ESX server as root.
- 2. Click the Users & Groups tab.

- 3. Right-click the Users & Groups page. In the shortcut menu that appears, select Add.
- 4. Create the new user. Ensure that the Grant shell access to this user checkbox is selected.

NOTE: ESX server includes the 'adduser' utility, which you can use to create a non-root user. Run **man adduser** for help with the adduser command.

An alternate approach is to edit the /etc/ssh/sshd_config file to allow root login access. Follow these steps to do this:

- 1. Look for the line that says, "#PermitRootLogin yes"
- 2. Remove the # sign and save the file.
- 3. Restart the SSH daemonusing the command: #service sshd restart

I can't login as root with Putty after editing the sshd_config file

By default, Putty sends passwords in clear text. By default, the SSH daemon doesn't support this. Follow these steps to allow Putty access:

- 1. Edit the /etc/ssh/sshd_config file.
- 2. Find the line that says "#PasswordAuthentication yes"
- 3. Remove the # sign.
- 4. Restart the SSH daemon with the command #service sshd restart.

Putty should now work.

VMware Kernel

The questions and answers in this section have to do with the VMware Kernel.

When I create a VMKernel network it asks to set the default gateway.

I already have a default gateway defined. What do I use here?

The answer depends on your network infrastructure. Typically, it is the same as the Console Gateway.

🕝 DNS and Routing Config	guration	_ 🗆 🔀
DNS Configuration Routing		
Service Console		
Default gateway:	172 . 19 . 0 .	1
Gateway device:	vswif0	-
VMkernel		
Default gateway:	172 . 19 . 0 .	1
	OK Cancel	Help

VMware Miscellaneous Issues

The questions and answers in this section have to do with miscellaneous VMware issues that do not fit into any of the other categories.

FYI: An ESX Server FQN can't be longer than 29 characters

Longer hostnames causes a memory leak. For example, the fully qualified host name esx3server01.internal.equallogic.com is too long.

This is expected to be addressed in v3.0.1

I get a "CPU incompatible" error when migrating a running VM

The processor in the destination server is not at the same generation as the source server or is from a different vendor. Migrating the running virtual machine to the destination server could cause the virtual machine to crash.

🕼 Migrate Virtual Machin	ne Wizard
Select Destination Select the destination	nost or cluster for this virtual machine migration.
Select Destination Select Resource Pool Migration Priority Ready to Complete	 ESX 3 Datacenter AppEngLab 172.18.0.11 172.18.0.12 172.18.0.15 172.18.0.16 172.18.0.19 Compatibility: Centos-v43 ✓ Unable to migrate from 172.18.0.12 to 172.18.0.19: The CPU of the host is incompatible with the CPU feature requirements of virtual machine; problem detected at CPUID level 0x80000001 register 'edx'
Help	<u>≤Back</u> Next≥ Cancel

Workarounds: One way to deal with this problem is to ensure that each cluster uses servers with the same hardware. The second way to deal with this is to remove the "odd" server from the cluster and run it standalone.

Visit the VMware knowledge base for more information.

http://kb.vmware.com/vmtnkb/search.do?cmd=displayKC&docType=kc&externalId=1377& sliceId=SAL Public&dialogID=112540&stateId=0%200%20114524&doctag=Author,%20

I get a "Failed to serialize results" message when checking Storage Properties

Try disabling CHAP on the VMware software initiator and on the EQL array access control for all volumes. Restrict access by IP address instead.

My VM enters an infinite abort loop when all paths to a LUN are no longer accessible

When all paths to a LUN are no longer accessible and a virtual machine is undergoing heavy I/O, the virtual machine goes into an abort loop. The virtual machine is non-responsive. This is a known issue that will be fixed in VMware ESX Server 3.0.1.

To work around this problem, reboot the virtual machine.

My ESX Server has become sluggish and unresponsive

When the ESX Server is under heavy load from iSCSI or NFS backed virtual machine storage, the server may become sluggish or unresponsive for periods of time.

Workaround: Login in as root and run the following command, then reboot:

#esxcfg-advcfg -k 16777216 netPktHeapMinSize

Network connectivity lost when a network leaks undesirable packets

When you use a network adapter without scatter or gather capability, a memory leak exists that can lead to the loss of network connectivity.

The message:

WARNING: Uplink: 1925: Couldn't allocate pkt for frame copy, appears in the log.

To the best of our knowledge, the following cards are vulnerable to this problem:

- e1000 with pci id 0x1000
- e100 with pci *rev* ID less than 0x0c (that is 4, 5, 8, 9)
- Some Broadcom5700 network adapters

To work around this issue:

- 1. Use the following command to increase the heap size: #esxcfg-advcfg -k 16777216 netPktHeapMinSize
- 2. Reboot the system.

How do I gather Diagnostic Data?

