EMULEX®

Elxflash and LpCfg Management Utilities Version 10.4

User Manual

Connect • Monitor • Manage

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Note: References to OCe11100 series products also apply to OCe11100R series products.

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1. Introduction

This document explains how to use the adapter management utility kits for Linux, FreeBSD, and Windows pre-boot environments.

Elxflash Offline Kit

The ElxflashOffline kits allow you to configure Emulex® adapters before you install or boot a server operating system. You can also use the Elxflash Standalone kit, which allows you to update firmware on Emulex adapters without installing any tools. See "Running the LpCfg Utility Included with the ElxflashStandalone Kit" on page 36 for more information.

The Elxflash Offline kit includes:

- linlpcfg and elxflash for FreeBSD
- linlpcfg and elxflash for Linux
- winlpcfg and elxflash for Windows

The winlpcfg and the linlpcfg are management utilities for adapter configuration and diagnostics for Windows and Linux respectively. linlpcfg is also used for the FreeBSD operating system. The LpCfg utility can also download firmware, but you must manually select which adapters to update.

Elxflash is a firmware download utility. When the /auto switch is used, Elxflash automatically chooses the "best" image to download. When the fwmatrix.txt file is used, you choose which images to apply to the adapters.

Additionally, Linux has an offline utility for network interface card (NIC) adapters only. This utility uses operating system-provided features and utilities to discover universal converged network adapters (CNAs) and download firmware. This utility relies on the inbox driver for supported distributions and only supports CNAs. See "ElxflashOffline Kit for NIC Only" on page 12 for more information.

Note: The Offline utility, except for the standalone version, must be installed on your system before you can run it. While the standalone utility does not need to be installed before it is run, you must go to the directory into which the standalone utility was extracted and run it from the command prompt.

See "LpCfg Utility Command Line Interface" on page 35 for further information on the offline utility.

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Elxflash Utility

The Elxflash utility uses a command line interface allowing you to build scripts for automated and unattended firmware and boot code download solutions for Emulex LightPulse® Fibre Channel (FC) host bus adapters (HBAs), LightPulse FC and Fibre Channel over Ethernet/network interface card (FCoE/NIC), and Emulex OneConnect® CNAs that are in production systems. You can also download firmware and boot code on local and remote machines simultaneously.

The Elxflash Standalone kit, which allows you to update firmware on Emulex adapters without needing to install any tools, is also available. See "Running the LpCfg Utility Included with the ElxflashStandalone Kit" on page 36 for more information.

The Elxflash utility uses auto-discovery (/auto) so you do not need to maintain the fwmatrix.txt configuration file. When auto-discovery is invoked, the utility automatically discovers local adapters and performs selected operations such as: /ff (force firmware), /fb (force boot), /update, /downgrade, and /rewrite.

When using auto-discovery you must populate the firmware and boot subdirectories with image files for specific adapter models. Auto-discovery requires the use of Emulex defined firmware and boot code file names in their respective directories.

If you do not want to use auto-discovery, the Elxflash utility can update the firmware or boot code of an adapter using the fwmatrix.txt configuration file. When using the fwmatrix.txt file, you must update each supported adapter's type, firmware, and boot code entries and place the corresponding firmware and boot code images into their respective directories. The fwmatrix.txt file enables all operations that are used with auto-discovery.

Command Syntax

In all cases, the commands are given with the prefix *os*. When you enter any command, you must replace *os* with either:

- ./lin – for the Linux LpCfg utility commands, for use on Linux and FreeBSD machines.
- win – for the WinPE LpCfg utility commands, for use on WinPE machines.

The LpCfg utility commands are not case-sensitive, nor are their arguments. You can enter them in upper, lower, or mixed case. However, for Linux operating systems, Emulex recommends using linlpcfg (all lowercase) for the utility commands (for example, ./linlpcfg listhba).

The LpCfg utility commands require both:

- One space between the command name and the first argument.
- One space between additional arguments.

Note: Do not put a space before or after the equal sign within an argument.

WWN values are reported and specified with two 4-byte hexadecimal words – WWN word 0 (w0) and WWN word 1 (w1). To make the full WWN, concatenate the w0 and w1 values.

For detailed information on using the command line interface, see chapter 3., "Elxflash Utility Command Line Interface," on page 19 and chapter 4., "LpCfg Utility Command Line Interface," on page 35.

Supported Platforms

For supported adapters, and supported versions of operating systems and platforms, see the Emulex website.

Abbreviations

BIOS	basic input-output system
CNA	converged network adapter
EFI	Extensible Firmware Interface
EROM	erasable read-only memory
FC	Fibre Channel
FCoE	Fibre Channel over Ethernet
HBA	host bus adapter
HEX	hexadecimal
IEEE	Institution of Electrical and Electronics Engineers
GUI	graphical user interface
iSCSI	internet Small Computer System Interface
LUN	logical unit number
MAC	media access control
MILI	Management Interface Library
ms	milliseconds
NIC	network interface card (or controller)
PCI	peripheral controller interface
PCI_ID	PCI device identification number
POST	power-on self test
ROM	read-only memory
SAN	storage area network
UCNA	universal converged network adapters
VPD	vital product data
WWN	world wide name
WWNN	world wide node name

WWPN   world wide port name
XML   extensible markup language

2. Installation

This chapter details prerequisites and procedures for installing and uninstalling the ElxflashOffline kit for: Linux, Windows, and FreeBSD. It also describes the updating procedure for each supported operating system.

Platform Prerequisites

The utilities included in the ElxflashOffline kit for Linux and FreeBSD have prerequisites that must be installed prior to installing the utilities. The Windows operating system does not have prerequisites.

Linux

The Linux platform requires additional software, such as libraries, to run the different versions of the utility. This section provides the prerequisites.

Note: The Linux driver must be installed on the system for the applications to work properly.

Elxflash Offline and Elxflash Standalone Kits

The following software must be installed to run the different versions of the utility.

- libnl
- ethtool
- lspci
- libsysfs (optional)

ElxflashOffline Kit for NIC Only

RHEL 5.6 and later

- NIC driver
- ethtool
- libsysfs

RHEL 6.1, RHEL 7.0 and later

- NIC driver
- ethtool
- libsysfs
- pcutils-libs

SLES 11 SP1 and later

- NIC driver
- ethtool
- sysfsutils
- pcituils

CentOS 6.1, CentOS 7.0, and later

- NIC driver
- ethtool
- libsysfs
- pcutils-libs

Windows

There are no prerequisites for Windows.

FreeBSD

The FreeBSD platform requires additional software, such as libraries, to run the Elxflash utilities. These prerequisites are listed below and provided by the operating system.

- libstdc++
- libm
- libc
- libgcc

Note: BASH is required to run the install and uninstall scripts. If it is not installed, you must install the BASH package, which is part of the FreeBSD distribution.

Installing the ElxflashOffline Kit for Linux

The ElxflashOffline Kit for Linux uses an install script to install the elxflash and linlpcfg utilty RPM packages. The install script determines the correct architecture and distribution, and updates the existing ElxflashOffline and Elxlinlpcfg RPM packages. If there are no existing ElxflashOffline or Elxlinlpcfg RPM packages, the install script installs the packaged ElxflashOffline and Elxlinlpcfg RPM packages.

To install the ElxflashOffline Kit for Linux:

1. Untar the installation tarball.
2. Run the install script located on the root of the installation kit.

Example:

```
$ tar zxvf elxflashOffline-linux-<version>-<rel>.tgz
$ cd elxflashOffline-linux-<version>-<rel>
$ ./install.sh
```

Updating

To update an existing ElxflashOffline Kit for a Linux installation, run the install.sh script to update the ElxflashOffline and Elxlinlpcfg RPM packages.

Uninstalling

The ElxflashOffline Kit for Linux uses an uninstall script to uninstall the utility. The uninstall script executes specific actions depending on the switches that are used.

- ./uninstall.sh – Uninstalls the ElxflashOffline and Elxlinlpcfg RPM packages.
- ./uninstall.sh -h – Displays a summary of all available switches

To uninstall the ElxflashOffline Kit for Linux, run the uninstall script located on the root of the installation kit.

Example:

```
$ cd elxflashOffline-linux-<version>-<rel>
$ ./uninstall.sh
```

Installing the ElxflashOffline NIC Only Kit for Linux

The install script determines the correct architecture and distribution, and upgrades the existing ElxflashOffline (NIC only) RPM package. If there is no existing ElxflashOffline RPM package, the install script installs the packaged ElxflashOffline RPM package.

To install the ElxflashOffline NIC Only Kit:

1. Untar the installation tarball.
2. Run the install script located in the root directory of the installation kit.

Example:

```
$ tar zxvf elxflashOffline_NIC_Only-linux-<version>-<rel>.tgz
$ cd elxflashOffline_NIC_Only-linux-<version>-<rel>.tgz
$ ./install.sh
```

Updating

To update the ElxflashOffline_NIC_Only kit, run the install.sh script to upgrade the ElxflashOffline RPM package.

Uninstalling

To uninstall the ElxflashOffline_NIC_Only kit, run the uninstall script located in the root directory of the installation kit.

The uninstall script executes specific actions depending on the switches used.

- ./uninstall.sh – Uninstalls ElxflashOffline RPM package
- ./uninstall.sh -h – Displays a summary of all available switches

Example:

```
$ cd elxflashOffline_NIC_Only-linux-<version>-<rel>.tgz
$ ./uninstall.sh
```

Installing the ElxflashOffline Kit for Windows PE

To install the ElxflashOffline kit for Windows PE:

1. Unzip the Offline-WinPE-<version>-<rel>.zip.
2. Change the directory to the correct architecture subdirectory.
3. Run setupElxAll-<arch>.exe.

    The following components are installed:

    - Storport CNA driver
    - Storport Fibre Channel (FC) driver
    - OneConnect iSCSI and NIC drivers
    - winLpCfg – Elxflash Offline

    Note: The setupElxAll-<arch>.exe file is compatible only with WinPE. It does not
    function with any version of Windows Server.

Updating

To update an existing ElxflashOffline kit installation, run the same steps for installing
the ElxflashOffline kit for Windows PE above.

The installer uninstalls the existing version and then installs the updated version.

Uninstalling

To uninstall the ElxflashOffline kit for Windows PE, run the following commands:

```
X:\>cd "X:\ProgramData\Tarma Installer\{AE1F1CA1-B626-4447-9208-14607187EC3D}"
X:\>setup.exe /remove
```

Extracting the Driver Files from the ElxflashOffline Kit for Windows

To extract the driver files from the ElxflashOffline kit, you can use the installer or the
command line. When extracting these files, all files, both x64 and x86, are extracted to
<Drive>:\My Documents\Emulex\Drivers. This location is hard-coded and cannot be
changed.

