Emulex® Solaris FCA Utilities for OneConnect® Adapters

User Guide

Version 11.2
December 30, 2016

FCAUtil-OCA-UG112

Corporate Headquarters
San Jose, CA

Website
www.broadcom.com

Table of Contents

Chapter 1: Introduction

This document provides information for the Emulex® `brcmadm` Solaris Fibre Channel adapter (FCA) utility programs.

- `brcmadm` – Changes driver parameters through a local interactive or command line interface (CLI) mode. It can also update firmware on non-Oracle-branded devices.

1.1 Supported Drivers

The Emulex `brcmadm` utility program supports the following drivers:

- `elxfc` – Emulex distributed Fibre Channel over Ethernet (FCoE) Solaris driver (does not support Oracle-branded devices).
- `elxnic` – Emulex distributed Solaris network interface card (NIC) driver.

1.2 Abbreviations

API	application programming interface
CLI	command line interface
D_ID	destination identifier
ELS	Extended Link Service
FC	Fibre Channel
FCA	Fibre Channel adapter
FCIO	FC input/output
FCoE	Fibre Channel over Ethernet
FCP	Fibre Channel Protocol
FCTL	Fibre Channel transport library
GFC	gigabit Fibre Channel
HBA	host bus adapter
I/O	input/output
iSCSI	internet Small Computer Systems Interface
NIC	network interface card (or controller)
PCI	Peripheral Component Interconnect
SAN	storage area network
SFS	SAN Foundation Software
VPD	vital product data
WWN	World Wide Name
WWPN	World Wide Port Name

Chapter 2: Installing and Removing the Utilities

This chapter provides the procedures for installing and removing the FCA utilities.

2.1 Supported Operating Systems

The following operating systems are supported:

- Solaris 10.13 (x64)
- Solaris 11.2 (x64)
- Solaris 11.3 (x64)

2.2 Supported Adapters

The FCA utilities support the following Broadcom OneConnect® CNAs:

- OCe11000-series adapters
- OCe14000-series adapters

2.3 Installing the Utilities for the Solaris 10 Operating System

The `brcmadm` utility is bundled into abrcmxu utilities package. Two options are available for installing the brcmxu utilities package:

- Using the `brcmxu_install` script – See Section 2.3.1, Installing the Utilities Using the brcmxu_install Script.
- Manually, by using `pkgadd` – See Section 2.3.2, Installing the Utilities Manually.

NOTE For additional information on installing and removing packages, refer to the Solaris system administration documentation and the `pkgadd(1M)` and `pkgrm(1M)` man pages, which are available on the Oracle website.

2.3.1 Installing the Utilities Using the brcmxu_install Script

NOTE Although it is possible to install brcmxu onto one or more clients from a server, that procedure is not covered in this document (see the Solaris documentation on the Oracle website for more information).

Before installing the `brcmxu` utilities package, you must install the Solaris 10 Update 13 operating system with Oracle- patches and version 11.2 of the `elxfc` or `elxmc` out-of-box driver for Solaris. To install the `brcmxu` utilities package using the `brcmxu_install` script:

1. Log in as `root`, or `su` to root.
2. Copy the `brcmxu` utilities package from your distribution medium into a directory. The `brcmxu` utilities package is a tar file, with a naming convention similar to the following:

   `brcmxu_kit-<version>-i386.tar`

3. Change to the directory of the tar file:

   ```
   cd <directory>
   ```

4. Extract the `brcmxu_install` script from the tar file:

   ```
   tar xf brcmxu_kit-<version>-i386.tar brcmxu_install
   ```

5. Install the `brcmxu` utilities package:

   ```
   brcmxu_install
   ```

   If an earlier version of the `brcmxu` utilities package is not found, a message is displayed indicating this, and you can skip to step 7. Otherwise, the script begins removing any earlier version of the `emlxu` utilities package, and the following message is displayed:

   ```
   <Removing old BRCMbrcmu package>
   ```

6. If an earlier version of the `brcmxu` utilities package is installed, you are prompted to remove it:

   ```
   Do you want to remove this package? [y,n,?,q]
   ```

   Type `y,` and press Enter. The following message is displayed:

   ```
   Removal of <BRCMbrcmu> was successful.
   ```

7. The script expands the new tar file and begins installing the brcmxu utilities package. The following message is displayed:

   ```
   <Expanding brcmxu_kit-<version>-i386.tar>
   <Adding new package>
   ```

   The package is prepared for installation, and you are prompted to confirm its installation:

   ```
   Do you want to continue with the installation of <BRCMbrcmu> [y, n,?]:
   ```

   Type `y`, and press Enter. The installation progress is indicated.

8. Examine the output for any errors or warnings. If the installation is successful, the following message is displayed near the end of the process:

   ```
   Installation of <BRCMbrcmu> was successful.
   ```

9. The script performs some cleanup and the following messages are displayed:

   ```
   <Cleaning directory>
   <brcmxu_install complete>
   <Execute "brcmxu_remove" when ready to uninstall>
   ```

   The script copies the `brcmxu_remove` script into the working directory with the original brcmxu utilities package tar file. You can use the `brcmxu_remove` script later when you want to remove the brcmxu utilities from your system. See Section 2.5, Removing the Utilities for the Solaris 10 Operating System, for more details. You can also delete the `brcmxu_remove` script.

   The brcmxu utilities installation is complete. The brcmxu utilities package programs are located in the `/opt/BRCMbrcmu/bin` directory.

10. You do not need reboot the system to run a utility program, but you must either enter the full path name of the program, or add the package bin directory (`/opt/BRCMbrcmu/bin`) to the system environment search path.

2.3.2 Installing the Utilities Manually

To install the utilities package manually:

1. Log in as `root`, or `su` to root.
2. Copy the brcmxu utilities package from your distribution medium into a directory. The brcmxu utilities package is a tar file, with a naming convention similar to the following:

   ```
   brcmxu_kit-<version>-i386.tar
   ```

3. Go to the directory of the tar file:

   ```
   cd <directory>
   ```

4. Extract the `brcmxu_install` script from the tar file:
   ```
   tar xvf brcmxu_kit-<version>-i386.tar
   ```
5. Install the BRCMbrcmu utilities package:
   ```
   pkgadd -d . BRCMbrcmu
   ```
6. The package is prepared for installation, and you are prompted to confirm its installation:
   ```
   Do you want to continue with the installation of <BRCMbrcmu> [y,n,?]
   ```
   Type `y,` and press Enter. The installation progress is indicated.
7. Examine the output for any errors or warnings. If the installation is successful, the following message is displayed near the end of the process:
   ```
   Installation of <BRCMbrcmu> was successful.
   ```
   The brcmxu utilities installation is complete. The utility package's programs are located in the `/opt/BRCMbrcmu/bin` directory.
8. You do not need to reboot the system to run a utility program, but you must either enter the program full path name or add the package bin directory (`/opt/BRCMbrcmu/bin`) to the system environment search path. To use the man pages provided by the package, you must also add the package man directory (`opt/BRCMbrcmu/man`) to the system environment's man path.

2.4 Installing the Utilities for the Solaris 11 Operating System

NOTE

- Do not install the Solaris FCA Utility Kit (`brcmxu`) from the `p5p` bundle or IPS repository on any host that has the OneCommand® CNA Manager application installed. Remove the OneCommand CNA Manager kit before installing `brcmxu` using `p5p`. If you want to run both the OneCommand CNA Manager and `brcmxu`, use the combined installation kit.

For additional information on installing and removing packages, refer to the Solaris system administration documentation and the `pkgadd(1M)` and `pkgrm(1M)` man pages, which are available on the Oracle website.

