QLOGIC

Simplify

SANsurfer FC CLI Application User's Guide

Command Line Interface for SANblade Fibre Channel Host Bus Adapters

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Section 1

Introduction

The SANsurfer® command line interface (CLI) application is a simplified, condensed version of the SANsurfer FC HBA Manager GUI. SANsurfer FC CLI does not provide any features that require a GUI.

SANsurfer FC CLI is supported for QLA®22*xx* and QLA23*xx* HBAs on the following operating systems:

- Windows® 2000/SP4 Server and Advanced Server SP4
- Windows 2003 Server™ and Enterprise Server, IA-32 and IA-64
- Red Hat™ Linux® AS v2.1 and 3.0, IA-32 and IA-64
- Red Hat Linux 9 Professional, IA-32 only
- SuSE® Linux Enterprise Server 8 (SLES), IA-32, IA64 and AMD64
- Solaris® SPARC® v2.6, 2.7, 2.8, and 2.9
- Solaris 9 x86 v2.9

NOTE: Throughout this guide, *HBA* and *adapter* are used interchangeably. *Target* and *device* are also used interchangeably.

1.1 Technical Support

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

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

Notes

Section 2

Getting Started

2.1 Introduction

SANsurfer FC CLI operates in one of the following modes:

- **Interactive mode.** SANsurfer FC CLI starts, then waits for and executes input commands until terminated by the user. Use this mode to perform multiple operations.
- **Non-interactive mode.** SANsurfer FC CLI starts, performs functions defined by the list of parameters provided, then terminates. In this mode, the application is executed from a script file or when you want to perform a single operation.

In both modes, SANsurfer FC CLI is *not* case sensitive. However, file names in some operating systems are case sensitive; in this case, SANsurfer FC CLI *is* case sensitive for that particular file.

2.2 Interactive Mode

Type the following in a command window to start SANsurfer FC CLI in interactive mode:

```
scli INT
```
or

```
scli
```

The Main Menu (see figure 2-1) displays. For example:

```
SANsurfer FC CLI

        v1.06.14 Build 24

Main Menu:

 1:  Display System Information
 2:  Display HBA Settings
 3:  Display HBA Information
 4:  Display Device List
 5:  Display LUN List
 6:  Configure HBA Settings
 7:  Target Persistent Binding
 8:  Selective LUNs
 9:  Boot Device
10:  Driver Settings
11:  HBA Utilities
12:  Flash HBA Beacon
13:  Diagnostics
14:  Display Usage
15:  Quit

     Enter Selection:
```

Figure 2-1. SANsurfer FC CLI Main Menu (Windows 2000/Windows Server 2003)—Interactive Mode

Depending on the menu selection, SANsurfer FC CLI prompts for more input as needed. For example, if you select **Configure HBA Settings**, SANsurfer FC CLI prompts you for the number that corresponds to the adapter you want to configure.

NOTE:

- The **Update Driver** option under **HBA Utilities** (option 11) is only available on Windows 2000/Windows Server 2003 (IA32, IA64, and AMD64).
- In Solaris SPARC, the option to **Save/Update BIOS** is **Save/Update FCode**.

2.3 Non-interactive Mode

Type the following in a command window to start SANsurfer FC CLI in non-interactive mode:

```
scli <parameters>
```

SANsurfer FC CLI executes the command options, then terminates.

To list all of the available command line parameters and the SANsurfer FC CLI version, type the following:

```
scli -h or
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 CLI accepts the notation with and without the dash (-). Hexadecimal values can be in uppercase or lowercase.

- The following inputs are valid for the WWN 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. The valid command line options are listed in table 2-1.

Table 2-1. Non-Interactive Mode Options

Non-interactive Option	Interactive Menu Selection (Windows)	Interactive Menu Selection (Red Hat/SuSE Linux, Solaris SPARC)	Description	Section
-G	1	1	Display system information	4.1
-C	2	2	Display HBA settings	4.2
-I	3	3	Display HBA information	4.3
-T	4	4	Display device list	4.4
-L	5	5	Display LUN list	4.5
-N	6	6	Configure HBA settings	4.6

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

Non-interactive Option	Interactive Menu Selection (Windows)	Interactive Menu Selection (Red Hat/SuSE Linux, Solaris SPARC)	Description	Section
-P	7	7	Target persistent binding	4.7
-M	8	8	Selective LUNs	4.8
-E	9	9	Boot device	4.9
—	10	10	Driver Settings	4.10
-FG	—	—	View Driver Settings	4.11
-FS	—	—	Modify Current Settings	4.12
—	11	11	HBA Utilities	—
-B	11	11	Save/update BIOS[a]/FCode[b]	4.13
-R	11	11	Save/update NVRAM	4.14
-D	11	—	Update driver	4.15
-A	12	12	Flash HBA beacon	4.16
-KL/-KR	13	13	Diagnostics	4.17
-H -?	14	14	Display usage	—
—	15	15	Quit	—
-F	—		Input from a file	4.18
-O	—		Output to a file	4.19
-S	—		Silent mode	4.20
-V	—		Display version	4.21
-X	—		Output in XML format	4.22
-Z	—		Display all information for one or all HBAs	4.23

Table Notes

[a]Windows 2000, Windows Server 2003, Red Hat/SuSE Linux

[b]Solaris SPARC

Options that have a corresponding menu selection cannot be combined: 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 CLI displays the following when there are errors in the command line input:

```
Error <error message>
SANsurfer FC CLI
v1.06.14 Build 24
Copyright 2003-2004 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters

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

Notes

Section 3
Initial Installation

The following requirements must be met before you run the SANsurfer FC CLI:

- The HBAs must be installed.
- The HBA drivers must be installed.
- You need approximately 3 MB on the PC to install the SANsurfer FC CLI application.

NOTE: SANsurfer FC CLI is an application developed to configure QLogic HBAs. It can only configure HBAs on the local machine upon which the application is installed; it cannot configure HBAs on remote machines.

3.1 Installation Instructions

3.1.1 Windows 2000 and Windows Server 2003

Perform the following steps to install SANsurfer FC CLI on a Windows 2000/Windows Server 2003 operating system:

1. Download the scli-*x.xx.xx*.win32.zip file (from the QLogic® Web site or the SANsurfer Management Suite™ CD-ROM) to a directory on your local machine. In the file name, *x.x.xx* stands for the current version of SANsurfer FC CLI.
2. Use a utility such as WinZip® to extract the file to a directory. By default, the extraction places the files into a directory named SANsurferCLI.

3.1.2 Red Hat/SuSE Linux

Perform the following steps to install SANsurfer FC CLI on a Red Hat/SuSE Linux operating system:

1. Download the scli-*x.xx.xx*-xx.i386.rpm.gz file (from the QLogic Web site or the SANsurfer Management Suite CD-ROM) to your local machine. In the file name, *x.xx.xx* stands for the current version of SANsurfer FC CLI.
2. Uncompress the file with the following command: gwnzip <*File*>
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 /opt/QLogic_Corporation/SANsurferCLI directory.

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

```
rpm -q scli
```

3.1.3 Solaris SPARC

Perform the following steps to install SANsurfer FC CLI on a Solaris SPARC operating system:

1. Download the scli.*x.xx.xx-xx*.SPARC.Solaris.pkg.Z file (from the QLogic Web site or the SANsurfer Management Suite CD-ROM) to a temporary directory on your machine. For example:

   ```
   /tmp
   ```

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

2. Type the following to uncompress the file:

   ```
   andrewsun:/# uncompress scli.x.xx.xx-xx.SPARC.Solaris.pkg.Z
   ```

3. Type the following to see the available package file:

   ```
   # ls
   ```

   The available packages display. For example:

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

4. Type the following to install SANsurfer FC CLI:

   ```
   andrewsun:/# pkgadd -d scli.x.xx.xx-xx.SPARC.Solaris.pkg
   ```

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

   ```
   1  scli2-6        SANsurfer FC CLI
                     (sparc) 1.06.14 Build 24 (Solaris 2.6-7)
   2  scli2-8        SANsurfer FC CLI
                     (sparc) 1.06.14 Build 24 (Solaris 8-9)

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

   If your operating system is Solaris 2.6 or 7, type `1`. If your operating system is Solaris 8 or 9, type `2`.

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

```
Processing package instance <scli2-8> from
</space/chuynh/scli/qlogic/Solaris/pkgs/x>

SANsurfer FC CLI
(sparc) 1.06.14 (Solaris 8-9)
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.

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 <scli2-8>
[y,n,?]
```

7. Type `y` and press ENTER to continue the installation.The pkgadd program then installs SANsurfer FC CLI. You are notified when the installation is complete. For example:

```
Installing SANsurfer FC CLI as <scli2-8>
## Installing part 1 of 1.
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
/opt/QLogic_Corporation/SANsurferCLI/menu.properties
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
22.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
23.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0000/nvram.d
at
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0001/nvramfc
.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0002/nvram22
.dat
...
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x4282/NVRAM22
.DAT
/opt/QLogic_Corporation/SANsurferCLI/readme.txt
/opt/QLogic_Corporation/SANsurferCLI/scli
/opt/QLogic_Corporation/SANsurferCLI/sfcli.properties
[ verifying class <none> ]
## Executing postinstall script.
Installation of <scli2-8> was successful.
andrewsun:/#
```

3.1.4
Solaris x86

Perform the following steps to install SANsurfer FC CLI on a Solaris x86 operating system:

1. Download the scli.*x.xx.xx*.x86.Solaris.pkg.Z file (from the QLogic Web site or the SANsurfer Management Suite CD-ROM) to a temporary directory on your machine. For example:

   ```
   /tmp
   ```

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

2. Type the following to uncompress the file:

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

3. Type the following to see the available package file:

   ```
   # ls
   ```

   The available packages display. For example:

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

4. Type the following to install SANsurfer FC CLI:

   ```
   bash-2.05# pkgadd -d scli.x.xx.xx.x86.Solaris.pkg
   ```

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

   ```
   1  scli2-8        SANsurfer FC CLI
                     (x86) 1.06.14 Build 24 (Solaris 8-9)

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

   Type `1`, then press ENTER.

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

   ```
   Processing package instance <scli2-8> from
   </export/home/chuynh/scli/Solaris/pkgs/x>

   SANsurfer FC CLI
   (x86) 1.06.14 Build 24 (Solaris 8-9)
   QLogic Corporation
   ## Executing checkinstall script.
   ## Processing package information.
   ## Processing system information.
   2 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 <scli2-8>
[y,n,?] y
```

7. Type `y` and press ENTER to continue the installation.The pkgadd program then installs SANsurfer FC CLI. You are notified when the installation is complete. For example:

```
Installing SANsurfer FC CLI as <scli2-8>

## Installing part 1 of 1.
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
/opt/QLogic_Corporation/SANsurferCLI/menu.properties
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
22.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
23.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0000/nvram.d
at
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0001/nvramfc
.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0002/nvram22
.dat
...
/opt/QLogic_Corporation/SANsurferCLI/readme.txt
/opt/QLogic_Corporation/SANsurferCLI/scli
/opt/QLogic_Corporation/SANsurferCLI/sfcli.properties
[ verifying class <none> ]
## Executing postinstall script.
Installation of <scli2-8> was successful.
bash-2.05#
```

3.2 Uninstalling SANsurfer FC CLI

3.2.1 Windows 2000 and Windows Server 2003

To uninstall SANsurfer FC CLI, manually remove the files from the directory created in section 3.1.1, step 2.

3.2.2
Red Hat/SuSE Linux

To uninstall SANsurfer FC CLI, type one of the following at the command line, 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 CLI package name, enter the following text from the command line:

```
rpm -q scli
```

3.2.3
Solaris SPARC

Perform the following steps to uninstall SANsurfer FC CLI:

1. Type the following to remove SANsurfer FC CLI:

   ```
   # pkgrm scli2-8
   ```

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

   ```
   The following package is currently installed:
   scli2-8    SANsurfer FC CLI
              (sparc) 1.06.14 (Solaris 8-9)
   Do you want to remove this package?
   ```

3. Type `y` and press ENTER. The program displays another script warning asking whether to continue the uninstall process. For example:

   ```
   ## Removing installed package instance <scli2-8>
   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 press ENTER. The pkgrm program notifies you when the uninstall process is complete. For example:

   ```
   ## Verifying package dependencies.
   ## Processing package information.
   ## Removing pathnames in class <none>
   /opt/QLogic_Corporation/SANsurferCLI/sfcli.properties
   /opt/QLogic_Corporation/SANsurferCLI/scli
   /opt/QLogic_Corporation/SANsurferCLI/readme.txt
   /opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x4282/NVRAM22
   .DAT
   ```

```
...
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
22.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs
/opt/QLogic_Corporation/SANsurferCLI/menu.properties
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
/opt/QLogic_Corporation/SANsurferCLI
/opt/QLogic_Corporation <non-empty directory not removed>
/opt <shared pathname not removed>
## Executing postremove script.
scli removed.
menu.properties removed.
adapters.properties removed.
sfcli.properties removed.
## Updating system information.

