



SANsurfer FC/CNA HBA CLI User's Guide

Command Line Interface for
QLogic FC and FCoE Adapters

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Changed product name from "SANsurfer FC HBA CLI" to "SANsurfer FC/CNA HBA CLI."	All
Added QLE81xx and QMI81xx to the list of supported adapters.	"Supported QLogic Adapters" on page 1-2
Added Red Hat and Novell PowerPC64 to supported Linux OSs.	"Supported Operating Systems" on page 1-3
Added list of unsupported features for QLE81xx and QMI81xx adapters on Linux OS.	"Unsupported Features" on page 1-5
Added note recommending uninstalling older version rather than upgrading.	"Installing SANsurfer FC/CNA HBA CLI" on page 1-7
Added new FCoE menu option to <i>Getting Started</i> chapter.	"Starting Interactive Mode" on page 2-1
Added <code>-cna</code> command line option to <i>Non-interactive Mode Options</i> table.	Table 2-1 on page 2-4

<p>Added new FCoE menu option to <i>Interactive Commands</i> chapter.</p> <p>Added Flash Image Version to list of actual VPD information.</p> <p>Added new ENode MAC Address information for QLE81xx adapters.</p> <p>Added cautions about deleting the LUN persistent name for a LUN with active I/O.</p> <p>Updated the Utilities menu (renamed some options per modifications to the CLI, added new MPI config table options, and removed the FCoE Utility option).</p> <p>Updated Update Flash option.</p> <p>Added new message passing interface (MPI) options for the Utilities menu.</p> <p>Updated loopback and read/write buffer test descriptions and examples.</p> <p>Updated the transceiver details output examples.</p> <p>Updated FCoE menu section to reflect support for both QLE80xx (FCoE adapters) and QLx81xx (converged network adapters).</p> <p>Added new section for converged network adapters (QLE81xx and QMI81xx).</p> <p>Added new command line options for converged network adapters (QLE81xx and QMI81xx).</p> <p>Renamed <i>Interactive Exit Codes</i> appendix and updated and added new error return codes.</p> <p>Removed redundant <i>Non-Interactive Error Codes</i> appendix (codes are the same as in Appendix C Error/Exit Return Codes).</p> <p>Added new glossary terms.</p>	<p>3 Interactive Commands</p> <p>“Generate Report (Per Adapter Port)” on page 3-11</p> <p>“HBA Information (Command Line Option -i)” on page 3-21</p> <p>“Persistent Names Menu (Command Line Option -pl)” on page 3-39</p> <p>“-pl (Show, Add, and Delete Persistent Names)” on page 4-41</p> <p>“Utilities Menu” on page 3-64</p> <p>“Update MPI Config Table” on page 3-71</p> <p>“Save MPI Config Table” on page 3-71</p> <p>“Update Flash (Per Adapter Port or All HBAs) (Command Line Option -b)” on page 3-65</p> <p>“Update MPI Config Table” on page 3-71</p> <p>“Save MPI Config Table” on page 3-71</p> <p>“Diagnostics Loopback Test (Command Line Option -kl)” on page 3-77</p> <p>“Diagnostics Read/Write Buffer Test” on page 3-83</p> <p>“Diagnostics Transceiver Details: DMI (Command Line Option -dm)” on page 3-85</p> <p>“FCoE Menu (Command Line Option -cna)” on page 3-108</p> <p>“FCoE Utilities Menu for QLx81xx Adapters (Command Line Option -cna)” on page 3-111</p> <p>“-cna (FCoE Utilities Menu for QLx81xx Adapters)” on page 4-8</p> <p>Appendix C Error/Exit Return Codes</p> <p>—</p> <p>Glossary</p>
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Preface

The SANsurfer[®] FC/CNA HBA CLI tool provides a command line interface (CLI) that lets you easily install, configure, and deploy QLogic[®] Fibre Channel (FC) adapters, as well as QLogic Fibre Channel over Ethernet (FCoE) converged network adapters (CNAs). It also provides robust diagnostic and troubleshooting capabilities and useful statistical information to optimize SAN performance. This tool only configures adapters on the local machine (where SANsurfer FC/CNA HBA CLI is installed.)

SANsurfer FC/CNA HBA CLI is a simplified, condensed version of the SANsurfer FC HBA Manager graphical user interface (GUI), which manages both local and remote hosts.

SANsurfer FC/CNA HBA CLI can be operated in two modes:

- **Interactive mode** (menu-driven interface). This mode requires user intervention.
- **Non-interactive mode** (command line interface). Use this mode for scripting or when you want to do a single operation.

NOTE:

This guide uses interchangeably the terms *HBA*, *CNA*, and *adapter*.

Intended Audience

This guide is intended for end users responsible for administration of QLogic FC adapters.

What's in This Guide

This preface provides a general overview of the product and covers the intended audience, related materials, document conventions, and contact information for technical support.

The remainder of this guide is organized into the following chapters and appendices:

- [1 Installation and Removal](#) lists the supported QLogic adapters and operating systems, lists the system hardware and software requirements, and provides step-by-step instructions for installing and uninstalling SANsurfer FC/CNA HBA CLI on Windows, Linux, Solaris, and Macintosh.
- [2 Getting Started](#) describes the two modes used in SANsurfer FC/CNA HBA CLI: *interactive* and *non-interactive*. It also explains some special terms used in this guide.
- [3 Interactive Commands](#) provides detailed explanations and examples of the command line options used in interactive mode.
- [4 Non-Interactive Commands](#) provides detailed explanations and examples of the command line options used in non-interactive mode.
- [Appendix A XML Format 1](#) provides explanations and examples of XML files created with the `-x1` command line option.
- [Appendix B XML Format 2](#) provides explanations and examples of XML files created with the `-x2` command line option.
- [Appendix C Error/Exit Return Codes](#) lists the error return codes that can occur while running SANsurfer FC/CNA HBA CLI in interactive and non-interactive modes. For each return code number, it provides the name and description.
- [Appendix D Help Commands](#) provides an alphabetical list of the command line actions, arguments, and functions of the help commands.

Following the appendices are a glossary of terms used and an index that will help you quickly find the information you need.

Documentation Conventions

This guide uses the following typographic conventions:

- Text in **bold font** indicates a menu or menu item. For example:
From the **General Information Menu**, type the number for **Host Topology**.
- Text in a monospace font (`Courier New`) indicates CLI window text output. For example:

```
The HBA already has the device selected as boot device.
```
- Text in a bold sans serif font (`Courier New`) indicates user input (what you type). For example:

```
# scli -z
```


- Text in ALL CAPITALS indicates the name of a key that you press on the keyboard. For example:

Type the number for Host Information and then press ENTER.

- *Italicized* text indicates either a document reference, glossary term, or emphasis. For example:

Attached Port means a QLogic adapter....

For a complete list, see the *QLogic SAN Interoperability Guide*.

- Italicized text within angle brackets indicates user-defined variables. For example:

```
# scli -k (<hba instance> | <hba wwpn>)
```

- Text shown in [blue](#) indicates a cross-reference hyperlink to a Web site or to another section of this guide. Click the hyperlink to jump to that site or section. For example:

Visit the QLogic support Web site at support.qlogic.com for the latest firmware and product updates.

For information on the Virtual Menu, see “[Virtual Menu for Adapter Instance](#)” on page 3-98.

- In [3 Interactive Commands](#), a “breadcrumbs” line follows most command headings to show you how to access that option; that is, it shows the hierarchical path from the top level to the command under discussion. For example, to reach the **Save to Text File** options from the main SANsurfer FC/CNA HBA CLI menu, you would select option 1 to open the **General Information** menu, 2 to open the **Host Topology** menu, and 2 again to see the **Save to Text File** options.

The following shows a breadcrumbs example:

1: **General Information** ▶ 2: Host Topology ▶ 2: Save to Text File

Related Materials

For additional information, refer to the SANsurfer FC/CNA HBA CLI ReadMe file and release notes.

License Agreements

Refer to the *QLogic Software End User License Agreement* for a complete listing of all license agreements affecting this product.

Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic switch products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider.

Visit the QLogic support Web site listed in [Contact Information](#) for the latest firmware and software updates.

Availability

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays.

Training

QLogic offers training for technical professionals for all iSCSI, InfiniBand, and Fibre Channel products. From the main QLogic Web page, www.qlogic.com, click the **Education and Resources** tab at the top, and then click the **Education & Training** tab at the left. The QLogic Global Training Portal offers online courses, certification exams, and scheduling of in-person training.

Technical certification courses include installation, maintenance, and troubleshooting QLogic products. Upon demonstrating knowledge using live equipment, QLogic awards a certificate identifying the student as a Certified Professional. The training professionals at QLogic may be reached by e-mail at training@qlogic.com.

Contact Information

Please feel free to contact your QLogic approved reseller or QLogic Technical Support at any phase of integration for assistance. QLogic Technical Support can be reached by the following methods:

Web <http://support.qlogic.com>
E-mail support@qlogic.com

The QLogic knowledge database contains troubleshooting information for the QLogic adapters. Access the database from the QLogic Support Web page, <http://support.qlogic.com>. Use the Support Center search engine to look for specific troubleshooting information.

1 Installation and Removal

This chapter lists the supported QLogic adapters and system requirements, provides procedures for downloading and installing SANsurfer FC/CNA HBA CLI, and instructions for removing the product. Refer to the following sections:

- [“Supported QLogic Adapters” on page 1-2](#)
- [“Supported Operating Systems” on page 1-3](#)
- [“System Requirements” on page 1-4](#)
- [“Downloading the Installation Package” on page 1-6](#)
- [“Installing SANsurfer FC/CNA HBA CLI” on page 1-7](#)
- [“Uninstalling SANsurfer FC/CNA HBA CLI” on page 1-21](#)

Prerequisites

Before you run SANsurfer FC/CNA HBA CLI, ensure that the following requirements are met:

- The adapters must be installed.
- The adapter drivers must be installed.
- For QLE81xx and QMI81xx adapters, a QLogic-specific small form factor pluggable (SFP) must be installed.

NOTE:

Some SANsurfer FC/CNA HBA CLI features are not available when:

- You have a Solaris system that is running with the driver distributed with the OS installation CDs (QLC driver).
- You have a Linux system that is running with the IOCTL or sysfs (inbox) driver.
- You have a Linux system that is running with a VMware driver.

Supported QLogic Adapters

SANsurfer FC/CNA HBA CLI is supported for the following QLogic adapters:

- QLA2xx
- QLA234x
- QLE2xx
- QLA246x
- QLE246x
- QLE256x
- QLE8042
- QLE81xx
- QMI81xx

Not all SANsurfer FC/CNA HBA CLI features are available on every supported adapter. For more information, see [“Unsupported Features” on page 1-5](#).

NOTE:

If SANsurfer FC/CNA HBA CLI detects an unsupported adapter, the following message appears, where *X* is the adapter instance number and *YYYYYYY* is the adapter model:

```
Unsupported HBA (Instance X - YYYYYYY)
```

If SANsurfer FC/CNA HBA CLI detects an adapter for which no information is known, the following message appears, where *X* is the adapter instance number, *0xYYYY* is the subsystem vendor ID, and *0xZZZZ* is subsystem device ID of the adapter:

```
Unknown HBA type (Instance X SSVID=0xYYYY SSDID=0xZZZZ)!
```

Supported Operating Systems

SANsurfer FC/CNA HBA CLI is supported on the following operating systems:

■ **Microsoft® Windows®:**

- Windows 2000, 32-bit, Intel x86 Intel 64, AMD64
- Windows Server 2003, 32-bit Intel x86, Intel 64, AMD64
- Windows Server 2008, 32-bit Intel x86, Intel 64, AMD64
- Windows XP Professional, 32-bit Intel x86, Intel 64, AMD64
- Windows XP Professional, x64-bit Intel 64, AMD64
- Windows Vista, 32-bit Intel x86
- Windows Vista x64

■ **Linux®:**

- Red Hat® RHEL AS/ES 5.0 32-bit, 64-bit Intel IA64, Intel 64, AMD64
- Red Hat RHEL AS/ES 4.5 32-bit, 64-bit Intel IA64, Intel 64, AMD64
- Red Hat RHEL AS/ES 4.0 32-bit, 64-bit Intel IA64, Intel 64, AMD64
- Red Hat RHEL AS/ES 3.0 32-bit, 64-bit Intel x86, Intel 64, AMD64
- Red Hat PowerPC64

- Novell® SLES 10 32-bit, 64-bit Intel IA64, Intel 64, AMD64
- Novell SLES 9 32-bit, 64-bit Intel IA64, Intel 64, AMD64
- Novell SLES 8 32-bit, 64-bit Intel x86, AMD64
- Novell PowerPC64

NOTE:

RHEL 3.0 and SLES 8 do not support 8Gb adapters.

■ **Solaris®:**

- Solaris 9, 10 x86 32-bit, 64-bit Intel x86, Intel 64, AMD64
- Solaris 2.6, 7, 8, 9, and 10 SPARC 32-bit, 64-bit SPARC

■ **Apple® Macintosh®:**

- Mac OS X (Panther/Tiger), 32-bit, 64-bit PowerPC/Intel

■ **NetWare®:**

- NetWare 6.5 32-bit Intel x86, Intel 64, AMD64

■ **VMware® ESX:**

- ESX 3.5 32-bit, Intel 64, AMD64

NOTES:

- Throughout this guide, the terms *Windows*, *Linux*, *Solaris*, and *Macintosh* refer to all the respective supported operating systems unless otherwise noted.
- For specific service packs (SPs) and OS updates, refer to the descriptions where this software version is posted on the QLogic Web site: <http://support.qlogic.com>.

System Requirements

The system requirements for SANsurfer FC/CNA HBA CLI are described in the following sections:

- “[Hardware Requirements](#)” on page 1-4
- “[Software Requirements](#)” on page 1-5

Hardware Requirements

The minimum hardware requirements are as follows:

- QLogic adapters (see “[Supported QLogic Adapters](#)” on page 1-2).
- Single- or multiprocessor server or workstation:
 - Pentium® III with 450 MHz or greater for Windows 2000, Windows Server 2003, Windows XP Professional, Linux, and Solaris.
 - Windows Vista and Windows Server 2008—Use the minimum requirements from Microsoft.
 - Power Mac® G5 1.8 MHz or greater with 512 MB of memory.
 - FC devices, such as disks and RAID subsystems.
 - QLogic FC adapters.

SANsurfer FC/CNA HBA CLI supports most FC devices. For a complete list of devices that support failover, see the *QLogic SAN Interoperability Guide*, which you can download from the QLogic Web site:

<http://connect.qlogic.com/interopguide/Interoperability.asp>

NOTE:

Tape devices are shown as part of the configuration, but are *not* fully supported by SANsurfer FC/CNA HBA CLI. Only persistent binding and LUN masking are available.

- 256 MB physical RAM are required to run SANsurfer FC/CNA HBA CLI; running with less memory can cause disk swapping (“paging” or “paging out”), which severely affects performance.
- Video card capable of 256 colors and a screen resolution of 800x600 pixels.
- About 7 MB of disk space.

Software Requirements

The minimum software requirements are as follows:

- QLogic drivers for your OS platform.
- Administrative privileges to perform management functions.
- One of the operating systems listed in [“Supported Operating Systems” on page 1-3](#).

Unsupported Features

Depending on your system, not all SANsurfer FC adapter features are available.

Features Not Available When Running Windows Driver with NPIV Enabled

When running the driver with NPIV enabled on Windows, the following features are not available with virtual ports:

- Adapter parameters settings
- Adapter parameters restore default
- Flash update from file
- Flash save to file
- Adapter parameters update from file
- Adapter parameters save to file
- Adapter parameters update from templates
- Target link speed
- Boot device settings
- Driver settings
- Adapter beacon
- Target/LUN list

Features Not Available When Running IOCTL Module Driver

When running the input/output control (IOCTL) module driver on a Linux OS, the following features are not available:

- Persistent binding
- Selective LUN
- Adapter port statistics
- Driver settings
- Host topology

Features Not Available When Running Linux with Converged Network Adapters

When running Linux OS with converged network adapters (QLE81xx and QMI81xx), the following features are not available:

- Support for inbox driver only; no driver update support
- Persistent binding
- Adapter port statistics
- iiDMA support
- Loopback test

Features Not Available When Running Sysfs Inbox Driver

When running the Sysfs Inbox driver on a Linux OS, the following features are not available:

- Persistent binding
- Selective LUN
- Adapter port statistics
- Driver settings
- Host topology
- Link status
- Loopback test

Features Not Available When Running VMware Driver

When running the VMware driver on a Linux OS, the following features are not available with virtual ports:

- Adapter parameters settings
- Adapter parameters restore default
- Flash update from file
- Flash save to file
- Adapter parameters update from file
- Adapter parameters save to file
- Adapter parameters update from templates

Downloading the Installation Package

Follow these steps to download the SANsurfer FC/CNA HBA CLI installation package from the QLogic Web site.

To download the installation package:

1. From the QLogic home page (www.qlogic.com), click the **Downloads** tab.
2. On the Driver Downloads / Manuals page, select **Fibre Channel HBAs**, your adapter model, and operating system, and then click **Go!**

Figure 1-1 shows an example.

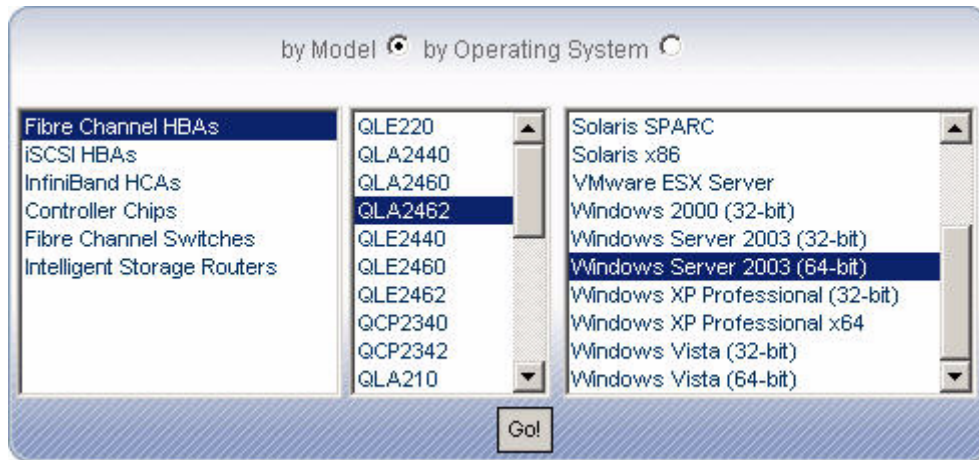


Figure 1-1 Selecting Adapter Model (Example)

The resources page for the selected model appears.

3. Under **Management Tools**, click **SANsurfer CLI...**
The End User Software License Agreement page appears.
4. Scroll to the bottom and click **Agree**.
5. On the File Download dialog box, click **Save**. Select a directory on your system and download the file.

Installing SANsurfer FC/CNA HBA CLI

NOTE:

If you have a previous version of SANsurfer FC HBA CLI already installed, the installation program (except on Solaris) provides the option to upgrade the previous version to this latest version. However, **QLogic recommends that you always uninstall any older version of SANsurfer before installing the new version.**

Follow the installation instructions in the section that corresponds to your operating system (OS):

- [“Windows Installation” on page 1-8](#)
- [“Linux Installation” on page 1-14](#)
- [“Solaris Installation” on page 1-15](#)
- [“Macintosh Installation” on page 1-18](#)
- [“VMware Installation” on page 1-20](#)

Windows Installation

To install SANsurfer FC/CNA HBA CLI on Windows, follow either the GUI or command line installation steps:

- “Standard (GUI) Installation” on page 1-8
- “Command Line Installation” on page 1-12

Standard (GUI) Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a Windows operating system using the standard (GUI) method.

To install SANsurfer FC/CNA HBA CLI on Windows (GUI):

1. Locate and double-click the installer package.

The Preparing to Install dialog box appears, as shown in [Figure 1-2](#). The status bar indicates that the installation package is loading.

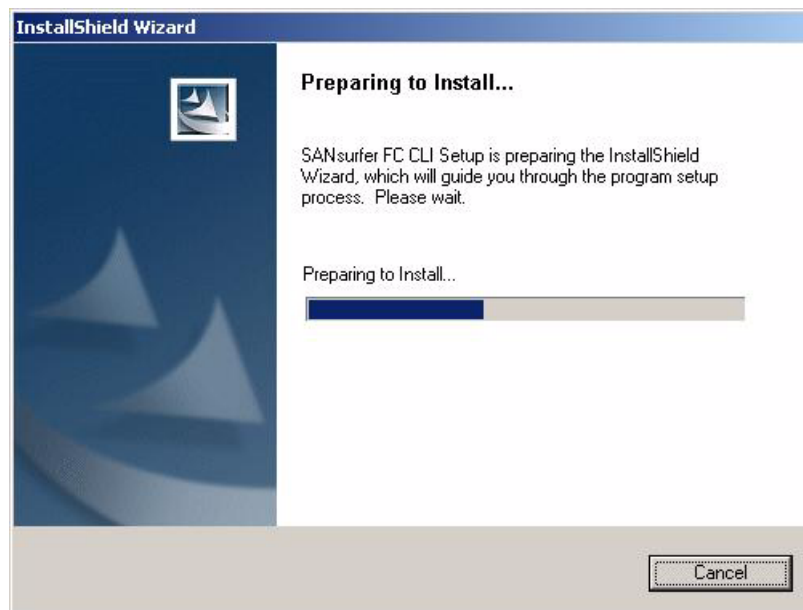


Figure 1-2 Preparing to Install Dialog Box

After the install package is loaded, the Welcome dialog box appears as shown in [Figure 1-3](#).

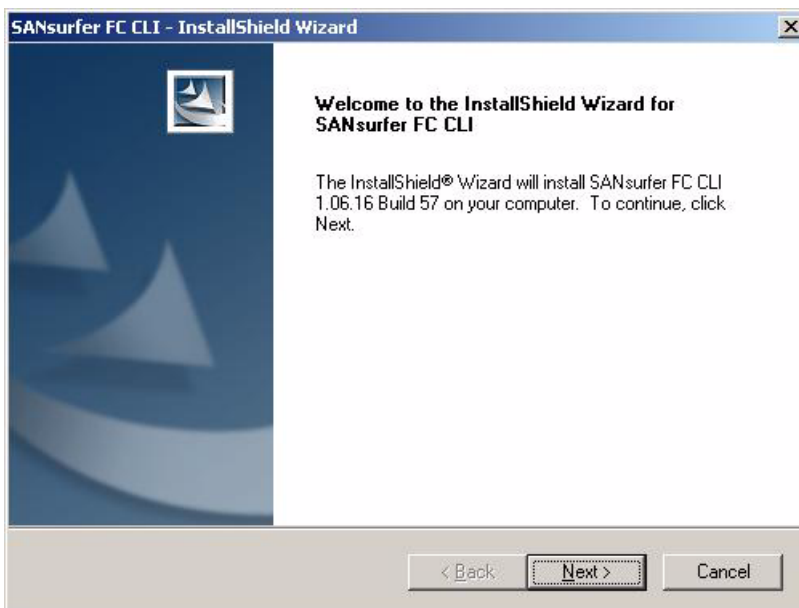


Figure 1-3 Welcome Dialog Box

2. Read the information, and then click **Next**.

The Choose Destination Location dialog box appears as shown in [Figure 1-4](#).

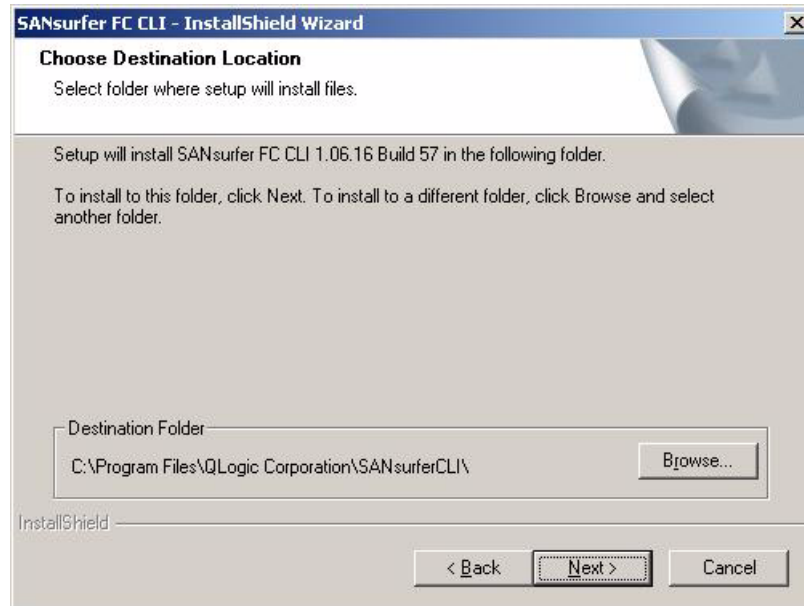


Figure 1-4 Choose Destination Location Dialog Box

3. In the Choose Destination Location dialog box, do one of the following:
 - To select the destination location in the dialog box, click **Next** (recommended). The default location for a Windows system is:

```
Program Files\QLogic Corporation\SANsurferCLI
```
 - To select a different location:
 - a. Click **Browse**.
 - b. Select an installation location.
 - c. The Choose Destination Location dialog box reappears. Click **Next**.

The Ready to Install the Program dialog box appears as shown in [Figure 1-5](#).

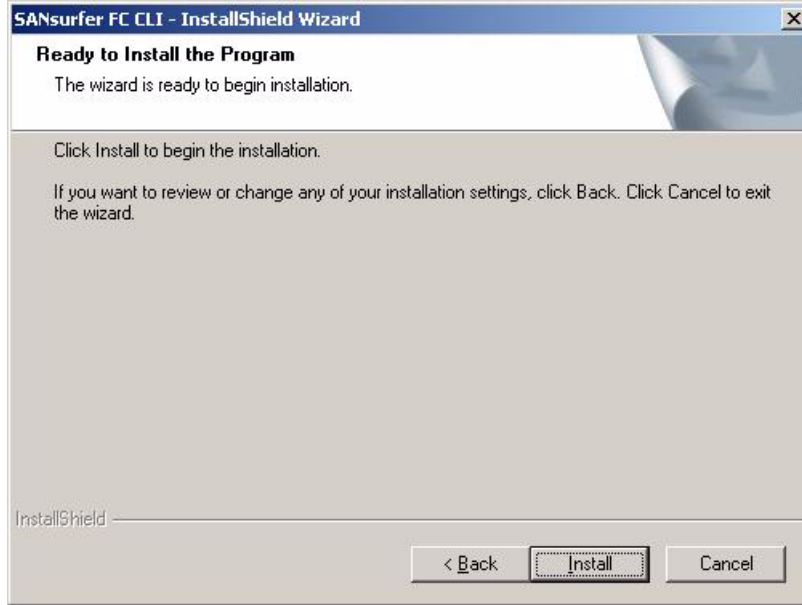


Figure 1-5 Ready to Install the Program Dialog Box

4. Read the information, and then click **Install**.

The Setup Status dialog box appears as shown in [Figure 1-6](#).

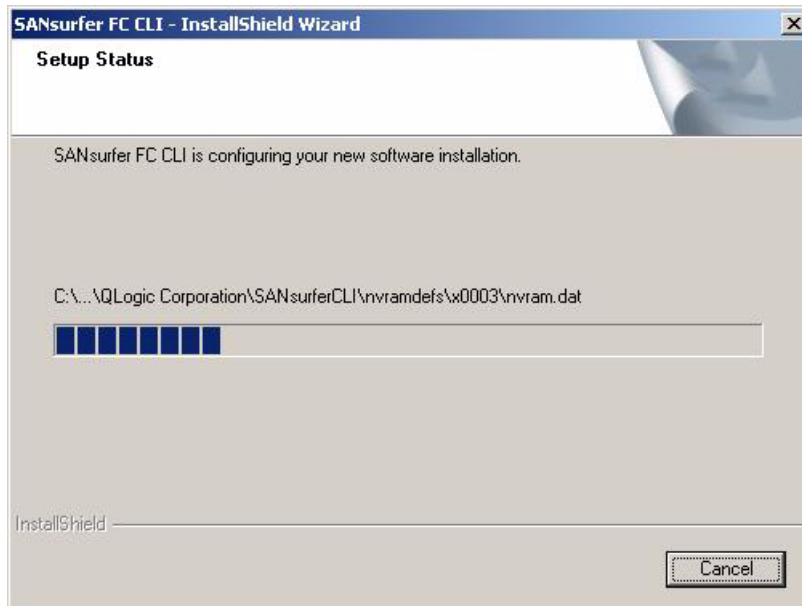


Figure 1-6 Setup Status Dialog Box

If you want to stop the installation, click **Cancel**.

The InstallShield Wizard Complete dialog box appears as shown in [Figure 1-7](#).

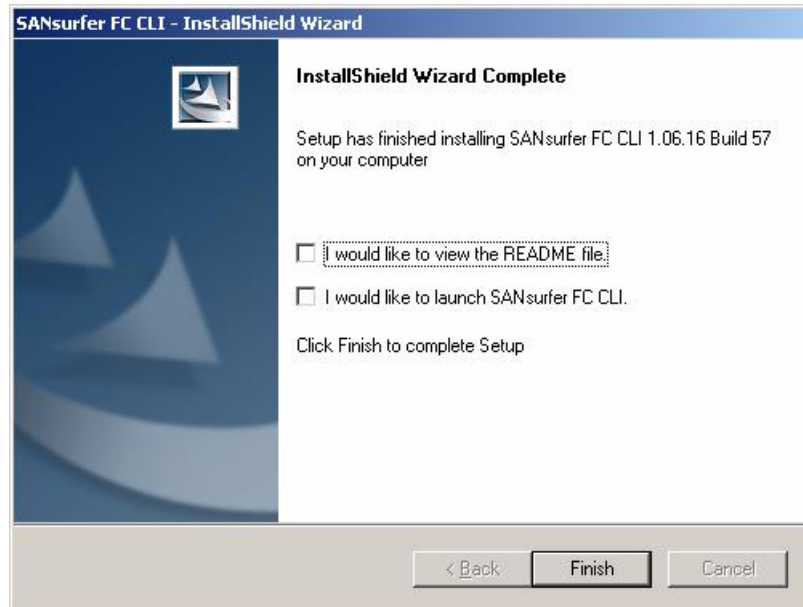


Figure 1-7 InstallShield Wizard Complete Dialog Box

5. (Optional.) Select one of the following:
 - If you want to see more information about SANsurfer FC/CNA HBA CLI, select the **I would like to view the README file** check box.
 - If you want to start SANsurfer FC/CNA HBA CLI, select the **I would like to launch SANsurfer FC CLI** check box.
6. Click **Finish**.

Command Line Installation

To install SANsurfer FC/CNA HBA CLI using the command line installation, follow the steps for either standard or silent installation:

- [“Standard Command Line Installation” on page 1-13](#)
- [“Silent Command Line Installation” on page 1-13](#)

Standard Command Line Installation

Type the following text for a standard installation of SANsurfer FC/CNA HBA CLI on a Windows operating system, where `xx` indicates the version of SANsurfer FC/CNA HBA CLI:

```
scli-1.x.x.xx.windows.exe
```

By default, SANsurfer FC/CNA HBA CLI is installed in the following directory:

```
Program files\QLogic Corporation\SANsurferCLI
```

If you want to change the default location, enter the directory in the command line; for example:

```
scli-1.x.x-xx.windows.exe installdir="c:\sansurfercli"
```

Silent Command Line Installation

The command for a silent installation is the same as for a standard installation (see [“Standard Command Line Installation” on page 1-13](#)), with the addition of the command parameters listed in [Table 1-1](#). Examples using these parameters follow the table.

Table 1-1. Windows Command Line Installation Parameters

Parameter	Meaning	Description
/r	Record mode ^a	To run the SANsurfer FC/CNA HBA CLI installation package in silent mode, first run <code>scli-1.x.x-xx.windows.exe</code> with the <code>/r</code> parameter to generate a response file, which stores information about the data entered and options selected at run time. By default, the response file is created inside the system's Windows folder. To specify an alternative response file name and location, use the <code>/f1</code> parameter.
/s	Silent mode	For an InstallScript MSI or InstallScript project, the command <code>scli-1.x.x-xx.windows.exe /s</code> runs the installation in silent mode, based on the responses contained in the <code>Setup.iss</code> file, located in the same directory. (Response files are created by running <code>Setup.exe</code> with the <code>/r</code> option). To specify an alternative file name or location of the response file, use the <code>/f1</code> parameter.
/f1	Specify alternative response file name ^a	This parameter allows you to specify the name and location of the response file. The <code>/f1</code> parameter is available when creating a response file (with the <code>/r</code> option) and when using a response file (with the <code>/s</code> option).

Table 1-1. Windows Command Line Installation Parameters (Continued)

Parameter	Meaning	Description
/f2	Specify alternative log file name ^a	When running an InstallScript MSI or InstallScript installation in silent mode (using the /s parameter), the log file Setup.log is created in the same directory and with the same name (except for the extension) as the response file. The /f2 parameter allows you to specify an alternative log file location and file name.

Table Notes

^a InstallScript and InstallScript MSI projects only.

To create a response file for a silent installation of SANsurfer FC/CNA HBA CLI, enter the following:

```
scli-1.x.x-xx.windows.exe /r /f1"C:\Temp\install_1.iss"
```

To run the installation in silent mode with a log file, enter the following:

```
scli-1.x.x-xx.windows.exe /s /f1"C:\Temp\install_2.iss"
```

To run the installation in silent mode with an alternate file in a temporary directory, enter the following:

```
scli-1.x.x-xx.windows.exe /s /f1"C:\Temp\install_1.iss" /f2"C:\Temp\install_3.log"
```

NOTE:

After installing SANsurfer FC/CNA HBA CLI, you can create an uninstallation script for future use by creating a response file with a different name. For example:

```
scli-1.x.x-xx.windows.exe /r /f1"C:\Temp\uninstall.iss"
```

Linux Installation

To install SANsurfer FC/CNA HBA CLI on a Red Hat/SUSE Linux operating system, follow these steps:

To install SANsurfer FC/CNA HBA CLI on Linux:

1. From the QLogic Web site or the *SANsurfer for FC and FCoE Adapters* CD-ROM, download to your local machine following file:

```
scli-x.xx.xx-xx.i386.rpm.gz
```

Where *x.xx.xx-xx* specifies the current version of SANsurfer FC/CNA HBA CLI.

2. Decompress the file with the following command:

```
gunzip <file name>
```

3. Enter the following command to install the package:

```
rpm -iv scli-x.xx.xx-xx.i386.rpm
```

NOTE:

For SUSE SLES IA64, the command line is:

```
rpm --iv scli-x.xx.xx-xx.ia64.rpm --nodeps
```

The new package is installed in the following directory:

```
/opt/QLogic_Corporation/SANsurferCLI
```

To query for the installed SANsurfer FC/CNA HBA CLI package name, enter the following text from the command line:

```
rpm -q scli
```

Solaris Installation

To install SANsurfer FC/CNA HBA CLI on Solaris, follow the steps in one of these sections:

- [“Solaris SPARC 8, 9, 10 Installation” on page 1-15](#)
- [“Solaris x86 9 and 10 Installation” on page 1-17](#)

Solaris SPARC 8, 9, 10 Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a Solaris SPARC 8, 9, or 10 operating system.

To install SANsurfer FC/CNA HBA CLI on Solaris 8, 9, or 10:

1. From the QLogic Web site or the *SANsurfer for FC and FCoE Adapters* CD-ROM, download to a temporary directory (for example, /tmp) on your machine the following file:

```
scli-x.xx.xx-xx.sparc.Solaris.pkg
```

NOTE:

In the file name, *x.xx.xx-xx* stands for the current version of SANsurfer FC/CNA HBA CLI. The *-xx* stands for the build version.

2. To see the available package file, type the following:

```
# ls
```

The available packages appear. For example:

```
# scli-x.xx.xx-xx.sparc.Solaris.pkg
```

3. To install SANsurfer FC/CNA HBA CLI, type the following:

```
# pkgadd -d scli-x.xx.xx-xx.sparc.Solaris.pkg
```

4. You are prompted to select a package. For example:

```
The following packages are available:
1 QLScli QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration
Utility)
(sparc) x.xx.xx Build xx
Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]:
Enter 1 to proceed with the installation.
```

5. The pkgadd program does a series of checks, and then posts a script warning and asks whether to continue the installation. For example:

```
Processing package instance <QLScli> from
</space/chuynh/scli/qlogic/Solaris/pkgs/x>
QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration Utility)
(sparc) x.xx.xx Build xx
QLogic Corporation
## Executing checkinstall script.
Using </> as the package base directory.
## Processing package information.
## Processing system information.
39 package pathnames are already properly installed.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.
Do you want to continue with the installation of <QLScli>
[y,n,?]
To continue, type y, then press ENTER.
```

6. Messages appear showing what files have been installed. The system shows a final message when installation is complete. For example:

```
Installing QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration
Utility) as <QLScli>
## Installing part 1 of 1.
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
```

```
/opt/QLogic_Corporation/SANsurferCLI/libs/libqlsdm.so
/opt/QLogic_Corporation/SANsurferCLI/menu.properties
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram2
2.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram2
3.dat
. . .
Installation of <QLScli> was successful.
```

Solaris x86 9 and 10 Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a Solaris x86 9 or 10 operating system.

To install SANsurfer FC/CNA HBA CLI on Solaris x86 9 or 10:

1. From the QLogic Web site or the *SANsurfer for FC and FCoE Adapters* CD-ROM, download to a temporary directory (for example, /tmp) on your machine the following file:

```
scli-x.xx.xx-xx.x86.Solaris.pkg
```

NOTE:

In the file name, *x.xx.xx-xx* stands for the current version of SANsurfer FC/CNA HBA CLI. The *-xx* stands for the build version.

2. To decompress the file, type the following:

```
# uncompress scli-x.xx.xx-xx.x86.Solaris.pkg
```

3. To see the available package file, type the following:

```
# ls
```

The available packages appear. For example:

```
# scli.x.xx.xx-xx.SPARC-X86.Solaris.pkg
```

4. To install SANsurfer FC/CNA HBA CLI, type the following:

```
# pkgadd -d scli-x.xx.xx-xx.SPARC-X86.Solaris.pkg
```

5. You are prompted to select a package. For example:

```
The following packages are available:
1 QLSclix QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration
Utility)
(i386) x.xx.xx Build xx
```

```
Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]: q
```

```
Enter 1 to proceed the installation.
```

6. Type the number that corresponds to your operating system, and then press ENTER.

The pkgadd program does a series of checks, posts a script warning, and asks whether to continue the installation. For example:

```
Processing package instance <QLSclix> from
</space/chuynh/scli/qlogic/Solaris/pkgs/x>
SANsurfer FC/CNA HBA CLI (HBA Configuration Utility) (sparc)
1.xx.xx (Build xx Solaris 8-10)
QLogic Corporation
## Executing checkinstall script.
## Processing package information.
## Processing system information. 3 package pathnames are
already properly installed.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
.
.
.
[ verifying class <none>]
## Executing postinatall script.
Installation of <QLSclix> was successful.
```

Macintosh Installation

To install SANsurfer FC/CNA HBA CLI on a Macintosh system, follow either the standard GUI or command line installation method:

- [“Standard \(GUI\) Installation” on page 1-18](#)
- [“Command Line Installation” on page 1-19](#)

Standard (GUI) Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a Macintosh using the standard GUI method.

To install SANsurfer FC/CNA HBA CLI on Macintosh (GUI):

1. You must have Admin privileges to install SANsurfer FC/CNA HBA CLI. To verify/enable Admin privileges, go to **System Preferences**, select **Account**, and then **Security Tab**. Make sure the **Allow user to administer this computer** check box is selected.
2. Download the SCLI zip file with Safari™ or other browser.

3. When the download has finished, StuffIt® expands the `zip` file to a `tar` file onto the desktop.
4. Double-click the SCLI `tar` file icon to create the SCLI `pkg` file.
5. Double-click the SCLI `pkg` file icon.
6. Follow the **Installer** menu.

The installation directory is:

```
$HOME/Applications/QLogic_Corporation/SANsurferCLI
```

where `$HOME` is root.

7. After the installation process has finished, you can delete the SCLI `pkg` and `tar` files.

Command Line Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a Macintosh using the command line method.

To install SANsurfer FC/CNA HBA CLI on Macintosh (command line):

1. Download the SCLI install package for Mac OS x (compressed tar file) to a local directory.
2. Decompress the file by typing the following command:

```
tar -zxvf <file>.tgz
```

For example:

```
qlogic:~ root#tar -zxvf scli-x.x.x-x.macos.pkg.tgz
./scli-x.x.x-x.pkg/
./scli-x.x.x-x.pkg/Contents/
./scli-x.x.x-x.pkg/Contents/Archive.bom
./scli-x.x.x-x.pkg/Contents/Archive.pax.gz
...
...
```

This command extracts the compressed file to a directory named `scli-x.x.x-x.pkg`.

3. Install the package to the default directory. For example:

```
installer -pkg scli-x.x.x-x.pkg -target /
```

This command installs the product in the default `Applications` directory:

```
/var/root/Applications/QLogic_Corporation/SANsurferCLI
```

If this is the first time you are installing SANsurfer FC/CNA HBA CLI, the system shows the following messages:

```
qlogic:~ root# installer -pkg scli-x.x.x-x.pkg -target /
installer: Package name is SANsurfer FC/CNA HBA CLI x.x.x
Build x
installer: Installing onto volume mounted at /.
installer: The install was successful.
```

If there is a previous version of SANsurfer FC/CNA HBA CLI on the system, the installer automatically runs an update operation. For example:

```
qlogic:~ root# installer -pkg scli-x.x.x-x.pkg -target /
installer: Package name is SANsurfer FC/CNA HBA CLI x.x.x
Build x
installer: Upgrading volume mounted at /.
installer: The upgrade was successful.
```

VMware Installation

Follow these steps to install SANsurfer FC/CNA HBA CLI on a system running VMware ESX 3.5.

To install SANsurfer FC/CNA HBA CLI on VMware ESX 3.5:

1. From either the QLogic Web site or the *SANsurfer for FC and FCoE Adapters* CD-ROM, download to your local machine the following file:

```
scli-x.xx.xx-xx.i386.rpm.gz
```

Where *x.xx.xx* stands for the current version of SANsurfer FC/CNA HBA CLI.

2. Decompress the file using the following command:

```
gunzip <file name>
```

3. Install the package using the following command:

```
rpm -iv scli-x.xx.xx-xx.i386.rpm
```

The new package is installed in the following directory:

```
/opt/QLogic_Corporation/SANsurferCLI
```

4. (Optional) To query for the installed SANsurfer FC/CNA HBA CLI package name, enter the following from the command line:

```
rpm -q scli
```

Uninstalling SANsurfer FC/CNA HBA CLI

Refer to the following sections for the appropriate procedure to uninstall SANsurfer FC/CNA HBA CLI from your system:

- [“Windows Uninstall” on page 1-21](#)
- [“Linux Uninstall” on page 1-22](#)
- [“Solaris Uninstall” on page 1-22](#)
- [“Macintosh Uninstall” on page 1-24](#)
- [“VMware Uninstall” on page 1-24](#)

Windows Uninstall

To uninstall SANsurfer FC/CNA HBA CLI, use either the standard GUI or command line method:

- [“Standard \(GUI\) Uninstall” on page 1-21](#)
- [“Command Line Uninstall” on page 1-21](#)

Standard (GUI) Uninstall

Follow these steps to uninstall SANsurfer FC/CNA HBA CLI on Windows using the GUI method.

To uninstall SANsurfer FC/CNA HBA CLI on Windows (GUI):

1. From the Control Panel, click **Add or Remove Programs**.
2. Highlight SANsurfer FC/CNA HBA CLI.
3. Click **Remove**. No re-boot is required.

Alternately, invoke `scli-1.x.x-xx.windows.exe` and select the option to **Remove** all installed features.

Command Line Uninstall

Follow these steps to uninstall SANsurfer FC/CNA HBA CLI on Windows using the command line method.

To uninstall SANsurfer FC/CNA HBA CLI on Windows (command line):

1. At a command line prompt, type the following:

```
scli-1.x.x-x.windows.exe /uninst /s
```

2. If you created an uninstall script in [“Silent Command Line Installation” on page 1-13](#), you can uninstall SANsurfer FC/CNA HBA CLI in silent mode by type the following:

```
scli-1.x.x-x.windows.exe /s /f1"C:\Temp\uninstall.iss"
```

Linux Uninstall

To uninstall SANsurfer FC/CNA HBA CLI on a Linux system, go to the command line and type one of the following commands, where x.xx.xx is the current version of CLI:

```
rpm -e scli-x.xx.xx-xx  
rpm -e scli
```

To query for the installed SANsurfer FC/CNA HBA CLI package name, type the following text from the command line:

```
rpm -q scli
```

Solaris Uninstall

To uninstall SANsurfer FC/CNA HBA CLI on a Solaris system, follow one of these procedures:

- [“Solaris SPARC 8, 9, and 10 Uninstall” on page 1-22](#)
- [“Solaris x86 8, 9, and 10 Uninstall” on page 1-23](#)

Solaris SPARC 8, 9, and 10 Uninstall

Follow these steps to uninstall SANsurfer FC/CNA HBA CLI.

To uninstall SANsurfer FC/CNA HBA CLI on Solaris SPARC 8, 9, and 10:

1. Type the following:

```
# pkgrm QLScli
```

2. The program shows the package name and a script warning asking whether to continue the uninstall process. For example:

```
The following package is currently installed:  
QLScli   QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration  
Utility) (sparc) 1.x.x Build xx  
Do you want to remove this package?
```

3. Type **y** and then press ENTER. The program shows a script warning asking whether to continue the uninstall process. For example:

```
## Removing installed package instance <QLScli>  
This package contains scripts which will be executed with  
super-user permission during the process of removing this  
package  
Do you want to continue with the removal of this package  
[y,n,?,q]
```

4. Type **y** and then press ENTER. The pkgrm program notifies you when the uninstall process is complete. For example:


```
## Verifying package dependencies.
## Processing package information. ...
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
/opt/QLogic_Corporation/SANsurferCLI
## Executing postremove script.
scli removed.
Menu property file removed.
Adapter property file removed.
SCLI property file removed.
## Updating system information.
Removal of <QLScli> was successful.
```

Solaris x86 8, 9, and 10 Uninstall

Follow these steps to uninstall SANsurfer FC/CNA HBA CLI on a Solaris system.

To uninstall SANsurfer FC/CNA HBA CLI on Solaris x86 8, 9, and 10:

1. Type the following to remove SANsurfer FC/CNA HBA CLI:

```
# pkgrm QLSclix
```

2. The program shows the package name and a script warning asking whether to continue the uninstall process. For example:

```
The following package is currently installed:
QLSclix QLogic SANsurfer FC/CNA HBA CLI (HBA Configuration
Utility) (x86) 1.x.x Build xx
Do you want to remove this package?
```

3. Type **y** and then press ENTER. The program shows a script warning asking whether to continue the uninstall process. For example:

```
## Removing installed package instance <QLSclix>
This package contains scripts which will be executed with
super-user permission during the process of removing this
package
Do you want to continue with the removal of this package
[y,n,?,q]
```

4. Type **y** and then press ENTER. The pkgrm program notifies you when the uninstall process is complete. For example:

```
## Verifying package dependencies.
## Processing package information.
...
/opt/QLogic_Corporation <shared pathname not removed>
/opt <shared pathname not removed>
## Executing postremove script.
scli removed.
Menu property file removed.
Adapter property file removed.
```

```
SCLI property file removed.  
## Updating system information.  
Removal of <QLSclix> was successful.
```

Macintosh Uninstall

Uninstalling SANsurfer FC/CNA HBA CLI is not necessary for Mac OS X; the native installer automatically updates the product whenever it detects a change in the product version.

To manually uninstall SANsurfer FC/CNA HBA CLI, delete its folder and any references to the SANsurfer installer package(s) in the `/Library/Receipts` directory. For example:

```
rm -rf /Library/Receipts/scli-x.x.x-x.pkg
```

NOTE:

You must be in the root directory or have root/admin privileges to do this operation.

VMware Uninstall

To uninstall SANsurfer FC/CNA HBA CLI on a VMware ESX 3.5 system, go to the command line and type one of the following commands, where `x.xx.xx` is the current version of the CLI:

```
rpm -e scli-x.xx.xx-xx
```

```
rpm -e scli
```

To query for the installed SANsurfer FC/CNA HBA CLI package name, enter the following command:

```
rpm -q scli
```

2 Getting Started

This chapter provides the following sections to help you get started using SANsurfer FC/CNA HBA CLI:

- [“Starting Interactive Mode” on page 2-1](#)
- [“Starting Non-Interactive Mode” on page 2-4](#)
- [“Terminology” on page 2-9](#)
- [“Advanced Features” on page 2-10](#)

SANsurfer FC/CNA HBA CLI Modes

SANsurfer FC/CNA HBA CLI operates in two modes:

- **Interactive** (menu-driven). The CLI starts and prompts for user input. Based on the input, the CLI executes the specified commands until terminated by the user. Use this mode to do multiple operations. [3 Interactive Commands](#) covers this interface.
- **Non-interactive** (command line). The CLI starts, executes the functions defined by the list of parameters provided, and then terminates. Use this mode to run SANsurfer FC/CNA HBA CLI from a script file or when you want to do a single operation. [4 Non-Interactive Commands](#) covers this interface.

SANsurfer FC/CNA HBA CLI is *not* case sensitive in either mode. However, file names in some operating systems are case sensitive; in this case, SANsurfer FC/CNA HBA CLI *is* case sensitive for that specific file.

Starting Interactive Mode

To start SANsurfer FC/CNA HBA CLI in interactive mode, use one of these methods:

- For Windows, click the **SANsurfer FC/CNA HBA CLI** icon on the desktop.
- For Linux or Solaris, open a command window and type one of the following:

```
scli INT  
scli
```

NOTE:

When starting SANsurfer FC/CNA HBA CLI from a Solaris console serial port connection, the CLI may take a long time to come up. To resolve this issue, specify the `INT` flag, as shown in the preceding bullet.

- For Mac OS X, follow these steps:
 1. Double-click the SANsurfer FC/CNA HBA CLI (SCLI) icon.
 2. A terminal window opens. SCLI (interactive mode) scans the host for QLogic adapters and SAN storage.
 3. Run SCLI commands as required.
 4. When finished, return to the main menu, and type the indicated number to exit SANsurfer FC/CNA HBA CLI.
 5. Close the terminal window.

The **Main Menu** appears as shown in the following:

```
SANsurfer FC/CNA HBA CLI  
v1.x.x Build xx
```

```
Main Menu
```

```
1: General Information  
2: HBA Information  
3: HBA Parameters  
4: Target/LUN List  
5: Target Link Speed   or 5: iiDMA Settings  
6: Target Persistent Bindings  
7: Selective LUNs  
8: Boot Device  
9: Driver Settings  
10: Utilities  
11: Beacon  
12: Diagnostics  
13: Statistics  
14: Help               or 14: Virtual (if supported by adapter)  
15: Exit               or 15: QoS (if supported by adapter)  
                       or 16: FCoE (if supported by adapter)  
                       or 17: Help  
                       or 18: Exit
```

NOTE:

Selections on the Main Menu are dynamic, and what you see depends on your system's operating system, drivers, and adapter type. Based on your specific system, this menu may contain different items. For example:

- Selection **5**: may be either **Target Link Speed** or **iiDMA Settings**.
- The **Virtual** menu selection is available only on Windows systems running with a driver that supports NPIV (N_Port ID virtualization).
- The **QoS** menu selection is available only on Windows systems with an 8Gb adapter.
- The **FCoE** menu selection is available only if an FCoE or converged network adapter is present.
- For a converged network adapter with an inbox driver, the Main Menu contains only these options:

```
Main Menu

1: General Information
2: HBA Information
3: HBA Parameters
4: Target/LUN List
5: Boot Device
6: Utilities
7: Beacon
8: Diagnostics
9: FCoE
10: Help
11: Exit
```

Depending on which menu you select, may prompt you for more input. For example, if you select **HBA Parameters**, SANsurfer FC/CNA HBA CLI prompts you for the port number that corresponds to the adapter model you want to view.

NOTE:

- The **Driver Update** option under **Utilities** (option 10) is only available on Windows.
- In Solaris SPARC, the option to **Save/Update BIOS** is **Save/Update FCode**.

Starting Non-Interactive Mode

To start SANSurfer FC/CNA HBA CLI in non-interactive mode, type the following in a command window:

```
scli <parameters>
```

SANSurfer FC/CNA HBA CLI executes the command options, and then terminates.

To list all of the available command line parameters and the SANSurfer FC/CNA HBA CLI version, type one of the following:

```
scli -h  
scli -?
```

In Solaris SPARC, include double quotes around the view option (?) if the system is running with a csh or tsch shell. For example:

```
# scli -e 0 "?"
```

For world wide node name (WWNN), world wide port name (WWPN), and port ID parameter inputs, SANSurfer FC/CNA HBA CLI accepts the notation with and without the dash (-). Hexadecimal values can be uppercase or lowercase.

The following input formats are both valid for the WWNN and WWPN:

```
20-00-00-E0-8B-01-83-C4  
200000E08B0183C4
```

The following inputs are valid for the port ID:

```
68-5C-AB 685CAB
```

All command line options must be preceded by the dash (-) or forward slash (/) notation. Most options have a corresponding menu selection in interactive mode. [Table 2-1](#) lists all valid command line options, shows the corresponding menu selection by OS, and provides a description and cross-reference.

Table 2-1. Non-interactive Mode Options

CLI Option	Interactive Menu (Windows)	Interactive Menu (Red Hat/SUSE Linux, Solaris SPARC)	Interactive Menu (Macintosh)	Description	See User Guide Section
-a	11	11	11	Flash adapter beacon	"-a (View or Toggle Beacon Status)" on page 4-6

Table 2-1. Non-interactive Mode Options (Continued)

CLI Option	Interactive Menu (Windows)	Interactive Menu (Red Hat/SUSE Linux, Solaris SPARC)	Interactive Menu (Macintosh)	Description	See User Guide Section
-b	10	10	—	Save/update BIOS/FCode ^{a b}	“-b (Save or Update the Flash BIOS or FCode)” on page 4-7
-c	2	2	2	Show adapter settings	“-c (Show Parameter Settings)” on page 4-8
-cna	16	16	16	View and modify converged network adapters	“-cna (FCoE Utilities Menu for QLx81xx Adapters)” on page 4-8
-d	10	—	10	Update driver	“-d (Update Device Driver)” on page 4-10
-dm	12	12	12	Transceiver details	“-dm (Display Diagnostics Monitoring Info)” on page 4-10
-e	8	8	8	Boot device settings	“-e (Boot Device View Select Disable)” on page 4-11
-f	—	—	—	Input from a file	“-f (Input Parameter Options from a Text File)” on page 4-13
-fg	9	9	9	View driver settings	“-fg (Show Driver Settings)” on page 4-16
-fs	9	9	9	Driver settings	“-fs (Configure Driver Settings)” on page 4-16
—	10	10	10	Adapter utilities	—

Table 2-1. Non-interactive Mode Options (Continued)

CLI Option	Interactive Menu (Windows)	Interactive Menu (Red Hat/SUSE Linux, Solaris SPARC)	Interactive Menu (Macintosh)	Description	See User Guide Section
-g	1	1	1	Show system information	"-g (Display System Information)" on page 4-18
-gs	13	13	13	Adapter statistics	"-gs (Show HBA Statistics)" on page 4-18
-h	14	14	14	Show usage	"-h (Help)" on page 4-19
-?	14	14	14	Show usage	
-ha	2	2	2	Adapter alias	"-ha (Set Delete HBA Alias)" on page 4-19
-i	2	2	2	Show adapter information	"-i (Display HBA General Information or VPD Information for One or All HBAs)" on page 4-20
-kl	12	12	12	Loopback test	"-kl (Loopback Test)" on page 4-20
-kr	12	12	12	Read/write buffer test	"-kr (Run Read/Write Buffer Test)" on page 4-27
-l	4	4	4	Show LUN list	"-l (Display LUN Info)" on page 4-32
-ls	13	13	13	Show Link status	"-ls (Display Link Status)" on page 4-32
-m	7	7	7	Selective LUNs	"-m (View, Enable, or Disable LUNs)" on page 4-33

Table 2-1. Non-interactive Mode Options (Continued)

CLI Option	Interactive Menu (Windows)	Interactive Menu (Red Hat/SUSE Linux, Solaris SPARC)	Interactive Menu (Macintosh)	Description	See User Guide Section
-n	3	3	3	Configure adapter settings	"-n (Set Selected HBA Parameter)" on page 4-35
-o	1	1	1	Output to a file	"-o (Output to a File)" on page 4-37
-p	6	6	6	Target persistent binding	"-p (Display Persistent Target Binding Info)" on page 4-38
-pa	2	2	2	Adapter port alias	"-pa (Define Port Alias)" on page 4-40
-pl	—	6	—	Persistent device names	"-pl (Show, Add, and Delete Persistent Names)" on page 4-41
-q	5	5	5	Target link speed	"-q (View or Set Target Link Speed)" on page 4-42
-qos	15	—	—	Quality of service	"-qos (QoS Menu)" on page 4-43
-r	—	—	—	Save/update NVRAM	"-r (Update HBA Parameters)" on page 4-44
—	1	1	1	Refresh	—
—	15 (16)	15 (16)	15 (16)	Quit	—
-s	—	—	—	Silent mode	"-s (Silent Mode)" on page 4-45
-t	4	4	4	Show device list	"-t (Display Target Information)" on page 4-45

Table 2-1. Non-interactive Mode Options (Continued)

CLI Option	Interactive Menu (Windows)	Interactive Menu (Red Hat/SUSE Linux, Solaris SPARC)	Interactive Menu (Macintosh)	Description	See User Guide Section
-tb	11	11	11	Flash target beacon	"-tb (Target Beacon On/Off)" on page 4-46
-tp	1	1	1	Show host topology	"-tp (Display Host Topology)" on page 4-46
-u	10	10	10	Update or save firmware preload area	"-u (Firmware Area Update/Save)" on page 4-46
-v	—	—	—	Show version	"-v (Display Version)" on page 4-47
-vp	14	14	—	Virtual ports ^c	"-vp (Virtual Port)" on page 4-47
-x	1	1	1	Output in XML format	"-x (Output in XML Format 1)" on page 4-48
-z	2	2	2	Show all information for one or all adapters	"-z (Display All HBA information for One or All HBAs)" on page 4-49

Table Notes

^a Windows, Linux, Solaris x86

^b Solaris SPARC

^c Windows or Solaris systems running driver that supports NPIV (excluding QLE8042 adapter)

Options that have a corresponding menu selection cannot be combined. That is, only one option is allowed in a single command. If multiple options are specified in a command, only the first one is processed. These options, however, can be combined with one or more options that do not have a corresponding menu selection, with the exception of -F.