2.4.1 Scripted Installation

1. Log in as `root`, or `su` to root.
2. Download the `p5p` tar file from the Broadcom website.
3. Untar the archive:
   ```
   $ tar -xvf brcmxu_p5p-<version>.tar
   ```
4. Run the installation script:
   ```
   $ ./brcmxu_install
   ```

2.4.2 Manual Installation

1. Log in as `root`, or `su` to root.
2. Download the p5p tar file from the Broadcom website.
3. Extract the p5p archive from the tar file:
   ```
   $ tar -xvf brcmxu_p5p-<version>.tar
   ```

4. Run the following command to install the package:

```
$ pfexec pkg install –g brcmxu_<version>.p5p brcmxu
```

5. Reboot the system:

```
$ reboot
```

2.5 Removing the Utilities for the Solaris 10 Operating System

Three options are available for removing the brcmxu utilities package:

- Using the brcmxu_install script – Removes any previous versions of the brcmxu utilities package before installing the latest brcmxu utilities package. See Section 2.3.1, Installing the Utilities Using the brcmxu_install Script.
- Using the brcmxu_remove script – Removes all brcmxu files. See Section 2.5.1, Removing the Utilities Using the brcmxu_remove Script.
- Manually, by using pkgrm – Removes all brcmxu files. See Section 2.5.2, Removing the Utilities Manually.

2.5.1 Removing the Utilities Using the brcmxu_remove Script

To remove all brcmxu files using the brcmxu_remove script:

1. Log in as root, or su to root.
2. If you are in the directory of the brcmxu_remove script, go to step 4. Otherwise, go to the directory where the original brcmxu utilities package tar file is located:

```
cd <directory>
```

3. Extract the brcmxu_remove script from the brcmxu utilities package tar file:

```
tar xf brcmxu_kit-<version>-i386.tar brcmxu_remove
```

4. Run the brcmxu_remove script:

```
brcmxu_remove
```

   The brcmxu_remove script locates the BRCMbrcmu package, and the following message is displayed:

```
<Removing BRCMbrcmu package>
```

5. If an brcmxu utilities package is not found, a message is displayed indicating this, and you can skip to step 7. Otherwise, you are prompted to remove the package:

```
Do you want to remove this package? [y,n,?,q]
```

   Type y, and press Enter. The following message is displayed:

```
Removal of <BRCMbrcmu> was successful.
```

6. The script performs cleanup, and the following messages are displayed:

```
<Removing brcmxu scripts>
<brcmxu_remove complete>
```

   The utilities package has been removed.

7. If you want to install another version of the brcmxu utilities package, follow the instructions provided in one of the following sections:
   - Section 2.3, Installing the Utilities for the Solaris 10 Operating System.
   - Section 2.7, Updating the Utilities.

2.5.2 Removing the Utilities Manually

To manually remove the BRCMbrcmu utilities package:

1. Log in as root, or su to root.
2. Run the package removal command:
   ```
   pkgrm BRCMbrcmu
   ```
3. You are prompted to confirm the package removal:
   ```
   Do you want to remove this package? [y,n,?,q]
   ```
   Type y, and press Enter. The package is prepared for removal.
4. You are prompted again for confirmation:
   ```
   Do you want to remove this package? [y,n,?,q]
   ```
   Type y, and press Enter. The following message is displayed:
   ```
   Removal of <BRCMbrcmu> was successful
   ```

2.6 Removing the Utilities for the Solaris 11 Operating System

2.6.1 Manual Removal

Run the following command to remove brcmxu from the system:

```
$ pkg uninstall brcmxu
```

2.6.2 Scripted Removal

Run the following command to remove brcmxu from the system:

```
$ ./brcmxu_remove
```

2.7 Updating the Utilities

2.7.1 For the Solaris 10 Operating System

Two options are available for updating the utilities package:

- Using the brcmxu_install script – Follow the procedure in Section 2.3.1, Installing the Utilities Using the brcmxu_install Script. In this procedure, if an earlier version of the brcmxu utilities package is installed, you are prompted to remove it before installing the newer version.
- Manually – First, manually remove the existing BRCMbrcmu utilities package as detailed in Section 2.5.2, Removing the Utilities Manually. Then, manually install the newer BRCMbrcmu utilities package as detailed in Section 2.4, Installing the Utilities for the Solaris 11 Operating System.

2.7.2 For the Solaris 11 Operating System

Follow either the script or the manual procedure in Section 2.4, Installing the Utilities for the Solaris 11 Operating System.

Chapter 3: Using the brcmadm Utility

The `brcmadm` utility changes driver parameters through a local interactive or CLI mode. It can also update firmware on non-Oracle-branded devices. The `brcmadm` utility is a direct user interface to the FC input/output (FCIO) interface provided by the Oracle StorEdge SAN Foundation Software (SFS). The FCIO interface provides an Oracle common ioctl interface to the Fibre Channel transport library (FCTL) driver, which manages the FCA drivers for each FCoE adapter attached to the host system.

The `brcmadm` utility program runs in two modes:

- Interactive mode (see Section 3.1, Interactive Mode of Operation for brcmadm)
- CLI mode (see Section 3.2, CLI Mode of Operation for brcmadm)

NOTE The OneCommand CNA Manager application provides the same functions as `brcmadm`, and a number of additional ones on multiple systems, through a choice of a graphical user interface and a scriptable command line interface.

To change driver parameters using the OneCommand CNA Manager application, refer to the *OneCommand CNA Manager Application for OneConnect Adapters User Guide* or the *OneCommand CNA Manager Command Line Interface for OneConnect Adapters User Guide*.

3.1 Interactive Mode of Operation for brcmadm

To run the `brcmadm` utility in interactive mode, type `brcmadm` without any command line arguments. For example:

```
# brcmadm
```

3.1.1 Displaying Available Emulex Adapters

After the `brcmadm` utility is started, it scans the host system and prepares a list of qualified adapter ports, which are devices that are attached to the `elxfc` or `elxnic` driver. After each list number, the adapter type of stack and type of driver is displayed. For example:

```
Available Emulex HBA's:

1. SFS:elxfc2      :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,2/fp
@0,0 (CONNECTED)
2. SFS:elxfc3      :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,3/fp
@0,0 (CONNECTED)
3. NIC:elxnic0     :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0
(CONNECTED)
4. NIC:elxnic1     :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,1
(CONNECTED)

Enter an HBA number or zero to exit:
```

In this example, six adapter ports are available. For each adapter, the type of stack is indicated. The three types are:

- SFS – The Oracle SFS stack
- NIC – The Oracle networking stack

After the available adapter list is displayed, you are prompted to choose one of the available adapter ports by entering its list number, or you can type `0` or `zero` to exit.