Note: Extracting all the drivers takes an additional 28 MB. By default, Windows PE
allocates only 32 MB of writeable memory. The size of the writable memory
may be increased when building the WinPE ISO image.

You can extract the driver files using the GUI mode by running the installer or you can use the command line in silent mode.

To extract the drivers from the ElxflashOffline kit for Windows:

GUI Mode

1. Run the installer.
2. From the Installation Options screen, select **Extract All Drivers**, and deselect **Install elxApp_Drivers (64-bit)**.
3. Click **Install** to continue.

Silent Mode

From the command line, type

```
start/wait SetupElxAll-x64.exe/q2 extract=2
```

Note: Values for the "extract" parameter are:

- 0 — Install the package; do not extract drivers. (DEFAULT)
- 1 — Install the package; extract drivers
- 2 — Do not install the package; extract drivers.

Extracting the ElxflashStandalone Kit (Linux and Windows)

The ElxflashStandalone kit is not installed; you must extract it from its zip file. After you extract the utility, the following directories are created. The Linux executable files are extracted to the lx\ directory, or the Windows executable files are extracted to the win\ directory.

- boot\
- firmware\
- lx\
- win\

In Windows, for example, three directories are visible in the kit's root directory after you extract the standalone utility. The top level "boot" directory and "firmware" directory are the default directories in which Elxflash looks for boot code and firmware images. Ensure that firmware and boot code are located in these directories.

```
# dir

07/05/2012  07:02 PM    <DIR>          .
07/05/2012  07:02 PM    <DIR>          ..
07/02/2012  03:14 PM    <DIR>          boot
07/02/2012  03:14 PM    <DIR>          firmware
07/02/2012  03:15 PM    <DIR>          win
```

The ElxflashStandalone kit has the same dependencies as the ElxflashOffline kits. See "Platform Prerequisites" on page 12.

Note: Update or uninstall procedures for the ElxflashStandalone kit are not available. When a new version is available, you extract it, replacing the older version.

Installing the ElxflashOffline Kit for FreeBSD

The ElxflashOffline kit installation for FreeBSD uses an install script. The install script determines the correct architecture and distribution and performs the following operations:

- Installs the Elxflash utility and linlpcfg
- Temporarily mounts /proc

Note: For security reasons, /proc is not mounted by default; however, Elxflash and linlpcfg require that /proc be mounted in order to run. Verify /proc is mounted before running Elxflash or linlpcfg.

To install the ElxflashOffline kit for FreeBSD:

1. Untar the installation tarball.
2. Run the install script located in the root directory of the installation kit.

   For example:

   ```
   # tar xvf elxflashOffline-FreeBSD-<version>-<rel>.tgz
   # cd elxflashOffline-FreeBSD-<version>-<rel>
   # ./install.sh
   ```

Updating

To update the ElxflashOffline kit for FreeBSD, uninstall the old version and then unzip the new version.

Uninstalling

To uninstall the ElxflashOffline kit for FreeBSD:

Run the uninstall script located in the root directory of the installation kit.

For example:

```
# cd elxflashOffline-FreeBSD-<version>-<rel>
# ./uninstall.sh
```

Firmware and Boot Code

Firmware images are available on the Emulex support site at:
http://www.emulex.com. All firmware image files are expected to be in the
sub-directory named "firmware". All boot code image files are expected to be in the
sub-directory named "boot". The HBA types are always Emulex model names.

Note: OneConnect models (FCoE, iSCSI, and NIC) may share the same Emulex model
name, but can run different protocols. For example, an Emulex model OCe10102
can be an FCoE, iSCSI, or NIC CNA.

When the fwmatrix.txt file is used, the Elxflash model name must include the highest
protocol being used on that model. An adapter's Elxflash model name can be seen by
running the /query command.

Notes:

- On an FCoE/NIC adapter, the highest protocol is FCoE. On an iSCSI/NIC
  adapter, the highest protocol is iSCSI.
- Ensure that there are no spaces in the fwmatrix.txt model name to avoid a
  firmware update failure.

For example:

```
# ./elxflash /q
HBA=OCe11100-iSCSI, Port Type=iSCSI, MAC=00:00:C9:AD:AD:21, PCI ID=712, VID=19A2,
SSID=E702, SVID=10DF, Firmware=4.0.493.0, Boot Code=2.0.21.768
HBA=OCe11100-iSCSI, Port Type=iSCSI, MAC=00:00:C9:AD:AD:25, PCI ID=712, VID=19A2,
SSID=E702, SVID=10DF, Firmware=4.0.493.0, Boot Code=2.0.21.768
HBA=OCe11100-iSCSI, Port Type=NIC, MAC=00:00:C9:AD:AD:20, PCI ID=710, VID=19A2,
SSID=E702, SVID=10DF, Firmware=4.0.493.0, Boot Code=2.0.21.768
HBA=OCe11100-iSCSI, Port Type=NIC, MAC=00:00:C9:AD:AD:24, PCI ID=710, VID=19A2,
SSID=E702, SVID=10DF, Firmware=4.0.493.0, Boot Code=2.0.21.768
elxflash.exe: All required queries succeeded - Return Code=0
```

Note: The OCe11100 CNA in the example above is an iSCSI adapter, which has the
Elxflash model name of OCe11100-iSCSI.

3. Elxflash Utility Command Line Interface

Two supported modes for each Elxflash utility switch are available. The first mode relies on the fwmatrix.txt file. It is your responsibility to update the firmware and boot code directories with the appropriate firmware and boot code images.

Note: Ensure that there are no spaces in the fwmatrix.txt model name to avoid a firmware update failure.

The second mode is auto-discovery. When the /auto switch is used with the following switches, the Elxflash utility automatically discovers adapters and, using the firmware and boot subdirectories, performs the specified operation on each adapter.

- /f
- /fb
- /ff
- /downgrade
- /rewrite
- /update

Auto-Discovery (/auto)

Usage: /auto

The auto-discovery switch instructs the Elxflash utility to ignore the fwmatrix.txt file, automatically discover local adapters, and perform specified operations employing an additional switch using the firmware and boot directories.

The /auto switch must be used with an additional operational switch such as:

- /f
- /ff
- /fb
- /downgrade
- /rewrite
- /update

Example usage:

./elxflash /auto /update – Updates the firmware and boot code using the firmware and boot directories.

- The fwmatrix.txt file is ignored. You must place the desired versions of firmware in the firmware directory.
- Using the firmware subdirectory, the Elxflash utility automatically discovers the best matching firmware for each installed and supported adapter.
- If multiple versions of firmware or boot code are found for an adapter, the Elxflash utility uses the most recent version when performing the firmware download.

Downgrade (/downgrade or /g)

Usage: /downgrade or /g

The downgrade switch downgrades the firmware or boot code of each adapter if the currently installed versions are more recent than the downgrade versions. This switch cannot be used with the /update or /rewrite commands.

Example usage:

./elxflash /downgrade /auto – Downgrades the firmware or boot code using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired downgrade versions of firmware or boot code in their respective directories.
- If the downgrade versions are older than the currently installed versions on the adapter, then the downgrade versions are downloaded to the adapter.
- If multiple downgrade versions of firmware or boot code are found for an adapter, the next-previous downgrade versions are downloaded to the adapter.
- When performing the boot code downgrade operation, the Elxflash utility first tries to match by adapter family and boot type. If a match is not found, the Elxflash utility then tries to match by boot type. If the utility matches by boot type and multiple versions of boot code are detected, downgrade chooses the downgrade file in the following order:
    1. Universal (U)
    2. Pair (P)
    3. Open (O)
    4. EFI (E)
    5. x86 (B)

./elxflash /downgrade – Downgrades the firmware or boot code using the fwmatrix.txt file.

- For each installed and supported adapter, the current firmware or boot code versions are compared with the versions specified in fwmatrix.txt.
- If the downgrade versions in fwmatrix.txt are older than the currently installed versions, the downgrade versions of firmware or boot code are downloaded to that adapter.

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=<description>
```

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FCoE Adapter Download Summary

```
<date><time>

HBA=<model>, Port Type=<port_type>, WWN=<wwn>,

Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Summary

```
<date><time>

HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,

Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>

Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Notes:

- FCoE, iSCSI, and NIC-only adapters require a system reboot to activate new firmware.
- If the preview switch is used, the Status=<description> field displays "Preview."

Force Firmware and Boot Code (/f)

Usage: /f

The force firmware and boot code switch forces a firmware and boot code download to an adapter regardless of the current version on the adapter, and is performed regardless of any additional operational switches given on the command line. Also, see "Force Boot Code (/fb)" on page 22 and "Force Firmware (/ff)" on page 23.

Example usage:

./elxflash /f /auto – Forces a firmware and boot code download using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired versions of firmware and boot code in their respective directories.
- If multiple versions of firmware or boot code are found for an adapter, the Elxflash utility uses the most recent versions when performing the firmware and boot code downloads.

./elxflash /f – Forces a firmware and boot code download using the fwmatrix.txt file.

- For each installed and supported adapter, forces a download of firmware and boot code using the versions specified in the fwmatrix.txt file.

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=<description>
```

FCoE Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Notes:

- FCoE, iSCSI, and NIC-only adapters require a system reboot to activate new firmware.
- If the preview switch is used, the Status=<description> field displays "Preview."

Force Boot Code (/fb)

Usage: /fb

The force boot code switch forces a boot code download to an adapter regardless of the boot code version installed on the adapter, and of any additional operational switches given on the command line.

Example usage:

./elxflash /fb /auto – Forces a boot code download using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired versions of boot code in the boot directory.
- If multiple versions of boot code are found for an adapter, the Elxflash utility uses the most recent version when performing the boot code download.

./elxflash /fb – Forces a boot code download using the fwmatrix.txt file.

- For each installed and supported adapter, forces a download of boot code using the boot code version specified in the fwmatrix.txt file.

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Boot Code, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Notes:

- If the preview switch is used, the Status=<description> field displays "Preview."
- The force boot code (/fb) switch applies only to legacy FC HBAs.

Force Firmware (/ff)

Usage: `/ff`

The force firmware switch forces a firmware download to an adapter regardless of the firmware version installed on the adapter or any additional operational switches given on the command line.

Example usage:

`./elxflash /ff /auto` – Forces a firmware download using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired versions of firmware in the firmware directory.
- If multiple versions of firmware are found for an adapter, the Elxflash utility uses the most recent version when performing the firmware download.

`./elxflash /ff` – Forces a firmware download using the fwmatrix.txt file.

- For each installed and supported adapter, forces a download of firmware using the firmware version specified in the fwmatrix.txt file.