Removal of <scli2-8> was successful.
bash-2.05#
```

3.2.4 Solaris x86

Perform the following steps to uninstall SANsurfer FC CLI:

1. Type the following to remove SANsurfer FC CLI:

   ```
   bash-2.05# pkgrm scli2-8
   ```

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

   ```
   The following package is currently installed:

   scli2-8    SANsurfer FC CLI
              (x86) 1.06.14 (Solaris 8-9)

   Do you want to remove this package?
   ```

3. Type `y` and press ENTER. The program displays another script warning asking whether to continue the uninstall process. For example:

   ```
   ## Removing installed package instance <scli2-8>

   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 press ENTER. The pkgrm program notifies you when the uninstall process is complete. For example:

```
## Verifying package dependencies.
## Processing package information.
## Removing pathnames in class <none>
/opt/QLogic_Corporation/SANsurferCLI/sfcli.properties
/opt/QLogic_Corporation/SANsurferCLI/scli
/opt/QLogic_Corporation/SANsurferCLI/readme.txt
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x4282/NVRAM22
.DAT
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x4282
...
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/x0000
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
23.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default/nvram
22.dat
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs/default
/opt/QLogic_Corporation/SANsurferCLI/nvramdefs
/opt/QLogic_Corporation/SANsurferCLI/menu.properties
/opt/QLogic_Corporation/SANsurferCLI/adapters.properties
/opt/QLogic_Corporation/SANsurferCLI
/opt/QLogic_Corporation <non-empty directory not removed>
/opt <shared pathname not removed>
## Executing postremove script.
scli removed.
menu.properties removed.
adapters.properties removed.
sfcli.properties removed.
## Updating system information.
Removal of <scli2-8> was successful.
bash-2.05#
```

Section 4

Command Line Options

The following sections describe the command line options listed in table 2-1. The options are described in both interactive and non-interactive modes.

4.1 Display System Information (Command Line Option -G)

When this option is selected, the application displays the following information about the local machine:

- Host name
- OS type
- OS version (patches where applicable)
- Failover API version
- SAN device management API version
- QLogic direct driver version (if installed)
- List of HBAs: HBA number, WWPN, serial number, and firmware version
- Total number of QLogic Fibre Channel HBAs detected

NOTE: The failover and SAN device management APIs are QLogic-specific libraries required for SANsurfer FC CLI. The versions of these libraries are useful for debugging purposes.

4.2 Display HBA Settings (Command Line Option -C)

When this option is selected, the application displays the following HBA settings:

- Connection options
- Data rate (QLA23*xx* HBAs)
- Frame size
- Hard Loop ID
- Loop reset delay (in seconds)
- Enable host HBA BIOS
- Enable hard loop ID
- Enable FC tape support
- Operation mode
- Interrupt delay timers
- Execution throttle
- Enable extended error logging

- Login retry count
- Enable LIP reset
- Port down retry count
- Enable LIP full login
- Link down timeout (in seconds)
- Enable target reset
- LUNs per target

4.2.1 Interactive Mode

SANsurfer FC CLI prompts you to select a display option: view these parameters for all HBAs or for a specific HBA. If you select a specific HBA, a list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER. For example:

```
1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
14: Display Usage
15: Quit


                Enter Selection: 2

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HBA Settings - View Menu
    1:  Display Specific HBA Settings
    2:  Display All HBA Settings
    3:  Return to Main Menu


                Enter Selection: 1


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```

```
Select HBA:
    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


               Enter Selection: 1
-----------------------------------------------------------------
QLogic HBA 0 - QLA200  WWPN: 21-00-00-E0-8B-17-FF-74
-----------------------------------------------------------------
Connection Options           : Point to Point
Data Rate                    : 2 Gbps
Frame Size                   : 2048
Loop Reset Delay (seconds)   : 5
Enable Host HBA BIOS         : Disabled
Enable FC Tape Support       : Enabled
Execution Throttle           : 16
Enable Extended Error Logging: Disabled
Login Retry Count            : 8
Enable LIP Reset             : Disabled
Port Down Retry Count        : 30
Enable LIP Full Login        : Enabled
Link Down Timeout (seconds)  : 30
Enable Target Reset          : Enabled
LUNs Per Target              : 128

              Press <Enter> to continue:
```

4.2.2 Non-interactive Mode

To display the parameter settings for all the HBAs in the system, type one of the following commands:

```
# scli -C ALL
# scli -C
```

To display the parameter settings for a specific HBA, type one of the following commands:

```
# scli -C <HBA>
# scli -C <WWPN>
```

Where:

HBA = HBA number from HBA general information

WWPN = World wide port name of the HBA

4.3 Display HBA Information (Command Line Option -I)

When this option is selected, SANsurfer FC CLI displays the following information about the selected HBAs:

- Host name
- HBA number
- HBA model
- HBA node name (WWNN)
- HBA port name (WWPN)
- HBA port ID
- Serial number
- Driver version
- BIOS version (Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux)
- Firmware version
- Device target count
- Actual connection mode
- Actual data rate
- PortType (topology)
- PCI bus number (Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux)
- PCI slot number (Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux)
- HBA status (online, offline)

4.3.1 Interactive Mode

SANsurfer FC CLI prompts you to select a display option: view the general information for all HBAs or for a specific HBA. If you select a specific HBA, a list of HBAs is displayed. Type the number that corresponds to that HBA, then press ENTER.

The following text is an example of the **Display HBA Information** option.

```
    1:  Display System Information
    2:  Display HBA Settings
    3:  Display HBA Information
    4:  Display Device List
    5:  Display LUN List
    6:  Configure HBA Settings
    7:  Target Persistent Binding
    8:  Selective LUNs
    9:  Boot Device
    10: Driver Settings
    11: HBA Utilities
    12: Flash HBA Beacon
    13: Diagnostics
    14: Display Usage
    15: Quit


                Enter Selection: 3

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HBA General Information Menu
    1:  Display Specific HBA Information
    2:  Display All HBA Information
    3:  Return to Main Menu


                Enter Selection: 1

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Select HBA:
    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 1

Host Name : G2_DL760
HBA Number : 0
HBA Model : QLA23xx
HBA Node Name : xx-xx-xx-xx-xx-xx-xx-xx
```

```
HBA Port Name : xx-xx-xx-xx-xx-xx-xx-xx
HBA Port ID : xx-xx-xx
Serial Number : F02630
Driver Version : SCSIport 9.0.0.12 <w32 IP>
BIOS Version : 1.42
Firmware Version : 3.02.27
Device Target Count : 0
Actual Connection Mode : Loop
Actual Data Rate :  Unknown
PortType (Topology) : NLPort
PCI Bus Number : 13
PCI Slot Number : 0
HBA Status : Loop Down

            Press <Enter> to continue:
```

4.3.2 Non-interactive Mode

To display the general information for all the HBAs in the system, type one of the following commands:

```
# scli -I ALL
# scli -I
```

To display the general information for a specific HBA, type the following command:

```
# scli -I <HBA WWPN>
```

Where:

HBA WWPN = World wide port name of the HBA

4.4 Display Device List (Command Line Option -T)

When this option is selected, the application displays the following information about the devices:

- Path
- Target
- Device ID
- Port ID
- Product vendor
- Product ID
- Product revision
- Node name
- Port name
- Product type

- Number of LUNs
- Status

4.4.1 Interactive Mode

To display the device list, perform the following steps:

1. Type the number for the **Display Device List** option, then press ENTER.
2. Select a display option: display the HBA's target information for all HBAs or for a specific HBA. If you select a specific HBA, continue with step 3.
3. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
4. Select a display option: display the information for all devices or for a specific device. If you selected a specific device, continue with step 5.
5. A list of devices is displayed. Type the number that corresponds to the device, then press ENTER.

The following text is an example of the **Display Device List** option.

```
 1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
14: Display Usage
15: Quit


                Enter Selection: 4

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Device Info- HBA Selection Menu:
     1:  Select HBA
     2:  Select All HBAs
     3:  Return to Main Menu
```

```
                Enter Selection: 1

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        Select HBA:

        1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
        2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
        3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
        4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
        5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
        6:  Return to Main Menu


                Enter Selection: 2

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    HBA's Target Information Menu:
       1:  Display Specific Device Information
       2:  Display All Device Information
       3:  Return to HBA Selection Menu
       4:  Return to Main Menu


                  Enter Selection: 2

    ------------------------------------------------------------------
    QLogic HBA 1 - QLA2340  WWPN: 21-00-00-E0-8B-07-62-A0
    ------------------------------------------------------------------
    Path                          : 0
    Target                        : 0
    Device ID                     : 0x84
    Port ID                       : 10-02-E2
    Product Vendor                : SEAGATE
    Product ID                    : ST318453FC
    Product Revision              : 0002
    Node Name                     : xx-xx-xx-xx-xx-xx-xx-xx
    Port Name                     : xx-xx-xx-xx-xx-xx-xx-xx
    Product Type                  : Disk
    Number of LUN(s)              : 1
    Status                        : Online
    ------------------------------------------------------------------
    Path                          : 0
    Target                        : 1
    Device ID                     : 0x83
```

```
Port ID                         : 10-02-E1
Product Vendor                  : SEAGATE
Product ID                      : ST318453FC
Product Revision                : 0002
Node Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Port Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Product Type                    : Disk
Number of LUN(s)                : 1
Status                          : Online
-------------------------------------------------------------------
Path                            : 0
Target                          : 2
Device ID                       : 0x85
Port ID                         : 10-02-E4
Product Vendor                  : SEAGATE
Product ID                      : ST318203FC
Product Revision                : 0002
Node Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Port Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Product Type                    : Disk
Number of LUN(s)                : 1
Status                          : Online
-------------------------------------------------------------------
Path                            : 0
Target                          : 3
Device ID                       : 0x86
Port ID                         : 10-02-E8
Product Vendor                  : SEAGATE
Product ID                      : ST318203FC
Product Revision                : 0002
Node Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Port Name                       : xx-xx-xx-xx-xx-xx-xx-xx
Product Type                    : Disk
Number of LUN(s)                : 1
Status                          : Online
-------------------------------------------------------------------

                Press <Enter> to continue:
```

4.4.2 Non-interactive Mode

To display the device list for all the HBAs in the system, type one of the following commands:

```
# scli -T ALL
# scli -T
```

To display the device information for a specific HBA, type one of the following commands:

```
# scli -T <HBA>
# scli -T <HBA WWPN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

To display the device information for a specific device on an HBA, type one of the following commands:

```
# scli -T <HBA> <Target WWPN>
# scli -T <HBA> <Target Port ID>
# scli -T <HBA WWPN> <Target WWPN>
# scli -T <HBA WWPN> <Target Port ID>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWPN = World wide port name of the target

Target Port ID = Port ID of the target

4.5 Display LUN List (Command Line Option -L)

When this option is selected, SANsurfer FC CLI displays the following information about the LUNs for a specified target:

- Product vendor
- Product ID
- Product revision
- LUN
- Size (in GB or MB)
- WWULN (world-wide unique LUN name)

4.5.1 Interactive Mode

To display the HBA's LUN list, perform the following steps:

1. Type the number for the **Display LUN List** option, then press ENTER.
2. Select either **Select HBA** or **Select ALL HBAs**. If you chose **Select ALL HBAs**, skip to step 4.

3. A list of HBAs is displayed. Type the number that corresponds to the HBA whose LUN list you want to view, then press ENTER.
4. Select **Display Specific LUN Information** or **Display All LUN(s) Information**. If you select a Specific LUN, continue with the next step.
5. A list of devices is displayed. Type the number that corresponds to the device you want to view its LUNs, then press ENTER.
6. A list of LUNs is displayed. Type the number that corresponds to the LUN you want to view its details, then press ENTER.

The following text is an example of the **Display LUN List** option.