3.1.2 Selecting an Adapter Port Attached to an SFS Stack

If you select an adapter port that is attached to an SFS stack, the `brcmadm` utility displays a list of available commands. For example, if you enter 1 from the example in Section 3.1.1, Displaying Available Emulex Adapters, the `brcmadm` utility displays the following:

```
HBA 1:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,2/fp
@0,0

Available commands:          [FCIO rev2]

get_num_devs                 - Returns the number of FC devices seen by this HBA.
get_dev_list                 - Returns a list of FC devices seen by this HBA.
get_logi_params <wwpn>       - Returns the login paramters for a specified FC
device.
get_host_params              - Return the host parameters.
get_sym_pname                - Returns the symbolic port name of a device.
set_sym_pname <string>       - Sets the symbolic port name for a device.
get_sym_nname                - Returns the symbolic node name of a device.
set_sym_nname <string>       - Sets the symbolic node name for a device.
dev_login <wwpn>             - Performs an FC login to a device.
dev_logout <wwpn>            - Performs an FC logout to a device.
get_state <wwpn>             - Returns current SFS state of a specified device.
dev_remove <wwpn>            - Remove the FC device from SFS management.
link_status <d_id>           - Request link error status from a specified D_ID.
get_fcode_rev                - Returns the current Fcode revison of the HBA.
download_fcode [filename]    - Download the HBA fcode.
get_fw_rev                   - Returns the current firmware revison of the HBA.
download_fw [filename]       - Download the HBA firmware.
get_boot_rev                 - Returns the current boot revison of the HBA.
get_phy_attrs                - Returns the current PHY attributes for the HBA.
download_boot [filename]     - Download the HBA boot image.
get_dump_size                - Returns the HBA's firmware core dump size.
force_dump                   - Force a firmware core dump on this HBA.
get_dump [-h]                - Saves firmware core dump to a file.
get_topology                 - Returns the current FC network topology.
reset_link [wwpn]           - Resets the link of a specified public loop FC device.
reset_hard                   - Reset the HBA.
diag ...                     - Perform a diagnostic test on the HBA.
ns                          - Performs a complete query of the fabric name server.
parm_get_num                - Returns the total number of configurable parameters.
parm_get_list                - Returns a list of configurable parameters.
parm_get <label>             - Gets the value of a specified parameter in the
driver.
```

```
parm_set <label> <val>      - Sets the value of a specified parameter in the
driver.
msgbuf [all], <number> [-i interval] - Returns the driver's internal message log.
get_host_attrs              - Returns the host adapter and port attributes.
get_port_attrs <index>, <wwn>, all   - Returns the port attributes.
get_path <index>            - Returns the adapter path.
get_vpd                     - Returns the adapter's Vital Product Data (VPD).
boot_code [enable, disable] - Sets or shows the boot code state in this HBA.
get_rnid [wwpn]             - Gets the RNID information for local or specified
port.
get_inst                    - Gets the driver instance.
get_phy_attrs                 - Returns the current PHY attributes for the
HBA.(CNAs only)
set_throttle                  - Temporarily sets the I/O queue depth for a
specified remote
                              port.
get_throttle                - Gets the I/O queue depth for all remote ports.
q                           - Exits this program.
h                           - Returns this help screen.
hba                         - Select another hba.
p                           - Repeat previous command.

brcmadm>
```

3.1.3 Selecting an Adapter Port Attached to a NIC Stack

If you select an adapter port that is attached to a NIC stack, the `brcmadm` utility presents a list of available commands. For example, if you enter 2 from the example in Section 3.1.1, Displaying Available Emulex Adapters, the `brcmadm` utility displays the following:

```
HBA 3:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0
(physical port)

Available commands:                                              [NIC rev1]

        get_hba_attrs                       - Returns the current control
attributes for the HBA.
         get_linkinfo                       - Returns the current link status
information for the HBA port.
          get_fw_rev                      - Returns the current firmware revison
of the HBA.
          download_fw [filename]            - Download the HBA firmware.
        get_phy_attrs [filename]          - Returns the current PHY attributes
for the HBA.
                  q                         - Exits this program.
                  h                         - Returns this help screen.
                hba                         - Select another hba.
                  p                         - Repeat previous command.

Available commands:      [NIC rev1]

get_hba_attrs           - Returns the current control attributes.
get_linkinfo            - Returns the current link status information.
```

```
get_fw_rev              - Returns the current firmware revision of the HBA.
download_fw [filename]  - Download the HBA firmware.
get_phy_attrs           - Returns the current firmware revision of the adapter.
q                       - Exits this program.
h                       - Returns this help screen.
hba                     - Select another HBA.
p                       - Repeat previous command.

brcmadm>
```

3.1.4 Entering brcmadm Commands

After the available commands are listed, the `brcmadm>` prompt is displayed. From this point, the utility is prompt driven. When the prompt is displayed, you can enter one of the commands in the list. For example, you can display the list of available commands at anytime by typing `h` (the help screen) at the prompt:

```
brcmadm> h
```

For some commands, you may have optional or required arguments. If a command requires an argument, but is entered without the argument, a usage statement is returned to indicate that the command requires an argument or arguments. For example, the `get_state` command requires a World Wide Port Name (WWPN) for the target device. Therefore, if you type only `get_state`:

```
brcmadm> get_state
```

The `brcmadm` utility returns:

```
Usage: get_state <wwpn>
```

Therefore, you must include the <*wwpn*> argument for the get_state command to receive a valid response. For example:

```
brcmadm> get_state 10000090fa701419
```

The `brcmadm` utility can now run the command and display the state:

```
State: Logged_In
```

3.1.5 Exiting brcmadm

To exit (quit) the `brcmadm` utility, type `q` at the prompt:

```
brcmadm> q
```

3.2 CLI Mode of Operation for brcmadm

Two options are available to run `brcmadm` in a CLI mode:

- Device path option (see Section 3.2.1, Device Path Option in CLI Mode)
- Instance option (see Section 3.2.2, Instance Option in CLI Mode)

3.2.1 Device Path Option in CLI Mode

In this CLI mode option, type `brcmadm`, the device path, followed by a valid command, and its command arguments (if applicable).

Syntax e

```
brcmadm <device path> [-y] <cmd> [cmd_option(s)]
```

Arguments

device path	Specifies the full device name for a single adapter or a pattern string for multiple adapters. If the pattern string matches any part of an adapter device path, the command runs on that adapter.
`-y`	If the [`-y`] option is included, the `brcmadm` utility runs immediately without pausing for a verification from the user to continue. If the [`-y`] option is absent, the `brcmadm` utility pauses for a verification from the user before running the command.
cmd	An `brcmadm` command. See Table 1, Summary for `brcmadm` Commands.
cmd_option(s)	Various `brcmadm` command arguments, if applicable.

3.2.1.1 Device Path Option for a Single Adapter

When using the device path option for single adapters, the <*device path*> parameter must be the full device name for the single adapter.

Running a Command with User Verification

In this example, the `brcmadm` utility pauses for verification before running the command. Type `brcmadm`, the full device name (`/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,2/fp@0,0:devctl`), the command (`get_state`), and its <*wwpn*> argument (`10000090fa701419`):

```
 #brcmadm
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,2/fp@0,0:devctl  get_state  10000090fa701419
```

The `brcmadm` utility returns some status, but it pauses for a response before running the command:

```
 HBA 1:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,2/fp@0,0

State: Logged_In
```

Running a Command without User Verification (Using [-y])

If you do not want the `brcmadm` utility to pause for verification before running the command, include the `-y` option after the full device name. For example, if you type `brcmadm`, the `-y` option, the full device name, the command, and its argument, the `brcmadm` utility runs the command immediately:

```
brcmadm
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,2/fp@0,0:devctl  -y get_state  10000090fa701419

HBA 1:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,2/fp@0,0
State: Logged_In
```

3.2.1.2 Device Path Option for Multiple Adapters

When using the device path option for multiple adapters, use a pattern string for the <*device path*> parameter. If the pattern string matches any part of an adapter device path, the command runs on that adapter.

Running a Command with User Verification

In this example, the `brcmadm` utility pauses for verification before running the command.