For all command line options, SANsurfer FC/CNA HBA CLI shows the following when there are errors in the command line input:

```
Error <error message>
SANsurfer FC/CNA HBA CLI
v1.x.x Build xx
Copyright 2003-2009 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters

description of command entered
Usage: <current command use usage>
```

Terminology

Some of the terms used in this guide are similar and some have changed slightly as technology changes. The following definitions apply:

adapter port

Adapter port refers to the actual physical port on an adapter. For example, a QLA2462 has two ports called *HBA port 1* and *HBA port 2*.

adapter instance, adapter instance number, or adapter port instance

When you install adapter in a system with other adapters, each adapter port gets assigned a number by the driver or API so it knows which adapter to communicate with. This assigned number might be called *adapter instance*, *adapter instance number*, or *adapter port instance*.

adapter alias

When an alias is assigned to a physical adapter, no matter how many ports that adapter has, the adapter alias refers to the adapter, not one of its ports.

port alias

You can also assign an alias to an individual port on an adapter. This *port alias* refers to only that port and none other.

Thus, an adapter can only have one *adapter alias*, but each port on that adapter must have a unique *port alias*.

Advanced Features

SANsurfer FC/CNA HBA CLI adds the following advanced features to its toolset:

N_Port ID virtualization (NPIV). NPIV (N_Port ID virtualization) allows you to make the most of your server and Fibre Channel fabric. For instance, you can partition your server to support multiple operating systems at the same time, maximizing server utilization. By creating virtual ports from a single physical adapter port, you allow multiple initiators. SANsurfer FC/CNA HBA CLI facilitates creating multiple virtual ports from a single physical adapter port.

NOTE:

NPIV is available only for Windows and Solaris operating systems and 4Gb and greater adapters.

Quality of service (QoS). QoS refers to service level agreement (SLA) to ensure business continuity when transmitting data over virtual ports by either setting priorities or allocating bandwidth. SANsurfer FC/CNA HBA CLI provides an easy-to-use interface that lets you either assign QoS to virtual ports by setting *priorities* (which eventually translates to IOPS) or allocating *bandwidth* to them.

- **Setting the QoS by bandwidth** lets you allocate up to 80% of the number of gigabits per second (Gbps) transmission speed of the physical port's capacity to its defined virtual ports (NPIV). Using this feature lets you guarantee a transmission rate for each virtual port that requires a specific bandwidth to run mission-critical applications for business continuity using virtual ports. The setting for a given QoS can resolve bottlenecks that exist when virtual machines contend for port bandwidth on the same server.
- **Setting the QoS by priority** lets you set the priority level for the defined virtual ports. This enables to you give preference to data transmissions for one virtual port over others by giving it a higher priority than the others. You can set the priority level on any virtual port, regardless of the settings applied to other virtual ports.

NOTE:

QoS is available only for Windows operating systems and 8Gb adapters. On Windows Server 2008, MSI-X must be enabled.

3 Interactive Commands

This chapter describes the interactive mode command line options for specific QLogic FC adapters. The interactive mode uses a series of menus from which you select the option you want and enter the number for that option. (For information on non-interactive mode operation—in which you simply enter a one- or two-letter code to perform operations on the adapter—refer to [4 Non-Interactive Commands](#).)

This chapter covers the following options available (depending on your system setup) on the main menu:

- “General Information Menu (Command Line Option -g)” on page 3-4
- “HBA Information Menu (Command Line Option -i)” on page 3-19
- “HBA Parameters Menu” on page 3-24
- “Target/LUN List Menu (Command Line Options -t and -l)” on page 3-36
- “Target Link Speed or iDMA Settings Menu (Command Line Option -q)” on page 3-47
- “Target Persistent Bindings Menu (Command Line Option -p)” on page 3-54
- “Selective LUNs Menu (Command Line Option -m)” on page 3-58
- “Boot Device Menu (Command Line Option -e)” on page 3-60
- “Driver Settings Menu (Command Line Option -fg)” on page 3-62
- “Utilities Menu” on page 3-64
- “Beacon Menu” on page 3-75
- “Diagnostics Menu (Command Line Options -kl, -kr, and -dm)” on page 3-76
- “Statistics Menu (Command Line Options -gs and -ls)” on page 3-89
- “Virtual Menu (Command Line Option -vp)” on page 3-97
- “QoS Menu (Command Line Option -qos)” on page 3-101
- “FCoE Menu (Command Line Option -cna)” on page 3-108
- “Help Menu (Command Line Option -h)” on page 3-120

Starting Interactive Mode

To start the interactive mode, type one of the following:

```
[ scli ]
```

```
[ scli int] (on some Solaris installations)
```

When you start SANSurfer FC/CNA HBA CLI in interactive mode, the **Main Menu** appears as follows:

```
Main Menu
```

```
1: General Information
2: HBA Information
3: HBA Parameters
4: Target/LUN List
5: Target Link Speed   or 5: iidDMA Settings
6: Target Persistent Bindings
7: Selective LUNs
8: Boot Device
9: Driver Settings
10: Utilities
11: Beacon
12: Diagnostics
13: Statistics
14: Help               or 14: Virtual (if supported by adapter)
15: Exit               or 15: QoS (if supported by adapter)
                       or 16: FCoE (if supported by adapter)
                       or 17: Help
                       or 18: Exit
```

NOTES:

Selections on the Main Menu are dynamic, and what you see depends on your system's operating system, drivers, and adapter type. Based on your specific system, this menu may contain different items. For example:

- Selection **5**: may be either **Target Link Speed** or **iiDMA Settings**.
- The **Virtual** menu selection is available only on Windows systems running with a driver that supports NPIV (N_Port ID virtualization).
- The **QoS** menu selection is available only on Windows systems with an 8Gb adapter.
- The **FCoE** menu selection is available only if an FCoE or converged network adapter is present.
- For a converged network adapter with an inbox driver, the Main Menu contains only these options:

Main Menu

```
1: General Information
2: HBA Information
3: HBA Parameters
4: Target/LUN List
5: Boot Device
6: Utilities
7: Beacon
8: Diagnostics
9: FCoE
10: Help
11: Exit
```

Selections from the **Main Menu** open new menus. For example, if you enter option **1 (General Information)** on the main interactive menu, the system shows a new menu, the **General Information Menu**. From this menu you have several choices including **1: Host Information**, **2: Host Topology**, and so forth. On every menu you can type the number for **Return to Previous Menu** and move to the next higher level (parent) menu.

In the remainder of this chapter, you will see a “breadcrumbs” line following most subsection headings. The breadcrumbs line shows you how to access that option; that is, it shows the hierarchical path from the top level to the command under discussion. For example, to reach the **Save to Txt File** options from the main SANsurfer FC/CNA HBA CLI menu, you would select option **1** to open the **General Information** menu, **2** to open the **Host Topology** menu, and then **2** again to see the **Save As Txt File** options. The following shows the breadcrumbs example:

1: **General Information** ▶ 2: Host Topology ▶ 2: Save As Txt File

General Information Menu (Command Line Option -g)

1: General Information

This option shows you general information for the adapter.

To see the HBA **General Information** menu, from the **Main Menu**, type the number for the **General Information** option, and then press ENTER.

The **General Information** menu contains the following options:

- **Host Information** (see “[Host Information \(Command Line Option -g\)](#)” on [page 3-4](#))
- **Host Topology** (see “[Host Topology \(Command Line Option -tp | -topology\)](#)” on [page 3-5](#))
- **Report** (see “[Generate Report \(Command Line Option -z\)](#)” on [page 3-10](#))
- **Refresh** (see “[Refresh](#)” on [page 3-19](#))

Host Information (Command Line Option -g)

1: General Information ▶ 1: Host Information

This option shows you host information.

From the **Main Menu**, type the number for **General Information**, and then press ENTER.

From the **General Information Menu**, type the number for **Host Information**, and then press ENTER. Host information includes the following data:

- Host name
- OS type
- OS version (patches where applicable)
- SDM API version
- A list of adapters including, for each adapter:
 - Adapter model and serial number (SN)
 - Port number
 - WWPN
 - Adapter instance number
 - Status (online/offline)
 - (Repeats for each adapter)

- Total number of QLogic adapters detected

NOTE:

The SAN Device Management (SDM) API is a QLogic-specific library required for SANsurfer FC/CNA HBA CLI. The version number of this library is useful in debugging.

```
-----
Host Name           : BRAGI
OS Type            : Microsoft Windows Svr 2003 Enterprise Ed. x86
OS Version         : Service Pack 1 (Build 3790)
SDM API Version    : 1.28.0.50 QLSDM.DLL
-----
```

```
-----
HBA Model QLA2342 (SN C28750):
  Port 1 WWPN 21-00-00-E0-8B-01-43-9B SN B05283 (HBA Instance 0) Online
  Port 2 WWPN 21-01-00-E0-8B-21-43-9B SN B05283 (HBA Instance 1) Online
HBA Model QLA2300 (SN D825408):
  Port 1 WWPN 21-00-00-E0-8B-05-CB-D8 SN D83179 (HBA Instance 2) Loop down
  Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 SN D83179 (HBA Instance 3) Online
HBA Model QLA2462 (SN FFC0551C34679):
  Port 1 WWPN 21-00-00-E0-8B-1F-9D-F0 SN FFC0519U93213 (HBA Instance 4)
Online
  Port 2 WWPN 21-01-00-E0-8B-3F-9D-P0 SN FFC0519U93213 (HBA Instance 5) Loop
down
HBA Model QLA210 (SN C655417):
  Port 1 WWPN 21-00-00-E0-8B-1A-3F-E0 SN R61343 (HBA Instance 6) Online
-----
```

Total QLogic HBA(s) : 4

Host Topology (Command Line Option -tp | -topology)

1: General Information ▶ 2: Host Topology

This option shows you the **HBA Host Topology** menu.

NOTE:

Under Linux, host topology (-tp) is disabled if you are using the IOCTL or sysfs (inbox) driver.

From the **General Information Menu**, type the number for **Host Topology**, and then press ENTER. When you select this option, the following options appear:

- Display

- Save As Txt file
- Save As XML File

Display (Host Topology) (Command Line Option -tp | -topology)

1: General Information ▶ 2: Host Topology ▶ 1: Display

The host topology option shows information about interconnect elements (switches or adapters) and switch ports.

NOTE:

Attached Port means a QLogic adapter, a tape or disk target device, or GBIC connected to a physical port on a switch.

If the interconnect element is a switch:

- Interconnect element (switch)
 - Type (Switch or adapter)
 - World wide name
 - Domain ID
 - Management ID
 - IP address
 - Model
 - Symbolic name
 - Serial number
 - MAC address
 - Firmware version
 - Port count
 - Beacon status

If the interconnect element is an adapter:

- Interconnect element (adapter)
 - Type
 - World wide node name
 - World wide port name
 - Vendor ID
 - Adapter Model
 - Adapter Serial Number
 - Adapter Alias
 - Port Alias
 - Driver Version
 - Firmware Version
 - Total Number of Devices
 - Host

- Number of Port
- Beacon Status
- Port Type
- Port State
- Port Information (repeats for each port) (Every port may not use all items):
 - Physical Port Number (switch or adapter port number), including:
 - Port Name (WWPN)
 - Port State (Online or Loop Down)
 - Port Type
 - TX Port Type
 - Port Module Type
 - Attached Port (Repeats for every target/initiator that functions as an attached port). (Not all items may appear for every port):
 - Target/Initiator
 - Node Name
 - Port Name
 - Vendor ID
 - Product ID (if applicable)
 - Product Revision (if applicable)
 - Product Serial Number (if applicable)
 - Adapter Model (if applicable)
 - Adapter Serial Number (if applicable)
 - Adapter Alias (if applicable)
 - Port Alias (if applicable)
 - Driver Version (if applicable)
 - Firmware version (if applicable)
 - Total number of devices (targets, if applicable)
 - Host (if applicable)

Here is an example:

```

=====
= InterConnect Element                               =
=====
Type                                               : HBA
World Wide Node Name                             : 20-00-00-E0-8B-03-55-7C
World Wide Port Name                             : 21-00-00-E0-8B-03-55-7C
Vendor Id                                         : QLogic Corporation
HBA Model                                         : 2200
HBA Serial Number                               : C28437
HBA Alias                                         :
Port Alias                                       :
Driver Version                                   : SCSI Miniport 8.1.5.15 (W2K IP)
Firmware Version                                 : 2.02.03
Total Number of Devices                          : 0

```

```
Host : BRAGI
Number of Port : 1
Beacon status : Unsupported
Port Type : L_Port
Port State : Online
=====
= InterConnect Element =
=====
Type : Switch
World Wide Name : 10-00-00-C0-DD-00-6A-9F
Domain ID : 4 (0x4)
Management ID : 0
IP Address : 10.3.10.178
Model :
Symbolic Name :
Serial Number :
MAC Address :
Firmware Version :
Port Count : 8
Beacon Status : Unsupported
=====
= Port Information =
=====
Physical Port Number : 1
=====
Port Name : 20-00-00-C0-DD-00-6A-9F
Port state : Offline
Port Type : F_Port
TX Port Type : Electrical - EL
Port Module Type : GBIC
=====
Physical Port Number : 2
=====
Port Name : 20-01-00-C0-DD-00-6A-9F
Port state : Offline
Port Type : Vendor Specific/Reserved Port Type.
TX Port Type : Electrical - EL
Port Module Type : GBIC
=====
= Attached Port =
=====
Target/Initiator : Target
Node Name : 20-00-00-20-37-1A-6B-CF
Port Name : 21-00-00-20-37-1A-6B-CF
Vendor Id : SEAGATE
Product Id : ST136403FC
Product Revision : FF5F
```

```

Product Serial Number : LT06464600001011HGGH

Target/Initiator      : Target
Node Name             : 20-00-00-20-37-11-FF-EF
Port Name             : 21-00-00-20-37-11-FF-EF
Vendor Id             : SEAGATE
Product Id            : ST118273 CLAR18
Product Revision      : SG1D
Product Serial Number : LP60266900001919HQ1K
. . .
=====
Physical Port Number  : 8
=====
Port Name             : 20-07-00-C0-DD-00-6A-9F
Port state            : Offline
Port Type             : Vendor Specific/Reserved Port Type.
TX Port Type          : Short wave laser - SN (850nm)
Port Module Type      : GBIC
=====
= Attached Port      =
=====
Target/Initiator      : ISL
Node Name             : 20-00-00-E0-8B-03-55-7C
Port Name             : 21-00-00-E0-8B-03-55-7C
Vendor Id             : QLogic Corporation
HBA Model             : 2200
HBA Serial Number     : C28437
HBA Alias             :
Port Alias           :
Driver Version         : SCSI Miniport 8.1.5.15 (W2K IP)
Firmware Version      : 2.02.03
Total Number of Devices: 0
Host                  : BRAGI
=====
= InterConnect Element =
=====
Type                  : HBA
World Wide Node Name  : 20-00-00-E0-8B-85-8C-7C
World Wide Port Name  : 21-00-00-E0-8B-85-8C-7C
Vendor Id             : QLogic Corporation
HBA Model             : QLA2462
HBA Serial Number     : FFC0551D59564
HBA Alias             :
Port Alias           :
Driver Version         : STOR Miniport 9.1.0.18 (w32)
Firmware Version      : 4.00.12
Total Number of Devices: 0
Host                  : BRAGI
Number of Port        : 1
  
```

```
Beacon status           : Off
Port Type               : Unknown
Port State              : LinkDown
```

Hit <RETURN> to continue:

Save As Txt File (Command Line Option -b)

1: General Information ▶ 2: Host Topology ▶ 2: Save As Txt File

When you save the host topology to a text file, the system responds with the file name. For example:

```
Topology has been successfully saved to file
BRAGI_topology_06152009_093855.txt
```

Save As XML File

1: General Information ▶ 2: Host Topology ▶ 3: Save As XML File

When you choose to save the host topology to an XML file, the system responds with the **Host Topology Menu** with options to:

- Save as XML Format 1
- Save as XML Format 2

Save As XML File: Format 1 (Command Line Option -x)

1: General Information ▶ 2: Host Topology ▶ 3: Save As XML File ▶ 1: Save As XML File format 1

The system responds with the name of the XML Format 1 file; for example:

```
Topology has been successfully saved to file
BRAGI_topology_06152009_093855.xml
```

Save to XML File: Format 2 (Command Line Option -x2)

1: General Information ▶ 2: Host Topology ▶ 3: Save As XML File ▶ 2: Save As XML File format 2

The system responds with the name of the XML Format 2 file; for example:

```
Topology has been successfully saved to file
BRAGI_topology_06152009_093855.xml
```

Generate Report (Command Line Option -z)

1: General Information ▶ 3: Report

The **Report Menu** provides the option to select an individual port instance from a list of all adapters or to select **All HBAs**.

- Adapter Model
 - Port Number
 - Port WWPN
 - Port Status

Generate Report (Per Adapter Port)

1: General Information ▶ 3: Report ▶ 1 - n: Port Number

If you enter the number for an adapter port instance from the list, the system shows a variety of adapter and system information including:

- SANsurfer FC/CNA HBA CLI header
 - Version and build
- Adapter header
 - Host name
 - OS type
 - OS version
 - SDM API version
 - Adapter Model (Serial Number)
 - Port number
 - Port WWPN
 - Adapter instance
 - Status (online/offline)
- Adapter General Information
 - Host Name
 - Adapter Instance
 - Adapter Model
 - Adapter Description
 - Adapter ID
 - Adapter Alias
 - Adapter Port
 - Port Alias
 - Node Name (WWNN)
 - Port Name (WWPN)
 - Port ID
 - Serial Number
 - Driver Version
 - BIOS Version (Windows and Linux)
 - Firmware Version
 - Flash BIOS Version
 - Flash FCode Version
 - Flash EFI Version
 - Flash Firmware Version

- Actual Connection Mode
- Actual Data Rate
- PortType (Topology)
- Target Count
- PCI Bus Number (Windows and Linux)
- PCI Device Number (Windows and Linux)
- Adapter Status (online, offline)
- Adapter VPD Header (Vital Product Data) Information (for QLA/QLE24xx and QLE81xx only)
 - Adapter Instance
 - Adapter Type
 - Port Number
 - WWPN
 - Port ID
- The actual VPD information:
 - Product Identifier
 - Part Number
 - Serial Number
 - Misc. Information (for example, PCI and PCI-X speeds)
 - Manufacturing ID
 - EFI Driver Version
 - Firmware Version
 - BIOS Version (Windows and Linux)
 - FCode Version (Solaris)
 - Flash Image Version
- Adapter Parameters Settings Header (Command Line Options -c)
 - Adapter Instance
 - Adapter Part Number
 - Port Number
 - WWPN
 - Port ID
- Adapter Parameter Settings
 - Connection Options
 - Data Rate (QLA23xx, QLA24xx, QLE23xx, and QLE24xx adapters)
 - Frame Size
 - Hard Loop ID
 - Loop Reset Delay (in seconds)
 - Enable Host Adapter BIOS
 - Enable Hard Loop ID
 - Enable FC Tape Support
 - Operation Mode

- Interrupt Delay Timer
- Execution Throttle
- Login Retry Count
- Port Down Retry Count
- Enable LIP Full Login
- Link Down Timeout (in seconds)
- Enable Target Reset
- LUNs Per Target
- Enable Receive Out Of Order Frame
- Driver Settings Information Header (Command Line Options -fg)
 - Adapter Instance
 - Adapter Part Number
 - Port Number
 - WWPN
 - Port ID
- Driver Settings (repeats for each adapter instance)
 - Driver Settings - Group: Persistent
 - Persistently bound Plus New targets
 - Persistently bound targets only
 - Driver Settings - Group: Binding
 - Bind by WWPN
 - Bind by Port ID
- Device/LUNs Information Header (Repeats for each adapter instance)
 - Adapter Instance
 - Adapter Part Number
 - Port Number
 - WWPN
 - PORT ID
- Device/LUNs Information (Repeats for each LUN)
 - Path
 - Target
 - Device ID
 - Product Vendor
 - Product ID
 - Product Revision
 - Serial number
 - Node name
 - Port Name
 - Port ID
 - Product Type
 - LUN count(s)

- Status
- LUN N (Repeats for each LUN)
 - Product Vendor
 - Product ID
 - Product revision
 - LUN
 - Size
 - Type
 - WWULN
- Selective LUN Information Header (repeats for each selective LUN)
 - Adapter Instance
 - Adapter Part Number
 - Port Number
 - WWPN
 - Port ID
- Selective LUN Information
 - Device Vendor ID
 - Device Product ID
 - Serial Number
 - Device Port Name
 - Device Port ID
- Boot Device Settings
 - Selectable Boot
 - Primary Boot Port Name
 - Primary Boot Port Address
 - Alternate 1 Boot Port Name
 - Alternate 1 Boot Port Address
 - Alternate 2 Boot Port Name
 - Alternate 2 Boot Port Address
 - Alternate 3 Boot Port Name
 - Alternate 3 Boot Port Address

An example follows:

```
SANsurfer FC/CNA HBA CLI
vx.x.x Build x
Copyright (C) 2003-2009 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters
Build Type: Release
Build Date: 10/25/2009 5:18:58 PM
```

Host Name : BRAGI
OS Type : Microsoft Windows Server 2003 Enterprise
Edition x86
OS Version : Service Pack 1 (Build 3790)
SDM API Version : 1.28.0.50 QLSDM.DLL

HBA Model 2200 (SN C28437):

Port 1 WWPN 21-00-00-E0-8B-03-55-7C (HBA instance 0) Online
Port 2 WWPN 21-01-00-E0-8B-23-55-7C (HBA instance 1) Online

HBA Model QLA2300 (SN D83179):

Port 1 WWPN 21-00-00-E0-8B-05-CB-D8 (HBA instance 2) Online
Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 (HBA instance 3) Online

HBA Model QLA2462 (SN FFC0551D59564):

Port 1 WWPN 21-00-00-E0-8B-85-8C-7C (HBA instance 4) Loop down
Port 2 WWPN 21-01-00-E0-8B-A5-8C-7C (HBA instance 5) Online

Total QLogic HBA(s) : 3

Time and date: Tue Nov 20 16:11:43 2009

HBA General Information

Host Name : BRAGI
HBA Instance : 1
HBA Model : 2200
HBA Description : QLA2200 /02/12/04 QLA2202FS QCP2202
HBA ID : 1-2200
HBA Alias :
HBA Port : 2
Port Alias :
Node Name : 20-00-00-E0-8B-03-55-7C
Port Name : 21-01-00-E0-8B-23-55-7C
Port ID : 11-06-00
Serial Number : C28437
Driver Version : SCSI Miniport 8.1.5.15 (W2K IP)
BIOS Version : 1.83
Firmware Version : 2.02.03
Actual Connection Mode : Point to Point
Actual Data Rate : 1 Gbps
PortType (Topology) : NPort
Target Count : 2
PCI Bus Number : 1
PCI Device Number : 5
HBA Status : Online

HBA VPD Information

Feature is not supported with selected HBA (Instance 1 - 2200)!

HBA Parameters Settings

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

Connection Options	: 3 - Point-to-Point, Otherwise Loop
Frame Size	: 1024
Hard Loop ID	: 0
Loop Reset Delay (seconds)	: 5
Enable Host HBA BIOS	: Disabled
Enable Hard Loop ID	: Disabled
Enable FC Tape Support	: Enabled
Execution Throttle	: 16
Login Retry Count	: 8
Enable LIP Reset	: Disabled
Port Down Retry Count	: 30
Enable LIP Full Login	: Enabled
Link Down Timeout (seconds)	: 0
Enable Target Reset	: Enabled
LUNs Per Target	: 8

Driver Settings Information

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

Driver Settings - Group: Persistent

Present targets that are persistently bound plus any new target(s) : Enable
Present targets that are persistently bound Only : Disable

Driver Settings - Group: Binding

Bind by World Wide Port Name : Enable
Bind by Port ID : Disable

Devices/LUNs Information

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

Path : 0
Target : 0
Device ID : 0x82
Product Vendor : SEAGATE
Product ID : ST136403FC
Product Revision : FF5F
Serial Number : LT06464600001011HGGH
Node Name : 20-00-00-20-37-1A-6B-CF
Port Name : 21-00-00-20-37-1A-6B-CF
Port ID : 11-01-E4
Product Type : Disk
LUN Count(s) : 1
Status : Online

LUN 0

Product Vendor : SEAGATE
Product ID : ST136403FC
Product Revision : FF5F
LUN : 0
Size : 33.92 GB
Type : SBC-2 Direct access block device
(e.g., magnetic disk)
WWULN : 20-00-00-20-37-1A-6B-CF

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

Path : 0
Target : 1
Device ID : 0x83
Product Vendor : SEAGATE
Product ID : ST118273 CLAR18
Product Revision : SG1D
Serial Number : LP60266900001919HQ1K
Node Name : 20-00-00-20-37-11-FF-EF
Port Name : 21-00-00-20-37-11-FF-EF
Port ID : 11-01-E8
Product Type : Disk
LUN Count(s) : 1
Status : Online

LUN 0

```
Product Vendor      : SEAGATE
Product ID         : ST118273 CLAR18
Product Revision   : SG1D
LUN                : 0
Size               : 16.95 GB
Type               : SBC-2 Direct access block device
                   (e.g., magnetic disk)
WWWLN              : 20-00-00-20-37-11-FF-EF
```

Target Persistent Binding Information

No target persistent binding configuration on HBA instance 1 (WWPN
21-01-00-E0-8
B-23-55-7C).

Selective LUNs Information

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

```
Device Vendor ID : SEAGATE
Device Product ID: ST136403FC
Serial Number    : LT06464600001011HGGH
Device Port Name : 21-00-00-20-37-1A-6B-CF
Device Port ID  : 11-01-E4
```

Enable Type	Target/LUN Info	Port Name	LUN ID
-------------	-----------------	-----------	--------

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

```
Device Vendor ID : SEAGATE
Device Product ID: ST118273 CLAR18
Serial Number    : LP60266900001919HQ1K
Device Port Name : 21-00-00-20-37-11-FF-EF
Device Port ID  : 11-01-E8
```

Enable Type	Target/LUN Info	Port Name	LUN ID
-------------	-----------------	-----------	--------

HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00

Boot Device Settings:

Selectable Boot: Disabled

(Primary) Boot Port Name	LUN
----------	------------------	-----

```

-----
00-00-00-00-00-00-00-00-00          0
-----
(Alternate 1) Boot Port Name          LUN
-----
00-00-00-00-00-00-00-00-00          0
-----
(Alternate 2) Boot Port Name          LUN
-----
00-00-00-00-00-00-00-00-00          0
-----
(Alternate 3) Boot Port Name          LUN
-----
00-00-00-00-00-00-00-00-00          0
Finish in 1 second(s)...

```

Hit <RETURN> to continue:

Generate Report (All Adapters) (Command Line Option -z)

1: General Information ▶ 3: Report ▶ 4_N: All HBAs

The system shows the report information for all adapters. See [“Generate Report \(Per Adapter Port\)” on page 3-11](#), in which data repeats for every adapter.

Refresh

1: General Information ▶ 4: Refresh

This selection returns the option to refresh the configuration for the current host.

HBA Information Menu (Command Line Option -i)

2: HBA Information

This command shows the **HBA Information Menu** that includes list of all detected adapters and their ports, as well as the options to view all adapters and to return to the previous menu.

- Adapter Model QLxnnnn
 - 1. Port information
 - Port number
 - WWPN
 - Status
 - [additional port(s) or FCoE engines, as appropriate]

- Additional adapters (as appropriate)
- All adapters

Here is an example of a typical **HBA Information Menu**. In this example, the host includes three adapters with two ports each:

HBA Information Menu

```
HBA Model 2200:
  1: Port 1: WWPN: 21-00-00-E0-8B-03-55-7C Online
  2: Port 2: WWPN: 21-01-00-E0-8B-23-55-7C Online
HBA Model QLA2300:
  3: Port 1: WWPN: 21-00-00-E0-8B-05-CB-D8 Online
  4: Port 2: WWPN: 21-01-00-E0-8B-25-CB-D8 Online
HBA Model QLA2462:
  5: Port 1: WWPN: 21-00-00-E0-8B-85-8C-7C Loop down
  6: Port 2: WWPN: 21-01-00-E0-8B-A5-8C-7C Online
  7: All HBAs
  8: Return to Previous Menu
```

In the following example, the QLE8042 adapter includes an FCoE engine:

HBA Information Menu

```
HBA Model QLE2562
  1: Port 1: WWPN: 21-00-00-1B-32-16-C3-EE Online
  2: Port 2: WWPN: 21-01-00-1B-32-36-C3-EE SFP not installed
HBA Model QLE8042
  3: Port 1: WWPN: 21-00-00-E0-8B-80-5F-0F Link Down
  4: FCoE Engine
  5: Port 2: WWPN: 21-01-00-E0-8B-A0-5F-0F Link Down
HBA Model QLE220
  6: Port 1: WWPN: 21-00-00-E0-8B-91-A4-26 Loop Down
HBA Model QLE2462
  7: Port 1: WWPN: 21-01-00-1B-32-20-27-CE Loop Down
  8: All HBAs
  9: Return to Previous Menu
```

HBA General Information (per Adapter Port)

2: HBA Information ▶ 1 - n: Port Number

When you select one of the adapter ports by number, this option shows the **HBA Information Menu** for that adapter port. The menu includes options for:

- Information
- HBA Alias
- HBA Port Alias
- VPD

If you select a number corresponding to an FCoE engine rather than a port, the following general information is shown:

```
-----
Host Name           : TARGET3
HBA Model           : QLE8042
HBA Description     : QLE8042 Mercury CNA
Firmware Version   : 1.1.0 (Operational)
-----
```

Where `Firmware Version` is the version of FCoE firmware installed on the adapter, along with one of the following descriptions:

- `Operational` indicates you are using an installed version of the application.
- `Golden` indicates you are running from the ROM version.

HBA Information (Command Line Option -i)

2: HBA Information ▶ *n*: Port Number ▶ 1: HBA Information

This option produces the same **HBA Information Menu** available from the **General Information, Report** menu. See [“Generate Report \(Per Adapter Port\)” on page 3-11](#).

To view FCoE information, enter the following command line option:

```
scli -fcoe ( <hba instance> | <hba wwpn> ) --info
```

For the QLx81xx adapters only, additional information includes the ENode MAC Address, which is that adapter’s FC node MAC address.

HBA Alias (Command Line Option -ha)

2: HBA Information ▶ *n*: Port Number ▶ 2: HBA Alias

When you select this option, SANsurfer FC/CNA HBA CLI shows the following information about the adapter:

- Adapter Model
- WWNN
- Serial number
- Alias

With this option you can create, modify, or delete the symbolic name or *alias*, for an adapter.

To create, modify, or delete an adapter alias:

1. From the **Main Menu**, type the number for the **HBA Information** option, and then press ENTER.
2. Type the number for the adapter you want to configure, and then press ENTER.
3. Type the number for the **HBA Alias** option, and then press ENTER.

The **HBA Alias** menu appears:

```
N: HBA Model: QLnnnn
   Port n WWPN: nn-nn-nn-nn-nn-nn-nn-nn
   Serial Number: XXXXnnnnnnnnnn
   Port Alias: (If the adapter already has an alias, it appears; otherwise,
blank.)
```

4. Type the number for the adapter model, and then press ENTER.
5. Create, modify, or delete the adapter alias as follows:
 - a. To create or modify an the adapter alias, type a symbolic name (maximum 100 characters) at the **HBA Alias** prompt, and then press ENTER.
 - b. To delete an existing adapter alias, leave the **HBA Alias** field empty, and then press ENTER.

Here is an example of the **HBA Alias** option.

```
HBA Alias Menu
1: HBA Model: QLA2462
   WWNN: xx-xx-xx-xx-xx-xx-xx-xx
   Serial Number: FFC0519U93213
   HBA Alias: 4G Dual Port HBA
2: Cancel
   Note: 0 to return to the Main Menu
Enter Selection: 1
HBA Alias:
```

HBA Port Alias (Command Line Option -pa)

2: HBA Information ▶ n: Port Number ▶ 3: HBA Port Alias

The **HBA Port Alias** option allows you to create, modify, or delete a symbolic name (Alias) for the specified adapter port.

To create, modify, or delete an adapter port alias:

1. From the **Main Menu**, type the number for the **HBA Information** option, and then press ENTER.
2. Type the number for the **HBA Port** for which you want to change the Port Alias, and then press ENTER.
3. Type the number for the **HBA Port Alias** option, and then press ENTER.
4. The **Port Alias Menu** appears. Here is an example:

```
Port Alias Menu
1: HBA Model: QLA2462
WWNN: xx-xx-xx-xx-xx-xx-xx-xx
Serial Number: FFC0519U93213
Port Alias: 4G Port 1
2: Cancel
Enter 0 to return to the Main Menu
Enter Selection:
```

If you select a port number from the **Port Alias Menu**, the CLI prompts you to enter a Port Alias as follows:

```
Port Alias: _
```

- To keep the current port alias, enter the number for **Cancel**, and then press ENTER.
- To change the port alias, type a new name, and then press ENTER.
- To delete an existing port alias, leave the field blank, and then press ENTER.

HBA VPD Information
(Command Line Option -I and Reserved Word “vpd”)

2: HBA Information ▶ n: Port Number ▶ 4: VPD

With QLA/QLE24xx and QLE81xx adapters *only*, if you select option **4**, the Vital Product Data (VPD) information appears:

- Adapter instance number, model, port number, adapter port name (WWPN), and port ID
 - Product Identifier
 - VPD-R tag (VPD ReadOnly field) (if available)
 - Part Number (adapter model)
 - Serial Number
 - Misc. Information (for example, PCI and PCI-X speeds)
 - Manufacturing ID
 - EFI Driver Version
 - Firmware Version

- BIOS Version (Windows and Linux)
- FCode Version (Solaris)
- Flash Image Version (QLE81xx adapters only)

If the adapter does not support VPD, the following message appears:

```
VPD not supported on current HBA x!
```

HBA Information (All HBAs)

2: HBA Information ▶ *n*: All HBAs

Depending on how many adapters are in the host, the number to select this option varies. When you select that option, the **All HBAs** menu shows the HBA **Information** and **VPD** (Vital Product Data) options.

- Information
- VPD

Information

2: HBA Information ▶ *n*: All HBAs ▶ 3: Information

The Information menu shows the same adapter Information available from the **General Information Menu**. See [“Generate Report \(Per Adapter Port\)” on page 3-11](#).

2: HBA Information ▶ *n*: All HBAs ▶ 3: VPD

The VPD menu shows the same Vital Product Data available from the **HBA Information Menu**. See [“HBA VPD Information \(Command Line Option -l and Reserved Word “vpd\)” on page 3-23](#).

HBA Parameters Menu

3: HBA Parameters

The HBA Parameters command shows the **HBA Parameters Menu**, which is similar to the **HBA Information Menu**. It also includes list of all detected adapters and their ports, as well as the options to view all adapters and to return to the previous menu.

- Adapter Model QL*xnnnn*
 - Port information
 - Port number
 - WWPN
 - Status
 - [additional port(s) or FCoE engines, as appropriate]
- Additional adapters (as appropriate)

■ All adapters

Here is an example of an **HBA Parameters Menu**. In this example, the host includes three adapters with two ports each and one adapter with a single port (see [HBA Parameters \(Per Adapter Port\)](#) and [HBA Parameters \(All HBAs\)](#)):

```
HBA Model QLA2342:
  1. Port 1 WWPN 21-00-00-E0-8B-01-43-9B Online
  2. Port 2 WWPN 21-01-00-E0-8B-21-43-9B Online
HBA Model QLA2300:
  3. Port 1 WWPN 21-00-00-E0-8B-05-CB-D8 Loop down
  4. Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 Online
HBA Model QLA2462:
  5. Port 1 WWPN 21-00-00-E0-8B-1P-9D-P0 Online
  6. Port 2 WWPN 21-01-00-E0-8B-3P-9D-P0 Loop down
HBA Model QLA210:
  7. Port 1 WiIPN 21-00-00-E0-8B-1A-3F-E0 Online
  8. All HBAs
  9. Return to Previous Menu
```

The following example of an **HBA Parameters Menu** includes adapter QLE8042 with an FCoE engine (see [HBA Parameters \(Per FCoE Engine\)](#)):

```
HBA Model QLE2562
  1: Port 1: WWPN: 21-00-00-1B-32-16-C3-EE Online
  2: Port 2: WWPN: 21-01-00-1B-32-36-C3-EE SFP not installed
HBA Model QLE8042
  3: Port 1: WWPN: 21-00-00-E0-8B-80-5F-0F Link Down
  4: FCoE Engine
  5: Port 2: WWPN: 21-01-00-E0-8B-A0-5F-0F Link Down
HBA Model QLE220
  6: Port 1: WWPN: 21-00-00-E0-8B-91-A4-26 Loop Down
HBA Model QLE2462
  7: Port 1: WWPN: 21-01-00-1B-32-20-27-CE Loop Down
  8: All HBAs
  9: Return to Previous Menu
```

Enter the number to select the adapter you want to configure or **All HBAs**.

HBA Parameters (Per Adapter Port)

3: HBA Parameters ▶ n: Port Instance

The **HBA Instance** menu has the following options:

- Display HBA Parameters
- Configure HBA Parameters
- Restore Defaults (4Gb and above adapters only)
- Return to Previous Menu

Display HBA Parameters (Command Line Option -c#)

3: HBA Parameters ▶ n: Port Instance ▶ 1: Display HBA Parameters

When you select this option, the following parameters appear:

- Connection Options
- Data Rate (4Gb and above adapters)
- Frame Size
- Hard Loop ID
- Loop Reset Delay (seconds)
- Enable Host Adapter BIOS
- Enable Hard Loop ID
- Enable FC Tape Support
- Operation Mode
- Interrupt Delay Timer (100 ms)
- Execution Throttle
- Login Retry Count
- Enable LIP Reset
- Port Down Retry Count
- Enable LIP Full Login
- Link Down Timeout (seconds)
- Enable Target Reset
- LUNs Per Target
- Enable Receive Out Of Order Frame

Configure HBA Parameters (Command Line Option -n)

3: HBA Parameters ▶ n: Port Number ▶ 2: Configure HBA Parameters

From the **Configure HBA Parameters** menu, you can configure the following adapter parameters:

- Connection Options
- Data Rate
- Frame Size
- Hard Loop ID
- Loop Reset Delay (seconds)
- Enable Adapter Port BIOS
- Enable Adapter Hard Loop ID
- Enable Fibre Channel Tape Support
- Operation Mode
- Interrupt Delay Timer
- Execution Throttle
- Login Retry Count
- Enable LIP Reset
- Port Down Retry Count

- Enable LIP Full Login (QLA/QLE23xx adapters)
- Link Down Timeout (seconds)
- Enable Target Reset
- LUNs per Target
- Enable Receive Out Of Order Frame
- Commit Changes
- Abort Changes

Table 3-1 lists the configurable adapter parameters alphabetically by name and alias, and provides values and descriptions of each.

Table 3-1. Adapter Parameters Settings (NVRAM)

Parameter Name	Alias	Value	Description
ConnectionOption	CO	0-3	See table note 1.
DataRate	DR	0-4	See table note 2.
EnableBIOS	EB	0, 1	See table notes 3, 4.
EnableExtendedLogging	EL	0, 1	See table notes 3, 4.
EnableFCTape	EF	0, 1	See table note 3.
EnableHardLoopID	HL	0, 1	See table note 3.
EnableLIPFullLogin	FL	0, 1	See table note 3.
EnableLipReset	LP	0, 1	See table note 3.
EnableReceiveOutOfOrderFrame	EO	0, 1	See table notes 3, 5.
EnableTargetReset	TR	0, 1	See table note 3.
ExecutionThrottle	ET	1-65535	
FrameSize	FR	512, 1024, 2048	
HardLoopID	HD	0-125	
InterruptDelayTimer	ID	0-255	
LinkDownTimeOut	LT	0-240	
LoginReTryCount	LR	0-255	
MaximumLUNsPerTarget	ML	0, 8, 16, 32, 64, 128, 256	
OperationMode	OM	0, 5, 6	See table note 6.
PortDownRetryCount	PD	0-255	

Table 3-1. Adapter Parameters Settings (NVRAM) (Continued)

Parameter Name	Alias	Value	Description
ResetDelay	RD	0-255	

Table Notes

1. Connection Options (read-only on QLE8042, QLE/QMI81xx, and SMB adapters):
 - 0 = Loop Only
 - 1 = Point-to-point Only
 - 2 = Loop preferred, otherwise Point-to-Point
 - 3 = Point-to-Point, otherwise Loop (QLA22xx Only)
2. Data Rate (read only on QLE8042 and SMB adapters):
 - 0 = 1 Gbs
 - 1 = 2 Gbs
 - 2 = Auto
 - 3 = 4 Gbs
 - 4 = 8 Gbs
3. Others:
 - 0 = Disable
 - 1 = Enable
4. Option is *not* available on 4Gb or latest adapters.
5. Option *is* available on 4Gb or latest adapters.
6. Operation Modes:
 - 0 = Interrupt for every I/O completion
 - 5 = Interrupt when Interrupt Delay Timer expires.
 - 6 = Interrupt when Interrupt Delay Timer expires or no active I/O.

Connection Options

3: HBA Parameters ▶ 1: Port Number ▶ 2: Configure HBA Parameters ▶ n. Connection Options

From this menu, you can configure the connection options:

- 0—Loop Only
- 1—Point to Point Only
- 2—Loop Preferred, Otherwise Point-to-Point
- 3—Point-to-Point, Otherwise Loop (QLA22xx adapter only)

Type the number for the connection type you want, and then press ENTER.

NOTE:

- Connection options are read-only on QLE8042, QLE/QMI81xx, and SMB adapters.
- QLE/QMI81xx adapters support only the **Point to Point Only** option.

Data Rate

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Data Rate

This option shows the **Data Rate** menu. (Note that data rate configuration is not available for all adapter port instances.) From this menu you can select:

- Auto
- 1 Gbps
- 2 Gbps
- 4 Gbps
- 8 Gbps

NOTE:

- The 1 Gbps data rate is not supported with 8G adapters.
- QLE/QMI81xx adapters support 10Gbps only and cannot be modified.

Type the number for the data rate you want, and then press ENTER.

Frame Size

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Frame Size

This option shows the **Frame Size** menu. From it you can select:

- Frame Size: 512
- Frame Size: 1024
- Frame Size: 2048

Type the number for the frame size you want, and then press ENTER.

Hard Loop ID

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Hard Loop ID

This option prompts you to enter a valid Hard Loop ID from 0 to 125. Type the number you want, and then press ENTER.

Loop Reset Delay

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Loop Reset Delay

This option prompts you to enter a Reset Delay from 0 to 255 seconds. Type the number you want for the loop reset delay, and then press ENTER.

Enable HBA Port BIOS

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable HBA Port BIOS

This option allows you to enable or disable the BIOS boot setting. When this setting is disabled, the ROM BIOS on the adapter is disabled. If you are booting from a FC hard disk attached to the adapter, you must enable this setting. The default is disabled.

Enable HBA Hard Loop ID

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable HBA Hard Loop ID

This choice gives you the option to enable or disable the Hard Loop ID. Type the number you want, and then press ENTER.

Enable Fibre Channel Tape Support

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable Fibre Channel Tape Support

This choice gives you the option to enable or disable Fibre-Channel Tape support. Type the number you want, and then press ENTER.

Operation Mode

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Operation Mode

This option shows the **Operation Mode Menu**. From it you can select:

- Interrupt for every I/O Completion
- Interrupt when Interrupt Delay Timer expires
- Interrupt when Interrupt Delay Timer expires or no active I/O

Type the number for the Operation Mode you want, and then press ENTER.

Interrupt Delay Timer

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Interrupt Delay Timer

This choice gives you the option to set the Interrupt Delay timer to 0 to 255 seconds.

You cannot set the Interrupt Delay timer when the Operation Mode (blue) is set to Interrupt for Every I/O Completion.

Execution Throttle

3: **HBA Parameters** ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Execution throttle

This choice gives you the option to set the Execution Throttle to a value from 1 to 65535. This value specifies the delay in seconds between the execution of each line of code.

Login Retry Count

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Login Retry Count

This choice gives you the option to set the Login Retry Count to a value from 0 to 255.

Enable LIP Reset

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable LIP Reset

This choice gives you the option to Enable or Disable LIP Reset.

Port Down Retry Count

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Port Down Retry Count

This choice gives you the option to set the Port Down Retry Count to a value from 0 to 255.

Enable LIP Full Login

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable LIP Full Login

This choice gives you the option to enable or disable LIP Full Login.

Link Down Timeout

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Link Down Timeout

This choice gives you the option to set the Link Down timeout to a value from 0 to 240.

Enable Target Reset

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Enable Target Reset

This choice gives you the option to Enable or Disable Target Reset.

LUNs per Target

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. LUNs per Target

This option shows the **LUNs per Target** menu. From it you can select:

- 0 LUN per Target
- 8 LUNs per Target
- 16 LUNs per Target
- 32 LUNs per Target
- 64 LUNs per Target
- 128 LUNs per Target
- 256 LUNs per Target

Commit Changes

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n. Commit changes

Choose this option to make the changes permanent.

CAUTION!

There is undo after you commit to making changes to the adapter parameters.

Abort Changes

3: HBA Parameters ▶ N: Port Number ▶ 2: Configure HBA Parameters ▶ n: Abort changes

Choose this option to stop without making any changes.

Restore Defaults

3: HBA Parameters ▶ n: Port Number ▶ 3: Restore Defaults

This option is for 4Gb and 8Gb adapters only. Selecting the **Restore Defaults** option causes the following warning to appear:

Warning:

Please update the HBA parameters with extreme care.

Incorrectly updating the HBA parameters may render the HBA inoperable.

If you currently have boot device information set up in the HBA parameters, updating the HBA parameters from a file may result in changing that information.

If you wish to preserve the boot device information, please either update the file with the correct boot device settings before the HBA parameters update or re-configure the boot settings after the update.

Do you want to proceed with the operation?

1: Yes

2: No

If you enter **1** to proceed, the system returns a message similar to the following:

```
Restoring default settings on HBA instance 5 - QLA2462. Please wait...
```

```
HBA Parameters restore completed. Changes has been saved to HBA instance 5.
```

```
You must reboot in order for the changes to become effective.
```

HBA Parameters (Per FCoE Engine)

3: HBA Parameters ▶ n: FCoE Engine

The **FCoE Parameters** menu appears only for the QLE8042 adapter and has the following options:

- [Display FCoE Parameters](#)
- [Configure FCoE Parameters](#)
- [Return to Previous Menu](#)

Display FCoE Parameters

3: HBA Parameters ▶ n: FCoE Engine ▶ 1: Display FCoE Parameters

When you select this option, the **FCoE Port Selection** menu appears. Select a port number and then press ENTER to show the FCoE parameters for that instance, as shown in the following example:

```
FCoE Port Selection Menu

FCoE Engine (QLE8042)
  Desc: QLE8042 Mercury CNA
1: Port 0
2: Port 1
3: Return to Previous Menu

      Note: 0 to return to Main Menu
      Enter Selection: 1

-----
FCoE Parameters Port 0
-----
Host Name                : TARGET3
HBA Instance             : 3
HBA Model                : QLE8042
HBA Description          : QLE8042 Mercury CNA
Port Type                : Access
Pause Type               : Priority Flow Control
Priority Pause Mask      : 0[ ] 1[ ] 2[ ] 3[x] 4[ ] 5[ ]
                        6[ ] 7[ ]
FCoE Config              : T11 Rev 0 Frame Format
FCoE COS                 : 3
```

Configure FCoE Parameters

3: HBA Parameters ▶ n: FCoE Engine ▶ 2: Configure FCoE Parameters

When you select this option, the **FCoE Port Selection** menu appears. Select a port number and then press ENTER to list the configurable FCoE parameters for that instance. For example:

FCoE Parameters Menu

FCoE Engine (QLE8042) Port 0
Desc: QLE8042 Mercury CNA

- 1: Port Type
- 2: Pause Type
- 3: FCoE COS
- 4: Save Changes
- 5: Return to Previous Menu

If you make any changes to the configuration of the FCoE engine, select the **Save Changes** option before you leave the FCoE Parameters menu.

Port Type

3: HBA Parameters ▶ N: FCoE Engine ▶ 2: Configure FCoE Parameters ▶ n. Port Type

This option shows the **Port Type** menu. From this menu you can select one of the following port types; the current type is indicated:

- Access (default; does not carry the VLAN tag)
- Trunk (carries the VLAN tag)

Type the number for the port type you want, and then press ENTER. Note that the Port Type must be set to **Trunk** to configure Pause Type and FCoE CoS (see the following sections).

When the network (Ethernet) port is configured as a trunk port, packets are tagged. When the port is configured as an access port, packets are untagged and do not contain a VLAN tag.

Pause Type

3: HBA Parameters ▶ n: FCoE Engine ▶ 2: Configure FCoE Parameters ▶ n. Pause Type

This option shows the **Pause Type** menu. Pause types include Standard Pause and Priority Flow Control (per-priority pause). Pause is a frame that controls the flow between transmitter and receiver if the transmitter sends data at a higher rate than the receiver. In that situation, the receiver sends a PAUSE frame to the transmitter and the transmitter suspends transmission for the specified time.

From the **Pause Type** menu you can select one of the following pause types; the current type is indicated:

- Standard Pause (default)
- Priority Flow Control

Type the number for the pause type you want, and then press ENTER.

Standard Pause applies to all the frames. By default, Standard Pause is enabled on the server-facing Ethernet ports, as well as on the network-facing Ethernet ports. This setting affects the connection only when connected to a peer that is not configured with data center bridging capability exchange protocol (DCBX).

Priority Flow Control enables you to manage pauses in traffic according to assigned priorities to class of service (CoS) frames; that is, on per-flow basis. CoS is a way of managing traffic in a network by grouping similar types of traffic (for example, e-mail, streaming video, voice, large document file transfer) together and treating each type as a class with its own level of service priority.

Priority Flow Control applies to servers with a single adapter interface, which could carry traffic for LAN, SAN, and IPC. In this case, SAN traffic is marked with a specific CoS to identify it as a distinct flow among other flows (LAN, IPC), and pause can be applied to this specific CoS to assure lossless SAN frames. When connected to a DCBX-enabled peer, the pause type is automatically set with priority flow control (per-priority pause) when the peer sends a priority flow control time length value, regardless of this parameter setting.

The pause type will be reconfigured based on the setting of this parameter whenever the following occurs:

- The network link goes down.
- The system is reset.

DCBX: When connected to a *data center bridging exchange protocol* (DCBX) enabled peer, the pause type is automatically configured to be Priority Flow Control (per-priority pause) when the peer sends a Priority Flow Control type-length-value (TLV), this parameter is configured on the adapter. When not connected to a DCBX-enabled peer, or before receipt of a Priority Flow Control TLV, on setting of this parameter on the adapter.

FCoE COS

3: HBA Parameters ▶ N: FCoE Engine ▶ 2: Configure FCoE Parameters ▶ n. FCoE COS

This option prompts you to configure a persistent value for the FCoE class of service (CoS) for priority encoded FCoE packets. Type a numeric value in the range of 0 through 7, and then press ENTER. The current value is indicated in brackets; the default value is 3.

FCoE packets must carry a CoS value and must be tagged, meaning that the port must be configured as a trunk port. This setting affects the connection when connected to a peer with DCBX protocol and a matching CoS setting. If the DCBX peer CoS setting does not match, the connection is not affected by this setting. When not connected to a DCBX-enabled peer, or before receiving an FCoE CoS value, the FCoE CoS type length value is based on this parameter setting. In this case, the FCoE packets will only be priority encoded if the network port is configured as a trunk port (see [“Port Type” on page 3-34](#)).

When connected to a DCBX-enabled peer, the FCoE CoS value is automatically set to value specified in the FCoE CoS type length value, regardless of this parameter setting. When connected to a switch that supports DCBX (for example, the Cisco Nexus™ 5020 switch), the port type is implicitly changed by FCoE engine firmware to be a trunk port, regardless of the persistent settings.

The priority pause mask is a bitmap of CoS values for which pause is being enabled. SANsurfer FC/CNA HBA CLI allows you to select or clear boxes from 0 to 7, representing the different CoS values for which pause is being enabled (or disabled). Because FCoE uses CoS 3 and because FC is lossless, you must enable pause for CoS 3.

If you need to change the FCoE CoS value, you should also enable pause for the new CoS value.

These values need not be modified when talking to a switch that supports DCBX (for example, the Cisco Nexus 5020 switch). The values are valid only when talking to a switch that does not support DCBX.

HBA Parameters (All HBAs)

3: HBA Parameters ▶ n: All HBAs

When you select this option, the parameters listed in “[HBA Parameters \(Per Adapter Port\)](#)” on page 3-25 appear for every adapter.

Target/LUN List Menu (Command Line Options -t and -l)

4: Target/LUN List

This option shows the main **Target List Menu**, which includes a list of all adapters and port instances detected on the host. You have the option to select:

- Each adapter port individually
- All adapters

Here is an example of the **Target List Menu**:

```
HBA Model QLA2462
 1: Port    1: WWPN: 21-00-00-E0-8B-1F-9D-F0 Online
 2: Port    2: WWPN: 21-01-00-E0-8B-3F-9D-F0 Online
HBA Model QLE2562
 3: Port    1: WWPN: 21-00-00-1B-32-1B-4E-4C Online
 4: Port    2: WWPN: 21-01-00-1B-32-3B-4E-4C Online
 5: All HBAs
 6: Return to Previous Menu
```

[Table 3-2](#) lists the variables and their descriptions for target/LUN information.

Table 3-2. Target/LUN Information

Variable	Description
<address>	IP address.
<hba instance>	Adapter number (adapter instance number).
<hba wwpn>	Adapter world wide port name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.
<lun id>	Logical unit number (0–255).
<target id>	Target ID.
<target portid>	Target world wide port name, format xx-xx-xx or xxxxxx.
<target wwnn>	Target world wide node name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.
<target wwpn>	Target world wide port name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.