```
    1:  Display System Information
    2:  Display HBA Settings
    3:  Display HBA Information
    4:  Display Device List
    5:  Display LUN List
    6:  Configure HBA Settings
    7:  Target Persistent Binding
    8:  Selective LUNs
    9:  Boot Device
    10: Driver Settings
    11: HBA Utilities
    12: Flash HBA Beacon
    13: Diagnostics
    14: Display Usage
    15: Quit


                Enter Selection: 5

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LUN List:  HBA Selection Menu:
    1:  Select HBA
    2:  Select All HBAs
    3:  Return to Main Menu


                Enter Selection: 1

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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
```

```
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 2

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HBA's LUN Information Menu:
    1:  Display Specific LUN Information
    2:  Display All LUN(s) Information
    3:  Return to HBA Selection Menu
    4:  Return to Main Menu


                Enter Selection: 1

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    Select Device:

   1:  Disk
                Vendor       : SEAGATE
                Product ID   : ST318453FC
                Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID      : 10-02-E2
    2:  Disk
                Vendor       : SEAGATE
                Product ID   : ST318453FC
                Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID      : 10-02-E1
    3:  Disk
                Vendor       : SEAGATE
                Product ID   : ST318203FC
                Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID      : 10-02-E4
    4:  Disk
                Vendor       : SEAGATE
                Product ID   : ST318203FC
                Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID      : 10-02-E8
    5:  Return to Previous Menu
```

```
                Enter Selection: 1

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        Select LUN Number:

        1:  LUN 0
                    Vendor       : SEAGATE
                    Product ID   : ST318453FC
                    Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                    Port ID      : 10-02-E2
        2:  Return to HBA's LUN Information Menu


                    Enter Selection: 1

-----------------------------------------------------------------
QLogic HBA 1 - QLA2340  WWPN: 21-00-00-E0-8B-07-62-A0
-----------------------------------------------------------------
Disk (21-00-00-20-37-15-96-EC)
-----------------------------------------------------------------
Product Vendor               : SEAGATE
Product ID                   : ST318453FC
Product Revision             : 0002
LUN                          : 0
Size                         : 17.09 GB
WWULN                        : xx-xx-xx-xx-xx-15-96-EC
```

4.5.2 Non-interactive Mode

To display the LUN information for all the devices in a specific HBA, type one of the following commands:

```
# scli -L <HBA>
# scli -L <HBA WWPN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

To display the LUN information for a specific device in a specific HBA, type one of the following commands:

```
# scli -L <HBA> <Target Port ID>
# scli -L <HBA> <Target WWPN>
# scli -L <HBA WWPN> <Target Port ID>
# scli -L <HBA WWPN> <Target WWPN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWPN = World wide port name of the target

Target Port ID = Port ID of the target

To display the LUN information for a specific LUN on a specific device in a specific HBA, type one of the following commands:

```
# scli -L <HBA> <Target Port ID> <LUN ID>
# scli -L <HBA> <Target WWPN> <LUN ID>
# scli -L <HBA WWPN> <Target Port ID> <LUN ID>
# scli -L <HBA WWPN> <Target WWPN> <LUN ID>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWPN = World wide port name of the target

Target Port ID = Port ID of the target

LUN ID = ID of the LUN

4.6 Configure HBA Settings (Command Line Option -N)

The following HBA parameters can be set by SANsurfer FC CLI:

- Connection options
- Data rate (QLA23*xx* HBAs)
- Frame size
- Hard loop ID
- Loop reset delay (in seconds)
- Enable host HBA BIOS
- Enable HBA hard loop ID

- Enable Fibre Channel tape support
- Operation mode (QLA23*xx* HBAs, Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux)
- Interrupt Delay Timer (100 ms) (QLA23*xx* HBAs, Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux)
- Execution throttle
- Enable extended logging
- Login retry count
- Port down retry count
- Enable LIP full login
- Enable LIP reset
- Link down timeout (in seconds)
- Enable target reset
- LUNs per device

After changing these parameters, you can do one of the following:

- Commit change for this HBA
- Abandon changes and return to Main Menu

4.6.1 Interactive Mode

Type the number corresponding to the HBA, then press ENTER. A list of HBA parameters is displayed. When you make a selection from the list, SANsurfer FC CLI prompts you for additional input.

The following text is an example of the **Configure HBA Settings** option.

```
1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
```

```
    14: Display Usage
    15: Quit


                Enter Selection: 6

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Select HBA:
    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 1

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HBA's Parameter Configuration Menu:
    1:  Connection Options
    2:  Data Rate
    3:  Frame Size
    4:  Hard Loop ID
    5:  Loop Reset Delay (seconds)
    6:  Enable Host HBA BIOS
    7:  Enable HBA Hard Loop ID
    8:  Enable Fibre Channel Tape Support
    9:  Operation Mode
    10: Interrupt Delay Timer (100ms)
    11: Execution Throttle
    12: Enable Extended Logging
    13: Login Retry Count
    14: Port Down Retry Count
    15: Enable LIP full login
    16: Enable LIP Reset
    17: Link Down Timeout (seconds)
    18: Enable Target Reset
    19: LUNs per Target
    20: Commit Changes for this HBA
    21: Abandon Changes and Return to Main Menu


                Enter Selection:
```

4.6.2 Non-interactive Mode

To set a specific parameter on a specific HBA, type one of the following commands:

```
# scli -N ( <hba no> | <hba wwpn> ) { ( <param name> | <param
alias> ) <param value> }
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Parameter Name = Name of the parameters

Parameter Alias = Alias of the parameters

Parameter Value = New value of the parameters

The pairs <*Parameter Name*> <*Parameter Value*> and <*Parameter Alias*> <*Parameter Value*> can be repeated to set multiple parameters in a single command.

The parameter names and aliases are defined in table 4-1.

Table 4-1. HBA Parameters

Parameter Description	Parameter Name	Parameter Alias	Parameter Value
Data rate	DataRate	DR	0–2[a]
Connection options	ConnectionOption	CO	0–2 for QLA23*xx*; 0–3 for QLA22*xx*[b]
Enable Fibre Channel tape support	EnableFCTape	EF	1, 0[c]
Maximum LUNs per target	MaximumLUNsPerTarget	ML	0, 8, 16, 32, 64, 128, 256
Enable hard loop ID	EnableHardLoopID	HL	1, 0[c]
Hard loop ID	HardLoopID	HD	0–125
Frame size	FrameSize	FR	512, 1024, 2048
Enable LIP reset	EnableLIPReset	LP	1, 0[c]
Enable LIP full login	EnableLIPFullLogin	FL	1, 0[c]
Enable target reset	EnableTargetReset	TR	1, 0[c]
Enable extended logging	EnableExtendedLogging	EL	1, 0[c]
Enable BIOS	EnableBIOS	EB	1, 0[c]
Loop reset delay	ResetDelay	RD	0–60 seconds
Login retry count	LoginRetryCount	LR	0–255

Table 4-1. HBA Parameters (Continued)

Parameter Description	Parameter Name	Parameter Alias	Parameter Value
Link down timeout	LinkDownTimeout	LT	0–255
Link down error	LinkDownError	LD	1, 0[c, d]
Port down retry count	PortDownRetryCount	PD	0–255
Execution throttle	ExecutionThrottle	ET	1–256
Fast error reporting	FastErrorReporting	FE	1, 0[c, d]
Operation mode (Not supported on Solaris)	OperationMode	OM	0, 5, 6[e]
Interrupt delay timer (Not supported on Solaris)	InterruptDelayTimer	ID	0–255[f]

Table Notes

[a]Data rate (QLA23*xx* HBAs): 0=1 Gbps, 1=2 Gbps, 2=Auto

[b]Connection options: 0=loop only, 1=point-to-point only, 2=loop preferred, otherwise point-to-point, 3=point-to-point, otherwise loop (QLA22*xx* HBAs)

[c]1=Enable, 0=Disable

[d]This parameter is valid only in Solaris SPARC.

[e]Operation mode (QLA23*xx* HBAs): 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

[f]QLA23*xx* HBAs

NOTE: Please refer to SANsurfer HBA Manager Index Adapter setting for parameters related to QLA200.

4.7 Target Persistent Binding (Command Line Option -P)

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

4.7.1
View Target Persistent Binding

4.7.2
Interactive Mode

1. Type the number for the **View Target Persistent Binding** option from the submenu, then press ENTER. A list of HBAs is displayed.
2. Type the number that corresponds to the HBA, then press ENTER.

The following text is an example of the **Target Persistent Binding** option.

```
1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
14: Display Usage
15: Quit


            Enter Selection: 7

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Target Persistent Binding Menu:

1:  View Target Persistent Binding
2:  Set Target Persistent Binding
3:  Remove Target Persistent Binding
4:  Return to Main Menu


            Enter Selection: 1

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```

```
    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  All HBAs
    7:  Return to Previous Menu


                Enter Selection: 2

-------------------------------------------------------------------
QLogic HBA 1 - QLA2340  WWPN: 21-00-00-E0-8B-07-62-A0
-------------------------------------------------------------------
Bind Type     Device Node Name          Device Port Name
Port ID   ID
---- -------  -----------------------  -----------------------
No     Disk   20-00-00-20-37-15-97-1E  21-00-00-20-37-15-97-1E
10-02-E1
Yes    Disk   20-00-00-20-37-15-96-EC  21-00-00-20-37-15-96-EC
10-02-E2  0
Yes    Disk   20-00-00-20-37-38-66-2D  21-00-00-20-37-38-66-2D
10-02-E4  1
Yes    Disk   20-00-00-20-37-38-73-BC  21-00-00-20-37-38-73-BC
10-02-E8  2

    Press <Enter> to continue:
```

4.7.3 Non-interactive Mode

Type one of the following commands:

```
# scli -P <HBA> ?
# scli -P <HBA WWPN> ?
# scli -P <HBA> VIEW
# scli -P <HBA WWPN> VIEW
# scli -P all ?
# scli -P all ...
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

ALL = All HBAs

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

```
# scli -P <HBA> "?"
```

SANsurfer FC CLI displays all targets that are currently bound to the HBA in the following format:

```
<Bind> <Type> <Device Node Name> <Device Port Name> <Port ID> <ID>
```

4.7.4 Set Target Persistent Binding

4.7.5 Interactive Mode

In interactive mode, select the **Set Target Persistent Binding** option from the submenu. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.

If target persistent binding information was saved in persistent storage and the machine is restarted, the driver reads the information saved in persistent storage during start up. SANsurfer FC CLI then reads this information from the driver and sets the target IDs accordingly.

The **Set Target Persistent Binding** option finds the devices seen by the OS. The target ID is a number between the range of 0–255.

In Windows, the target IDs have to be contiguous distinct numbers starting at 0. In Linux and Solaris, target IDs can be any number between 0 and 255 (25μ for Linux) as long as there are no duplicate target IDs per HBA.

In Solaris SPARC, target IDs can be assigned to both configured and unconfigured ports. Valid target ID values are in the range 0–255. The IDs are validated before they are saved. Duplicate target IDs are not allowed.

In Windows 2000 and Windows Server 2003, target IDs can be assigned only to ports that will be configured. Valid targets ID values are in the range 0–(*n*–1), where *n* is the number of targets attached to the HBA.

Once persistent binding information for the targets is saved, the ports retain the assigned target IDs across reboots.

NOTE: Be sure to set persistent binding for every target that the HBA sees; otherwise, only the persistently bound target is visible, and all other targets are invisible to the HBA when the system reboots.

The following text is an example of the **Set Target Persistent Binding** option.

```
Target Persistent Binding Menu:

    1:  View Target Persistent Binding
```

```
2:  Set Target Persistent Binding
3:  Remove Target Persistent Binding
4:  Return to Main Menu

            Enter Selection: 2

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Select HBA:

1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
6:  Return to Main Menu



            Enter Selection: 2


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Select Device:

1:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E1
            Bind         : No
            Target ID    :
2:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E2
            Bind         : Yes
            Target ID    : 0
3:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E4
```

```
                Bind          : Yes
                Target ID     : 1
    4:  Disk
                Vendor        : SEAGATE
                Product ID    : ST318203FC
                Port Name     : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID       : 10-02-E8
                Bind          : Yes
                Target ID     : 2
    5:  Save and Return to Previous Menu
    6:  Abort and Return to Previous Menu


                Enter Selection: 1
                Enter Selection: 1


Please Enter New Target ID  : 3

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    Target Persistent Binding - FC Port Configuration

    1:  Select More
    2:  Commit Changes
    3:  Abort and Return to Main Menu


                Enter Selection: 2

Configuration saved. Changes have been saved to persistent
storage.
You must reboot in order for the saved configuration to become
effective.