Type `brcmadm`, the pattern string "`pci10df,e800@0,2`", and the command `get_num_devs`:

```
 #brcmadm  "pci10df,e800@0,2"  get_num_devs

HBA 1:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,2/fp@0,0

There are 1 devices reported on this port.
```

Running a Command without User Verification (Using [-y])

If you do not want the `brcmadm` utility to pause for verification before running the command, include the `-y` option after the pattern string. For example, if you type `brcmadm`, the `-y` option, the pattern string, and the command, the `brcmadm` utility runs the command immediately:

```
 #brcmadm  "pci10df,e800@0,3"  -y get_num_devs

HBA 1:
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@
0,3/fp@0,0

There are 1 devices reported on this port.
```

3.2.2 Instance Option in CLI Mode

This CLI mode option enables you to use the `brcmadm` utility as part of a script or another program capable of running system-level calls.

Syntax

`brcmadm -i<N, SFS, or all> [-y] <cmd> [cmd_option(s)]`

Arguments

`N`	Indicates a specific elxfc driver instance. For example, N=1 means "elxfc1", N=2 means "elxfc2", and N=2.1 means "elxfc2.1".
`SFS`	Indicates all elxfc driver instances that are attached to the Oracle SFS interface.
`all`	Indicates all elxfc driver instances.
`-y`	If the [`-y`] option is included, the `brcmadm` utility runs immediately. It does not pause for verification to continue. If the [`-y`] option is absent, the `brcmadm` utility pauses for verification before running the command.
cmd	An `brcmadm` command. See Table 1, Summary for `brcmadm` Commands.
cmd_option(s)	Various `brcmadm` command arguments, if applicable.

3.2.3 Using brcmadm help for Command Usage in CLI Mode

The `brcmadm` utility offers help for command usage in CLI mode. To invoke a usage help screen, type `brcmadm help` at the prompt. The CLI mode usage screen is displayed as follows:

USAGE: brcmadm :Runs utility in interactive mode.

or

`brcmadm -v`

or

brcmadm -i<N, SFS, or all> [-*y*] <*cmd*> [*cmd_option(s)*]

or

brcmadm -j<N, SFS, or all> [-*y*] <*cmd*> [*cmd_option(s)*]

or

brcmadm -n<N or all> [-*y*] <*cmd*> [*cmd_option(s)*]

or

brcmadm -m<N or all> [-*y*] <*cmd*> [*cmd_option(s)*]

or

brcmadm <device_path> [-*y*] <*cmd*> [*cmd_option(s)*]

OPTIONS:

-v	Display utility version information.
-i<*N*>	Executes command on a specific elxfc driver instance.(Example: N=2 for elxfc2 or N=2.1 for elxfc2.1)
-iSFS	Executes command on all SFS elxfc driver instances.
-iall	Executes command on all elxfc driver instances.
-j<*N*>	Executes command on a specific elxfc driver instance.(Example: N=2 for elxfc2 or N=2.1 for elxfc2.1)
-jSFS	Executes command on all SFS elxfc driver instances.
-jall	Executes command on all elxfc driver instances.
-m<*N*>	Executes command on a specific elxnic driver instance.(Example: N=2 for elxnic2 or N=5 for elxnic5)
device_path	If a full device path is not specified, then the command will be executed on all device paths containing the specified device_path string.
-y	If multiple devices are found, the utility will ask for verification before executing the command on each device. This option will cause the utility to skip the verification and automatically execute the command on each device.

3.3 Command Descriptions for brcmadm

This section provides a list of commands and descriptions that can be issued with the `brcmadm` utility. The following table summarizes this command list, including abbreviated descriptions.

Table 1 Summary for `brcmadm` Commands

Command Syntax	Description	Page
`boot_code [enable, disable]`	Sets or shows the boot code state of the current adapter.	19
`dev_login <wwpn>`	Performs an Fibre Channel (FC) login to an FCoE device on the network, if not already logged in.	20
`dev_logout <wwpn>`	Performs an FC logout to an FCoE device on the network, if not already logged out.	20
`dev_remove <wwpn>`	Removes the specified FCoE device from Solaris SFS management.	20

`diag...`	Performs a diagnostic test on the adapter. Two formats are available:
	`diag <test [parameters]>`
	Performs a diagnostic test on the adapter port specified by an Emulex-specific test and its parameters (if applicable).
	`diag code <cmd_code>`
	Performs a diagnostic test on the adapter port specified by a diagnostic command code (in hexadecimal). This command provides generic support to issue an adapter-specific diagnostic code to any third-party adapter.
		20
		
		21

`download_fw <filename>`	Downloads the specified firmware image file to the adapter.	21
`force_dump`	Forces a firmware core dump on the adapter.	22
`get_boot_rev`	Returns the current boot revision of the adapter.	22
`get_dev_list`	Returns a list of FCoE devices currently seen by this adapter port.	22
`get_dump [-h]`	Saves the firmware core dump to a file.	23
`get_dump_size`	Returns the adapter's firmware core dump size.	23
`get_fcode_rev`	Returns the current FCode version of the adapter.	23
`get_fw_rev`	Returns the current firmware version of the adapter.	23
`get_hba_attrs`	Returns the current control attributes for the adapter.	23
`get_host_attrs`	Displays all of the current host adapter API attributes.	24
`get_host_params`	Returns the FC login parameters of this adapter port.	25
`get_inst`	Returns driver instance for this adapter port.	26
`get_linkinfo`	Returns the current link status information for the adapter port.	26
`get_logi_params <wwpn>`	Returns the FC login common service parameters for a specified FCoE device on the network.	26
`get_num_devs`	Returns the number of FCoE devices currently seen by this adapter port.	21
`get_path <index>`	Shows the current Solaris device path for a specified adapter port. The total number of ports available can be seen in the "Number of HBA ports" attribute displayed using the `get_host_attrs` command. The <*index*> argument is an index into this list.	27
`get_phy_attrs`	**NOTE** Shows the current PHY module attributes of the adapter.	27
`get_port_attrs <index>, <wwn>, all`	Shows the current adapter API port attributes. All of the ports' attributes can be displayed, or a single port can be specified by <*index*> or <*wwn*>. The total number of ports available can be seen in the "Number of Discovered Ports" attribute displayed using the `get_host_attrs` command. The <*index*> argument is an index into this list.	28
`get_rnid [wwpn]`	Returns the request node identification data information for the local or specified port.	29

Table 1 Summary for `brcmadm` Commands (Continued)

Command Syntax	Description	Page
`get_state <wwpn>`	Returns the current Solaris SFS state of the specified FCoE device on the network.	29
`get_sym_nname`	Returns the symbolic FCoE node name of the adapter port. **NOTE** This operation is not supported by the Solaris SFS stack.	29
`get_sym_pname`	Returns the symbolic FCoE port name of the adapter port. **NOTE** This operation is not supported by the Solaris SFS stack.	29
`get_throttle`	Returns the I/O queue depth of all remote ports.	30
`get_topology`	Returns the FCoE network topology of the adapter port.	30
`get_vpd`	Shows the current adapter's vital product data.	30
`h`	Returns the help screen, that is, it lists the available commands.	31
`hba`	Allows you to select another adapter with which to interface, which prevents you from having to exit and reenter the program.	32
`link_status <d_id>`	Requests and returns the current link error status from the FCoE device specified by the D_ID address.	32
`msgbuf [all], <number> [-i interval]`	This command displays the current driver log, with various options.	33
`ns`	Performs and returns a complete query of the fabric name server.	34
`p`	Repeats the last command.	34
`parm_get <label>`	Retrieves the value of a specified parameter in the driver.	35
`parm_get_list`	Returns a list of configurable parameters.	35
`parm_get_num`	Returns the total number of configurable parameters.	34
`parm_set <label> <value>`	Sets the value of a specified parameter in the driver. Only dynamic parameters can be set.	38
`q`	Exits (quits) the utility program.	38
`reset_hard`	Forces the adapter to perform a hardware reset.	39
`reset_link <[wwpn] or 0>`	If the [*wwpn*] parameter is specified, this command resets the link of the specified FCoE device on the network. If `0` (zero) is specified, this command resets the local link.	39
`set_sym_nname <"string">`	Sets the symbolic FCoE node name of the adapter to the string provided. **NOTE** This operation is not supported by the Solaris SFS stack.	39
`set_sym_pname <"string">`	Sets the symbolic FCoE port name of the adapter to the string provided. **NOTE** This operation is not supported by the Solaris SFS stack.	39
`set_throttle`	Temporarily sets the I/O queue depth for a specified remote port.	40

3.3.1 boot_code [enable, disable]

Shows or sets the boot code state of the current adapter.