Target/LUN List (Per Adapter Port)

4: Target/LUN List ▶ 1 - n Target List Menu - Port n

When you select an HBA port instance from the **Target/LUN List**, a list of LUNs (disks) attached to that port instance appears. Technical information for each LUN appears, including:

- Vendor
- Product ID
- Product Revision
- Serial Number
- Node Name
- Port Name
- Port ID

Here is an example of a typical menu item:

```

1:  Disk(Online)
    Vendor           :  SEAGATE
    Product ID      :  ST318453FC
    Product Rev     :  0006
    Serial Number   :  3JA9TN7600007517T6P1
    Node Name       :  20-00-00-11-C6-2D-5B-F9
    Port Name       :  22-00-00-11-C6-2D-5B-F9
    Port ID        :  02-0A-DC

2:  Disk (Online)

```

```
Vendor           : SEAGATE
Product ID      : ST318453FC
Product Rev     : 0006
Serial Number   : 3JA9TN7600007523T6P1
Node Name       : 20-00-00-11-C6-2D-5B-FA
Portname        : 22-00-00-11-C6-2D-5B-FA
Port ID         : 02-0A-DE
```

And so on.

You can select any LUN and view additional information by entering its number at the prompt and then pressing ENTER.

Per Target/LUN

4: Target/LUN List ▶ 1 - n Target List Menu Port n ▶ 1 - n: Target

When you enter the number for an individual target, the **LUN List Menu** for that target appears. It includes a list of all LUNs on that target and the following information for each LUN:

- LUN Number
 - Vendor
 - Product ID
 - Port Name
 - Port ID
- All LUN(s)

Here is an example of the **LUN List Menu**:

```
1: LUN 0
   Vendor           : SEAGATE
   Product ID      : ST318453FC
   Port Name       : 22-00-00-11-C6-2D-5B-F9
   Port ID         : 02-0A-DC
```

And so on.

n: All LUN(s)
n: Return to Previous Menu

Per Target/All LUNs

4: Target/LUN List ▶ 1 - n Target List Menu Port n ▶ 1 - n: Target ▶ 1 - n: LUN (Number)

When you select a specific LUN from the LUN list, information for the selected LUN appears, as well as options to view additional information and access persistent names. For example:

```
HBA Instance 2 (QLE2462 Port 1) : Online
WWPN: 21-00-00-E0-8B-86-E5-D0
```

Desc: QLE2462 PCI Express to 4Gb FC Dual Channel

- 1: Information
- 2: Persistent Names
- 3: Return to Previous Menu

Information

4: Target/LUN List ▶ 1 - n Target List Menu Port n ▶ 1 - n: Target ▶ 1 - n: LUN (Number) ▶ 1: Information

When you select **Information** from the previous menu, the following information for that LUN appears:

- Product Vendor
- Product ID
- Product Revision
- LUN
- Size
- Type
- WWULN
- OS LUN Name (on Solaris and Linux)

For example:

```
Product Vendor           : HP
Product ID              : MSA VOLUME
Product Revision        : 6.68
LUN                     : 8
Size                    : 4.88 GB
Type                    : SBC-2 Direct access block device
                        (e.g., magnetic disk)
WWULN                   :
60-05-08-B3-00-90-8D-B0-AF-57-A1-B0-88-40-00-20
OS LUN Name             : /dev/sdh;
```

Persistent Names Menu (Command Line Option -pl)

4: Target/LUN List ▶ 1 - n Target List Menu Port n ▶ 1 - n: Target ▶ 1 - n: LUN (Number) ▶ 2: Persistent Names

NOTE:

The **Persistent Names Menu** is available only on Linux Red Hat 5 (2.6 kernel) systems; it is not available for Novell SLES.

In large SAN configurations, the *udev* mechanism eases storage device management by enabling intuitive device file names to help manage LUNs.

When you select **Persistent Names** from the previous menu, the following **Persistent Names Menu** for that LUN appears. This menu provides options to view, add, and delete persistent names for the LUN. For example:

Persistent Names Menu

```
HBA Instance 2 (QLE2462 Port 1) : Online
WWPN: 21-00-00-E0-8B-86-E5-D0
Desc: QLE2462 PCI Express to 4Gb FC Dual Channel

1: Info
2: Add
3: Delete
4: Return to Previous Menu
```

1. Info To view information about the selected LUN's persistent binding, select **1** on the **Persistent Names Menu**. The following shows an example of the information that appears:

```
Product Vendor           : HP
Product ID               : MSA VOLUME
Product Revision         : 6.68
LUN                      : 8
WWULN                   : 60-05-08-B3-00-90-8D-B0-AF-57-A1-B0-88-40-00-20
OS LUN Name              : /dev/sdh;
Persistent LUN Name      :
```

2. Add To add persistent binding for the LUN, select **2** on the **Persistent Names Menu**. The following device information is shown and you are prompted to enter a new persistent device name. For example:

```
-----
Product Vendor           : HP
Product ID               : MSA VOLUME
Product Revision         : 6.68
LUN                      : 8
WWULN                   : 60-05-08-B3-00-90-8D-B0-AF-57-A1-B0-88-40-00-20
OS LUN Name              : /dev/sdh;
-----
Persistent LUN Name      :
Enter new persistent device names: MSA_UDEV
New persistent device name has been added to LUN 8 (TID 4).
Please reboot or run 'udevtrigger' command for the changes to take effect
```

Hit <RETURN> to continue:

For the persistent device name change to take effect and show in the **Persistent Names Info** output, you must either reboot the system or run the `-udevtrigger` command.

3. Delete To delete persistent binding for the LUN, select **3** on the **Persistent Names Menu**. SANsurfer FC/CNA HBA CLI lists the existing LUN persistent binding names, prompts you to select one for deletion, and then immediately deletes the persistent LUN name. For example:

```
1: test1
2: Return to Previous Menu
```

```
Note: 0 to return to Main Menu
Enter Selection: 1
```

```
-----
Product Vendor           : SANBlaze
Product ID               : VLUN FC RAMDisk
Product Revision         : 3.1.
LUN                      : 28
WWULN                   : 60-00-62-B0-00-0F-53-50-00-00-00-00-00-00-1C
OS LUN Name              : /dev/sdbh;/dev/sg59;
-----
```

```
Persistent LUN Name      : test1
Persistent device name of LUN 28 (TID 1) has been deleted.
Please reboot or run 'udevtrigger' command for the changes to take effect
```

```
Hit <RETURN> to continue:
```

CAUTION!

Do not delete a LUN's persistent device name if there is any active I/O on the LUN.

For the persistent device name deletion to take effect, you must either reboot the system or run the `-udevtrigger` command.

All Targets

4: Target/LUN List ▶ 1 - n Target List Menu Port n ▶ 1 - n: Target ▶ m: All LUNs

When you select a specific LUN from the LUN list, the following information for all LUNs appears:

- Product Vendor
- Product ID
- Product Revision
- LUN
- Size
- Type
- WWULN
- OS LUN Name (on Solaris and Linux)

(Repeats for each LUN)

Here is an example of the LUN information.

```
Product Vendor      : SEAGATE
Product ID          : ST318453FC
Product Revision    : 0006
LUN                 : 0
Size                : SBC-2 Direct Access block device
                   : (e.g. magnetic disk)
WWULN               : 20-00-00-11-C6-2D-5A-3F
```

Hit <Return> to continue:

And so on. Repeats for each LUN.

Target/LUN List (All Adapters)

4: Target/LUN List ▶ N: All HBAs

This choice shows the **Target List Menu** for **All HBAs**:

- Individual Target
- Individual LUN
- All Target(s)
- All LUN(s)

Individual Target

4: Target/LUN List ▶ N: All HBAs ▶ 1: Individual Target

This choice shows the **Target List Menu** for **All HBAs**. Information for each individual target includes:

- (Target type) on QLAxxxx (adapter instance *n*)
 - Vendor
 - Product ID
 - Product Revision
 - Serial Number
 - Port Name
 - Port ID
- Repeats for each target

Here is an example of the **Target List Menu** for **All HBAs**:

```
1: Disk 0 on QLA2462 (HBA Instance 0)
Vendor      : SEAGATE
Product ID  : ST336607FC
Product Rev : 0006
Serial Number : 3JA9TN7600007517T6P1
Port Name   : 22-00-00-11-C6-2D-5B-F9
Port ID     : 02-0A-DC
```

```

1: Disk 1 on QLA2462 (HBA Instance 0)
  Vendor                : SEAGATE
  Product ID            : ST336607FC
  Product Rev           : 0006
  Serial Number         : 3JA9TN7600007517FK7W
  Port Name              : 22-00-00-11-C6-2D-5A-B8
  Port ID                : 02-0A-EO
  
```

And so on.

Individual LUN

4: Target/LUN List ▶ n: Port Number ▶ 1: Individual LUN ▶ 1 - n: Target

When you select an individual target, the following target information appears:

- Path
- Target
- Device ID
- Product Vendor
- Product ID
- Product Revision
- Node Name
- Port Name
- Product Type
- LUN Count(s)
- Status

Here is an example of the Target information:

```

Path                : 0
Target              : 3
Device ID           : 0x87
Product Vendor      : SEAGATE
Product ID          : ST336607FC
Product Revision    : 0006
Serial Number       : 3JA9TN7600007517T6P1
Node Name           : 20-00-00-11-C6-2D-5B-F9
Port Name           : 22-00-00-11-C6-2D-5B-F9
Port ID             : 02-0A-DC
Product Type        : Disk
LUN Count(s)       : 1
Status              : Online
  
```

All Targets

4: Target/LUN List ▶ n: Port Number ▶ 1: Individual LUNs

When you select this option, SANsurfer FC/CNA HBA CLI shows the **LUN List Menu** containing:

- Product Vendor
- Product ID
- Port Name
- Port ID
- LUN ID
- OS LUN Name (on Solaris and Linux)

NOTE:

- In the Solaris OS, the QLA adapter driver supports a maximum of 256 LUNs.
- In the Solaris OS, the QLC adapter driver supports a maximum of 16K LUNs.

Here is an example of the LUN information:

```
Product Vendor      : SEAGATE
Product ID          : ST336607FC
Product Revision    : 0006
LUN                 : 0
Size                : 34.18 GB
Type                : SBC-2 Direct access block device
                    (e.g., magnetic disk)
WWULN               : 20-00-00-0C-50-68-1E-9A
```

Hit (RETURN) to continue:

All Target(s)

4: Target/LUN List ▶ n: Port Number ▶ 3: All Target(s)

This choice shows information for all targets connected to the system, including:

- Path
- Target
- Device ID
- Product Vendor
- Product ID
- Product Revision
- Serial Number
- Node Name
- Port Name
- Port ID
- Product Type
- LUN Count(s)
- Status

Here is an example of the **All Targets** option.

Note: 0 to return to Main Menu
Enter Selection: 3

```
-----
HBA Instance 5: QLA2300 Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 PortID
11-05-EF
-----
```

```
-----
Path                : 0
Target              : 0
Device ID           : 0x85
Product Vendor      : SEAGATE
Product ID          : ST136403FC
Product Revision    : FF5F
Serial Number       : LT06464600001011HGGH
Node Name           : 20-00-00-20-37-1A-6B-CF
Port Name           : 21-00-00-20-37-1A-6B-CF
Port ID             : 11-01-E4
Product Type        : Disk
LUN Count(s)       : 1
Status              : Online
-----
```

And so forth.

All LUN(s)

4: Target/LUN List ▶ n: Port Number ▶ 3: All LUN(s)

When you select this option, SANsurfer FC/CNA HBA CLI shows the following information about all LUNs for all adapter port instances:

- Product Vendor
- Product ID
- Product Revision
- LUN
- Size (in GB or MB)
- Type (for example, magnetic disk)
- WWULN (world-wide unique LUN name)
- OS LUN Name (on Solaris and Linux)

NOTE:

- In the Solaris OS, the QLA adapter driver supports a maximum of 256 LUNs.
- In the Solaris OS, the QLC adapter driver supports a maximum of 16K LUNs.

Here is an example of the All LUNs information:

```
-----  
HBA Instance 0: QLA2462 Port 1 WWPN 21-00-00-E0-8B-1F-9D-F0 Port  
ID 02-00-00  
-----
```

```
Target WWPN (22-00-00-04-CF-9C-24-CA)  
-----
```

```
Product Vendor      : SEAGATE  
Product ID          : ST318203FC  
Product Revision    : 0006  
LUN                 : 0  
Size                : 34.18 GB  
Type                : SBC-2 Direct access block device  
                    (e.g., magnetic disk)  
WWULN              : 20-00-00-20-37-38-73-BC  
                    Press <Enter> to continue:
```

Target information repeats for each target.

Here is an example of the All LUNs information for Linux:

```
Product Vendor      : HITACHI  
Product ID          : HUS103073FLF210  
Product Revision    : FA16  
LUN                 : 0  
Size                : 68.37 GB  
Type                : SBC-2 Direct access block device  
                    (e.g., magnetic disk)  
WWULN              : 20-00-00-00-87-72-85-B2  
OS LUN Name        : /dev/sda
```

Here is an example of the All LUNs information on Solaris with a QLA driver:

```
Product Vendor      : SUN  
Product ID          : StorEdge 3510  
Product Revision    : 415F  
LUN                 : 15  
Size                : 4.88 GB  
Type                : SBC-2 Direct access block device  
                    (e.g., magnetic disk)  
WWULN              : 60-0C-0F-F0-00-00-00-00-09-8B-68-37-E0-B1-  
9B-04  
OS LUN Name        : /dev/rdisk/c1t0d0s15
```

Target Link Speed or iiDMA Settings Menu (Command Line Option -q)

5: Target Link Speed or 5: iiDMA Settings

NOTE:

Depending on your system, the SANsurfer FC/CNA HBA CLI **Main Menu** may show either the **Target Link Speed** option or the **iiDMA Settings** option.

This option shows the **Target Link Speed Menu** or **iiDMA Menu** that includes a list of all adapters and port instances detected, including the options to select:

- Each adapter port instance, individually
- All adapters

Here is an example of the **Target Link Speed Menu** or **iiDMA Settings Menu**:

```
HBA Model QLA2342:
  1. Port 1 WWPN 21-00-00-E0-8B-01-43-9B Online
  2. Port 2 WWPN 21-01-00-E0-8B-21-43-9B Online
HBA Model QLA2300:
  3. Port 1 WWPN 21-00-00-E0-8B-05-CB-D8 Loop down
  4. Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 Online
HBA Model QLA2462:
  5. Port 1 WWPN 21-00-00-E0-8B-1P-9D-P0 Online
  6. Port 2 WWPN 21-01-00-E0-8B-3P-9D-P0 Loop down
HBA Model QLA210:
  7. Port 1 WiIPN 21-00-00-E0-8B-1A-3F-E0 Online
  8. All HBAs
  9. Return to Previous Menu
```

Table 3-3 lists the target link speed settings and descriptions.

Table 3-3. Target Link Speed Settings

Target Link Speed Settings	Description
<address>	IP address.
<hba instance>	Adapter number (adapter instance number).
<hba wwnn>	Adapter world wide port name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.
<lun id>	Logical unit number (0–255).
<speed>	Target Link Speed (iiDMA) - (1, 2, or 4 Gbs).

Table 3-3. Target Link Speed Settings (Continued)

Target Link Speed Settings	Description
<target id>	Target ID.
<target portid>	Target world wide port name, format xx-xx-xx or xxxxxx.
<target wwnn>	Target World Wide Node Name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.
<target wwpn>	Target world wide port name, format xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxx.
-targets -t	All targets.

Configuring the iiDMA Settings

Use the intelligent interleaved direct memory access (iiDMA) menu to select the intelligent interleave factor settings per adapter type and device.

NOTE:

The iiDMA options are not available for the QLE8042 adapter with FCoE engine.

To configure iiDMA settings:

1. From the SANsurfer FC/CNA HBA CLI main menu, select **iiDMA Settings**.
2. Select the adapter that you want to apply the iiDMA update.
3. Select one of the following options:
 - Basic Configuration** if you want to apply the iiDMA update to all devices attached to this adapter.
 - Advanced Configuration** if you want to select an apply different iiDMA update to each device attached to this adapter.
4. To use **Basic Configuration**:
 - a. Select the adapter.
 - b. Select the iiDMA from the intelligent interleave factor speed list (**1 Gbps, 2 Gbps, 4 Gbps, or 8 Gbps**) to all attached devices.
 - c. Choose one of the following options:
 - To apply the new settings to all attached devices, select **Yes**. The following is returned:

```
iiDMA settings have been saved to selected target(s)  
on HBA instance n.
```

- To exit **iiDMA Settings** without making any changes, select **No**.
- 5. To use **Advanced Configuration**:
 - a. Select the adapter.
 - b. From the device list, select a device (disk) that is currently attached to this adapter.
 - c. From the iiDMA speed list, select the iiDMA (**1 Gbps**, **2 Gbps**, **4 Gbps**, or **8 Gbps**) that you want to set for this device.
 - d. Repeat the previous step for additional devices.
 - e. Choose one of the following options:
 - To proceed, select **Select the Apply changes to selected target(s)**. The following is returned:

```
The iiDMA settings have been saved to selected  
target(s) .
```
 - To exit without making any changes, select **Return to Previous Menu**.

HBA Port Instance

5: Target Link Speed ▶ Target Link Speed Menu for HBA instance 1-n

This option shows the **Target Link Speed Menu** or **iiDMA Settings Menu** for a specific port instance. This menu looks like the Target List Menu shown in [“Per Target/LUN” on page 3-38](#). It includes a list of all targets attached to the selected port instance and specific information about each target, including:

- Target Type (for example, Disk)
 - Product Vendor
 - Product ID
 - Product Revision
 - Serial Number
 - Port Name
 - Port ID
 - Max Target Link Rate
- Next Target Type (for example, Disk)
- Apply Changes to Selected Targets

Here is an example of the **Target Link Speed Menu** for all adapter instances:

```
Target Link Speed Menu
```

```

HBA Instance 0 (QLA2463 Port 1) : Online
Desc: QLA2462 PCI-X 2.0 to 4Gb PC Dual Channel
1: Disk
  Vendor           : SEAGATE
  Product ID       : ST318453FC
  Product Rev      : DF12
  Serial Number    : 3EV0NYSG000072496DYD
  Port Name        : 22-00-00-04-CF-9C-24-CA
  Port ID          : 02-00-E1
  Max Target Link Rate : 4 Gbps
2: Disk
  Vendor           : SEAGATE
  Product ID       : ST318453FC
  Product Rev      : 00006
  Serial Number    : 3JA9AYSG000072496FBJ
  Port Name        : 22-00-00-0C-50-68-1E-9A
  Port ID          : 11-0A-E2
  Max Target Link Rate : 4 Gbps
m: Disk
  Vendor           : SEAGATE
  Product ID       : ST318453FC
  Product Rev      : 0006
  Serial Number    : 3JA9TQE0000724966ZK
  Port Name        : 22-00-00-11-C6-2D-5A-3F
  Port ID          : 02-0A-E4
  Max Target Link Rate : 4 Gbps
n: Apply Changes to Selected Target(s)

```

HBA Port

5: iiDMA Settings ▶ 1 - n: HBA Port n

If you select a port for adapter model QLA2462, the following information appears:

iiDMA Menu

```

HBA Instance 3 (QLA2462 Port 2) : Online
WWPN: 21-01-00-E0-8B-A5-8C-7C
Desc: QLA2462 PCI-X 2.0 to 4Gb FC Dual Channel

1: Disk
  Vendor           : SEAGATE
  Product ID       : ST136403FC
  Product Rev      : FF5F
  Serial Number    : LT06464600001011HGGH
  Port Name        : 21-00-00-20-37-1A-6B-CF
  Port ID          : 11-01-E4
  Intelligent Interleave Factor: 4 Gbps

2: Disk

```

```
Vendor                : SEAGATE
Product ID            : ST118273 CLAR18
Product Rev           : SG1D
Serial Number         : LP60266900001919HQ1K
Port Name             : 21-00-00-20-37-11-FF-EF
Port ID               : 11-01-E8
Intelligent Interleave Factor: 4 Gbps
```

3: Apply Changes to selected Target(s)

4: Return to Previous Menu

Note: 0 to return to Main Menu
Enter Selection:

Advanced Configuration

5: Target Link Speed ▶ n: Port Number ▶ 2: Advanced Configuration

When you select a port instance from the **Target Link Menu**, the **Target Link Speed Menu (Advanced)** appears. It includes the link speed options. The options vary according to the adapter in use. For example:

- 1 Gbps
- 2 Gbps
- 4Gbps
- 8 Gbps

Type the number for the link speed you want for the adapter port instance selected, and then press ENTER.

The same menu reappears, allowing you to set the link speed for every port instance you want.

When you have set the speed for all the links you want, type the number for **Apply changes to Selected Target(s)**, and then press ENTER.

Target Link Speed: All HBAs

5: Target Link Speed ▶ 2: All HBAs

When you select this option, the **Target Link Speed Menu for All HBAs** appears. It offers two options:

- Basic configuration
- Advanced Configuration

Target Link Speed: All HBAs, Basic Configuration

5: Target Link Speed ▶ 2: All HBAs ▶ 1: Basic Configuration

When you select this option, the **Target Link Speed Menu (Basic) for All HBAs** appears. It offers the link speed options. The options vary according to the adapter in use. For example:

- 1 Gbps
- 2 Gbps
- 4Gbps
- 8 Gbps

Respond **Yes** to the **Proceed?** prompt to apply the change to all port instances on all adapters.

Target Link Speed: All HBAs, Advanced Configuration

5: Target Link Speed ▶ 2: All HBAs ▶ 1: Advanced Configuration

This option shows the **Target Link Speed Menu (Advanced) for All HBAs**. This menu lists all targets on all adapters and shows information about each target:

- Target Type, Target number, Adapter model, and instance
 - Product vendor
 - Product ID
 - Product revision
 - Serial Number
 - Port Name
 - Port ID
 - Max Target Link Rate
- Next Target Type, Target number, Adapter model and instance
- Apply Changes to Selected Targets

Here is an example of the **Target Link Speed Menu (Advanced) for All HBAs**:

```
Target Link Speed Menu (Advanced)
All HBAs

1:  Disk 0 on QLA2462 (HBA Instance 0)
    Vendor                : SEAGATE
    Product ID            : ST318453FC
    Product Rev           : DF12
    Serial Number         : 3EV0NYSG000072496DYD
    Port Name             : 22-00-00-04-CF-9C-24-CA
    Port ID               : 02-00-E1
    Max Target Link Rate  : 4 Gbps

2:  Disk 1 on QLA2462 (HBA Instance 0)
```



```

Vendor                : SEAGATE
Product ID            : ST318453FC
Product Rev           : 00006
Serial Number         : 3JA9AYSG000072496FBJ
Port Name             : 22-00-00-0C-50-68-1E-9A
Port ID               : 11-0A-E2
Max Target Link Rate  : 4 Gbps
...
m: Disk 2 on QLA2462 (HBA Instance 1)
Vendor                : SEAGATE
Product ID            : ST318453FC
Product Rev           : 00006
Serial Number         : 3AJA9ALAG0000724966ZK
Port Name             : 22-00-00-11-C6-2D-5A-3F
Port ID               : 11-0A-E2
Max Target Link Rate  : 4 Gbps
...
n: Disk
Vendor                : SEAGATE
Product ID            : ST318453FC
Product Rev           : 0006
Serial Number         : 3JA9TQE0000724966ZK
Port Name             : 22-00-00-11-C6-2D-5A-3F
Port ID               : 02-0A-E4
Max Target Link Rate  : 4 Gbps
p: Apply Changes to Selected Target(s)

```

Target Link Speed: All HBAs, Advanced Configuration

5: Target Link Speed ▶ 2: All HBAs ▶ 1: Advanced Configuration ▶ 1 - n: Link speed

When you select an adapter to set its link speed, the **Target Link Speed Menu (Advanced)** menu for a specific adapter instance appears. It shows the link speed options you can choose from. The options vary according to the adapter in use. For example:

- 1 Gbps
- 2 Gbps
- 4 Gbps
- 8 Gbps

When you set a Link Speed option for a specific (target) device the **Target Link Speed Menu (Advanced) for All HBAs** reappears, allowing you to set the link speed for another adapter instance.

When you have set the link speed for all the instances you want to, type the number for **Apply changes to Selected Target(s)**, and then press ENTER.

The system returns a message indicating the changes have been saved. For example:

New iiDMA setting has been saved to selected target(s) on HBA instance 0.

iiDMA Settings: Disk

5: iiDMA Settings ▶ 1 - n: HBA Port n ▶ n: Disk n

When you select a specific disk on the adapter port, the following options are available on the **iiDMA Menu (Advanced)**:

- 1 Gps
- 2 Gps
- 4 Gps

iiDMA: All HBAs

5: iiDMA Settings ▶ n: All HBAs

When you select **All HBAs** to configure, the options for **Basic Configuration** and **Advance Configuration** appear on the menu. See [“Configuring the iiDMA Settings” on page 3-48](#).

Target Persistent Bindings Menu (Command Line Option -p)

6: Target Persistent Bindings

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Target Persistent Binding** menu listing standard adapter port instances (see [“HBA Port Instance” on page 3-49](#)), where you can select an individual adapter port or **All HBAs**.

The following sections describe how to view, set, and delete the adapter’s target persistent binding in interactive and non-interactive modes.

NOTE:

- In a Solaris OS, QLA/QLE24xx and QEM2462 adapters with a QLA driver allow up to 2048 targets with target IDs in the range of 0–2047.
- In a Solaris OS, QLA/QLE23xx adapters with a QLA driver allow up to 256 targets with target IDs in the range of 0–2047.
- Under Solaris, this feature is disabled if you are using the driver from the OS installation CDs (QLC driver). Under Linux, this feature is disabled if you are using the IOCTL or sysfs (inbox) driver.

Whether you select a specific adapter port instance or **All HBAs**, the **Target Persistent Bindings Menu** appears.

Target Persistent Bindings (Per Adapter Port) (Command Line Option -p)

6: Target Persistent Bindings ▶ 1 - n: Target Persistent Bindings HBA Instance n

When you select an adapter instance to view or change its binding, this menu the **Target Persistent Bindings Menu** for a specific adapter instance appears. It shows the binding options you can choose from:

- Display Configuration
- Bind Target(s)
- Unbind Target(s)

Type the number for the option you want, and then press ENTER.

Display Target Persistent Binding (Command Line Option -p)

6: Target Persistent Binding ▶ 1 - n: Target Persistent Binding HBA Instance n ▶ 1: Display Configuration

When you select the **Display Configuration** option, the following information appears. (Or, the message, *No target persistent binding configuration on HBA instance n* appears instead):

- Bind status (**Yes** or **No**)
- Device type (**Disk**, for example)
- Target information (model name and number, for example)
- Port Name
- Port ID
- Target ID

Target Persistent Bindings: Bind Target(s) (Command Line Option -p)

6: Target Persistent Bindings ▶ 1 - n: Target Persistent Bindings HBA Instance n ▶ 2: Bind Target(s)

When you select the **Bind Targets** option, the **Target Persistent Binding Menu for HBA Instance n** appears. This menu lists all targets on the selected adapter instance and shows information about each target:

- Target Type
 - Product Vendor
 - Product ID
 - Port Name
 - Port ID
 - Bind
 - Target ID
- Next Target (repeats)
- All Targets

Here is an example of the **Target Persistent Binding Menu for HBA Instance n:**

```
Target Persistent binding Menu
HBA Instance 0

1:  Disk
    Vendor           : SEAGATE
    Product ID      : ST318453FC
    Port Name       : 22-00-00-04-CF-9C-24-CA
    Port ID         : 02-00-E1
    Bind            : No
    Target ID       :

2:  Disk
    Vendor           : SEAGATE
    Product ID      : ST318453FC
    Port Name       : 22-00-00-0C-50-68-1E-9A
    Port ID         : 11-0A-E2
    Bind            : No
    Target ID       :

...
m:  Disk 2 on QLA2462 (HBA Instance 1)
    Vendor           : SEAGATE
    Product ID      : ST318453FC
    Port Name       : 22-00-00-11-C6-2D-5A-3F
    Port ID         : 11-0A-E2
    Bind            : No
    Target ID       :

...
n:  Disk
    Vendor           : SEAGATE
    Product ID      : ST318453FC
    Port Name       : 22-00-00-11-C6-2D-5A-3F
    Port ID         : 02-0A-E4
    Bind            : No
    Target ID       :

p:  All Target(s)
```

Target Persistent Binding - FC Port Configuration (Command Line Option -p)

6: Target Persistent Binding ▶ 1 - n: Target Persistent Binding ▶ 2: Bind Target(s) ▶ 1-n: Port configuration

When you select this menu, you are prompted to enter a Target ID. The **Target Persistent Binding - FC Port configuration** Menu appears and lists these options:

- Select More
- Commit Changes
- Cancel

Type the number for the option you want, and then press ENTER.

Target Persistent Binding: Unbind Targets (Command Line Option -p)

6: Target Persistent Binding ▶ 1 - n: Target Persistent Binding HBA Instance n ▶ 3: Unbind Target(s)

The **Unbind Targets** option is like the **Bind Targets** option (see [“Target Persistent Bindings: Bind Target\(s\) \(Command Line Option -p\)”](#) on page 3-55).

Target Persistent Binding (All HBAs)

6: Target Persistent Binding ▶ p: All HBAs

When you select this option, SANsurfer FC/CNA HBA CLI shows the following options:

- Display Configuration
- Bind Target(s)
- Unbind Target(s)

Display Target Persistent Binding

6: Target Persistent Binding ▶ p: All HBAs ▶ 1: Display Configuration

When you select the **Display Configuration** option, the following information appears. (Or, the message, *No target persistent binding configuration on HBA instance n* appears instead):

- Bind status (**Yes** or **No**)
- Device type (**Disk**, for example)
- Target information (model name and number, for example)
- Port Name
- Port ID
- Target ID

Target Persistent Binding: Bind Targets

6: Target Persistent Binding ▶ p: All HBAs ▶ 2: Bind Targets

See [“Target Persistent Bindings: Bind Target\(s\) \(Command Line Option -p\)”](#) on page 3-55.

Target Persistent Binding: Unbind Targets

6: Target Persistent Binding ▶ p: All HBAs ▶ 3: Unbind Targets

See [“Target Persistent Binding: Unbind Targets \(Command Line Option -p\)”](#) on page 3-57.

Selective LUNs Menu

(Command Line Option -m)

7: Selective LUNs

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Selective LUNs Menu** (see), allowing you to select an individual adapter port or **All HBAs**.

Selective LUNs (Per Adapter Port)

7: Selective LUNs ▶ 1: - m: HBA Port Instance

When you select this option, SANsurfer FC/CNA HBA CLI shows the following options for the adapter:

- Display LUN Configuration
- Manual Configure LUNs
- Auto Configure LUNs

If this option is not available for the selected LUN, the following message appears:

```
Configuration not permitted. Device(s) either not present or not
persistently bound (HBA n)!
```

Selective LUNs (All HBAs)

7: Selective LUNs ▶ 1: All HBAs

When you select this option, SANsurfer FC/CNA HBA CLI shows the following options for all adapters:

- Display LUN Configuration
- Manual Configure LUNs
- Auto Configure LUNs

Display LUN Configuration

7: Selective LUNs ▶ 1-m: Port Number ▶ 1: Display LUN Configuration

When you select the **Display LUN Configuration** menu, you can choose to show either:

- Details View
- General View

The detailed view shows:

```
Selective LUN Menu (Display)
HBA Instance 5 (QLA2300 Port 2) : Online
  WWPN: 21-01-00-E0-8B-25-CB-D8
  Desc: QLA2302 VA-CPQ (PCI to FC dual channel) HP Appliance
```

```

1:  Disk
    Vendor           : SEAGATE
    Product ID       : ST136403FC
    Port Name        : 21-00-00-20-37-1A-6B-CF
    Port ID          : 11-01-E4
    Bind             : Yes
    Target ID        : 0
2:  Disk
    Vendor           : SEAGATE
    Product ID       : ST118273 CLAR18
    Port Name        : 21-00-00-20-37-11-FF-EF
    Port ID          : 11-01-E8
    Bind             : Yes
    Target ID        : 1
3:  Return to Previous Menu

```

The general view shows:

```
-----
HBA Instance 5: QLA2300 Port 2 WWPN 21-01-00-E0-8B-25-CB-D8 PortID 11-05-EF
-----
```

Enable	Type	Target/LUN Info	Port Name	LUN ID
Yes	Disk	SEAGATE ST136403FC	21-00-00-20-37-1A-6B-CF	0
Yes	Disk	SEAGATE ST118273 CLAR18	21-00-00-20-37-11-FF-EF	0

Manual Configure LUNs

7: **Selective LUNs** ▶ 1-m: Port Number ▶ 2: Manual Configure LUNs

When you select this option, SANsurfer FC/CNA HBA CLI lists the disks on the selected adapter port and shows the current configuration of each. Select the number for the disk you want to configure, and then press ENTER to continue.

You can then select either an individual LUN to configure, or **All LUNs**. Select option **1: Enable** to enable the LUN(s), or option **2: Disable** to disable the LUN(s).

You are prompted to choose either **1: Select More** to configure additional LUNs or **2: Commit Changes** to confirm your configuration changes.

Auto Configure LUNs

7: **Selective LUNs** ▶ 1-m: Port Number ▶ 3: Auto Configure LUNs

When you select this option, SANsurfer FC/CNA HBA CLI provides the options **1: Enable** to enable all targets and all LUN(s), or **2: Disable** to disable all targets and all LUN(s). When you select either option, the changes are saved immediately and you are prompted to reboot:

```
Configuration saved on HBA instance 5 (WWPN
21-01-00-E0-8B-25-CB-D8). LUN persistent data saved successfully.
```

Please reboot the system for the saved configuration to become effective.

Boot Device Menu (Command Line Option -e)

8: Boot Device

NOTE:

The **Boot Device Menu** option is not supported on Red Hat or Novell PowerPC64.

When you select this option, SANsurfer FC/CNA HBA CLI shows the standard **HBA Port Instance** menu (see [“HBA Port Instance” on page 3-49](#)) allowing you to select an individual adapter port or **All HBAs**.

HBA Port Instance

8: Boot Device ▶ 1 - m: HBA Port Instance

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Boot Device Settings** menu for adapter instance *m*. You can choose to:

- Display Boot Device(s)
- Configure Boot Device(s)

Boot Device(s) (Per Adapter Port)

8: Boot Device ▶ n: Port Number ▶ 1: Display Boot Device(s)

When you select this option, SANsurfer FC/CNA HBA CLI shows the following information about the boot devices for this adapter instance:

- Adapter Instance Number
- Adapter Model Number (QLAxxxx)
- Port Number (on that adapter)
- WWPN
- Port ID
- Boot Device Settings
- Selectable Boot (Enabled/Disabled)
- Primary Boot Port Name (WWPN) and LUN
- Alternate 1 Boot Port Name and LUN
- Alternate 2 Boot Port Name and LUN
- Alternate 3 Boot Port Name and LUN

For example:


```
-----
HBA Instance 0: 2200 Port 1 WWPN 21-00-00-E0-8B-03-55-7C PortID 00-00-EF
-----
```

Boot Device Settings:

```
-----
Selectable Boot: Disabled
-----
```

(Primary) Boot Port Name	LUN
00-00-00-00-00-00-00-00	0
(Alternate 1) Boot Port Name	LUN
00-00-00-00-00-00-00-00	0
(Alternate 2) Boot Port Name	LUN
00-00-00-00-00-00-00-00	0
(Alternate 3) Boot Port Name	LUN
00-00-00-00-00-00-00-00	0

Configure Boot Device(s)

8: Boot Device ▶ n: Port Number ▶ 2: Configure Boot Device(s)

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Boot Device Settings** menu for adapter instance *m*, including the adapter model number, and details about its specifications. You can choose to configure the following:

- Primary Boot Device
- Alternate 1 Boot Device
- Alternate 2 Boot Device
- Alternate 3 Boot Device

Boot Device Settings

8: Boot Device ▶ n: Port Number ▶ 2: Configure Boot Device ▶ 2: Boot Device Settings

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Boot Device Settings** menu with information about each one including:

- Device type (for example, Disk)
 - Order (Primary, secondary, and so forth)
 - Boot Port Name (WWPN)
- BIOS Boot Default

LUN List Menu

8: **Boot Device** ▶ n: Port Number ▶ 2: Configure Boot Device ▶ 2: Boot Device Settings ▶ 1: LUN List Menu

When you select this option, SANsurfer FC/CNA HBA CLI shows the **LUN List Menu**, which includes a list of LUNs on the selected device. You can select any of the IUNs as the boot device:

- LUN: 0
- LUN: 1

And so on.

Save Configuration

8: **Boot Device** ▶ n: Port Number ▶ 2: Configure Boot Device ▶ 2: Device Settings ▶ 1: LUN List ▶ 1: Save Configuration

When you select this option, the CLI shows the **Save Configuration** menu:

- Proceed
- Cancel

Boot Device(s) (All HBAs)

8: **Boot Device** ▶ 1: All HBAs

When you select this option, SANsurfer FC/CNA HBA CLI shows information about all boot devices for all adapters. For details, see [“Boot Device\(s\) \(Per Adapter Port\)” on page 3-60](#).

- Product vendor
- Product ID
- Product revision

Driver Settings Menu (Command Line Option -fg)

9: **Driver Settings**

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Driver Settings Menu** that lists the ports on each adapter. Select the number corresponding to the port that you want, and then press ENTER to view the **Target: Display Options** and **Target: Binding Options**.

NOTE:

Options on the **Driver Settings** menu differ according to the driver type: failover, non-failover, Windows, Solaris, or Macintosh:

- **Present persistently bound target(s) plus any new target(s) with driver default** (option available for all drivers)
- **Present persistently bound target(s) Only** (option available for all drivers)
- **Present targets with driver default** (option available for failover driver only)
- **Bind by World Wide Port Name** (option available for all drivers *except* Macintosh driver)
- **Bind by Port ID** (option available for all drivers *except* Macintosh driver)
- **Commit Changes**

The current settings for the **Present persistently bound target(s)...** and **Bind by...** are indicated by the word *Current* in parentheses after the selection. To change these settings, select the menu number corresponding to the other option.

NOTE:

If you select a QLA22xx adapter, all QLA22xx adapters on the host will use the same settings. If you select a 23xx adapter, all 2Gb and 4Gb adapters on the host will also use the same settings. If you select any other adapter, all other 2Gb, 4Gb, and 8Gb adapters on the host will also use the same settings.

To save your changes, select **Commit Changes**.

[Table 3-4](#) shows the driver settings.

Table 3-4. Driver Settings

Parameter Name <param name>	Alias <param alias>	Value <param value>	Description
PersistentOnly	PO	0, 1	Present persistently bound target(s) only.
Persistent-PlusNew	PN	0, 1	Present persistently bound target(s) plus any new target(s) with driver default.

Table 3-4. Driver Settings (Continued)

Parameter Name <param name>	Alias <param alias>	Value <param value>	Description
NewOnly ^a	NO	0, 1	Present targets with driver default.
BindWWPN	BW	0, 1	Bind devices by WWPNs.
BindPortID	BP	0, 1	Bind devices by port IDs.

Table Notes

^a Driver Parameter `NewOnly` (NO) is supported only with the failover driver.

Utilities Menu

10: Utilities

The **Utilities Menu** provides options for saving and restoring Flash and adapter parameters. You can save adapter parameters in either a generic file or in a server manufacturer template such as QLogic, HP, IBM, EMC, and so on. Saving parameters in a template provides the advantage of tailored, default settings optimized for best results within the context.

When you select this option, SANsurfer FC/CNA HBA CLI shows the following utilities options:

- Update Flash (see [page 3-65](#))
- Save Flash (see [page 3-65](#))
- Update HBA Parameters (see [page 3-65](#))
- Save HBA Parameters (see [page 3-66](#))
- HBA Parameters Templates (see [page 3-66](#))
- Update Driver (Windows only) (see [page 3-69](#))
- Update Firmware Preload Table (8Gb adapters only) (see [page 3-69](#))
- Save Firmware Preload Table (8Gb adapters only) (see [page 3-70](#))
- Update MPI Config Table (see [page 3-71](#))
- Save MPI Config Table (see [page 3-71](#))
- Driver Rescan (Solaris with QLA driver only) (see [page 3-72](#))
- Firmware Area Update (8Gb adapters only) (see [page 3-72](#))
- Firmware Area Save (8Gb adapters only) (see [page 3-74](#))

Each of these menu options is described in this section.

Update Flash (Per Adapter Port or All HBAs) (Command Line Option -b)

10: Utilities ▶ 1: Update Flash

When you select **Update Flash**, you are prompted to select either one of your adapter port instances or **All HBAs** to update. SANsurfer FC/CNA HBA CLI then prompts you to **Update Entire Image**, to enter a file name (.bin) for the Flash update file, and to confirm the operation. The Flash update progress appears as in the following example:

```
Validating Flash Image File...
BIOS Version                : 2.11
Driver Firmware Version    : 5.01.01
Flash BIOS Version         : 2.11
Flash FCode Version        : 3.01
Flash EFI Version          : 3.10
Flash Firmware Version     : 5.01.01
Updating Flash on HBA port(s) - QLE8142. Please wait...
Updating Adapter flash NIC Boot Code...
Updating Adapter flash NIC MPI FW...
Updating Adapter flash FC Boot Code/FW...
Updating Adapter flash uncompressed FW...
Updating Adapter flash FC VPD...
Updating Adapter flash NIC VPD...
Flash update complete. Changes have been saved to both ports of
this HBA.
```

Save Flash (Per Adapter Port) (Command Line Option -b and Reserved Word "save")

10: Utilities ▶ 2: Save Flash

NOTE:

The Flash save-to-file option is not supported on QLE/QMI81xx adapters.

When you select this option, SANsurfer FC/CNA HBA CLI opens the **Save Flash Menu**, where you select an adapter port and then enter a file name to save.

Update HBA Parameters (Per Adapter Port or All HBAs) (Command Line Option -r)

10: Utilities ▶ 3: Update HBA Parameters

When you select **Update HBA Parameters**, you are prompted to select either one of your adapter port instances or **All HBAs** to update. SANsurfer FC/CNA HBA CLI then shows the following warning message:

Warning:

Please update the HBA parameters with extreme care.
Incorrectly updating the HBA parameters may render the HBA inoperable.
If you currently have boot device information set up in the HBA parameters, updating the HBA parameters from a file may result in changing that information.

If you wish to preserve the boot device information, please either update the file with the correct boot device settings before the HBA parameters update or re-configure the boot settings after the update.

Do you want to proceed with the operation?

- 1: Yes
- 2: No

Enter Selection:

If you select **1: Yes**, you are prompted to enter the name of a file from which to update the adapter parameters.

Save HBA Parameters (Per Adapter Port) (Command Line Option -r and Reserved Word “save”)

10: Utilities ▶ 4: Save HBA Parameters

When you select the **Save HBA Parameters** option, SANsurfer FC/CNA HBA CLI prompts you to select an adapter. You then enter a file name to save the parameters for that adapter.

HBA Parameters Template (Per Adapter or All HBAs) (Command Line Option -n and OEM Name)

10: Utilities ▶ 5: HBA Parameters Template

Use templates to set OEM-specific storage qualified adapter parameters to a pre-determined value without using a specific `DAT/DEF` file for each adapter type that you might be using.

The following ISP2422/2432 parameters are subject to the template feature:

- **Execution Throttle** specifies the maximum number of commands executing on any one port. When a port's execution throttle is reached, no new commands are executed until the current command finishes executing.
- **Descending Loop ID Search** specifies in what order the firmware assigns the `AL_PA` (**A**rbitrated**L**oop_**P**hysical**A**ddress). The firmware searches all the nodes in a loop topology and assigns the `AL_PA` in a descending order if you select 0, ascending order if you select 1.

- **Maximum LUNs Per Target** specifies the maximum number of LUNs per target. Multiple LUN support is typically for RAID boxes that use LUNs to map drives.
- **Port Down Retry Count** specifies the number of times SANsurfer FC/CNA HBA CLI retries a command to a port returning port down status.
- **Link Down Timeout** specifies the time the driver waits for the link to come up after link down before returning the I/Os. This is analogous to the **Port Down Retry Count** setting, which is used when the port is down.

The following tables list the parameter settings supported by templates for the specified adapters by ISP number.

NOTE:

Settings that are effected by the template apply only to the ISP 2300/2310/2312 2Gb adapters and the ISP2422/2432 4Gb adapters.

Table 3-5. Template Supported Parameter Settings for QLA24xx/QLE24xx and QLE256x Adapters (ISP2422)

Setting	QLogic	EMC	HP	IBM	Sun
Execution Throttle	16	256	16	256	256
Descending Loop ID Search	0	0	0	0	0
Maximum LUNs Per Target	*a	256	128	256	128
Port Down Retry Count	30	45	16	30	30
Link Down Timeout	30	45	8	30	30

^a Information not currently available.

Table 3-6. Template Supported Parameter Settings for QLA24xx/QLE24xx and QLE256x Adapters (ISP2432)

Setting	QLogic	Dell	EMC	HP	IBM	Sun
Execution Throttle	16	256	256	16	256	16
Descending Loop ID Search	0	1	1	0	0	0
Maximum LUNs Per Target	128	256	256	128	256	128
Port Down Retry Count	30	45	45	16	30	30
Link Down Timeout	30	45	45	8	30	30

Table 3-7. Template Supported Parameter Settings for QLA23xx Adapters (ISP2300/2310)

Setting	QLogic	EMC	IBM	Sun
Execution Throttle	16	256	256	16
Descending Loop ID Search	0	1	0	0
Maximum LUNs Per Target	128	256	0	8
Port Down Retry Count	30	45	30	30
Link Down Timeout	30	45	30	0

Table 3-8. Template Supported Parameter Settings for QLA23xx Adapters (ISP2312)

Setting	QLogic	EMC	HP	HPQ	IBM	Sun
Execution Throttle	16	256	16	16	256	16
Descending Loop ID Search	0	1	0	0	0	0
Maximum LUNs Per Target	128	256	128	128	256	8
Port Down Retry Count	30	45	16	16	30	30
Link Down Timeout	30	45	8	8	30	0

Table 3-9. Template Supported Parameter Settings for QLA23xx Adapters (ISP2322)

Setting	QLogic	EMC
Execution Throttle	16	256
Descending Loop ID Search	0	1
Maximum LUNs Per Target	128	256
Port Down Retry Count	30	45
Link Down Timeout	30	45

When you select the **HBA Parameters Template** option, SANsurfer FC/CNA HBA CLI prompts you to select an adapter port (or **All HBAs**), and then offers some or all of the following template types:

- **Dell** (Dell-specific settings)
- **EMC** (EMC-specific settings)
- **HP** (HP-specific settings)

- **HPQ** (HP-specific settings—2Gb HP adapters)
- **IBM** (IBM-specific settings)
- **QLGC** (QLogic-specific settings)
- **SUN** (Sun-specific settings)

Select one of the templates to apply it immediately to the adapter port instance (or **All HBAs**.) The following is returned:

```
Updating HBA Parameters on HBA instance n - QLA2nnn. Please
wait...
HBA Parameters update complete. Changes have been saved and
applied to the HBA instance n.
```

Update Driver (Command Line Option -d)

10: Utilities ▶ n: Update Driver

The **Update Driver** option is available on Windows systems only. When you select **Update Driver** from the **Utilities** menu, SANsurfer FC/CNA HBA CLI prompts you to select an adapter port, and then enter a file name (*INF*, *ZIP*, or *EXE*) with which to update the driver for that port.

NOTE:

FCoE converged network adapters require a FCoE-specific driver.

Update Firmware Preload Table

10: Utilities ▶ n: Update Firmware Preload Table

NOTE:

The **Update Firmware Preload Table** option does not apply to Linux Inbox drivers.

The preload table is basically a list of register addresses and data values. The only flexibility is provided by means of flags that indicate which function and for what type of reset the entry applies. The ROM code simply walks the list and loads the registers with the values, as permitted by the flags. The set of registers include MSI-X, Member, and so on.

The **Update Firmware Preload Table** option is supported only for 8Gb adapters. When you select this option from the **Utilities** menu, SANsurfer FC/CNA HBA CLI prompts you to select either an 8Gb adapter or **All HBAs** to update.

For example:

Firmware Preload Table Update Menu

```
HBA Model QLA2462
  Port  1: WWPN: 21-00-00-E0-8B-1F-9D-F0 Loop Down
  Port  2: WWPN: 21-01-00-E0-8B-3F-9D-F0 Online
HBA Model QLE2562
  1: Port  1: WWPN: 21-00-00-1B-32-1B-4E-4C Online
     Port  2: WWPN: 21-01-00-1B-32-3B-4E-4C Online
  2: All HBAs
  3: Return to Previous Menu
```

The CLI issues a warning and prompts you to confirm that you want to proceed with the firmware preload table update. If you respond **Yes**, enter the name of the previously saved `.dat` file (see [“Save Firmware Preload Table” on page 3-70](#)) from which to write its data to the Flash on the adapter. For example:

Warning:

```
Please update the HBA flash region with extreme care.
Incorrectly updating the flash region may render the HBA
inoperable.
```

```
Do you want to proceed with the operation?
```

```
1: Yes
2: No
```

```
Enter Selection: 1
```

```
Enter a file name or Hit <RETURN> to abort: QLE2562_fw.dat
```

Save Firmware Preload Table

10: Utilities ▶ n: Save Firmware Preload Table

NOTE:

The **Update Firmware Preload Table** option does not apply to Linux Inbox drivers.

The **Save Firmware Preload Table** option is supported only for 8Gb adapters. When you select this option from the **Utilities** menu, SANsurfer FC/CNA HBA CLI reads the contents of the firmware table in the adapter Flash, prompts you to select an 8Gb adapter port for which to save a firmware preload table, and to specify a `.dat` filename in which to save the information.

For example:

```
Firmware Preload Table Save Menu
```

```
HBA Model QLA2462
```

```

Port 1: WWPN: 21-00-00-E0-8B-1F-9D-F0 Loop Down
Port 2: WWPN: 21-01-00-E0-8B-3F-9D-F0 Online
HBA Model QLE2562
1: Port 1: WWPN: 21-00-00-1B-32-1B-4E-4C Online
   Port 2: WWPN: 21-01-00-1B-32-3B-4E-4C Online
2: Return to Previous Menu

```

```

Note: 0 to return to Main Menu
Enter Selection: 1

```

Enter a file name or Hit <RETURN> to abort: **QLE2562_fwp.dat**

After saving a firmware preload table to a file, you can use it to update the adapter firmware (see [“Update Firmware Preload Table”](#) on page 3-69).

Update MPI Config Table

10: Utilities ▶ n: Update MPI Config Table

Select the **Update MPI Config Table** option to write configuration data from a previously saved `.dat` file to the Flash on the adapter through the message passing interface (MPI), which enables you to update a new MPI config table to the MPI firmware. When you select this option from the **Utilities** menu, SANsurfer FC/CNA HBA CLI prompts you to select either an 8Gb adapter port (QLx81xx) or **All HBAs** to update.

The CLI displays the current version of the MPI config table for the adapter; for example:

```

MPI Config Table (CNA ):
    Current Version: v1.0

```

The CLI then warns you of the danger inherent in updating the table and prompts you twice to confirm the update procedure. If you respond **Yes** to both prompts the update proceeds. For example:

```

Updating MPI config table of HBA instance 0 - QLE8142...
Successful, please reboot for the change to take effect.

```

Save MPI Config Table

10: Utilities ▶ n: Save MPI Config Table

Select the **Save MPI Config Table** option to export the data in the MPI config table in the Flash to a file. When you select this option from the **Utilities** menu, SANsurfer FC/CNA HBA CLI prompts you to select an 8Gb adapter port (QLx81xx) for which to save an MPI configuration table, and to specify a `.dat` filename in which to save the information.

For example:

```

MPI Config Table (CNA ):

```

Current Version: v1.0

```
Enter a file name or Hit <RETURN> to abort: c:\QLE8142_MPI.dat
Saving current MPI config table of HBA instance 0 to
c:\QLE8142_MPI.dat...
Mpi Configuration v1.0 of HBA instance 0 saved successfully.
```

Driver Rescan (Command Line Option -rs)

10: Utilities ▶ n: Driver Rescan

The **Driver Rescan** option is available only on Solaris systems with the QLA driver. When you select **Driver Rescan** from the **Utilities** menu, SANsurfer FC/CNA HBA CLI prompts you to select an adapter port to rescan.

Firmware Area Update (Command Line Option -u)

10: Utilities ▶ n: Firmware Area Update

The **Firmware Area Update** operation takes a firmware preload table .dat file and writes the data to the Flash on the card.

This option is visible only if you have selected an 8Gb adapter.

To update the firmware area:

1. On the **Utilities** menu, select the number for the **Firmware Area Update** option.

The following menu is shown, for example:

Firmware Area Update Menu

```
HBA Model QLE2562
1: Port 1: WWPN: 21-00-00-1B-32-16-18-EE Loop Down
2: Port 2: WWPN: 21-01-00-1B-32-36-18-EE Online
HBA Model QLE8000
Port 1: WWPN: 21-00-00-1B-32-0A-A9-B4 Link Down
FCoE Engine
Port 2: WWPN: 21-01-00-1B-32-2A-A9-B4 Link Down
HBA Model QLE220
Port 1: WWPN: 21-00-00-E0-8B-91-A4-26 Loop Down
HBA Model QLE2462
Port 1: WWPN: 21-00-00-1B-32-00-27-CE Online
Port 2: WWPN: 21-01-00-1B-32-20-27-CE Loop Down
3: All HBAs
4: Return to Previous Menu
```

2. Select the number corresponding to the QLE256x adapter port for which you want to update firmware, or select the option for **All HBAs**.

SANsurfer FC/CNA HBA CLI shows the following warning:

Warning:

```
Please update the HBA firmware area with extreme care.
Incorrectly updating the firmware area may render the HBA
inoperable.
```

```
Do you want to proceed with the operation?
```

```
1: Yes
```

```
2: No
```

3. Select option **1** to proceed.
4. At the prompt, enter the name of a firmware preload table `DAT` file.

An example of a typical firmware preload table file header follows:

```
;Document number: ??
;Document Description: FwArea DATA for standard cards
;
;APPLICATION: ISP25xx FIBRE CHANNEL
;
;NOTE: A companion file with ".DEF" file extension must be present to
;       insure that file comparision during DVT testing will pass.
;
;Revision History:
;REV  DATE   WHO  ER#   DESCRIPTION OF CHANGE
;
; a  08-24-07  kd  xxxxx  Initial Document
; b  08-31-07  kc  xxxxx  Fix entries for Gen2 ZCNT and Gen1 TLTH
; c  09-20-07  kc  xxxxx  Add Version field.  Init Version = 1.
;                                     Set default number of MSI-X vectors to 2
;                                     Add disabled entry for Extended MSI-X
;                                     Disable 1MB Membar 2
;                                     Toggle internal RAM Access enable (HW workaround)
;                                     Set G1CNT = 1
; d  11-09-07  kc  57669  New RX Serdes settings for A1R
;                                     57767  New TX Serdes settings for A1R
;                                     57776  L8 A1R Ram Workaround (Swap Addr, RM=00b)
; e  11-13-07  kc  57767b Adjust PCS regs for new TX serdes parms
; f  12-07-07  kc  58189  Add File Version number.
;
; This file is the default settings for the FwArea and must have the
; extension of DAT.  Edit this file to change parameters.
;
; Numbers are in hexadecimal. File can also contain comments.
```

```
;
; FW Area data file for standard card
;*****
;      !!!!! DO NOT CHANGE THE ORDER OF THE DATA      !!!!!!!!!!!!!
;*****
;
;*****
; FW Area header (BYTE OFFSET 0000h - 0013h)
;*****
FW Signature          [0-FFFFFFFh] = caba3821
...

```

Firmware Area Save (Command Line Option -u)

10: Utilities ▶ n: Firmware Area Save

The **Firmware Area Save** operation reads the contents of the firmware preload table in the adapter Flash and exports the data to a specified DAT file.

This option is visible only if you have selected an 8Gb adapter.