                Press <Enter> to continue:
```

4.7.6 Non-interactive Mode

In non-interactive mode, type one of the following commands to bind a target with a specific target ID:

```
# scli -P ( <hba no> | <hba wwpn> ) { <target wwnn> <target wwpn>
<target portid> <target id> }
```

Where:

HBA = HBA number from HBA general information

HBA WWNN = Word wide node name of the HBA

HBA WWPN = World wide port name of the HBA

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

The group <*Target WWNN*> <*Target WWPN*> <*Target Port ID*> <*Target ID*> can be repeated to bind multiple targets in a single command.

In Solaris, if a target has been designated as a boot device in section 4.9 and that target is persistently bound, the target ID cannot be modified.

4.7.7 Remove Target Persistent Binding

In interactive mode, select the **Remove Target Persistent Binding** option from the submenu.

In non-interactive mode, type one of the following commands:

```
# scli -P <HBA> REMOVE ALL
# scli -P <HBA WWPN> REMOVE ALL
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

4.7.8
Remove Target Persistent Binding for Specific Target

4.7.9
Interactive Mode

Perform the following steps to remove persistent binding for a specific target:

1. Type the number for the **Remove Target Persistent Binding** option from the submenu, then press ENTER.
2. Type the number for the **Remove Persistent Binding for Specific Target** option, from the submenu, then press ENTER.
3. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
4. A list of devices is displayed. Type the number that corresponds to the device, then press ENTER.

The following text is an example of the **Target Persistent Binding** option when persistent binding is removed for a specific target.

```
Target Persistent Binding Menu:

    1:  View Target Persistent Binding
    2:  Set Target Persistent Binding
    3:  Remove Target Persistent Binding
    4:  Return to Main Menu


                Enter Selection: 1


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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  All HBAs
    7:  Return to Previous Menu
```

```
                Enter Selection: 2
-----------------------------------------------------------------
QLogic HBA 1 - QLA2340  WWPN: xx-xx-xx-xx-xx-07-62-A0
-----------------------------------------------------------------
Bind Type     Device Node Name         Device Port Name
Port ID   ID
---- -------  -----------------------  -----------------------
Yes    Disk   20-00-00-20-37-15-97-1E  21-00-00-20-37-15-97-1E
10-02-E1  3
Yes    Disk   20-00-00-20-37-15-96-EC  21-00-00-20-37-15-96-EC
10-02-E2  0
Yes    Disk   20-00-00-20-37-38-66-2D  21-00-00-20-37-38-66-2D
10-02-E4  1
Yes    Disk   20-00-00-20-37-38-73-BC  21-00-00-20-37-38-73-BC
10-02-E8  2

                Press <Enter> to continue:

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    Target Persistent Binding Menu:

    1:  View Target Persistent Binding
    2:  Set Target Persistent Binding
    3:  Remove Target Persistent Binding
    4:  Return to Main Menu


                Enter Selection: 3

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    Remove Target Persistent Binding Menu

    1:  Remove Persistent Binding for Specific Target
    2:  Remove Persistent Binding for All Targets
    3:  Return to Target Persistent Binding Menu
    4:  Return to Main Menu


                Enter Selection: 1

                Enter Selection: 1
```

```
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Select HBA:

1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
6:  Return to Main Menu


            Enter Selection: 2

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Select Device:

1:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E1
            Bind         : Yes
            Target ID    : 3
2:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E2
            Bind         : Yes
            Target ID    : 0
3:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E4
            Bind         : Yes
            Target ID    : 1
4:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E8
            Bind         : Yes
```

```
                Target ID    : 2
    5:  Save and Return to Previous Menu
    6:  Abort and Return to Previous Menu


                Enter Selection: 2
Configuration changed. Changes have been saved to persistent
storage.
You must reboot in order for the saved configuration to become
effective.

                Press <Enter> to continue:
```

4.7.10 Non-Interactive Mode

Type one of the following commands:

```
# scli -P <HBA> REMOVE <Target WWNN>
# scli -P <HBA WWPN> REMOVE <Target WWNN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

4.7.11 Remove Persistent Bindings for All Targets on a Specific HBA

4.7.12 Interactive Mode

Perform the following steps to remove a persistent binding for all targets:

1. Type the number for the **Remove Target Persistent Binding** option from the submenu, then press ENTER.
2. Type the number for the **Remove Persistent Binding for All Targets** option from the submenu, then press ENTER.
3. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
4. A list of devices is displayed. Type the number that corresponds to the device, then press ENTER.

The following text is an example of the **Target Persistent Binding** option when persistent binding is removed for all targets on a specific HBA.

```
Target Persistent Binding Menu:

    1:  View Target Persistent Binding
    2:  Set Target Persistent Binding
    3:  Remove Target Persistent Binding
    4:  Return to Main Menu


                Enter Selection: 3

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    Remove Target Persistent Binding Menu

    1:  Remove Persistent Binding for Specific Target
    2:  Remove Persistent Binding for All Targets
    3:  Return to Target Persistent Binding Menu
    4:  Return to Main Menu


                Enter Selection: 2

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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 2
Configuration changed. Changes have been saved to persistent
storage.
You must reboot in order for the saved configuration to become
effective.

                Press <Enter> to continue:
```

4.7.13
Non-Interactive Mode

In non-interactive mode, type one of the following commands:

```
# scli -P <HBA> REMOVE ALL
# scli -P <HBA WWPN> REMOVE ALL
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

4.8
Selective LUNs (Command Line Option -M)

The following sections describe how to perform the following tasks for the HBA's target LUN mask in interactive and non-interactive modes:

- View the selective LUN
- Enable/disable a LUN
- Enable/disable all LUNs

NOTE:

- Before configuring selective LUNs, you must persistently bind the targets (see section 4.7).
- If the current driver setting is Bind by Port ID, this option is not available.

4.8.1
View Selective LUNs

4.8.2
Interactive Mode

Perform the following steps to view selective LUNs:

1. Type the number for the **View Selective LUNs** option from the submenu, then press ENTER.
2. Type the number for the **View Specific LUN** or **View All LUNs** option, then press ENTER.
3. If you selected **View Specific LUN**, all the HBAs are displayed. Type the number that corresponds to the HBA, then press ENTER.

4. Select the device, a list of LUNs is displayed. Type the number that corresponds to the LUN, then press ENTER.
5. To toggle a LUN between Enabled or Disabled, type the number that corresponds to the LUN, then press ENTER.

The following text is an example of the **Selective LUNs** option.

```
 1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
14: Display Usage
15: Quit


            Enter Selection: 8

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Selective LUNs:  Enable/Disable LUNs Menu:

1:  View Selective LUNs
2:  Enable/Disable a LUN
3:  Enable/Disable ALL LUNs
4:  Return to Main Menu


            Enter Selection: 1

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Select HBA:

1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
```

```
4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
6:  Return to Previous Menu


            Enter Selection: 2

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Select Device:

1:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E1
            Bind         : Yes
            Target ID    : 0
2:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E2
            Bind         : Yes
            Target ID    : 1
3:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E4
            Bind         : No
            Target ID    : 0
4:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E8
            Bind         : No
            Target ID    : 1
5:  Return to Previous Menu


            Enter Selection: 1

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```

```
    Select LUN Number:

    1:  LUN 0
                Vendor       : SEAGATE
                Product ID   : ST318453FC
                Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
                Port ID      : 10-02-E1
                Bind         : Yes
                Target ID    : 0
    2:  Return to HBA's LUN Information Menu


                Enter Selection: 1
World Wide Node Name     World Wide Port Name     LUN ID   State
--------------------     --------------------     ------   -------
20-00-00-20-37-15-97-1E  21-00-00-20-37-15-97-1E  0        Enabled

                Press <Enter> to continue:

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    View Selective LUN(s)

    1:  View Specific LUN
    2:  View All LUNs
    3:  Return to Selective LUNs Menu


                Enter Selection: 3
```

4.8.3 Non-Interactive Mode

Type one of the following commands to view the HBA's currently enabled LUN list:

```
# scli -M <HBA> ?
# scli -M <HBA WWPN> ?
# scli -M <HBA> VIEW
# scli -M <HBA WWPN> VIEW
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

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> "?"
```

The application displays the HBA's enabled LUN list in the following format:

```
<Target WWNN> <Target WWPN> <LUN ID>
```

In non-interactive mode, type one of the following commands to view a LUN's current select state:

```
# scli -M <HBA> <Target WWNN> <Target WWPN> <LUN ID> ?
# scli -M <HBA WWPN> <Target WWNN> <Target WWPN> <LUN ID> ?
# scli -M <HBA> <Target WWNN> <Target WWPN> <LUN ID> VIEW
# scli -M <HBA WWPN> <Target WWNN> <Target WWPN> <LUN ID> VIEW
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

Target WWPN = World wide port name of the target

LUN ID = ID of the LUN

If the input represents a valid LUN, SANsurfer FC CLI displays its current state as selected or unselected for that HBA.

4.8.4 Enable/Disable a LUN

4.8.5 Interactive Mode

Perform the following steps to enable or disable a LUN:

1. Type the number for the **Enable/Disable a LUN** option from the submenu, then press ENTER.
2. To continue, type the number for **Select HBA**, then press ENTER.
3. A list of HBAs is displayed. Type the number that corresponds to the HBA of the device/LUN number you want to enable or disable, then press ENTER.
4. A list of devices is displayed. Type the number that corresponds to the device/LUN, then press ENTER.
5. A list of LUNs is displayed. Type the number that corresponds to the LUN, then press ENTER.

6. Enable or disable the selected LUN.
7. Type the number for **More** or **Commit Changes**, then press ENTER.

The following text is an example of the **Enable/Disable a LUN** option.

```
Selective LUNs:  Enable/Disable LUNs Menu:

    1:  View Selective LUNs
    2:  Enable/Disable a LUN
    3:  Enable/Disable ALL LUNs
    4:  Return to Main Menu


                Enter Selection: 2

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    Enable/Disable LUN - HBA Selection Menu

    1:  Select HBA
    2:  Return to Selective LUNs Menu
    3:  Return to Main Menu


                Enter Selection: 1

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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 2

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    Select Device:
```

```
1:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E1
            Bind         : Yes
            Target ID    : 0
2:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E2
            Bind         : Yes
            Target ID    : 1
3:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E4
            Bind         : No
            Target ID    : 0
4:  Disk
            Vendor       : SEAGATE
            Product ID   : ST318203FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E8
            Bind         : No
            Target ID    : 1
5:  Return to Previous Menu


            Enter Selection: 1

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Select LUN Number:

1:  LUN 0
            Vendor       : SEAGATE
            Product ID   : ST318453FC
            Port Name    : xx-xx-xx-xx-xx-xx-xx-xx
            Port ID      : 10-02-E1
            Bind         : Yes
```

```
            Target ID    : 0
2:  Return to HBA's LUN Information Menu

         Enter Selection: 1
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Enable/Disable LUN

1:  Enabled
2:  Disabled
3:  Return to Selective LUNs Menu


            Enter Selection: 1

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Enter Another LUN?

1:  Select More
2:  Commit Changes


              Enter Selection: 2
Configuration saved. LUN persistent data saved successfully.
Please reboot the system for the saved configuration to become
effective.
```

4.8.6 Non-Interactive Mode

Type one of the following commands to enable (select) a LUN on a specific HBA:

```
# scli -M ( <hba no> | <hba wwpn>  ) { <target wwnn> <target wwpn>
<lun id> ( 1 | enable ) }
```

Type one of the following commands to disable (unselect) a LUN on a specific HBA:

```
scli -M ( <hba no> | <hba wwpn>  ) { <target wwnn> <target wwpn>
<lun id> ( 0 | disable ) }
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

Target WWPN = World wide port name of the target

LUN ID = ID of the LUN

The sequence <*Target WWNN*> <*Target WWPN*> <*LUN ID*> 0 or 1 can be repeated to select multiple LUNs in the same command.

4.8.7 Enable/Disable All LUNs

4.8.8 Interactive Mode

Perform the following steps to enable or disable all LUNs:

1. Type the number for the **Enable/Disable ALL LUNs** option from the submenu, then press ENTER.
2. Type the number that corresponds to the HBA, then press ENTER.
3. Make a selection: enable/disable all LUNs on a device or enable/disable all LUNS on the current HBA.
4. If you select a specific device, a list of devices is displayed. Type the number that corresponds to the device/LUN, then press ENTER.
5. Enable or disable the LUNs.

4.8.9 Non-Interactive Mode

Type one of the following commands to select all LUNs for all targets on the HBA:

```
# scli -M <HBA> SELECT ALL
# scli -M <HBA WWPN> SELECT ALL
```

Type one of the following commands to select all LUNs for a specific target:

```
# scli -M <HBA> SELECT <Target WWNN> <Target WWPN>
# scli -M <HBA WWPN> SELECT <Target WWNN> <Target WWPN>
```

Type one of the following commands to unselect all LUNs for all targets on the HBA:

```
# scli -M <HBA> UNSELECT ALL
# scli -M <HBA WWPN> UNSELECT ALL
```

Type one of the following commands to unselect all LUNs for a specific target:

```
# scli -M <HBA> UNSELECT <Target WWNN> <Target WWPN>
# scli -M <HBA WWPN> UNSELECT <Target WWNN> <Target WWPN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

Target WWPN = World wide port name of the target

4.9 Boot Device (Command Line Option -E)

The following sections describe how to perform the following tasks in interactive and non-interactive modes:

- View the boot device selection
- Set the boot device

4.9.1 Viewing the Boot Device Selection

4.9.1.1 Interactive Mode

Perform the following steps to view a single boot device or all boot devices:

1. Type the number for the **View Boot Device Selection** option from the submenu, then press ENTER.
2. If there is more than one HBA in the system, the menu displays the list of HBAs. To view all the boot devices, type the number for **ALL**, then press ENTER. To view a specific boot device, type the number corresponding to the HBA whose boot device you want to view, then press ENTER.