Follow these steps to gather diagnostic data:

1. Go to the Administration Menu and Select Export Diagnostic Data.

🕝 172.19.49.170 - Vir	tual Infrastr	ucture Client					
File Edit View Inventory	Administration	Help					
Inventory Scheduled T	Custom Attr Server Setti		ips				
🗣 🔿 🗗 🖨	Role	F					
 Hosts & Clusters Equallogic Corp H	Session Edit Messag		Illogic.com VMware ESX Server, 3.0.0, 2770 Achines Performance Configuration Task		nts Alarms Permiss	ions Maps	
ESX-Lab		nostic Data		Res	ources		
□ moe-e Legacy Templates □ Centos-v43 Model: □ FedoraCore5 Processors: □ LongHornBeta2 Processor Type: □ NetBSDv3 Nuy65-esx NW65-esx Nuwer of Nics:		lodel:	Supermicro X5DPI 2 CPU x 2.399 GHz		Jusage: 1106 MH:	z 2 x 2.399	GHz
		lyperthreading:	Intel(R) Xeon(TM) CPU 2.40GHz Active 4		nory usage: 986 MB	6 GB	
RHELV	4up3	tate:	connected	8	moe-boot-vol	Capacity 12.25 GB	Free 11.64 GB
Sol10u Sol11b Sol11b Sol11b	43	irtual Machines: Motion Enabled:	4 yes		ESX3SAN ESX-SWInit-Vol0	399.75 GB 49.75 GB	214.88 GB 44.14 GB
Solid SuSE-S	P	ctive Tasks:			Backup Storage	99.75 GB	99.14 GB

2. Select the servers to gather the report, the filename and where to save the files.

🖉 Save Diagnostic Data 🛛 🛛 🔀						
DiagnosticData You may download diagnostic data for VirtualCenter Server and any of the hosts below:						
 □ Posts & Clusters □ □ □ ○ ○						
✓ Include information from VirtualCenter Server						
Download diagnostic data to the following location: c:\temp\vmware.diag Browse						
OK Cancel Help						

Non-VMware Questions

The questions and answers in this section have to do with non-VMware products that interact with VMware.

QLogic iSCSI HBAs

NOTE: The QLogic 4010 iSCSI HBA is considered experimental by VMware at this time. VMware only offers limited support for this card.

References:

http://www.vmware.com/pdf/vi3 io guide.pdf

http://pubs.vmware.com/vi3/serverconfig/wwhelp/wwhimpl/common/html/wwhelp.htm?context=serverconfig&file=sc_storage .10.14.html

http://www.vmware.com/support/vi3/doc/releasenotes vi3.html

I've booted from SAN but I can't see other volumes on the Qlogic iSCSI HBA

Verify that the Discovery address is set on that adapter.

- 3. Go to the Configuration Tab and select Storage Adapters.
- 4. Select the QLA4010 Storage Adapter (vmhba0) and then Properties.

🕗 iSCSI Initiator (vmhba0) Properties 📃 🗖 🔀								
General Dynamic Discovery Sta	tic Discovery CHAP Authentication							
-iSCSI Properties								
iSCSI name:	iqn.2000-04.com.qlogic:qla4010.fs20408a01564							
iSCSI alias:								
Target discovery methods:	Send Targets, Static Target							
Hardware Initiator Properties								
Network Interface Prope	rties							
Current/maximum speed:	1024Mb/1024Mb							
MAC Address:	00:c0:dd:01:41:c1							
IP Settings								
IP Address:	172.19.51.49							
Subnet Mask:	255.255.0.0							
Default Gateway:	172.19.0.1							
DNS Servers								
Preferred Server:	172.16.20.96							
Alternate Server:	0.0.0.0							
	Configure							
	Close Help							

- Select the **Dynamic Discovery** Tab and make sure the Group IP address of the array is there. If not, add it and click **Close** to save it.
- Try rescanning the storage adapter. The volume(s) should now be visible.

🚰 iSCSI Initiator (vmhba0) Properties	
General Dynamic Discovery Static Discovery	CHAP Authentication
Send Targets Obtain information about target devices dir the SendTargets commmand.	ectly from the following iSCSI servers using
iSCSI Server	Status
172.19.50.10:3260	
	Add Edit Remove
	Close Help

How do I configure Multipath Support with the QLogic 4010 iSCSI HBA?

Follow these steps to configure multipath support (MPIO) for the QLogic 4010:

1. Make sure the array volume allows both iSCSI HBAs to have access.

EQUALLOGIC®				Acco	unt: grpadmin Logged in 7	//22/06 12:09:36 AM	🗙 Loga			
Group segrp Group Configuration	⊖ Volume esx-multipath	-vol0								
-1 Events (1 new)	Activities	Status Access	Snapshots R	eplication Scheduler						
Volumes	Volume esx-multip	Access Control List								
esx-multipath-vol0	Modify volume settings									
Replication Partners	Create schedule Clone volume	CHAP user 🔺	IP address	ISCSI initiator	Apply to	VDS policy	Add			
User Preferences	Set volume offline	*	172.16.25.111	*	volume & snapshots	no	Modify			
Customer Support	Set read-only Delete volume		172.16.25.110 172.16.25.113	*	volume & snapshots volume & snapshots	no	T Delete			
	Snapshots Modify snapshot settings Create snapshot	*	172.16.25.113	*	volume & snapshots	no				
	 <u>Restore from snapshot</u> <u>Replication</u> <u>Configure replication</u> 									

NOTE: In this example there are four IP's in the access list. Two for the iSCSI HBAs and two for the software iSCSI initiator in the other node to enable VMotion support.