FC and FCoE Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Notes:

- FCoE, iSCSI, and NIC-only adapters require a system reboot to activate new firmware.
- If the preview switch is used, the Status=<description> field displays "Preview."

Firmware Matrix Directory Change (/fmd)

Usage: `/fmd=<directory>`

The firmware matrix directory change switch changes the location of the base directory in which fwmatrix.txt is located.

Firmware Flash Override (/fo)

Usage: `/fo`

The flash override switch is used to execute a firmware download using the flash executable file on supported CNAs.

Note: The flash override switch applies to Linux ElxflashOffline and Elxflash Standalone only.

Example usage:

`./elxflash /f /auto /fo` – Forces a firmware and boot code download using auto-discovery, and downloads the firmware to supported CNAs using the flash executable file.

- The fwmatrix.txt file is ignored. The desired versions of firmware and boot code must be placed in their respective directories.
- If multiple versions of firmware and boot code are found for an adapter, Elxflash uses the most recent versions when performing the firmware and boot code downloads.
- The flash executable file is used to download firmware to supported CNAs.

Example usage:

`./elxflash /f /fo` – Forces a firmware and boot code download using the fwmatrix.txt file, and downloads the firmware to supported CNAs using the flash executable file.

- For each installed and supported adapter, a forced download of firmware and boot code occurs using the versions specified in the fwmatrix.txt file.
- The flash executable file is used to download firmware to supported CNAs.

Help (/h or /?)

Usage: `/h` or `/?`

The help switch displays a help message detailing instructions on how to use the Elxflash utility.

Image Directory Change (/id)

Usage: `/id=<image_directory>`

The image directory switch is used to specify the location of the firmware and boot code directories.

Example usage:

`./elxflash /f /auto /id=/tmp` – Forces a firmware and boot code download using auto-discovery. Elxflash looks for the firmware and boot code directories in the /tmp directory.

- The fwmatrix.txt file is ignored. The desired versions of firmware and boot code must be placed in their respective directories.
- In this example firmware must be placed in the /tmp/firmware directory and boot code must be placed in the /tmp/boot directory.
- If multiple versions of firmware or boot code are found for an adapter, Elxflash uses the most recent versions when performing the firmware and boot code downloads.

`./elxflash /f /id/tmp` – Forces a firmware and boot code download using the fwmatrix.txt file. Elxflash look for the firmware and boot code directories in the /tmp directory.

- For each installed and supported adapter, a forced download of firmware and boot code occurs using the versions specified in the fwmatrix.txt file.
- In this example firmware must be placed in the /tmp/firmware directory and boot code must be placed in the /tmp/boot directory.

Note: This switch was "/i" in previous versions of the Elxflash utility.

Image Version Display (/iv)

Usage: `/iv=<image file>`

The image version display switch shows the firmware image file's version number.

Example usage:

`./elxflash /iv=firmware/A11460.grp`

`1.1.46.0`

Note: The image version display switch requires a path to the firmware image file in order to decode image file's version.

Log (/log)

Usage: `/log=<logfile.txt>`

The log switch appends the output of the Elxflash utility to a text file. Log can be used with any switch.

Preview (/p)

Usage: `/p`

The preview switch provides a download preview of all adapters that the Elxflash utility can update using either auto-discovery or the fwmatrix.txt file. The preview switch can be used with any of the operational switches, such as:

- /ff
- /fb
- /downgrade
- /rewrite
- /update

When the preview switch is used, the Elxflash utility displays a download summary, but does not actually perform the download.

Each adapter's download preview displays the adapter's old and new image version. The old image version represents the image version that is currently on the adapter. The new image version represents the image version that the Elxflash utility would use during a download.

Example usage:

`./elxflash /preview /auto /update` – Previews an upgrade of firmware or boot code using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired update versions of firmware or boot code in their respective directories.
- If the update versions are higher than the currently installed versions on the adapter, the Elxflash utility provides a download preview for each adapter that can be updated.
- If multiple update versions of firmware or boot code are found for an adapter, the Elxflash utility provides a download preview using the most recent versions.

`./elxflash /preview` – Previews an upgrade of firmware or boot code using the fwmatrix.txt file.

- For each installed and supported adapter, the current firmware and boot code versions are compared with the versions specified in fwmatrix.txt.
- If the update versions in fwmatrix.txt are more recent than the currently installed versions, the Elxflash utility provides a download preview of firmware or boot code for each adapter that can be updated.

FC Adapter Download Summary

```
<date><time>

HBA=<model>, Port Type=<port_type>, WWN=<wwn>,

Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=Preview
```

FCoE Adapter Download Summary

```
<date><time>

HBA=<model>, Port Type=<port_type>, WWN=<wwn>,

Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=Preview
```

iSCSI and NIC-only Adapter Download Summary

```
<date><time>

HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,

Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=Preview
```

Process FC HBAs Only (/fc)

Usage: `/fc`

The process FC HBAs only switch causes Elxflash to act only on FC HBAs.

Example usage:

`./elxflash /q /fc` - Only FC HBAs are displayed for a query.

`./elxflash /auto /up /fc` - Applies auto update only to FC HBAs.

When doing a firmware or boot code update and the /fc switch is used, only FC HBAs are updated; CNAs are not displayed.

Notes:
- /fc is not available on ElxflashOffline_NIC_only.
- This switch supports LPe16202 adapters in FC mode.

Processing UCNAs (/ucna)

Usage: `/ucna`

The Process UCNA switch causes Elxflash to act only on CNAs.

Example usage:

`./elxflash /q /ucna` - Only UCNAs are displayed for a query.

`./elxflash /auto /up /ucna` - Apply auto update only to UCNAs.

When doing a firmware or boot code update and the /ucna switch is used, only CNAs are updated; FC HBAs are not displayed.

Note: This switch supports LPe16202 adapters in NIC mode.

Query (/q)

Usage: `/q`

The query switch displays an adapter's model, WWN or MAC address, PCI_ID, firmware version, and boot code version. Query can be used with any switch.

Example usage:

```
C:\elxflashStandalone-windows-10.0.567.22-1\win>elxflash.bat /q
```

FC Adapter Status Summary

```
HBA=<model>, Port Type=<port_type>, WWN =<wwn>, Firmware=<version>,
Boot Code=<version>, Boot Code enable=<status>
```

FCoE Adapter Status Summary

```
HBA=<model>, Port Type=<port_type>, WWN =<wwn>, Firmware=<version>,
Boot Code=<version>
```

iSCSI and NIC-only Adapter Status Summary

```
HBA=<model>, Port Type=<port_type>, MAC =<mac_address>,
Firmware=<version>, Boot Code=<version>
```

Notes:

- On FC adapters, the query switch displays boot code version information only if the adapter has boot code installed.
- When the query switch is used with an operational switch, the query also includes an additional field called "Supported Firmware" or "Supported Boot Code".

Ramdrive (/ramdrive) - (Windows Offline Adapter Management Utility only)

Usage: `/ramdrive=<drive letter>[:]`

The ramdrive switch specifies the drive for creating temporary and log files. The default is drive X; the default drive in Windows PE.

Rewrite (/rewrite or /e)

Usage: `/rewrite` -or- `/e`

The rewrite switch updates the firmware or boot code of each adapter if the installed versions are earlier than or the same as the rewrite versions. This switch cannot be used with /update or /downgrade.

Example usage:

`./elxflash /rewrite /auto` – Rewrites the firmware boot code using auto-discovery.

- The fwmatrix.txt file is ignored. You must place the desired rewrite versions of firmware or boot code in their respective directories.
- If the rewrite versions are more recent than or the same as the versions installed on the adapter, then the rewrite versions are downloaded to the adapter.
- If multiple rewrite versions of firmware or boot code are found for an adapter, the most recent versions are downloaded to the adapter.
- When performing the boot code rewrite operation, Elxflash first tries to match by adapter family and boot type. If a match is not found, Elxflash then tries to match by boot type. If the utility matches by boot type, and multiple versions of boot code are detected, rewrite always chooses in the following order:
  1. Universal (U)
  2. Pair (P)
  3. Open (O)
  4. EFI (E)
  5. x86 (B)

`./elxflash /rewrite` – Rewrites the firmware or boot code using the fwmatrix.txt file.

- For each installed and supported adapter, the current firmware or boot code versions are compared with the versions in fwmatrix.txt.
- If the currently installed versions are less than or equal to the rewrite versions in fwmatrix.txt then the rewrite versions of firmware or boot code are downloaded to the adapter.

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=<description>
```

FCoE Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Notes:

- FCoE, iSCSI, and NIC-only adapters require a system reboot to activate new firmware.
- If the preview switch is also used, the Status =<description> field displays "Preview."

Silent (/s)

Usage: `/s`

The silent switch prevents all output from being displayed.

Example usage:

`./elxflash /f /auto /s` – Forces a firmware and boot code download using auto-discovery and mutes all output to stdout.

- The fwmatrix.txt file is ignored. The desired versions of firmware and boot code must be placed in their respective directories.
- If multiple versions of firmware or boot code are found for an adapter, Elxflash uses the most recent versions when performing the firmware and boot code downloads.
- No output is printed to stdout.

`./elxflash /f /s` – Forces a firmware and boot code download using the fwmatrix.txt file and mutes all output to stdout.

- For each installed and supported adapter, a download of firmware and boot code is forced using the versions specified in the fwmatrix.txt file.
- No output is printed to stdout.

Discover CNAs using SysFS (/sysfs)

Note: This switch requires that libsysfs is installed. If the libsysfs library is not found, the /sysfs switch is not available.

Usage: `/sysfs + operational switch`

/sysfs is an operational switch that discovers CNA functions using the SysFS tool and executes firmware downloads by using the ethtool utility or SysFS interface. The /sysfs switch is used with any switch that displays adapter information, for example /q, or any combination of switches that executes a download. The following switches can be used:

- /f - force firmware and boot code
- /fb - force boot code
- /ff - force firmware
- /downgrade or /g
- /query or /q
- /rewrite or /e
- /update

For example, "./elxflash /sysfs /auto /f" discovers CNA NIC functions using SysFS and discovers legacy FC functions using LpCfg. It forces a firmware download on CNA adapters using ethtool or SysFS and forces a firmware and boot code download on legacy FC adapters using LpCfg.

Notes:

- Only CNA NIC functions are displayed. Displaying iSCSI and FCoE functions is not supported.
- When /sysfs is used, the VPD model name is not available.
- The /sysfs switch is available on ElxflashStandalone on RHEL 5, RHEL 6, and SLES 11 SP1+ only.

Example usage:

`/elxflash /sysfs /q`

Update (/update)

Usage: `/update`

The update switch updates the firmware or boot code of each adapter if the currently installed versions are less than the update versions. This switch cannot be used with /downgrade or /rewrite.

Example usage:

`./elxflash /update /auto` – Upgrades the firmware or boot code using auto-discovery.

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- The fwmatrix.txt file is ignored. You must place the desired update versions of firmware or boot code in their respective directories.
- If the update versions are higher than the currently installed versions on the adapter then the update versions are downloaded to the adapter.
- If multiple update versions of firmware or boot code are found for an adapter, the most recent versions are downloaded to the adapter.
- When performing the boot code update operation, the Elxflash utility uses the most recent boot code version found. Since multiple compatible versions of boot code may exist, the most recent version is selected in the following order:
  1. Universal (U)
  2. Pair (P)
  3. Open (O)
  4. EFI (E)
  5. x86 (B)

Note: The most recent boot code version is downloaded regardless of the installed boot code. This allows upgrading from one type of boot code to another type.

`./elxflash /update` – Upgrades the firmware or boot code using the fwmatrix.txt file.

- For each installed and supported adapter, the current firmware and boot code versions are compared with the versions specified in fwmatrix.txt.
- If the update versions in fwmatrix.txt are more recent than the currently installed versions, then the update versions of firmware or boot code are downloaded to that adapter.

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=<description>
```

FCoE Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

Note: FCoE, iSCSI, and NIC-only adapters require a system reboot to activate new firmware.

