



Compellent Storage Center

Host Bus Adapter (HBA) & Operating System Configuration Settings

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Purpose

This document details the recommended configuration for Host Bus Adapters (HBAs) and any applicable operating system settings for servers used when connected to a Compellent Storage Center.

NOTE: Some links in this document will require authenticated access to the Compellent Customer Portal and/or Knowledge Center.

Contacting Copilot Services

If you need assistance, contact Copilot Services by phone or email:

support@compellent.com

866-EZSTORE (866.397.8673)

For general information on Compellent products, visit www.compellent.com.

For downloads and technical tips, log on to the [Compellent Knowledge Center](http://knowledgecenter.compellent.com) at: <http://knowledgecenter.compellent.com>.

Document Revisions

Date	Revision	Description	Author
10/27/2009	1.0	Release	Technical Solutions

Host Bus Adapter (HBA) Configuration

The following documented settings are recommended for HBAs attached to a Compellent Storage Center.

QLogic QLA23xx/QLE23xx/QLA24xx/QLE24xx (Fibre Channel)

The settings specified for the QLogic Fibre Channel adapter can be configured from the QLogic BIOS FastUtil on system boot by pressing CTRL+Q when prompted. For Windows users, QLogic's SANsurfer utility can also be used to modify the configuration settings for the HBA. This utility can be downloaded from <http://www.qlogic.com>.

For the adapter settings and advanced settings, make sure that the values are configured as below:

Connection Options

The "Connection Options" field should be set to "1" for Point-To-Point Only.

Login Retry Count

The "Login Retry" count field should be set to "60" attempts.

Port Down Retry Count

The "Port Down Retry" count field should be set to "60" attempts.

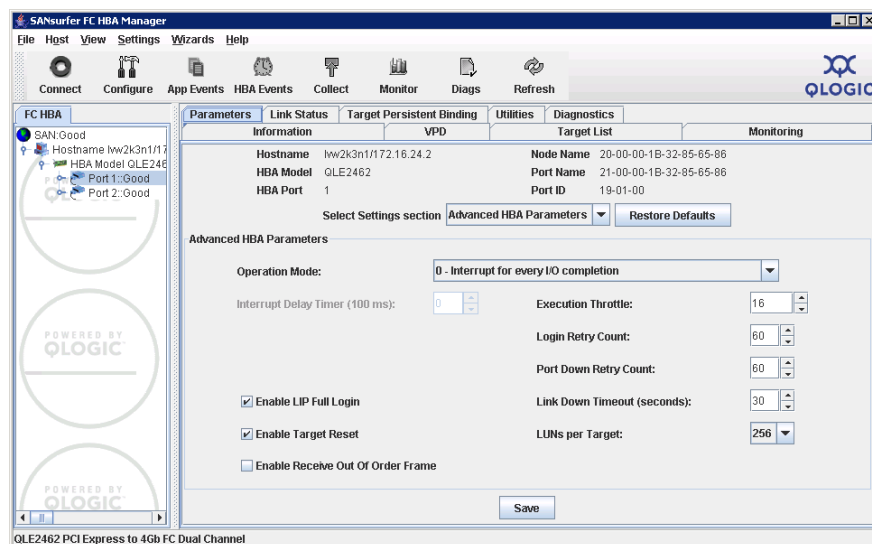
Link Down Timeout

The "Link Down Timeout" field should be set to "30" seconds".

Execution Throttle (Queue Depth)

The "Execution Throttle" field should be set to "16" on a 4GB HBA, "256" on 2GB HBAs.

NOTE: This is a basic recommendation. All environments are different and may require adjustment of this parameter.



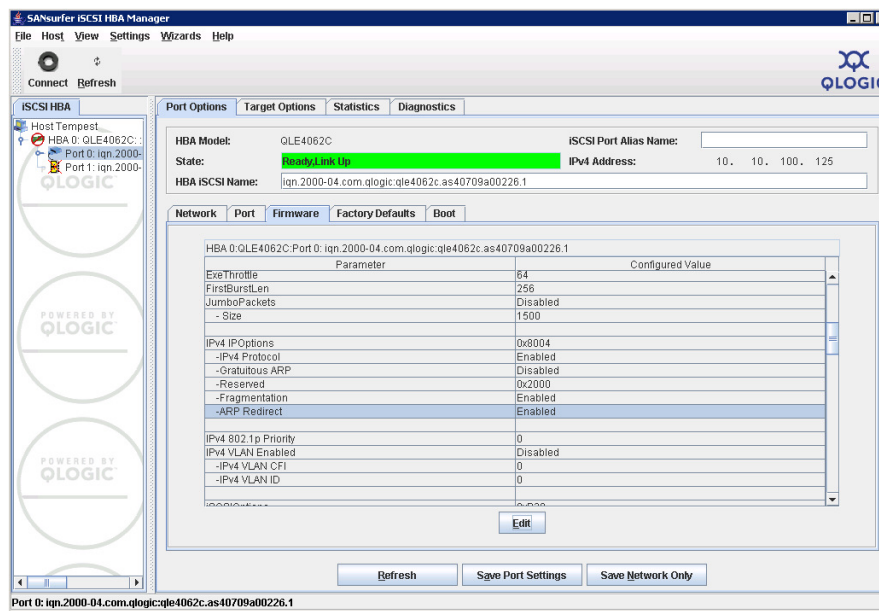
Configuring HBA Settings in the QLogic SANsurfer Utility

