EMULEX®

Offline and Online Adapter Management Utilities Version 6.1 User Manual

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1. Introduction

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

Offline Adapter Management Utility

The Offline Adapter Management Utility kits allow you to configure Emulex® adapters before you install or boot a server operating system. Additionally, you can use a standalone Offline Adapter Management utility. See "Running the Standalone Adapter Management Utility" on page 36 for more information.

Caution: The adapter must not be connected to any device or fabric while the Linux offline utility is in use.

The offline utility includes:

- winlpcfg
- linlpcfg

See "Offline Adapter Management Utility Command Line Interface" on page 34 for further information on the offline utility.

Online Adapter Management Utility

The Online Adapter Management 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 Host Bus Adapters (HBAs) and OneConnect™ Universal Converged Network Adapters (UCNAs). For simplicity, this document refers to HBAs and UCNAs as adapters.

You can download firmware and boot code on local and remote machines simultaneously.

The Online Adapter Management Utility uses auto-discovery (/auto) which relieves you from having 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 the auto-discovery approach, the Online Adapter Management Utility has retained the ability to 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 in addition to placing the corresponding firmware and boot code images into their respective directories. The fwmatrix.txt file enables all operations that are used with auto-discovery.

Key Capabilities

Key capabilities include:

Switches

The following switches are available on all versions of the utility unless otherwise indicated:

- /auto – Auto-discovers adapters and does not use the fwmatrix.txt configuration file.
- /downgrade – Downgrades firmware or boot code if the downgrade version is less than the version that is currently installed on an adapter.
- /fb – Forces a boot code download on an adapter. /fb is not available in the ElxflashOfffline_NIC_Only build.
- /fc – Process FC HBAs only.
- /ff – Forces a firmware download on an adapter.
- /fo – Uses the flash executable on supported UCNAs.
- /fmd=<directory> – Changes the base directory where fwmatrix.txt is located.
- /id=<directory> – Changes the base directory where the firmware and boot code directories are located.
- /iv=<image_version> – Displays an image file's version.
- /p – Previews a download of firmware or boot code.
- /rewrite – Explicitly re-flashes the firmware or boot code on an adapter if the rewrite version is equal to or higher than the version currently installed on the adapter.
- /s – Mutes all output to stdout.
- /ucna – Processes UCNAs only.
- /update – Updates firmware or boot code if the update version is greater than the version currently installed on an adapter.

Supported Platforms

The online and offline applications can be installed on Windows and Linux.

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

2. Installation

Platform Pre-requisites

Linux

The Linux platform requires additional software, such as libraries, to run the different versions of the Offline/Online utility. These pre-requisites are listed below.

Offline Adapter Management Utility

- libnl library

Offline Adapter Standalone Management Utility

- libnl library

Online Adapter Management Utility

- OneCommand Core or Enterprise Kit

Offline Adapter Management Utility - NIC Only

RHEL 5.6, 5.7, 5.8 and later

- Inbox NIC driver
- ethtool
- libsysfs

RHEL 6, 6.1, 6.2 and later

- Inbox NIC driver
- ethtool
- libsysfs

SLES 10 SP4, SLES 11 SP1, and SLES 11 SP2

- Inbox NIC driver
- ethtool
- sysfsutils

Note: For SLES 10 SP4, you can use the DUD (Driver Update Disk) NIC driver 4.0.359.0s or later as an option.

Installing the Offline Adapter Management Utility for Linux

To install the Offline Adapter Management utility for Linux:

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

The install script determines the correct architecture and distribution, and performs the following operations:

1. Installs the packaged LPFC driver only if an LPFC driver RPM is not currently installed.
2. Installs the packaged NIC driver only if a NIC driver RPM is not currently installed.
3. Installs the packaged iSCSI driver only if an iSCSI driver RPM is not currently installed.
4. Attempts to update the existing ElxflashOffline and Elxlinlpcfg RPMs. If there are no existing ElxflashOffline or Elxlinlpcfg RPMs, the install script installs the packaged ElxflashOffline and Elxlinlpcfg RPMs.

Example:

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

Updating

With an existing Offline Adapter Management utility for Linux installation, run the install.sh script to update the ElxflashOffline and Elxlinlpcfg RPMs.

Note: During an update, only the ElxflashOffline and Elxlinlpcfg RPMs are updated. Existing lpfc, NIC, and iSCSI driver RPMs are not updated.