Verbose (/v)

Usage: /v

The verbose switch displays progress messages and can be used with any switch. When this switch is used, the following information is displayed:

- A download summary for all adapters that had successful or failed downloads
- A summary of unsupported adapters, if applicable
- A per adapter message for each adapter that the Elxflash utility did not update

FC Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=<Boot Code|Firmware>, Image=<image>, New=<version>,
Old=<version>, Status=<description>
```

FCoE Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, WWN=<wwn>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
```

iSCSI and NIC-only Adapter Download Summary

```
<date><time>
HBA=<model>, Port Type=<port_type>, MAC=<mac_address>,
Update=Firmware, Image=<image>, New=<version>, Old=<version>,
Status=<description>
Return Code=<n>
```

where <description> is Success or Error, and <n> = 0 for completion with no errors or a non-zero error code for any error.

VPD (/vpd)

Note: The vpd command is supported on the ElxflashOffline and Elxflash Standalone utilities only.

Usage: `/vpd`

The vpd command displays the VPD model name for supported adapters. You must use the vpd command with one of the following switches:

- /f - Force firmware and boot
- /fb - force boot code
- /ff - force firmware
- /xml - XML output
- /downgrade or /g
- /query or /q
- /rewrite or /e
- /update

Note: The vpd command does not display any information if used without the switches listed above. If you attempt to use the /vpd command without the switches listed above, an error message is displayed.

If the vpd command is used in conjunction with the fwmatrix.txt file, the model name in the fwmatrix.txt file must match the VPD model name reported by Elxflash. Supported adapters include legacy FC adapters that support VPD and OCe11102 and later CNA adapters.

Note: Displaying the VPD model name for OCe10100 CNAs is not supported.

- XML Output (/xml)

Usage: `/xml`

The xml switch displays utility output in XML format.

4. LpCfg Utility Command Line Interface

The LpCfg utility allows you to configure Emulex adapters before you install or boot a server operating system.

The LpCfg utility includes:

- winlpcfg
- linlpcfg

Note: Usage code and examples show "`oslpcfg`". Note that the "*os*" designation changes to "win" if you are using LpCfg for Windows and to "lin" if you are using LpCfg for Linux.

You can use the LpCfg utility to do the following:

- View information on an Emulex adapter
- Reset the adapter
- Download firmware and boot code files
- Select a boot device
- Read and update WWNs
- Read MAC addresses
- Enable boot code
- Update configuration regions
- Set the adapter to use soft jumpers
- Run diagnostic tests
- Read and process script files
- Read, write, and reset VLAN IDs and VLAN Priorities

Running the LpCfg Utility from the Command Prompt

Note: The LpCfg utility is a command line utility and does not include a graphical user interface.

To run the LpCfg utility from the command prompt:

1. Boot the system with a supported operating system.
2. Start the LpCfg utility with a valid command or a valid script file name.
   - To start the LpCfg utility from the command line, move to the directory where the executable file resides and type
     ```
     oslpcfg <valid command> (replace os with ./lin or win as appropriate)
     ```
     - For example, starting the Windows LpCfg utility with a reset command:
       ```
       winlpcfg reset n=2
       ```
     - For example, starting the Linux LpCfg utility with a reset command:
       ```
       ./linlpcfg reset n=2
       ```

- To start the LpCfg utility with a script file name, move to the directory where the LpCfg utility resides and type

      *os*lpcfg @<script file name>

  o For example, starting the Windows LpCfg utility with script1.txt in the c:\test directory:

        *os*lpcfg @C:\test\script1.txt

Note: To redirect screen output to a file, add <filename> at the end of each command. For example:

      *os*lpcfg listboot n=1 >result.out

Note: For more information on script files, see "Creating Script Files" on page 56 and "Script File Commands" on page 57.

Running the LpCfg Utility Included with the ElxflashStandalone Kit

The ElxflashStandalone kit allows you to run elxflash and lpcfg without installing the utilities. No drivers are included in the Standalone kit. No applications are installed because the utility runs from inside the kit.

The ElxflashStandalone Kit has the same capability as the ElxflashOffline Kit, except that you use the following scripts to run the utility:

- Windows – winlpcfg.bat and elxflash.bat
- Linux – linplcfg.sh and elxflash.sh

Windows

1. Extract the kit contents.
2. Change directory (cd) to elxflashStandalone-windows-<version>.

   The following directories must be present:

   - boot\
   - firmware\
   - win\

3. For Elxflash, copy firmware images to the firmware directory. Copy boot images to the boot directory.

   Note: For Elxflash, each operating system architecture directory includes a fwmatrix.txt file. You must use the fwmatrix.txt directory that matches the current operating system architecture.

4. Change directory (cd) to the win directory.

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The following files and directories must be present:

- win32\
- x64\
- elxflash.bat
- winlpcfg.bat

The elxflash.bat script is used to configure the environment, run Elxflash, and revert any changes before exiting. This script installs the MILI service if it is not installed.

The winlpcfg.bat script is used to configure the environment, run winlpcfg, and revert any changes before exiting. This script installs the MILI service if it is not installed.

Notes:

- The MILI service is temporarily installed. The service is removed after the script execution is completed.
- If OneCommand® Manager is installed, the OneCommand Manager libraries and OneCommand Manager MILI service are used by the Elxflash and winlpcfg utilities.
- The winlpcfg.bat and elxflash.bat scripts call the native versions of elxflash.exe and winlpcfg.exe. For example, on Windows x64, the 64-bit utilities are called.
- The adapter being managed by the utilities included in the ElxflashStandalone kit must not be managed simultaneously by other Emulex utilities including OneCommand Manager.

5. To update firmware and bootcode on an adapter in Windows, type

```
# elxflash.bat /auto /up
```

To display a list of HBAs in Windows, type from the Win directory

```
# winlpcfg.bat  listhba
```

Each time Elxflash or lpcfg is run, a log file is created. On Windows these files are called:

```
C:\clu\log\elxflash.log
C:\clu\log\winlpcfg.log
```

Linux

Note: Running 32-bit applications on Linux x86_64 is not supported. The sh scripts only run native executable files.

1. Extract the kit contents.
2. Change directory (cd) to elxflashStandalone-linux-<version>.

The following directories must be present:

- boot\
- firmware\
- lx\

3. For Elxflash, copy firmware images to the firmware directory. Copy boot images to the boot directory.

   Note: For Elxflash, each operating system architecture directory includes a fwmatrix.txt file. You must use the fwmatrix.txt directory that matches the current operating system architecture.

4. Change directory (cd) to the lx directory.

   The following files and directories must be present:

   - i386\
   - x86_64\
   - ppc64\
   - elxflash.sh
   - linlpcfg.sh

   The elxflash.sh script is used to configure the environment, run Elxflash, and revert any changes before exiting. This script installs the MILI daemon if it is not installed.

   The linlpcfg.sh script is used to configure the environment, run linlpcfg, and revert any changes before exiting. This script installs the MILI daemons if they are not installed.

   ## Notes:

   - The MILI service is temporarily installed. The service is removed after the script execution is completed.
   - If OneCommand Manager is installed, the OneCommand Manager libraries and OneCommand Manager elxmilid daemon are used by the Elxflash and linlpcfg utilities.
   - The linlpcfg.sh and elxflash.sh scripts call the native versions of Elxflash and linlpcfg. For example, on Linux x86_64, the 64-bit utilities are called.
   - The adapter being managed by the utilities included in the ElxflashStandalone kit must not be managed simultaneously by other Emulex utilities including OneCommand Manager.

5. To update firmware and bootcode on an adapter, type

   ```
   # ./elxflash.sh /auto up
   ```

   To display a list of HBAs, type

   ```
   # ./linlpcfg.sh  listhba
   ```

Each time Elxflash or lpcfg is run, a log file is created. On Linux these files are called:

```
/var/log/clu/elxflash.log
/var/log/clu/linlpcfg.log
```

Supported Commands

Table 4-1 lists all LpCfg commands that are supported or not supported on Emulex adapters on various platforms.

✓ indicates commands are supported on both winlpcfg and linlpcfg.

L indicates commands are supported only on linlpcfg.

N/A indicates that the command is not applicable.

FCoE only indicates commands are supported only by FCoE adapters.