To save the firmware area:

1. On the **Utilities** menu, select the number for the **Firmware Area Save** option.

The following menu is shown, for example:

Firmware Area Save Menu

```
HBA Model QLE2562
  1: Port 1: WWPN: 21-00-00-1B-32-16-18-EE Loop Down
  2: Port 2: WWPN: 21-01-00-1B-32-36-18-EE Online
HBA Model QLE8000
  Port 1: WWPN: 21-00-00-1B-32-0A-A9-B4 Link Down
  FCoE Engine
  Port 2: WWPN: 21-01-00-1B-32-2A-A9-B4 Link Down
HBA Model QLE220
  Port 1: WWPN: 21-00-00-E0-8B-91-A4-26 Loop Down
HBA Model QLE2462
  Port 1: WWPN: 21-00-00-1B-32-00-27-CE Online
  Port 2: WWPN: 21-01-00-1B-32-20-27-CE Loop Down
  3: Return to Previous Menu

```

2. Select the number corresponding to the QLE256x adapter port for which you want to save the firmware area.
3. At the prompt, enter the name of an existing firmware preload table DAT file.

Beacon Menu

11: Beacon

The **Beacon** menu provides options for *beaconing*: a process by which an LED on a device (adapter or target) is flashed or blinked to locate it. Use the **Locate HBA** option to beacon a specified adapter. Use the **Locate Target** option to beacon a specified storage device (the **Locate Target** option assumes that the target is a JBOD device rather than RAID).

When you select the **Beacon** option, SANsurfer FC/CNA HBA CLI shows the **Beacon Menu** containing these options:

- Locate HBA
- Locate Target(s)

NOTE:

The beaconing options are not available for the QLE8042 adapter nor the QLE/QMI81xx adapters.

Locate HBA: HBA Beacon (Command Line Option -a)

11: Beacon ▶ 1: Locate HBA

When you select this option, SANsurfer FC/CNA HBA CLI shows the **HBA Beacon Menu** that lists all adapter ports. Select any port, and then press ENTER to toggle the Beacon LED for that port:

Locate Target(s): Target Beacon (Command Line Option -tb)

11: Beacon ▶ 2: Locate Target(s)

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Target Beacon Menu** that lists all adapter ports. Select any port, and then press ENTER to view the disk details of that port, including the current beacon status:

```
HBA Instance 1 (2200 Port 2) : Online
  WWPN: 21-01-00-E0-8B-23-55-7C
  Desc: QLA2200 /02/12/04 QLA2202FS QCP2202

  1: Disk
     Vendor                : SEAGATE
     Product ID            : ST136403FC
     Port Name              : 21-00-00-20-37-1A-6B-CF
     Port ID                : 11-01-E4
     Beacon                 : No
```

```
2:  Disk
    Vendor                : SEAGATE
    Product ID            : ST118273 CLAR18
    Port Name              : 21-00-00-20-37-11-FF-EF
    Port ID                : 11-01-E8
    Beacon                 : No
3:  Beacon Selected Target(s)
4:  Return to Previous Menu
```

You can select a disk number to blink the LED on that target. The blinking asterisk (*) below the Device Port Name line shows that the target beacon is active.

```
-----
HBA Instance 1: 2200 Port 2 WWPN 21-01-00-E0-8B-23-55-7C PortID 11-06-00
-----
```

```
Target Beacon
-----
```

```
Hit <RETURN> to abort
-----
```

Device Port Name	Beacon Status
21-00-00-20-37-11-FF-EF	On - Active

★

Beacon Selected Target(s)

11: **Beacon** ▶ 2: Locate Target(s) ▶ 3: Beacon Selected Target(s)

When you select the **Beacon Selected Target(s)** option, SANsurfer FC/CNA HBA CLI shows a list of the targets associated with the adapter. You can select any target to toggle the Beacon LED for that target:

Diagnostics Menu (Command Line Options -kl, -kr, and -dm)

12: Diagnostics

The **Diagnostics** menu provides end-to-end diagnostics that allow you to test the adapters and the devices to which they are connected. The SANsurfer FC/CNA HBA CLI diagnostics include the following:

- Loopback test, which is external to the adapter, evaluates the ports (transmit and receive transceivers) on the adapter and the error rate.
- Read/write buffer test verifies the link between the adapter and its attached devices.

When you select this option from the **Main Menu**, SANsurfer FC/CNA HBA CLI shows **Diagnostics Menu** with the standard list of adapter ports. Type the number for the port on which you want to run diagnostic tests and then press ENTER.

When you select an adapter port from the **Diagnostics** menu, SANsurfer FC/CNA HBA CLI shows the list of diagnostic tests you can run for that port, including:

- Loopback Test
- Read/Write Buffer Test
- Transceiver Details (available on 4Gb and 8Gb only)

NOTE:

The diagnostic loopback test and transceiver details are not available for the QLE8042 adapter.

The QLE81xx adapters support only the external loopback test and require a loopback connector.

Test Results Test results for loopback and read/write buffer tests may include the following:

- Loopback test results:
 - Test Status
 - CRC Error
 - Disparity Error
 - Frame Length Error
- Read/Write buffer test results:
 - Loop ID/Status
 - Data Miscompare
 - Link Failure
 - Loss of Sync
 - Loss of Signal
 - Invalid CRC

Diagnostics Loopback Test (Command Line Option -kl)

12: **Diagnostics** ▶ *n*: Port Number ▶ 1: Loopback Test

When you select the diagnostics **Loopback Test** option, SANsurfer FC/CNA HBA CLI shows the **Loopback Test Menu** containing the following options (see [page 3-79](#)):

- Display Test Parameters
- Reset Test Parameters
- Configure Test Parameters
- Start Diagnostic Test

NOTE:

The diagnostic loopback test is not available for the QLE8042 adapter.

Diagnostic tests interrupt normal adapter operations. At the completion of the testing, the adapter's state before the tests are restored. Note the following:

- Run these tests when no other activities are required of the adapter.
- Tests read and write to sensitive areas on the adapter.
- Disruption of some diagnostic tests may require a complete update of the adapter's critical memory areas.

NOTE:

Although SANsurfer FC/CNA HBA CLI protects against normal operation interruption and testing disruption, it is your responsibility to ensure that the diagnostics are run without causing interruptions to other processes and disruptions to the actual testing process.

The loopback test is external to the adapter. If the adapter port is in loop mode, you can run the loopback test with a loopback connector. If the adapter port is in point-to-point mode and attached to a switch, an echo test is run instead (no loopback connector is used). In addition, some driver versions do not require a loopback connector.

The test evaluates the ports (transmit and receive transceivers) on the adapter. More specifically, the loopback test transmits and receives (loopback) the specified data and checks for the frame CRC, disparity, and length errors.

NOTE:

Under Solaris, this feature is disabled if you are using the driver from the OS installation CDs (QLC driver).

To prepare for a loopback test:

1. In interactive mode, type the number for the **Configure HBA Settings** option, and then press ENTER.
2. From the **Connections Options** menu (interactive mode) or the `-n` command (non-interactive mode), do one of the following:

- If the adapter port is not connected to the fabric through a point-to-point connection (F-port) and is not connected to a switch, change the setting to *loop only*, if not currently set to this option.
- If the adapter port is connected to the fabric through a point-to-point connection (F-port) and is connected to a switch, change the setting to *point-to-point only*, if not currently set to this option.

After completing the loopback test, change the connection option back to its original value.

3. Attach a loopback connector to the FC connector on the adapter port.
The loopback connector must be appropriate for the type of FC adapter connector. Be sure to select the appropriate adapter connector for testing.
To install a loopback connector, do the following:
 - a. Disconnect the cable from the appropriate adapter connector.
 - b. Install the loopback connector on the adapter connector.
4. Follow the steps in either [“Start Diagnostic Test \(Loopback\)” on page 3-82](#) (interactive mode) or [“-kl \(Loopback Test\)” on page 4-20](#) (non-interactive mode).

After completing the loopback test, follow these steps to prepare for normal adapter operations.

To prepare for normal adapter operations:

1. Remove the loopback connector from the adapter connector.
2. Reconnect the cable that you disconnected before installing the loopback connector.
3. From the **Connections Options** menu (interactive mode) or the -N command (non-interactive mode), change the setting back to its previous setting.

Display Test Parameters (Loopback)

12: Diagnostics ▶ n: Port Number ▶ 1: Loopback Test ▶ 1: Display Test Parameters

Select this option to show the current loopback test parameters. For example:

```
-----
HBA Instance 2: QLE2560 Port 1 WWPN 21-00-00-1B-32-0E-1C-CB PortID 01-02-00
-----
```

```
-----
Test Configuration
-----
```

```
Data Pattern : Random
```

```
Data Size (Bytes)           : 512
Number of test(s) (1-65535) : 65535
Test Increment (1-65535)    : 1
On Error                    : Ignore
Test Continuous             : OFF
Loopback Type               : External Loopback
```

Reset Test Parameters (Loopback)

12: Diagnostics ▶ n: Port Number ▶ 1: Loopback Test ▶ 2: Reset Test Parameters

Select this option to reset the current loopback test parameters to the defaults. The default settings are restored immediately.

```
Restoring default settings ..., done.
```

Configure Test Parameters (Loopback)

12: Diagnostics ▶ n: Port Number ▶ 1: Loopback Test ▶ 3: Configure Test Parameters

Select the **Configure Test Parameters** option to set the parameters for the loopback test. For example:

```
Diagnostic Menu (Loopback)
```

```
HBA Instance 2 (QLE2562 Port 1) : Online
WWPN: 21-00-00-1B-32-1B-4E-4C
Desc: QLE2562 PCI Express to 8Gb FC Dual Channel
```

```
1: Data Pattern
2: Data Size
3: Number of Test(s)
4: Test Increment(s)
5: On Error Policy
6: Enable/Disable Test Continuously
7: Loopback Type (displayed for 8Gb adapters only)
8: Return to Previous Menu
```

[Table 3-10](#) shows the diagnostics configuration settings.

Table 3-10. Adapter Diagnostics Configuration Settings

Parameter Name <param name>	Alias <param alias>	Value <param value>	Description
DataPattern	DP	00–FF CRPAT CSPAT CJTPAT	See table note 1 Loopback test only Loopback test only Loopback test only
DataSize	DS	8, 16, 32, 64, 128, 256, 512, 1024, 2048	See table note 2
TestCount	TC	0–65535 (Loopback) 0–10000 (R/W Buffer)	See table note 3 See table note 3
TestIncrement	TI	1–65535 (Loopback) 1–10000 (R/W Buffer)	See table note 4 See table note 4
OnError	OE	0, 1, 2	See table note 5
LoopbackType	LT	0, 1, 2	See table note 6

Table Notes:

1. DataPattern is the test pattern in hexadecimal format, user-defined pattern (hex), or random pattern.

Hex	Binary
00	00000000
55	01010101
5A	01011010
A5	10100101
AA	10101010
FF	11111111

2. DataSize specifies the data (frame payload) size in bytes. Actual data that is transferred during any given pass of the test. For R/W buffer test, the maximum data size is 128 bytes.

3. TestCount:

- 0: Test continuously
- 1–Max: Total number of tests that will be executed

4. TestIncrement must be less than the number of test count specified.

5. OnError specifies the action if an error occurs during any given pass.

- 0: Ignore
- 1: Stop
- 2: Ignore

6. LoopbackType (for 8Gb adapters only):

- 0: 10 bit internal loopback test
- 1: 1 bit serial loopback test
- 2: External loopback test

Selecting the **Loopback Type** option (available only for 8Gb adapters) shows the currently type and allows you to change the type to one of the following loopback test types:

- 10 bit Internal Loopback
- 1 bit Serial Loopback
- External Loopback (QLE81xx adapters support only the external loopback test and require a loopback connector)

For example:

```
Diagnostics Start Mode
```

```
HBA Instance 2 (QLE2562 Port 1) : Online
WWPN: 21-00-00-1B-32-1B-4E-4C
Desc: QLE2562 PCI Express to 8Gb FC Dual Channel

1: 10 bit Internal Loopback
2: 1 bit Serial Loopback
3: External Loopback (Current)
4: Return to Previous Menu
```

Start Diagnostic Test (Loopback)

12: Diagnostics ▶ n: Port Number ▶ 1: Loopback Test ▶ 4: Start Diagnostic Test

When you select **Start Diagnostics Test** for the loopback test, the following is returned (example):

```
-----
HBA Instance 4: QLE2562 Port 2 WWPN 21-01-00-1B-32-36-18-EE PortID 01-0F-00
-----
```

```
-----
Test Configuration
-----
```

```
Data Pattern           : Random
Data Size (Bytes)      : 512
Number of test(s) (1-65535) : 65535
Test Increment(1-65535) : 1
On Error               : Ignore
Test Continuous        : OFF
-----
```

```
-----
Diagnostics - Loopback Test Result
-----
```

```
Hit <RETURN> to abort
-----
```

HBA	Test Data Pattern	Status	CRC	Disparity	FrameLength
4	BB-54-01-BD-AC-24-DD-80	Success	0	0	0

Finished 6376 iterations in 1 second(s)...

Diagnostics Read/Write Buffer Test

12: **Diagnostics** ▶ n: Port Number ▶ 2: Read/Write Buffer Test

When you select this option, SANsurfer FC/CNA HBA CLI shows the **Read/Write Buffer Test Menu** containing the following options:

- Display Test Parameters
- Reset Test Parameters
- Configure Test Parameters
- Start Diagnostics Test

The read/write buffer test sends specified data through the SCSI Write Buffer command to a target device (disk). It then reads the data back through the SCSI Read Buffer command and compares the data for errors. The test also compares the link status of the target before and after the read/write buffer test. If errors occur, the test indicates a broken or unreliable link between the adapter port and the target.

NOTE:

- Not all storage supports read/write buffer tests.
- Under Solaris, this feature is disabled if you are using the driver from the OS installation CDs (QLC driver).
- Some targets (devices) may not support read/write buffer commands. Check with your hardware vendor or manufacturer.

Configure Test Parameters (Read/Write)

The read/write buffer test must be run on a disk device. Before running the read/write buffer test, verify that the adapter port is connected to at least one target by viewing the host configuration information. In interactive mode, from the **Show System Information** option, type the number for the **Host Configuration** option, and then press ENTER.

To configure a read/write buffer test:

1. Select the number for the **Diagnostics** option, and then press ENTER.
2. The **Diagnostics Menu** appears. Type the number that corresponds to the adapter port you want to test, and then press ENTER.
3. From the next **Diagnostics Menu**, type the number for the Read/Write Buffer Test, and then press ENTER:

- 1 = Loopback Test
 - 2 = Read/Write Buffer Test
4. The **Read/Write Buffer Test Menu** appears. Select one of the following options:
1. **Display Test Parameters.** Type 1 to show the current parameter values.
 2. **Reset Test Parameters.** Type 2 to return all parameters to their default values.
 3. **Configure Test Parameters.** Type 3 to customize any or all of the parameter values. Continue with [Step 5](#).
 4. **Start Diagnostics Test.** Type 4 to run the read/write buffer test with the current parameter values. To see these values, type 1 (**Display Test Parameters**).
 5. **Return to Previous Menu.** Type 5 to go back to the main **Diagnostics Menu**.
6. If you selected **Configure Test Parameters** in [Step 4](#), the **Diagnostic Menu (R/W Buffer)** appears. For example:
- ```
1: Data Pattern
2: Data Size
3: Number of Test(s)
4: Test Increment(s)
5: On Error Policy
6: Enable/Disable Test Continuously
7: Enable/Disable Device(s) (allows you to select or deselect targets
and LUNs on which to run diagnostics)
8: Return to Previous Menu
```

See [Table 3-10 on page 3-81](#) for a description of the parameters and their values. For each parameter you want to change, follow these steps:

- a. Type the number associated with the parameter you want to change.
- b. Type the number associated with the new parameter value.
- c. Return to the previous menu.

### Start Diagnostic Test (Read/Write Buffer)

When you select **Start Diagnostics Test** for the read/write buffer test, the CLI shows the test configuration and results.

The following warning message appears:

```
Warning: The Diagnostic Loopback and Read/Write Buffer tests
require that the HBA has no outstanding input and output
```



operations. Please make sure there is no active I/O before starting the test(s).

Do you want to proceed with the test(s)?

1. Yes
2. No

Type **1** to proceed or **2** to cancel the operation. If you proceed, the test runs as shown in the following example:

```

HBA Instance 8: QLE8142 Port 1 WWPN 21-00-00-C0-DD-0A-B1-FD PortID C5-02-0D

Test Configuration

Data Pattern : Random
Data Size (Bytes) : 128
Number of test(s) (1-10000) : 10000
Test Increment(1-10000) : 1
On Error : Ignore
Test Continuous : OFF

Diagnostics - Read/Write Buffer Test Result

Hit <ENTER> to abort

Iter No Data Pattern Status

7219 F8-B8-7D-52-D1-0B-28-A2 Success
7220 - Error: Data mis-compare (C5-01-00 - 1)
 Expected Data: 37-1C-6C-B0-B9-CE-EE-A2
 Received Data: 00-00-00-F0-00-00-00-00
9999 A6-EE-1C-B0-04-8A-65-BF Success

```

## Diagnostics Transceiver Details: DMI (Command Line Option -dm)

12: Diagnostics ▶ n: Port Number ▶ 3: Transceiver Details

The **Transceiver Details** option is shown only for 4Gb and 8Gb. When you select this option, SANsurfer FC/CNA HBA CLI shows the **Transceiver Details Menu** containing the following options:

- General
- Details

Select either **General** or **Details**, and then press ENTER to retrieve the transceiver information for this port instance.

**NOTE:**

The diagnostic transceiver details (DMI) are not available for the QLE8042 FCoE engine.

**Transceiver Details: General**

Select the **General** option on the **Transceiver Details** menu to view general information for the selected adapter port. The following shows an example:

-----  
HBA Instance 0: QLE8142 Port 1 WWPN 21-00-00-C0-DD-12-0D-ED PortID C5-02-20  
-----

Media Information  
-----

Vendor: FINISAR CORP.  
Type: 10G Base-SR  
Part Number: FTLX8572D3BCL  
Speed: 10 GBytes/Sec  
Revision: A  
Serial Number: UDL0019  
QLogic SFP Installed: Yes  
-----

|              | Temperature<br>(C) | Voltage<br>(V) | Tx Bias<br>(mA) | Tx Power<br>(mW) | Rx Power<br>(mW) |
|--------------|--------------------|----------------|-----------------|------------------|------------------|
| Value        | 35.84              | 3.33           | 8.04            | 0.5835           | 0.6172           |
| Status       | Normal             | Normal         | Normal          | Normal           | Normal           |
| High Alarm   | 78.00              | 3.70           | 11.80           | 0.8318           | 1.0000           |
| High Warning | 73.00              | 3.60           | 10.80           | 0.7079           | 0.7943           |
| Low Warning  | -239.00            | 3.00           | 5.00            | 0.3162           | 0.0158           |
| Low Alarm    | -244.00            | 2.90           | 4.00            | 0.2512           | 0.0100           |

**Transceiver Details: Details**

Select the **Details** option on the **Transceiver Details** menu to view detailed information for the selected adapter port. The following shows an example:

-----  
HBA Instance 0: QLE8142 Port 1 WWPN 21-00-00-C0-DD-12-0D-ED PortID C5-02-20  
-----

Optical Transceiver Digital Diagnostic Data:

Address A0

```

Identifier: SFP
Ext. Identifier: GBIC/SFP defined by serial ID only
Connector: LC
Ethernet Speed: 10 GBytes/Sec
Compliance: 0x00 0x00 0x00
FC Link Length:
FC Transmitter Tech:
FC Transmission Media:
FC Speed:
Encoding: Reserved
BR, Nominal: 0x67
Length (9um) - km: 0x00
Length (9um): 0x00
Length (50um): 0x08
Length (62.5um): 0x03
Length (Copper): 0x00
Vendor name: FINISAR CORP.
Vendor OUI: 0x00 0x90 0x65
Vendor PN: FTLX8572D3BCL
Vendor Rev: A
Wave Length: 0x0352
CC_BASE: 0x3a
Options:-Signal Loss, as defined in SFP MSA: 0x1
 -Signal Loss, inverted from SFP MSA: 0x0
 -TX_FAULT signal implemented: 0x1
 -TX_DISABLE implemented & disables serial o/p: 0x1
 -RATE_SELECT implemented: 0x0
BR, max: 0x00
BR, min: 0x00
Vendor SN: UDL0019
Date code: 090220
Diag Monitoring Type:-Address change required: 0x0
 -Power Measurement: 0x1
 -Externally Calibrated: 0x0
 -Internally Calibrated: 0x1
 -Digital diag monitoring: 0x1
 -Legacy diagnostic: 0x0
Enhanced Options:-Soft RATE_SELECT ctrl & monitoring: 0x0
 -Soft RX_LOS monitoring: 0x1
 -Soft TX_FAULT monitoring: 0x1
 -Soft TX_DISABLE ctrl & monitoring: 0x1
 -Alarm/warning flags: 0x1
SFF-8472 Compliance: TBD
CC_EXT: 0xb1
Vendor Specific: 0x51 0x4c 0x6f 0x67 0x69 0x63 0x00 0x00
 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00

```

0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00

Address A2

Temp High Alarm: 0x4e00  
Temp Low Alarm: 0x0c00  
Temp High Warning: 0x4900  
Temp Low Warning: 0x1100  
Voltage High Alarm: 0x9088  
Voltage Low Alarm: 0x7148  
Voltage High Warning: 0x8ca0  
Voltage Low Warning: 0x7530  
Bias High Alarm: 0x170c  
Bias Low Alarm: 0x07d0  
Bias High Warning: 0x1518  
Bias Low Warning: 0x09c4  
TX Signal Power High Alarm: 0x207e  
TX Signal Power Low Alarm: 0x09d0  
TX Signal Power High Warning: 0x1ba7  
TX Signal Power Low Warning: 0x0c5a  
RX Signal Power High Alarm: 0x2710  
RX Signal Power Low Alarm: 0x0064  
RX Signal Power High Warning: 0x1f07  
RX Signal Power Low Warning: 0x009e  
Rx\_PWR(4): 0x00000000  
Rx\_PWR(3): 0x00000000  
Rx\_PWR(2): 0x00000000  
Rx\_PWR(1): 0x3f800000  
Rx\_PWR(0): 0x00000000  
Tx\_I(Slope): 0x0100  
Tx\_I(Offset): 0x0000  
Tx\_PWR(Slope): 0x0100  
Tx\_PWR(Offset): 0x0000  
T(Slope): 0x0100  
T(Offset): 0x0000  
V(Slope): 0x0100  
V(Offset): 0x0000  
Checksum: 0x0b  
Temperature MSB: 0x23  
Temperature LSB: 0xee  
Vcc MSB: 0x82  
Vcc LSB: 0x31  
TX Bias MSB: 0x0f  
TX Bias LSB: 0xbd  
TX Power MSB: 0x16  
TX Power LSB: 0xb7  
RX Power MSB: 0x18  
RX Power LSB: 0x1e  
Reserved MSB: 0x00  
Reserved LSB: 0x00

```

Reserved MSB: 0x00
Reserved LSB: 0x00
Status/Control Bits:-Data_Ready_Bar: 0x0
 -LOS: 0x0
 -TX Fault: 0x0
 -Soft RX Rate Select: 0x0
 -RX Rate Select State: 0x1
 -Soft TX Disable: 0x0
 -TX Disable State: 0x0
 -TX Signal Power Low Alarm: 0x0
 -TX Signal Power High Alarm: 0x0
 -TX Bias Low Alarm: 0x0
 -TX Bias High Alarm: 0x0
 -Vcc Low Alarm: 0x0
 -Vcc High Alarm: 0x0
 -Temp Low Alarm: 0x0
 -Temp High Alarm: 0x0
 -RX Signal Power Low Alarm: 0x0
 -RX Signal Power High Alarm: 0x0
 -TX Signal Power Low Warning: 0x0
 -TX Signal Power High Warning: 0x0
 -TX Bias Low Warning: 0x0
 -TX Bias High Warning: 0x0
 -Vcc Low Warning: 0x0
 -Vcc High Warning: 0x0
 -Temp Low Warning: 0x0
 -Temp High Warning: 0x0
 -Reserved Warning: 0x0
 -Reserved Warning: 0x0
 -Reserved Warning: 0x0
 -Reserved Warning: 0x0
 -Reserved Warning: 0x0
 -Reserved Warning: 0x0
 -RX Power Low Warning: 0x0
 -RX Power High Warning: 0x0
Vendor Specific: 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0x01

```

## Statistics Menu

### (Command Line Options -gs and -ls)

#### 13: Statistics

The **Statistics** option allows you to configure the adapter polling and sampling rate. When you select this option, SANsurfer FC/CNA HBA CLI shows the **Statistics Menu** containing:

- HBA Statistics
- Link Status

**NOTE:**

- Under Solaris, adapter statistics are disabled if you are using the driver from the OS installation CDs (QLC driver). Under Linux, this feature is disabled if you are using the IOCTL or sysfs (inbox) driver.
- Under Solaris, link statistics are disabled if you are using the driver from the OS installation CDs (QLC driver).

## HBA Statistics: Monitoring (Command Line Option -gs)

13: Statistics ▶ 1: HBA Statistics

When you select this option, SANsurfer FC/CNA HBA CLI shows the **HBA Statistics Menu** including the following options:

- Configuration
- Show HBA Statistics

### Configuration

13: Statistics ▶ 1: HBA Statistics ▶ 1: Configuration

**To change the adapter statistics:**

1. From the **Main Menu**, type the number for the **Statistics** option, and then press ENTER.
2. From the **Statistics Menu**, type the number for the **HBA Statistics** option, and then press ENTER.
3. From the **HBA Statistics Menu**, type the number for the **Configuration** option, and then press ENTER.

The **HBA Statistics Settings Menu** contains the following options:

- Current Settings
  - Restore Default
  - Auto Poll
  - Set Rate
  - Log to File
4. To see the current port statistics, select **Current Settings**, and then press ENTER. For example:

```

HBA Port Statistics Settings

AutoPoll (AP): 10
SetRate (SR): 5
```

```
LogToFile (LF): null.csv
```

- To restore the adapter defaults, select **Restore Default**, and then press ENTER. The following message appears:

```
Resetting to default settings..., done.
```

- To change the polling, select **Auto Poll**, and then press ENTER. Then select either **Auto Poll** or **Manual Poll**, and then press ENTER to enable that selection.
- To change the sampling rate, select **Set Rate**, and then press ENTER. You are prompted to enter a rate value between 5 and 30 seconds; the current rate is shown in parentheses. Type a new rate, and then press ENTER to update the sampling rate.
- To save the adapter statistics to a file, select **Log to File**, and then press ENTER. Type the name of a .csv file to save to, and then press ENTER.

Table 3-11 shows the values for the adapter port statistics options.

**Table 3-11. Adapter Port Statistics Options**

| Parameter Name | Alias | Value         | Description                                                                       |
|----------------|-------|---------------|-----------------------------------------------------------------------------------|
| AutoPoll       | AP    | 0             | Turn on automatic updates of the adapter port statistics.                         |
|                |       | 1–256         | Turn on automatic updates of the adapter port statistics at a specified interval. |
| SetRate        | SR    | 5–30          | Set the polling interval during automatic update (seconds).                       |
| LogToFile      | LF    | Log File Name | Export the statistics to a file (CSV format).                                     |

### Current Settings

13: Statistics ▶ 1: HBA Statistics ▶ 1: Configuration ▶ 1: Current Settings

The system shows the current settings for:

- AutoPoll (AP)
- SetRate (SR)
- LogToFile (LF)

### Restore Defaults

13: Statistics ▶ 1: HBA Statistics ▶ 1: Configuration ▶ 2: Restore Default

The system restores the default settings and returns a message:

```
Resetting to default settings..., done.
```

## Auto Poll

13: **Statistics** ▶ 1: HBA Statistics ▶ 1: Configuration ▶ 3: Auto Poll

SANsurfer FC/CNA HBA CLI shows two polling options:

- AutoPoll
- Manual Poll

If you select the **Auto Poll** option, the system enables Auto Poll and returns a message:

```
Auto Poll enabled.
```

If you select the **Manual Poll** option, the system prompts you to enter a value for Manual Poll iteration:

```
Manual Poll iteration (1-256)
```

Enter a value from 1 to 256, and then press ENTER. The system updates the Manual Poll iteration value and returns the following message:

```
Manual Poll updated.
```

## Set Rate

13: **Statistics** ▶ 1: HBA Statistics ▶ 1: Configuration ▶ 4: Set Rate

The system prompts you to enter a value for the sampling rate (the current rate is shown in parentheses):

```
Sampling Rate Seconds [5-30] (n) :
```

Enter a value from 5 to 30, and then press ENTER. The system updates the sampling rate and returns a message:

```
Sampling rate updated.
```

## Log to File

13: **Statistics** ▶ 1: HBA Statistics ▶ 1: Configuration ▶ 5: Log To file

When you select the **Log to File** option, the system prompts you to enter a file name or press ENTER to cancel.

If you press the ENTER key, the **HBA Statistics Settings Menu** reappears.

If you enter a file name, for example, *MyFile*, the system saves the log to that file and returns a message:

```
Save to file option enabled (MyFile.csv).
```



The file name extension `.csv` indicates a comma separated value file type.

## Show HBA Statistics

13: **Statistics** ▶ 1: HBA Statistics ▶ 1: Show HBA Statistics

### To view the adapter port statistics:

1. From the **Main Menu**, type the number for the **Statistics** option, and then press ENTER.
2. From the **Statistics Menu**, type the number for the **HBA Statistics** option, and then press ENTER.
3. From the **HBA Statistics Menu**, type the number for the **Show HBA Statistics** option, and then press ENTER.
4. The **Statistics Menu** appears and prompts you to select an adapter port. Type the number for the port, and then press ENTER.

The adapter statistics for that port are shown. For example:

```

HBA Instance 0: 2200 Port 1 WWPN 21-00-00-E0-8B-03-55-7C PortID 00-00-EF

```

```
HBA Port Statistics

```

The following keys are in use during test:

```
<R> | <r> - Reset All Counters
<RETURN> - Abort Test

```

```
HBA Port Errors Device Errors Reset I/O Count IOPS BPS Time

0 0 0 30568 0 0 0 09:43:43 AM
```

## Link Status (Command Line Option -ls)

13: **Statistics** ▶ 2: Link Status

The following sections describe how to view and change the adapter's link status.

### NOTE:

Under Solaris, link status is disabled if you are using drivers from the OS installation CDs (QLC driver).

From the **Main Menu**, select **Statistics** and then select **Link Status**. When you select the **Link Status** option, SANsurfer FC/CNA HBA CLI shows the following options:

- [“Configuration” on page 3-94](#)
- [“Show Link Status” on page 3-96](#)

## Configuration

13: Statistics ▶ 2: Link Status ▶ 1: Configuration

When you select the **Configuration** option, the **Link Status Settings Menu** appears and allows you to view and configure the following:

- Current Settings
- Restore Default
- Auto Poll
- Set Rate
- Log to file

[Table 3-12](#) shows the statistics and link status options.

**Table 3-12. Statistics/Link Status Options**

| Parameter Name | Alias | Value         | Description                                            |
|----------------|-------|---------------|--------------------------------------------------------|
| AutoPoll       | AP    | 0             | Update the link statistics automatically.              |
|                |       | 1–256         | Update the link statistics up to a specified interval. |
| SetRate        | SR    | 5–30          | Set the Statistics Sampling Rate (seconds).            |
| LogToFile      | LF    | Log File Name | Export the link statistics to a file (CSV format).     |

### Current Settings

13: Statistics ▶ 2: Link Status ▶ 1: Configuration ▶ 1: Current Settings

Select the **Current Settings** option to have the system show the current link status settings for:

- AutoPoll (AP)
- SetRate (SR)
- LogToFile (LF)

### Restore Default

13: Statistics ▶ 2: Link Status ▶ 1: Configuration ▶ 2: Restore Default

The **Restore Default** option causes the system to restore the default settings and return the following message:

Resetting to default settings..., done.

### Auto Poll Menu

13: **Statistics** ▶ 2: Link Status ▶ 1: Configuration ▶ 3: Auto Poll

SANsurfer FC/CNA HBA CLI shows two polling options:

- Auto Poll
- Manual Poll

If you select the **Auto Poll** option, the system enables Auto Poll and returns a message:

```
Auto Poll enabled.
```

If you select the **Manual Poll** option, the system prompts you to enter a value for Manual Poll iteration:

```
Manual Poll iteration (1-256)
```

Enter a value from 1 to 256, and then press ENTER. The system updates the Manual Poll iteration value and returns the following message:

```
Manual Poll updated.
```

### Set Rate

13: **Statistics** ▶ 2: Link Status ▶ 1: Configuration ▶ 4: Set Rate

The system prompts you to enter a value for the sampling rate (the current rate is shown in parentheses):

```
Sampling Rate Seconds [5-30] (n) :
```

Enter a value from 5 through 30, and then press ENTER. The system updates the sampling rate and returns a message:

```
Sampling rate updated.
```

### Log to File

13: **Statistics** ▶ 2: Link Status ▶ 1: Configuration ▶ 5: Log to File

When you select the **Log to File** option, the system prompts you to enter a file name or press RETURN to cancel.

If you press the ENTER key, the **Link Status Settings Menu** reappears.

If you enter a file name, for example, *MyFile*, the system saves the log to that file and returns a message:

```
Save to file option enabled (MyFile.csv).
```

The file name extension `.CSV` indicates a comma separated value file type.

## Show Link Status

13: **Statistics** ▶ 2: Link Status ▶ 2: Show Link Status

The **Show Link Status** option shows a menu of port numbers from which you can select the port for which you want the link status.

### To view the link status:

1. Type the number for the **Statistics** option, and then press ENTER.
2. The **Statistics Menu** appears. Type the number for the **Link Status** option, and then press ENTER.
3. The **Link Status Menu** appears. Type the number for the **Show Link Status** option, and then press ENTER.
4. You are prompted to select an adapter port. Type the number for the port, and then press ENTER. The adapter link status for that port appears.

```

Link Status

```

The following keys are in use during test:

```
<R> | <r> - Reset Current
<C> | <c> - Refresh Current
<T> | <t> - Refresh Total
<RETURN> - Abort Test

```

| Port Name  | Link Failure | Sync Loss | Signal Loss | Invalid CRC |
|------------|--------------|-----------|-------------|-------------|
| Port(WWPN) | 0            | 0         | 0           | 0           |
| Disk(WWPN) | 0            | 0         | 0           | 0           |
| Disk(WWPN) | 0            | 0         | 0           | 0           |
| Disk(WWPN) | 0            | 0         | 0           | 0           |
| Disk(WWPN) | 0            | 0         | 0           | 0           |
| Disk(WWPN) | 0            | 0         | 0           | 0           |

Press <Enter> to continue:

## Virtual Menu

### (Command Line Option -vp)

#### 14: Virtual Menu

#### NOTES:

- The option to use N\_Port ID virtualization (NPIV) only appears on the **Main Menu** if the adapters and system support it. NPIV requires a Windows or Solaris system running with a driver that supports NPIV.
- Virtual menu options are not available for the QLE8042 adapter with FCoE engine.
- QLE81xx adapters support NPIV.
- Statistics are available for virtual ports on the adapter (see [“Statistics Menu \(Command Line Options -gs and -ls\)”](#) on page 3-89).

QLogic's SANsurfer FC/CNA HBA CLI for Windows and Solaris works in conjunction with QLogic's N\_Port ID virtualization (NPIV)-capable driver. NPIV is an ANSI T11 standard that describes how multiple unique fabric addresses (N\_Port IDs) can share a single FC adapter physical port (N\_Port) in SAN fabric topology. NPIV allows a physical adapter port to obtain N\_Port IDs. SANsurfer FC/CNA HBA CLI refers to these N\_Port IDs as “virtual ports” (vPorts).

QLogic 4Gb FC adapters (QLx24xx) support the NPIV standard. Using NPIV requires software tools or applications to create, delete, manage, deploy, and migrate virtual ports. Microsoft's Windows Virtual Server 2005 R2, Windows Server 2003, and Solaris 11 provide a virtualization platform that can run guest operating systems in an x86 environment. Use the QLogic NPIV-capable Windows driver with QLogic's SANsurfer FC/CNA HBA CLI to create, delete, and manage virtual ports. You can deploy and migrate virtual ports in conjunction with virtual machines (VMs) in your Solaris and Windows Virtual Server environment using Microsoft System Center Virtual Machine CLI 2007.

For more information about QLogic and Microsoft solutions, see the following documents:

- *HBA Virtualization Technologies for Windows OS Environments* (QLogic)
- *Microsoft System Center Virtual Machine Manager* (Microsoft)

The **Virtual Menu** options allow you to view, create, and delete virtual adapter ports.

To see a complete list of NPIV options, add the flag `-h` to the `vp` command. For example:

```
scli -vp -h
```

When you select the **Virtual Menu** option from the main menu, the **Virtual Menu** appears, showing:

- Adapter Model
  - Port Number
  - WWPN
  - Status (Online/Loop down)
- (Additional adapters)
  - (Additional ports)

Virtual port options include the following:

- `<vport wwpn>` is the world wide port name (WWPN) of a virtual port.
- `<vport hex>` is a single hexadecimal digit that will be part of the virtual port's WWPN (second field, byte 1). (0–4 is reserved for the physical adapter port.) Note that this feature is supported only with an NPIV-enabled driver.

## Virtual Menu for Adapter Instance

14: Virtual ▶ 1: Virtual Menu

When you select this option, the **Virtual Port Menu** appears with the following options:

- List Virtual Ports
- Delete a Virtual port
- Create a Virtual port

Enter the number for the option you want, and then press ENTER.

With a virtual adapter, the following SANsurfer FC/CNA HBA CLI features are *not* available:

- Adapter Parameters Display
- Adapter Parameters Settings
- Adapter Parameters Restore Default
- Flash Update from file
- Flash Save to file
- Adapter Parameters Update from file
- Adapter Parameters Save to file
- Adapter Parameters Templates
- Driver Update
- Target Link Speed
- Boot Device Settings
- Driver Settings

In addition, the following notes apply:

- The maximum number of virtual adapters that can be created of a physical adapter is 15.
- *vPort* means *virtual port* in all the displays.
- In command line mode, you must use the WWPN instead of adapter instance number to select a virtual port.
- After you create or delete a virtual adapter, you should refresh the configuration to see the changes.

## List Virtual Port(s)

14: Virtual ▶ 1: Virtual Menu ▶ 3: List Virtual Ports

When you select this option, the menu of virtual ports on this physical adapter port appears showing:

- List Virtual Ports including for each:
  - Instance Number
  - Virtual Port Number
  - WWPN
  - Status (Online or Loop Down)

Here is an example:

```
Virtual Menu
```

```
HBA Model QLA2462:
```

```
0: vPort 3: WWPN: 21-7B-00-E0-8B-14-5A-CF Online
1: vPort 2: WWPN: 21-67-00-E0-8B-14-5A-CF Online
4: Return to Previous Menu
```

## Delete Virtual Port(s)

14: Virtual ▶ 1: Virtual Menu ▶ 3: Delete a Virtual Port

To delete a virtual port, select a virtual port number from the **Delete a Virtual Port** menu. To see the change, you must manually refresh the virtual port configuration.

### **NOTE:**

For Solaris 11, this option is not supported for the QLC driver.

## Create Virtual Port(s)

14: Virtual ▶ 1: Virtual Menu ▶ 3: Create a Virtual Port

### NOTE:

For Solaris 11, this option is not supported for the QLC driver.

When you select this option, the **Create Virtual Port Menu** for this adapter instance appears showing:

- HBA Instance *n*
  - Adapter Model Port Number
  - Status
  - Description
- Followed by the menu:
  - Auto Generate**
  - User Generate**

Here is an example:

```
Create Virtual Port Menu

HBA Instance 4 (QLA2462 Port 1) : Online
Desc: QLA2462 PCI-X 2.0 to 4Gb FD Dual Channel
 1: Auto Generate
 2: User Generate
 3: Return to Previous Menu
```

### Auto Generate

14: Virtual ▶ 1: Virtual Menu ▶ 3: Create a Virtual Port ▶ 1: Auto Generate

When you select this option, the system creates a virtual port on this adapter's physical port and reports the WWPN of the virtual port. For example:

```
Virtual Port 21-25-00-E0-8B-14-5A-CF created successfully on HBA
instance 4.
```

To see the change to the virtual ports, you must manually refresh the configuration.

### User Generate

14: Virtual ▶ 1: Virtual Menu ▶ 3: Create a Virtual Port ▶ 2: User Generate

When you select this option, you are prompted to enter a hexadecimal (hex) digit for the new virtual port WWPN. This new hex number is assigned to the second field of the physical adapter port WWPN. For example:



Enter Hex Pattern (xx) :

Type two hex digits. The system creates the new virtual port, for example:

```
(Create Virtual Port Menu)
Enter Selection: 2
Enter Hex Pattern <xx>: EF
```

The system returns the following:

```
Virtual Port 21-EF-00-8B-14-5A-CF created successfully on HBA
instance 4.
```

Note that the entered hex digits, **EF**, now appear in byte 1 of the new virtual port WWPN.

To see the change to the virtual ports, you must manually refresh the configuration.

## QoS Menu

(Command Line Option -qos)

### 15: QoS

**NOTE:**

The **QoS Menu** option is available only for Windows operating systems and 8Gb and 10Gb adapters. For Windows Server 2008, QoS is supported only with MSI-X enabled.

QoS (quality of service) refers to service level agreement (SLA) to ensure business continuity when transmitting data over virtual ports by either setting priorities or allocating bandwidth. SANsurfer FC/CNA HBA CLI provides an easy-to-use interface that lets you assign QoS to virtual ports by either setting *priorities* or allocating *bandwidth* to them:

- **Setting the QoS by bandwidth** lets you allocate up to 80% of the number of gigabits per second (Gbps) transmission speed of the physical port's capacity to its defined virtual ports (NPIV). Using this feature lets you guarantee a transmission rate for each virtual port that requires a specific bandwidth to run mission-critical applications for business continuity using virtual ports. The setting for a given QoS can resolve bottlenecks that exist when virtual machines contend for port bandwidth.

- **Setting the QoS by priority** (the default for newly created virtual ports) lets you set the priority level for each of the defined virtual ports. This enables to you give preference to data transmissions for one virtual port over others by giving it a higher priority than the others, which in turn translates to IOPS. You can set the priority level on any virtual port, regardless of the settings applied to other virtual ports.

**NOTES:**

- Only one type of QoS setting is allowed on all virtual ports belonging to a single physical port. That means you cannot have a virtual port set to QoS Priority and another virtual port set to QoS Bandwidth.
- Each physical port (and its virtual ports) can be set with different QoS type in a host.
- If the physical port has no virtual ports, you must first create them. See [“Create Virtual Port\(s\)” on page 3-100](#).
- If you change the QoS type (QoS Priority or QoS Bandwidth), the QoS settings of all virtual ports will revert to the default setting.

When you select the **QoS** option from the Main Menu, the **QoS Menu** opens and prompts you to select one of the physical ports on your adapter. For example:

```
SANsurfer FC/CNA HBA CLI CLI

vx.x.x Build x

QoS Menu

HBA Model QMH2462
 Port 1: WWPN: 50-01-43-80-00-AC-2F-7C Loop Down
 Port 2: WWPN: 50-01-43-80-00-AC-2F-7E Loop Down
HBA Model QMH2562
 1: Port 1: WWPN: 50-06-0B-00-00-C2-AE-00 Online
 2: Port 2: WWPN: 50-06-0B-00-00-C2-AE-02 Online
 3: Return to Previous Menu

Note: 0 to return to Main Menu
Enter Selection: 1
```

Select one of the online physical ports for this adapter and then press ENTER to open the **QoS Type Menu** for that adapter port. This menu prompts you to select one of the following as the quality of service type, where the currently selected type is indicated next to it by (Current):

- **QoS Priority**
- **QoS Bandwidth**

**CAUTION!**

If you change QoS type from QoS Priority to QoS Bandwidth, or QoS Bandwidth to QoS Priority, the QoS settings of all virtual ports revert to the default settings.

## QoS Priority Menu

15: QoS ▶ *n*: Port number ▶ 1: QoS Priority

Setting the QoS by priority lets you set the priority level for each of the defined virtual ports. This enables to you give preference to data transmissions for one virtual port over others by giving it a higher priority than the others. You can set the priority level on any virtual port, regardless of the settings applied to other virtual ports.

The **QoS Priority Menu** shows the adapter instance, model number, port number, and the status, WWPN, and description of the selected physical adapter port. It also lists all virtual ports created for that physical port.

**To set the priority for a virtual port:**

1. From the **QoS Priority Menu**, type the number corresponding to the virtual port that you want to change. Take note of whether or not that virtual port is currently **Enabled** and **Unlocked**, and then press ENTER.
2. If the virtual port is already enabled and unlocked, proceed to [Step 3](#). Otherwise:
  - a. The virtual port must be **Enabled** to set the priority. To enable a currently disabled vPort, enter 1 for the **Enable/Disable QoS Settings** option and then 1 again to **Enable** the vPort.
  - b. The virtual port must be **Unlocked** to set the priority. To unlock a currently locked vPort, enter 2 for the **Lock/Unlock QoS Settings** option and then 2 again to **Unlock** the vPort.
3. On the **QoS Priority Menu**, select the **Modify QoS Settings** option.
4. Enter a new priority level for the virtual port by selecting either **Low**, **Medium**, or **High**, and then pressing ENTER. For example:

QoS Priority Menu

```
HBA Instance 0 (QMH2562 Virtual Port 0): Online
WWPN: 50-06-0B-00-00-C2-AE-7C
Desc: QMH2562 PCI-E to 8Gb FC Dual Channel Mezz HBA
```

```
1: Low[1]
2: Medium[3]
3: High[5]
```

```
4: Return to Previous Menu
```

```
Note: 0 to return to Main Menu
Enter Selection: 2
```

The **QoS Priority Menu** reappears and lists all the virtual ports.

5. Verify that the priority level is correct for the virtual port that you changed.
6. (Optional) To prevent further changes to the virtual port, set the mode to **Locked**.
7. (Optional) To change the priority for additional virtual ports, repeat the previous steps.
8. To save your QoS priority changes, select the **Apply QoS Settings** option.

**NOTE:**

No changes made to QoS settings in the previous steps are saved until you select **Apply QoS Settings**.

The following confirmation appears:

```
Changes in QoS settings have been applied to selected vPort(s)
Hit <RETURN> to continue:
```

## QoS Bandwidth Menu

15: QoS ▶ n: Port number ▶ 2: QoS Bandwidth

SANsurfer FC/CNA HBA CLI supports two different types of bandwidth for virtual ports:

- **Bandwidth Speed** specifies that the maximum bandwidth speed of all virtual ports cannot exceed the maximum actual connection speed. (For details, see [“QoS Bandwidth Speed Menu” on page 3-105.](#))
- **Bandwidth Percentage** specifies that the maximum bandwidth percentage of all virtual ports cannot exceed 100%. (For details, see [“QoS Bandwidth Percentage Menu” on page 3-107.](#))

The **QoS Bandwidth Menu** shows the adapter instance, model number, port number, and the status, WWPN, and description of the selected physical adapter port. It also lists all virtual ports created for that physical port. After you select a virtual port, SANsurfer FC/CNA HBA CLI prompts you to select the bandwidth type as either by speed or by percentage. For example:

```
QoS Bandwidth Menu
```

```
HBA Instance 0 (QMH2562 Port 1) : Online
WWPN: 50-06-0B-00-00-C2-AE-00
```

Desc: QMH2562 PCI-E to 8Gb FC Dual Channel Mezz HBA

- 1: Bandwidth Speed
- 2: Bandwidth Percentage
- 3: Return to Previous Menu

Note: 0 to return to Main Menu  
Enter Selection: 1

When deciding how much bandwidth to assign to a virtual port, consider the bandwidth required to run the application, and then set it in the range of +5% of given bandwidth. For example, if a mission-critical application on a virtual machine requires 1 Gbps to transmit its data over the fabric, the recommended bandwidth setting is 1.05 Gps.

An 8Gb adapter can transmit data up to 8Gbps for each physical port, which sets the common pool of bandwidth until you adjust the settings on the virtual ports. This feature allows you to divide up to 80% (or 6.4Gbps) between the physical port and any of its virtual ports. The remaining 20% (or 1.6 Gbps) is reserved to handle non-QoS applications or VMs.

#### **NOTE:**

If you do not see the **QoS Bandwidth Menu** shown in the preceding, some QoS settings may be disabled or locked and an alternate menu is shown. Select from the following menu options to enable or unlock the feature you need:

- If QoS is disabled for the selected virtual port, you must first enable it. Select 1. Enable/Disable QoS Settings.
- If QoS is enabled for the selected virtual port but the QoS setting change option is locked, you must first unlock it. Select 2. Lock/Unlock QoS Settings.
- If the QoS lock setting is disabled, you must first change the QoS settings. Select 3. Modify QoS Settings.

## **QoS Bandwidth Speed Menu**

15: QoS ▶ n: Port number ▶ 2: QoS Bandwidth ▶ 1: Bandwidth Speed

The **QoS Bandwidth Speed Menu** lists all virtual ports for the selected adapter physical port.

#### **To set the bandwidth speed for a virtual port:**

1. From the **QoS Bandwidth Speed Menu**, type the number corresponding to the virtual port that you want to change. Take note of whether or not that virtual port is currently **Enabled** and **Unlocked**, and then press ENTER.

2. If the virtual port is already enabled and unlocked, proceed to [Step 3](#). Otherwise:
  - a. The virtual port must be **Enabled** to set the bandwidth. To enable a currently disabled vPort, enter 1 for the **Enable/Disable QoS Settings** option and then 1 again to **Enable** the vPort.
  - b. The virtual port must be **Unlocked** to set the bandwidth. To unlock a currently locked vPort, enter 2 for the **Lock/Unlock QoS Settings** option and then 2 again to **Unlock** the vPort.
3. On the **QoS Bandwidth Speed Menu**, select the **Modify QoS Settings** option.
4. At the prompt to select a bandwidth unit value, select either 1 (for Mbps) or 2 (for Gbps).
5. The **Enter Bandwidth Speed** prompt shows the allowable range and current speed in square brackets. Type a new speed value and then press ENTER.  
The **QoS Bandwidth Speed Menu** reappears and lists all the virtual ports.
6. Verify that the bandwidth speed is correct for the virtual port that you changed.
7. (Optional) To prevent further changes to the virtual port, set the mode to **Locked**.
8. (Optional) To change the bandwidth speed for additional virtual ports, repeat the previous steps.
9. When the **QoS Bandwidth Speed Menu** reappears, select the **Apply QoS Settings** option to save your changes.

**NOTE:**

No changes made to QoS settings in the previous steps are saved until you select **Apply QoS Settings**.

The following confirmation appears:

```
Changes in QoS settings have been applied to selected vPort(s)
Hit <RETURN> to continue:
```

## QoS Bandwidth Percentage Menu

15: QoS ▶ n: Port number ▶ 2: QoS Bandwidth ▶ 2: Bandwidth Percentage

### To set the bandwidth percentage for a virtual port:

1. From the **QoS Bandwidth Percentage Menu**, type the number corresponding to the virtual port that you want to change. Take note of whether or not that virtual port is currently **Enabled** and **Unlocked**, and then press ENTER.
2. If the virtual port is already enabled and unlocked, proceed to [Step 3](#). Otherwise:
  - a. The virtual port must be **Enabled** to set the bandwidth. To enable a currently disabled vPort, enter 1 for the **Enable/Disable QoS Settings** option and then 1 again to **Enable** the vPort.
  - b. The virtual port must be **Unlocked** to set the bandwidth. To unlock a currently locked vPort, enter 2 for the **Lock/Unlock QoS Settings** option and then 2 again to **Unlock** the vPort.
3. On the **QoS Bandwidth Percentage Menu**, select the **Modify QoS Settings** option.
4. The **Enter Bandwidth Percentage** prompt shows the allowable range and current percentage in square brackets. Enter a new percentage value and then press ENTER.  
The **QoS Bandwidth Percentage Menu** reappears and lists all the virtual ports.
5. Verify that the bandwidth percentage is correct for the virtual port that you changed.
6. (Optional) To prevent further changes to the virtual port, set the mode to **Locked**.
7. (Optional) To change the bandwidth percentage for additional virtual ports, repeat the previous steps.
8. When the **QoS Bandwidth Percentage Menu** reappears, select the **Apply QoS Settings** option to save your changes.

### NOTE:

No changes made to QoS settings in the previous steps are saved until you select **Apply QoS Settings**.

The following confirmation appears:

```
Changes in QoS settings have been applied to selected vPort(s)
```

Hit <RETURN> to continue:

## FCoE Menu

### (Command Line Option -cna)

#### 16: FCoE

Fibre Channel over Ethernet (FCoE) is a new technology that allows FC storage traffic to travel over an Ethernet fabric. This promotes I/O consolidation, whereby data (TCP/IP) and storage (FCoE) traffic can travel over the same shared Ethernet medium. Each traffic type is tagged with a different VLAN ID, resulting in reduced adapter, cabling, switch, power, and cooling costs. By design, FCoE preserves existing FC storage and management tool investment by retaining the FC protocol and familiar FC services, such as WWNs, zoning, and LUN masking.

The **FCoE** menu is available only for the QLE80xx, QLE81xx, and QM181xx adapters. When you select **FCoE** from the main menu, SANsurfer FC/CNA HBA CLI displays a submenu that varies depending on whether the installed adapter is a QLE80xx (FCoE adapter) or a QLx81xx (converged network adapter). Refer to the appropriate section for your adapter type:

- [“FCoE Utilities Menu for QLE80xx Adapters” on page 3-108](#)
- [“FCoE Utilities Menu for QLx81xx Adapters \(Command Line Option -cna\)” on page 3-111](#)

## FCoE Utilities Menu for QLE80xx Adapters

The **FCoE Utilities** menu for the QLE80xx FCoE adapter prompts you to select an FCoE engine, and then provides the following menu for that engine:

```
FCoE Utilities Menu

FCoE Engine (QLE8042)
 Desc: QLE8042 Mercury CNA

1: Update Firmware
2: Stats
3: Logs
4: Return to Previous Menu
```



## Update Firmware

### 16: FCoE ▶ 1: Update Firmware

Use this option to update the firmware on the adapter's ASIC chip. When you select the **Update Firmware** option from the **FCoE Utility** menu, SANsurfer FC/CNA HBA CLI prompts you to enter the file name (usually a `.bin` file) for the firmware to update. After the firmware update is complete, the utility shows a message if it succeeded or failed.

To update firmware using the command line option, enter the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --loadfw <firmware file>
```

## Stats Menu

### 16: FCoE ▶ 2: Stats

Use this option to review the activity of Ethernet data sent and received over the FCoE connection. When you select the **Stats** option from the **FCoE Utility** menu, SANsurfer FC/CNA HBA CLI opens the **Stats** menu. Currently, this menu contains just one option, **Network Interface Stats**.

Select the **Network Interface Stats** option to show network statistics link (NSL) port statistics for one of the available port numbers. The following example shows the output of that option.

NSL Port Statistics Details (Port 0)

```

NSL Port Statistics
Number of Transmitted Packets < 64 bytes: 0
Number of Transmitted Packets = 64 bytes: 0
Number of Transmitted Packets <= 127 bytes: 0
Number of Transmitted Packets <= 255 bytes: 0
Number of Transmitted Packets <= 511 bytes: 0
Number of Transmitted Packets <= 1023 bytes: 0
Number of Transmitted Packets <= 1518 bytes: 0
Number of Transmitted Packets <= 2047 bytes: 0
Number of Transmitted Packets <= 4095 bytes: 0
Number of Transmitted Packets <= 8191 bytes: 0
Number of Transmitted Packets <= 9215 bytes: 0
Number of Transmitted Packets >= 9216 bytes: 0
Total Number of Transmitted Packets (including those with error): 0
Number of Transmitted Bytes for Good Packets: 0
Number of Transmitted Good Packets: 0
Number of Transmitted Unicast Packets: 0
Number of Transmitted Multicast Packets: 0
Number of Transmitted Broadcast Packets: 0
Number of Transmitted Packets with VLAN tag: 0
```

```
Number of Transmitted 802.3x Pause Control Packets: 0
Number of Transmitted Per-Priority Pause Packets: 0
Number of Transmitted Packets with Error: 0
Number of Received Packets < 64 bytes: 0
Number of Received Packets = 64 bytes: 0
Number of Received Packets <= 127 bytes: 0
Number of Received Packets <= 255 bytes: 0
Number of Received Packets <= 511 bytes: 0
Number of Received Packets <= 1023 bytes: 0
Number of Received Packets <= 1518 bytes: 0
Number of Received Packets <= 2047 bytes: 0
Number of Received Packets <= 4095 bytes: 0
Number of Received Packets <= 8191 bytes: 0
Number of Received Packets <= 9215 bytes: 0
Number of Received Packets >= 9216 bytes: 0
Total Number of Received Packets (including those with error): 0
Number of Received Bytes for Good Packets: 0
Number of Received Good Packets: 0
Number of Received Unicast Packets: 0
Number of Received Multicast Packets: 0
Number of Received Broadcast Packets: 0
Number of Received Packets with VLAN tag: 0
Number of Received Oversized Packets with Good CRC: 0
Number of Received Oversized Packets: 0
Number of Received Packets Discarded by the MAC: 0
Number of Received Undersized Packets with Good CRC: 0
Number of Received Undersized Packets with Bad CRC: 0
Number of Received Packets with CRC Error: 0
Number of Received Packets with Length Error: 0
Number of Received Oversized Packets with Bad CRC: 0
Number of Received 802.3x Pause Control Packets: 0
Number of Received Per-Priority Pause Packets: 0
```

Hit <RETURN> to continue:

To show port statistics using the command line option, enter the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --mon --nsl --port[0,1]
```

## Logs Menu

### 16: FCoE ▶ 3: Logs

When you select the **Logs** option from the **FCoE Utility** menu, SANsurfer FC/CNA HBA CLI opens the **Logs** menu. This menu contains two options, **Link Events** and **DCX**.