QLogic QLA40xx/QLE40xx (iSCSI)

In addition to the settings recommended for QLogic Fibre Channel adapters, also adjust the settings below for QLogic iSCSI adapters:

ARP Redirect

The “ARP Redirect” field should be set to “**Enabled**”.



Configuring iSCSI HBA Settings in the QLogic SANsurfer Utility

Emulex

The settings specified for the Emulex Fibre Channel adapter can be configured from the Emulex LightPulse BIOS on system boot by pressing CTRL+E or ALT+E when prompted. For Windows users, Emulex’s HBAAnywhere utility can also be used to modify the configuration settings for the HBA. This utility can be downloaded from <http://www.emulex.com>.

For the adapter settings and advanced settings, make sure that the values are configured as below:

NodeTimeout

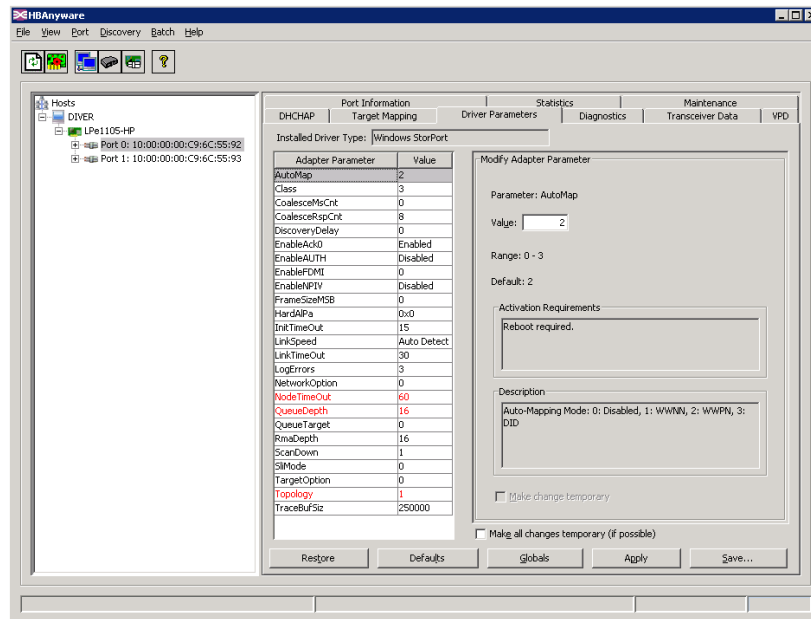
The Node Timeout field should be set to “**60**”.

QueueDepth

The Queue Depth field should be set to “**16**” on 4GB HBAs, “**256**” on 2GB HBAs. **NOTE:** This is a basic recommendation. All environments are different and may require adjustment of this parameter.

Topology

The “Topology” field should be set to “**1**” for Point-To-Point Only.



Configuring HBA Settings in the Emulex HBAnywhere Utility

LSI

There are no configurable settings for the LSI HBA interface cards.

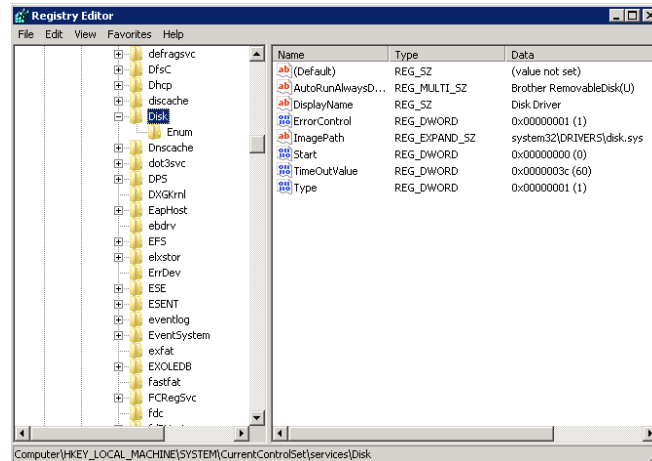
Operating System Configuration

The following settings are recommended for servers attached to a Compellent Storage Center.