Table 4-1 Supported Commands for LpCfg

COMMANDS	FC Adapters			FCoE, NIC, and iSCSI Adapters	
	x86	x64	PPC	x86	x64
Operating Systems	RH 5.6+	RH 5.6+	RH 5.6+	RH 5.6+	RH 5.6+
	RH 6.1+	RH 6.1+	RH 6.1+	RH 6.1+	RH 6.1+
	SLES 11.1+	SLES 11.1+	SLES 11.1+	SLES 11.1+	SLES 11.1+
	WinPE 3.1+	WinPE 3.1+		WinPE 3.1+	WinPE 3.1+
				Ubuntu 11.x, Ubuntu 12.x Ubuntu 13.x (Elxflash Standalone on OneConnect adapters only)	Ubuntu 11.x, Ubuntu 12.x Ubuntu 13.x (Elxflash Standalone on OneConnect adapters only)
				Debian 5.x Debian 6.x Debian 7.x (Elxflash Standalone on OneConnect adapters only)	Debian 5.x Debian 6.x Debian 7.x (Elxflash Standalone on OneConnect adapters only)
config See "Notes on Supported Commands" on page 41.	✓	✓	L	FCoE only	FCoE only
directDownload See "Notes on Supported Commands" on page 41.	L	L	L	N/A	N/A
disableboot	✓	✓	L	N/A	N/A
disablebootdevice	✓	✓	L	FCoE	FCoE

Table 4-1 Supported Commands for LpCfg (Continued)

COMMANDS	FC Adapters			FCoE, NIC, and iSCSI Adapters	
	x86	x64	PPC	x86	x64
dmatest See "Notes on Supported Commands" on page 41.	N/A	N/A	N/A	✓	✓
download See "Notes on Supported Commands" on page 41.	✓	✓	L	✓	✓
enableboot	✓	✓	L	N/A	N/A
enablebootdevice	✓	✓	L	FCoE	FCoE
extloopback	✓	✓	L	✓	✓
hbaattr	✓	✓	✓	✓	✓
h or ? (Help)	✓	✓	L	✓	✓
intloopback	✓	✓	L	✓	✓
listboot	✓	✓	L	N/A	N/A
listhba	✓	✓	L	✓	✓
listrev	✓	✓	L	FCoE only	FCoE only
listmac	N/A	N/A	N/A	NIC, iSCSI	NIC, iSCSI
listwwn	✓	✓	L	FCoE only	FCoE only
logfile	✓	✓	L	✓	✓
pciloopback	✓	✓	L	FCoE only	FCoE only
posttest See "Notes on Supported Commands" on page 41.	✓	✓	L	N/A	N/A
personalityinfo See "Notes on Supported Commands" on page 41.	N/A	N/A	N/A	✓	✓
changepersonality See "Notes on Supported Commands" on page 41.	N/A	N/A	N/A	✓	✓
readaltboot	✓	✓	L	FCoE only	FCoE only
readbootdevice	✓	✓	L	FCoE only	FCoE only
readconfig	✓	✓	L	FCoE only	FCoE only
readmac	N/A	N/A	N/A	✓	✓
readvlanprops	N/A	N/A	N/A	✓	✓
reset	✓	✓	L	FCoE only	FCoE only
restoredefwwn	✓	✓	L	FCoE only	FCoE only

Table 4-1 Supported Commands for LpCfg (Continued)

COMMANDS	FC Adapters			FCoE, NIC, and iSCSI Adapters	
	x86	x64	PPC	x86	x64
restorenwwn	✓	✓	L	FCoE only	FCoE only
restorevlanprops	N/A	N/A	N/A	✓	✓
restorewwn	✓	✓	L	FCoE only	FCoE only
savewwn	✓	✓	L	FCoE only	FCoE only
screendisplay	✓	✓	L	FCoE only	FCoE only
scriptvwwnn	✓	✓	L	FCoE only	FCoE only
scriptvwwpn	✓	✓	L	FCoE only	FCoE only
scriptwwnn	✓	✓	L	FCoE only	FCoE only
scriptwwpn	✓	✓	L	FCoE only	FCoE only
setaltboot	✓	✓	L	FCoE only	FCoE only
setbootdevice	✓	✓	L	FCoE only	FCoE only
version	✓	✓	L	✓	✓
vpd See "Notes on Supported Commands" on page 41.	✓	✓	L	✓	✓
writevlanprops	N/A	N/A	N/A	✓	✓
writewwn	✓	✓	L	FCoE only	FCoE only

Notes on Supported Commands

- The Config, DirectDownload, DmaTest, and postTest commands are not supported by 16Gb Fibre Channel adapters.
- The download command does not support a= <adapter name> with CNAs and the LPe16000 family of adapters.
- DmaTest is supported on OneConnect adapters only.
  PersonalityInfo and changePersonality are supported on OCe11100-series adapters only.

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Viewing the Syntax for Commands (help or ?)

To view the syntax for all available commands, type

    *os*lpcfg help

    or

    *os*lpcfg ?

To view the syntax for a specific command, type

    *os*lpcfg help <command>

    or

    *os*lpcfg ? <command>

For example, either:

    *os*lpcfg help download

    or

    *os*lpcfg ? download

returns a response similar to the following:

    download <n=adapter> <i=imagepath>

    or

    download <a=adaptertype> <i=imagepath>

Resetting an Adapter (reset)

This command resets a specific adapter or all adapters in the system.

Syntax:

To reset one adapter, type

    *os*lpcfg reset n=<adapter number>

To reset all adapters in the system, type

    *os*lpcfg reset n=all

Running the Power-on Self Test (posttest)

This command runs the POST on the selected adapter.

To run the adapter POST test, type

    *os*lpcfg posttest n=<all/adapter number>

The following example runs the POST test on adapter number 1.

    *os*lpcfg posttest n=1

Viewing Adapter Information

The following commands allow you to view different kinds of adapter information such as VPD, boot device information, and adapter attributes.

Viewing Emulex Conventional Names Instead of VPD (- /c)

Adding /c to any command that uses the a= parameter to return adapter data causes the command to return an Emulex conventional model for the adapter rather than the model name in the adapter. /c can be used for any command that displays the model name. For instance, the following commands use the a= parameter and show this behavior.

- config
- download
- directdownload

Note: The offline utility does not always display the model name of the adapter being tested.

For example:

- Emulex conventional model name (using /c switch) – LPe16002
- VPD model name– LPe1104-M6-D

Viewing the LpCfg Utility Version Information (version)

This command shows the LpCfg utility version information.

To view this information, type

```
oslpcfg version
```

Viewing VPD

This command shows the VPD of the adapter specified by its number.

To display VPD, type

```
oslpcfg vpd n=<adapter number>
```

Viewing Boot Device Information (readbootdevice)

This command shows the WWN, the LUN (in decimal format), and the topology in use for the currently selected boot device.

To show this information, type

```
oslpcfg readbootdevice n=<adapter number>
```

The following example reads WWN and LUN for adapter number 1:

```
oslpcfg readbootdevice n=1
```

Viewing BootBIOS Versions (listboot)

This command lists all the BootBIOS versions, with indices (base 1) and code names, that are loaded in the flash of the adapter and specified by its number. If the selected adapter does not have any BootBIOS loaded, it returns error code 39.

Note: Because this application uses base 1 indices, if you had three ports in the application they would be port 1, port 2, and port 3.

To list BootBIOS versions, type

```
oslpcfg listboot n=<adapter number>
```

The following example lists BootBIOS versions that are loaded on adapter number 3:

```
oslpcfg listboot n=3
```

Viewing Adapter Attributes (hbaattr)

This command displays adapter information.

To list the adapter attributes for all installed adapters, type

```
oslpcfg hbaattr
```

To list the adapter attributes for one adapter, type

```
oslpcfg hbaattr n=<adapter_number>
```

Viewing All Adapters in the System (listhba)

This command lists all installed adapters in the system. Information includes the adapter number (base 1), the IEEE address assigned by the manufacturer, the functional firmware, the adapter type, and possible mailbox errors.

To list all adapters in the system, type

```
oslpcfg listhba
```

Note: listHBA with option -/c displays the FC HBA conventional model names instead of the model names contained in the VPD.

Viewing the WWN of All Adapters in the System (listwwn)

This command lists all adapters installed in the system and shows the factory-assigned WWN, the non-volatile WWPN, and the WWNN used to identify an adapter in the SAN.

The factory-assigned WWN is an IEEE address that cannot be changed in the field. The non-volatile WWN can be modified in the field and persists after a restart of the operating system. The full factory-assigned WWN and non-volatile WWN are a concatenation of the two 8-character values (word 0 and word 1) that are shown for each. You can modify the non-volatile WWPN and WWNN using either the writewwn command or the scriptwwpn and scriptwwnn commands. For more information on the writewwn command, see "Writing WWN and Updating NVPARMS (writewwn)" on page 47.

If the system does not have any Emulex adapters installed, it returns error code 45.

To show the WWN information, type:

```
oslpcfg listwwn
```

Viewing the MAC Address (listmac)

This command shows the MAC address of a NIC CNA port.

To view the MAC address of a NIC CNA port, type

```
oslpcfg listmac n=<adapter number>
```

Reading the MAC Address (readmac)

This command shows the current, factory and semi-volatile MAC addresses for the adapter number specified.

Note: Readmac is supported on the following adapters: LPe16000 (FCoE/NIC), LPe16000 (FC/NIC), OCe11100, and OCe14100 [R] and later revisions.

To view the MAC address of the adapter number specified, type

```
oslpcfg.exe readmac n=<adapter#>
```

The following example lists information for adapter number 1:

```
>oslpcfg.exe readmac n=1
Command: readmac n=1
adapter 1:
Current MAC Address : 00-90-FA-30-43-AA
Factory MAC Address : 00-90-FA-30-43-30
Semi-Volatile MAC Address: 00-90-FA-30-43-AA
Command completed, NO Error
```

Viewing Firmware Program Revisions (listrev)

This command shows the firmware versions in the adapter's flash memory, specified by their numbers.

To show revisions, type

```
oslpcfg listrev n=<adapter number>
```

The following example lists information for adapter number 3:

```
oslpcfg listrev n=3
```

Viewing Selected Configuration Regions (readconfig)

This command shows the contents of the selected configuration region up to the initialized length or the specified byte count (if the initialized length is less than the specified byte count). Valid region numbers are 0 to 32. You must initialize the configuration region first by writing data to it.

Note: If you are using an FCoE adapter, the readconfig command only supports reading configuration region 8 and 32.

To read a configuration, type

```
oslpcfg readconfig n=<adapter number> r=<region number> l=<byte count>
```

The following example reads the configuration for adapter number 1, region 0, byte count 20:

```
oslpcfg readconfig n=1 r=0 l=20
```

Firmware and Boot Code Download Commands

The following firmware and boot code download commands include a command to downloading a firmware or boot code file and a command to access the flash device directly.

Downloading a File (download)

This command downloads a firmware or boot code file to a specific adapter.

The adapter name is the name that appears when you run the listHBA command. For more information on the listHBA command, see "Viewing All Adapters in the System (listhba)" on page 44.

To download a firmware image file to an adapter specified by its number, type

```
oslpcfg download n=<adapter number> i=<firmware image filename>
```

The following example downloads the uu513a10.prg (Universal) BootBIOS file to adapter number 6; in this example, the (Universal) BootBIOS file is for an LPe12000 adapter:

```
oslpcfg download n=6 i=uu513a10.prg
```

Note: Boot code on OneConnect and 16GFC adapters is updated by downloading firmware. LpCfg does not support updating boot code separately these adapters.

Accessing the Flash Device Directly (directdownload)

This command directly accesses the flash device on the adapter without using the adapter firmware. This feature is useful in downloading a ROM file image if the firmware has been corrupted. The adapter name is the name that appears when you run the listHBA command. You can also use "default" for the adapter name if there is only one single-port adapter or one dual-port adapter in the system. For more information on the listHBA command, see "Viewing All Adapters in the System (listhba)" on page 44.