- 2. Go to Configuration, select Storage Adapters, then Properties.
- 3. Make sure each iSCSI HBA can discover the volume.

Device		Type	SAN Id	entifier		
SCSI Software	Adapter	Type	DAIN 10	entinei		
vmhba40	Auapter	iSCSI	ion 19	98-01.com.vmware:		
QLA4010						
vmhba0		iSCSI	iqn.19	91-05.com.microsoft		
vmhba1		iSCSI	ign.19	91-05.com.microsoft		
Details vmhba0 Model:	QLA4010				IP Address:	Prop 172.16.25.11
iSCSI Name:	iqn.1991-05.com.microsoft:station3				Discovery Methods:	-
iSCSI Alias:					Targets:	1
SCSI Target 0						
iSCSI Name:	iqn.2001-05.com.equallogic:6-8a0900-a81120001-ab30069a96044c16-esx-multipath-vol0					
iSCSI Alias:	esx-multipath-vol0					
Target LUNs:	1					Hide
Path	Canonical Path (Capacity	LUN ID			

- 4. Add the storage into the system and format as VMFSv3 (if required)
- 5. Go to **Configuration**, select **Storage** then click **Properties**. You should see both iSCSI adapters, one as Active and one Standby.
- 6. Click the Manage Paths button to see which HBA is the preferred path.

🛿 iSCSI Initiator (vmhba0) Properties 📃 🗖 🔀							
General Dynamic Discovery Static Discovery CHAP Authentication							
- iSCSI Properties							
iSCSI name:	iqn.2000-04.com.qlogic:qla4010.fs20408a01564						
iSCSI alias:							
Target discovery methods:	Send Targets, Static Target						
Hardware Initiator Properties							
Network Interface Prope	rties						
Current/maximum speed:	1024Mb/1024Mb						
MAC Address:	00:c0:dd:01:41:c1						
IP Settings							
IP Address:	172.19.51.49						
Subnet Mask:	255.255.0.0						
Default Gateway:	172.19.0.1						
DNS Servers							
Preferred Server:	172.16.20.96						
Alternate Server:	0.0.0.0						
	Configure						
	Close Help						

Are there any tuning parameters for the Qlogic to increase throughput?

QLogic has a firmware setting called Execution Throttle. This sets the maximum number of simultaneous commands the adapter will send out. The default is typically 64, with a maximum of 256. QLogic support tells customers to set it to MAX. However, this could cause contention issues on the SAN. Informal testing has shown improvement up to 128 but little difference above that. Some experimentation may be required to determine the optimal setting in your environment.

NOTE If you are booting from SAN, you will have to reboot the host for the change to take effect.

EqualLogic Snapshots

The questions and answers in this section have to do with snapshots.

VMware wants to format snapshots, replicas, and clones

To prevent this, you have to enable the *LVM.EnableResignature* parameter. If the VMware ESX Server sees that a volume already has a VMFS signature that matches an existing volume, it treats the volume as new and asks you to format it. If you set LVM.EnableResignature, the ESX server gives you access. You have to set this parameter for every ESX server where you want to mount snapshots, promoted replicas or clones.

Follow these steps to set LVM.EnableResignature:

1. From the Configuration Tab of the ESX server, select Advanced Settings.

Advanced Settings for	larry-esx3.dev.equallogic.com	X
BufferCache Scsi Numa - LVM - VMFS3 - FileSystem - Net	LVM.DeviceLockTries Number of times to attempt device lock acquisition Min: 1 Max: 15	10
 Net Misc Mem User Cpu Migrate Irq NFS 	LVM.DeviceLockWait Time (in msecs) to wait before retrying device lock acquisition Min: 0 Max: 10000	1000
Disk	LVM.DisallowSnapshotLun Disallow access to snapshot LUN if resignaturing is off. This is ignored if resignaturing in on Min: 0 Max: 1	1
	LVM.EnableResignature Enable Volume Resignaturing Min: 0 Max: 1	1
	[OK Cancel Help

- 2. Select LVM on the menu on the left. In the information pane you will see LVM.EnableResignature field. The default setting is 0. Change the setting to 1.
- 3. Now when you scan for new storage, it should see the snapshot, promoted replica, or clone as a pre-existing VMFS volume and mount it.

Microsoft Clustering Service

The questions and answers in this section have to do with the Microsoft Clustering Service.

Can Microsoft Clustering Service (MSCS) in W2K3 (SP1) use VMDK disks?

Windows 2003 (SP1) introduced a change that resulted in MSCS clusters not functioning in any ESX Server version. Vmware is working with Microsoft support to resolve the issue.

Workaround: Use the MS iSCSI initiator and put the Quorum and Cluster volumes outside of VMware, directly on the EqualLogic array. This also allows the full range of the PS Series Array features (replication, snapshots of individual volumes, VSS for backups, etc.).

NOTE: Windows 2000 and its service packs, and Windows 2003 RTM continue to function in ESX Server virtual machines.