To list available log entries using the command line option, enter the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --log --list
```

To show a specific log entry by Log ID, enter the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --log --id <logid>
```

### Link Events

16: FCoE ▶ 3: Logs: ▶ 1: Link Events

Select the **Link Events** option to show information similar to the following example:

```

LogID=8 LogName=Link Events

000:00:01:58:480 Host fibre channel port 0, physical link up
000:00:02:03:120 Host fibre channel port 1, physical link up
```

### DCX

16: FCoE ▶ 3: Logs ▶ 2: DCX

Select the **DCX** option to show information similar to the following example:

```

LogID=9 LogName=DCX

000:00:00:00:250 dcx_initialize: DCX enabled and initialized
```

## FCoE Utilities Menu for QLx81xx Adapters (Command Line Option -cna)

The **FCoE Utilities** menu for the QLE81xx and QMI81xx converged network adapters first prompts you to select an FCoE port, for example:

```
FCoE Utilities Menu

HBA Model QLE8142
 1: Port 1: WWPN: 21-00-00-C0-DD-12-0D-ED Online
 2: Port 2: WWPN: 21-00-00-C0-DD-12-0D-EF SFP not installed
 3: Return to Previous Menu
```

When you select an online port, the following menu appears:

```
FCoE Utilities Menu

HBA Instance 0 (QLE8142 Port 1) : Online
ENode MAC Addr: 00:C0:DD:12:0D:ED
WWPN : 21-00-00-C0-DD-12-0D-ED
Desc : QLE8142 QLogic PCI Express to 10 GbE Dual
 Channel CNA (FCoE)
```

- 1: Information
- 2: Data Center Bridging
- 3: DCE Statistics
- 4: TLV
- 5: Return to Previous Menu

The following sections explain each of these menu options:

- [“Information” on page 3-112](#)
- [“Data Center Bridging” on page 3-112](#)
- [“DCE Statistics” on page 3-114](#)
- [“TLV” on page 3-118](#)

## Information

16: FCoE ▶ 1: Information

When you select the **Information** option from the **FCoE Utilities Menu** for QLE81xx/QMI81xx adapters, general information for the adapter is displayed, as shown in the following example:

```

HBA Instance 0: QLE8142 Port 1 WWPN 21-00-00-C0-DD-12-0D-ED PortID C5-02-20

```

```

General Info

```

```
VN Port MAC Address : 0E:FC:00:C5:02:20
VLAN ID : 1002
Max Frame Size : 2500 (Baby Jumbo)
Addressing Mode : FPMA

```

## Data Center Bridging

16: FCoE ▶ 2: Data Center Bridging

When you select the **Data Center Bridging** option from the **FCoE Utilities Menu** for QLE81xx/QMI81xx adapters, the following parameters and settings are displayed for the adapter, as shown in the following example:

```

Data Center Bridging Port 0 Configuration Parameters

```

```
Host Name : BP-WIN2008
HBA Instance : 0
HBA Model : QLE8142
HBA Description : QLE8142 QLogic PCI Express to 10 GbE Dual
 Channel CNA (FCoE)

```

```
DCBX
```

```

DCBX Enable : Enabled
Willing : Enabled
Port Pause Type : Per Priority Pause
SAN Priority COS : 3

ETS

Priority Txt Mode : Bandwidth
SAN Bandwidth Percent : 50
SAN Unused Bw To LAN : Enabled
LAN Unused Bw To SAN : Disabled

```

Table 3-13 provides descriptions of the DCBX and enhanced transmission selection (ETS) settings shown in the preceding example.

**Table 3-13. DCBX and ETS Configuration Parameters**

| Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DCBX Enable     | When DCBX is enabled, the switch connected to the host over this adapter port negotiates these port parameter settings. You cannot disable DCBX.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Willing         | This read-only parameter is from the switch. You cannot disable Willing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Port Pause Type | <p>Specifies the default port pause type as either <i>Standard</i> or <i>Per Priority Pause</i>. Pause is a frame that controls the flow between transmitter and receiver, when the transmitter sends data at a higher rate than the receiver. In such situations, the receiver sends a PAUSE frame to the transmitter and the transmitter suspends transmission for the specified time.</p> <ul style="list-style-type: none"> <li>■ <b>Standard</b> applies to all the frames. Standard pause is enabled by default on the server facing Ethernet ports as well as the network facing Ethernet ports. This setting affects the connection only when connected to a peer that is not configured with DCBX protocol.</li> <li>■ <b>Per Priority Pause</b> enables you to manage pauses in traffic according to assigned priorities to CoS frames (for example, on a per-flow basis). Priority flow control applies to servers with a single adapter interface, which could carry traffic for LAN, SAN, and IPC. In this case, SAN traffic is marked with specific COS to identify it as a distinct flow among other flows (LAN or IPC); you can apply a pause to this specific COS to assure loss-less SAN frames. When connected to a DCBX-enabled peer, the pause type is automatically set with per-priority pause when the peer sends a priority flow control time length value, regardless of this parameter setting.</li> </ul> |

**Table 3-13. DCBX and ETS Configuration Parameters (Continued)**

| Parameter             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAN Priority CoS      | <p>CoS provides eight levels to accommodate more than one traffic class of SAN, LAN, and IPC, with one of the classes used for SAN traffic. This setting shows the persistent value for priority-encoded port packets: 0–7. The default value is 5. The SAN CoS setting affects the connection only when connected to a peer that is not configured with DCBX.</p> <p>When connected to a DCBX-enabled peer, the port CoS value is automatically set to value specified in the port CoS TLV, regardless of this parameter setting.</p> <p>When not connected to a DCBX-enabled peer, or before receiving a port CoS value, the port CoS TLV is based on this parameter setting.</p> |
| Priority Txt Mode     | <p>Specifies the priority mode for data transfer as one of the following:</p> <ul style="list-style-type: none"> <li>■ <b>strict</b> disables the other bandwidth settings. When other settings are disabled, the switch negotiates the port bandwidth according to settings configured on that switch.</li> <li>■ <b>Bandwidth</b> specifies that a percent of bandwidth to SAN traffic uses the SAN bandwidth percent scale. Bandwidth sets the percentage of the number of gigabytes per second (Gbps) transmission speed of the port's capacity to SAN versus LAN traffic. The <b>Bandwidth</b> mode guarantees a transmission rate for SAN traffic over the port.</li> </ul>   |
| SAN Bandwidth Percent | <p>If the <b>Priority Txt Mode</b> is set to <b>Bandwidth</b>, this value indicates the SAN versus LAN percent setting.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SAN Unused Bw To LAN  | <p><b>Enabled</b> specifies that unused bandwidth allocated for SAN traffic is reallocated to LAN traffic when necessary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SAN Unused Bw To SAN  | <p><b>Enabled</b> specifies that unused bandwidth allocated for LAN traffic is reallocated to SAN traffic when necessary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## DCE Statistics

### 16: FCoE ▶ 3: DCE Statistics

When you select the **DCE Statistics** option from the **FCoE Utilities Menu** for QLE81xx/QMI81xx adapters, a submenu menu appears with the following options for data center Ethernet (DCE):

- Display Settings (see [page 3-115](#))
- Auto Polling (see [page 3-115](#))
- Set Rate (see [page 3-115](#))
- Set Details (see [page 3-115](#))
- Start (see [page 3-115](#))

## Display Settings

16: FCoE ▶ 3: DCE Statistics ▶ 1: Display Settings

Select the **Display Settings** option to show the current DCE statistics settings for the selected adapter, for example:

```

DCE Statistics Settings

AutoPoll (AP): 10
SetRate (SR): 5
LogToFile (LF): N/A
Details (DT): 0
```

## Auto Polling

16: FCoE ▶ 3: DCE Statistics ▶ 2: Auto Polling

Select the **Auto Polling** option to open the **Statistics Poll Menu**, which shows your current setting as either **Auto Poll** or **Manual Poll**. To change the polling method, select the appropriate option.

## Set Rate

16: FCoE ▶ 3: DCE Statistics ▶ 3: Set Rate

Select the **Set Rate** option to view the current **Sampling Rate** in seconds. To change the sampling rate, enter a numeric value between 5 and 30.

## Set Details

16: FCoE ▶ 3: DCE Statistics ▶ 4: Set Details

Select the **Set Details** option to view the current **DCE Statistics Details**. To change the detail setting from the current setting to one of the other two options, select that option, and then press ENTER. The example below indicates that **Absolute** is the current setting; you can change the setting to either **Rate (Per Second)** or **Baseline**.

```
1: Absolute (Current)
2: Rate (Per Second)
3: Baseline
```

## Start

16: FCoE ▶ 3: DCE Statistics ▶ 5: Start

Select the **Start** option to view (run) the DCE statistics details for the selected converged network adapter with the **Absolute**<sup>1</sup> setting. For example:

<sup>1</sup> DCE statistics run with the **Rate** or **Baseline** settings instead of the **Absolute** setting will generally show all zeroes, except for the **Receive** totals.

-----  
DCE Statistics Details for CNA Instance 0 - QLE8142  
-----

```

 Transmit Packets: 143885
 Transmit Octets: 17373502
 Transmit Multicast Packets: 20036
 Transmit Broadcast Packets: 0
 Transmit Unicast Packets: 123849
 Transmit Control Packets: 0
 Transmit Pause Packets: 0
 Transmit Packets 64 Octets: 2
 Transmit Packets 65to127 Octets: 113380
 Transmit Packets 128to255 Octets: 30503
 Transmit Packets 256to511 Octets: 0
 Transmit Packets 512to1023 Octets: 0
 Transmit Packets 1024to1518 Octets: 0
 Transmit Packets 1519toMax Octets: 0
 Transmit Undersize Packets: 0
 Transmit Oversize Packets: 0
 Receive Octets: 995453281
 Receive Octets Ok: 133608898
 Receive Packets: 7038642
 Receive Packets Ok: 1447366
 Receive Broadcast Packets: 157285
 Receive Multicast Packets: 1105617
 Receive Unicast Packets: 184464
 Receive Undersize Packets: 0
 Receive Oversize Packets: 0
 Receive Jabber Packets: 0
 Receive Undersize FCS Error Packets: 0
 Receive Control Packets: 18
 Receive Pause Packets: 0
 Receive Packets 64Octets: 307157
 Receive Packets 65to127Octets: 3811507
 Receive Packets 128to255Octets: 2239110
 Receive Packets 256to511Octets: 631218
 Receive Packets 512to1023Octets: 40077
 Receive Packets 1024to1518Octets: 721
 Receive Packets 1519toMaxOctets: 8852
 Transmit CBFC Pause Frames 0: 0
 Transmit CBFC Pause Frames 1: 0
 Transmit CBFC Pause Frames 2: 0
 Transmit CBFC Pause Frames 3: 0
 Transmit CBFC Pause Frames 4: 0
 Transmit CBFC Pause Frames 5: 0
 Transmit CBFC Pause Frames 6: 0
 Transmit CBFC Pause Frames 7: 0
 Transmit FCoE Packets: 123851
 Transmit Mgmt Packets: 20034
```



```
Receive CBFC Pause Frames 0: 0
Receive CBFC Pause Frames 1: 0
Receive CBFC Pause Frames 2: 0
Receive CBFC Pause Frames 3: 0
Receive CBFC Pause Frames 4: 0
Receive CBFC Pause Frames 5: 0
Receive CBFC Pause Frames 6: 0
Receive CBFC Pause Frames 7: 0
 Receive FCoE Packets: 337914
 Receive Mgmt Packets: 20479
 Receive Packets Priority 0: 0
 Receive Packets Priority 1: 0
 Receive Packets Priority 2: 0
 Receive Packets Priority 3: 337937
 Receive Packets Priority 4: 0
 Receive Packets Priority 5: 0
 Receive Packets Priority 6: 0
 Receive Packets Priority 7: 307142
 Transmit Packets Priority 0: 0
 Transmit Packets Priority 1: 0
 Transmit Packets Priority 2: 0
 Transmit Packets Priority 3: 123851
 Transmit Packets Priority 4: 0
 Transmit Packets Priority 5: 0
 Transmit Packets Priority 6: 0
 Transmit Packets Priority 7: 0
Receive Packets Discarded Priority 0: 0
Receive Packets Discarded Priority 1: 0
Receive Packets Discarded Priority 2: 0
Receive Packets Discarded Priority 3: 0
Receive Packets Discarded Priority 4: 0
Receive Packets Discarded Priority 5: 0
Receive Packets Discarded Priority 6: 0
Receive Packets Discarded Priority 7: 0
```

-----  
General keyboard shortcuts:

```
A - Change details display to Absolute
R - Change details display to Rate Per Second
B - Change details display to Baseline
C - Clear Baseline
[- Ascending sort by Names
] - Descending sort by Names
{ - Ascending sort by Values
} - Descending sort by Values
ENTER - Cancel the current task
```

-----

**NOTE:**

While the DCE statistics are running, you can change the viewing options by pressing the keys listed above: A, R, B, C, [, ], {, }, and ENTER. The C key (Clear Baseline) option is available only in **Baseline** mode.

**TLV**

16: FCoE ▶ 4: TLV

When you select the **TLV** option from the **FCoE Utilities Menu** for QLE81xx/QMI81xx adapters, a submenu menu prompts you to view either **Details** or **Raw** type-length-value (TLV) data for DCBX. The TLV for link layer discovery protocol (LLDP) frames is used to exchange parameters and their values.

**Details**

16: FCoE ▶ 4: TLV ▶ 1: Details

If you select the **Details** option, TLV data appears such as in the following example:

```

DCBX Parameters Details for CNA Instance 0 - QLE8142

Fri May 01 14:27:08 2009

DCBX TLV (Type-Length-Value) Data
=====
```

|                                |
|--------------------------------|
| DCBX Parameter Type and Length |
| DCBX Parameter Length: 13      |
| DCBX Parameter Type: 2         |

|                            |
|----------------------------|
| DCBX Parameter Information |
| Parameter Type: Current    |
| Pad Byte Present: Yes      |
| DCBX Parameter Valid: Yes  |
| Reserved: 0                |

|                                    |
|------------------------------------|
| DCBX Parameter Data                |
| Priority Group ID of Priority 1: 0 |
| Priority Group ID of Priority 0: 0 |
| Priority Group ID of Priority 3: 1 |
| Priority Group ID of Priority 2: 0 |
| Priority Group ID of Priority 5: 0 |
| Priority Group ID of Priority 4: 0 |

Priority Group ID of Priority 7: 0  
Priority Group ID of Priority 6: 0

Priority Group 0 Percentage: 50  
Priority Group 1 Percentage: 50  
Priority Group 2 Percentage: 0  
Priority Group 3 Percentage: 0  
Priority Group 4 Percentage: 0  
Priority Group 5 Percentage: 0  
Priority Group 6 Percentage: 0  
Priority Group 7 Percentage: 0

Number of Traffic Classes Supported: 2

DCBX Parameter Information

Parameter Type: Remote  
Pad Byte Present: Yes  
DCBX Parameter Valid: Yes  
Reserved: 0

DCBX Parameter Data

Priority Group ID of Priority 1: 0  
Priority Group ID of Priority 0: 0

Priority Group ID of Priority 3: 1  
Priority Group ID of Priority 2: 0

Priority Group ID of Priority 5: 0  
Priority Group ID of Priority 4: 0

Priority Group ID of Priority 7: 0  
Priority Group ID of Priority 6: 0

Priority Group 0 Percentage: 50  
Priority Group 1 Percentage: 50  
Priority Group 2 Percentage: 0  
Priority Group 3 Percentage: 0  
Priority Group 4 Percentage: 0  
Priority Group 5 Percentage: 0  
Priority Group 6 Percentage: 0  
Priority Group 7 Percentage: 0

Number of Traffic Classes Supported: 2

DCBX Parameter Information

Parameter Type: Remote  
Pad Byte Present: No  
DCBX Parameter Valid: Yes  
Reserved: 0

DCBX Parameter Data

```
PFC Enabled on Priority 0: No
PFC Enabled on Priority 1: No
PFC Enabled on Priority 2: No
PFC Enabled on Priority 3: Yes
PFC Enabled on Priority 4: No
PFC Enabled on Priority 5: No
PFC Enabled on Priority 6: No
PFC Enabled on Priority 7: No

Number of Traffic Classes Supported: 8
. . .
```

## Raw

16: FCoE ▶ 4: TLV ▶ 2: Raw

If you select the **Raw** option, TLV data appears such as in the following example:

```

DCBX Parameters Raw Data for CNA Instance 0 - QLE8142

```

```
Fri May 01 14:27:10 2009
```

```
DCBX TLV (Type-Length-Value) Data
=====
```

```
0D 04 0E 00 00 01 00 00
32 32 00 00 00 00 00 00
02 00 0D 00 00 01 00 00
32 32 00 00 00 00 00 00
02 00 0C 00 00 01 00 00
32 32 00 00 00 00 00 00
02 00 02 06 0A 00 08 08
09 00 08 08 08 00 08 01
```

# Help Menu

(Command Line Option -h)

14 (or *n*): Help

When you enter this option the **Help Menu** appears with the following options:

- Contents
- Exit Codes
- About

Type the number for the option you want, and then press ENTER.

To view help for FCoE using the command line option, enter the following command:

```
scli -fcoe
```

## Contents

14 (or 15): Help ▶ 1: Contents

When you select the **Contents** option, SANsurfer FC/CNA HBA CLI shows the entire **Help** menu. You can see the help menu options rearranged into alphabetical order in [Appendix D](#).

## Exit Codes

14 (or 15): Help ▶ 2: Exit Codes

When you select the **Exit Codes** option, SANsurfer FC/CNA HBA CLI shows the entire list of exit codes. You can see the exit codes in [Appendix C](#).

## About

14 (or 15): Help ▶ 3: About

When you select the **About** option, SANsurfer FC/CNA HBA CLI shows the following information about this tool:

- Product name
- Version and build number
- Copyright information
- All rights reserved
- Full Name
- Build Type
- Build Date

---

## Notes

# 4 Non-Interactive Commands

This chapter contains the information in the help (to view help, enter the command `-h`), plus additional explanation and examples. Each command line option is listed, followed by a command description and examples of the command in use and typical responses from the system.

The non-interactive command information included in this chapter includes the following:

- [“Display System Information \(Command Line Options -g, -z, and -tp\)” on page 4-1](#)
- [“Command Summary” on page 4-5](#)

## Display System Information (Command Line Options -g, -z, and -tp)

When you enter one of these options, general information appears in various formats. For example:

- `# scli -g` shows the host information (see [“Host Information \(Command Line Option -g\)” on page 4-1](#)).
- `# scli -z` shows the host configuration (see [“Host Configuration \(Command Line Option -z\)” on page 4-2](#)).
- `# scli -tp` shows the host topology (see [“Host Topology \(Command Line Option -tp\)” on page 4-3](#)).

## Host Information (Command Line Option -g)

The command format to show host information is:

```
scli -g
```

When you enter this option, the following information about the local machine appears:

- Host Name
- OS type
- OS version (patches where applicable)

- SAN target management (SDM) API version
- List of adapters: adapter model, port number, WWPN, serial number (SN), adapter number (adapter 0–n), and status (online/offline)
- Total number of QLogic FC adapters detected

**NOTE:**

The failover and SAN device management APIs are QLogic-specific libraries required for SANsurfer FC/CNA HBA CLI. The versions of these libraries are useful for debugging purposes.

## Host Configuration (Command Line Option -z)

The command line option `-z` shows all of the adapter’s information in a single command. The command format is:

```
scli -z
```

SANsurfer FC/CNA HBA CLI shows the information in [“Host Information \(Command Line Option -g\)”](#) on page 4-1, as well as the following additional information:

- HBA General information
- HBA Vital Product Data (VPD)
- HBA Parameter Settings
- Driver Settings Information:
  - Group: Persistent
  - Group: Binding
- Devices/LUNs Information
- Selective LUNs Information
  - Boot Device Settings

To show the information for a single adapter, type the following command:

```
scli -z (<hba instance> | <hba wwpn>)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

To show the information for all adapters, type:

```
scli -z all
```



## Host Topology (Command Line Option -tp)

**NOTE:**

Under Linux, host topology (-tp) is disabled if you are using the IOCTL or sysfs (inbox) driver.

The command format for Host Topology is:

```
scli -tp
```

When you select this option, SANsurfer FC/CNA HBA CLI shows the information in [“Host Configuration \(Command Line Option -z\)”](#) on page 4-2, as well as the following additional information:

- Interconnect Element (switch or adapter)
  - Type (switch or adapter)
  - World wide name
  - Domain ID
  - Management ID
  - IP address
  - Model
  - Symbolic name
  - Serial number
  - MAC address
  - Firmware version
  - Port count
  - Beacon status
  
- Interconnect element (adapter):
  - Type
  - World wide node name
  - World wide port name
  - Vendor ID
  - HBA Model
  - Adapter Serial Number
  - Adapter Alias
  - Port Alias
  - Driver Version
  - Firmware Version
  - Total Number of Devices
  - Host
  - Number of Port
  - Beacon status

- Port Type
- Port State
- Port Information
  - Physical Port Number (switch port number), including:
    - Port state
    - Port type
    - TX port type
    - Port module type
  - Attached Port (QLogic adapter, tape device, or disk device connected to the switch physical port), including:
    - Target/initiator
    - Node name
    - Port name
    - Vendor ID
    - Product ID (if applicable)
    - Product revision (if applicable)
    - Product serial number (if applicable)
    - Adapter model (if applicable)
    - Adapter serial number (if applicable)
    - Adapter alias (if applicable)
    - Port alias (if applicable)
    - Driver version
    - Firmware version
    - Total number of devices (if applicable)
    - Host (if applicable)

## Host Configuration

Use these options to show the information for one or all of the adapter ports in the system. The `-z` option shows the combination of the commands listed in [Table 4-1](#). The commands are listed in alphabetical order.

**Table 4-1. Options Shown by -z**

| CLI              | Description           | See User Guide Section                                                  |
|------------------|-----------------------|-------------------------------------------------------------------------|
| <code>-c</code>  | Show adapter settings | <a href="#">“-c (Show Parameter Settings)” on page 4-8</a>              |
| <code>-e</code>  | Configure boot device | <a href="#">“-e (Boot Device View   Select   Disable)” on page 4-11</a> |
| <code>-fg</code> | View driver settings  | <a href="#">“-fg (Show Driver Settings)” on page 4-16</a>               |

**Table 4-1. Options Shown by -z (Continued)**

| CLI | Description                         | See User Guide Section                                                                     |
|-----|-------------------------------------|--------------------------------------------------------------------------------------------|
| -g  | Show system information             | “-g (Display System Information)” on page 4-18                                             |
| -i  | Show adapter information            | “-i (Display HBA General Information or VPD Information for One or All HBAs)” on page 4-20 |
| -l  | Show LUN list                       | “-l (Display LUN Info)” on page 4-32                                                       |
| -m  | Configure selective LUNs            | “-m (View, Enable, or Disable LUNs)” on page 4-33                                          |
| -p  | Configure target persistent binding | “-p (Display Persistent Target Binding Info)” on page 4-38                                 |
| -t  | Show target list                    | “-t (Display Target Information)” on page 4-45                                             |

## Command Summary

The command format for non-interactive mode is:

```
scli -(Cmd) (<hba instance> | <hba wwpn>) (view | ?)
```

Where:

*hba instance* = Adapter port instance (use -g command to find)

*hba wwpn* = Adapter world wide port name

You can combine the commands -o, -s and -x with other options. However, they *must* be at the beginning or at the end of the command line. Use these commands as follows:

- -o = Output the results to a file (see “-o (Output to a File)” on page 4-37). For example:

```
scli -l -o
```

- -s = Silent mode (see “-s (Silent Mode)” on page 4-45). For example:

```
scli -i all -s -o output.txt
```

- -x = Outputs the results in XML format (see “-x (Output in XML Format 1)” on page 4-48). For example:

```
scli -i all -x -o output.xml
```

You cannot combine the command `-f` with any other options:

- `-f` = Input Parameter Options from a Text File (see “[-f \(Input Parameter Options from a Text File\)](#)” on page 4-13). For example:

```
scli -f command.txt
```

In addition, the following general rules for commands apply:

- Only *one* command line option per input file is valid.
- You can use either the hyphen (-) character or the forward slash (/) character. For example, both of these commands are valid:

```
scli -g
scli /g
```

[Table 4-2](#) defines the command variables.

**Table 4-2. Command Variables**

| Variable                            | Definition                   | Format                                      |
|-------------------------------------|------------------------------|---------------------------------------------|
| <code>&lt;hba instance&gt;</code>   | Adapter number <sup>a</sup>  |                                             |
| <code>&lt;hba wwpn&gt;</code>       | Adapter world wide port name | xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxxxx |
| <code>&lt;alias&gt;</code>          | Adapter alias                | Symbolic adapter <sup>b</sup> name          |
| <code>&lt;target wwnn&gt;</code>    | Target world wide node name  | xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxxxx |
| <code>&lt;target wwpn&gt;</code>    | Target world wide port name  | xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxxxx |
| <code>&lt;target port id&gt;</code> | Target port ID               | xx-xx-xx or xxxxxx                          |
| <code>&lt;target id&gt;</code>      | Target ID                    |                                             |
| <code>&lt;lun id&gt;</code>         | Logical unit number          | (0–255)                                     |
| <code>&lt;address&gt;</code>        | IP address                   | xxx.xxx.xxx.xxx                             |
| <code>(speed)</code>                | Target link speed            | 1.2 or 4 GHz, or 8G                         |

**Table Notes**

<sup>a</sup> You can use the `-g` command to find adapter numbers.

<sup>b</sup> You assign the symbolic name. It is limited to 100 characters in length.

## **-a (View or Toggle Beacon Status)**

Use the `-a` command to either view (1) or change (2) the status of a beacon.

**NOTE:**

- Adapter must not be in silent mode. See “-s (Silent Mode)” on page 4-45 to issue a response to this command.
- The `-a` feature is not supported on QLA22xx adapters or QLE8042 adapter.

To view the adapter port’s LED beacon state, type:

```
scli -a (<hba instance> | <hba wwpn>) (view | ?)
```

When the adapter’s LED is flashing, the following message appears:

```
HBA Port x - LED Flashing is ON.
```

When the adapter’s LED is not flashing, the following message appears:

```
HBA Port x - LED Flashing is OFF.
```

In Solaris SPARC, include double quotes around the question mark (?) if the system is running with a `csch` or `tsch` shell. For example:

```
scli -a <hba> "?"
```

To start or stop flashing the adapter’s LED beacon, type:

```
scli -a (<hba instance> | <hba wwpn>)
```

SANsurfer FC/CNA HBA CLI toggles the LED’s state. If the LED is flashing, the flashing stops. If the LED is not flashing, the flashing begins.

If SANsurfer FC/CNA HBA CLI is not in silent mode (see “-s (Silent Mode)” on page 4-45), one of the following messages appears to indicate the LED’s current state:

```
The LED Flashing for <hba instance> <hba wwpn> has been turned
ON
The LED Flashing for <hba instance> <hba wwpn> has been turned
OFF
```

The `hba instance` and `hba wwpn` variables must match the command input parameter.

## **-b** **(Save or Update the Flash BIOS or FCode)**

Use the `-b` command to:

- Update the BIOS or FCode from a file (1).
- Save the BIOS or FCode to a file (2).

To update one or all adapter's Flash with new BIOS or FCode, type:

```
scli -b (all | <hba instance> | <hba wwpn>) [(<-rg> | all)]
<BIOS/FCode File Name>
```

Where:

*all* = All adapters of the same type in the system are updated with the new BIOS/FCode

*hba instance* = Adapter number (use *-g* command to find)

*hba wwpn* = World wide port name

*-rg* = Flash region update mode (4GB adapters only<sup>a</sup>)

*all* Update all regions (BIOS/FCode/EFI) depending on the Flash

*BIOS/FCode File Name* = Name or path of file containing update BIOS/FCode

<sup>a</sup> Region update only supported on QLA/QLE/QMC246x adapters.

To save the BIOS/FCode to a file, type:

```
scli -b (<hba instance> | <hba wwpn>) SAVE <BIOS/FCode File Name>
```

Where:

*hba instance* = Adapter number (use *-g* command to find)

*hba wwpn* = World wide port name of the adapter

*BIOS/FCode File Name* = File name or a path to a file in which to save BIOS/FCode

## **-C** (Show Parameter Settings)

Use the *-c* command to show the parameter settings for all adapters in the system:

```
scli -c [<all>]
```

To show the parameter settings for a specific adapter, type:

```
scli -c (<hba instance> | <hba wwpn>)
```

Where:

*hba instance* = Adapter number (use *-g* command to find)

*hba wwpn* = World wide port name of the adapter

## **-cna** (FCoE Utilities Menu for QLx81xx Adapters)

Use the *-cna* command to work with converged network adapters (QLE81xx and QMI81xx).

The `-cna` command line options use the following variables:

*hba instance* = Adapter instance number of a converged network adapter port  
*hba wwpn* = World wide port name of a converged network adapter port  
*mpi file* = MPI configuration .dat file  
`--detail` = View detailed format  
`--raw` = View raw format  
*param name* = Parameter name  
*param alias* = Parameter alias  
*param value* = Parameter value

To view general information for the adapter, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --geninfo
```

To view data center bridging exchange protocol (DCBX) settings, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --dcb --info
```

To update the message passing interface (MPI) configuration table on the adapter from a file, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --updatecfg <mpi file>
```

To save the current MPI configuration table of the selected adapter to a file, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --savecfg <mpi file>
```

To view DCBX Type-Length-Value (TLV) data sent and received over the adapter port connection, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --tlv --detail | --raw
```

To view data center Ethernet (DCE™) network activity information sent and received over the adapter port connection, issue the following command:

```
scli -cna <hba instance>|<hba wwpn> --mon --dce [{ <param name> | <param alias> <param value> }]
```

[Table 4-3](#) lists the DCE statistics parameters, possible values, and a description of each.

**Table 4-3. DCE™ Statistics Parameters**

| Parameter Name | Parameter Alias | Parameter Value | Description                                                                                                                                               |
|----------------|-----------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| AutoPoll       | AP              | 0<br>1–256      | Set to auto polling mode<br>Set to manual polling mode (iteration)                                                                                        |
| SetRate        | SR              | 5–30            | Set the polling interval rate (seconds)                                                                                                                   |
| Details        | DT              | 0–2             | Set the detailed display mode:<br><ul style="list-style-type: none"> <li>■ 0 = Absolute</li> <li>■ 1 = Rate per second</li> <li>■ 2 = Baseline</li> </ul> |

### **-d** (Update Device Driver)

Use the `-d` command to update the adapter’s device driver:

```
scli -d <file name>
```

Where:

*file name* = Absolute or full path name of the setup `INF` file or the compressed driver file in `ZIP` or `EXE` format. The binary image of the device driver must reside in the same absolute or full path location. For example:

```
scli -d c:\temp\ql2300\qlxxx.inf
```

### **-dm** (Display Diagnostics Monitoring Info)

This option allows you to show general or detailed Digital Diagnostic Monitoring Interface for optical transceivers.

**NOTE:**

- This option is supported only for QLA/QLE/QEM24xx (4GB) adapters.
- Under Solaris, this option is disabled if you are using Linux inbox drivers (SLES 10.0/RHEL 5.0 or latest).

To show transceiver monitoring *general* information, type:

```
scli -dm (<hba instance> | <hba wwpn> | <all>)general | gen
```

To show transceiver monitoring *detailed* information, type:



```
scli -dm (<hba instance> | <hba wwpn> | all)details | det
```

Where:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

*all* = All adapters in the system

## **-e** (Boot Device View | Select | Disable)

Use the `-e` command to:

- Show the current boot-device selection for all adapters.
- Show the current boot-device selection for a specific adapter.
- Set a target device as the boot device for an adapter.
- Selectable boot—The OS boots from the first target the BIOS finds.
- Delete the boot device from an adapter.

In these commands:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

*target wwnn* = World wide node name of the target

*target wwpn* = World wide port name of the target

*target id* = ID to which the target is bound

*lun id* = ID of the LUN

To view the current boot device selection on all adapters:

```
scli -e (view | ?)
```

To view the current boot device selection for a specific adapter:

```
scli -e (<hba instance> | <hba wwpn>) (view | ?)
```

In Solaris SPARC, if the system is running with a `csch` or `tsch` shell, include double quotes around the question mark (?). For example:

```
scli -e <hba> "?"
```

In Windows and Linux, each adapter's currently selected boot device is shown in the following format:

```
<hba instance> <hba wwpn> <target wwnn> <target wwpn> <lun id>
```

Solaris shows each adapter's currently selected boot device in the following format:

```
<hba instance> <hba wwpn> <target wwnn> <target wwpn> <target id> <lun id>
```

If the system does not have an adapter with a boot device selected, the following message appears:

```
There is no boot device selected for any HBA in the system.
```

Following is an example of the boot device option when viewing the boot device for a single adapter. In this example, no boot device is configured (selectable boot is disabled; the boot port name is all zeroes).

```

HBA 1: QLA2340 WWPN xx-xx-xx-xx-xx-xx-xx-xx Port ID 00-00-00

Boot Device Settings:

Selectable Boot: Disabled

(Primary) Boot Port Name LUN

00-00-00-00-00-00-00-00 00-00-00-00-00-00-00-00 0
Press <Enter> to continue:
```

To cause the OS to boot from the first target it finds with a LUN, select a boot port name of 00-00-...00 (selectable boot); this applies only if the boot BIOS is enabled.

To set a specific target as the boot device for a specific adapter, type the following command:

```
scli -e (<hba instance> | <hba wwpn>) <target wwnn> <target wwpn> <target id> <lun id>
```

**NOTE:**

Because x86 Solaris does not require the target ID, the Solaris command is:

```
scli -e (<hba instance> | <hba wwpn>) <target wwnn> <target wwpn> <lun id>
```

**NOTE:**

The boot device setting option is not supported on Macintosh PowerPC.

SANsurfer FC/CNA HBA CLI checks all parameters to verify that the adapter, targets, and LUNs are valid.

If you select an adapter with no target or a target with no LUN, SANsurfer FC/CNA HBA CLI shows an error message and aborts.

In Solaris SPARC, setting the target ID to the target of the boot-selected LUN is equivalent to persistently binding the target (see “-p (Display Persistent Target Binding Info)” on page 4-38). Therefore, if the target is persistently bound, its boot device entry must have the same target ID.

For all operating systems, if the adapter already has boot devices defined and they are different from the ones in the command parameter or menu selection, you are prompted to confirm the boot device selection:

```
The HBA already has a boot device(s) selected. Do you want to
replace it with the new one?
```

For all operating systems, if the adapter already has boot devices selected and they are the same as the ones in the command parameter or menu selection, the following message appears:

```
The HBA already has that device selected as boot device.
```

To use selectable boot (the OS boots from the first target the BIOS finds) set the `<target wwpn>`, `<target wwnn>` and `<lun id>` inputs to all zeroes. For example type:

```
scli -e (<hba instance> | <hba wwpn>) (enable | 0 0 0)
```

To disable (delete) the boot device for a specific adapter, type:

```
scli -e (<hba instance> | <hba wwpn>) disable
```

## **-ei** (List SANsurfer FC/CNA HBA CLI Error Codes)

This command lists the SANsurfer FC/CNA HBA CLI error codes as shown in [Appendix D](#).

## **-f** (Input Parameter Options from a Text File)

### **NOTE:**

The `-f` option is valid only in non-interactive mode, and cannot be combined with any other options. Only one command line parameter per file is valid. This option is used when it is run as a script file.

To input parameter options to SANsurfer FC/CNA HBA CLI through a text file, type `-f`, followed by the file name. For example:

```
scli -f command.txt
```

The text file must be formatted as follows:

- The file must contain a single line.
- The file must contain only parameters.
- The file cannot contain another `-f` option.

The following example shows how to set the connection option of an adapter to default (loop preferred, otherwise point-to-point) and the data rate to auto through a command file that is invoked by the `-f` option:

1. Create a text file (for example, `setadapter0.txt`) and enter the following command in the text file:

```
-n 0 co 2 dr 2
```

2. Save and close the file.
3. Issue the `scli` command with the `-f` option (input from command file):

```
scli -f setadapter0.txt
scli -f <file name>
```

SANsurfer FC/CNA HBA CLI specifies command line input from file.

## **-fcoe** (Display and Configure FCoE Engine Parameters)

Use the `-fcoe` commands to view and modify the FCoE engine for QLE8042 and Cisco Unified Computing System (UCS) converged network adapters.

### **Display Commands**

To show the current FCoE engine firmware version, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --info
```

To show the FCoE engine parameters, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --getparam --port0
```

To show the FCoE engine parameters of port 1, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --getparam --port1
```

### **Configuration Commands**

To modify the current FCoE engine parameters, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --setparam --port0
({ <param name> | <param alias> } <param value>)
```

To modify the FCoE engine parameters of port 1, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --setparam --port1
({ <param name> | <param alias> } <param value>)
```

In the previous commands, the variables indicate the following (see also [Table 4-4](#)):

- hba instance* = Adapter instance number (use `-g` command to find)
- hba wwpn* = World wide port name of the adapter
- param name* = Name of the parameter
- param alias* = Alias of the parameter
- param value* = New value of the parameter
- `-port0` = FCoE access port 0
- `-port1` = FCoE access port 1

**Table 4-4. FCoE Engine Parameters**

| Parameter Name<br><param name> | Alias<br><param alias> | Value<br><param value> | Description                                                                                                                                                                                                                                                                    |
|--------------------------------|------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PortType                       | AT                     | 0, 1                   | 0=Access (default)<br>1=Trunk                                                                                                                                                                                                                                                  |
| PauseType                      | PT                     | 1, 2                   | 1=Standard Pause (default)<br>2=Priority Flow Control                                                                                                                                                                                                                          |
| PriorityPause-Mask             | PM                     | 0, 1, ..7              | Specifies the bit location of the pause mask to be set to 1; that is, a PriorityPauseMask type of 1,3,4 means that bit 1,3,4 is 1, the rest are zeros. This equals 1a (hexadecimal) or 26 (decimal). This mask is valid only if the PauseType is set to Priority Flow Control. |
| FCoEConfig                     | FC                     | 0, 1                   | 0=Pre-T11 Frame Format<br>1=T11 Rev 0 Frame Format (If supported)                                                                                                                                                                                                              |
| COS                            | CS                     | 0–7                    | By default, the default value for priority encoded FCoE packet is 3. This settings is per Fibre Channel port.                                                                                                                                                                  |

### Firmware Update Commands

To update the firmware on the FCoE, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --loadfw <firmware file>
```

## Network Interface Statistics Commands

To show the FCoE network interface statistics, issue the following command:

```
scli -fcoe (<hba instance> | <hba wwpn>) --mon --nsl --portn
```

## FCoE Log Commands

To show the FCoE available logs, issue the following commands:

To list available log IDs:

```
scli -fcoe (<hba instance> | <hba wwpn>) --log --list
```

To show a specific log by log ID:

```
scli -fcoe (<hba instance> | <hba wwpn>) --log --id
<logid>
```

In the previous commands, the variables indicate the following:

*hba instance* = Adapter instance number of an adapter port  
*hba wwpn* = World wide port name of an adapter port  
*firmware file* = File name of the new firmware (usually .bin)  
*portn* = FCoE access port 0 or 1  
*logid* = Available log ID (0–n)

## -fg (Show Driver Settings)

### NOTE:

The `-fg` option is valid only in non-interactive mode.

To show the driver settings, type:

```
scli -fg (<hba instance> | <hba wwpn>) (view | ?)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter

## -fs (Configure Driver Settings)

Type the following command to configure the driver settings:

```
scli -fs (<hba instance> | <hba wwpn>) {(<param name> |
<param alias>) <param value>}
```

Where:

- hba instance* = Adapter instance number of an adapter port (use `-g` command to find)
- hba wwpn* = World wide port name of the adapter
- param name* = Name of the parameters
- param alias* = Alias of the parameters
- param value* = New value of the parameters

The pairs `<param name> <param value>` and `<param alias> <param value>` can be repeated to set multiple parameters in a single command.

Table 4-5 lists the driver configuration parameter names and aliases.

**Table 4-5. Driver Settings Parameters**

Description	Parameter Name <param name>	Alias <param alias>	Value <sup>a</sup> <param value>
Persistently bound target(s) only	PersistentOnly	PO	0, 1
Present persistently bound target(s) plus any new target(s) with driver default	PersistentPlusNew	PN	0, 1
Present targets with driver default	NewOnly <sup>b</sup>	NO	0, 1
Bind devices by WWPN	BindWWPN	BW	0, 1
Bind devices by port ID	BindPortID	BP	0, 1

Table Notes

<sup>a</sup> 0 = Disabled, 1 = Enabled

<sup>b</sup> Driver parameter `NewOnly` (NO) is supported only with the failover driver. If you select a QLA22xx adapter, all QLA22xx adapters on the host will use the same settings. If you select a 23xx adapter, all 2G/4G adapters on the host will also use the same settings.

The following restrictions apply:

- Under Solaris, the driver configuration feature is disabled if you are using the driver from the OS installation CDs (QLC driver).
- Under Linux, this feature is disabled if you are using the IOCTL or sysfs (inbox) driver.
- Under Macintosh, the `BindWWPN` and `BindPortID` parameters are not changeable; Mac supports only the `BindWWPN` parameter.

## **-g** (Display System Information)

To view system information, type:

```
scli -g
```

For details of this command, see “Display System Information (Command Line Options -g, -z, and -tp)” on page 4-1.

## **-gs** (Show HBA Statistics)

To view the adapter statistics, type:

```
scli -gs (<hba instance> | <hba wwpn>) [(<param name> | <param alias>) <param value>]
```

Where:

*hba instance* = Adapter number (use -g command to find)

*hba wwpn* = World wide port name of the adapter

*param name* = Name of the parameter (see table 4-7)

*param alias* = Alias of the parameter (see table 4-7)

*param value* = New value of the parameter (see table 4-7)

Table 4-6 lists the adapter statistics parameter names, aliases, and values.

**Table 4-6. Adapter Statistics Parameters**

Description	Name	Alias	Value
Sets how often statistics are retrieved	AutoPoll	AP	0–256 <sup>a</sup>
Set the polling interval when retrieving statistics (seconds)	PollRate	SR	5–30
Saves the adapter’s statistics to a CVS log file	LogToFile	LF	Log file name

Table Notes

<sup>a</sup> When the AutoPoll value is 0, statistics are retrieved automatically until the user aborts the operation.  
When the AutoPoll value is in the range of 1–256, statistics are retrieved for the number of cycles specified by this value.

Under Solaris, this feature is disabled if you are using the driver from the OS installation CDs (QLC driver). Under Linux, this feature is disabled if you are using the IOCTL or sysfs (inbox) driver.



## -h (Help)

Type the following text to view the help file:

```
scli (-h | ?)
```

Type the following text to view help information for an individual command:

```
scli <Command Line Parameter> (-h | ?)
```

For example, typing `scli -l -h` shows:

```
SANsurfer FC/CNA HBA CLI
v1.x.x Build x
Copyright 2003-2009 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters

scli -l (<hba no> | <hba wwpn>)
 - shows LUN information for all HBAs.
scli -l (<hba no> | <hba wwpn>) (<target wwpn>| <target
portid>)
 - shows LUN information for a specific target
scli -l (<hba no> | <hba wwpn>) (<target wwpn>| <target
portid>) <lun id> - shows LUN information for a specific
LUN on a specific target
```

### NOTE:

To view the current version information for SANsurfer FC/CNA HBA CLI, use the `-v` option described in [“-v \(Display Version\)” on page 4-47](#).

## -ha (Set | Delete HBA Alias)

With this command you can view, set or delete the alias of a specific adapter.

To view the alias of a specified adapter, type:

```
scli -ha (<hba instance> | <hba wwpn>) view | ?
```

To set an alias for a specified adapter, type:

```
scli -ha (<hba instance> | <hba wwpn>) <alias>
```

To delete an alias of a specified adapter, type:

```
scli -ha (<hba instance> | <hba wwpn>) delete
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*alias* = Symbolic adapter name. (100 characters, maximum)

To set an alias for the selected adapter:

```
scli -ha (<hba instance> | <hba wwpn>) <alias>
```

To delete the current alias of the selected adapter:

```
scli -ha (<hba instance> | <hba wwpn>) delete
```

To view the current alias of the selected adapter:

```
scli -ha (<hba instance> | <hba wwpn>) view | ?
```

## **-i**

### **(Display HBA General Information or VPD Information for One or All HBAs)**

To show general adapter information or VPD information for all adapter ports in the system, type the following command:

```
scli -i [<all>] [<VPD>]
```

Where:

*all* = All adapters in the system  
*VPD* = Vital Product Data

To show general or VPD information for a specific adapter, type:

```
scli -I (<hba instance> | <hba wwpn>) [VPD]
```

To show VPD (QLA/QLE24xx only) for all adapter ports in the system, type:

```
scli -i VPD
scli -i all VPD
```

Where:

*all* = VPD information for all adapters in the system

## **-kl**

### **(Loopback Test)**

Use the `-kl` command to perform the loopback test.

Use the `-kr` command to perform the read/write buffer test (see [“Run a Read/Write Buffer Test” on page 4-28](#)).

To do a loopback test with the default parameters, type:

```
scli -kl (<hba instance> | <hba wwpn>)
```

To do a loopback test with customized parameters, type:

```
scli -kl (<hba instance> | <hba wwpn>) [(<param name> | <param alias>) <param value>]
```

Where:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

`-ex` or `-exclude` = World wide port name of the target device to be excluded from the read/write test

*param name* = One of the following:

- [DataPattern \(DP\)](#) on page 4-21
- [DataSize \(DS\)](#) on page 4-23
- [TestCount \(TC\)](#) on page 4-23
- [TestIncrement \(TI\)](#) on page 4-23
- [OnError \(OE\)](#) on page 4-24
- [LoopbackType \(LT\)](#) on page 4-24

*param alias* = One of the following:

- [DP](#) (see [DataPattern \(DP\)](#) on page 4-21)
- [DS](#) (see [DataSize \(DS\)](#) on page 4-23)
- [TC](#) (see [TestCount \(TC\)](#) on page 4-23)
- [TI](#) (see [TestIncrement \(TI\)](#) on page 4-23)
- [OE](#) (see [OnError \(OE\)](#) on page 4-24)
- [LT](#) (see [LoopbackType \(LT\)](#) on page 4-24)

*param value* = Value for selected parameter

Sections [“DataPattern \(DP\)” on page 4-21](#) through [“LoopbackType \(LT\)” on page 4-24](#) describe how to change the default parameters for both of these tests. [“Run a Loopback Test” on page 4-24](#) contains command line examples and test results for a loopback test. [“Run a Read/Write Buffer Test” on page 4-28](#) contains command line examples and test results for a read/write buffer test.

## DataPattern (DP)

For the loopback test, the data pattern is either:

```
DP <param value>
DataPattern <param value>
```

The data pattern must be in a two-character hexadecimal pattern in the range of 00–FF. The hexadecimal letters can be uppercase or lowercase. The default pattern is random, for example:

```
scli -kl (<hba instance> | <hba wwpn>) DP Random
```

To enter a customized value (in the range of 00–FF), type:

```
scli -kl (<hba instance> | <hba wwpn>) DP <param value>
```

In addition to a hex pattern, you can enter a compliant random data pattern (CRPAT), jitter tolerance pattern (CJTPAT), or supply noise test sequence (CSPAT) for a loopback test. For example:

```
scli -kl (<hba instance> | <hba wwpn>) DP CJTPAT
```

Table 4-7 lists all valid data patterns:

**Table 4-7. Data Pattern Values**

Hexadecimal	Binary
00	00000000
55	01010101
5A	01011010
A5	10100101
AA	10101010
FF	11111111
Random	
Customized (00–FF)	
CRPAT <sup>a</sup> (loopback test only)	
CJTPAT <sup>b</sup> (loopback test only)	
CSPAT <sup>c</sup> (loopback test only)	

Table Notes

<sup>a</sup> Compliant random data pattern in a valid FC frame, as defined by the ANSI document *Methodologies for Jitter and Signal Quality Specification - MJSQ Annex A - Test bit sequences*.

<sup>b</sup> Compliant jitter tolerance pattern in an FC frame, as defined by the ASIC document listed above.

<sup>c</sup> Compliant supply noise test sequence in a valid FC frame, as defined by the ASIC document listed above.

## DataSize (DS)

For the loopback test, the data size specifies the data (frame payload) size in bytes. The data size is the actual data that is transferred during any given pass of the test.

```
DS <param value>
DataSize <param value>
```

The valid data sizes are as follows:

- **Read/write buffer test.** The data size can be 8, 16, 32, 64, or 128 bytes. The default value is 128 bytes.
- **Echo test.** The data size can be 8, 16, 32, 64, 128, 256, 512, 1024, or 2048. The default size is 512.
- **Loopback test (Windows, Solaris, and Macintosh systems).** The data size can be 8, 16, 32, 64, 128, 256, 512, 1024, or 2048. The default value is 512 bytes.
- **Loopback test (Linux systems).** The data size can be 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, or 65535. The default value is 512 bytes.

## TestCount (TC)

The test count specifies the number of loopback tests:

```
TC <param value>
TestCount <param value>
```

For a read/write buffer test, the number of tests run must be in the range of 0–10000.

For a loopback test, the number of tests run must be in the range of 0–65535.

For both tests, a value of 0 indicates that the test runs continuously (it stops when you press ENTER). The default number of tests run is 500.

## TestIncrement (TI)

The test increment for the loopback test is either of the following:

```
TI <param value>
TestIncrement <param value>
```

For a read/write buffer test, the test increment must be in the range of 1–10000.

For a loopback test, the test increment must be in the range of 1–65535.

If the number of tests is continuous (see [“TestCount \(TC\)” on page 4-23](#)), the test increment is automatically set to one of the following:

- 12 (Windows)
- 25 (Solaris)
- 2 (Linux and Macintosh)

The default test increment is 1. The test increment cannot be larger than the number of tests run (see “[TestCount \(TC\)](#)” on page 4-23).

## OnError (OE)

For the loopback test, OnError is either:

```
OE <param value>
OnError <param value>
```

This parameter determines how errors are handled if they occur during any given pass. [Table 4-8](#) lists the valid values.

**Table 4-8. OnError Values**

Value	Description
0	The error is ignored. This is the default value.
1	The test stops on error.
2	On error, the data pattern and test repeat until the error is cleared.

## LoopbackType (LT)

For the loopback test only, the loopback type parameter specifies the type of loopback tests that you can select from, as shown in [Table 4-9](#).

**Table 4-9. LoopbackType Values**

Value	Description
0	10 bit internal loopback test.
1	1 bit serial loopback test.
2	External loopback test.

Be sure to select the appropriate adapter connector for testing. For internal loopback, a loopback connector must be plugged in the adapter connector.

## Run a Loopback Test

The loopback test sends and receives messages, through a loopback or through an echo command, to the switch.

**NOTE:**

The loopback test is disabled if you are using the drivers from the OS installation and not functional on the QLE8042 adapter.

**NOTE:**

Run an echo test instead of a loopback test under the following conditions:

- You have a QLA23xx, QLA24xx, QLE23xx, or QLE24xx adapter that is connected to the fabric through a point-to-point connection (F\_Port).
- The adapter is connected to a switch.
- Your operating system has one of the driver versions listed in [Table 4-10](#).

[Table 4-10](#) lists the operating system driver versions that do not require a loopback connector.

**Table 4-10. Driver Versions Not Requiring a Loopback Connector**

Operating System	Driver Version <sup>a</sup>
Windows XP, Windows 2000, or Windows Server 2003 with SCSI miniport driver	9.0.0.12
Windows Server 2003 with STORport miniport driver	9.0.0.12
Solaris SPARC	4.12

Table Notes

<sup>a</sup> All subsequent versions also apply.

To do a loopback test using the current parameters, type:

```
scli --kl (<hba instance> | <hba wwpn>)
```

To do a loopback test with custom parameters, type:

```
scli --kl (<hba instance> | <hba wwpn>) [(<param name> | <param alias>) <param value>]
```

Section “[-kl \(Loopback Test\)](#)” on page 4-20 describes the parameters and their default values.

The following examples do 500 loopback tests with a test increment of 10, a data pattern of FFh, and a data size of 8 bytes. The test stops if an error occurs.

```
scli -kl <hba wwpn> DP FF DS 8 TC 500 TI 10 OE 1
```

```
scli -kl <hba instance> DP FF DS 8 TC 500 TI 10 OE 1
```

You do not have to set each parameter for the loopback test. If you do not specify a parameter in the command line, the current parameter value is used. For example, the following command sets the data pattern to FFh and uses the current values for the other parameters:

```
scli -kl <hba instance> DP FF
```

The following example sets the data size to 16 bytes and has the test loop if an error occurs. The other parameters use the current values:

```
scli -kl <hba wwpn> DS 16 OE 2
```

An example of a successful loopback test follows:

```

Test Configuration

Data Pattern = Random
Data Size (Bytes) = 512
Number of test(s) (0-65535) = N/A
Test Increment (1-65535) = 125
On Error = Ignore
Test Continuous = ON

Diagnostics - Loopback Test Result

Note: Press <Enter> to stop the test any time

| HBA | Test Data Pattern | Status | CRC | Disparity | FrameLength | Active |
|-----|-------------------------|---------|-----|-----------|-------------|--------|
| 0 | B1-3B-6A-A5-11-28-C1-8C | Success | 0 | 0 | 0 | / |

```

The test results are described as follows:

- **Status**—Test result. The possible values are:
  - Success**—The test passed.
  - Error**—CRC, disparity, or frame length errors occurred.
  - Failed**—An error occurred when attempting to issue a command.
  - Loop down**—The loop is down.
- **CRC**—Number of CRC errors.
- **Disparity**—Number of disparity errors.
- **FrameLength**—Number of frame length errors.



```
-kl (<hba instance> | <hba wwpn>) [{"<param name> | <param alias>} <param value>}]
```

## **-kl** (Run HBA Diagnostics Loopback Test)

### **NOTE:**

Under Solaris, this feature is disabled if you are using the driver from the OS installation CDs (QLC driver).

The *<param name>*, *<param alias>*, and *<param value>* options are described in [Table 4-11](#).

The system shows the following information after a loopback test completes:

- Test status
- CRC error
- Disparity error
- Frame length error

## **-kr** (Run Read/Write Buffer Test)

Use the `-kr` command to do read/write buffer test. (To run the loopback test, use the `-kl` command—see “[-kl \(Loopback Test\)](#)” on page 4-20.)

To do a read/write test using the default parameters, type:

```
scli -kr (<hba instance> | <hba wwpn>)
```

To do a read/write test with customized parameters, type:

```
scli -kr (<hba instance> | <hba wwpn>) [(-EX | -EXCLUDE)
<target wwpn>] (<param name> | <param alias>) <param value>
```

Where:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

`-ex` or `-exclude` = World wide port name of the target device that is excluded from the read/write test

*param name* = One of the following:

- [DataPattern \(DP\)](#) on page 4-21)
- [DataSize \(DS\)](#) on page 4-23)
- [TestCount \(TC\)](#) on page 4-23)
- [TestIncrement \(TI\)](#) on page 4-23)
- [OnError \(OE\)](#) on page 4-24)

*param alias* = One of the following:

- [DP](#) (see [DataPattern \(DP\)](#) on page 4-21)
- [DS](#) (see [DataSize \(DS\)](#) on page 4-23)
- [TC](#) (see [TestCount \(TC\)](#) on page 4-23)
- [TI](#) (see [TestIncrement \(TI\)](#) on page 4-23)
- [OE](#) (see [OnError \(OE\)](#) on page 4-24)

*param value* = Value for selected parameter

Sections [“DataPattern \(DP\)” on page 4-21](#) through [“OnError \(OE\)” on page 4-24](#) describe how to change the default parameters for both of these tests. [“Run a Loopback Test” on page 4-24](#) contains command line examples and test results for a loopback test. [“Run a Read/Write Buffer Test” on page 4-28](#) contains command line examples and test results for a read/write buffer test.