Notes:

- You cannot use directdownload in a script file.
- CNAs and LPe16000 family of adapters do not support directdownload.

You can use this feature on the following Emulex adapters: LP21000 and LP21002.

To access the flash device on the adapter directly, type (all on one line)

```
oslpcfg directdownload a=<adapter name/default> i=<firmware image
filename> s=<selection 0 or 1>
```

where s=1 saves the existing VPD.

The following example accesses the flash device on an LPe12000 HBA:

```
oslpcfg directdownload a=lpe12000 i=C:\image\ud100a8.rom s=1
```

The following example accesses the flash device if the offline utility cannot detect the adapter type and there is only one single-port adapter or one dual-port adapter in the system:

```
oslpcfg directdownload a=default i=C:\image\ud100a8.rom s=1
```

Caution: In versions prior to 5.1 or with option s=0 in version 5.1, the ROM images used with the directdownload command may not contain certain VPD information (for example, serial number, adapter model, or manufacturer). Direct download of a ROM image that has not been confirmed to contain the correct VPD image updates the board's firmware, but it also clears the VPD. The board will function. If you use calls for VPD in your applications, the information may be changed or missing.

World Wide Name Commands

The following commands allow you to use the WWN to update NVPARAMS, save WWN data to a file, and restore WWN data while updating NVPARAMS. You can also restore the NVPARAMS and the IEEE address.

Writing WWN and Updating NVPARMS (writewwn)

This command allows you to enter word 0 and word 1 of the WWPN or WWNN from the keyboard or a barcode scanner to update a specified adapter's NVPARMS with a new WWPN or WWNN. The new WWPN and WWNN are used the next time the adapter is discovered. The adapter stores the original WWPN and WWNN in another

region of the memory so it can be used to identify the adapter as it was manufactured. The WWN can also be read with a barcode scanner.

The Write WWN prompts for the WWPN and WWNN cannot be used in a script file. The scriptwwnn and scriptwwpn commands use values entered with the command and can be used in a script file.

Caution: Use the writewwn command with caution. If you use the same WWPN or WWNN on more than one adapter in a fabric, unpredictable results may occur.

Note: Word 0 of WWNN and WWPN names must follow one of the following formats:
1 0 0 0 0 x x x
2 x x x x x x x
3 x x x x x x x
5 x x x x x x x

To modify the WWPN and WWNN, type

```
oslpcfg writewwn n=<adapter number>
```

The offline utility prompts you to enter new data:

- WWPN word 0
- WWPN word 1
- WWNN word 0
- WWNN word 1

The following example writes the WWPN and WWNN for adapter number 1.

```
oslpcfg writewwn n=1
Enter or Scan value for WWPN word 0 now
```

Enter a value.

```
10000000
```

The system echoes what you entered, followed by the next prompt:

```
10000000
Enter or Scan value for WWPN word 1 now
```

Saving WWN Data to a File (savewwn)

This command reads the original words 0 and 1 of the IEEE address, installed by manufacturing, from configuration regions 16 (or 32) of the adapter (specified by its number) and saves the configuration region information in the selected WWN file.

To save the WWN data to a file, type

```
oslpcfg savewwn n=<adapter number> c=<wwn filename>
```

The following example reads the configuration region information on adapter number 4 and saves it to the contents of the ctwwn.sav file:

```
oslpcfg savewwn n=4 c=ctwwn.sav
```

Restoring WWN and Updating NVPARMS (restorewwn)

This command restores words 0 and 1 of the IEEE address from a specified file created with the savewwn command and uses them to update the NVPARMS port name with this IEEE address.

To restore the WWN, type

```
oslpcfg restorewwn n=<adapter number> c=<wwn filename>
```

The following example updates the NVPARMS on adapter number 4 with the ctwwn.sav file.

```
oslpcfg restorewwn n=4 c=ctwwn.sav
```

Restoring NVPARMS (restorenvwwn)

This command restores the non-volatile WWPN and WWNN to the adapter, replacing any volatile WWPN and WWNN data, without powering off the adapter.

If the adapter does not have firmware that supports the volatile WWN, the following error message appears:

```
Write Volatile Parms Error. Reported Error 48
```

If this occurs, install firmware that supports the volatile WWN.

To restore the non-volatile WWN, type

```
oslpcfg restorenvwwn n=<adapter number>
```

The following example restores the non-volatile WWN on adapter number 2.

```
oslpcfg restorenvwwn n=2
```

Restoring the IEEE address (restoredefwwn)

This command reads the IEEE address (assigned by the manufacturer) and writes it to the non-volatile WWPN and WWNN.

To restore the IEEE address, type

```
oslpcfg restoredefwwn n=<adapter number>
```

The following example restores the IEEE address on adapter number 2.

```
oslpcfg restoredefwwn n=2
```

Boot Code Commands

You must enable BootBIOS before you can issue setBootDevice and setAltBoot commands. If necessary, use the enableboot command to enable BootBIOS. See "Enabling or Disabling BootBIOS or Boot Code (enableboot or disableboot)" on page 50 for more information.

To set the boot device with the offline utility, run the following commands in this order:

1. Use the listboot command to verify that the BootBIOS is present. See "Viewing BootBIOS Versions (listboot)" on page 44 for more information.

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Example:

```
oslpcfg listboot n=1
```

Sample return:

```
bootBIOS 1 (enabled): ZB2.01A2
bootBIOS 2 (disabled): ZB2.01A1
```

2. Use the setbootdevice command to set the boot device. See "Selecting a Boot Device (setbootdevice)" on page 50 for more information.

3. Configure the system BIOS so the adapter boot device is the highest in the boot order.

Enabling or Disabling BootBIOS or Boot Code (enableboot or disableboot)

This command enables or disables the BootBIOS (boot code) (selected by its index) for the specified adapter number. Index i is one of the indices (base 1) shown when you run the listboot command.

To enable BootBIOS, type

```
oslpcfg enableboot n=<adapter number> i=<index>
```

The following example enables BootBIOS on adapter number 6:

```
oslpcfg enableboot n=6 i=1
```

To disable BootBIOS, type

```
oslpcfg disableboot n=<adapter number>
```

The following example disables BootBIOS on adapter number 6:

```
oslpcfg disableboot n=6
```

Selecting a Boot Device (setbootdevice)

This command sets the boot device specified by its WWN, LUN, and desired topology.

- Set t to 0 for arbitrated loop.
- Set t to 1 for point-to-point.

The selected device boots when the system reboots.

The boot code must be enabled before issuing the setbootdevice command.

To set the boot device, type (all on one line)

```
oslpcfg setbootdevice n=<adapter number> w0=<wwpn word 0> w1=<wwpn
word 1> l=<Decimal ID of LUN> t=<topology>
```

Note: Enter the LUN number in decimal format.

The following example sets the boot device on adapter number 1, LUN number 46 with a desired topology of arbitrated loop:

```
oslpcfg setbootdevice n=1 w0=a1b2c3d4 w1=b946a4e8 l=46 t=0
```

Note: If port login fails after 50ms, the command is retried once.

Enabling or Disabling Boot Devices (enablebootdevice or disablebootdevice)

After using the setBootDevice command, you can enable or disable the boot device by using the enablebootdevice or disablebootdevice command.

To enable the boot device, type

```
oslpcfg enablebootdevice n=<adapter number>
```

To disable the boot device, type

```
oslpcfg disablebootdevice n=<adapter number>
```

Note: These commands require that the system be rebooted for the change to take effect.

Read All Alternative Boot Devices (readaltboot)

This command shows the WWN and LUN numbers in decimal format of all possible alternate boot devices. You can have up to seven alternate boot devices.

To read all alternate boot devices, type (all on one line)

```
oslpcfg readaltboot n=1
```

Selecting One or More Alternate Boot Devices (setaltboot)

This command sets alternate boot devices. You can set up to seven alternate boot devices, that is, index i can be from one to seven.

Note: The boot code must be enabled before you issue the setAltBoot command.

To set up one or more alternate boot devices, type (all on one line)

```
oslpcfg setaltboot n=<adapter number> i=<index> w0=<wwpn word 0>
w1=<wwpn word 1> l=<Decimal ID of LUN>
```

The following example sets the alternate boot device on adapter number 1, LUN number 3:

```
oslpcfg setaltboot n=1 i=1 w0=12345678 w1=a842b6 l=3.
```

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Configuration Commands

Configuration commands allow you to update the configuration region of an adapter by name or by number.

Updating Configuration Regions (config)

Two forms of configuration are available:

- Configure all adapters of a given adapter name at once
- Configure a single adapter by its number

Valid region numbers range from 0 to 32.

Update by Name

To update a specified configuration region on all adapters of the same selected name, type (all on one line)

```
oslpcfg config a=<adapter name> r=<region number> c=<configuration filename>
```

Note: The adapter name is the name that appears when you run the listHBA command. For more information on the listHBA command, see "Viewing All Adapters in the System (listhba)" on page 44.

The following example updates region 6 of all LP12000 adapters with ctplus1.cfl:

```
oslpcfg config a=lp12000 r=6 c=ctplus1.cfl
```

The following example updates region 17 of all ABC24-FC56 adapters with d:\dfplus1.cfl:

```
oslpcfg config a=ABC24-FC56 r=17 c=d:\dfplus1.cfl
```

Note: The size of the .cfl file for configuration region update can be up to 2028 bytes.

Update by Number

To update a specified configuration region for one adapter, type (all on one line)

```
oslpcfg config n=<adapter number> r=<region number> c=<configuration filename>
```

The following example updates region 17 of adapter number 4 with heplus1.cf1:

```
oslpcfg config n=4 r=17 c=heplus1.cfl
```

The following example updates region 6 of adapter number 2 with d:\dfplus1.cf1:

```
oslpcfg config n=2 r=6 c=d:\dfplus1.cfl
```

Personality Commands

The following commands allow you to manage the personality of your adapter

Note: Personality commands apply to OneConnect adapters only.

Viewing Personality Information (personalityInfo)

Note: The personalityInfo command applies to OneConnect adapters only.

This command displays the current personality running on the adapter, as well as, other available personalities.

To view personality information, type

```
oslpcfg personalityInfo n=<adapter index>
```

where adapter index is obtained from the listHBA command.

The following example lists the personalityInfo on adapter number 3:

```
oslpcfg personalityInfo n=3
```

Changing Personality Information (changePersonality)

Note: The personalityInfo command applies to OneConnect adapters only.

This command changes the personality of the adapter to the selected one. You must reboot the system to activate the personality change.