Examples

To show the current boot code:

```
brcmadm> boot_code
Boot code: Disabled
```

To enable the boot code:

```
brcmadm> boot_code enable
Boot code: Enabled
```

To disable the boot code:

```
brcmadm> boot_code disable
Boot code: Disabled
```

3.3.2 dev_login <wwpn>

Performs an FC login to an FCoE device on the network, if it is not already logged in.

Example

```
brcmadm> dev_login 21000020371938fa
Done.
```

3.3.3 dev_logout <wwpn>

Performs an FC logout to an FCoE device on the network, if not already logged out.

Example

```
brcmadm> dev_logout 21000020371938fa
Done.
```

3.3.4 dev_remove <wwpn>

Removes the specified FCoE device from Solaris SFS management.

3.3.5 diag <test [parameters]>

Performs the diagnostics function on the adapter port. This command provides support for Emulex-specific tests.

<test [parameters]>

`emlx_biu [`*pattern*`]`	Performs the bus interface unit test. The [*pattern*] parameter is a 4-byte hexadecimal pattern to be used for the test (for example, 0xA5A5A5A5).
`emlx_echo <`*did*`> [`*pattern*`]`	Performs the echo test to a specified port ID. The [*pattern*] parameter is a 4-byte hexadecimal pattern to be used for the test (for example, 0xA5A5A5A5).
`emlx_post`	Performs the power-on self-tests.

Examples

Performs the bus interface unit test:

```
brcmadm> diag emlx_biu
Result: EMLX_DIAG_BIU: Operation successful.
```

Performs the echo test to a <did>=fffffc:

```
brcmadm> diag emlx_echo fffffc
Result: EMLX_DIAG_ECHO: Operation successful.
```

Performs the power-on self-tests:

```
brcmadm> diag emlx_post
Result: EMLX_DIAG_POST: Operation successful.
```

3.3.6 diag code <cmd_code>

Performs a diagnostic test on the adapter port specified by a diagnostic command code (in hexadecimal format). This command provides generic support to issue an adapter-specific diagnostic code to any third-party adapter.

NOTE The return status from the adapter is displayed in decimal and hexadecimal format if the diagnostic command code is valid for the adapter. No interpretation of the return status is provided.

Examples

```
brcmadm> diag code 0x4526
Result: CODE(0x4526): 16 (0x10)
```

3.3.7 download_fw <filename>

NOTE Downloads the specified firmware image file to the adapter

Example

```
brcmadm> download_fw  oc14-11.2.1157.4.ufi

Non-OBJ file type

redboot op_type
Image Components: BE4 UFI type  size=16777392

Current: Firmware: 10.0.803.23
New:     Firmware: 11.2.1157.4  16777392 (0x10000b0) bytes

Are you sure you want to download this image? (y or n): y

Download may take several minutes. Do not interrupt.

Downloading...

Done.

NOTE: This firmware download requires the process to be
      performed twice. You must reboot the system and
      download the same firmware a second time to complete
      the download process.

brcmadm>
```

3.3.8 force_dump

Forces a firmware core dump on the adapter.

Example

```
brcmadm> force_dump
Done.
```

3.3.9 get_boot_rev

Returns the current boot revision of the adapter.

Example

```
brcmadm> get_boot_rev

Boot revision: OCe14102-UM 10.0.803.23
```

3.3.10 get_dev_list

Returns a list of FCoE devices currently seen by this adapter port.

Example

```
brcmadm> get_dev_list

There are 1 devices reported on this port.
------------------------------------------------
Device 0:
          Dtype: 0
FC4_type[proto]: 0x00000120, 0x00000000, 0x00000000, 0x00000000, 0x00000000,
0x00000000, 0x00000000, 0x00000000
          State: Logged_In
           D_id: 360442
           LILP: 0
      Hard Addr: 0
           WWPN: 10000090fa701419
           WWNN: 20000090fa701419
```

3.3.11 get_dump [-h]

Saves the firmware core dump to a file.

Example

Result if a valid dump exists in the driver memory:

```
brcmadm> get_dump -h
   Core size: 6580624 bytes
       files: 2
    TXT file: 13728
    DMP file: 6566876
Result if a valid dump does not exist in the driver memory:
brcmadm> get_dump -h
No core file available.
```

3.3.12 get_dump_size

Returns the adapter firmware core dump size.

Example

Result if a valid dump exists in the driver memory:

```
brcmadm> get_dump_size
Size: 6580624 (0x646990) bytes
```

Result if a valid dump does not exist in the driver memory:

```
brcmadm> get_dump_size
Size: 0 (0x0) bytes
```

3.3.13 get_fcode_rev

Returns the current FCode revision of the adapter.

Example

```
brcmadm> get_fcode_rev

FCODE revision: OCe14102-UM none
```

3.3.14 get_fw_rev

Returns the current firmware version of the adapter.

Example

```
brcmadm> get_fw_rev

Firmware revision: OCe14102-UM 10.0.803.23
```

3.3.15 get_hba_attrs

Returns the current control attributes for the adapter.

Example

```
brcmadm> get_hba_attrs

HBA:

     Flash ROM Version: SE HBA ATTR VER:0000.0001
          Manufacturer: Emulex Corporation
         Support Modes: NIC,FCOE_INI,FCOE_TGT,0
       SEEPROM Version: 6.6
         IOCTL Version: 0x00012345
         EP Fw Version: 0x00897654
          NCSI Version: ???????????
  Def Extended Timeout: 0
                 Model: OCe14102-UM
           Description: Emulex OneConnect OCe14102-UM 10GbE 2-Port SFP+ PCIe 3.0
Univer
```

```
         Serial Number: FC41382165
            IP Version: IPv4
      Firmware Version: 10.0.803.23
          BIOS Version: 10.0.803.23
       REDBOOT Version: 2.0.281.768
        Driver Version:
Flash Firmware Version: 10.0.803.23
   Functions Supported: 0
        Max CDB Length: 0
         ASIC Revision: Unknown(10)
     Generational GUID:
        HBA Port Count: 0
  Multifunction Device: True
         iSCSI Version: 11
   Def Linkdown Timout: 0
         Physical Port: 0
 Max Domains Supported: 10
           HBA Status: Operational
          Cache Valid: True
              HBA MTU: 8342 9200 8342 40965 0 0 0 0
  Firmware Post Status: 0xC000
       iSCSI Features: LIST_MODE,0
        PCI Vendor ID: 0x10df
        PCI Device ID: 0x0720
     PCI SubVendor ID: 0x10df
     PCI SubDevice ID: 0xe800
       PCI Bus Number: 5
    PCI Device Number: 0
   PCI Function Number: 0
        Interface Type: 0
    Unique Identifier: 0
          Net Filters: 0

brcmadm>
```

3.3.16 get_host_attrs

Displays all of the current host adapter API attributes.