The following text is an example of the **Boot Device** option when viewing a single boot device or all boot devices.

```
 1:  Display System Information
 2:  Display HBA Settings
 3:  Display HBA Information
 4:  Display Device List
 5:  Display LUN List
 6:  Configure HBA Settings
 7:  Target Persistent Binding
 8:  Selective LUNs
 9:  Boot Device
10: Driver Settings
```

```
    11: HBA Utilities
    12: Flash HBA Beacon
    13: Diagnostics
    14: Display Usage
    15: Quit

                Enter Selection: 9



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    HBA Boot Device

    1:  View Boot Device Selection
    2:  Set Boot Device
    3:  Return to Main Menu


                Enter Selection: 1

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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  All HBAs
    7:  Return to Previous Menu


                Enter Selection: 2
-----------------------------------------------------------------
QLogic HBA 1 - QLA2340  WWPN: 21-00-00-E0-8B-07-62-A0
-----------------------------------------------------------------
Primary Boot Device Information:
-------------------------------------
Selectable Boot: Enabled
-------------------------------------
Device Node Name         Device Port Name         LUN ID
-----------------------  -----------------------  ------
```

```
00-00-00-00-00-00-00-00  00-00-00-00-00-00-00-00       0

                Press <Enter> to continue:
```

4.9.1.2
Non-interactive Mode

Type one of the following commands to view the boot devices for all HBAs in the system:

```
# scli -E ?
# scli -E VIEW
```

Type one of the following commands to view the boot device for a single HBA:

```
# scli -E <HBA> ?
# scli -E <HBA WWPN> ?
# scli -E <HBA> VIEW
# scli -E <HBA WWPN> VIEW
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

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

```
# scli -E <HBA> "?"
```

In Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux, each HBA's currently selected boot device is displayed in the following format:

<HBA Number> <HBA WWPN> <Target WWNN> <Target WWPN> <LUN ID>

In Solaris SPARC, each HBA's currently selected boot device is displayed in the following format:

<HBA Number> <HBA WWPN> <Target WWNN> <Target WWPN> <Target ID> <LUN ID>

If the system does not have an HBA with a boot device selected, the following message displays:

```
There is no boot device selected for any HBA in the system.
```

The following text is an example of the **Boot Device** option when viewing the boot device for a single HBA.

```
-----------------------------------------------------------------
QLogic HBA 1 - QLA2340  WWPN: 21-00-00-E0-8B-07-62-A0
-----------------------------------------------------------------
Primary Boot Device Information:
-------------------------------------
Selectable Boot: Enabled
-------------------------------------
Device Node Name          Device Port Name          LUN ID
-----------------------   -----------------------   ------
00-00-00-00-00-00-00-00   00-00-00-00-00-00-00-00        0


                    Press <Enter> to continue:
```

Select boot port name all 00-00-…00 will cause the OS to boot from the first target it finds with a LUN (this only applies if the boot BIOS is enabled).

4.9.2 Set Boot Device

The following sections describe how to enable and disable the HBA's boot device in interactive and non-interactive modes.

4.9.2.1 Enable the HBA's Boot Device

4.9.2.2 Interactive Mode

In interactive mode, type the number for the **Set Boot Device** option from the submenu, then press ENTER. If there is more than one HBA in the system, a list of HBAs is displayed. Type the number for the HBA for which you want to enable a boot device, then press ENTER.

If the BIOS is disabled, you are prompted:

```
Boot device disabled. Enable boot device?
```

In Windows 2000, Windows Server 2003, and Solaris SPARC, if the HBA does not have a boot device selected, a list of attached targets is displayed. The target list

also includes a NULL (zero) target (default mode). In default mode, the HBA BIOS selects the first device with a LUN 0 as the boot device. If you select a non-NULL target, the menu displays the list of LUNs. After you select a LUN as the boot device, you are prompted to confirm the selection.

In Solaris SPARC, a list of targets using the WWNN and WWPN is displayed. When you select a target, SANsurfer FC CLI searches the persistent binding list to see if a target ID has been bound to this target. If none is found, you are prompted for a target ID. After you enter a target ID, the list of LUNs is displayed. Select one LUN as the boot device.

NOTE: The LUN must always be an open Solaris boot device. The target ID is determined by the boot part name. Once selected and saved, the target ID is the value used by the OS to determine the boot device.

The following text is an example of the **Boot Device** option when a boot device is set.

```
HBA Boot Device

    1:  View Boot Device Selection
    2:  Set Boot Device
    3:  Return to Main Menu


                Enter Selection: 2

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    Select HBA:

    1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
    2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
    3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
    4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
    5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
    6:  Return to Main Menu


                Enter Selection: 2
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   Boot Device Disabled. Enable Boot Device?

   1:  Yes
   2:  No
```

```
                Enter Selection: 1

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        Select Device:

        1:  Disk
                    Port Name    : 21-00-00-20-37-15-97-1E
                    Node Name    : xx-xx-xx-xx-xx-15-97-1E
                    Port ID      : 10-02-E1
        2:  Disk
                    Port Name    : 21-00-00-20-37-15-96-EC
                    Node Name    : xx-xx-xx-xx-xx-15-96-EC
                    Port ID      : 10-02-E2
        3:  Disk
                    Port Name    : 21-00-00-20-37-38-66-2D
                    Node Name    : xx-xx-xx-xx-xx-38-66-2D
                    Port ID      : 10-02-E4
        4:  Disk
                    Port Name    : 21-00-00-20-37-38-73-BC
                    Node Name    : xx-xx-xx-xx-xx-38-73-BC
                    Port ID      : 10-02-E8
        5:  Set Default

        6:  Return to Main Menu


                    Enter Selection: 5

    Boot Device Change Completed. Press Enter to continue:
```

4.9.2.3
Non-interactive Mode

In non-interactive mode (Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux), type one of the following commands to select a boot device for the HBA:

```
# scli -E <HBA> <Target WWNN> <Target WWPN> <LUN ID>
# scli -E <HBA WWPN> <Target WWNN> <Target WWPN> <LUN ID>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

Target WWPN = World wide port name of the target

LUN ID = ID of the LUN

SANsurfer FC CLI checks all parameters to verify that the HBA, targets, and LUNs are valid. The <*Target WWPN*>, <*Target WWNN*> and <*LUN ID*> inputs can be all zeroes. For example:

```
# scli -E <HBA> 0 0 0
```

In non-interactive mode (Solaris SPARC), type one of the following commands to select a boot device for the HBA:

```
# scli -E <HBA> <Target WWNN> <Target WWPN> <Target ID>
<LUN ID>
# scli -E <HBA WWPN> <Target WWNN> <Target WWPN> <Target ID>
<LUN ID>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Target WWNN = World wide node name of the target

Target WWPN = World wide port name of the target

Target ID = ID of the target

LUN ID = ID of the LUN

If you select an HBA with no target or a target with no LUN, SANsurfer FC CLI displays an error message and aborts.

In Solaris SPARC, assigning the target ID to the target of the boot-selected LUN is equivalent to the target persistent binding described in section 4.7. Therefore, if the target is persistently bound, its boot device entry must have the same target ID.

For all operating systems, if the HBA 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 HBA already has boot devices selected and they are the same as the ones in the command parameter or menu selection, the following message displays:

```
The HBA already has that device selected as boot device.
```

4.9.2.4
Disable the HBA's Boot Device

4.9.2.5
Interactive Mode

In interactive mode, select the **Set Boot Device Setting** option from the submenu. If there is more than one HBA in the system, the list of HBAs is displayed. Select an HBA. You are then prompted to confirm disabling the boot device.

4.9.2.6
Non-interactive Mode

In non-interactive mode, type the following command to disable the boot device for a specific HBA:

```
# scli -E <HBA> disable
```

Where:

HBA = HBA number from HBA general information

4.10
Driver Settings

4.10.1
Interactive Mode

1. Type the number for the **Driver Settings** option, then press ENTER.
2. Type the number that corresponds to the HBA, then press ENTER.
3. Type the number for the **Commit Changes for this HBA** option to save the settings, then press ENTER.

The following text is an example of the **Driver Settings** option.

```
1:  Display System Information
2:  Display HBA Settings
3:  Display HBA Information
4:  Display Device List
5:  Display LUN List
6:  Configure HBA Settings
7:  Target Persistent Binding
8:  Selective LUNs
9:  Boot Device
10: Driver Settings
11: HBA Utilities
12: Flash HBA Beacon
13: Diagnostics
```

```
14: Display Usage
15: Quit


            Enter Selection: 10

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Select HBA:

1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200
2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340
3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200
4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200
5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200
6:  Return to Main Menu


            Enter Selection: 2

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Driver Settings

1:  Present targets that are persistently bound plus
    any new target(s) (Current)
2:  Present targets that are persistently bound Only
3:  Bind by World Wide Port Name (Current)
4:  Bind by Port ID
5:  Commit Changes for this HBA
6:  Return to HBA Selection Menu


            Enter Selection: 4

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 Driver Settings

 1:  Present targets that are persistently bound plus
     any new target(s) (Current)
 2:  Present targets that are persistently bound Only
 3:  Bind by World Wide Port Name
```

```
4:  Bind by Port ID (Current)
5:  Commit Changes for this HBA
6:  Return to HBA Selection Menu


            Enter Selection: 5

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Warning:

    You have requested to commit driver setting changes
    of the HBA. All HBAs dependant on the same
    driver will be affected by the change.

    Do you want to proceed with the operation?

    1: Yes
    2: No


            Enter Selection: 1

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Warning:
    You have requested to change from bind by world wide
    port name to bind by port id. All existent persistent
    binding information will be deleted from the current host.
    Also after this option is set,selective LUN will be
    disabled.

    1: Yes
    2: No

             Enter Selection: 1

Configuration changed. Changes have been saved to persistent
storage.
You must reboot in order for the saved configuration to become
effective.
Driver Settings - The commit operation completed. Please reboot
the system for the changes to take effect.

            Press <Enter> to continue:
```

NOTE:

- In Windows, when switching driver settings from bind by port ID to bind by port name (no target persistent binding operation involved), then the following message displays:
  Driver Settings - The commit operation completed. Please reboot the system for the changes to take effect.
- In Solaris, the following message displays:
  Driver Settings - The commit operation completed. The changes should be effective immediately.
- In Linux, the following message displays:
  Driver Settings - The commit operation completed. Please reload the QLA driver module for the changes to take effect.

4.11 View Driver Settings (Command Line Option -FG)

NOTE: This option is valid only in non-interactive mode.

Type one of the following commands to display the driver settings:

```
# scli -FG <HBA> ?
# scli -FG <HBA WWPN> ?
# scli -FG <HBA> VIEW
# scli -FG <HBA WWPN> VIEW
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

4.12 Configure Driver Settings (Command Line Option -FS)

NOTE: This option is valid only in non-interactive mode.