## Run a Read/Write Buffer Test

This test runs on all devices or on the devices you select on the adapter you select. This test sends the SCSI Write Buffer command to the target devices and uses the SCSI Read Buffer command to read the returned data and do a data comparison.

### **NOTE:**

All devices attached to the adapter must support SCSI Read/Write Buffer commands.

To do a read/write buffer test using the current parameters, type:

```
scli -kr (<hba instance> | <hba wwpn>)
```

To exclude a device or devices on the selected adapter port, type:

```
scli -kr (<hba instance>|<hba wwpn>) [(-EX | -EXCLUDE)
<target wwpn>] [(<param name> | <param alias>) <param value>]
```

The following examples do 500 read/write buffer tests with a test increment of 10, a data pattern of FFh, and a data size of 8 bytes. The test stops if an error occurs.

```
scli -kr <hba instance> DP FF DS 8 TC 500 TI 10 OE 1
scli -kr <hba wwpn> DP FF DS 8 TC 500 TI 10 OE 1
```

You do not have to set each parameter for the read/write buffer test. If you do not specify a parameter in the command line, the current parameter value is used. For example, the following command sets the data pattern to FFh and uses the current values for the other parameters:

```
scli -kr <hba instance> DP FF
```

The following example sets the data size to 16 bytes and has the test loop if an error occurs. The other parameters use the current values.

```
scli -kr <hba wwpn> DS 16 OE 2
```

An example of a successful read/write buffer test follows:

```
HBA 1: QEM2462 Port 1 WWPN xx-xx-xx-xx-xx-xx-xx-xx Port ID 02-0E-00
```

```

Test Configuration

```

```
Data Pattern : Random
Data Size (Bytes) : 512
Number of test(s) (0-65535) : 500
Test Increment (1-65535) : 1
On Error : Ignore
Test Continuous : OFF
```

```

Diagnostics - Loopback Test Result

```

```
Note: Press <Enter> to stop the test any time

```

HBA	Test Data Pattern	Status	CRC	Disparity	FrameLength	Active
1	B4-31-0E-AA-AD-CF-D5-B0	Success	0	0	0	\

```
-kr (<hba instance> | <hba wwpn>) [{"(-EX | -EXCLUDE) <target wwpn>"}] [{"<param name>| <param alias>) <param value>}
```

## Run Adapter Diagnostics Read-write Buffer Test

The `{(-ex | exclude) <target wwpn>}` parameters specify a device that will be excluded from the read/write buffer test.

The system shows the following information after a read/write buffer test completes:

- Loop ID/status
- Data miscompare
- Link failure
- Loss of sync
- Loss of signal
- Invalid CRC

[Table 4-11](#) lists the `<param name>`, `<param alias>`, and `<param value>` options.

**Table 4-11. Diagnostics Parameters**

Name <param name>	Alias <param alias>	Value <param value>	Description
DataPattern	DP	Test pattern in hex format <sup>a</sup> Customized (00–FF) Random pattern CRPAT <sup>b</sup> CJTPAT <sup>c</sup> CSPAT <sup>d</sup>	00, 55, 5A, A5, AA, FF (see <a href="#">Table 4-12</a> ) — — Loopback test only Loopback test only Loopback test only
DataSize <sup>e</sup>	DS	8, 16, 32, 64, 128, 256, 512, 1024, 2048	Actual data transferred during any given pass of the test
TestCount <sup>f</sup>	TC	0–65535 0–10,000	Loopback test only Read/write buffer test only
TestIncrement <sup>g</sup>	TI	1–65535 1–10,000	Loopback test only Read/write buffer test only
OnError	OE	0–2	0 = ignore 1 = stop 2 = loop on error

### Table Notes

<sup>a</sup> Valid two-character case-insensitive hexadecimal patterns.

<sup>b</sup> Compliant random data pattern in a valid FC frame, as defined by the ANSI document *Methodologies for Jitter and Signal Quality Specification - MJSQ Annex A - Test bit sequences*.

- <sup>c</sup> Compliant jitter tolerance pattern in a FC frame, as defined by the ASIC document listed above.
- <sup>d</sup> Compliant supply noise test sequence in a valid FC frame, as defined by the ASIC document listed above.
- <sup>e</sup> For read/write buffer test, the maximum size is 128; this is also the default. For an echo test, the maximum size is 2048; the default size is 512. For a loopback test on Windows, Solaris, and Macintosh systems, the maximum size is 2048; the default size is 512. For a loopback test on Linux OSs, the maximum size is 65535; the default size is 512.
- <sup>f</sup> 0=test continuously. 1–10,000 and 1–65535=total number of tests that will be executed.
- <sup>g</sup> Must be less than the TestCount value.

**Table 4-12. Data Pattern (DP) Test Patterns**

Hex	Binary
00	00000000
55	01010101
5A	01011010
A5	10100101
AA	10101010
FF	11111111

If the read/write buffer test fails, the system shows the following information:

- **Loop/port ID** (the loop ID of the adapter when operating in loop mode).
- **Status:**
  - Success**—The test passed.
  - Error**—A data miscompare or link status firmware error occurred.
  - Failed**—A link status error, SCSI write buffer error, or SCSI read buffer error occurred.
  - Unknown**—The target was not present.
  - Unsupported**—The device does not support this test.
- **Data Miscompare**—The possible values are:
  - 0 (no data miscompares)
  - Device not present
  - Get link status failed
  - Read buffer failed
  - R/W buffer not supported
  - Write buffer failed

- **Link Failure**—Number of link failures
- **Loss of sync**—Number of sync loss errors
- **Loss of signal**—Number of signal loss errors
- **Invalid CRC**—Number of invalid CRCs

## **-l** (Display LUN Info)

This command shows LUN information for:

- All adapters
- A specific target
- A specific LUN on a specific target

To show the LUN information for *all target* devices for a *specific adapter Instance*, type:

```
scli -l (<hba instance> | <hba wwpn>)
```

To show the LUN information for a specific device for a specific adapter port, type:

```
scli -l (<hba instance> | <hba wwpn>) (<target port id> |
<target wwpn>)
```

To show the LUN information for a *specific LUN* on a *specific target* device for a *specific adapter* port instance, type:

```
scli -l (<hba instance> | <hba wwpn>) (<target port id> |
<target wwpn>) <lun id>
```

Where:

*hba instance* = Adapter number (use -g command to find)

*hba wwpn* = World wide port name of the adapter

*target port id* = Port ID of the target

*target wwpn* = World wide port name of the target

*lun id* = ID of the LUN

## **-ls** (Display Link Status)

To view the link status, type:

```
scli -ls (<hba instance> | <hba wwpn>) [(<param name> |
<param alias>) <param value>]
```

Where:

- hba instance* = Adapter number (use `-g` command to find)
- hba wwpn* = World wide port name of the adapter
- param name* = Name of the parameter (see [Table 4-13](#))
- param alias* = Alias of the parameter (see [Table 4-13](#))
- param value* = New value of the parameter (see [Table 4-13](#))

[Table 4-13](#) defines the link status parameter names, aliases, and values.

**Table 4-13. Link Status Parameters**

Description	Name	Alias	Value
Sets link-status retrieval period	AutoPoll	AP	0–256 <sup>a</sup> cycles
Sets link-status retrieval polling interval	PollRate	SR	5–30 seconds
Save link status to CVS log file	LogToFile	LF	Log file name

Table Notes

<sup>a</sup> When the AutoPoll parameter is 0, the link status is retrieved automatically until the user aborts the operation. When the AutoPoll parameter is in the range of 1–256, the link status is retrieved for the number of cycles specified by this value.

## **-m** (View, Enable, or Disable LUNs)

**NOTE:**

- If the current driver setting is Bind by Port ID, this option is not available.
- Under Solaris, if you use the driver from the OS installation CDs (QLC driver), this feature is disabled.
- Under Linux, if you use the IOCTL or sysfs (inbox) driver, this feature is disabled.
- Under Solaris, the QLA adapter driver supports a maximum of 256 LUNs.
- Under Solaris, the QLC adapter driver supports a maximum of 16K LUNs.
- You must persistently bind the targets before configuring selective LUNs, (link).

Use the `-m` command to:

- View all selective LUNs for all adapter ports
- View an adapter's selective LUN list
- View the current selective state of a LUN on a specific target
- Enable (select) a LUN on a specific target on a specific adapter
- Disable (deselect) a LUN on a specific target on a specific adapter
- Enable all LUNs on a specific target on a specific adapter
- Disable (deselect) all LUNs on a specific target on a specific adapter
- Enable (select) all LUNs of all targets on a specific adapter
- Disable (deselect) all LUNs of all targets on a specific adapter

For these commands:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*target wwnn* = World wide node name of the target  
*target wwpn* = World wide port name of the target  
*lun id* = ID of the LUN

To view all selective LUNs for all adapter ports, type:

```
scli -m all (view | ?)
```

To view an adapter's selective LUN list, type:

```
scli -m (<hba instance> | <hba wwpn> | all) (view | ?)
```

In Solaris SPARC, include double quotes around the question mark (?) if the system is running with a `csh` or `tsch` shell. For example:

```
scli -m <HBA> "?"
```

SANsurfer FC/CNA HBA CLI shows the adapter's enabled LUN list in the following format:

```
<target wwnn> <target wwpn> <lun id>
```

To view the current select state of a specific LUN, type:

```
scli -m (<hba instance> | <hba wwpn>) (<target wwnn> <target wwpn> <lun id>) (view | ?)
```

If the input represents a valid LUN, SANsurfer FC/CNA HBA CLI shows that LUN's current state as selected or deselected for that adapter.

To enable (select) a LUN on a specific target on a specific adapter, type:

```
scli -m (<hba instance> | <hba wwpn>) {<target wwnn> <target wwpn> <lun id> (1 | enable | select)}
```



**NOTE:**

You can repeat the sequence `<target wwn> <target wwpn> <lun id> 1` to select multiple LUNs in the same command.

To disable (deselect) a LUN on a specific target on a specific adapter, type:

```
scli -m (<hba instance> | <hba wwpn>) {<target wwn> <target wwpn> <lun id> (0 | disable | deselect)}
```

**NOTE:**

To select multiple LUNs in the same command, repeat the following sequence:

```
<target wwn> <target wwpn> <lun id> 0
```

To enable (select) all LUNs for a specific target on a specific adapter, type:

```
scli -m (<hba instance> | <hba wwpn>) select | enable <target wwn> <target wwpn>
```

To disable (deselect) all LUNs for a specific target on a specific adapter, type:

```
scli -m (<hba instance> | <hba wwpn>) deselect | disable <target wwn> <target wwpn>
```

To enable (select) all LUNs of all targets on a specific adapter:

```
scli -m (<hba instance> | <hba wwpn>) select all
```

To disable (deselect) all LUNs of all targets on a specific adapter:

```
scli -m (<hba instance> | <hba wwpn>) deselect all
```

## **-n (Set Selected HBA Parameter)**

To set a specific parameter on a specific adapter, type:

```
scli -n (<hba instance> | <hba wwpn>) { (<param name> | <param alias>) <param value> }
```

To restore the default BIOS (4G adapters only), type:

```
scli -n (<hba instance> | <hba wwpn>) default
```

Where:

*hba instance* = Adapter number (use -g command to find)  
*hba wwpn* = World wide port name of the adapter  
*param name* = Name of the parameters

*param alias* = Alias of the parameters  
*param value* = New value of the parameters

The pairs *<param name>* *<param value>* and *<param alias>* *<param value>* can be repeated to set multiple parameters with a single command.

Table 4-14 lists the adapter parameter names and aliases.

**Table 4-14. Adapter Parameters**

Description	Name	Alias	Value
Connection options	ConnectionOption	CO	See table note <sup>a</sup>
Data rate	DataRate	DR	See table note <sup>b</sup>
Enable BIOS	EnableBIOS <sup>c</sup>	EB	1=Enable, 0=Disable
Enable extended logging	EnableExtendedLogging <sup>d</sup>	EL	1=Enable, 0=Disable
Enable FC tape	EnableFCTape	EF	1=Enable, 0=Disable
Enable hard loop ID	EnableHardLoopID	HL	1=Enable, 0=Disable
Enable LIP full login	EnableLIPFullLogin	FL	1=Enable, 0=Disable
Enable LIP reset	EnableLipReset	LP	1=Enable, 0=Disable
Enable target reset	EnableTargetReset	TR	1=Enable, 0=Disable
Execution throttle	ExecutionThrottle	ET	1–65535
Frame size	FrameSize	FR	512, 1024, 2048
Hard loop ID	HardLoopID	HD	0–125
Interrupt delay timer	InterruptDelayTimer	ID	0–255
Login retry count	LoginRetryCount	LR	0–255
Link down timeout	LinkDownTimeOut	LT	0–240
Maximum LUNs per target	MaximumLUNsPerTarget	ML	0, 8, 16, 32, 64, 128, 256
Operation mode	OperationMode	OM	See table note <sup>e</sup>
Port down retry count	PortDownRetryCount	PD	0–255
Reset Delay	ResetDelay	RD	0-255

Table Notes:

- <sup>a</sup> Connection Options:
- 0 = Loop only
  - 1 = Point-to-point only
  - 2 = Loop preferred, otherwise point-to-point
  - 3 = Point-to-point preferred, otherwise loop (QLA22xx adapters only)
- <sup>b</sup> Data Rate (QLA23xx/QLA24xx/QLE23xx/QLE24xx and 8Gb adapters):
- 0 = 1 Gb
  - 1 = 2Gbs
  - 2 = Auto
  - 3 = 4 Gbs
  - 4 = 8 Gbs
- <sup>c</sup> EnableBIOS option not available on 4Gb adapter.
- <sup>d</sup> EnableExtendedLogging option not available on PPC64 or SPARC.
- <sup>e</sup> Operation mode (QLA/QLE23xx, QLA/QLE24xx, and 8Gb adapters):
- 0 = interrupt for every I/O completion
  - 5 = interrupt when interrupt delay timer expires
  - 6 = interrupt when interrupt delay timer expires or no active I/O

**NOTE:**

QLA200/210 adapters have a limited set of parameters that can be changed.

**-O**  
**(Output to a File)**

**NOTE:**

- The `-o` option is valid only in non-interactive mode.
- This option can be used with all non-interactive mode options that have a corresponding interactive mode option (see [Table 4-1](#)). The option must be the first or last command in the command line.
- If the file already exists, new data are appended to the current file.

To output result and status messages into a file, type `-o`, followed by the file name. For example, to save LUN information to a file named `systemLUNinfo`:

```
scli -l -o systemLUNinfo
```

Where the file name is `systemLUNinfo`, all messages are located in the directory indicated for the system platform:

Windows: `syslog.log` in the current directory

Linux: `/var/log/messages`

Macintosh: `/var/log/system.log`

Solaris: `/var/adm/messages`

## **-p** (Display Persistent Target Binding Info)

With this command you can:

- Show binding information for one or on all adapters
- Bind a specific target to a selected adapter
- Bind all targets on a specific adapter or on all adapter
- Unbind a specific target
- Unbind all targets on a specific adapter or on all adapters

### **NOTE:**

- Under Solaris, if you use the driver from the OS installation CDs (QLC driver), these features are disabled.
- Under Linux, if you use the IOCTL or sysfs (inbox) driver these features are disabled.

To show target persistent binding information for a specific adapter port, type:

```
scli -p (<hba instance> | <hba wwpn>) (view | ?)
```

To show persistent binding information for all adapters, type:

```
scli -p all (view | ?)
```

Where:

`hba instance` = Adapter number (use `-g` command to find)

`hba wwpn` = World wide port name of the adapter

### **NOTE:**

In Solaris SPARC using a `csh` or `tsch` shell, include double quotes around the question mark (?). For example:

```
scli -p <HBA> "?"
```

The following example is a typical SANsurfer FC/CNA HBA CLI output showing all targets currently bound to an adapter:

```

HBA 0: QLA2462 Port 1 WWPN xx-xx-xx-xx-xx-xx-xx-xx Port ID 11-06-EF

Bind Type Device Node Name Device Port Name Port ID ID
---- -
No Disk xx-xx-xx-xx-xx-xx-xx-xx xx-xx-xx-xx-xx-xx-xx-xx 10-02-E1
Yes Disk xx-xx-xx-xx-xx-xx-xx-xx xx-xx-xx-xx-xx-xx-xx-xx 10-02-E2 0
Yes Disk xx-xx-xx-xx-xx-xx-xx-xx xx-xx-xx-xx-xx-xx-xx-xx 10-02-E4 1
Yes Disk xx-xx-xx-xx-xx-xx-xx-xx xx-xx-xx-xx-xx-xx-xx-xx 10-02-E8 2
Press <Enter> to continue:
```

To bind a selected target to a specific adapter, type:

```
scli -p (<hba instance> | <hba wwpn>) (<target wwnn> <target
wwpn> <target port id> <target id>)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwnn* = Word wide node name of the adapter  
*hba wwpn* = World wide port name of the adapter  
*target wwnn* = World wide node name of the target  
*target wwpn* = World wide port name of the target  
*target port id* = Port ID of the target  
*target id* = ID to which the target is bound

To bind multiple targets with a single command, repeat the following group:

```
<target wwnn> <target wwpn> <target port id> <target id>
```

To bind all targets on a specific adapter or to bind all targets on all adapters, type:

```
scli -p (<hba instance> | <hba wwpn> | all) bind all
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter

To unbind a specific target, type:

```
scli -p (<hba instance> | <hba wwpn>) (remove <target wwnn>
| unbind <target wwnn>)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*target wwnn* = World wide node name of the target

To unbind all targets on a specific adapter port or on all adapter ports, type:

```
scli -p (<hba instance> | <hba wwpn> | all) (remove all |
unbind all)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter

## **-pa** (Define Port Alias)

With this command you can:

- Define the port alias for a specific adapter port (1)
- Delete the port alias from a specific adapter port (2)
- View the port alias for a specific adapter port (3)

To define a port alias for the specified adapter, type:

```
scli -pa (<hba instance> | <hba wwpn>) <alias>
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*alias* = Symbolic name you assign to the adapter port

To delete a port alias for the specified adapter port, type:

```
scli -pa (<hba instance> | <hba wwpn>) delete
```

To view a port alias for the specified adapter port, type:

```
scli -pa (<hba instance> | <hba wwpn>) view | ?
```

## **-pl** (Show, Add, and Delete Persistent Names)

This option provides persistent device names for storage devices.

### **NOTE:**

The `-pl` option is available only on Linux (RHEL 5.x) systems; this option is not supported for SLES 11.

To display persistent device names for a specific LUN or all LUNs, type:

```
scli -pl <hba instance>|<hba wwpn> --info [<target id> <lun id>]
```

To add a persistent device name to a specific LUN, type:

```
scli -pl <hba instance>|<hba wwpn> --set {<target id> <lun id> <lun name>}
```

To remove the existing persistent device name currently assigned to a specific LUN, type:

```
scli -pl <hba instance>|<hba wwpn> --del {<target id> <lun id> <lun name>}
```

### **CAUTION!**

Do not delete a LUN's persistent device name if there is any active I/O on the LUN.

Where:

*hba instance* = Adapter instance number of adapter port

*hba wwpn* = World wide port name of the adapter port

*target id* = Target ID of the designated device

*lun id* = LUN ID of the designated device

*lun name* = Persistent device name to be assigned to the designated LUN. The LUN name may contain only alphanumeric characters, underscores, and the special characters @, #, %, and /. It may not contain spaces and may not exceed 80 characters in length.

## **-q** (View or Set Target Link Speed)

### **NOTE:**

The `-q` option is supported only on 4GB adapters.

Type the following command to view the link speed of all targets attached to one adapter or all adapters:

```
scli -q (<hba instance> | <hba wwpn> | <all>) [-targets | -t]
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*all* = Reports link speed for all targets on all adapters in the system  
*-targets* = All targets  
*-t* = All targets

To view the link speed of a specific target attached to an adapter, enter the following command:

```
scli -q (<hba instance> | <hba wwpn> | <target wwpn>
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*target wwpn* = World wide port name of the target

To set the link speed of all targets attached to one adapter or all adapters to the designated speed, enter the following command:

```
scli -q (<hba instance> | <hba wwpn> | <all>) <-targets | -t
><speed>
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*all* = Reports link speed for all targets on all adapters in the system  
*-targets* = All targets  
*-t* = All targets  
*speed* = Link speed (



To set the link speed of selected target(s) attached to one adapter to the designated speed, type the following command:

```
scli -q (<hba instance> | <hba wwpn> | <all>) <target wwpn>
<speed>
```

Where:

*hba instance* = Adapter number (use `-g` command to find)  
*hba wwpn* = World wide port name of the adapter  
*all* = Reports link speed for all targets on all adapters in the system  
*target wwpn* = World wide port name of the target  
*speed* = Link speed

## -qos (QoS Menu)

SANsurfer FC/CNA HBA CLI provides quality of service (QoS) for virtual ports on 8Gb adapters only. For a detailed explanation of the requirements and usage of QoS, see [“QoS Menu \(Command Line Option -qos\)” on page 3-101](#).

Use virtual port QoS as follows:

- To show current QoS settings for all virtual ports on a physical adapter port, enter the following command:

```
scli -qos <hba instance>|<hba wwpn> info --vp <all>
[--spd|--per]
```

- To show current QoS settings for a specific virtual port on a physical adapter port, enter the following command:

```
scli -qos <hba instance>|<hba wwpn> info --vp <vport wwpn>
```

- To change QoS settings for specified virtual ports, enter the following command:

```
scli -qos <hba instance>|<hba wwpn> {--vp <vport wwpn> --pri
<priority>|--bwspd <speed>|--bwper <percent>| --lock <lock
value>|--enable <enable value>}
```

Where:

*hba instance* = Adapter instance number for an adapter port  
*hba wwpn* = World wide port name of an adapter port  
*all* = All virtual ports under a physical adapter  
*--per* = View virtual port QoS information by percentage  
*--spd* = View virtual port QoS information by speed  
*vport wwpn* = World wide port name of a virtual port

You can specify the QoS of the virtual port based on either priority, bandwidth speed, or bandwidth percentage, where:

*--pri* = Priority to assign to the virtual port  
*priority* = Priority value: low, medium, or high  
*--bwspd* = Bandwidth speed to assign to the virtual port  
*speed* = Value of bandwidth speed  
*--bwper* = Bandwidth percentage to assign to the virtual port  
*percent* = Value of bandwidth percent

You can change the lock and enable properties of the virtual port using the following options:

*--lock* = Specify the lock value  
*lock value* = Lock value: 1 for lock or 0 for unlock.  
*--enable* = Specify whether the virtual port is enabled  
*enable value* = Enable value: 1 for enable or 0 for disable

## **-r** (Update HBA Parameters)

To update the adapter parameters, type the following:

```
scli -r (<hba instance> | <hba wwpn> | all) <File Name>
```

Where:

*hba instance* = Adapter number (use *-g* command to find)  
*hba wwpn* = World wide port name of the adapter  
*all* = All adapter ports in the system are updated with the new adapter parameters  
*hba parameters file name* = File name or a path to a file that contains the updated adapter parameters

To save the adapter parameters to a file, type:

```
scli -r (<hba instance> | <hba wwpn>) save <File Name>
```

Where:

*hba instance* = Adapter number (use *-g* command to find)  
*hba wwpn* = World wide port name of the adapter  
*hba parameters file name* = File name or a path to a file to save the adapter parameters

## **-S** (Silent Mode)

### **NOTE:**

- The `-s` option is valid only in non-interactive mode.
- You can use this option with all non-interactive mode options that have a corresponding interactive mode option (see [Table 4-1](#)). This option must be the first or last command in the command line.

In non-interactive mode, the system shows result and status messages generated by SANSurfer FC/CNA HBA CLI (by default) unless suppressed by silent mode. You can combine this option with the `-o` option (see [“-o \(Output to a File\)” on page 4-37](#)) so the output is saved in a file and does not appear in the CLI. For example:

```
scli -I all -s -o output.txt
```

## **-t** (Display Target Information)

To show the target information for *all* adapters in the system, type:

```
scli -t [<all>]
```

To show the target information for a *specific* adapter, type:

```
scli -t (<hba instance> | <hba wwpn>)
```

To show specific target information for a *specific target* on an adapter, type:

```
scli -t (<hba instance> | <hba wwpn>) (<target wwpn> | <target port id>)
```

Where:

*hba instance* = Adapter number (use `-g` command to find)

*hba wwpn* = World wide port name of the adapter

*target wwpn* = World wide port name of the target

*target port id* = Port ID of the target

To show the target information on all adapters, type:

```
-t [<all>]
```

To show the target information on a specific adapter, type:

```
-t (<hba instance> | <hba wwpn>)
```

To show the target information for a specific target on a specific adapter, type:

```
-t (<hba instance> | <hba wwpn>) (<target wwpn> | <target port id>)
```

iiDMA (intelligent interleaved direct memory access) settings include:

- `-targets` | `-t` applies to all targets.
- `<speed>` indicates the supported intelligent interleave factor: 1, 2, 4, or 8 Gbps.

## **-tb** (Target Beacon On/Off)

To start or stop flashing a target's LED, type:

```
scli -tb (<hba instance> | <hba wwpn>) (<target wwpn>)
(<0 | ON> | <1 | PRESET>)
```

### **NOTE:**

- The `<0 | ON>` option flashes the LED until interrupted. The `<1 | PRESET>` option flashes the LED 12 times.
- This feature is supported only on JBOD (“just a bunch of disks”) devices.

## **-tp** (Display Host Topology)

Use the `-tp` option to show the topology configuration of the host:

```
scli -tp | topology
```

Under Linux, this feature is disabled if you are using the IOCTL or sysfs (inbox) driver.

[“Host Topology \(Command Line Option -tp\)” on page 4-3](#) covers this command.

## **-u** (Firmware Area Update/Save)

Use the `-u` option to update the firmware preload area of the adapter from a `DAT` file or to save the current firmware preload area of the adapter to a `DAT` file.

### **NOTE:**

This option is available only for 8Gb adapters.

To update the adapter firmware preload table, enter the following command:

```
scli -u (<hba instance> | <hba wwpn>) <file name>
```

To save the current adapter firmware preload table to a DAT file, enter the following command:

```
scli -u (<hba instance> | <hba wwpn>) save <file name>
```

Where:

- <hba instance> is the adapter instance number of an adapter port.
- <hba wwpn> is the world wide port name (WWPN) of an adapter port.
- <file name> is the name of the firmware preload table DAT file.

## **-V** (Display Version)

### **NOTE:**

This option is valid only in non-interactive mode.

To show the version number of the SANsurfer FC/CNA HBA CLI tool, type:

```
scli -v
```

The system shows the following information:

```
SANsurfer FC/CNA HBA CLI
v1.x.x Build x
Copyright 2003-2009 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters.
Build Type: Release
Build Date: xx/xx/xxxx xx:xx:xx AM
```

## **-vp** (Virtual Port)

To list all virtual ports on a physical adapter port, type:

```
scli -vp (<hba instance> : <hba wwpn>) list all
```

Where:

- hba instance* = Adapter number (use -g command to find)
- hba wwpn* = World wide port name of the adapter
- vport wwpn* = World wide port name of the virtual port
- vport hex* = World wide port name of the virtual port with the two hex digits in byte three supplied by the user

To list a specific virtual port on a physical adapter port, type:

```
scli -vp (<hba instance> : <hba wwpn>) list <vport wwpn>
```

To create a virtual port with an automatic WWPN, type:

```
scli -vp (<hba instance> : <hba wwpn>) create auto
```

To create a virtual port with a specific WWPN, type:

```
scli -vp (<hba instance> : <hba wwpn>) create <vport hex>
```

When prompted, enter two hexadecimal digits. The system checks these digits to be sure they are unique and, if they are, puts them into byte 1 of the WWPN.

To delete all virtual ports on a physical adapter port, type:

```
scli -vp (<hba instance> : <hba wwpn>) delete all
```

To delete a specific virtual port on a physical adapter port, type:

```
scli -vp (<hba instance> : <hba wwpn>) delete <vport wwpn>
```

## **-X** (Output in XML Format 1)

### **NOTE:**

This option is valid only in non-interactive mode.

You can use this option with all non-interactive mode options that have a corresponding interactive mode option (see [Table 4-1](#)). This option must be the first or last command in the command line.

When you use this option, the system shows all result and status messages in XML format 1, a legacy format. These formats are described in [Appendix A](#). This option is usually combined with the `-o` option (see “[-o \(Output to a File\)](#)” on [page 4-37](#)) to create a text file with XML output so that it can be parsed by an XML-compliant utility. For example to show adapter general information and output it to an XML file named `output.xml`:

```
scli -i all -x -o output.xml
```

## **-x2** (Output in XML Format 2)

### **NOTE:**

This option is valid only in non-interactive mode.

You can use this option with all non-interactive mode options that have a corresponding interactive mode option (see [Table 4-1](#)). This option must be the first or last command in the command line.

When you use this option, the system shows all result and status messages in XML format 2, standard XML format. These formats are described in [Appendix B](#). This option is usually combined with the `-o` option (see “[-o \(Output to a File\)](#)” on [page 4-37](#)) to create a text file with XML output so that it can be parsed by an XML-compliant utility. For example, to show adapter general information and output it to an XML file named `output.xml`:

```
scli -i all -x2 -o output.xml
```

## **-Z** **(Display All HBA information for One or All HBAs)**

To show all information for one specific adapter or for all adapters in the system, type:

```
scli -z (<hba instance> | <hba wwpn>) | <all>
```

“[Host Configuration \(Command Line Option -z\)](#)” on [page 4-2](#) covers this command.

---

## Notes



# A XML Format 1

## **NOTE:**

XML files created using the `-x1` command line option *do not* match standard output. They are designed for backward compatibility with customized legacy scripts. For new scripts, we strongly recommend using the `-x2` command line option, which generates XML files compatible with standard output (see [Appendix B](#)).

## Output Parts

The `-x1` command line option (see “[-x \(Output in XML Format 1\)](#)” on page 4-48) shows all output in XML format 1. This section defines the XML format 1 output, which consists of the following parts:

- “Main Tag” on page A-1
- “Utility Header” on page A-1
- “Status Message” on page A-2
- “Reboot Message” on page A-2
- “Error Message” on page A-2

## Main Tag

When SANsurfer FC/CNA HBA CLI is in XML mode, all outputs are within the main tag:

```
<QLogic>
...
</QLogic>
```

## Utility Header

The following header information is shown after the main tag:

```
<AppName> SANsurfer Command Line Utility </AppName>
<AppVersion> X.YY.ZZ Build XX</AppVersion>
```

## Status Message

Before the closing main tag `</QLogic>`, SANsurfer FC/CNA HBA CLI shows returning status from the execution of the command line parameters and the error messages. A return value of 0 indicates success; a return value of 1 indicates failure:

- Successful execution of the command line parameters returns the following status:

```
<Status> 0 </Status>
```

- When the execution of the command line parameters fails, the status value of nonzero is shown, followed by an error message that provides additional details:

```
<Status> 1 </Status>
<ErrorMsg> Details of the failure </ErrorMsg>
```

## Reboot Message

When the execution of the command line parameters is successful and the system must be restarted for the change to take effect, the following message is shown:

```
<Reboot> 1 </Reboot>
```

When the execution of the command line parameters is successful and the system does not need to be restarted, the following message is shown:

```
<Reboot> 0 </Reboot>
```

## Error Message

Before the closing main tag `</QLogic>`, but following the Status message SANsurfer FC/CNA HBA CLI shows error information if the status is nonzero (indicating a failure).

```
<ErrorMsg> Details of the failure </ErrorMsg>
```

## XML Format 1 Tags for Each Option

The following sections describe the XML format 1 for each command line option, including:

- [“Display System Information \(Command Line Option -g\)” on page A-3](#)
- [“Display Adapter Settings \(Command Line Option -c\)” on page A-4](#)
- [“Display HBA Information \(Command Line Option -i\)” on page A-5](#)

- “Display Device List (Command Line Option -t)” on page A-7
- “Display LUN List (Command Line Option -l)” on page A-7
- “Target Persistent Binding (Command Line Option -p)” on page A-8
- “Selective LUNs (Command Line Option -m)” on page A-8
- “Boot Device (Command Line Option -e)” on page A-9
- “Diagnostics Results—Loopback Test (Command Line Option -kl)” on page A-9
- “Diagnostics Results—Read/Write Buffer Test (Command Line Option -kr)” on page A-10
- “View Driver Settings (Command Line Option -fg)” on page A-10
- “Display All Information for One or All Adapters (Command Line Option -z)” on page A-11
- “Link Statistics (Command Line Option -ls)” on page A-14
- “HBA Statistics (Command Line Option -gs)” on page A-14
- “HBA Alias (Command Line Option -ha)” on page A-15
- “HBA Port Alias (Command Line Option -pa)” on page A-15
- “Display FCoE Information” on page A-22
- “Display FCoE Parameters” on page A-23
- “Display FCoE Link Events” on page A-23
- “Display FCoE DCBX” on page A-25
- “Display FCoE Network Interface Statistics” on page A-26

**NOTE:**

In these sections, the term *number* refers to the adapter number shown with the adapter general information (command line option -i).

## Display System Information (Command Line Option -g)

The XML format 1 for system information output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <Host>
 <Name> Host Name </Name>
 <OSType> OS Type </OSType>
```

```
 <OSVersion> OS Version (and patches) </OSVersion>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <NumOfHBA> Number of QLogic FC HBA(s) </NumOfHBA>
 </Host>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

The parameter <HBA.../> repeats for each adapter in the system.

## Display Adapter Settings (Command Line Option -c)

The XML Format 1 for adapter settings information is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <Param
 ConnectionOption="value"
 DataRate="value"
 FrameSize="value"
 HardLoopID="value"
 LoopResetDelay="value"
 EnableHostAdapterBIOS="value"
 EnableHardLoopId="value"
 FibreChannelTapeSupport="value"
 OperationMode="value"
 IntDelayTimer="value"
 ExecutionThrottle="value"
 EnableExtendedLogging="value"
 LoginRetryCount="value"
 EnableLipReset="value"
 PortDownRetryCount="value"
 EnableLipFulllogin="value"
 LinkDownTimeout="value"
 EnableTargetReset="value"
 LUNsPerTarget="value" />
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

For clarity, each parameter is listed on a separate line; however, multiple parameters can be on the same line.

For multiple adapters, repeat the preceding sequence with the ID number  
(ID Number="value") of the next adapter.

## Display HBA Information (Command Line Option -i)

### NOTE:

4G adapters include VPD information as an option to the -i command.

The XML Format 1 for adapter general information is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <GeneralInfo Port="value"
 Model="value"
 HBAID="value"
 HBAAlias="value"
 HBAPort="value"
 PortAlias="value"
 WWNN="value"
 WWPN="value"
 PortID="value"
 SerialNumber="value"
 DriverVersion="value"
 BIOSVersion="value"
 FirmwareVersion="value"
 TargetCount="value"
 PCIBus="value"
 PCIDevice="value"
 ActualConnectionMode="value"
 ActualDataRate="value"
 PortType="value"
 Status="value"
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

Here is the information for the 4G adapters:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build n.nn</AppVersion>
 <HBA>
```

```
<GeneralInfo Port="value"
Model="value"
HBAID="value"
HBAALias=""
HBAPort=""
PortAlias=""
WWNN="value"
WWPN="value"
PortID="value"
SerialNumber="value"
DriverVersion="value"
BIOSVersion="value"
FirmwareVersion="value"
OptionROMBIOSVersion="value"
OptionROMCodeVersion="value"
OptionROMEFIVersion="value"
OptionROMFirmwareVersion="value"
TargetCount="value"
PCIBus="value"
PCIDevice="value"
ActualConnectionMode="value"
ActualDataRate="value"
PortType="value"
Status="value"
</HBA>
<Status> 0 </Status>
<Reboot> 0 </Reboot>
</QLogic>
```

**Here is the VPD information:**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build n.nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
</VPD>
 <VPDProductIdentifier="value"
 VPD-RTAG=""
 PartNumber="value"
 SerialNumber="value"
 MiscInformation="value"
 ManufacturingID="value"
 EFIDriverVersion="value"
 FirmwareVersion="value"
 BIOSVersion="value"
 FCodeVersion="value"
 AssetTag="value" />
</VPD>
```

```

 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Display Device List (Command Line Option -t)

The XML Format 1 for adapter device information is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBAPort="value" WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <Info Path="value"
 ID="value"
 Vendor="value" ProductID="value"
 Revision="value"
 SerialNumber="value"
 DeviceID="value"
 PortID="value" LunCount="value" Type="value"
 DeviceStatus="value" />
 </Target>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

The <Target>...</Target> sequence is repeated for each adapter target.

## Display LUN List (Command Line Option -l)

The XML Format 1 for the adapter LUN list information is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBAPort="value" WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>

```

```
<LUN ID="value"
 WWULN="value"
 Vendor ="value"
 Product ="value"
 Revision ="value"
 Size="value">
 Type="value" />
</Target>
</HBA>
<Status> 0 </Status>
<Reboot> 0 </Reboot>
</QLogic>
```

The `<LUN ... />` sequence is repeated for each LUN attached to the target. The LUN list is listed under the target, not the adapter.

The `<Target>...</Target>` sequence is repeated for each LUN attached to the target.

## Target Persistent Binding (Command Line Option -p)

The XML Format 1 for the adapter target persistent binding information is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
<HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <TargetBinding TargetWWNN="value" TargetWWPN="value"
 TargetPortID="value" TargetID="value" />
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

The `<TargetBinding ... />` sequence is repeated for each target bound to the adapter.

## Selective LUNs (Command Line Option -m)

The XML Format 1 for the selective LUNs information is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
```



```

<HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <EnabledLUN ID="value" LUNWWNN="value" LUNWWPN="value"/>
 </Target>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

The <HBA> ... </HBA> sequence repeats for each adapter.

The <Target> ... </Target> sequence repeats for each Target.

The <EnabledLUN... /> sequence repeats for each enabled LUN under the target.

## Boot Device

### (Command Line Option -e)

The XML Format 1 for the boot device information is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <BootDevice TargetWWPN="value" LUNID="value" />
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

The <BootDevice.../> sequence is repeated for each boot device of the adapter. In Windows and Linux, the TargetID="value" field is not present.

## Diagnostics Results—Loopback Test

### (Command Line Option -kl)

The XML Format 1 for the loopback test results is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <Loop ID="value"

```

```
 CRCError="value"
 DisparityError="value"
 FrameLengthError="value"
 Result="value"/>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## Diagnostics Results—Read/Write Buffer Test (Command Line Option -kr)

The XML Format 1 for the read/write buffer test results is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
<HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <Loop ID ="value" DataMiscompare="value"
LinkFailure= "value" LossOfSync="value" LossOfSignal="value"
InvalidCRC="value" Result="value" />
 </Target>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

The <Target> sequence is repeated for each device attached to the adapter.

## View Driver Settings (Command Line Option -fg)

The XML Format 1 for the current driver settings information is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
<HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <DriverSettings>
 <Info PersistentPlusNew="value"
PersistentOnly="value"
BindbyWWPN="value"
```

```

 BindbyPortID="value" />
 /DriverSettings>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Display All Information for One or All Adapters (Command Line Option -z)

The XML Format 1 for all adapter information is more complicated than its non-XML counterpart because the tags cannot be repeated. In non-XML mode, SANsurfer FC/CNA HBA CLI sequentially calls all the options in [Table A-1](#), and each option is shown in its standard output format. If each option shows its own XML output, the resulting list would have multiple duplicate tags.

**Table A-1. Options Shown by -z**

Non-interactive Option	Description	See Section
-g	Show system information	“General Information Menu (Command Line Option -g)” on page 3-4
-i	Show adapter information	“HBA Information Menu (Command Line Option -i)” on page 3-19
-c	Show adapter settings	“HBA Parameters Menu” on page 3-24
-t	Show device list	“Target/LUN List Menu (Command Line Options -t and -l)” on page 3-36
-l	Show LUN list	“Target/LUN List Menu (Command Line Options -t and -l)” on page 3-36
-p	Target persistent binding	“Target Persistent Bindings Menu (Command Line Option -p)” on page 3-54
-m	Selective LUNs	“Selective LUNs Menu (Command Line Option -m)” on page 3-58
-e	Boot device	“Boot Device Menu (Command Line Option -e)” on page 3-60

The XML Format 1 for all adapter information is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>

```

```
<Host>
 <Name> Host Name </Name>
 <OSType> OS Type </OSType>
 <OSVersion> OS Version (and patches where applicable)
</OSVersion>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <NumOfHBA> Number of QLogic Fibre Channel HBA(s) detected
</NumOfHBA>
</Host> <HBA>
 <HBA PortNumber="value" WWNN="value" WWPN="value" />
 <GeneralInfo Port ="value"
 Model="value"
 HBAID="value"
 HBAAlias="value"
 MHBAPort="value"
 PortAlias="value"
 WWNN="value"
 WWPN="value"
 PortID="value"
 SerialNumber="value"
 DriverVersion="value"
 BIOSVersion="value"
 FirmwareVersion="value"
 TargetCount="value"
 PCIBus="value"
 PCIDevice="value"
 ActualConnectionMode="value"
 ActualDataRate="value"
 PortType="value"
 Status="value" />
<VPD>
 <VPD Product Identifier="" />
</VPD>
 <Param
 ConnectionOption="value"
 DataRate="value"
 FrameSize="value"
 HardLoopID="value"
 LoopResetDelay="value"
 EnableHostAdapterBIOS="value"
 EnableHardLoopId="value"
 FibreChannelTapeSupport="value"
 OperationMode="value"
 IntDelayTimer="value"
 ExecutionThrottle="value"
 EnableExtendedLogging="value"
 LoginRetryCount="value"
 EnableLipReset="value"
 PortDownRetryCount="value"
```

```

 EnableLipFulllogin="value"
 LinkDownTimeout="value"
 EnableTargetReset="value"
 LUNsPerTarget="value" />
<Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <Info Path= "value"
 Vendor ="value"
 ProductID= "value"
 Revision= "value"
 SerialNumber= "value"
 DeviceID= "value"
 PortID= "value"
 LunCount= "value"
 Type= "value"
 DeviceStatus= "value" />
<LUN ID="value"
 WWULN="value"
 Vendor ="value"
 Product= "value"
 Revision= "value"
 Size= "value"
 Type="value" />
 <EnabledLUN ID="value" LUNWWNN="value"LUNWWPN="value" />
</Target>
 <TargetBinding TargetWWNN="value" TargetWWPN="value"
TargetPortID="value" TargetID="value" />
<BootDevice TargetWWNN="value" TargetWWPN="value" LUNID="value" />
 <DriverSettings>
 <Info PersistentPlusNew="value"
 PersistentOnly="value"
 BindbyWWPN="value"
 BindbyPortID="value" />
 </DriverSettings>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

**NOTE:**

- The <HBA>...</HBA> sequence is repeated for each adapter.
- The <Target>...</Target> sequence is repeated for each target.
- The <LUN... /> parameter is repeated for each LUN.
- The <EnabledLUN ID... /> parameter is repeated for each enabled LUN.
- The <TargetBinding.../> parameter is repeated for each target persistent binding entry.
- The <BootDevice.../> parameter is repeated for each boot device selection entry.

## Link Statistics (Command Line Option -ls)

The XML Format 1 for the link statistics option is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWPN="value" WWNN="value" />
 <LinkStatus PortName="value"
 LinkFailure="value"
 SyncLoss="value"
 SignalLoss="value"
 InvalidCRC="value"
 TimeStamp="value" />
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
 </HBA>
</QLogic>
```

## HBA Statistics (Command Line Option -gs)

The XML Format 1 for the adapter statistics option is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWPN="value" WWNN="value" />
 <Statistics LoopID="value"
 PortError="value"
 >
```

```
 DeviceError="value"
 Reset="value"
 IOCount="value"
 IOPS="value"
 BPS="value"
 TimeStamp="value" />
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## HBA Alias (Command Line Option -ha)

The XML Format 1 for the adapter alias option is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <HBAAlias>
 <Alias Name="value" />
 </HBAAlias>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## HBA Port Alias (Command Line Option -pa)

The XML Format 1 for the adapter port alias option is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <PortAlias>
 <Alias Name="value" />
 </PortAlias>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## HBA Transceiver Details (Command Line Option -dm)

The XML Format 1 for adapter transceiver details (general information) is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />
 <MediaInformation>
 <Vendor>"value"</Vendor>
 <Type>"value"</Type>
 <PartNumber>"value"</PartNumber>
 <Speed>"value"</Speed>
 <Revision>"value"</Revision>
 <SerialNumber>"value" </SerialNumber>
 </MediaInformation>
 <Diagnostics>
 <Temperature>
 <MeasuredTemperature> (C) </MeasuredTemperature>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Temperature>
 <Voltage>
 <MeasuredVoltage> (Vdc) </MeasuredVoltage>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Voltage>
 <TxBias>
 <MeasuredTxBiasUnit> (mA) </MeasuredTxBiasUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxBias>
 <TxPower>
```



```

 <MeasuredTxPowerUnit> (mW) </MeasuredTxPowerUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxPower>
 <RxPower>
 <MeasuredRxPowerUnit> (mW) </MeasuredRxPowerUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </RxPower>
</Diagnostics>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

The XML Format 1 for adapter transceiver details (detailed information) is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <HBA>
 <HBA Port="value" WWNN="value" WWPN="value" />

 <OpticalTransceiverDigitalDiagnosticData></OpticalTransceiverDigitalDiagnosticData>
 <Address_A0>
 <Identifier>"value" </Identifier>
 <Ext.Identifier>"value"</Ext.Identifier>
 <Connector>"value"</Connector>
 <TransceiverData>
 <Compliance> "value" </Compliance>
 <FCLinkLength>"value" </FCLinkLength>
 <FCTransmitterTech>"value"</FCTransmitterTech>
 <FCTransmissionMedia>"value"</FCTransmissionMedia>
 <FCSpeed>"value"</FCSpeed>
 </TransceiverData>
 <Encoding>"value"</Encoding>
 <BR-Nominal> "value" </BR-Nominal>
 <Length-9um-km> "value" </Length-9um-km>
 <Length-9um> "value" </Length-9um>
 </HBA>
 </QLogic>

```

```
<Length-50um> "value" </Length-50um>
<Length-62.5um> "value" </Length-62.5um>
<Length-Copper> "value" </Length-Copper>
<VendorName>"value"</VendorName>
<VendorOUI> "value" </VendorOUI>
<VendorPN>"value" </VendorPN>
<VendorRev>"value" </VendorRev>
<WaveLength>"value" </WaveLength>
<CC_BASE> "value" </CC_BASE>
<Options>
 <SignalLossAsDefinedInSFPMSA> "value"
</SignalLossAsDefinedInSFPMSA>
 <SignalLossInvertedFromSFPMSA>"value"
</SignalLossInvertedFromSFPMSA>
 <TX_Fault_SignalImplemented> "value"
</TX_Fault_SignalImplemented>
 <TX_DisableImplementedAndDisablesSerialOP>
"value"</TX_DisableImplementedAndDisablesSerialOP>
 <RATE_SelectImplemented> "value"
</RATE_SelectImplemented>
</Options>
<BR-Max> "value" </BR-Max>
<BR-Min> "value" </BR-Min>
<VendorSN>"value" </VendorSN>
<DateCode>"value" </DateCode>
<DiagMonitoringType>
<AddressChangeRequired> "value" </AddressChangeRequired>
 <PowerMeasurement> "value" </PowerMeasurement>
 <ExternallyCalibrated> "value" </ExternallyCalibrated>
<InternallyCalibrated> "value" </InternallyCalibrated>
<DigitalDiagMonitoring> "value" </DigitalDiagMonitoring>
<LegacyDiagnostic> "value" </LegacyDiagnostic>
</DiagMonitoringType>
<EnhancedOptions>
 <SoftRateSelectCtrlAndMonitoring> "value"
</SoftRateSelectCtrlAndMonitoring>
 <SoftRXLOSMonitoring> "value"</SoftRXLOSMonitoring>
 <SoftTXFaultMonitoring> "value" </SoftTXFaultMonitoring>
 <SoftTXDisableCtrlAndMonitoring> "value"
</SoftTXDisableCtrlAndMonitoring>
 <Alarm-WarningFlags> "value" </Alarm-WarningFlags>
</EnhancedOptions>
<SFF-8472-Compliance>"value"</SFF-8472-Compliance>
<CC_EXT> 0x7d </CC_EXT>
<VendorSpecific> "value" </VendorSpecific>
</Address_A0>
<Address_A2>
 <TempHighAlarm>"value"</TempHighAlarm>
 <TempLowAlarm>"value"</TempLowAlarm>
```

```

<TempHighWarning>"value"</TempHighWarning>
<TempLowWarning>"value" </TempLowWarning>
<VoltageHighAlarm>"value"</VoltageHighAlarm>
<VoltageLowAlarm>"value"</VoltageLowAlarm>
<VoltageHighWarning>"value"</VoltageHighWarning>
<VoltageLowWarning>"value" </VoltageLowWarning>
<BiasHighAlarm>"value"</BiasHighAlarm>
<BiasLowAlarm>"value" </BiasLowAlarm>
<BiasHighWarning>"value" </BiasHighWarning>
<BiasLowWarning>"value" </BiasLowWarning>
<TXPowerHighAlarm>"value" </TXPowerHighAlarm>
<TXPowerLowAlarm>"value" </TXPowerLowAlarm>
<TXPowerHighWarning>"value"</TXPowerHighWarning>
<TXPowerLowWarning>"value"</TXPowerLowWarning>
<RXPowerHighAlarm>"value" </RXPowerHighAlarm>
<RXPowerLowAlarm>"value" </RXPowerLowAlarm>
<RXPowerHighWarning>"value"</RXPowerHighWarning>
<RXPowerLowWarning>"value"</RXPowerLowWarning>
<Rx_PWR-4>"value"</Rx_PWR-4>
<Rx_PWR-3>"value"</Rx_PWR-3>
<Rx_PWR-2>"value"</Rx_PWR-2>
<Rx_PWR-1>"value"</Rx_PWR-1>
<Rx_PWR-0>"value"</Rx_PWR-0>
<Tx_I_Slope>"value"</Tx_I_Slope>
<Tx_I_Offset>"value"</Tx_I_Offset>
<Tx_PWR_Offset>"value"</Tx_PWR_Offset>
<T_Slope>"value"</T_Slope>
<T_Offset>"value"</T_Offset>
<V_Slope>"value"</V_Slope>
<V_Offset>"value"</V_Offset>
<Checksum> "value" </Checksum>
<Temperature_MSB> "value" </Temperature_MSB>
<Temperature_LSB> "value" </Temperature_LSB>
<Vcc_MSB> "value"</Vcc_MSB>
<Vcc_LSB> "value"</Vcc_LSB>
<TX_Bias_MSB> "value" </TX_Bias_MSB>
<TX_Bias_LSB> "value" </TX_Bias_LSB>
<TX_Power_MSB>"value" </TX_Power_MSB>
<TX_Power_LSB> "value" </TX_Power_LSB>
<RX_Power_MSB> "value" </RX_Power_MSB>
<RX_Power_LSB> "value" </RX_Power_LSB>
<Reserved_MSB> "value" </Reserved_MSB>
<Reserved_LSB> "value" </Reserved_LSB>
<Reserved_MSB> "value" </Reserved_MSB>
<Reserved_LSB> "value" </Reserved_LSB>
<StatusControlBits>
 <DataReadyBar> "value" </DataReadyBar>
 <LOS> "value" </LOS>
 <TXFault> "value" </TXFault>

```

```

 <SoftRXRateSelect> "value" </SoftRXRateSelect>
 <RXRateSelectState> "value" </RXRateSelectState>
 <SoftTXDisable> "value"</SoftTXDisable>
 <TXDisableState> "value" </TXDisableState>
 </StatusControlBits>
 <TXPowerLowAlarm>"value" </TXPowerLowAlarm>
 <TXPowerHighAlarm> "value" </TXPowerHighAlarm>
 <TXBiasLowAlarm> "value" </TXBiasLowAlarm>
 <TXBiasHighAlarm> "value" </TXBiasHighAlarm>
 <VccLowAlarm> "value" </VccLowAlarm>
 <VccHighAlarm> "value" </VccHighAlarm>
 <TempLowAlarm> "value" </TempLowAlarm>
 <TempHighAlarm> "value" </TempHighAlarm>
 <RXPowerLowAlarm> "value" </RXPowerLowAlarm>
 <RXPowerHighAlarm>"value" </RXPowerHighAlarm>
 <TXPowerLowWarning> "value" </TXPowerLowWarning>
 <TXPowerHighWarning> "value" </TXPowerHighWarning>
 <TXBiasLowWarning> "value" </TXBiasLowWarning>
 <TXBiasHighWarning> "value" </TXBiasHighWarning>
 <VccLowWarning> "value" </VccLowWarning>
 <VccHighWarning> "value" </VccHighWarning>
 <TempLowWarning> "value" </TempLowWarning>
 <TempHighWarning> "value" </TempHighWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <ReservedWarning> "value" </ReservedWarning>
 <RXPowerLowWarning> "value" </RXPowerLowWarning>
 <RXPowerLowWarning> "value" </RXPowerLowWarning>
 <VendorSpecific> "value" </VendorSpecific>
</Address_A2>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Host Topology (Command Line Option **-tp**)

The XML Format 1 for an adapter type interconnect element is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
<InterConnectElement Type="HBA">
 <HBA WWNN="value"

```

```

WWPN="value"
VendorId="value"
Model="value"
SerialNumber="value"
Alias="value"
PortAlias="value"
DriverVersion="value"
FirmwareVersion="value"
Host="value"
TotalNumberOfDevices="value"
NumberOfPort="value"
BeaconStatus="value"
PortType="value"
PortState="value"/>
<Status> 0 </Status>
<Reboot> 0 </Reboot>
</QLogic>

```

The XML Format 1 for a switch type interconnect element is as follows:

```

<InterConnectElement Type="Switch">
 <Switch WWPN="value" DomainID="value" ManagementID="value"
 IPAddress="value"
 Model="value" SymbolicName="value" SerialNumber="value"
 MACAddress="value" FirmwareVersion="value" PortCount="value"
 BeaconStatus="value"/>
 <PhysicalPortInformation>
 <PhysicalPort Number="value">
 <Port WWPN="value" State="value" Type="value"
 TXPortType="value" ModuleType="value"/>
 <AttachedPort Type="Initiator">
 <HBA NodeName="value"
 PortName="value"
 VendorId="value"
 Model="value"
 SerialNumber="value"
 Alias="value"
 PortAlias="value"
 DriverVersion="value"
 FirmwareVersion="value"
 TotalNumberOfDevices="value"
 Host="value"/>
 </AttachedPort>
 </PhysicalPort>
 ...
 ...
 <PhysicalPort Number="value">
 <Port WWPN="value" State="value" Type="value"
 TXPortType="value" ModuleType="value"/>
 <AttachedPort Type="Initiator">