Example

```
brcmadm> get_host_attrs

Host:

    Manufacturer              = Emulex
    Serial Number             = FC41382165
    Model                     = OCe14102-UM
    Model Description         = Emulex OneConnect OCe14102-UM 10GbE 2-Port SFP+
PCIe 3.0 Universal CNA
    Node WWN                  = 20000090fa701419
   Node Symbolic Name        = Emulex OCe14102-UM FV10.0.803.23 DV11.2.1115.0 HN:
OS:Solaris 11
    Hardware Version          = 3
```

```
    Driver Version             = 11.2.1115.0 (2016.10.03.15.34)
    Optional ROM Version       = Boot:10.0.803.23
    Firmware Version           = OCe14102-UM 10.0.803.23
    Vendor Specific ID         = 72410df
    Number of HBA ports        = 1
    Driver Name                = elxfc

    Last Change                = 0
    fp Instance                = 1a
    Node WWN                   = 20000090fa701419
    Port WWN                   = 10000090fa701419
    Port Fc Id                 = 360442
    Port Type                  = Nport
    Port State                 = Online
    Port Supported COS         = Class3
    Port Supported FC4 Types   = 00000000, 00000000, 00000000, 00000000,
                                 00000000, 00000000, 00000000, 00000000
    Port Active FC4 Types      = 00000120, 00000000, 00000000, 00000000,
                                 00000000, 00000000, 00000000, 00000000
    Port Symbolic Name         = Emulex PPN-10:00:00:90:fa:70:14:19
    Port Supported Speed       = 10Gb
    Port Speed                 = 10Gb
    Port Max Frame Size        = 2048
    Fabric Name                = 2002002a6a6d8a01
    Number of Discovered Ports = 1

brcmadm>
```

3.3.17 get_host_params

Returns the FC login parameters of this adapter port.

Example

```
brcmadm> get_host_params

Host:
          Dtype: 0
FC4_type[proto]: 0x00000120, 0x00000000, 0x00000000, 0x00000000, 0x00000000,
0x00000000, 0x00000000, 0x00000000
          State: Online
      Linkspeed: 10Gb
           D_id: 360442
           LILP: 0
      Hard Addr: 0
           WWPN: 10000090fa701419
           WWNN: 20000090fa701419

brcmadm>
```

3.3.18 get_inst

Returns driver instance for this adapter port.

Example

```
brcmadm> get_inst

elxfc3
```

3.3.19 get_linkinfo

Returns the current link status information for the adapter port.

Example

```
brcmadm> get_linkinfo

      Physical port: 1
         MAC Duplex: Full Duplex
          MAC Speed: 10 Gbps
          MAC Fault: None
    Mgmt MAC Duplex: None
     Mgmt MAC Speed: None
     QOS Link Speed: 10000 Mbps
Logical Link Status: Link Up
```

3.3.20 get_logi_params <wwpn>

Returns the FC login common service parameters for a specified FCoE device on the network.

Example

```
brcmadm> get_logi_params  10000090fa701411

Login Parameters:
00 00 00 00
08 09 0a 00
00 88 00 08
ff 00 00 00
00 00 00 00
10 00 00 90
fa 70 14 11
20 00 00 90
fa 70 14 11
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 88 00 00
00 00 00 08
```

```
ff 00 00 00
01 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00

brcmadm>
```

3.3.21 get_num_devs

Returns the number of FCoE devices currently seen by this adapter port.

Example

```
brcmadm>   get_num_devs
There are 4 devices reported on this port.
```

3.3.22 get_path <index>

Shows the current Solaris device path for a specified adapter port. The total number of ports available can be seen in the `Number of HBA ports` attribute displayed using the `get_host_attrs` command. The <*index*> argument is an index into this list.

Example

```
brcmadm> get_path 0

Adapter:
/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,3/fp@0,0
```

3.3.23 get_phy_attrs

Shows the current physical layer module attributes of the adapter.

Example

```
brcmadm> get_phy_attrs

PHY Attributes:
        PHY Type: BladeEngine
  Interface Type: 10GB SFP+
     Misc Params: 31.25MHz, PAN, SYMP, AD dis
  Future Details: 0x00000000
 Ext Phy Details: Speeds valid.
    Fixed Speeds: 1G, 10G
     Auto Speeds: No Support.
           rsvd0: 0x00000000
           rsvd1: 0x00000000

brcmadm>
```

3.3.24 get_port_attrs <index>, <wwn>, all

Shows the current adapter API port attributes. All of the ports' attributes can be displayed, or a single port can be specified by <*index*> or <*wwn*>. The total number of ports available can be seen in the Number of Discovered Ports attribute displayed using the `get_host_attrs` command. The <*index*> argument is an index into this list.

Example

```
brcmadm> get_port_attrs all

Host Port:

    Last Change               = 0
    fp Instance               = 1a
    Node WWN                  = 20000090fa701419
    Port WWN                  = 10000090fa701419
    Port Fc Id                = 360442
    Port Type                 = Nport
    Port State                = Online
    Port Supported COS        = Class3
    Port Supported FC4 Types  = 00000000, 00000000, 00000000, 00000000,
                                00000000, 00000000, 00000000, 00000000
    Port Active FC4 Types     = 00000120, 00000000, 00000000, 00000000,
                                00000000, 00000000, 00000000, 00000000
    Port Symbolic Name        = Emulex PPN-10:00:00:90:fa:70:14:19
    Port Supported Speed      = 10Gb
    Port Speed                = 10Gb
    Port Max Frame Size       = 2048
    Fabric Name               = 2002002a6a6d8a01
    Number of Discovered Ports = 1

Port 0:

    Node WWN                  = 20000090fa701411
    Port WWN                  = 10000090fa701411
    Port Fc Id                = 360422
    Port Type                 = Unknown
    Port State                = Online
    Port Supported COS        = Class3
    Port Supported FC4 Types  = 00000000, 00000000, 00000000, 00000000,
                                00000000, 00000000, 00000000, 00000000
    Port Active FC4 Types     = 00000120, 00000000, 00000000, 00000000,
                                00000000, 00000000, 00000000, 00000000
    Port Symbolic Name        = Emulex PPN-10:00:00:90:fa:70:14:11
    Port Supported Speed      = Unknown
    Port Speed                = Unknown
    Port Max Frame Size       = 0
    Fabric Name               = 0000000000000000

brcmadm>
```

3.3.25 get_rnid [wwpn]

Returns the request node identification data ELS information for the local or specified port.

Example

```
brcmadm> get_rnid

  Offset:  00 01 02 03   04 05 06 07   08 09 0A 0B   0C 0D 0E 0F   ASCII:
-------------------------------------------------------------------------------
---
      0:  31 30 30 30   30 30 39 30   66 61 37 30   31 34 00 00   10000090fa7014..
     10:  07 00 00 00   00 00 00 00   00 00 00 00   01 00 00 00   ................
     20:  00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00   ................
     30:  00 00 00 00                                            ....
Done.

brcmadm>
```

3.3.26 get_state <wwpn>

Returns the current Solaris SFS state of the specified FCoE device on the network.

Example

```
brcmadm> get_state  10000090fa701411

State: Logged_In

brcmadm>
```

3.3.27 get_sym_nname

Returns the symbolic FCoE node name of the adapter port.

NOTE This operation is not supported by the Solaris SFS stack.

Example

```
brcmadm> get_sym_nname
ioctl: FCIO_GET_SYM_NNAME: Operation not supported
```

3.3.28 get_sym_pname

Returns the symbolic FCoE port name of the adapter port.

NOTE This operation is not supported by the Solaris SFS stack.

Example

```
brcmadm> get_sym_pname
ioctl: FCIO_GET_SYM_PNAME: Operation not supported
```

3.3.29 get_throttle

Returns the I/O queue depth of all remote ports. The queue depth represents the maximum concurrent I/Os the driver allows to the remote port at any given time. The default queue depth for an FCP target port is specified by the target-depth driver parameter.