Type one of the following commands to configure the driver settings:

```
# scli -FS ( <hba no> | <hba wwpn> ) { ( <param name> | <param
alias> ) <param value> }
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

Parameter Name = Name of the parameters

Parameter Alias = Alias of the parameters

Parameter Value = New value of the parameters

The pairs <*Parameter Name*> <*Parameter Value*> and <*Parameter Alias*> <*Parameter Value*> can be repeated to set multiple parameters in a single command.

The parameter names and aliases are defined in table 4-2.

Table 4-2. Driver Settings

Parameter Description	Parameter Name	Parameter Alias	Parameter Value[a]
Persistent only	PersistentOnly	PO	1, 0
Persistent plus new	PersistentPlusNew	PN	1, 0
Bind WWPN	BindWWPN	BW	1, 0
Bind port ID	BindPortID	BP	1, 0

Table Notes

[a]1=Enabled, 0=Disabled

4.13 Save/Update Flash (BIOS/FCode) (Command Line Option -B)

This option allows you to update or save to a file the system's BIOS (Windows 2000, Windows Server 2003, and Red Hat/SuSE Linux) or FCode (Solaris SPARC).

4.13.1 Interactive Mode

Perform the following steps to update the BIOS/FCode:

1. Type the number for the **HBA Utilities** option, then press ENTER.
2. Type the number for the **Update Flash** option, then press ENTER.
3. Type the number for either **Select an HBA** or **Select ALL HBAs**, then press ENTER. If you chose **Select ALL HBAs**, skip to step 5.

4. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
5. The following warning displays:

```
Warning: The option ROM save/update operation requires that
the HBA has no outstanding input and output operations. Please
make sure there is no active I/O before starting the operation.
Also after the update operation, the HBA will be reset. This
may adversely affect your SAN.

Do you want to proceed with the operation?

1. Yes
2. No
```

   Type `1` to proceed or `2` to cancel the operation.

6. Do one of the following:
   a. Enter a file name or a path to a file. SANsurfer FC CLI updates the BIOS/FCode.

      NOTE: The BIOS file has a .bin extension.

   b. Press ENTER to abort operation and return to the previous menu.

Perform the following steps to save the BIOS/FCode to a file:

1. Select **HBA Utilities**.
2. Select **Save Flash**.
1. Select **Select an HBA**.
2. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
3. The following warning displays:

```
Warning: The option ROM save/update operation requires that
the HBA has no outstanding input and output operations. Please
make sure there is no active I/O before starting the operation.
Also after the update operation, the HBA will be reset. This
may adversely affect your SAN.

Do you want to proceed with the operation?

1. Yes
2. No
```

Type `1` to proceed or `2` to cancel the operation.

4. Enter a file name or a path to a file. SANsurfer FC CLI saves the BIOS/FCode to the specific file.

4.13.2 Non-interactive Mode

Type one of the following commands to update the HBA's BIOS/FCode:

```
# scli -B <HBA> <BIOS/FCode File Name>
# scli -B <HBA WWPN> <BIOS/FCode File Name>
# scli -B ALL <BIOS/FCode File Name>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

ALL = All HBAs in the system will be updated with the new BIOS/FCode

BIOS/FCode File Name = File name or a path to a file that contains the updated BIOS/FCode

Type one of the following commands to save the HBA's BIOS/FCode to a file:

```
# scli -B <HBA> SAVE <BIOS/FCode File Name>
# scli -B <HBA WWPN> SAVE <BIOS/FCode File Name>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

BIOS/FCode File Name = File name or a path to a file to save BIOS/FCode

4.14 Save/Update NVRAM (Command Line Option -R)

This option allows you to update the HBA's NVRAM or save the HBA's NVRAM to a file.

4.14.1 Interactive Mode

Perform the following steps to update the HBA's NVRAM:

1. Type the number for the **HBA Utilities** option, then press ENTER.
2. Type the number for the **Update NVRAM** option, then press ENTER.
1. Type the number for either **Select an HBA** or **Select ALL HBAs**, then press ENTER. If you chose **Select ALL HBAs**, skip to step 3.
2. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.
3. The following warning displays:

```
Warning: Please update the NVRAM with extreme care. Incorrect
updating of the NVRAM may render the HBA inoperable. If you
currently have boot device information set up in the NVRAM,
updating the NVRAM 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 NVRAM update or re-configure the boot settings after
the update.

Do you want to proceed with the operation?

1. Yes
2. No
```

Type `1` to proceed or `2` to cancel the operation.

4. Do one of the following:

   a. Enter a file name or a path to a file. SANsurfer FC CLI updates the NVRAM.

      NOTE: NVRAM file has a .dat extension.

   b. Press ENTER to abort operation and return to the previous menu.

Perform the following steps to save the HBA's NVRAM to a file:

1. Type the number for the **HBA Utilities** option, then press ENTER.
2. Type the number for the **Save NVRAM** option, then press ENTER.
1. Select **Select an HBA**.
2. A list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER.

3. The following warning displays:

```
Warning: The save NVRAM operation requires that the HBA has
no outstanding input and output operations. Please make sure
there is no active I/O before starting the operation.

Do you want to proceed with the operation?

1. Yes
2. No
```

   Type `1` to proceed or `2` to cancel the operation.

4. Do one of the following:
   a. Enter a file name or a path to a file. SANsurfer FC CLI saves the NVRAM.
   b. Press ENTER to abort operation and return to the previous menu.

4.14.2 Non-interactive Mode

Type one of the following commands to update the HBA's NVRAM:

```
# scli -R <HBA> <NVRAM File Name>
# scli -R <HBA WWPN> <NVRAM File Name>
# scli -R ALL <NVRAM File Name>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

ALL = All HBAs in the system will be updated with the new NVRAM

NVRAM File Name = File name or a path to a file that contains the updated NVRAM

Type one of the following commands to save the HBA's NVRAM to a file:

```
# scli -R <HBA> SAVE <NVRAM File Name>
# scli -R <HBA WWPN> SAVE <NVRAM File Name>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

NVRAM File Name = File name or a path to a file to save the NVRAM

4.15 Update Driver (Windows 2000 and Windows Server 2003) (Command Line Option -D)

This option allows you to update the HBA's device driver.

4.15.1 Interactive Mode

Perform the following steps to update the driver:

1. Type the number for the **HBA Utilities** option, then press ENTER.
2. Type the number for the **Update Driver** option, then press ENTER. A list of HBAs is displayed.
3. Select an HBA.
4. Enter a file name or a path name to the file.
5. The following confirmation message displays:

   ```
   This option will install version SCSIport x.x.x.xx.xx. The
   current version is SCSIport x.x.x.xx <xxx IP>.

   Do you want to perform the operation?

   1. Yes

   2. No
   ```

   Type `1` to proceed or `2` to cancel the operation.

6. The **Hardware Installation** dialog box displays with a warning message. Select **Continue Anyway** if you want to update the driver.

   NOTE: This dialog box displays for every port supported by the driver being updated.

7. The following message displays:

   ```
   The driver update operation completed, reboot not needed.
   ```

4.15.2 Non-interactive Mode

Type the following command to update the HBA's device driver:

```
scli -D <Device Driver INF File Name>
```

Where:

Device Driver INF File Name = Absolute, full path name of the setup INF file that contains the information needed to update the HBA's driver. The binary image of the device driver must reside in the same absolute path location. For example:

```
scli -d c:\temp\ql2300\oemsetup.inf
```

4.16 Flash HBA Beacon (Command Line Option -A)

This option allows you to stop and start flashing an HBA's LED.

4.16.1 Interactive Mode

When this option is selected and there is more than one HBA in the system, the list of HBAs is displayed. Type the number that corresponds to the HBA, then press ENTER. An on/off message is displayed indicating the current flashing state of the HBA and, depending on the state, the option to start or stop the flashing. For example:

```
1:  HBA 0 - WWPN: xx-xx-xx-xx-xx-17-FF-74 QLA200 Unsupported
2:  HBA 1 - WWPN: xx-xx-xx-xx-xx-07-62-A0 QLA2340 LED OFF
3:  HBA 2 - WWPN: xx-xx-xx-xx-xx-02-D7-23 2200 Unsupported
4:  HBA 3 - WWPN: xx-xx-xx-xx-xx-23-55-7C 2200 Unsupported
5:  HBA 4 - WWPN: xx-xx-xx-xx-xx-03-55-7C 2200 Unsupported
```

Perform the following steps to stop and start flashing an HBA's LED:

1. Select the number for the **Flash HBA Beacon** option, then press ENTER.
2. Select the desired HBA from the list that is displayed. The LED is toggled on or off.

4.16.2 Non-interactive Mode

To view the HBA's flashing state, type one of the following commands:

```
# scli -A <HBA> ?
# scli -A <HBA WWPN> ?
# scli -A <HBA> VIEW
# scli -A <HBA WWPN> VIEW
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

When the HBA's LED is in flashing state, the following message is displayed:

```
HBA x - LED Flashing is ON.
```

When the HBA's LED is not in flashing state, the following message is displayed:

```
HBA x - LED Flashing is OFF.
```

To start or stop flashing the HBA's LED, type one of the following commands:

```
# scli -A <HBA>
# scli -A <HBA WWPN>
```

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

```
# scli -A <HBA> "?"
```

When the HBA's LED is in flashing state, the following message is displayed:

```
LED Flashing is ON.
```

When the HBA's LED is not in flashing state, the following message is displayed:

```
LED Flashing is OFF.
```

To start or stop flashing the HBA's LED, type one of the following commands:

```
# scli -A <HBA>
# scli -A <HBA WWPN>
```

SANsurfer FC CLI toggles the HBA's LED flashing state. If the LED is flashing, the flashing stops. If the LED is not flashing, the flashing starts.

If SANsurfer FC CLI is not in silent mode (see section 4.20), one of the following messages is displayed to indicate the HBA's current flashing state:

```
The LED Flashing for <HBA> <HBA WWPN> has been turned ON
The LED Flashing for <HBA> <HBA WWPN> has been turned OFF
```

The <*HBA*> or <*HBA WWPN*> must match the command input parameter.

4.17 Diagnostics (Command Line Options -KL and -KR)

This option allows you to run a loopback test or a read/write buffer test.

4.17.1 Interactive Mode

Perform the following steps to run a loopback test or a read/write buffer test:

1. Select the HBA you want to test. The **Diagnostic Test Selection** submenu displays.
2. Type the number that corresponds to the test you want to run, then press ENTER:
   - `1` = loopback test
   - `2` = read/write buffer test

   If you want to test a different HBA, type `3`, then press ENTER.
3. The **Configure Diagnostic Loopback Test Parameters** or **Configure Diagnostic Read/Write Buffer Test Parameters** submenu displays. Select one of the following options:

   1: Display Test Configuration. Type `1` to display the current parameter values. See figure 4-1 for an example; the top of the figure displays the test configuration.

   2: Restore Test Configuration to Default. Type `2` to return all parameters to their default values.

   3: Customize Test Configuration. Type `3` to customize any or all of the parameter values. Continue with step 4.

   4: Run Diagnostic Test with Current Configuration. Type 4 to run the loopback or read/write buffer test with the current parameter values. To see these values, type `1` (**Display Test Configuration)**.

   See figure 4-1 for an example of loopback test results. See figure 4-2 for an example of read/write buffer test results.

   5: Return to the previous menu. Type `5` to go back to the Diagnostics menu.
4. If you selected **Customize Test Configuration** in step 3, the **Diagnostic Test Configuration Menu** displays. See sections 4.17.2.1 through 4.17.2.5 for a

description of the parameters and their values. Perform the following steps for each parameter you want to change:

a. Type the number associated with the parameter you want to change.

b. Enter the parameter value.

c. To return to the previous menu, type `7` from the Read/Write area, or type `7` from the Loopback area.

5. Type `4` to run the loopback or read/write buffer test.

6. The following warning message displays:

```
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 perform the test(s)?

1. Yes

2. No
```

Type `1` to proceed or `2` to cancel the operation.

4.17.2 Non-interactive Mode

The -kl command performs the loopback test; the -kr command performs the read/write buffer test.

To perform a loopback test using the default parameters, type one of the following:

```
# scli -kl <HBA>
# scli -kl <HBA WWPN>
```

To perform a read/write test using the default parameters, type one of the following:

```
# scli -kr <HBA>
# scli -kr <HBA WWPN>
```

Sections 4.17.2.1 through 4.17.2.5 describe how to change the default parameters for both of these tests. Section 4.17.2.6 contains command line examples and test results for a loopback test. Section 4.17.2.7 contains command line examples and test results for a read/write buffer test.

4.17.2.1
Data Pattern: DP <*value*> or DataPattern <*value*>

The data pattern must be in a two-character hexadecimal pattern in the ranges 0–9 and A–F. The hex letters can be uppercase or lowercase. The default data pattern is *random*. For example:

```
# scli -kl <HBA> DP Random
# scli -kl <HBA WWPN> DP Random
```

To enter a customized value, type one of the following:

```
# scli -kl <HBA> DP <value>
# scli -kl <HBA WWPN> DP <value>
```

4.17.2.2
Data Size: DS <*value*> or DataSize <*value*>

The data size can be 8, 16, 32, or 64 bytes. The default value is 8 bytes.