To change personality, type

```
oslpcfg changePersonality n=<adapter index> p=<personality string>
```

The following example changes the personality information on adapter number 3:

```
oslpcfg changePersonality n=3 p=iSCSI
```

Diagnostic Tests

The following commands allow you to run diagnostic tests on your adapter.

Notes:

- Since the extloopback, intloopback, and pciloopback commands do not support testing on all installed adapters, the o=3 option applies to running linlpcfg with the script command. The o=3 option instructs LpCfg to ignore errors and continue script execution.
- When the o=3 option is used, LpCfg ignores up to 3 errors during an adapter test before continuing to the next adapter.

Running the External Loopback Test (extloopback)

Note: Extloopback is not supported on LPe16000-series FC adapters.

This command runs the external loopback test. You must put a loopback plug in each adapter port to be tested. You can test a specific adapter in the system. Specify the number of times you want the test to repeat, and direct the test response if an error is found.

The option on error choices are:

- o=1 stops the test on the first error
- o=2 ignores three errors and stops the test on the fourth error
- o=3 ignores errors and continues the test

Note: extloopback does not support testing all installed adapters using n=all.

To run the external loopback test on LightPulse adapters, type (all on one line)

```
oslpcfg extloopback n=<adapter number> r=<repeat count> o=<option on error>
```

Note: You must put a loopback plug in each port tested for extloopback.

To run external loopback test on OneConnect adapters, type (all on one line)

```
oslpcfg extLoopback n=<adapter index> p=<pattern> c=<byte count> r=<repeat count>
```

where:

- p = 3 to 8-HEX byte pattern
- c = 1500 to 8192
- r = 1 to 4096

The following example runs the external loopback test 50 times on adapter number 1 and stops the test if an error occurs:

```
oslpcfg extloopback n=1 r=50 o=1
```

Running the Internal Loopback Test (intloopback)

This command runs the internal loopback test. You can run the test on a specific adapter in the system. Specify the number of times you want the test to repeat, and direct the test response if an error occurs.

The option on error choices are:

- o=1 stops the test on the first error
- o=2 ignores three errors and stops the test on the fourth error
- o=3 ignores errors and continues the test

Notes:

- intloopback does not support testing all installed adapters using n=all.
- Do not use the internal loopback test on Emulex blade adapters.

To run the internal loopback test, type (all on one line)

```
oslpcfg intloopback n=<adapter number> r=<repeat count> o=<option on
error>
```

To run internal loopback test on OneConnect adapters, type (all on one line)

```
oslpcfg intLoopback n=<adapter index> p=<pattern> c=<byte count>
r=<repeat count> t=<type>
```

where:

- p = 3 to 8-HEX byte pattern
- c = 1500 to 8192
- r = 1 to 4096
- t = 2

The following example runs the internal loopback test 100 times on adapter number 1 and stops the test if an error occurs:

```
oslpcfg intloopback n=1 r=100 o=1
```

Running the PCI Loopback Test (pciloopback)

This command runs the PCI loopback test. You can run the test on a specific adapter or on all adapters in the system. Specify the number of times you want the test to repeat, and direct the test response if an error occurs.

The option on error choices are:

- o=1 stops the test on the first error
- o=2 ignores three errors and stops the test on the fourth error
- o=3 ignores errors and continues the test

Note: pciloopback does not support testing all installed adapters using n=all.

To run the PCI loopback test, type (all on one line)

```
oslpcfg pciloopback n=<all/adapter number> r=<repeat count>
o=<option on error>
```

The following example runs the PCI loopback test 100 times on all adapters in the system and stops the testing if any errors occurs.

```
oslpcfg pciloopback n=<adapter_number> r=100 o=1
```

Running the DMATest

This command runs the DMA test, which is a direct memory access test of the memory on the adapter. You can run the test on a specific adapter in the system and specify the number of times you want the test to repeat.

Notes:

- DMATest does not support testing all installed adapters using n=all.
- Do not use the DMA test on Emulex blade adapters.

To run the DMA test, type (all on one line)

```
oslpcfg dmatest <n=adapter> <p=pattern> <c=byte-count>
<r=repeat-count>
```

The following example runs the DMA test two times on adapter number 1:

```
oslpcfg dmatest n=1 p=abcde c=1500 r=2
```

Using Script Files

Use script files to efficiently perform tasks. Script files are commonly sequences of command that you use when performing tasks.

Creating Script Files

You can group commands together and run them using a script file. You can also enter comment lines, which begin with a semicolon. Each line follows the same command syntax as those documented in this manual. Using the offline utility, you can

- Run commands entered in a script file. Use the @ command to run the script file.
- Run commands multiple times. Add the repeat command as the last line of the script file.
- Create a log of test results. Add the logfile command as the first line of the script file.

To run a script file type:

```
oslpcfg @<scriptname.txt>
```

The following example runs the script "script1.txt" that resides in the current directory and executes all the commands in that script file.

```
oslpcfg @script1.txt
```

Note: To interrupt and stop any script, press **<S>** on the keyboard.

Script File Commands

The following is a sample script file. Each command follows the syntax covered above. The comment lines begin with a semicolon (;):

```
version
screendisplay o=0
;download a=lpe12000 i=c:\temp\ud201a12.all
;reset n=1 s=0
;reset n=2 s=0
reset n=all s=0
listboot n=1
enableboot n=1 i=2
; pciloopback n=1 r=10 o=1
; pciloopback n=2 r=10 o=2
; pciloopback n=all r=50 o=3
intloopback n=1 r=10 o=1
intloopback n=2 r=10 o=1
extloopback n=1 r=40 o=3
extloopback n=2 r=40 o=3
;repeat r=10
```

Repeating a Series of Commands (repeat)

Enter this command at the end of a script file to repeat a series of commands from the beginning of the script file a specific number of times.

Note: To interrupt and stop the repeat command, press **<S>** on the keyboard.

To repeat the series of commands in the script file, add the following as the last line of the file:

```
repeat r=<repeat count>
```

The following example repeats the series of commands in the script file ten times.

```
repeat r=10
```
 Enabling or Disabling Test Messages on the Screen (screendisplay)

This command enables or disables test message displays on the screen.

- o=0 – Prevents messages from appearing
- o=1 – Enables messages

Note: This command is supported only in script files.

To enable or disable test message displays on the screen, add the following line to the script:

```
screendisplay o=<display option>
```

In the following script file example, messages from the version and listhba commands are output to the log file and to the screen. After the screendisplay command is set to 0, all successive commands (download, listboot, and enableboot) result messages are output only to the log file, not to the screen.

```
version
listhba
screendisplay o=0
download a=lpe12000 i=c:\temp\ud201a12.all
listboot n=2
enableboot n=2 i=1
```

Updating Non-volatile WWNN (scriptwwnn)

This command reads the WWNN words 0 and 1 from the command line to update the non-volatile WWNN. You can also include this command in a script file. When the adapter is discovered, the new WWNN value is used. The adapter retains the original WWNN in another region of the firmware.

Caution: Use the scriptwwnn command with caution. If you use the same WWNN on more than one adapter in a fabric, unpredictable results may occur.

To change WWNN words 0 and 1 from the command line, type (all in one line)

```
oslpcfg scriptwwnn n=<adapter number> w0=<wwnn word 0> w1=<wwnn word 1>
```

The following example updates non-volatile WWNN word 0 and word 1 for adapter number 1:

```
oslpcfg scriptwwnn n=1 w0=10000345 w1=B620A1B2
```

Notes:

- Word 0 of WWNN and WWPN names must follow one of the following formats:
  1 0 0 0 0 x x x
  2 x x x x x x x
  3 x x x x x x x
  5 x x x x x x x
- If the scriptvwwnn command has been used previously, the adapter continues to use that WWNN until you change the WWNN with the restorenvwwn command.

Updating Non-volatile WWPN (scriptwwpn)

This command reads WWPN words 0 and 1 from the command line to update the non-volatile WWPN. You can also include this command in a script file. When it is discovered, the adapter uses the new WWNN value. It does not use the original IEEE address assigned by manufacturing (located in Configuration Region 16 or 32).

Caution: Use the scriptwwpn command with caution. If you use the same WWPN on more than one adapter in a fabric, unpredictable results may occur.

Note: If the scriptvwwnn command has been used previously, the adapter continues to use that WWPN until you change the WWPN with the restorenvwwn command.

To change WWPN words 0 and 1 from the command line, type (all in one line)

```
oslpcfg scriptwwpn n=<adapter number> w0=<wwpn word 0> w1=<wwpn word
1>
```

The following example updates the non-volatile WWPN word 0 word 1 for adapter number 1:

```
oslpcfg scriptwwpn n=1 w0=20A2D6B8 w1=C920A1B2
```

Updating Volatile WWNN (scriptvwwnn)

This command reads the WWNN words 0 and 1 from the command line to update the volatile WWNN. When next discovered, the adapter uses this new WWNN. It does not use the original IEEE address assigned by manufacturing (located in Configuration Region 16 or 32) nor does it use the value entered by the writewwn or scriptwwnn commands.

If the adapter does not have firmware that supports the volatile WWN, the following error message appears:

```
Write Volatile Parms Error. Reported Error 48
```

If this occurs, install firmware that supports the volatile WWN.

Notes:

- Word 0 of WWNN and WWPN names must follow one of the following formats:
  1 0 0 0 0 x x x
  2 x x x x x x x
  3 x x x x x x x
  5 x x x x x x x
- After you issue this command, the volatile WWNN is used by the adapter until the restorenvwwn command is issued or the system is restarted.

Caution: Use the scriptvwwnn command with caution. If you use the same volatile WWNN on more than one adapter in a fabric, unpredictable results may occur.

To change volatile WWNN words 0 and 1 from the command line, type (all in one line)

```
oslpcfg scriptvwwnn n=<adapter number> w0=<wwnn word 0> w1=<wwnn word 1>
```

The following example updates the volatile WWNN word 0 word 1 for adapter number 1:

```
oslpcfg scriptvwwnn n=1 w0=20A2D6B8 w1=C920A1B2
```

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Updating Volatile WWPN (scriptvwwpn)

This command reads the WWPN words 0 and 1 from the command line to update the volatile WWPN. When next discovered, the adapter uses this new WWPN. It does not use the original IEEE address assigned by manufacturing (located in Configuration Region 16 or 32) nor does it use the value entered by the writewwn or scriptwwpn commands.

If the adapter does not have firmware that supports the volatile WWN, the following error message appears:

```
Write Volatile Parms Error. Reported Error 48
```

If this occurs, install firmware that supports the volatile WWN.

Notes:

- Word 0 of WWNN and WWPN names must follow one of the following formats:
  1 0 0 0 0 x x x
  2 x x x x x x x
  3 x x x x x x x
  5 x x x x x x x
- After you issue this command, the volatile WWNN is used by the adapter until the restorenvwwn command is issued or the system is restarted.