Example

```
brcmadm> get_throttle

                WWPN : Depth
    ------------------------
    10000090fa701419 : 512

brcmadm>
```

3.3.30 get_topology

Returns the FCoE network topology of the adapter port.

Example

```
brcmadm> get_topology

Topology: Fabric

brcmadm>
```

3.3.31 get_vpd

Displays the current adapter vital product data.

Example

```
brcmadm> get_vpd

Vital Product Data:
           Identifier (ID): Emulex OneConnect OCe14102-UM 10GbE 2-Port SFP+ PCIe
3.0 Universal CNA, FCoE PF
          Part Number (PN): OCe14102-UM
         Manufacturer (MN): Emulex
        Serial Number (SN): FC41382165
          Description (V1): Emulex OneConnect OCe14102-UM 10GbE 2-Port SFP+ PCIe
3.0 Universal CNA
                Model (V2): OCe14102-UM
          Port Number (V4): 1

brcmadm>
```

3.3.32 h

Returns the help screen of the available commands.

Example

This example shows the help screen for an adapter port that is attached to an SFS stack.

```
brcmadm> h

Available commands:          [FCIO rev2]

get_num_devs                 - Returns the number of FC devices seen by this HBA.
get_dev_list                 - Returns a list of FC devices seen by this HBA.
get_logi_params <wwpn>       - Returns the login paramters for a specified FC
device.
get_host_params              - Return the host parameters.
get_sym_pname                - Returns the symbolic port name of a device.
set_sym_pname <string>       - Sets the symbolic port name for a device.
get_sym_nname                - Returns the symbolic node name of a device.
set_sym_nname <string>       - Sets the symbolic node name for a device.
dev_login <wwpn>             - Performs an FC login to a device.
dev_logout <wwpn>            - Performs an FC logout to a device.
get_state <wwpn>             - Returns current SFS state of a specified device.
dev_remove <wwpn>            - Remove the FC device from SFS management.
link_status <d_id>           - Request link error status from a specified D_ID.
get_fcode_rev                - Returns the current Fcode revison of the HBA.
download_fcode [filename]    - Download the HBA fcode.
get_fw_rev                   - Returns the current firmware revison of the HBA.
download_fw [filename]       - Download the HBA firmware.
get_boot_rev                 - Returns the current boot revison of the HBA.
download_boot [filename]     - Download the HBA boot image.
get_dump_size                - Returns the HBA's firmware core dump size.
force_dump                   - Force a firmware core dump on this HBA.
get_dump [-h]                - Saves firmware core dump to a file.
get_topology                 - Returns the current FC network topology.
reset_link [wwpn]           - Resets the link of a specified public loop FC device.
reset_hard                   - Reset the HBA.
diag ...                     - Perform a diagnostic test on the HBA.
ns                          - Performs a complete query of the fabric name server.
parm_get_num                - Returns the total number of configurable parameters.
parm_get_list                - Returns a list of configurable parameters.
parm_get <label>             - Gets the value of a specified parameter in the
driver.
parm_set <label> <val>       - Sets the value of a specified parameter in the
driver.
msgbuf [all], <number> [number] - Returns the driver's internal message log.
get_host_attrs               - Returns the host adapter and port attributes.
get_port_attrs <index>, <wwn>, all   - Returns the port attributes.
get_path <index>             - Returns the adapter path.
get_vpd                      - Returns the adapter's Vital Product Data (VPD).
boot_code [enable, disable] - Sets or shows the boot code state in this HBA.
get_rnid [wwpn]              - Gets the RNID information for local or specified
port.
get_inst                     - Gets the driver instance.
```

```
get_phy_attrs           - Returns the current PHY attributes for the HBA.(CNAs
only)
set_throttle...         - Temporarily sets the I/O queue depth for a specified
remote
                              port.
get_throttle                - Gets the I/O queue depth for all remote ports.
q                           - Exits this program.
h                           - Returns this help screen.
hba                         - Select another hba.
p                           - Repeat previous command.

brcmadm>
hba
Selects another adapter with which to interface. This command allows you to
connect to another adapter without having to exit and re-enter the program.
Example
brcmadm> hba

Available Emulex HBA's:

1. SFS:elxfc2      :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,2/fp
@0,0 (CONNECTED)
2. SFS:elxfc3      :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,3/fp
@0,0 (CONNECTED)
3. NIC:elxnic0     :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0
(CONNECTED)
4. NIC:elxnic1     :
/devices/pci@0,0/pci8086,3605@2/pci8086,3500@0/pci8086,3514@1/pci10df,e800@0,1
(CONNECTED)

Enter an HBA number or zero to exit:
```

3.3.33 link_status <d_id>

Requests and returns the current link error status from the FCoE device specified by the *D_ID* address.

Example

```
brcmadm> link_status e8

D_ID: e8
            Link failures: 3 (0x3)
       Loss of sync count: 12 (0xc)
     Loss of signal count: 0 (0x0)
Primitive sequence errors: 0 (0x0)
         Invalid tx words: 17 (0x11)
        Invalid CRC count: 0 (0x0)
```

3.3.34 msgbuf [all], <number> [-i interval]

This command displays the current driver log, with various options.

Parameters

`[all]`	If the [`all`] parameter is specified, this command displays all of the current driver message log.
<*`number`*>	If the <*`number`*> parameter is specified, this command displays the last <*`number`*> of lines of the current driver message log.
`[-i` *`interval`*`]`	Using the [`-i` *`interval`*] argument enables the screen to be refreshed every [interval] of seconds. If the [-i *`interval`*] argument is not provided, the driver message log is displayed, followed by the `brcmadm>` prompt.

To stop the command from displaying the current driver log, press **Ctrl+C** at the same time.

Example

In this example, the last 10 lines of the current driver log are displayed.

```
brcmadm> msgbuf  10

   93973.96:    630:[ B.1494]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
GET_FCIO_REV)
   93979.46:    631:[ B.10B0]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
FC_PORT_GET_FW_REV)
   94232.42:    632:[ B.1494]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
GET_FCIO_REV)
   94597.69:    633:[ B.1494]elxfc3:  DEBUG:   1: (Last message repeated 3
time(s).)
   94597.69:    634:[ B.26D6]elxfc3:  DEBUG: 800: ELS sent.  (RNID: sid=360442
did=360422 )
   94597.69:    635:[ 4.00EE]elxfc3:  DEBUG: 801: ELS comp.  (RNID Rejected:
did=360422 rsn=9 exp=0)
   94702.19:    636:[ B.144F]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
EMLXS_GET_THROTTLE: count=1)
   94702.19:    637:[ B.1467]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
EMLXS_GET_THROTTLE: max=1)
   94702.19:    638:[ B.147B]elxfc3:  DEBUG:1300: SFS. (EMLXS_GET_THROTTLE:
wwpn=10000090fa701411 depth=0)
   94936.65:    639:[ B.1494]elxfc3:  DEBUG:1300: SFS. (fca_port_manage:
GET_FCIO_REV)

brcmadm>
```

3.3.35 ns

Performs and returns a complete query of the fabric name server.

Example

```
brcmadm> ns

Nameserver:
-------------------------------------------------------------------------------
--
     TYPE: Nport
      PID: 360422
     WWPN: 10000090fa701411
PORT_NAME: (Emulex PPN-10:00:00:90:fa:70:14:11)
     WWNN: 20000090fa701411
NODE_NAME: (Emulex OCe14102-UM FV10.0.803.23 DV11.2.1115.0 HN: OS:Solaris 11)
      IPA: 000000001e00000e
  IP_ADDR: 0.0.0.0
    CLASS: Class3
FC4_TYPES:
00000120,00000000,00000000,00000000,00000000,00000000,00000000,00000000

brcmadm>
```

3.3.36 p

Repeats the last command.