```

```
 <HBA PortName="value"
 Host="DataUnavailable"/>
 </AttachedPort>
</PhysicalPort>
...
...
 </PhysicalPort>
 <PhysicalPort Number="value">
 <Port WWPN="value" State="value" Type="value"
TXPortType="value" ModuleType="value"/>
 </PhysicalPort>
...
...
 <PhysicalPort Number="value">
 <Port WWPN="20-0A-00-C0-DD-00-B9-09"
 <Port WWPN="value" State="value" Type="value"
TXPortType="value" ModuleType="value"/>
 <AttachedPort Type="Target">
 <Target NodeName="value"
 PortName="value"
 VendorId="value"
 ProductId="value"
 ProductRevision="value"
 ProductSerialNumber="value"/>
 </AttachedPort>
...
...
 <AttachedPort Type="Target">
 <Target NodeName="value"
 PortName="value"
 VendorId="value"
 ProductId="value"
 ProductRevision="value"
 ProductSerialNumber="value"/>
 </AttachedPort>
 </PhysicalPort>
</PhysicalPortInformation>
</InterConnectElement>

 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## Display FCoE Information

The XML Format 1 for FCoE information output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
```

```

<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <Menlo>
 <GeneralInfo HostName="TARGET3"
 Model="QLE8000"
 Description="QLE8042 Mercury CNA"
 FirmwareVersion="1.1.0 (Operational)" />
 </Menlo>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Display FCoE Parameters

The XML Format 1 for FCoE parameter output is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Port="3" WWNN="20-00-00-E0-8B-80-5F-0F"
 WWPN="21-00-00-E0-8B-80-5F-0F" />
 <Menlo>
 <Parameters
 PortSelection="0"
 PortType="Access"
 PauseType="Priority Flow Control"
 PriorityPauseMask="0xcc"
 PriorityPauseBitMask="0[] 1[] 2[x] 3[x] 4[] 5[] 6[x] 7[x] "
 FCoEConfig="Pre-T11 Frame Format"
 FCoECoS="5"/>
 </Menlo>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Display FCoE Link Events

The XML Format 1 for FCoE link events output is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>

```

```
<HBA>
 <HBA Port="3" WWNN="20-00-00-E0-8B-80-5F-0F"
WWPN="21-00-00-E0-8B-80-5F-0F" />
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
<FCoELogs>
 <LogID ID="8"
 LogName="Link Events"/>
 <Entry No="0"
 Info="000:00:02:03:120 Host fibre channel port 0, physical
link up"/>
 <Entry No="1"
 Info="000:00:02:03:120 Host fibre channel port 1, physical
link up"/>
 <Entry No="2"
 Info="No Data"/>
 <Entry No="3"
 Info="No Data"/>
 <Entry No="4"
 Info="No Data"/>
 <Entry No="5"
 Info="No Data"/>
 <Entry No="6"
 Info="No Data"/>
 <Entry No="7"
 Info="No Data"/>
 <Entry No="8"
 Info="No Data"/>
 <Entry No="9"
 Info="No Data"/>
 <Entry No="10"
 Info="No Data"/>
 <Entry No="11"
 Info="No Data"/>
 <Entry No="12"
 Info="No Data"/>
 <Entry No="13"
 Info="No Data"/>
 <Entry No="14"
 Info="No Data"/>
 <Entry No="15"
 Info="No Data"/>
 <Entry No="16"
 Info="No Data"/>
 <Entry No="17"
 Info="No Data"/>
```



```

 <Entry No="18"
 Info="No Data"/>
 <Entry No="19"
 Info="No Data"/>
 </FCoELogs>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
 </HBA>
</QLogic>

```

## Display FCoE DCBX

The XML Format 1 for FCoE DCBX output is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Port="3" WWNN="20-00-00-E0-8B-80-5F-0F"
 WWPNN="21-00-00-E0-8B-80-5F-0F" />
 <?xml version="1.0" encoding="ISO-8859-1"?>
 <QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <FCoELogs>
 <LogID ID="9"
 LogName="DCX"/>
 <Entry No="0"
 Info="000:00:00:00:250 dcx_initialize: DCX enabled and
 initialized"/>
 <Entry No="1"
 Info="No Data"/>
 <Entry No="2"
 Info="No Data"/>
 <Entry No="3"
 Info="No Data"/>
 <Entry No="4"
 Info="No Data"/>
 <Entry No="5"
 Info="No Data"/>
 <Entry No="6"
 Info="No Data"/>
 <Entry No="7"
 Info="No Data"/>
 <Entry No="8"

```

```
 Info="No Data"/>
 <Entry No="9"
 Info="No Data"/>
 <Entry No="10"
 Info="No Data"/>
 <Entry No="11"
 Info="No Data"/>
 <Entry No="12"
 Info="No Data"/>
 <Entry No="13"
 Info="No Data"/>
 <Entry No="14"
 Info="No Data"/>
 <Entry No="15"
 Info="No Data"/>
 <Entry No="16"
 Info="No Data"/>
 <Entry No="17"
 Info="No Data"/>
 <Entry No="18"
 Info="No Data"/>
 <Entry No="19"
 Info="No Data"/>
 </FCoELogs>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
</HBA>
</QLogic>
```

## Display FCoE Network Interface Statistics

The XML Format 1 for FCoE network interface statistics output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Port="3" WWNN="20-00-00-E0-8B-80-5F-0F"
WWPN="21-00-00-E0-8B-80-5F-0F" />
 <NSLPortStatistics>
 <NumberOfTransmittedPacketsLessThan64bytes>
 0
 </NumberOfTransmittedPacketsLessThan64bytes>

 <NumberOfTransmittedPacketsEqual64bytes>
 0
 </NumberOfTransmittedPacketsEqual64bytes>
 </NSLPortStatistics>
 </HBA>
</QLogic>
```

```
</NumberOfTransmittedPacketsEqual64bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo127bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo127bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo256bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo256bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo512bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo512bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo1024bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo1024bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo1518bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo1518bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo2047bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo2047bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo4095bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo4095bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo8191bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo8191bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo9215bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo9215bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo9216bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo9216bytes>

<TotalNumberOfTransmittedPackets_ IncludingThoseWithError>
0
</TotalNumberOfTransmittedPackets_ IncludingThoseWithError>

<NumberOfTransmittedBytesforGoodPackets>
0
</NumberOfTransmittedBytesforGoodPackets>
```

```
<NumberOfTransmittedGoodPackets>
0
</NumberOfTransmittedGoodPackets>

<NumberOfTransmittedUnicastPackets>
0
</NumberOfTransmittedUnicastPackets>

<NumberOfTransmittedMulticastPackets>
0
</NumberOfTransmittedMulticastPackets>

<NumberOfTransmittedBroadcastPackets>
0
</NumberOfTransmittedBroadcastPackets>

<NumberOfTransmittedPacketswithVLANtag>
0
</NumberOfTransmittedPacketswithVLANtag>

<NumberOfTransmitted_802_3x_PauseControlPackets>
0
</NumberOfTransmitted_802_3x_PauseControlPackets>

<NumberOfTransmittedPer-PriorityPausePackets>
0
</NumberOfTransmittedPer-PriorityPausePackets>

<NumberOfTransmittedPacketswithError>
0
</NumberOfTransmittedPacketswithError>

<NumberOfReceivedPacketsLessThan64bytes>
0
</NumberOfReceivedPacketsLessThan64bytes>

<NumberOfReceivedPacketsEqual64bytes>
0
</NumberOfReceivedPacketsEqual64bytes>

<NumberOfReceivedPacketsLessThanOrEqual127bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual127bytes>

<NumberOfReceivedPacketsLessThanOrEqual255bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual255bytes>
```

```
<NumberOfReceivedPacketsLessThanOrEqual511bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual511bytes>

<NumberOfReceivedPacketsLessThanOrEqual1023bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual1023bytes>

<NumberOfReceivedPacketsLessThanOrEqual1518bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual1518bytes>

<NumberOfReceivedPacketsLessThanOrEqual2047bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual2047bytes>

<NumberOfReceivedPacketsLessThanOrEqual4095bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual4095bytes>

<NumberOfReceivedPacketsLessThanOrEqual8191bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual8191bytes>

<NumberOfReceivedPacketsLessThanOrEqual9215bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual9215bytes>

<NumberOfReceivedPacketsLessThanOrEqual9216bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual9216bytes>

<TotalNumberOfReceivedPackets_IncludingThoseWithError>
0
</TotalNumberOfReceivedPackets_IncludingThoseWithError>

<NumberOfReceivedBytesforGoodPackets>
0
</NumberOfReceivedBytesforGoodPackets>

<NumberOfReceivedGoodPackets>
0
</NumberOfReceivedGoodPackets>

<NumberOfReceivedUnicastPackets>
0
</NumberOfReceivedUnicastPackets>

<NumberOfReceivedMulticastPackets>
```

```
0
</NumberOfReceivedMulticastPackets>

<NumberOfReceivedBroadcastPackets>
0
</NumberOfReceivedBroadcastPackets>

<NumberOfReceivedPacketsWithVLANtag>
0
</NumberOfReceivedPacketsWithVLANtag>

<NumberOfReceivedOversizedPacketsWithGoodCRC>
0
</NumberOfReceivedOversizedPacketsWithGoodCRC>

<NumberOfReceivedOversizedPackets>
0
</NumberOfReceivedOversizedPackets>

<NumberOfReceivedPacketsDiscardedbytheMAC>
0
</NumberOfReceivedPacketsDiscardedbytheMAC>

<NumberOfReceivedUndersizedPacketsWithGoodCRC>
0
</NumberOfReceivedUndersizedPacketsWithGoodCRC>

<NumberOfReceivedUndersizedPacketsWithBadCRC>
0
</NumberOfReceivedUndersizedPacketsWithBadCRC>

<NumberOfReceivedPacketsWithCRCError>
0
</NumberOfReceivedPacketsWithCRCError>

<NumberOfReceivedPacketsWithLengthError>
0
</NumberOfReceivedPacketsWithLengthError>

<NumberOfReceivedOversizedPacketsWithBadCRC>
0
</NumberOfReceivedOversizedPacketsWithBadCRC>

<NumberOfReceived_802_3x_PauseControlPackets>
0
</NumberOfReceived_802_3x_PauseControlPackets>

<NumberOfReceivedPer-PriorityPausePackets>
0
```

```
</NumberOfReceivedPer-PriorityPausePackets>

</NSLPortStatistics>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

---

## Notes



# B XML Format 2

This appendix provides the following information:

- “Output Parts” on page B-1 explains the output of XML format 2.
- “XML Format 2 Tags for Each Option” on page B-3 lists the XML format 2 tags for each option.

**NOTE:**

XML files created using the `-x2` command line option match standard output. They do not match the X1 files (see [Appendix A](#)), which are designed for backward compatibility with customized legacy scripts. If you are developing new scripts, we strongly recommend using the `-x2` command line option, which generates standard output XML files.

## Output Parts

The `-x2` command line option (see “[-x2 \(Output in XML Format 2\)](#)” on page 4-48) shows all output in XML Format 2. This section defines the XML2 output format, which consists of the following parts:

- “Main Tag” on page B-1
- “Utility Header” on page B-2
- “Status Message” on page B-2
- “Reboot Message” on page B-2
- “Error Message” on page B-2

## Main Tag

When SANsurfer FC/CNA HBA CLI is in XML2 mode, all outputs are between the main tags:

```
<QLogic>
...
</QLogic>
```

## Utility Header

The following header information is shown after the main tag:

```
<AppName> SANsurfer FC/CNA HBA CLI </AppName>
<AppVersion> X.YY.ZZ Build XX</AppVersion>
<AppXMLVersion> X.YY </AppXMLVersion>
```

## Status Message

Before the closing main tag `</QLogic>`, SANsurfer FC/CNA HBA CLI shows any returning status from the execution of the command line parameters and the error messages.

When the execution of the command line parameters is successful, the following status is shown:

```
<Status> 0 </Status>
```

When the execution of the command line parameters fails, the following status is shown, followed by an error message that provides additional details:

```
<Status> 1 </Status>
```

## Reboot Message

When the execution of the command line parameters is successful and the system must be restarted for the change to take effect, the following message is shown:

```
<Reboot> 1 </Reboot>
```

When the execution of the command line parameters is successful and the system does not need to be restarted, the following message is shown:

```
<Reboot> 0 </Reboot>
```

## Error Message

When the execution of the command line parameters is fails an Error message appears between the Status and Reboot tags. d the system must be restarted for the change to take effect, the following message is shown:

```
<ErrorMsg> "Details of the failure "</ErrorMsg>
```

## XML Format 2 Tags for Each Option

The following sections describe the XML Format 2 for each command line option:

- “Display System Information (Command Line Option -g)” on page B-4
- “Display Adapter Settings (Command Line Option -c)” on page B-4
- “Display HBA Information (Command Line Option -l)” on page B-5
- “Display Device List (Command Line Option -t)” on page B-7
- “Display LUN List (Command Line Option -l)” on page B-8
- “Target Persistent Binding (Command Line Option -p)” on page B-9
- “Selective LUNs (Command Line Option -m)” on page B-9
- “Boot Device (Command Line Option -e)” on page B-10
- “Diagnostics Results—Loopback Test (Command Line Option -kl)” on page B-11
- “Diagnostics Results—Read/Write Buffer Test (Command Line Option -kr)” on page B-12
- “View Driver Settings (Command Line Option -fg)” on page B-12
- “Display All Information for One or All Adapters (Command Line Option -z)” on page B-13
- “Link Statistics (Command Line Option -ls)” on page B-16
- “HBA Statistics (Command Line Option -gs)” on page B-17
- “HBA Alias (Command Line Option -ha)” on page B-18
- “HBA Port Alias (Command Line Option -pa)” on page B-18
- “HBA Transceiver Details (Command Line Option -dm)” on page B-20
- “Host Topology (Command Line Option -tp)” on page B-25
- “Display FCoE Information” on page B-27
- “Display FCoE Parameters” on page B-27
- “Display FCoE Link Events” on page B-27
- “Display FCoE DCBX” on page B-29
- “Display FCoE Network Interface Statistics” on page B-30

**NOTE:**

In these sections, the term *number* refers to the adapter number shown with the adapter general information (command line option -i).

## Display System Information (Command Line Option -g)

The command format is:

```
scli -g -x2
```

The XML Format 2 for system information output is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLISANsurfer FC/CNA HBA
 CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <Host>
 <Name> Host Name </Name>
 <OSType> OS Type </OSType>
 <OSVersion> OS Version <Build="value"</OSVersion>
 <SDMAPIVersion>n.nn.nn.nn</SDMAPIVersion>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <NumOfHBA>n</NumOfHBA>
 </Host>
 <Status> n </Status>
 <?ErrorMsg> "message" </ErrorMsg?>
 <Reboot> n /Reboot>
</QLogic>
```

The parameter <HBA.../> repeats for each adapter in the system.

## Display Adapter Settings (Command Line Option -c)

The command format is:

```
scli -c 0 -x2
```

The XML Format 2 for adapter settings information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Param
 ConnectionOption="value"
 DataRate="value"
```

```

 FrameSize="value"
 HardLoopId="value"
 LoopResetDelay="value"
 EnableHostAdapterBIOS="value"
 EnableHardLoopId="value"
 FibreChannelTapeSupport="value"
 OperationMode="value"
 IntDelayTimer="value"
 ExecutionThrottle="value"
 LoginRetryCount="value"
 EnableLipReset="value"
 PortDownRetryCount="value"
 EnableLipFulllogin="value"
 LinkDownTimeout="value"
 EnableTargetReset="value"
 LUNsPerTarget="value" />
 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>

```

The <HBA> ...</HBA> sequence repeats for each adapter

Each parameter is listed on a separate line for clarity; however, multiple parameters can be on the same line.

For multiple adapters, repeat the preceding sequence with the ID number (ID Number="value") of the next adapter.

## Display HBA Information (Command Line Option -l)

The command format is:

```
scli -i (<hba instance> | <hba wwpn> | all) -x2
```

Another version of the command shows all information or VPD information:

```
scli -i [all] [vpd] -x2
```

The XML Format 2 for adapter general information is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <GeneralInfo Instance="value"
 HBAModel="value"
 HBAID="value"
 HBAAlias="value"

```

```
 HBAPort="value"
 PortAlias="value"
 WWNN="value"
 WWPN="value"
 PortID="value"
 SerialNumber="value"
 DriverVersion="value"
 BIOSVersion="value"
 FirmwareVersion="value"
 PCIbus="value"
 PCIDevice="value"
 ActualConnectionMode="value"
 ActualDataRate="value"
 TargetCount="value"
 PortType="value"
 Status="value"
 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>
```

The XML Format 2 for 4G adapters is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.n Build n</AppVersion>
 <AppXmlVersion>2.0</AppXmlVersion>
 <HBA>
 <GeneralInfo Instance="value"
 HBAModel="value"
 HBAID="value"
 HBAAlias=""
 HBAPort="value"
 PortAlias=""
 WWNN="value"
 WWPN="value"
 PortID="value"
 SerialNumber="value"
 DriverVersion="value"
 BIOSVersion="value"
 FirmwareVersion="value"
 OptionROMBIOSVersion="value"
 OptionROMCodeVersion="value"
 OptionROMEFIVersion="value"
 OptionROMFirmwareVersion="value"
 PCIbus="value"
 PCIDevice="value"
 ActualConnectionMode="value"
 ActualDataRate="value"
```

```

 PortType="value"
 Status="value"
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

Here is the VPD information:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build n.nn</AppVersion>
 <HBA>
 <HBAInstance="value" HBAModel="value"HBAPort="value"
WWNN="value" WWPN="value" />
 <VPD>
 <VPD ProductIdentifier="value"
 PartNumber="value"
 SerialNumber="value"
 MiscInformation="value"
 ManufacturingID="value"
 EFIDriverVersion="value"
 FirmwareVersion="value"
 BIOSVersion="value"
 FCodeVersion="value"
 </VPD>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>

```

## Display Device List (Command Line Option -t)

The command format is:

```
scli -t (<hba instance> | <hba wwpn> | all) -x2
```

The XML Format 2 for adapter device information is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
WWNN="value" WWPN="value" />
 <Target>

```

```
<WWNN> Target WWNN </WWNN>
<WWPN> Target WWPN </WWPN>
<Info Path="value"
 ID="value"
 Vendor="value"
 ProductID="value"
 Revision="value"
 SerialNumber="value"
 DeviceID= "value"
 PortID= "value"
 LunCount= "value"
 Type= "value"
 DeviceStatus= "value" />
</Target>
</HBA>
<Status> n </Status>
<Reboot> n /Reboot>
</QLogic>
```

The <Target>...</Target> sequence repeats for each target.

The <HBA>...</HBA> sequence repeats for each adapter.

## Display LUN List (Command Line Option -l)

The command format is:

```
scli -l <hba instance> | <hba wwpn> -x2
```

The XML Format 2 for the adapter LUN list information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Target>
 <WWNN>value</WWNN>
 <WWPN>value</WWPN>
 <LUN ID="value"
 WWULN="value"
 Vendor="value"
 Product="value"
 Revision="value"
 Size="value"
 Type="value" />
 </Target>
```



```

 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>

```

The <Target> sequence repeats for each LUN attached to the target. The LUN list is listed under the target, not under the adapter.

## Target Persistent Binding (Command Line Option -p)

The command format is:

```
scli -p (<hba instance> | <hba wwpn> | all) (view | ?) -x2
```

The XML Format 2 for the adapter target persistent binding information is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />

 <TargetBinding TargetWWNN="value" TargetWWPN="value"
 TargetPortID="value" TargetID="value" />
 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>

```

The <HBA> ... </HBA> sequence repeats for each adapter.

The <Target binding ... /> sequence repeats for each bound target.

## Selective LUNs (Command Line Option -m)

The command format is:

```
scli -m all (view | ?) -x2
```

The XML Format 2 for the selective LUNs information is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>

```

```
<HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <EnabledLUN ID="value" LUNWWNN="value" LUNWWPN="value"/>
 </Target>
</HBA>
<Status> n </Status>
<Reboot> n /Reboot>
</QLogic>
```

The <Target> ... </Target> sequence repeats for each enabled LUN on the target.

## Boot Device (Command Line Option -e)

The command format for all adapters is:

```
-e (view | ?) -x2
```

The command format for a single adapter is:

```
-e (<hba instance> | <hba wwpn>) (view | ?) -x2
```

The XML Format 2 for the boot device information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <BootDeviceInfo>
 <BootParam EnableSelectableBoot="value" />
 <BootDevice TargetWWPN="value" LUNID="value"/>
 </BootDeviceInfo>
 </HBA>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <BootDeviceInfo>
 <BootParam EnableSelectableBoot="0" />
 <BootDevice TargetWWPN="value" LUNID="value"
 EnableSelectableBoot="0"/>
 </BootDeviceInfo>
```

```

 </HBA>
 <Status> n </Status>
 <?ErrorMsg> "message" </ErrorMsg?>
 <Reboot> n /Reboot>
</QLogic>

```

The <HBA> ...</HBA> sequence repeats for each adapter.

**NOTE:**

If EnableSelectableBoot is set to 1 in the BootParam EnableSelectable Boot tag, it does not appear in the BootDevice TargetWWPN tag:

```

 <BootParam EnableSelectableBoot="1" />
 <BootDevice TargetWWPN="value" LUNID="value"

```

However, if EnableSelectableBoot is set to 0 in the BootParam EnableSelectableBoot tag, it appears in the BootDevice TargetWWPN tag:

```

 <BootParam EnableSelectableBoot="0" />
 <BootDevice TargetWWPN="value" LUNID="value"
 EnableSelectableBoot="0"/>

```

## Diagnostics Results—Loopback Test (Command Line Option -kl)

The command format is:

```

scli -kl (<hba instance> | <hba wwpn>) [(<param name> | <param
alias>) <param value>] -x2

```

The XML Format 2 for the loopback test results is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Loop ID="value"
 CRCErrror="value"
 DisparityError="value"
 FrameLengthError="value"
 Result="Success"/>
 </HBA>

```

```
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>
```

## Diagnostics Results—Read/Write Buffer Test (Command Line Option -kr)

The command format is:

```
scli -kr (<hba instance> | <hba wwpn>) [(-EX | -EXCLUDE)
<target wwpn>] (<param name> | <param alias>) <param value>
-x2
```

The XML Format 2 for the read/write buffer test results is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <Loop ID ="value" DataMiscompare="value" LinkFailure=
 "value" LossOfSync="value" LossOfSignal="value" InvalidCRC="value"
 Result="value" />
 </Target>
 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>
```

The <Target>... </Target> sequence repeats for each target.

## View Driver Settings (Command Line Option -fg)

The command format is:

```
scli -fg (<hba instance> | <hba wwpn>) (VIEW | ?) -x2
```

The XML Format 2 for the current driver settings information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
```

```

 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
WWNN="value" WWPN="value" />
 <DriverSettings>
 <Info PersistentPlusNew="value"
 PersistentOnly="value"
 BindbyWWPN="value"
 BindbyPortID="value" />
 </DriverSettings>
</HBA>
<Status> n </Status>
<?ErrorMsg> "message" </ErrorMsg?>
<Reboot> n /Reboot>
</QLogic>

```

## Display All Information for One or All Adapters (Command Line Option -z)

The XML Format 2 for all adapter information is more complicated than its non-XML counterpart because the tags cannot be repeated. In non-XML mode, SANsurfer FC/CNA HBA CLI sequentially calls all the options in [Table B-1](#), and each option is shown in its standard output format. If each option shows its own XML2 output, the resulting display would have multiple duplicate tags.

**Table B-1. Options Shown by -z**

Non-interactive Option	Description	See User Guide Section
-g	Show system information	<a href="#">“Display System Information (Command Line Options -g, -z, and -tp)” on page 4-1</a>
-i	Show adapter information	<a href="#">“-i (Display HBA General Information or VPD Information for One or All HBAs)” on page 4-20</a>
-c	Show adapter settings	<a href="#">“-c (Show Parameter Settings)” on page 4-8</a>
-t	Show device list	<a href="#">“-t (Display Target Information)” on page 4-45</a>
-l	Show LUN list	<a href="#">“-l (Display LUN Info)” on page 4-32</a>
-p	Target persistent binding	<a href="#">“-p (Display Persistent Target Binding Info)” on page 4-38</a>
-m	Selective LUNs	<a href="#">“-m (View, Enable, or Disable LUNs)” on page 4-33</a>

**Table B-1. Options Shown by -z (Continued)**

Non-interactive Option	Description	See User Guide Section
-e	Boot device	<a href="#">"-e (Boot Device View   Select   Disable)" on page 4-11</a>

The command format is:

```
scli -z (<hba instance> | <hba wwpn> | all) -x2
```

The XML Format 2 for all adapter information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
<Host>
 <Name> Host Name </Name>
 <OSType> OS Type </OSType>
 <OSVersion> OS Version (BUILD) (patches)</OSVersion>
 <SDMAPIVersion> SDMAPI version </SDMAPIVersion>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
WWNN="value" WWPN="value" />
 <NumOfHBA> Number of HBA(s) detected </NumOfHBA>
 </Host> <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
WWNN="value" WWPN="value" />

 <GeneralInfo Instance="value"
 HBAModel="value"
 HBAID="value"
 HBAAlias="value"
 HBAPort="value"
 PortAlias="value"
 WWNN="value"
 WWPN="value"
 PortID="value"
 SerialNumber="value"
 DriverVersion="value"
 BIOSVersion="value"
 FirmwareVersion="value"
 PCIBus="value"
 PCIDevice="value"
 ActualConnectionMode="value"
 ActualDataRate="value"
 TargetCount="value"
```

```

 PortType="value"
 Status="value" />
 <Param ConnectionOption="value"
 <VPD>
 <VPD ProductIdentifier="" />
 </VPD>
 <Param
 ConnectionOption="value"
 DataRate="value"
 FrameSize="value"
 HardLoopID="value"
 LoopResetDelay="value"
 EnableHostAdapterBIOS="value"
 EnableHardLoopId="value"
 FibreChannelTapeSupport="value"
 OperationMode="value"
 IntDelayTimer="value"
 ExecutionThrottle="value"
 LoginRetryCount="value"
 EnableLipReset="value"
 PortDownRetryCount="value"
 EnableLipFulllogin="value"
 LinkDownTimeout="value"
 EnableTargetReset="value"
 LUNsPerTarget="value" />
 <Target>
 <WWNN> Target WWNN </WWNN>
 <WWPN> Target WWPN </WWPN>
 <Info Path= "value"
 ID="value"
 Vendor ="value"
 ProductID= "value"
 Revision= "value"
 SerialNumber="value"
 DeviceID="value"
 PortID="value"
 LunCount="value"
 Type="value"
 DeviceStatus="value" />
 <LUN ID="value"
 WWULN="value"
 Vendor ="value"
 Product="value"
 Revision="value"
 Size="value"
 Type="value" />
 <EnabledLUN ID="value" LUNWWNN="value" LUNWWPN="value" />
 </Target>

```

```
<TargetBinding TargetWWNN="value" TargetWWPN="value"
TargetPortID="value" TargetID="value" />
> <BootDeviceInfo>
 <BootParam EnableSelectableBoot="value" />
 <BootDevice TargetWWPN="value" LUNID="value" />
> </BootDeviceInfo> <DriverSettings>
 <Info PersistentPlusNew="value"
 PersistentOnly="value"
 BindbyWWPN="value"
 BindbyPortID="value" />
 </DriverSettings>
</HBA>
<Status> n </Status>
<Reboot> n /Reboot>
</QLogic>
```

**NOTE:**

- The <HBA>...</HBA> sequence repeats for each adapter.
- The <DriverSettings.../> sequence repeats for each adapter.
- The <VPD Product Identifier.../> sequence repeats for each adapter.
- The <Target>...</Target> sequence repeats for each target.
- The <LUN... /> sequence repeats for each LUN.
- The <EnabledLUN ID... /> sequence repeats for each enabled LUN.
- The <TargetBinding.../> sequence repeats for each target persistent binding entry.
- The <BootDevice.../> sequence repeats for each boot device selection entry.

## Link Statistics

(Command Line Option -ls)

The command format is:

```
scli -ls (<hba instance> | <hba wwpn>) [(<param name> | <param
alias>) <param value>] -x2
```

The XML Format 2 for the link statistics option is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
```



```

<HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <LinkStatus PortName="value"
 LinkFailure="value"
 SyncLoss="value"
 SignalLoss="value"
 InvalidCRC="value"
 TimeStamp="value"/>
</HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>

```

The <HBA>...</HBA> sequence repeats for each adapter.

The <LinkStatus.../> parameter repeats for each link.

## HBA Statistics

### (Command Line Option -gs)

The command format is:

```

scli -gs (<hba instance> | <hba wwpn>) [(<param name> | <param
alias>) <param value>] -x2

```

The XML Format 2 for the adapter statistics option is as follows:

```

<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
<HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <Statistics LoopID="value"
 PortError="value"
 DeviceError="value"
 Reset="value"
 IOCount="value"
 IOPS="value"
 BPS="value"
 TimeStamp="value" />
 </HBA>
<Status> n </Status>
<Reboot> n /Reboot>
</QLogic>

```

The <Statistics.../> sequence repeats for each adapter.

## HBA Alias (Command Line Option -ha)

The command format is:

```
scli -ha (<hba instance> | <hba wwpn>) view | ? -x2
```

The XML Format 2 for the adapter alias option is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <HBAAlias>
 <AliasName="value" />
 </HBAAlias>
 </HBA>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>
```

## HBA Port Alias (Command Line Option -pa)

The command format is:

```
scli -pa (<hba instance> | <hba wwpn>) view | ? -x2
```

The XML Format 2 for the adapter port alias option is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.nn.nn Build nn</AppVersion>
 <AppXmlVersion>2.0</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />
 <PortAlias>
 <Alias Name="value" />
 </PortAlias>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

The XML Format 2 for adapter transceiver details (detailed information) is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>v1.7.0 Build 15</AppVersion>
 <AppXmlVersion>2.0</AppXmlVersion>

 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
WWNN="value" WWPN="value" />
 <MediaInformation>
 <Vendor>"value"</Vendor>
 <Type>"value"</Type>
 <PartNumber>"value"</PartNumber>
 <Speed>"value"</Speed>
 <Revision>"value"</Revision>
 <SerialNumber>"value" </SerialNumber>
 </MediaInformation>
 <Diagnostics>
 <Temperature>
 <MeasuredTemperature>(C) </MeasuredTemperature>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Temperature>
 <Voltage>
 <MeasuredVoltage>(V) </MeasuredVoltage>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Voltage>
 <TxBias>
 <MeasuredTxBiasUnit>(mA) </MeasuredTxBiasUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxBias>
 <TxPower>
 <MeasuredTxPowerUnit>(mW) </MeasuredTxPowerUnit>
```

```
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxPower>
 <RxPower>
 <MeasuredRxPowerUnit> (mW) </MeasuredRxPowerUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </RxPower>
</Diagnostics>
</HBA>
<Status> 0 </Status>
<Reboot> 0 </Reboot>
</QLogic>
```

## HBA Transceiver Details (Command Line Option -dm)

The XML Format 2 for adapter transceiver details (general information) is as follows:

```
scli -dm (<hba instance> | <hba wwpn> | <all>) (general |
gen) -x2
```

The XML Format 2 for the boot device information is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
<HBA>
 <HBA Instance="value" HBA Model="value" WWNN="value"
WWPN="value" />
 <MediaInformation>
 <Vendor>"value"</Vendor>
 <Type>"value"</Type>
 <PartNumber>"value"</PartNumber>
 <Speed>"value"</Speed>
 <Revision>"value"</Revision>
 <SerialNumber>"value" </SerialNumber>
 </MediaInformation>
```

```

<Diagnostics>
 <Temperature>
 <MeasuredTemperature> (C) </MeasuredTemperature>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Temperature>
 <Voltage>
 <MeasuredVoltage> (V) </MeasuredVoltage>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </Voltage>
 <TxBias>
 <MeasuredTxBiasUnit> (mA) </MeasuredTxBiasUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxBias>
 <TxPower>
 <MeasuredTxPowerUnit> (mW) </MeasuredTxPowerUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </TxPower>
 <RxPower>
 <MeasuredRxPowerUnit> (mW) </MeasuredRxPowerUnit>
 <Value>"value"</Value>
 <Status>"value"</Status>
 <HighAlarm>"value"</HighAlarm>
 <HighWarning>"value"</HighWarning>
 <LowWarning>"value"</LowWarning>
 <LowAlarm>"value"</LowAlarm>
 </RxPower>
</Diagnostics>
</HBA>

```

The XML Format 2 for adapter transceiver details (general information) is as follows:

```
scli -dm (<hba instance> | <hba wwpn> | all) (details | det) -x2
```

The XML Format 2 for adapter transceiver details (detailed information) is as follows:

```
<?xml version="value" encoding="value"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>vn.n.nn Build nn</AppVersion>
 <AppXmlVersion>n.nn</AppXmlVersion>
 <HBA>
 <HBA Instance="value" HBAModel="value" HBAPort="value"
 WWNN="value" WWPN="value" />

 <OpticalTransceiverDigitalDiagnosticData></OpticalTransceiverDigitalDiagnosticData>
 <Address_A0>
 <Identifier>"value" </Identifier>
 <Ext.Identifier>"value"</Ext.Identifier>
 <Connector>"value"</Connector>
 <TransceiverData>
 <Compliance> "value" </Compliance>
 <FCLinkLength>"value" </FCLinkLength>
 <FCTransmitterTech>"value"</FCTransmitterTech>
 <FCTransmissionMedia>"value"</FCTransmissionMedia>
 <FCSpeed>"value"</FCSpeed>
 </TransceiverData>
 <Encoding>"value"</Encoding>
 <BR-Nominal> "value" </BR-Nominal>
 <Length-9um-km> "value" </Length-9um-km>
 <Length-9um> "value" </Length-9um>
 <Length-50um> "value" </Length-50um>
 <Length-62.5um> "value" </Length-62.5um>
 <Length-Copper> "value" </Length-Copper>
 <VendorName>"value"</VendorName>
 <VendorOUI> "value" </VendorOUI>
 <VendorPN>"value" </VendorPN>
 <VendorRev>"value" </VendorRev>
 <WaveLength>"value" </WaveLength>
 <CC_BASE> "value" </CC_BASE>
 <Options>
 <SignalLossAsDefinedInSFPMSA> "value"
 </SignalLossAsDefinedInSFPMSA>
 <SignalLossInvertedFromSFPMSA>"value"
 </SignalLossInvertedFromSFPMSA>
 <TX_Fault_SignalImplemented> "value"
 </TX_Fault_SignalImplemented>
```

```

 <TX_DisableImplementedAndDisablesSerialOP>
"value"</TX_DisableImplementedAndDisablesSerialOP>
 <RATE_SelectImplemented> "value" </RATE_SelectImplemented>
 </Options>
 <BR-Max> "value" </BR-Max>
 <BR-Min> "value" </BR-Min>
 <VendorSN>"value" </VendorSN>
 <DateCode>"value" </DateCode>
 <DiagMonitoringType>
 <AddressChangeRequired> "value" </AddressChangeRequired>
 <PowerMeasurement> "value" </PowerMeasurement>
 <ExternallyCalibrated> "value" </ExternallyCalibrated>
 <InternallyCalibrated> "value" </InternallyCalibrated>
 <DigitalDiagMonitoring> "value" </DigitalDiagMonitoring>
 <LegacyDiagnostic> "value" </LegacyDiagnostic>
 </DiagMonitoringType>
 <EnhancedOptions>
 <SoftRateSelectCtrlAndMonitoring> "value"
</SoftRateSelectCtrlAndMonitoring>
 <SoftRXLOSMonitoring> "value"</SoftRXLOSMonitoring>
 <SoftTXFaultMonitoring> "value" </SoftTXFaultMonitoring>
 <SoftTXDisableCtrlAndMonitoring> "value"
</SoftTXDisableCtrlAndMonitoring>
 <Alarm-WarningFlags> "value" </Alarm-WarningFlags>
 </EnhancedOptions>
 <SFF-8472-Compliance>"value"</SFF-8472-Compliance>
 <CC_EXT> 0x7d </CC_EXT>
 <VendorSpecific> "value" </VendorSpecific>
</Address_A0>
 <Address_A2>
 <TempHighAlarm>"value"</TempHighAlarm>
 <TempLowAlarm>"value"</TempLowAlarm>
 <TempHighWarning>"value"</TempHighWarning>
 <TempLowWarning>"value" </TempLowWarning>
 <VoltageHighAlarm>"value"</VoltageHighAlarm>
 <VoltageLowAlarm>"value"</VoltageLowAlarm>
 <VoltageHighWarning>"value"</VoltageHighWarning>
 <VoltageLowWarning>"value" </VoltageLowWarning>
 <BiasHighAlarm>"value"</BiasHighAlarm>
 <BiasLowAlarm>"value" </BiasLowAlarm>
 <BiasHighWarning>"value" </BiasHighWarning>
 <BiasLowWarning>"value" </BiasLowWarning>
 <TXPowerHighAlarm>"value" </TXPowerHighAlarm>
 <TXPowerLowAlarm>"value" </TXPowerLowAlarm>
 <TXPowerHighWarning>"value"</TXPowerHighWarning>
 <TXPowerLowWarning>"value"</TXPowerLowWarning>
 <RXPowerHighAlarm>"value" </RXPowerHighAlarm>
 <RXPowerLowAlarm>"value" </RXPowerLowAlarm>
 <RXPowerHighWarning>"value"</RXPowerHighWarning>

```

```
<RXPowerLowWarning>"value"</RXPowerLowWarning>
<Rx_PWR-4>"value"</Rx_PWR-4>
<Rx_PWR-3>"value"</Rx_PWR-3>
<Rx_PWR-2>"value"</Rx_PWR-2>
<Rx_PWR-1>"value"</Rx_PWR-1>
<Rx_PWR-0>"value"</Rx_PWR-0>
<Tx_I_Slope>"value"</Tx_I_Slope>
<Tx_I_Offset>"value"</Tx_I_Offset>
<Tx_PWR_Slope>"value"</Tx_PWR_Slope>
<Tx_PWR_Offset>"value"</Tx_PWR_Offset>
<T_Slope>"value"</T_Slope>
<T_Offset>"value"</T_Offset>
<V_Slope>"value"</V_Slope>
<V_Offset>"value"</V_Offset>
<Checksum> "value" </Checksum>
<Temperature_MSB> "value" </Temperature_MSB>
<Temperature_LSB> "value" </Temperature_LSB>
<Vcc_MSB> "value"</Vcc_MSB>
<Vcc_LSB> "value"</Vcc_LSB>
<TX_Bias_MSB> "value" </TX_Bias_MSB>
<TX_Bias_LSB> "value" </TX_Bias_LSB>
<TX_Power_MSB>"value" </TX_Power_MSB>
<TX_Power_LSB> "value" </TX_Power_LSB>
<RX_Power_MSB> "value" </RX_Power_MSB>
<RX_Power_LSB> "value" </RX_Power_LSB>
<Reserved_MSB> "value" </Reserved_MSB>
<Reserved_LSB> "value" </Reserved_LSB>
<Reserved_MSB> "value" </Reserved_MSB>
<Reserved_LSB> "value" </Reserved_LSB>
<StatusControlBits>
 <DataReadyBar> "value" </DataReadyBar>
 <LOS> "value" </LOS>
 <TXFault> "value" </TXFault>
 <SoftRXRateSelect> "value" </SoftRXRateSelect>
 <RXRateSelectState> "value" </RXRateSelectState>
 <SoftTXDisable> "value"</SoftTXDisable>
 <TXDisableState> "value" </TXDisableState>
</StatusControlBits>
<TXPowerLowAlarm>"value" </TXPowerLowAlarm>
<TXPowerHighAlarm> "value" </TXPowerHighAlarm>
<TXBiasLowAlarm> "value" </TXBiasLowAlarm>
<TXBiasHighAlarm> "value" </TXBiasHighAlarm>
<VccLowAlarm> "value" </VccLowAlarm>
<VccHighAlarm> "value" </VccHighAlarm>
<TempLowAlarm> "value" </TempLowAlarm>
<TempHighAlarm> "value" </TempHighAlarm>
<RXPowerLowAlarm> "value" </RXPowerLowAlarm>
<RXPowerHighAlarm>"value" </RXPowerHighAlarm>
<TXPowerLowWarning> "value" </TXPowerLowWarning>
```





```
 BeaconStatus="value"
 <PhysicalPortInformation>
 <PhysicalPortNumber="value">
 <Port WWPN="value"
 State="value"
 Type="value"
 TXPortType="value"
 ModuleType="value"
 <AttachedPort Type="value">
 <HBANodeName="value"
 PortName="value"
 VendorID="value"
 Model="value"
 SerialNumber="value"
 Alias="value"
 PortAlias="value"
 DriverVersion="value"
 FirmwareVersion="value"
 Host="value"/>
 </AttachPort>
 </PhysicalPort>
 ...
 </PhysicalPortInformation>
</InterconnectElements>
<InterconnectElementType="HBA">
 <HBA WWNN="value"
 WWPN="value"
 VendorID="value"
 Model="value"
 SerialNumber="value"
 Alias="value"
 PortAlias="value"
 DriverVersion="value"
 FirmwareVersion="value"
 Host="value"
 TotalNumberOfDevices="value"
 NumberOfPort="value"
 BeaconStatus="value"
 PortType="value"
 PortState="value"/>
</InterconnectElement>
 <Status> n </Status>
 <Reboot> n /Reboot>
</QLogic>
```

The <InterconnectElement>...</InterconnectElement> sequence repeats for each interconnect element.

## Display FCoE Information

The XML Format 2 for FCoE information output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <Menlo>
 <GeneralInfo HostName="TARGET3"
 Model="QLE8000"
 Description="QLE8042 Mercury CNA"
 FirmwareVersion="1.1.0 (Operational)" />
 </Menlo>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## Display FCoE Parameters

The XML Format 2 for FCoE parameter output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANSurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Instance="3" HBAModel="QLE8402" HBAPort="1"
 WWNN="20-00-00-E0-8B-80-5F-0F" WWPN="21-00-00-E0-8B-80-5F-0F" />
 <Menlo>
 <Parameters
 PortSelection="0"
 PortType="Access"
 PauseType="Priority Flow Control"
 PriorityPauseMask="0xcc"
 PriorityPauseBitMask="0[] 1[] 2[x] 3[x] 4[] 5[] 6[x] 7[x] "
 FCoEConfig="Pre-T11 Frame Format"
 FCoECoS="5"/>
 </Menlo>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

## Display FCoE Link Events

The XML Format 2 for FCoE link events output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Instance="3" HBAModel="QLE8402" HBAPort="1"
WWNN="20-00-00-E0-8B-80-5F-0F" WWPN="21-00-00-E0-8B-80-5F-0F" />
 <?xml version="1.0" encoding="ISO-8859-1"?>
 <QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <FCoELogs>
 <LogID ID="8"
 LogName="Link Events"/>
 <Entry No="0"
 Info="000:00:01:58:480 Host fibre channel port 0, physical
link up"/>
 <Entry No="1"
 Info="000:00:02:03:120 Host fibre channel port 1, physical
link up"/>
 <Entry No="2"
 Info="No Data"/>
 <Entry No="3"
 Info="No Data"/>
 <Entry No="4"
 Info="No Data"/>
 <Entry No="5"
 Info="No Data"/>
 <Entry No="6"
 Info="No Data"/>
 <Entry No="7"
 Info="No Data"/>
 <Entry No="8"
 Info="No Data"/>
 <Entry No="9"
 Info="No Data"/>
 <Entry No="10"
 Info="No Data"/>
 <Entry No="11"
 Info="No Data"/>
 <Entry No="12"
 Info="No Data"/>
 <Entry No="13"
 Info="No Data"/>
 <Entry No="14"
 Info="No Data"/>
 <Entry No="15"
 Info="No Data"/>
```

```

 <Entry No="16"
 Info="No Data"/>
 <Entry No="17"
 Info="No Data"/>
 <Entry No="18"
 Info="No Data"/>
 <Entry No="19"
 Info="No Data"/>
 </FCoELogs>
</HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
</HBA>
</QLogic>

```

## Display FCoE DCBX

The XML Format 2 for FCoE DCBX output is as follows:

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Instance="3" HBAModel="QLE8402" HBAPort="1"
 WWNN="20-00-00-E0-8B-80-5F-0F" WWPN="21-00-00-E0-8B-80-5F-0F" />
 </HBA>
</QLogic>
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <FCoELogs>
 <LogID ID="9"
 LogName="DCX"/>
 <Entry No="0"
 Info="000:00:00:00:250 dcx_initialize: DCX enabled and
 initialized"/>
 <Entry No="1"
 Info="No Data"/>
 <Entry No="2"
 Info="No Data"/>
 <Entry No="3"
 Info="No Data"/>
 <Entry No="4"
 Info="No Data"/>
 <Entry No="5"
 Info="No Data"/>
 <Entry No="6"

```

```
Info="No Data"/>
<Entry No="7"
Info="No Data"/>
<Entry No="8"
Info="No Data"/>
<Entry No="9"
Info="No Data"/>
<Entry No="10"
Info="No Data"/>
<Entry No="11"
Info="No Data"/>
<Entry No="12"
Info="No Data"/>
<Entry No="13"
Info="No Data"/>
<Entry No="14"
Info="No Data"/>
<Entry No="15"
Info="No Data"/>
<Entry No="16"
Info="No Data"/>
<Entry No="17"
Info="No Data"/>
<Entry No="18"
Info="No Data"/>
<Entry No="19"
Info="No Data"/>
</FCoELogs>
</HBA>
<Status> 0 </Status>
<Reboot> 0 </Reboot>
</QLogic>
</HBA>
</QLogic>
```

## Display FCoE Network Interface Statistics

The XML Format 2 for FCoE network interface statistics output is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<QLogic>
 <AppName>SANsurfer FC/CNA HBA CLI</AppName>
 <AppVersion>1.7.1.23</AppVersion>
 <HBA>
 <HBA Instance="3" HBAModel="QLE8402" HBAPort="1"
WWNN="20-00-00-E0-8B-80-5F-0F" WWPN="21-00-00-E0-8B-80-5F-0F" />
 <NSLPortStatistics>
 <NumberOfTransmittedPacketsLessThan64bytes>
 0
```

```
</NumberOfTransmittedPacketsLessThan64bytes>

<NumberOfTransmittedPacketsEqual64bytes>
0
</NumberOfTransmittedPacketsEqual64bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo127bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo127bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo256bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo256bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo512bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo512bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo1024bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo1024bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo1518bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo1518bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo2047bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo2047bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo4095bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo4095bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo8191bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo8191bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo9215bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo9215bytes>

<NumberOfTransmittedPacketsLessThanOrEqualTo9216bytes>
0
</NumberOfTransmittedPacketsLessThanOrEqualTo9216bytes>

<TotalNumberOfTransmittedPackets_IncludingThoseWithError>
0
</TotalNumberOfTransmittedPackets_IncludingThoseWithError>
```

```
<NumberOfTransmittedBytesforGoodPackets>
0
</NumberOfTransmittedBytesforGoodPackets>

<NumberOfTransmittedGoodPackets>
0
</NumberOfTransmittedGoodPackets>

<NumberOfTransmittedUnicastPackets>
0
</NumberOfTransmittedUnicastPackets>

<NumberOfTransmittedMulticastPackets>
0
</NumberOfTransmittedMulticastPackets>

<NumberOfTransmittedBroadcastPackets>
0
</NumberOfTransmittedBroadcastPackets>

<NumberOfTransmittedPacketswithVLANtag>
0
</NumberOfTransmittedPacketswithVLANtag>

<NumberOfTransmitted_802_3x_PauseControlPackets>
0
</NumberOfTransmitted_802_3x_PauseControlPackets>

<NumberOfTransmittedPer-PriorityPausePackets>
0
</NumberOfTransmittedPer-PriorityPausePackets>

<NumberOfTransmittedPacketswithError>
0
</NumberOfTransmittedPacketswithError>

<NumberOfReceivedPacketsLessThan64bytes>
0
</NumberOfReceivedPacketsLessThan64bytes>

<NumberOfReceivedPacketsEqual64bytes>
0
</NumberOfReceivedPacketsEqual64bytes>

<NumberOfReceivedPacketsLessThanOrEqual127bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual127bytes>
```



```
<NumberOfReceivedPacketsLessThanOrEqual255bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual255bytes>

<NumberOfReceivedPacketsLessThanOrEqual511bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual511bytes>

<NumberOfReceivedPacketsLessThanOrEqual1023bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual1023bytes>

<NumberOfReceivedPacketsLessThanOrEqual1518bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual1518bytes>

<NumberOfReceivedPacketsLessThanOrEqual2047bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual2047bytes>

<NumberOfReceivedPacketsLessThanOrEqual4095bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual4095bytes>

<NumberOfReceivedPacketsLessThanOrEqual8191bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual8191bytes>

<NumberOfReceivedPacketsLessThanOrEqual9215bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual9215bytes>

<NumberOfReceivedPacketsLessThanOrEqual9216bytes>
0
</NumberOfReceivedPacketsLessThanOrEqual9216bytes>

<TotalNumberOfReceivedPackets_IncludingThoseWithError>
0
</TotalNumberOfReceivedPackets_IncludingThoseWithError>

<NumberOfReceivedBytesforGoodPackets>
0
</NumberOfReceivedBytesforGoodPackets>

<NumberOfReceivedGoodPackets>
0
</NumberOfReceivedGoodPackets>

<NumberOfReceivedUnicastPackets>
```

```
0
</NumberOfReceivedUnicastPackets>

<NumberOfReceivedMulticastPackets>
0
</NumberOfReceivedMulticastPackets>

<NumberOfReceivedBroadcastPackets>
0
</NumberOfReceivedBroadcastPackets>

<NumberOfReceivedPacketsWithVLANtag>
0
</NumberOfReceivedPacketsWithVLANtag>

<NumberOfReceivedOversizedPacketsWithGoodCRC>
0
</NumberOfReceivedOversizedPacketsWithGoodCRC>

<NumberOfReceivedOversizedPackets>
0
</NumberOfReceivedOversizedPackets>

<NumberOfReceivedPacketsDiscardedbytheMAC>
0
</NumberOfReceivedPacketsDiscardedbytheMAC>

<NumberOfReceivedUndersizedPacketsWithGoodCRC>
0
</NumberOfReceivedUndersizedPacketsWithGoodCRC>

<NumberOfReceivedUndersizedPacketsWithBadCRC>
0
</NumberOfReceivedUndersizedPacketsWithBadCRC>

<NumberOfReceivedPacketsWithCRCError>
0
</NumberOfReceivedPacketsWithCRCError>

<NumberOfReceivedPacketsWithLengthError>
0
</NumberOfReceivedPacketsWithLengthError>

<NumberOfReceivedOversizedPacketsWithBadCRC>
0
</NumberOfReceivedOversizedPacketsWithBadCRC>

<NumberOfReceived_802_3x_PauseControlPackets>
0
```

```
</NumberOfReceived_802_3x_PauseControlPackets>

<NumberOfReceivedPer-PriorityPausePackets>
0
</NumberOfReceivedPer-PriorityPausePackets>

</NSLPortStatistics>
 </HBA>
 <Status> 0 </Status>
 <Reboot> 0 </Reboot>
</QLogic>
```

---

## Notes

# C Error/Exit Return Codes

To list the error/exit return codes while running SANsurfer FC/CNA HBA CLI in interactive mode:

1. From the **Main Menu**, select the **Help** option, and then press ENTER.
2. On the **Help Menu**, select **Exit Codes**, and then press ENTER.

To list the SANsurfer FC/CNA HBA CLI non-interactive error/exit codes from the command line, type:

```
scli -ei
```

SANsurfer FC/CNA HBA CLI lists the error/exit return code numbers, names, and descriptions as shown in [Table C-1](#).

**NOTE:**

Error return codes are continually being updated. Although [Table C-1](#) was accurate at the time this document was written, you should check for the latest return codes in the file, `Fcscli-exicodes.txt`, located in the SANsurfer FC/CNA HBA CLI installation directory.

**Table C-1. Error/Exit Return Codes**

Return Code	Name	Description
0	SUCCESS	Command executed with no error
1	ERROR_OPEN_FILE	Failed to open file
2	ERROR_READ_FILE	Failed to read file
3	ERROR_WRITE_FILE	Failed to write to a file
4	ERROR_CLOSE_FILE	Failed to close a file
5	ERROR_INCORRECT_FILE	Selected file is incorrect
6	ERROR_INCORRECT_FILE_SIZE	File size is incorrect
7	ERROR_UNSUPPORTED_HBA	Adapter is unsupported

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
8	ERROR_NO_HBA	Unable to open the adapter handle
9	ERROR_UNKNOWN_HBA	Adapter is unknown to SANsurfer FC/CNA HBA CLI
10	ERROR_INVALID_SSID	Adapter has invalid SSDID/SSVID
11	ERROR_MISMATCH_SSID	The specified Flash/NVRAM file does not have the SSDID/SSVID that match the adapter
12	ERROR_MISMATCH_CHECKSUM	File checksum does not match
13	ERROR_CORRUPTED_FILE	File appears to be corrupted
14	ERROR_FILE_CHKSUM_ERROR	File checksum returns error
15	ERROR_FILE_INVALID_DATA	File has invalid data
16	ERROR_FLASH_UPDATE_IGNORE	Adapter does not need to be updated
17	Reserved	Not used
18	Reserved	Not used
19	ERROR_FLASH_UPDATE_UNSUPPORTED	Flash update is not supported with this adapter
20	ERROR_FLASH_OPTION_DISABLED_HBA	Flash update is disabled with this adapter
21	ERROR_FLASH_OPTION_DISABLED_OS	Flash update is disabled with this OS
22	ERROR_FLASH_INVALID_HEADER_SIGNATURE	Flash file has invalid header signature
23	ERROR_FLASH_INVALID_DATA_SIGNATURE	Flash file has invalid data signature
24	Reserved	Internal used
25	ERROR_FLASH_CSUM_ERROR	Flash file checksum test failed
26	ERROR_FLASH_NO_FW_REGION_VALID	Adapter does not have valid firmware region
27	ERROR_FLASH_INVALID_FW_FILE	Firmware file does not match with adapter
28	Reserved	Internal used
29	ERROR_FLASH_CSUM_MISMATCH	Flash file has checksum mismatched.

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
30	ERROR_INCORRECT_RISC_CODE_FILE	Incorrect RISC image
31	ERROR_INCORRECT_BOOT_CODE_FILE	Incorrect BIOS/FCode boot image
32	ERROR_INCORRECT_FULL_IMAGE_FILE	Incorrect 1M Flash image
33	ERROR_CORRUPTED_FLASH_IMAGE_FILE	Flash image file is corrupted
34	ERROR_FLASH_UPDATE_FAILURE	Failed to update Flash
35	ERROR_FLASH_INVALID_REGION_SIGNATURE	Incorrect Flash image file
36	ERROR_FLASH_GET_REGION_FAILURE	Failed to read Flash update region from adapter
37	ERROR_FLASH_UPDATE_NO_VALID_REGION	Failed to validate Flash update region read from adapter
38	ERROR_FLASH_UPDATE_NO_REGION_LAYOUT	Adapter does not have Flash update region layout
39	ERROR_FLASH_UPDATE_INVALID_VPD	Flash contains invalid VPD
40	ERROR_DIAGNOSTICS_PARAM_ERROR	Diagnostics test returns invalid parameters
41	ERROR_DIAGNOSTICS_LOOP_DOWN	Unable to run diagnostics because the loop is down
42	ERROR_DIAGNOSTICS_FAILURE	Diagnostics test failed with errors
43	ERROR_DIAGNOSTICS_DATA_MISCOMPARE	Diagnostics test failed with data miscompare
44	ERROR_DIAGNOSTICS_UNKNOWN_STATUS	Unknown diagnostics test status
45	ERROR_DIAGNOSTICS_NO_AVAIL_TARGET	Unable to run R/W buffer test because there are no attached devices
46	ERROR_DIAGNOSTICS_NOT_FOUND_TARGET	Unable to run R/W buffer test because the excluded device is not available
47	ERROR_DIAGNOSTICS_MAX_FRAME_SETTING	Unable to run diagnostics because of the adapter current frame size setting
48	ERROR_INVALID_DIAGNOSTICS_SETTINGS	Invalid diagnostics test parameter settings

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
49	Reserved	Not used
50	ERROR_FC_LINK_UNKNOWN_STATUS	Error getting FC link status
51	ERROR_RESET_LINK_STATUS	Unable to reset adapter link status
52	ERROR_INVALIDE_STATISTICS_PARAMS	Invalid link status/statistics parameter settings
53	Reserved	Not used
54	Reserved	Not used
55	Reserved	Not used
56	Reserved	Not used
57	Reserved	Not used
58	Reserved	Not used
59	Reserved	Not used
60	ERROR_INVALID_PARAM_SETTINGS	Invalid adapter parameter value/key
61	ERROR_PARAM_UNSUPPORTED_HBA	Specified adapter parameters is not currently supported
62	ERROR_PARAM_UNSUPPORTED_DRIVER	Unable to update adapter parameters; the driver is unsupported
63	ERROR_RESTORE_NVRAM_DEFAULT	Failed to restore adapter parameters to default settings
64	ERROR_PARAM_UNSUPPORTED_OS	Unable to apply new adapter parameters; the OS is unsupported
65	ERROR_PARAM_DISABLE_SETTINGS	Current parameter is not supported
66	Reserved	Not used
67	Reserved	Not used
68	Reserved	Not used
69	Reserved	Not used
70	ERROR_SAVE_HBA_FLASH_TO_FILE	Failed to save adapter Flash image to a file
71	ERROR_READ_HBA_FLASH_HBA	Failed to read adapter Flash



**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
72	ERROR_NO_SPACE_LEFT	Command failed because no space left on the drive
73	ERROR_MISSING_TEMPLATE_FILE	Unable to find template file
74	Reserved	Not used
75	Reserved	Not used
76	Reserved	Not used
77	Reserved	Not used
78	Reserved	Not used
79	Reserved	Not used
80	ERROR_INVALID_SERIAL_NO	Invalid adapter serial number
81	ERROR_GET_NVRAM_DATA	Unable to read NVRAM from adapter
82	ERROR_UPDATE_NVRAM_DATA	Failed to update adapter parameters
83	ERROR_PRESERVE_NVRAM_DATA	Failed to preserve adapter parameters
84	ERROR_MISSING_NVRAM_TEMPLATE_FILE	Unable to find the NVRAM template for the adapter
85	ERROR_INVALID_NVRAM_PROG_OPTION	Specified key/value to program NVRAM are invalid
86	ERROR_SPECIFIC_OEM_TEMPLATE_UNUPPORT	Incorrect or unsupported OEM template type for selected adapter
87	Reserved	Not used
88	Reserved	Not used
89	Reserved	Not used
90	ERROR_READING_BOOT_DEVICE	Failed to read boot device settings of the adapter
91	ERROR_SAVING_BOOT_DEVICE	Failed to save boot device settings to the adapter
92	ERROR_BOOT_CONFIG_DISABLED_DRIVER	Boot device settings disabled with running driver
93	ERROR_BOOT_TARGET_NO_LUN	Boot device settings aborted because boot target has no LUN

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
94	ERROR_TARGET_NO_DIRECT_ACCESS	Boot device settings failed because the boot target is not a direct access device
95	ERROR_INVALID_BOOT_SETTINGS	Boot device parameter is invalid/incorrect
96	ERROR_UNSUPPORTED_BOOT_SETTINGS	Unsupported boot device settings
97	Reserved	Not used
98	Reserved	Not used
99	Reserved	Not used
100	ERROR_INVALID_DRIVER_PARAM	Driver parameter settings are invalid
101	ERROR_READ_DRIVER_PARAM	Failed to read current driver settings of the adapter
102	ERROR_DRIVER_PARAM_NOT_FOUND	Unknown driver parameter settings
103	ERROR_UNSUPPORTED_DRIVER_PARAM	Unsupported driver parameter
104	Reserved	Not used
105	Reserved	Not used
106	Reserved	Not used
107	Reserved	Not used
108	Reserved	Not used
109	Reserved	Not used
110	ERROR_DUPLICATE_TARGET_ID	Target has duplicate ID
111	ERROR_INVALID_TARGET_ID	Target has invalid ID
112	ERROR_MISMATCH_TARGET_ID	Target has mismatch ID
113	ERROR_READ_FROM_DRIVER	Failed to read persistent binding data from driver database
114	ERROR_READ_FROM_PERSISTENT_STORAGE	Failed to read persistent binding data from persistent database
115	ERROR_MEMORY_ALLOC_FAILURE	Unable to allocate memory
116	ERROR_TARGET_ENTRY_NOT_FOUND	Unable to find the binding entry of the specified target

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
117	ERROR_DELETE_TARGET_PERSISTENT_ENTRY	Failed to delete target persistent binding
118	ERROR_LUN_NOT_FOUND	Specified LUN ID not available
119	ERROR_NO_DEVICE_FOUND	Adapter does not have attached devices
120	ERROR_OPTION_UNSUPPORTED_DRV	Option is not available with running driver
121	ERROR_OPTION_UNSUPPORTED_HBA	Option is not available with adapter
122	ERROR_OPTION_UNSUPPORTED_OS	Option is not available on this OS platform
123	ERROR_OPTION_DISABLED_GUI_CONFIG	Target persistent binding is not allowed because of existing configuration saved by SANsurfer FC HBA Manager
124	ERROR_OPTION_DISABLED_DRV	Target persistent binding is disabled because of current driver
125	ERROR_UPDATE_LUN_DATA_PERSIST_BINDING	Failed to update LUN data during persistent binding configuration
126	ERROR_FAILOVER_DRIVER_LOADED	Feature is not supported with failover driver
127	Reserved	Not used
128	Reserved	Not used
129	Reserved	Not used
130	ERROR_INVALID_HBA_WWID	Adapter WWPN/WWNN specified is invalid
131	ERROR_INVALID_HBA_PID	Adapter instance specified is invalid
132	ERROR_INVALID_TARGET_WWID	Target WWPN/WWNN specified is invalid
133	ERROR_INVALID_LUN_ID	LUN ID specified is invalid
134	ERROR_MISSING_INPUT	Incomplete command line option
135	ERROR_INVALID_INPUT	Invalid command line option
136	ERROR_CMD_UNSUPPORTED	Specified command line option is unsupported
137	ERROR_UNKNOWN_CMD_OPTION	Unknown command option
138	Reserved	Not used
139	Reserved	Not used

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
140	ERROR_UNKNOWN_FILE_FORMAT	Unable to determine file format
141	ERROR_READ_DRV_VER_SYS_FILE	Failed to read driver version from sys file
142	ERROR_INIT_SECURITY_DESCRIPTOR	Failed to initialize security descriptor during driver update
143	ERROR_SET_SECURITY_DESCRIPTOR	Failed to set security descriptor during driver update
144	ERROR_FAIL_UPDATE_DRIVER	Failed to update driver
145	ERROR_HARDWARE_ID_NO_MATCH	Adapter hardware ID does not match with the driver config file
146	ERROR_DRIVER_UPDATE_UNSUPPORTED	Driver update is not allowed with this adapter
147	ERROR_NO_DRV_INF_FILE	Driver inf file is missing in the driver package
148	ERROR_CREATE_TEMP_DIR	Failed to create temporary directory
149	ERROR_OPEN_ZIP_FILE	Failed to open zip file
150	ERROR_CLOSE_ZIP_FILE	Failed to close zip file
151	ERROR_READ_ZIP_FILE	Failed to read zip file
152	ERROR_EXTRACT_ZIP_FILE	Failed to extract zip file
153	ERROR_CORRUPTED_ZIP_FILE	Zip file appears to be corrupted
154	ERROR_CREATE_ZIP_FILE	Failed to create zip file
155	ERROR_MISSING_DRV_FILE	Driver sys file is missing in the driver package
156	ERROR_EMPTY_FOLDER	Driver folder is empty
157	ERROR_GET_REGISTRY_KEY	Failed to get a registry key
158	ERROR_SET_REGISTRY_KEY	Failed to set a registry key
159	ERROR_STORPORT_NOT_SUPPORTED	Operation failed with STOR miniport driver
160	ERROR_INVALID_VPD_DATA	Adapter has invalid VPD data
161	ERROR_CORRUPTED_VPD	Current VPD of the adapter is corrupted
162	ERROR_BAD_CHECKSUM_VPD	VPD data has invalid checksum

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
163	ERROR_NO_SN_VPD	Serial number is missing in VPD data
164	ERROR_RETRIEVE_VPD_DATA	Failed to read VPD of selected adapter
165	ERROR_UNSUPPORT_VPD_OPT	Option is not supported with selected adapter
166	Reserved	Internal used
167	Reserved	Not used
168	Reserved	Not used
169	Reserved	Not used
170	Reserved	Not used
171	IBM Reserved	Blocked
172	IBM Reserved	Blocked
173	IBM Reserved	Blocked
174	IBM Reserved	Blocked
175	IBM Reserved	Blocked
176	IBM Reserved	Blocked
177	IBM Reserved	Blocked
178	IBM Reserved	Blocked
179	IBM Reserved	Blocked
180	IBM Reserved	Blocked
181	IBM Reserved	Blocked
182	IBM Reserved	Blocked
183	IBM Reserved	Blocked
184	IBM Reserved	Blocked
185	IBM Reserved	Blocked
186	IBM Reserved	Blocked
187	IBM Reserved	Blocked
188	IBM Reserved	Blocked

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
189	IBM Reserved	Blocked
190	IBM Reserved	Blocked
191	IBM Reserved	Blocked
192	IBM Reserved	Blocked
193	Reserved	Not used
194	Reserved	Not used
195	Reserved	Not used
196	Reserved	Not used
197	Reserved	Not used
198	Reserved	Not used
199	Reserved	Not used
200	ERROR_SAVE_SEL_LUN_CONFIG	Failed to save selective LUN configuration
201	Reserved	Not used
202	Reserved	Not used
203	Reserved	Not used
204	Reserved	Not used
205	Reserved	Not used
206	Reserved	Not used
207	Reserved	Not used
208	Reserved	Not used
209	Reserved	Not used
210	ERROR_MISSING_IP_ADDRESS	IP address is required
211	ERROR_MISSING_NETMASK_ADDRESS	Netmask address is required
212	ERROR_MISSING_GATEWAY_ADDRESS	Gateway address is required
213	ERROR_INVALID_IP_ADDRESS	Invalid IP address
214	ERROR_INVALID_NET_MASK	Invalid netmask address
215	ERROR_GET_SWITCH_INFO	Failed to get switch information

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
216	ERROR_SET_SWITCH_IP_ADDRESS	Failed to set switch IP address
217	ERROR_INVALID_SWITCH_INPUT	Invalid switch parameters settings
218	ERROR_INVALID_ADMIN_ACCOUNT	Admin account is required
219	ERROR_INVALID_ADMIN_PASSWORD	Admin password is incorrect
220	ERROR_INVALID_OPTION	Switch input is invalid
221	Reserved	Not used
222	Reserved	Not used
223	Reserved	Not used
224	Reserved	Not used
225	Reserved	Not used
226	Reserved	Not used
227	Reserved	Not used
228	Reserved	Not used
229	Reserved	Not used
230	ERROR_GET_TARGET_IIDMA_SETTINGS	Failed to query current intelligent interleaved direct memory access setting
231	ERROR_SAVE_TARGET_IIDMA_SETTINGS	Failed to set intelligent interleaved direct memory access factor
232	ERROR_SET_TARGET_IIDMA_UNSUPPORTED	Intelligent interleaved direct memory access factor setting is not supported with selected adapter
233	ERROR_INVALID_IIDMA_SETTINGS	Invalid intelligent interleaved direct memory access factor setting for selected adapter
234	ERROR_TARGET_NOT_AVAIL_IIDMA_SETTINGS	Not used
235	Reserved	Not used
236	Reserved	Not used
237	Reserved	Not used
238	Reserved	Not used

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
239	Reserved	Not used
240	ERROR_NO_TARGET_SELECTED	Unable to run target beacon because no device is selected
241	ERROR_GET_BEACON_STATE	Unable to get the beacon status
242	ERROR_SET_BEACON_STATE	Unable to set the beacon status
243	ERROR_BEACON_UNSUPPORTED	Beacon operation is unsupported
244	ERROR_INVALID_BEACON_PARAMETERS	Beacon settings are invalid
245	Reserved	Not used
246	Reserved	Not used
247	Reserved	Not used
248	Reserved	Not used
249	Reserved	Not used
250	ERROR_GET_HBA_ALIAS	Failed to retrieve adapter alias of the adapter
251	ERROR_UPDATE_HBA_ALIAS	Failed to update adapter alias of the adapter
252	ERROR_GET_PORT_ALIAS	Failed to retrieve port alias of the adapter
253	ERROR_UPDATE_PORT_ALIAS	Failed to update port alias of the adapter
254	Reserved	Not used
255	Reserved	Not used
256	Reserved	Not used
257	Reserved	Not used
258	Reserved	Not used
259	Reserved	Not used
260	ERROR_DRIVER_RESCAN	Driver rescan operation failed (Solaris)
261	Reserved	Not used
262	Reserved	Not used
263	Reserved	Not used



**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
264	Reserved	Not used
265	Reserved	Not used
266	Reserved	Not used
267	Reserved	Not used
268	Reserved	Not used
269	Reserved	Not used
270	ERROR_ADAPTER_PROP_MISSING	Adapter property file is missing
271	Reserved	Not used
272	Reserved	Not used
273	Reserved	Not used
274	Reserved	Not used
275	Reserved	Not used
276	Reserved	Not used
277	Reserved	Not used
278	Reserved	Not used
279	Reserved	Not used
280	ERROR_CREATE_VIRTUAL_PORT	Failed to create a virtual port of the adapter
281	ERROR_DELETE_VIRTUAL_PORT	Failed to delete a virtual port of the adapter
282	ERROR_INVALID_VIRTUAL_PORT_WWN	Virtual port WWPN is invalid
283	ERROR_VIRTUAL_PORT_NOT_FOUND	Unable to find the specific virtual port
284	ERROR_NO_VIRTUAL_PORT_EXIST	This adapter does not have any virtual ports
285	ERROR_DELETE_ALL_VIRTUAL_PORTS	Failed to delete all virtual ports of the adapter
286	ERROR_OPTION_DISABLED_VIRTUAL_HBA	Option is not available with virtual port adapter
287	ERROR_PRESERVED_WWPN_VIRTUAL_HBA	The supplied hexadecimal value is currently preserved for the physical adapter

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
288	Reserved	Not used
289	Reserved	Not used
290	Reserved	Not used
291	ERROR_VIRTUAL_HBA_LOCKED	vPort is currently locked
292	ERROR_VPORT_NOT_BELONG_TO_PPORT	vPort does not belong to the physical port
293	ERROR_DUPLICATE_WWPN_VIRTUAL_HBA	Found duplicate vPort WWPN
294	Reserved	Not used
295	Reserved	Not used
296	Reserved	Not used
297	Reserved	Not used
298	Reserved	Not used
299	Reserved	Not used
300	ERROR_RESET_MENLO	Failed to reset FCoE engine
301	ERROR_GET_MENLO_FW_VERSION	Failed to retrieve FCoE firmware version
302	ERROR_UPDATE_MENLO_FW	Failed to update FCoE firmware
303	ERROR_MANAGE_MENLO_INFO	Failed to execute FCoE operation commands
304	ERROR_GET_MENLO_CONFIG	Failed to retrieve FCoE parameters
305	ERROR_SET_MENLO_CONFIG	Failed to update FCoE parameters
306	ERROR_NOT_A_FCOE_DEVICE	Selected adapter is not an FCoE adapter
307	ERROR_INVALID_FW_SEGMENT_SIZE	Invalid FCoE firmware segment size
308	ERROR_MENLO_PORT_NOT_FOUND	Unable to find the selected FCoE port
309	ERROR_UNSUPPORTED_MENLO_DEVICE	Unsupported FCoE adapter
310	ERROR_GET_MENLO_ASIC_MONITORING	Failed to query FCoE ASIC port statistics
311	ERROR_GET_MENLO_CPU_MONITORING	Failed to query FCoE CPU statistics

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
312	ERROR_GET_MENLO_ETH_MONITORING	Failed to query FCoE Ethernet port statistics
313	ERROR_GET_MENLO_FC_MONITORING	Failed to query FCoE FC port statistics
314	ERROR_GET_MENLO_NSL_MONITORING	Failed to query FCoE NSL port statistics
315	ERROR_CORRUPTED_LOG_DATA	FCoE log data seems to be corrupted
316	ERROR_NO_MATCHING_LOG_ID	Unable to find the specified log that matched with the log ID
317	ERROR_READ_MENLO_MEMORY	FCoE diagnostics read memory failed
318	ERROR_WRITE_MENLO_MEMORY	FCoE diagnostics write memory failed
319	ERROR_RETRIEVING_MENLO_LOG_LAYOUT	Failed to query FCoE log layout
320	ERROR_RETRIEVING_MENLO_LOG_ID	Failed to retrieve FCoE log data
321	ERROR_INVALID_OFFSET	Invalid offset input
322	ERROR_INVALID_BYTES	Invalid bytes input
323	ERROR_INVALID_DIAG_ADDRESS	Invalid FCoE memory buffer address
324	ERROR_INVALID_DIAG_SIZE	Invalid FCoE memory buffer size
325	ERROR_INVALID_DIAG_INPUTS	Invalid FCoE inputs
326	ERROR_RETRIEVING_MENLO_PANIC_LOG	Failed to retrieve FCoE panic log
327	ERROR_NO_PANIC_LOG_FOUND	FCoE panic log not found
328	ERROR_FCOE_PARAMS_INVALID	FCoE parameter settings is invalid
329	ERROR_FCOE_PARAMS_UNSUPPORTED	FCoE parameter settings is unsupported
330	FLASH_VER_CTRL_FILE_MISSING	Flash version config file is missing
331	FLASH_UPDATE_NOT_NEEDED	Adapter boot code does not require upgrade
332	FLASH_UPDATE_ALL_FAILED	Flash update failed with all adapters
333	FLASH_UPDATE_SOME_FAILED	Flash update completed with errors (some adapters failed to be upgraded)
334	FLASH_NO_ENTRY_FLASH_CFG_FILE	Adapter entry is missing in the Flash version config file

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
335	Reserved	Not used
336	Reserved	Not used
337	Reserved	Not used
338	Reserved	Not used
339	Reserved	Not used
340	ERROR_GET_UDEV_NAME	Unable to query udev persistent device name
341	ERROR_DISPLAY_LUN_PERSISTENT_NAME	Error displaying udev persistent device name of the specified LUN
342	ERROR_SET_LUN_PERSISTENT_NAME	Error setting udev persistent device name to the specified LUN
343	ERROR_DEL_LUN_PERSISTENT_NAME	Error deleting udev persistent device name of the specified LUN
344	ERROR_INVALID_LUN_PERSISTENT_NAME	Invalid udev persistent device name
345	ERROR_OS_UNSUPPORTED_PERSISTENT_NAME	Udev persistent device name feature is not supported with current OS/kernel
346	ERROR_UNSUPPORTED_LUN_TYPE	Selected device is not supported with udev persistent device name feature
347	ERROR_UDEV_NAME_NOT_FOUND	Specified device is not currently configured with udev persistent device name
348	Reserved	Not used
349	Reserved	Not used
350	ERROR_FW_PRELOAD_UPDATE_FAILURE	Unable to update firmware preload table on the specified adapter
351	ERROR_FW_PRELOAD_SAVE_FAILURE	Unable to save adapter current firmware preload table to a DAT file
352	Reserved	Not used
353	Reserved	Not used
354	Reserved	Not used
355	Reserved	Not used

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
356	Reserved	Not used
357	Reserved	Not used
358	Reserved	Not used
359	Reserved	Not used
360	ERROR_FW_SERDES_UPDATE_FAILURE	Unable to update firmware SerDes table on the specified adapter
361	ERROR_FW_SERDES_SAVE_FAILURE	Unable to save current adapter firmware serdes table to a DAT file
362	Reserved	Not used
363	Reserved	Not used
364	Reserved	Not used
365	Reserved	Not used
366	Reserved	Not used
367	Reserved	Not used
368	Reserved	Not used
369	Reserved	Not used
370	ERROR_UPDATE_VPORT_ENABLE_STATE	Failed to enable/disable QoS enable setting state
371	ERROR_UPDATE_VPORT_LOCK_STATE	Failed to modify QoS lock setting state
372	ERROR_UPDATE_PPORT_ENABLE_STATE	Failed to modify QoS enable setting state. Selected port is a physical port
373	ERROR_UPDATE_PPORT_LOCK_STATE	Failed to lock/unlock QoS lock setting state. Selected port is a physical port
374	ERROR_INVALID_QOS_TYPE	Unsupported QoS type
375	ERROR_INVALID_QOS_PRIORITY_VALUE	Invalid input for QoS priority setting
376	ERROR_INVALID_QOS_BW_PERCENTAGE_VALUE	Invalid input for QoS bandwidth percentage setting
377	ERROR_INVALID_QOS_BW_SPEED_VALUE	Invalid input for QoS bandwidth speed setting

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
378	ERROR_QOS_PERCENTAGE_OVERFLOW	Failed to apply changes on selected port (QoS bandwidth overflow)
379	ERROR_VPORT_DISABLE_QOS_SETTING	Failed to apply changes on selected port (QoS settings is currently disabled)
380	ERROR_VPORT_LOCK_QOS_SETTING	Failed to apply changes on selected port (QoS settings is currently locked)
381	ERROR_UPDATE_VPORT_QOS_SETTING	Failed to update QoS settings
430	ERROR_SFP_INVALID_FILE_RECORD	File has invalid record
431	ERROR_SFP_BUFFER_INVALID_SIZE	Invalid record size
432	ERROR_SFP_BUFFER_INVALID_CHKSUM	File has invalid checksum
433	ERROR_SFP_UPDATE_FAILED	Failed to update Electronic Dispersion Compensation (EDC) firmware
434	ERROR_SFP_UPDATE_UNSUPPORTED	Selected option is unsupported
435	ERROR_SFP_UPDATE_NON_ZERO_COUNT_STATUS	Status error count is nonzero
436	Reserved	Not used
437	Reserved	Not used
438	ERROR_SFP_INVALID_FW_FILE	Incorrect Vitesse EDC firmware file
439	ERROR_SFP_READ_FW_VERSION	Failed to read EDC firmware version
440	ERROR_SFP_READ_FW_STATUS	Failed to read EDC firmware status
441	ERROR_SFP_UNSUPPORTED_LIB	Selected option is unsupported with current libqldsrm version
442	Reserved	Not used
443	Reserved	Not used
444	Reserved	Not used
445	Reserved	Not used
446	Reserved	Not used
447	Reserved	Not used
448	Reserved	Not used

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
449	Reserved	Not used
450	ERROR_ILT_SIGNATURE_MISMATCH	The image layout table (ILT) signature does not match
451	ERROR_INCORRECT_FCOE_FLASH_IMAGE	Unable to find an adapter that matches with the Flash image
452	ERROR_VALIDATE_FCOE_FLASH_IMAGE	Failed to verify Flash image
453	ERROR_MODIFY_FCOE_FLASH_IMAGE	Failed to modify Flash image
454	ERROR_READ_FLT_FLASH_IMAGE	Failed to read Flash layout tables
455	ERROR_UPDATE_NIC_BOOT_CODE	Failed to update NIC boot code
456	ERROR_UPDATE_MPI_FIRMWARE	Failed to update MPI firmware
457	ERROR_UPDATE_EDC_FIRMWARE	Failed to update EDC firmware
458	ERROR_UPDATE_FC_BOOT_CODE	Failed to update FC boot code
459	ERROR_UPDATE_FC_FIRMWARE	Failed to update FC firmware
460	ERROR_MPI_CFG_UPDATE_FAILURE	Failed to update MPI configuration
461	ERROR_MPI_CFG_SAVE_FAILURE	Failed to save MPI configuration
462	ERROR_GET_MPI_CFG_VERSION_HBA	Failed to get MPI configuration version from adapter
463	ERROR_GET_MPI_CFG_VERSION_FILE	Failed to get MPI configuration version from file
464	ERROR_VALIDATE_MPI_CFG_SETTINGS	Failed to validate DCBX parameter inputs
465	ERROR_APPLY_MPI_CFG_SETTINGS	Failed to save DCBX parameter inputs
466	ERROR_GET_DCE_STATISTICS	Failed to get DCE statistics
467	Reserved	Not used
468	Reserved	Not used
469	Reserved	Not used
470	ERROR_GET_DCE_STATISTICS	Failed to get DCE statistics
471	Reserved	Not used
472	Reserved	Not used

**Table C-1. Error/Exit Return Codes (Continued)**

Return Code	Name	Description
473	Reserved	Not used
474	Reserved	Not used
475	Reserved	Not used
476	Reserved	Not used
477	Reserved	Not used
478	Reserved	Not used
479	Reserved	Not used
480	ERROR_GET_DCBX_PARAMETERS	Failed to get DCBX TLV



# D Help Commands

Table D-2 is an alphabetic listing of the Help commands. Unless otherwise noted, only one command line option per input file is valid. The hyphen (-) and slash (/) characters are equivalent. For example, `scli -g` and `scli /g` are both valid commands.

Table D-1 describes each variable used in the command line arguments shown in Table D-2.

**Table D-1. Variables Used in Arguments**

Variable	Description
<address>	IP address.
<hba instance>	Adapter instance number of an adapter port.
<hba wwpn>	World wide port name of an adapter port. (xx-xx-xx-xx-xx-xx-xx-xx OR xxxxxxxxxxxxxxxx).
<enable value>	Enable value: 1 for enable or 0 for disable.
<file name>	Firmware preload table .dat file
<lock value>	Lock value: 1 for lock or 0 for unlock.
<log id>	FCoE log ID (0-x).
<lun id>	Logical unit number of a LUN.
<lun name>	Persistent device name assigned to the designated LUN.
<percent>	Value of bandwidth percent.
<priority>	Priority value: low, medium, or high.
<speed>	Link speed.
<target id>	ID of a target device.
<target portid>	Port ID of a target device. (xx-xx-xx OR xxxxxxx).
<target wwnn>	World wide node name of a target device. (xx-xx-xx-xx-xx-xx-xx-xx OR xxxxxxxxxxxxxxxx).

**Table D-1. Variables Used in Arguments (Continued)**

Variable	Description
<target wwpn>	World wide port name of a target device. (xx-xx-xx-xx-xx-xx-xx-xx OR xxxxxxxxxxxxxxxxx).
<vport hex>	World wide port name of the virtual port with the two hexadecimal digits in byte three supplied by the user.
<vport wwpn>	World wide port name of a virtual port.

**Table D-2. Help Commands**

Command Line Action	Arguments	Function
-	[ int ]	Starts interactive mode.
-a	( <hba instance>   <hba wwpn> )	Flashes the adapter port LED to locate it in the host. This feature is not supported on QLA22xx series adapters.
-a	( <hba instance>   <hba wwpn> ) ( view   ?)	Shows the current LED state on an adapter port.
-b	( <all>   <hba instance>   <hba wwpn> ) [ ( <-rg> <fw   boot  all> ) ] <file name>	Updates the adapter boot code from a file, where: <ul style="list-style-type: none"> <li>■ &lt;-rg&gt; Specifies Option ROM region update mode.</li> <li>■ &lt;all&gt; Updates the flash from a full image file (1MB image file).</li> <li>■ &lt;file name&gt; Flash image file name.</li> </ul> Note: Region update is not available on 2Gb adapters. Flash update is not supported on 2Gb adapters in Macintosh. If selected multiple adapters, only adapters that are compatible with the provided flash image will be updated.
-b	( <hba instance>   <hba wwpn> ) save <file name>	Saves the adapter boot code to a file.
-c	( <hba instance>   <hba wwpn> )	Views the adapter parameters settings of an adapter port.
-c	[ <all> ]	Views the adapter parameters settings of all adapters.

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-d	<file name >	Performs a driver update to the adapters. <file name> is the full path of the driver file in inf/zip or exe format.
-dm	( <hba instance>   <hba wwpn>   <all> ) general   gen   details   det	Runs a transceiver (SFF/SFP) diagnostics on an adapter port and shows the result in general or detail view. This feature is supported only with 4Gb adapter or latest. This feature is not available with inbox driver (SLES 10.0 / RHEL 5.0 or latest).
-e	( <hba instance>   <hba wwpn> ) ( enable   0 0 0 )	Selectable Boot: Configure the operating system to boot from the first target the BIOS finds.
-e	( <hba instance>   <hba wwpn> ) ( enable   0 0 0 )	Selectable Boot: Configure the operating system to boot from the first target the BIOS finds.
-e	( <hba instance>   <hba wwpn> ) ( view   ? )	Shows the current boot device information on an adapter port.
-e	( <hba instance>   <hba wwpn> ) ( view   ? )	Shows the current boot device information on an adapter port.
-e	( <hba instance>   <hba wwpn> ) disable [ prim   alt1   alt2   alt3 ]	Clears the selected current boot device settings on an adapter port (prim/alt1/alt2 or alt3 Boot Port Name). Configures all LUNs of all devices attached to an adapter port (Disable).
-e	( <hba instance>   <hba wwpn> ) disable [ prim   alt1   alt2   alt3 ]	Clears the selected current boot device settings on an adapter port (prim/alt1/alt2 or alt3 Boot Port Name).
-e	( <hba instance>   <hba wwpn> ) <target wwnn> <target wwpn> <lun id> [ prim   alt1   alt2   alt3]	Configures the operating system to boot from a specific target: <ul style="list-style-type: none"> <li>■ prim: Primary Boot Port Name</li> <li>■ alt1: Alternate 1 Boot Port Name</li> <li>■ alt2: Alternate 2 Boot Port Name</li> <li>■ alt3: Alternate 3 Boot Port Name</li> </ul>

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-e	( <hba instance>   <hba wwpn> <target wwnn> <target wwpn> <lun id> [ prim   alt1   alt2   alt3 ]	Configures the operating system to boot from a specific target: <ul style="list-style-type: none"> <li>■ prim: Primary Boot Port Name</li> <li>■ alt1: Alternate 1 Boot Port Name</li> <li>■ alt2: Alternate 2 Boot Port Name</li> <li>■ alt3: Alternate 3 Boot Port Name</li> </ul>
-e	( view   ? )	Shows the current boot device information on all adapters.
-e	( view   ? )	Shows the current boot device information on all adapters.
-ei	-	Lists the exit codes.
-f	<file name>	Executes from a command input file. Option -f cannot be combined with any other options.
-fcoe	( <hba instance>   <hba wwpn> ) --info	Shows current FCoE firmware version.
-fcoe	( <hba instance>   <hba wwpn> ) --getparam --portx	Shows FCoE parameters of specified port.
-fcoe	( <hba instance>   <hba wwpn> ) --setparam --portx ( { <param name>   <param alias> } <param value> }	Modifies FCoE parameters of specified port.
-fcoe	( <hba instance>   <hba wwpn> ) --loadfw <firmware file>	Updates FCoE firmware.
-fcoe	( <hba instance>   <hba wwpn> ) --mon --nsl --portx	Shows FCoE network interface statistics of specified port.
-fcoe	( <hba instance>   <hba wwpn> ) --log --list	Shows FCoE available log IDs.
-fcoe	( <hba instance>   <hba wwpn> ) --log --id <logid>	Shows the log specified by the log ID.
-fg	( <hba instance>   <hba wwpn> ) ( view   ? )	Shows the current driver settings.

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-fs	( <hba instance>   <hba wwpn> ) { ( <param name>   <param alias> ) <param value> }	Configures the driver settings.
-gs	( <hba instance>   <hba wwpn> ) { ( <param name>   <param alias> ) <param value> }	Shows the current statistics on an adapter port.
-h   -?	-	Lists all the command options and syntax. Option -h can be combined with a command line option to show the usage of that individual command.
-ha	( <hba instance>   <hba wwpn> ) <alias>	Sets an alias to an adapter.
-ha	( <hba instance>   <hba wwpn> ) delete	Deletes the current alias of an adapter.
-ha	( <hba instance>   <hba wwpn> ) view   ?	Shows the current alias of an adapter.
-i	( <hba instance>   <hba wwpn> ) [ vpd ]	Views the general or VPD information of an adapter port.
-i	[ <all> ] [ vpd ]	Views the general or VPD information of all adapters.
-kl	( <hba instance>   <hba wwpn> ) [ { ( <param name>   <param alias> ) <param value> } ]	Runs a diagnostics loopback test on an adapter port.
-kr	( <hba instance>   <hba wwpn> ) [ { ( -ex   -exclude ) <target wwpn> } ] [ ( <param name>   <param alias> ) <param value> ]	Runs a diagnostics read/write buffer test to all target device(s) attached to an adapter port.
-l	( <hba instance>   <hba wwpn> )	Shows the information about LUNs attached to an adapter port.
-l	( <hba instance>   <hba wwpn> ) ( <target wwpn>   <target portid> )	Shows the information about LUNs of a target device attached to an adapter port.
-l	( <hba instance>   <hba wwpn> ) ( <target wwpn>   <target portid> ) <lun id>	Shows the information about a specific LUN of a target device attached to an adapter port.

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-ls	( <hba instance>   <hba wwpn> ) { ( <param name>   <param alias> ) <param value> }	Shows the current link status on an adapter port.
-m	( <hba instance>   <hba wwpn> ) ( view   ? )	Views selective LUN information of all devices attached to an adapter port.
-m	( <hba instance>   <hba wwpn> ) <target wwnn> <target wwpn> <lun id> ( view   ? )	Views selective LUN information of a single device attached to an adapter port.
-m	( <hba instance>   <hba wwpn> ) select   enable <target wwnn> <target wwpn>	Configures all LUNs of a device attached to an adapter port (Enable).
-m	( <hba instance>   <hba wwpn> ) select all	Configures all LUNs of all devices attached to an adapter port (Enable).
-m	( <hba instance>   <hba wwpn> ) unselect   disable <target wwnn> <target wwpn>	Configures all LUNs of all devices attached to an adapter port (Disable).
-m	( <hba instance>   <hba wwpn> ) unselect all	Configures all LUNs of all devices attached to an adapter port (Disable).
-m	( <hba instance>   <hba wwpn> ) { <target wwnn> <target wwpn> <lun id> ( 0   1   enable     select   unselect ) }	Configures individual LUN of a device attached to an adapter port.
-n	( <hba instance>   <hba wwpn> ) { ( <param name>   <param alias> ) <param value> }	Modifies the adapter parameters of an adapter port.
-n	( <hba instance>   <hba wwpn>   <all> ) <OEM name>	Sets the adapter parameters of an adapter port with a pre-defined OEM default templates.
-n	( <hba instance>   <hba wwpn>   <all> ) default	Restores the adapter parameters of an adapter port to factory default settings (4Gb adapters or latest).
-o	<file name>	Writes the output to a named file. This option can be combined with other options. However, this option must be at the beginning or at the end of the command line.

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-p	( <hba instance>   <hba wwpn> ) { <target wwnn> <target wwpn> <target portid> <target id> }	Binds the selected device(s) attached to an adapter port.
-p	( <hba instance>   <hba wwpn> ) remove <target wwnn>   unbind <target wwnn>	Unbinds a specific device attached to an adapter port.
-p	( <hba instance>   <hba wwpn>   <all> ) ( view   ? )	Shows the current persistent binding configuration on an adapter port or all adapters.
-p	( <hba instance>   <hba wwpn>   <all> ) bind all	Binds all device(s) attached to an adapter port or all adapters.
-p	( <hba instance>   <hba wwpn>   <all> ) remove all   unbind all	Unbinds all device(s) attached to an adapter port or all adapters.
-pa	( <hba instance>   <hba wwpn> ) <alias>	Sets an alias to an adapter port.
-pa	( <hba instance>   <hba wwpn> ) delete	Deletes the current alias of an adapter port.
-pa	( <hba instance>   <hba wwpn> ) view   ?	Shows the current alias of an adapter port.
-pl	<hba instance> <hba wwpn> --info [<target id> <lun id>]	Shows persistent device names for a specific LUN or all LUNs. (Linux only)
-pl	<hba instance> <hba wwpn> --set {<target id> <lun id> <lun name>}	Adds a persistent device name to a specific LUN. (Linux only)
-pl	<hba instance> <hba wwpn> --del {<target id> <lun id> <lun name>}	Removes the existing persistent device name currently assigned to a specific LUN. (Linux only)
-q	( <hba instance>   <hba wwpn> ) { <target wwpn> <speed> }	Modifies the iiDMA settings of selected target(s) on an adapter port. This feature is supported only on 4Gb or latest adapters.
-q	( <hba instance>   <hba wwpn> ) <target wwpn>	Shows the current iiDMA settings of a specific target on an adapter port.
-q	( <hba instance>   <hba wwpn>   <all> ) ( -targets   -t ) <speed>	Modifies the iiDMA settings of all targets on an adapter port or all adapters.

**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-q	( <hba instance>   <hba wwpn>   <all> ) [ -targets   -t ]	Shows the current iiDMA settings of all targets on an adapter port or all adapters.
-qos	<hba instance> <hba wwpn> info --vp <all> [--spd --per]	Shows current QoS settings for all virtual ports on a physical adapter port.
-qos	<hba instance> <hba wwpn> info --vp <vport wwpn>	Shows current QoS settings for a specific virtual port on a physical adapter port.
-qos	<hba instance> <hba wwpn> {--vp <vport wwpn> --pri <priority> --bwspd <speed> --bwper <percent>  --lock <lock value> --enable <enable value>}	Modifies QoS settings for specified virtual ports.
-r	( <hba instance>   <hba wwpn> ) save <file name>	Saves the current adapter parameters of an adapter port to a file.
-r	( <hba instance>   <hba wwpn>   <all> ) <file name>	Updates the adapter parameters of an adapter port or all adapters from a file.
-s	-	Suppresses the output. This option can be combined with other options. However, this option must be at the beginning or at the end of the command line.
-t	( <hba instance>   <hba wwpn> )	Shows the information about devices (disks or tapes) attached to an adapter port.
-t	( <hba instance>   <hba wwpn> ) ( <target wwpn>   <target portid> )	Shows the information about a device (disk or tape) attached to an adapter port.
-t	[ <all> ]	Shows the information about devices (disks or tapes) attached to all adapters.
-tb	( <hba instance>   <hba wwpn> ){ ( <target wwpn> ) } <beacon mode>	Locates a specific device or multiple devices in a JBOD. This feature is supported only by devices within a JBOD.
-tp   -topology ]	-	Shows the current topology (Host view).
-u	( <hba instance>   <hba wwpn>   <all> ) <file name>	Updates the firmware preload area of the adapter.



**Table D-2. Help Commands (Continued)**

Command Line Action	Arguments	Function
-u	( <hba instance>   <hba wwpn> ) save <file name>	Saves the current adapter firmware preload area to a DAT file.
-v	–	Shows the current version.
-vp	( <hba instance>   <hba wwpn> ) create <vport hex>	Creates a virtual port with your own WWPN.
-vp	( <hba instance>   <hba wwpn> ) create auto	Creates a virtual port with default WWPN (auto generate).
-vp	( <hba instance>   <hba wwpn> ) delete <vport wwpn>	Deletes a virtual port on a physical adapter port.
-vp	( <hba instance>   <hba wwpn> ) delete all	Deletes all virtual port(s) on a physical adapter port.
-vp	( <hba instance>   <hba wwpn> ) list <vport wwpn>	Lists a specific virtual port on a physical adapter port.
-vp	( <hba instance>   <hba wwpn> ) list all	Lists all virtual ports on a physical adapter port.
-x	–	Writes the output in XML format 1. Option -x can be used to generate an old-style format that is compatible with previous releases (XML format 1). This option can be combined with other options; however, this option must be at the beginning or at the end of the command line.
-x2	–	Writes the output in XML format 2. Option -x2 can be used to generate a new-style format that is matched with standard text output (XML format 2). This option can be combined with other options; however, this option must be at the beginning or at the end of the command line.
-z	( <hba instance>   <hba wwpn>   <all> )	Creates a summary report of individual adapter or all adapters in the current host.

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## Notes

# Glossary

## **adapter**

The board that interfaces between the host system and the target devices. Adapter is synonymous with *host bus adapter (HBA)*, *host channel adapter (HCA)*, *host adapter*, and *adapter board*.

## **adapter alias**

A user-defined name for an adapter.

## **adapter port**

A port on the adapter board.

## **adapter port alias**

A user-defined name for an adapter port.

## **adapter port beacon**

An LED on the adapter. Flashing it enables you to locate the adapter.

## **AL**

Arbitrated loop. A circular (ring) topology (versus point-to-point) where two or more ports can be interconnected, but only two ports can communicate at a time. All communication passes through all ports connected to the loop.

## **AL\_PA**

Arbitrated loop physical address. A low-level address on the FC loop.

## **arbitrated loop**

See [AL](#).

## **arbitrated loop\_physical address**

See [AL\\_PA](#).

## **basic input output system**

See [BIOS](#).

## **BIOS**

Basic input output system (typically in Flash PROM). The program (or utility) that serves as an interface between the hardware and the operating system and allows booting from the adapter at startup.

## **boot code**

The program that initializes a system or an adapter. Boot code is the first program to run when a system or a device within a system, such as an adapter. FCode, BIOS, and EFI (enhanced firmware interface) are all forms of boot code for specific hardware/operating system environments.

Boot code for QLogic FC adapters is required if the computer system is booting from a storage device (disk drive) attached to the adapter. The primary function of the boot code is communication with the external boot device before the operating system is up and running. There are also secondary functions that can be performed by the boot code, including managing the setup for the adapter and initializing and testing the adapter's ISP.

### boot device

The device, usually the hard disk, that contains the operating system the BIOS uses to boot from when the computer is started.

### cache

A temporary high-speed storage (memory) area where recently used or frequently accessed data is stored for rapid access, thus increasing the efficiency of processor operations.

Cache contents duplicate recently-used values stored on disk or elsewhere. Cache is quick to access relative to the original data, which either takes more time due to slow disc-access time, or is slow to compute. After data is stored in the cache, future use can be made by accessing the cached copy rather than re-finding or recomputing the original data, so that the average access time is lower.

- **L1 cache**—Primary (smallest) cache on the same chip as the processor.
- **L2 cache**—Secondary (larger) cache. Either on the processor chip or external to the processor.

### class of service

See [CoS](#).

### CNA

Converged network adapters support both data networking (TCP/IP) and storage networking (FC) traffic on a single I/O adapter using two new technologies: [Enhanced Ethernet](#) and Fibre Channel over Ethernet ([FCoE](#)).

### converged network adapter

See [CNA](#).

### CoS

Class of service (CoS) is a 3-bit field within a layer two Ethernet frame header when using IEEE 802.1Q. It specifies a priority value of between 0 (signifying best-effort) and 7 (signifying priority real-time data) that can be used by quality of service disciplines to differentiate traffic.

CoS is a way of managing traffic in a network by grouping similar types of traffic (for example, e-mail, streaming video, voice, large document file transfer) together and treating each type as a class with its own level of service priority.

Fibre Channel classes of service include Class 1, 2, 3, 4, and 6.

### CSV file

A comma separated values file. A data file used for storage of data structured in a table form. Each line in the file corresponds to a row in the table. Within a line, fields are separated by commas, each field belonging to one table column.

### data center bridging

See [DCB](#).

### data center bridging exchange protocol

See [device](#).

### data center Ethernet

See [DCE](#).

### DCE

Data center Ethernet (DCE) is a Cisco term that refers to enhancements to Ethernet bridges that enables LAN and SAN connectivity over an Ethernet network. The acronym DCE is a Cisco trademark. The enhancements described within Cisco Data Center Ethernet helped create the IEEE 802.1 Data Center Bridging working group (DCB).

## DCB

Data center bridging. Provides enhancements to existing 802.1 bridge specifications to satisfy the requirements of protocols and applications in the data center. Because existing high-performance data centers typically comprise multiple application-specific networks that run on different link layer technologies (Fibre Channel for storage, InfiniBand for high-performance computing, and Ethernet for network management and LAN connectivity), DCB will enable 802.1 bridges to be used for the deployment of a converged network where all applications can be run over a single physical infrastructure.

## DCBX

Data center bridging exchange protocol. Used by DCB devices to exchange configuration information with directly connected peers. The protocol may also be used for misconfiguration detection and for configuration of the peer.

## device

A target, typically a disk drive. Hardware such as a disk drive, tape drive, printer, or keyboard that is installed in or connected to a system. In FC, a *target* device.

## driver

The software that interfaces between the file system and a physical data storage device or network media.

## E\_Port

Expansion port. A port in an FC switch that connects to another FC switch or bridge device by an inter-switch link (ISL). E\_Ports are used to link FC switches to form a multi-switch fabric.

## echo diagnostic test

Transmits a received signal back to the sender to verify the integrity of the device.

## Enhanced Ethernet

Also called *data center Ethernet* or *converged enhanced Ethernet*) refers to new enhancements to the existing Ethernet standard that eliminate Ethernet's inherently lossy nature and make 10Gb Ethernet a viable storage networking transport.

## enhanced transmission selection

See [ETS](#).

## Ethernet

The most widely used LAN technology that transmits information between computers, typically at speeds of 10 and 100 million bits per second (Mbps).

## ETS

Enhanced transmission selection (ETS) provides a common management framework for assignment of bandwidth to 802.1p CoS-based traffic classes.

## expansion port

See [E\\_Port](#).

## F\_Port

Fabric port. The "fabric" port in a FC fabric switch provides a point-to-point link attachment to a single N\_Port. F\_Ports are intermediate ports in virtual point-to-point links between end ports, for example N\_Port to F\_Port to F\_Port to N\_Port using a single FC fabric switch.

## fabric

A fabric consists of cross-connected FC devices and switches.

### **fabric loop port**

See [FL\\_Port](#).

### **fabric port**

See [F\\_Port](#).

### **fabric switch**

Also, *switched fabric*. A fabric switch connects multiple devices from independent FC-arbitrated loops (FC-ALs) and point-to-point topologies into a fabric using FC switches.

### **Fast!/UTIL**

QLogic *Fast!/UTIL* FC adapter BIOS utility.

### **FC**

Fibre Channel is a high-speed serial interface technology that supports other higher layer protocols such as SCSI and IP, and is primarily used in SANs. Standardized under ANSI in 1994.

### **FCode**

A type of boot code designed for use on Sun®'s SPARC® or Macintosh® hardware platforms. See also [boot code](#) and [Flash](#).

### **FCoE**

Fibre Channel over Ethernet is a new technology defined by the T11 standards body that allows traditional FC storage networking traffic to travel over an Ethernet link by encapsulating FC frames inside Layer 2 Ethernet frames. For more information, visit [www.fcoe.com](http://www.fcoe.com).

### **Fibre Channel**

See [FC](#).

### **Fibre Channel over Ethernet**

See [FCoE](#).

### **FL\_Port**

Fabric loop port. In FC, the fabric switch is capable of FC arbitrated loop operations and is connected to one or more NL\_Ports by an FC arbitrated loop. An FL\_Port becomes a shared entry point for public NL\_Port devices to an FC fabric. FL\_Ports are intermediate ports in virtual point-to-point links between end ports that do not reside on the same loop, for example NL\_Port to FL\_Port to F\_Port to N\_Port through a single FC fabric switch.

### **Flash**

Non-volatile memory holding the boot code. At times, Flash and boot code are used interchangeably. See also [boot code](#).

### **Flash BIOS**

A QLA2xxx adapter's Flash programmable read-only memory (PROM) contains the code that allows booting from the adapter at startup.

### **G\_Port**

Generic port. A port that can operate as either an E\_Port or an F\_Port. A G\_Port can determine operating mode at switch port initialization: F\_Port when an N\_Port attachment is determined or E\_Port when an E\_Port attachment is determined. See [E\\_Port](#), [F\\_Port](#), [FL\\_Port](#), [L\\_Port](#), [N\\_Port](#), [NL\\_Port](#).

### **generic port**

See [G\\_Port](#).

### **HBA**

Host bus adapter. See [adapter](#).

### **iiDMA**

Intelligent interleaved direct memory access. A QLogic patent-pending feature that ensures maximum link efficiency.

### input/output control

See [IOCTL](#).

### intelligent interleaved direct memory access

See [iiDMA](#).

### inter-switch link

See [ISL](#).

### IOCTL

Input/output control. A system call in UNIX/Linux systems. Allows an application to control or communicate with a device driver outside usual read/write operations.

### IOPS

Input/output operations per second is a common performance-based measurement calculated by benchmarking applications, and is primarily used with servers to find the best storage configuration.

### ISL

Inter-switch link. The connection between two switches using [E\\_Ports](#).

### JBOD

“Just a bunch of disks.” As opposed to a SAN. See [SAN](#).

### just a bunch of disks

See [JBOD](#).

### L\_Port

Loop port. Does arbitrated loop functions and protocols. NL\_Ports and FL\_Ports are examples of loop-capable ports. See also [E\\_Port](#), [F\\_Port](#), [FL\\_Port](#), [G\\_Port](#), [N\\_Port](#), [NL\\_Port](#).

### LIP

Loop initialization process. The initialization process in an arbitrated loop that occurs when the loop is powered up or a new device is added. One function of a LIP is to assign addresses. All data transmission on the loop is suspended during a LIP.

### load balancing

A software feature that improves system performance by balancing device access between multiple adapters for maximum resource efficiency. Available in Windows 2000/Windows Server 2003, Novell NetWare, and Red Hat/SUSE Linux.

### logical unit number

See [LUN](#).

### loop ID

The device's [AL\\_PA](#) on the loop.

### loop initialization process

See [LIP](#).

### loop port

See [L\\_Port](#).

### loopback

Diagnostic tool that routes transmit data through a loopback connector back to the same adapter.

### LUN

Logical unit number, a subdivision of a SCSI target. It is the small integer handle that differentiates an individual disk drive or partition (volume) within a common SCSI target device such as a disk array. Technically, a LUN can be a single physical disk drive, multiple physical disk drives, or a portion (volume) of a single physical disk drive. However, LUNs are typically not entire disk drives but rather virtual partitions (volumes) of a RAID set.

Using LUNs, the FC host can address multiple peripheral devices that may share a common controller.

### LUN masking

A software feature that assigns LUNs to specific servers or hides LUNs from specific servers for maximum access and availability control.

### media

Physical-layer information carriers. FC supports several different physical media: copper, multimode optical, and single-mode optical. All FC protocols are supported on all media.

### message passing interface

See [MPI](#).

### MPI

Message passing interface is a specification for an API that allows many computers to communicate with one another. It is used in computer clusters and supercomputers.

### MSI-X

One of two PCI-defined extensions to support message signaled interrupts (MSI), in PCI 2.2 and later and PCI Express. MSIs are an alternative way of generating an interrupt through special messages that allow emulation of a pin assertion or deassertion.

MSI-X (defined in PCI 3.0) allows a device to allocate any number of interrupts between 1 and 2048 and gives each interrupt separate data and address registers. Optional features in MSI (64-bit addressing and interrupt masking) are mandatory with MSI-X.

### N\_Port

Node port. A port that connects by a point-to-point link to either a single N\_Port or a single F\_Port. N\_Ports handle creation, detection, and flow of message units to and from the connected systems. N\_Ports are end ports in virtual point-to-point links through a fabric, for example N\_Port to F\_Port to F\_Port to N\_Port using a single FC fabric switch. See also [F\\_Port](#).

### N\_Port ID virtualization

See [NPIV](#).

### network adapter

A chip that provides network capabilities. A computer may include a network adapter on its system board, or on an adapter card. Also a *NIC* (network interface card or controller).

### network interface card/controller

See [NIC](#).

### NIC

Network interface card or network interface controller. A computer card installed to enable a dedicated network connection.

### NL\_Port

Node loop port. A port capable of arbitrated loop functions and protocols. An NL\_Port connects through an arbitrated loop to other NL\_Port and at most a single FL\_Port. NL\_Ports handle creation, detection, and flow of message units to and from the connected systems. NL\_Ports are end ports in virtual point-to-point links through a fabric, for example NL\_Port to F\_Port to F\_Port to N\_Port using a single FC fabric switch. In the absence of a fabric switch FL\_Port, NL\_Ports can communicate with



other NL\_Ports in virtual point-to-point links through an FC\_AL open loop circuit often through FC\_AL (arbitrated loop) open loop circuit often through FC-AL hub or loop switch devices. See: [E\\_Port](#), [F\\_Port](#), [FL\\_Port](#), [G\\_Port](#), [N\\_Port](#).

### node loop port

See [NL\\_Port](#).

### node port

See [N\\_Port](#).

### non-volatile random access memory

See [NVRAM](#).

### NPIV

N\_Port ID virtualization. The ability for a single physical FC end point (N\_Port) to support multiple, uniquely addressable, logical end points. With NPIV, a host FC adapter is shared in such a way that each virtual adapter is assigned to a virtual server and is separately identifiable within the fabric. Connectivity and access privileges within the fabric are controlled by identification of each virtual adapter and, hence, the virtual server using each virtual adapter.

### NVRAM

Non-volatile random access memory. A type of memory that retains data (configuration settings) even when power is removed. You can manually configure NVRAM settings or restore them from a file. NVRAM settings are called *adapter parameters* in this guide.

### open network computing

See [ONC](#).

### ONC

Open network computing. A remote procedure call developed by Sun Microsystems.

### path

A path to a device is a combination of a adapter port instance and a target port as distinct from internal paths in the fabric network. A fabric network appears to the operating system as an opaque network between the adapter (initiator) and the target.

Because a path is a combination of an adapter and a target port, it is distinct from another path if it is accessed through a different adapter and/or it is accessing a different target port. Consequently, when switching from one path to another, the driver might be selecting a different adapter (initiator), a different target port, or both.

This is important to the driver when selecting the proper method of failover notification. It can make a difference to the target device, which might have to take different actions when receiving retries of the request from another initiator or on a different port.

### point-to-point

Also FC-P2P. Two FC nodes directly connected (not in a loop).

### port

Access points in a device where a link attaches. There are four types of ports, as follows:

- [N\\_Port](#)—an FC port that supports point-to-point topology.
- [NL\\_Port](#)—an FC port that supports loop topology.
- [F\\_Port](#)—a port in a fabric where an N\_Port can attach.
- [FL\\_Port](#)—a port in a fabric where an NL\_Port can attach.

### port instance

The number of the port in the system. Each adapter may have one or multiple ports, identified with regard to the adapter as port 0, port 1 and so forth. To avoid confusion when dealing with a system containing numerous ports, each port is assigned a port instance number when the system boots up. So Port 0 on an adapter might have a port instance number of, for example, 8 if it is the eighth port discovered by the system.

### QoS

Quality of service refers to the methods used to prevent bottlenecks and ensure business continuity when transmitting data over virtual ports by setting priorities and allocating bandwidth.

### quality of service

See [QoS](#).

### SAN

Storage area network. Multiple storage units (disk drives) and servers connected by networking topology.

### SCSI

Small computer system interface. A high-speed interface used to connect devices, such as hard drives, CD drives, printers, and scanners, to a computer. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

### SerDes

A Serializer/Deserializer (SerDes pronounced *sir-dees*) is a pair of functional blocks commonly used in high speed communications. These blocks convert data between serial data and parallel interfaces in each direction.

### small computer system interface

See [SCSI](#).

### SFP

Small form factor pluggable is a 1-/2-/4-/8-Gbps transceiver device (smaller than a Gigabit interface converter) that plugs into the Fibre Channel port.

### storage area network

See [SAN](#).

### sysfs

A virtual file system provided by the 2.6 Linux kernel. Sysfs exports information about devices and drivers from the kernel device model to userspace, and is also used for configuration.

### target

The storage-device endpoint of a SCSI session. Initiators request data from targets (typically disk-drives, tape-drives, or other media devices). Typically a SCSI peripheral device is the target but an adapter may, in some cases, be a target. A target can contain many LUNs.

A target is a device that responds to a requested by an initiator (the host system). Peripherals are targets, but for some commands (for example, a SCSI COPY command), the peripheral may act as an initiator.

### target binding

The process in which the adapter driver binds a target ID using a target's world wide port name (WWPN) or port ID. This enables the target ID to always connect to the WWPN or port ID across reboots regardless of SAN reconfigurations.

## TLV

Type-length-value (TLV) is optional information that may be encoded as an element inside the protocol. The type and length fields are fixed in size (typically 1 to 4 bytes), and the value field is of variable size. These fields are used as follows:

- **Type:** A numeric code that indicates the kind of field that this part of the message represents.
- **Length:** The size of the value field (typically in bytes).
- **Value:** Variable sized set of bytes that contain data for this part of the message.

## type-length-value

See [TLV](#).

## udev

On Linux systems, udev is the new way of managing the `/dev` directory. It is run from user space. Udev creates a dynamic `/dev` directory and provides consistent device naming across reboots (when configured as such), and provides a user space Application Programming Interface (API) to access information about current system devices. `udev` relies on device information available through [sysfs](#).

## virtual logical area network

See [VLAN](#).

## virtual machine

See [VM](#).

## VLAN

Virtual logical area network (LAN). A group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. Although a VLAN has the same attributes as a physical LAN, it allows for end stations to be grouped together even if they are not located on the same LAN segment. VLANs enable network reconfiguration through software, instead of physically relocating devices.

## VM

Virtual machine. A software implementation of a machine (computer) that executes programs like a real machine.

## world wide node name

See [WWNN](#).

## world wide port name

See [WWPN](#).

## WWNN

World wide node name. Unique 64-bit address assigned to a device.

## WWPN

World wide port name. Unique 64-bit address assigned to each port on a device. One WWNN may contain multiple WWPN addresses.

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## Notes

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