Caution: Use the scriptvwwnn command with caution. If you use the same VWWNN on more than one adapter in a fabric, unpredictable results may occur.

To change VWWPN words 0 and 1 from the command line, type (all in one line)

```
oslpcfg scriptvwwpn n=<adapter number> w0=<wwpn word 0> w1=<wwpn word 1>
```

The following example updates the volatile WWPN word 0 word 1 for adapter number 1:

```
oslpcfg scriptvwwpn n=1 w0=20A2D6B8 w1=C920A1B2
```

Creating a Log (logfile)

This command creates a log file with a specified directory and file name. The default log file is lpcfglog.txt and is created in the system's current directory.

Note: This command is supported only in script files. Make it the first command in the script.

To create a log file use the following command as the first command in your script file, type

```
logfile l=<filename>
```

The following example creates a file called lplog.txt in the d:\ directory:

```
logfile l=d:\log\lplog.txt
```

Results of all commands are recorded in a log file. Unless otherwise specified by the logfile command, the default log file is Lpcfglog.txt in the current directory.

VLAN Commands

Using the following commands, you can manage the VLAN ID and VLAN priorities on specified adapters.

Reading VLAN Priorities (readvlanprops)

This command shows the NIC function on an adapter's VLAN ID and VLAN Priority for the adapter number specified.

Note: Readvlanprops is supported on the following adapters: LPe16000 (FCoE/NIC), LPe16000 (FC/NIC), OCe11100, and OCe14100 [R] and later revisions.

To read the VLAN priorities for the adapter specified, type

```
>oslpcfg.exe readmac n=<adapter#>
```

The following example lists information for adapter number 1:

```
>oslpcfg.exe readvlanprops n=1
Command: readvlanprops n=1
adapter 1:
VLANId        : 1024
VLANPriority: 1
Command completed, NO Error
```

Restoring the Default Values for the VLAN ID and VLAN Priorities (restorevlanprops)

This command restores the adapter's default VLAN ID and VLAN Priority values, which are both set to zero, on the adapter number specified.

Note: Restoredefvlanprops is supported on the following adapters: LPe16000 (FCoE/NIC), LPe16000 (FC/NIC), OCe11100, and OCe14100 [R] and later revisions.

To restore the VLAN ID and VLAN priorities for the adapter specified, type

```
>oslpcfg.exe restorevlanprops n=<adapter#>
```

Changing the VLAN ID and VLAN Priority on a Specified Adapter's NIC Function (writevlanprops)

This command allows you to change the VLAN ID and VLAN Priority on an the specified adapter's NIC function. You can specify the VLAN ID and the VLAN Priority with the following values:

- VLAN ID – 0-4095. A value of 0 disables the VLAN ID.
- VLAN Priority – 0-7.

Note: Writevlanprops is supported on the following adapters: LPe16000 (FCoE/NIC), LPe16000 (FC/NIC), OCe11100, and OCe14100 [R] and later revisions.

To change the VLAN ID and the VLAN Priority on a specified adapter's NIC function, type

```
WinLpCfg.exe writevlanpropsn=<adapter#> i=<vlan_id>
p=<vlan_priority>
```

The following example changes the VLAN ID and VLAN Priority for adapter number 1:

```
>oslpcfg.exe writevlanprops n=1 i=1024 p=1

Command: writevlanprops n=1 i=1024 p=1

adapter 1:

Command completed, NO Error
```

5. Elxflash Utility Status Messages

The Elxflash utility takes a less stringent approach to reporting status messages when used with auto-discovery. An error message is returned only when the Elxflash utility reports a failure during a download or if the firmware and boot directories cannot be located.

Table 5-1 lists the Elxflash utility status messages that are supported.

Table 5-1 Elxflash Status Messages

Message Number	Message Title	Message Details
0	GOOD_ALL_UPGRADES_OK	Returned if any of the discovered adapters had a successful download performed.
1	GOOD_NO_UPDATES_NEEDED	Returned if any of the discovered adapters did not need an update, downgrade, or rewrite operation. This message is never returned during a force firmware or force boot code download operation.
2	ERROR_ALL_UPGRADES_FAILED	Returned if all attempted downloads failed.
3	ERROR_SOME_UPGRADES_FAILED	Returned if some of the attempted downloads failed.
4	ERROR_EMULEX_APPS_COMMAND	Returned if Elxflash cannot execute an external executable such as: • *os*lpcfg (elxflashOffline) • hbacmd (elxflashOnline) • ethool (ElxflashOFfline NIC Only)
5	ERROR_NO_SUPORTED_HBA_FOUND	Returned if no supported adapters are found.
6	ERROR_DIRECTORY_NOT_FOUND	Returned if the firmware or boot directories are missing. Depending on the operation, auto-discovery expects the firmware or boot directories to exist as subdirectories in the root of the package directory.
7	GOOD_NO_UPGRADES_AVAILABLE	Returned if none of the discovered adapters had a matching image in the firmware or boot directories. In this case only, a matching image is an image that the adapter accepts regardless of the download operation being performed.
8	ERROR_NOT_ADMIN_USER	Returned when you attempt to run the executable file and do not have administrator (Windows) or root (Linux) privileges.

Table 5-1 Elxflash Status Messages (Continued)

Message Number	Message Title	Message Details
9	ERROR_UNSUPPORTED_OS	Used by the Exlflash Standalone execution scripts. Returned when the scripts are run on an unsupported operating system.
10	ERROR_UNSUPPORTED_ARCH	Used by the Exlflash Standalone execution scripts and returned when the scripts are run on an unsupported architecture.
11	GOOD_ALL_UPGRADES_OK_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, but all downloads to the other adapters succeeded.
12	GOOD_NO_UPDATES_NEEDED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and no updates were needed on the other adapters.
13	ERROR_ALL_UPGRADES_FAILED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and all downloads to the other adapters failed.
14	ERROR_SOME_UPGRADES_FAILED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and some downloads to the other adapters failed.
15	ERROR_NO_SUPPORTED_HBA_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, but no other adapters were discovered.
16	GOOD_NO_UPGRADES_AVAILABLE_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, but no applicable firmware or boot code images were found for supported adapters.
19	ERROR_IMAGE_VERSION	An error occurred when decoding the image version. The image file has an invalid extension, or Elxflash was unable to decode the image file's version. **Note:** This is returned only when using the /iv=<image_version> switch.
20	ERROR_MISSING_DEP	The application is missing one or more dependencies.

6. LpCfg Error Codes

Table 6-1 lists the LpCfg error codes that are supported.

Table 6-1 LPCfg Error Codes

Error Code	Description
0	No error
1	Invalid adapter number
2	Mailbox command error
3	No valid boot (BIOS) code found
4	Open file error
5	Invalid configuration region
6	Invalid adapter name
7	Download error
8	Invalid boot (BIOS) code index
9	Link not up for external loopback test
10	Link not up for internal loopback test
11	Invalid jumper selection (in jumper command)
12	Invalid alternate configuration region (in jumper command)
13	PCI loopback test fails
14	Adapter reset error
15	Read configuration region error
16	No VPD information available
17	No command in command line
18	Open log file error
19	Read wakeup parameters error
20	Update wakeup parameters error
21	Incorrect test parameters
22	Stopped by user
23	Internal loopback test fails
24	External loopback test fails
25	Error exists after four retries
26	Invalid command
27	Incorrect syntax
28	Command supported only in script files
29	Read_rev error

Table 6-1 LPCfg Error Codes (Continued)

Error Code	Description
30	Dump configuration region error
31	Read file error
32	Short file error
33	Read NVPARMS error
34	Write NVPARMS error
35	Command does not support all adapters
36	Invalid LUN number
37	No boot (BIOS) code enabled
38	Update configuration region error
39	No boot (BIOS) found
40	Dump memory error
41	Update EROM error
42	Delete load entry error
43	Write WWN error
44	Not supported in script files
45	No Emulex adapter found
46	Invalid Alternate Boot Device Index
47	Cannot restart adapter
48	Write volatile parameters error
49	POST test error
50	Incorrect symbols
51	Invalid length
52	Invalid topology
53	No event log
54	Read event log
55	Invalid input value
56	No libdfc library
57	Non-numeric input
58	No valid WWN
59	Region cleanup
60	Region initialization
62	Unable to allocate memory
63	DFC_InitDiagEnv error

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Table 6-1 LPCfg Error Codes (Continued)

Error Code	Description
64	DFC_ReadPciCfg error
65	No driver installed
66	No valid driver
67	Not valid adapter type
68	Not valid image
69	Long file error
70	Incompatible image
71	Not supported
72	MILI service not started
73	Script not supported
74	MILI not started
75	No NIC adapter
76	Personality information
77	Personality change
78	Administrator rights error
79	SLI-4 management error
80	Reboot required
83	Application is missing one or more dependencies.
141	General error from MILI
200	General error

7. Troubleshooting

When using Elxflash, some commands take precedence over others. For instance, the force firmware (/ff), force boot (/fb), and force firmware and boot code (/f) switches take precedence over the /downgrade, /update, and /rewrite switches. If /ff, /fb, or /f are used, the /downgrade, /update, and /rewrite switches are ignored.

The following examples illustrate this behavior:

1. ./elxflash /ff /update
   a. /update is ignored.
   b. Performs a force firmware operation on all installed and supported adapters.
2. ./elxflash /fb /update
   a. /update is ignored.
   b. Performs a force boot code operation on all installed and supported adapters.
3. ./elxflash /ff /downgrade
   a. /downgrade is ignored
   b. Performs a force firmware operation on all installed and supported adapters.
4. /elxflash /fb / downgrade
   a. /downgrade is ignored.
   b. Performs a force boot code operation on all installed and supported adapters.
5. ./elxflash /ff /rewrite
   a. /rewrite is ignored
   b. Performs a force firmware operation on all installed and supported adapters.
6. ./elxflash /fb / rewrite
   a. /rewrite is ignored.
   b. Performs a force boot code operation on all installed and supported adapters.

Unsupported Driver

The Elxflash utility reports an error similar to the following if an unsupported driver is installed on the system:

```
elxflash: no supported Emulex HBA's found - Return Code=1
```

If an error similar to the above occurs, verify that the correct version of the driver is installed. For supported adapters, and supported versions of operating systems and platforms, see the Emulex website.

Updating Adapters without Boot Code

The Elxflash utility reports an adapter's boot code version as "NONE" when the adapter does not have boot code installed. The utility does not update, downgrade, or rewrite the boot area if boot code is not present, but firmware will still be updated or downgraded without boot code. You can force a boot code download using auto-discovery or the fwmatrix.txt file.