Example

```
brcmadm> get_num_devs
There are 4 devices reported on this port.

brcmadm> p
brcmadm> get_num_devs

There are 4 devices reported on this port.
```

3.3.37 parm_get_num

Returns the total number of configurable parameters.

Example

```
brcmadm> parm_get_num
Result: There are 18 configurable parameters in the driver.
```

3.3.38 parm_get <label>

Gets the value of a specified parameter in the driver.

Example

```
brcmadm> parm_get adisc-support

  label: adisc-support
    min: 0
current: 1
    max: 2
default: 1
dynamic: yes
   desc: Sets the Fibre Channel ADISC login support level.
```

3.3.39 parm_get_list

Returns a list of configurable parameters.

Example

```
brcmadm> parm_get_list

Parameter:
------------------------------------------------------------------
  label: console-notices
    min: 0x0
current: 0x0
    max: 0xffffffff
default: 0x0
dynamic: yes
   desc: Verbose mask for notice messages to the console.
------------------------------------------------------------------
  label: console-warnings
    min: 0x0
current: 0x0
    max: 0xffffffff
default: 0x0
dynamic: yes
   desc: Verbose mask for warning messages to the console.
------------------------------------------------------------------
  label: console-errors
    min: 0x0
current: 0x0
    max: 0xffffffff
default: 0x0
dynamic: yes
   desc: Verbose mask for error messages to the console.
------------------------------------------------------------------
  label: log-notices
    min: 0x0
current: 0xffffffff
    max: 0xffffffff
default: 0xffffffff
```

```
dynamic: yes
   desc: Verbose mask for notice messages to the messages file.
-------------------------------------------------------------------
  label: log-warnings
    min: 0x0
current: 0xffffffff
    max: 0xffffffff
default: 0xffffffff
dynamic: yes
   desc: Verbose mask for warning messages to the messages file.
-------------------------------------------------------------------
  label: log-errors
    min: 0x0
current: 0xffffffff
    max: 0xffffffff
default: 0xffffffff
dynamic: yes
   desc: Verbose mask for error messages to the messages file.
-------------------------------------------------------------------
  label: num-iocbs
    min: 128
current: 1024
    max: 10240
default: 1024
dynamic: no
   desc: Number of outstanding IOCBs driver can queue to adapter.
-------------------------------------------------------------------
  label: ub-bufs
    min: 40
current: 1000
    max: 16320
default: 1000
dynamic: no
   desc: Number of unsolicited buffers the driver should allocate.
-------------------------------------------------------------------
  label: network-on
    min: 0
current: 1
    max: 1
default: 1
dynamic: no
   desc: Enable IP processing.
-------------------------------------------------------------------
  label: ack0
    min: 0
current: 0
    max: 1
default: 0
dynamic: no
   desc: Enable ACK0 support.
-------------------------------------------------------------------
  label: topology
    min: 0
current: 0
```

```
    max: 6
default: 0
dynamic: no
   desc: Select Fibre Channel topology.
-------------------------------------------------------------------
  label: link-speed
    min: 0
current: 0
    max: 4
default: 0
dynamic: no
   desc: Select link speed.
-------------------------------------------------------------------
  label: num-nodes
    min: 2
current: 512
    max: 512
default: 512
dynamic: no
   desc: Number of fibre channel nodes (NPorts) the driver will support.
-------------------------------------------------------------------
  label: cr-delay
    min: 0
current: 0
    max: 63
default: 0
dynamic: no
   desc: A count of milliseconds after which an interrupt response is generated.
-------------------------------------------------------------------
  label: cr-count
    min: 1
current: 1
    max: 255
default: 1
dynamic: no
   desc: A count of I/O completions after which an interrupt response is
generated.
-------------------------------------------------------------------
  label: assign-alpa
    min: 0x0
current: 0x0
    max: 0xef
default: 0x0
dynamic: no
   desc: Assigns a preferred ALPA to the port. Only used in Loop topology.
-------------------------------------------------------------------
  label: adisc-support
    min: 0
current: 1
    max: 2
default: 1
dynamic: yes
   desc: Sets the Fibre Channel ADISC login support level.
-------------------------------------------------------------------
```

```
  label: pm-support
    min: 0
current: 1
    max: 1
default: 1
dynamic: no
   desc: Enables power management support.
```

3.3.40 parm_set <label> <value>

Sets the value of a specified parameter in the driver. Only dynamic parameters can be set.

NOTE To make this change permanent, you must edit the `/kernel/drv/elxfc.conf` file.

Examples

This example sets a dynamic parameter:

```
brcmadm> parm_set adisc-support 2

  label: adisc-support
    min: 0
current: 2
    max: 2
default: 1
dynamic: yes
   desc: Sets the Fibre Channel ADISC login support level.
This example attempts to set a static parameter (which is not allowed):
brcmadm> parm_set max-xfer-size  5234688

brcmadm: EMLXS_PARM_SET: Parameter (max-xfer-size) is not dynamic and cannot be
changed here.

** To make this change permanent you must edit the /kernel/drv/elxfc.conf file **
** and reboot the system. **

brcmadm>
```

3.3.41 q

Exits (quits) the utility program.

Example

```
brcmadm> q
Exiting...
```

3.3.42 reset_hard

Forces the adapter to perform a hardware reset.

Example

```
brcmadm> reset_hard
Done.
```

3.3.43 reset_link <[wwpn] or 0>

If the [*wwpn*] parameter is specified, this command resets the link of the specified FC device on the network. If the specified [*wwpn*] applies to a remote port, the reset link [*wwpn*] only works if the remote port is on a public loop. SFS uses the `Loop Initialize ELS` command to reset the link on a remote port. The `LINIT ELS` command is valid only if the remote N_Port is on a public loop.

If `0` (zero) is specified, this command resets the local link.

Examples

Resets the link of the specified FC device:

```
brcmadm> reset_link 21000020371938fa
Done.
```

Resets the local link:

```
brcmadm> reset_link 0
Done.
```

3.3.44 set_sym_nname <“string”>

Sets the symbolic FCoE node name of the adapter to the string provided.

NOTE This operation is not supported by the Solaris SFS stack.

Example

```
brcmadm> set_sym_nname "Emulex Corporation"
ioctl: FCIO_SET_SYM_NNAME: Operation not supported
```

3.3.45 set_sym_pname <“string”>

Sets the symbolic FCoE port name of the adapter to the string provided.

NOTE This operation is not supported by the Solaris SFS stack.

Example

```
brcmadm> set_sym_pname "Emulex Corporation"
ioctl: FCIO_SET_SYM_PNAME: Operation not supported
```

3.3.46 set_throttle

Temporarily sets the I/O queue depth for a specified remote port. The <*depth*> is the maximum number of concurrent I/Os that the driver can send to the specified remote port. The default queue depth for an FCP target port is specified by the `target-depth` driver parameter.

Command Options

`set_throttle all` <*depth*>	Sets the depth for all ports.
`set_throttle fcp` <*depth*>	Sets the depth for all FCP target ports.
`set_throttle wwpn` <*depth*>	Sets the depth for a specific port.

Example

This example sets the maximum number of concurrent I/Os to 512 for all remote ports.

```
brcmadm> set_throttle all 512
    _____________WWPN: Depth
    21000011c6810947: 512
    21000011c681065f: 512
    21000011c68108c0: 512
    21000011c681061d: 512
```


BROADCOM