4.17.2.3
Number of Tests: TC <*value*> or TestCount <*value*>

The number of tests run must be in the range 0–10000. A value of 0 indicates that the test will be continuous (it will stop when you press ENTER). The default number of tests run is 500.

4.17.2.4
Test Increment: TI <*value*> or Test Increment <*value*>

The test increment must be in the range 1–10000. If the number of tests is continuous (see section 4.17.2.3), the test increment is automatically set to 125. The default test increment is 1.

4.17.2.5
On Error: OE <*value*> or OnError <*value*>

This parameter determines how errors are handled. The valid values are listed in table 4-3.

Table 4-3. On Error Parameter

Value	Meaning
0	The error is ignored. This is the default value.
1	If an error occurs, the test is stopped.
2	If an error occurs, the same data pattern and test is used until the error is cleared.

4.17.2.6

Run a Loopback Test

This test sends and receives messages through a loopback or through an echo command to the switch.

NOTE: An echo test is run instead of a loopback test under the following conditions:

- You have a QLA23*xx* HBA that is connected to the fabric through a point-to-point connection (F-port).
- Your operating system has one of the driver versions listed in table 4-4.

Table 4-4. Driver Versions that Do Not Require a Loopback Connector

Operating System	Driver Version[a]
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

[a]All subsequent versions also apply.

To perform a loopback test using the current parameters, type one of the following:

```
# scli -kl <HBA>
# scli -kl <HBA WWPN>
```

Sections 4.17.2.1 through 4.17.2.5 describe the parameters and their default values.

The following examples perform 500 loopback tests with a test increment of 10, a data pattern of FFh, and a data size of 8 bytes. The test will stop if an error occurs.

```
# scli -kl <HBA WWPN> dp FF ds 8 tc 500 ti 10 oe 1
# scli -kl <HBA> 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> 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
```

Figure 4-1 shows the results for a successful loopback test.

```
Test Configuration
Data Pattern                        =  Random
Data Size (Bytes)                   =  8
Number of test(s) (1-10,000)        =  N/A
Test Increment (1-10,000)           =  125
On Error                            =  Ignore
Test Continuous                     =  ON
Diagnostics - Loopback Test Result
Note: Press <Enter> to stop the test any time
```

HBA	Data Test Pattern	Status	CRC	Disparity	FrameLength	Active
0	B1-3B-6A-A5-11-28-C1-8C	Success	0	0	0	/

Figure 4-1. Sample Loopback Test Results

4.17.2.7
Run a Read/Write Buffer Test

This test runs on all or selected devices on the selected HBA. This test sends the SCSI Write Buffer command to the devices and uses the SCSI Read Buffer command to read the data back and perform a data comparison.

NOTE: All devices attached to the HBA must support SCSI Read/Write Buffer commands.

To perform a read/write buffer test using the current parameters, type one of the following:

```
# scli -kr <HBA>
# scli -kr <HBA WWPN>
```

To exclude a device or devices on the selected HBA, type one of the following:

```
# scli -kr (<HBA>|<HBA-WWPN>) [{(-EX <Target WWPN>| -Exclude
<Target WWPN>)}] [{(<param name>|<param alias>)<param value>}]
```

Sections 4.17.2.1 through 4.17.2.5 describe the parameters and their default values.

The following examples perform 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 will stop if an error occurs.

```
# scli -kr <HBA> 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> 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
```

Figure 4-2 shows the results for a successful read/write buffer test.

```
Test Configuration
Data Pattern                    =  Random
Data Size (Bytes)               =  8
Number of test(s) (1-10,000)    =  N/A
Test Increment (1-10,000)       =  125
On Error                        =  Ignore
Test Continuous                 =  ON
Diagnostics - Read/Write Buffer Test Result
Note: Press <Enter> to stop the test any time

Pass        Data Pattern          Status
32    79-FE-52-DB-25-43-E5-3C   Success
```

Figure 4-2. Sample Read/Write Buffer Test Results

If the read/write buffer test fails, the following information is displayed:

- Loop/port ID
- Status
- Data miscompare
- Link failure
- Loss of sync
- Loss of signal
- Invalid CRC

4.18 Input From a File (Command Line Option -F)

NOTE: This option is valid only in non-interactive mode. This option is used when it is run as a script file.

To input parameter options to SANsurfer FC 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.

NOTE: The following example shows how to set the connection option of a HBA to default (loop preferred, otherwise point-to-point) and the data rate to auto via a command file which is invoked by the -F option:

1. Create a text file (i.e: sethba0.txt) and enter the following command to 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):

   ```
   C:\SANsurferCLI>scli -f sethba0.txt
   ```

4.19 Output to a File (Command Line Option -O)

NOTE:

- This 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 2-1). The option must be the first or last command in the command line.

To output result and status messages into a file, type -O, followed by the file name. For example:

```
# scli -L 2 -S -O system
```

If the file name is `system`, then all of the messages are locked in the following locations:

- Windows 2000 and Windows Server 2003: syslog.log in the current directory
- Red Hat/SuSE Linux: /var/log/messages
- Solaris SPARC: /var/adm/messages

If the file already exists, the new messages are appended to the current file.

4.20 Silent Mode (Command Line Option -S)

NOTE:

- This 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 2-1). The option must be the first or last command in the command line.

In non-interactive mode, result and status messages generated by the application are displayed by default unless suppressed by silent mode. This option is usually combined with the -O option (see section 4.19) so that the output is saved in a file and not displayed on screen. For example:

```
# scli -I ALL -S -O output.txt
```

4.21 Display Version (Command Line Option -V)

NOTE: This option is valid only in non-interactive mode.

To display the version number of the SANsurfer FC CLI application, type `-V`. For example:

```
# scli -V
```

The following information is displayed:

```
SANsurfer FC CLI
v1.06.14 Build 24
Copyright 2003-2004 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters.
```

4.22 Output in XML Format (Command Line Option -X)

NOTE:

- This 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 2-1). The option must be the first or last command in the command line.

When this option is used, all result and status messages are displayed in XML formats. These formats are described in section 5. This option is usually combined with the -O option (see section 4.19) to create a text file with XML output so that it can be parsed by an XML-compliant utility. For example:

```
# scli -I ALL -X -O output.xml
```

4.23 Display All Information for One or All HBAs (Command Line Option -Z)

NOTE: This option is valid only in non-interactive mode.

Use this option to display all the information for one or all of the HBAs in the system. This option displays all of the HBA's information in a single command. The information displayed by the -Z option is the combination of the commands listed in table 4-5.

Table 4-5. Options Displayed by -Z

Non-interactive Option	Description	Section
-G	Display system information	4.1
-C	Display HBA settings	4.2
-I	Display HBA information	4.3
-T	Display device list	4.4
-L	Display LUN list	4.5
-P	Configure target persistent binding	4.7
-M	Configure selective LUNs	4.8
-E	Configure boot device	4.9

To display the information in table 4-5 for a single HBA, type one of the following commands:

```
# scli -Z <HBA>
# scli -Z <HBA WWPN>
```

Where:

HBA = HBA number from HBA general information

HBA WWPN = World wide port name of the HBA

To display the information in table 4-5 for all HBAs, type one of the following commands:

```
# scli -Z ALL
# scli -Z
```

4.24 Help

SANsurfer CLI now provides Help for individual commands.

For example, typing `scli -l -h` displays:

```
SANsurfer FC CLI
v1.06.14 Build 24
Copyright 2003-2004 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters

Displays the HBA's LUN list.
USAGE:
     scli -l ( <hba no> | <hba wwpn> )
     scli -l ( <hba no> | <hba wwpn> ) [ ( <target wwpn>| <target
     portid> ) ]
     scli -l ( <hba no> | <hba wwpn> ) [ ( <target wwpn>| <target
     portid> ) ]                       [ <lun id> ]

     Options
         <hba no>        Specifies a HBA by the HBA number.
         <hba wwpn>      Specifies a HBA by the HBA WWPN.
         <target wwpn>   Specifies a target by the target WWPN.

         <target portid> Specifies a target by the target port id.
         <lun id>        Specifies a LUN number.
```

Section 5

XML Format

The -X command line option (see section 4.22) displays all output in XML format. This section defines the XML output format, which consists of the following parts:

- Main tag
- Utility header
- Status message
- XML message (one for each option)

5.1 Main Tag

When SANsurfer FC CLI is in XML mode, all outputs are contained within the following main tag:

```
<QLogic>
...
</QLogic>
```

5.2 Utility Header

The following header information is displayed after the main tag:

```
<AppName> SANsurfer Command Line Utility </AppName>
<AppVersion> X.YY.ZZ Build XX</AppVersion>
```

5.3 Status Message

Before the closing main tag `</QLogic>`, SANsurfer FC CLI displays 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 displayed:

```
<Status> 0 </Status>
```

When the execution of the command line parameters fails, the following status is displayed, followed by an error message that provides additional details:

```
<Status> 1 </Status>
<ErrorMsg> Details of the failure </ErrorMsg>
```

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 displayed:

```
<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 displayed:

```
<Reboot> 0 </Reboot>
```

5.4 XML Message for Each Option

The following sections describe the XML format for each command line option. In these sections, the term *number* refers to the adapter number displayed with the HBA general information (command line option -I).

5.4.1 Display System Information (Command Line Option -G)

The XML format for system information output is as follows:

```
<Host>
   <Name> Host Name </Name>
   <OSType> OS Type </OSType>
   <OSVersion> OS Version (and patches where applicable)
   </OSVersion>
   <HBA Number="value" WWNN="value" WWPN="value" />
   <NumOfHBA> Number of QLogic Fibre Channel HBA(s) detected
   </NumOfHBA>
</Host>
```

The parameter `<HBA…/>` is repeated for each HBA in the system.

5.4.2
Display Adapter Settings (Command Line Option -C)

The XML format for adapter settings information is as follows:

```
<HBA>
   <ID Number="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>
```

Each parameter is listed on a separate line for clarity; however, multiple parameters can be on the same line.

For multiple adapters, repeat the above sequence with the ID number `(ID Number="value")` of the next adapter.

5.4.3
Display HBA Information (Command Line Option -I)

The XML format for adapter general information is as follows:

```
<HBA>
   <GeneralInfo Number ="value"
       Model="value"
       WWNN="value"
       WWPN="value"
       PortID="value"
       SerialNumber="value"
       DriverVersion="value"
       BIOSVersion="value"
       FcodeVersion="value"
       FirmwareVersion="value"
       TargetCount="value"
       PCIBus="value"
       PCIDevice="value"
       ActualConnectionMode="value"
       ActualDataRate="value"
       Configuration="value"
       PortType="value"
       Status="value"
</HBA>
```

5.4.4
Display Device List (Command Line Option -T)

The XML format for adapter device information is as follows:

```
<HBA>
   <ID Number="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" PortID= "value"
           LunCount= "value"
           Type= "value"
           DeviceStatus= "value" />
     </Target>
</HBA>
```

The `<Target>...</Target>` sequence is repeated for each HBA target.

5.4.5
Display LUN List (Command Line Option -L)

The XML format for the adapter LUN list information is as follows:

```
<HBA>
  <ID Number="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" />
  </Target>
</HBA>
```

The `<LUN … />` sequence is repeated for each LUN attached to the target. The LUN list is listed under the target, not the adapter.

5.4.6
Target Persistent Binding (Command Line Option -P)

The XML format for the adapter target persistent binding information is as follows:

```
<HBA>
  <ID Number="value" WWNN="value" WWPN="value" />
  <TargetBinding TargetWWNN="value" TargetWWPN="value"
    TargetPortID="value" TargetID="value" />
</HBA>
```

The `<TargetBinding … />` sequence is repeated for each target bound to the adapter.

5.4.7
Selective LUNs (Command Line Option -M)

The XML format for the selective LUNs information is as follows:

```
<HBA>
  <ID Number="value" WWNN="value" WWPN="value" />
  <Target>
    <WWNN> Target WWNN </WWNN>
    <WWPN> Target WWPN </WWPN>
    <EnabledLUN ID="value" LUNWWN="value" />
  </Target>
</HBA>
```

The `<EnabledLUN … />` sequence is repeated for each enabled LUN under the target.

5.4.8
Boot Device (Command Line Option -E)

The XML format for the boot device information is as follows:

```
<HBA>
  <ID Number="value" WWNN="value" WWPN="value" />
  <BootDevice TargetWWNN="value" TargetWWPN="value"
    TargetID="value" LUNID="value" />
</HBA>
```

The `<BootDevice…/>` sequence is repeated for each boot device of the adapter. In Windows 2000/Windows Server 2003 and Red Hat/SuSE Linux, the `TargetID="value"` field is not present.

5.4.9
Diagnostics Results—Loopback Test (Command Line Option -KL)

The XML format for the loopback test results is as follows:

```
<HBA>
   <ID Number="value" WWNN="value" WWPN="value" />
      <Port ID="value"
      CRCError="value"
      DisparityError="value"
      FrameLengthError="value"
      Result="Success"/>
</HBA>
```

5.4.10
Diagnostics Results—Read/Write Buffer Test (Command Line Option -KR)

The XML format for the read/write buffer test results is as follows:

```
<HBA>
  <ID Number="value" WWNN="value" WWPN="value" />
      <Target>
          <WWNN> Target WWNN </WWNN>
          <WWPN> Target WWPN </WWPN>
          <Port ID ="value"
              DataMiscompare="value"
              LinkFailure= "value"
              LossOfSync="value"
              LossOfSignal="value"
              InvalidCRC="value"
              Result="value" />
```

```
      </Target>
</HBA>
```

The <Target> sequence is repeated for each device attached to the adapter.

5.4.11 View Driver Settings (Command Line Option -FG)

The XML format for the current driver settings information is as follows:

```
<HBA>
   <ID Number="value" WWNN="value" WWPN="value" />
      <DriverSettings>
        <Info PersistentPlusNew="value"
          PersistentOnly="value"
          BindbyWWPN="value"
          BindbyPortID="value" />
      </DriverSettings>
</HBA>
```

5.4.12 Display All Information for One or All HBAs (Command Line Option -Z)

The XML format for all adapter information is more complicated than its non-XML counterpart because the tags cannot be repeated. In non-XML mode, SANsurfer FC CLI sequentially calls all the options in table 5-1, and each option is displayed in its standard output format. If each option displays its own XML output, the resulting display would have multiple duplicate tags.

Table 5-1. Options Displayed by -Z

Non-interactive Option	Description	Section
-G	Display system information	4.1
-C	Display HBA settings	4.2
-I	Display HBA information	4.3
-T	Display device list	4.4
-L	Display LUN list	4.5
-P	Target persistent binding	4.7
-M	Selective LUNs	4.8
-E	Boot device	4.9

The XML format for all adapter information is as follows:

```
<Host>
  <Name> Host Name </Name>
```

```
    <OSType> OS Type </OSType>
    <OSVersion> OS Version (and patches where applicable)
      </OSVersion>
    <HBA Number="value" WWNN="value" WWPN="value" />
      <NumOfHBA> Number of QLogic Fibre Channel HBA(s) detected
      </NumOfHBA>
    </Host>
  <HBA>
    <ID Number="value" WWNN="value" WWPN="value" />
    <GeneralInfo Number ="value"
           Model="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" />
    <Param ConnectionOption="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" PortID= "value" LunCount= "value"
    Type= "value" DeviceStatus= "value" />
    <LUN ID="value" WWULN="value" Vendor ="value"
      Product= "value" Revision= "value" Size= "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>
```

NOTE:

- The `<HBA>...</HBA>` sequence is repeated for each HBA.
- 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.

Notes

Appendix A
EBNF Format of Command Line

A.1 Example

The following text is an example of the EBNF command line format.

```
SANsurfer FC CLI
v1.06.14 Build 24
Copyright 2003-2004 QLogic Corp.
All rights reserved.
Command Line QLogic FC Host Bus Adapters

Usage: scli [-x -s -o ] [-g -c -i -t -l -z -n -p -b -r -d -m
-e -a -kl -kr -fg -fs -v]
            [-h -?] [-f] [ int ]
```

NOTE:

- Options -x,-s,-o can be combined with other options. However, they must be at the beginning or at the end of the command line.
- Option -f cannot be combined with any other options.
- The dash (-) character can be replaced with a slash (/) character, i.e. scli -g and scli /g are both valid commands.

Options:

```
[ int ]        - Starts interactive mode.
-g             - Displays the system information.

-c [ <all> ]   - Displays parameter settings for all HBAs.
-c ( <hba no> | <hba wwpn> )
               - Displays parameter settings for a specific HBA

-i [ <all> ]   - Displays all HBAs information.
-i ( <hba no> | <hba wwpn> )
               - Displays a specific HBA general information.
```

```
-t [ <all> ]   - Displays the target information on all HBAs.

-t ( <hba no> | <hba wwpn> )
               - Displays the target information on a specific
                 HBA

-t ( <hba no> | <hba wwpn> ) ( <target wwpn> | <target portid> )
               - Displays a specific target information on a
                 specific HBA.


-l ( <hba no> | <hba wwpn> )
               - Displays LUN information for all HBAs.

-l ( <hba no> | <hba wwpn> ) ( <target wwpn> | <target portid> )
               - Displays LUN information for a specific target

-l ( <hba no> | <hba wwpn> ) ( <target wwpn> | <target portid>
) <lun id>
               - Displays LUN information for a specific LUN on
                 a specific target.


-z ( <hba no> | <hba wwpn> | <all> )
               - Display all information for a specific HBA or
                 all HBAs.


-n ( <hba no> | <hba wwpn> ) { ( <param name> | <param alias> )
<param value> }
               - Sets the HBA's parameters.


-p ( <hba no> | <hba wwpn> ) ( view | ? )
               - Views current target persistent binding on a
                 specific HBA.

-p ( <hba no> | <hba wwpn> ) { <target wwnn> <target wwpn>
<target portid> <target id> }
               - Sets target persistent binding on a specific
                 HBA.

-p ( <hba no> | <hba wwpn> ) remove all
               - Removes all target persistent binding.

-p ( <hba no> | <hba wwpn> ) remove <target wwnn>
               - Removes a specific target persistent binding.
```

-b (<*hba no*> | <*hba wwpn*> | <*all*>) <*file name*>

- Updates the HBA's BIOS.

-b (<*hba no*> | <*hba wwpn*>) save <*file name*>

- Saves the HBA's BIOS to a file.

-r (<*hba no*> | <*hba wwpn*> | <*all*>) <*file name*>

- Update the HBA's NVRAM.

-r (<*hba no*> | <*hba wwpn*>) save <*file name*>

- Saves the HBA's NVRAM to a file.

-d <*file name*>

- Update driver to HBA(s) where <file name> is the full path of the driver oemsetup.inf file.

-m (<*hba no*> | <*hba wwpn*>) (view | ?)

- View the HBA 's selective LUN list

-m (<*hba no*> | <*hba wwpn*>) <*target wwnn*> <*target wwpn*> <*lun id*> (view | ?)

- View a LUN's selective state of specific device.

-m (<*hba no*> | <*hba wwpn*>) { <*target wwnn*> <*target wwpn*> <*lun id*> (0 | 1 | enable | disable) }

- Select/Unselect a LUN of a specific target on a specific HBA.

-e (view | ?)- View the boot device of all HBAs.

-e (<*hba no*> | <*hba wwpn*>) (view | ?)

- View the boot device of a specific HBA.

-e (<*hba no*> | <*hba wwpn*>) <*target wwnn*> <*target wwpn*> <*lun id*>

- Set a target as boot device on a specific HBA

-e (<*hba no*> | <*hba wwpn*>) (enable | 0 0 0)

- Set a default BIOS boot device on a specific HBA

-e (<*hba no*> | <*hba wwpn*>) disable

- Clear the boot device on a specific HBA.

-a (<*hba no*> | <*hba wwpn*>) (view | ?)

- View HBA's LED flashing status.

-a (<*hba no*> | <*hba wwpn*>)

```
                - Toggle the HBA's LED flashing state.

-kl ( <hba no> | <hba wwpn> ) [ { ( <param name> | <param alias> )
<param value> } ]
                - Run HBA diagnostics loopback test.
-fg ( <hba no> | <hba wwpn> ) ( view | ? )
                - View driver settings.

-fs ( <hba no> | <hba wwpn> ) { ( <param name> | <param alias> )
<param value> }
                - Configure driver settings.

-v              - Display version.

-h | -?         - Display usage help text.

-o <file name>- Specifies the output to a log file.

-f <file name>- Specifies command line input from file.

-x              - Specifies the output in XML format.

-s              - Silent mode.
```

Legends:

```
<hba no>        - HBA number.
<hba wwpn>      - HBA World Wide Port Name in the following
                  format:
                  xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxx.
<target wwnn>   - Target World Wide Node Name in the following
                  format:
                  xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxx.
<target wwpn>   - Target World Wide Port Name in the following
                  format:
                  xx-xx-xx-xx-xx-xx-xx-xx or xxxxxxxxxxxxxx.
<target portid>- Target Port ID in the following format:
```

```
                xx-xx-xx or xxxxxx.
<target id>    - Target ID.
<lun id>       - Logical Unit Number (0-255).
```

HBA Settings:

```
<param name>             - See column 1 - Table 1.
<param alias>            - See column 2 - Table 1.
<param value>            - See column 3 - Table 1.
```

Diagnostics Settings:

```
-exclude | -ex:- Specifies device by its wwpn to be excluded
                from read/write buffer test.
<param name>             - See column 1 - Table 2.
<param alias>            - See column 2 - Table 2.
<param value>            - See column 3 - Table 2.
```

Driver Settings:

```
<param name>             - See column 1 - Table 3.
<param alias>            - See column 2 - Table 3.
<param value>            - See column 3 - Table 3.
```

Parameter Name	Alias	Value	Description
ConnectionOption	CO	0-3	See note 1 below
DataRate	DR	0-2	See note 2 below
FrameSize	FR	512,1024,2048	
HardLoopID	HD	0-125	
aResetDelay	RD	0-60	
EnableBIOS	EB	0,1	See note 4 below
EnableHardLoopID	HL	0,1	See note 4 below
EnableFCTape	EF	0,1	See note 4 below
OperationMode	OM	0,5,6	See note 3 below
InterrrupDelayTimer	ID	0-255	
ExecutionThrottle	ET	1-256	
EnbleExtendedLogging	EL	0,1	See note 4 below
LoginReTryCount	LR	0-255	
EnableLipReset	LP	0,1	See note 4 below
PortDownRetryCount	PD	0-255	

EnableLIPFullLogin	FL	0,1	See note 4 below
LinkDownTimeOut	LT	0-255	
EnableTargetReset	TR	0,1	See note 4 below
MaximumLUNsPerTarget	ML	0,8,16,32,64,128,256	

Notes:

1. Connection Options: 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: 0 - 1Gbs, 1 - 2Gbs, 2 - Auto.
3. 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.
4. Others: 0 - Disable, 1 - Enable.

Table 1: HBA Configuration Settings

Parameter Name	Alias	Value	Description
DataPattern	DP	00-FF	See note 1 below
DataSize	DS	8,16,32,64	See note 2 below
TestCount	TC	0-10,000	See note 3 below
TestIncrement	TI	1-10,000	See note 4 below
OnError	OE	0-2	See note 5 below

Table 2: HBA Diagnostics Configuration Settings

Notes:

1. DataPattern: Test pattern in hex format.

Hex	Binary

```
                        00      00000000
                        55      01010101
                        5A      01011010
                        A5      10100101
                        AA      10101010
                        FF      11111111
                        Customized (00-FF).
                        Random.
2. DataSize:        Actual data that is transferred during any
                    given pass of the test.
3. TestCount:       0 - Test Continuously
                    1 to 10,000 - Total number of tests that
                    will be executed.
4. TestIncrement:   Must be less than the number of test count
                    specified.
5. OnError:         0 - Ignore , 1 - Stop, 2 - Loop on error.
Test Result:
      A)  Loopback test result:
          Test Status, CRC Error, Disparity Error, Frame Length
          Error.
      B)  Read/Write buffer test result:
          Loop ID/Status, Data Miscompare, Link Failure, Loss
          of Sync, Loss of Signal, Invalid CRC.
=============================================================
Parameter Name    Alias     Value            Description
=============================================================
PersistentOnly    PO   0,1,disable,enable  Present targets that
                                            are persistently
                                            bound only
PersistentPlusNew PN   0,1,disable,enable  Present targets that
                                            are persistently
                                            bound plus new
                                            targets
   BindWWPN       BW   0,1,disable,enable  Bind devices by
                                            WWPNs
   BindPortID     BP   0,1,disable,enable  Bind devices by Port
                                            IDs.

=============================================================
```

Table 3: Driver Settings

Notes