Windows Server 2000/2003/2008

Disk Timeout Value

Verify that the Disk Timeout Value is set to "60" to indicate a 60 second disk timeout threshold. If it is set incorrectly, this value can be set using the Registry Editor. Locate HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Disk\, and then set the "TimeoutValue" to "60".



Modifying the Disk Timeout Value in Windows Server

NOTE: The default value for Windows Server 2003 Service Pack 1 and later (including Windows Server 2008) is 60 seconds. However, Windows Server 2003 RTM contained a different timeout value than specified. If Clustering was installed before Service Pack 1, then installer will set the TimeoutValue to “20” on the cluster nodes. This is a bug in Windows Server 2003 RTM and was corrected in Service Pack 1. It is recommended that the latest service pack be installed prior to installing the Clustering service.

Multipathing (MPIO)

For more information on Windows Server configuration when using MPIO, see the MPIO User Guide at: <http://kc.compellent.com/Pages/Download.aspx?DocID=711>.

Novell Netware

Startup.ncf

In the startup.ncf file (c:/nwserver/startup.ncf), add:

```
/LUNS /ALLPATHS /ALLPORTS /PORTDOWN=60
```

to the end of the Fibre Channel driver load line.

Multipathing

For more information on Netware configuration and multipathing, see <http://kc.compellent.com/Pages/Download.aspx?DocID=806>.

AIX

The Compellent MPIO ODM Path Control Module must be installed on the AIX server for proper operation with Compellent Storage Center.

Hdisk Attributes

All Compellent hdisks have a default queue depth of **32**.

All Compellent hdisks have a default rw_timeout of **60**.

For more information on AIX MPIO, see the **AIX MPIO Guide** at:
<http://kc.compellent.com/Pages/Download.aspx?DocID=602>.

For general information and best practices for AIX, see the **AIX Best Practices Guide** at:
<http://kc.compellent.com/Pages/Download.aspx?DocID=709>.

HP-UX

HP-UX Version 11.31

HP-UX 11.31 requires that “Agile Addressing” is enabled for proper failover of Compellent Storage Center controllers.

HP-UX Version 11.21 or Earlier

No specific setting changes are required, however, a Cisco fabric with Persistent FCID enabled to survive Compellent Storage Center controller failover or port rebalance.

Best Practices & More Information

For general information and best practices for HP-UX, see the **HP-UX Best Practices Guide** at: <http://kc.compellent.com/Pages/Download.aspx?DocID=784>.

Solaris

/kernel/drv/fcp.conf Settings

To the bottom of the fcp.conf file, add:

```
Fcp_offline_delay=60
```

NOTE: This change does require a reboot.

/kernel/drv/qlc.conf Settings

Change the following variables to the associated values below:

```
Login-retry-count=60;  
port-down-retry-count=60;  
link-down-timeout=30;  
connection-options=1;
```

NOTE: For QLogic drivers, use the /kernel/drv/qla2300.conf file.

Best Practices & More Information

For more information on Solaris configuration for controller failover timing, see:
<http://kc.compellent.com/Pages/Download.aspx?DocID=807>.

SLES

Non-Boot Environment

To the end of the /etc/modprobe.d/qla2xxx file, add:


```
"options qla2xxx qlport_down_retry=65"

# echo "options qla2xxx qlport_down_retry=65" >>
/etc/modprobe.d/qla2xxx
# modprobe -r qla2xxx
# modprobe qla2xxx
```

Then reload the driver.

Boot Environment

To the end of the kernel line in /boot/grub/menu.lst, add:

```
"qla2xxx.qlport_down_retry=65"

# vi /boot/grub/men.lst
# reboot
```

Then reboot the server.

RHEL

Non-Boot Environment

To the end of the /etc/modprobe.conf file, add:

```
"options qla2xxx qlport_down_retry=65"

# echo "options qla2xxx qlport_down_retry=65" >>
/etc/modprobe.conf
# modprobe -r qla2xxx
# modprobe qla2xxx
```

Then reload the driver.

Boot Environment

To the end of the /etc/modprobe.conf file, add:

```
"options qla2xxx qlport_down_retry=60"

# echo "options qla2xxx qlport_down_retry=60" >>
/etc/modprobe.conf
# mkinitrd -f -v /boot/initrd-<kernel version>.img <kernel
version>
# reboot
```

Then update the init RAM disk and reboot the server.

VMware

For more information on configuration best practices for VMware, see:
<http://kc.compellent.com/Pages/Download.aspx?DocID=801>.