Uninstalling

To uninstall the Offline Adapter Management Utility for Linux, run the uninstall script located on the root of the installation kit.

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

- ./uninstall.sh – Uninstall ElxflashOffline and Elxlinlpcfg.
- ./uninstall.sh -f – Uninstall ElxflashOffline, Elxlinlpcfg and LPFC driver.
- ./uninstall.sh -n – Uninstall ElxflashOffline, Elxlinlpcfg, and NIC drivers.
- ./uninstall.sh -s – Uninstall ElxflashOffline, Elxlinlpcfg, and iSCSI drivers.
- ./uninstall.sh -u – Uninstall ElxflashOffline, Elxlinlpcfg, NIC, iSCSI and LPFC drivers.
- ./uninstall.sh -h – Display a summary of all available switches.

Example:

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

Installing the Online Adapter Management Utility for Linux

To install the Online Adapter Management utility for Linux:

1. Untar the elxflashOnline tar ball that matches the target architecture and operating system.
2. Copy the elxflashOnline-<version>-<rel> directory to the directory you choose.

Example:

```
$ tar zxvf elxflashOnline-<platforms>-<version>-<rel>.tgz
$ cd elxflashOnline-<platforms>-<version>-<rel>/<arch>/<os>
```

Note: To run the Online Adapter Management Utility, you must install the OneCommand Manager application and the adapter drivers. These components are not included in the Online Adapter Management Utility - Linux Kit.

Updating

To update the Online Adapter Management utility for Linux, untar the new version and delete the old version.

Uninstalling

To uninstall the Online Adapter Management utility for Linux, remove the elxflashOnline-<platforms>-<version>-<rel> directory that was created during installation.

Example:

```
$ rm -rf elxflashOnline-<platforms>-<version>-<rel>
```

Installing the Offline Adapter Management Utility for Linux (NIC Only)

To install the Offline Adapter Management utility for Linux (NIC only):

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

The install script determines the correct architecture and distribution, and attempts to upgrade the existing ElxflashOffline and Elxlinlpcfg RPMs. If there are no existing ElxflashOffline or Elxlinlpcfg RPMs, the install script installs the packaged ElxflashOffline and Elxlinlpcfg RPMs.

Example:

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

Updating

To update the Offline Adapter Management utility for Linux (NIC only), run the install.sh script to upgrade the ElxflashOffline RPM.

Note: During an update, only the ElxflashOffline RPM is updated.

Uninstalling

To uninstall the Offline Adapter Management utility for Linux (NIC only), run the uninstall script located on the root of the installation kit.

The uninstall script executes specific actions depending on what switches are used.

Note: The following uninstall scripts should not be used on the Citrix operating system.

- ./uninstall.sh – Uninstall ElxflashOffline and Elxlinlpcfg.
- ./uninstall.sh -f, --uninstall_lpfc – Uninstall ElxflashOffline, Elxlinlpcfg and LPFC driver.
- ./uninstall.sh -n, --uninstall_nic – Uninstall ElxflashOffline, Elxlinlpcfg, and NIC drivers.
- ./uninstall.sh -s, --uninstall_iscsi – Uninstall ElxflashOffline, Elxlinlpcfg, and iSCSI drivers.
- ./uninstall.sh -u, --uninstall_all – Uninstall ElxflashOffline, Elxlinlpcfg, NIC, iSCSI, and LPFC drivers.
- ./uninstall.sh -h - Display a summary of all available switches.

Example:

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

Installing the Offline Adapter Management Utility for Windows

To install the Offline Adapter Management utility for Windows:

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

   The following components are installed:

   - Storport UCNA driver
   - Storport Fibre Channel (FC) driver
   - OneConnect iSCSI and NIC drivers
   - WinLpCfg
   - Offline Adapter Management Utility

Updating

With an existing Offline Adapter Management utility for Windows installation, run the Offline-WinPE-<arch>-<version>-<rel>.exe.

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

Uninstalling

To uninstall the Offline Adapter Management utility for Windows, run the following commands:

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

Installing the Online Adapter Management Utility for Windows

To install the Online Adapter Management utility for Windows:

1. Unzip the ElxflashOnline-windows-<version>-<rel>.zip file.
2. Copy the win32 or x64 directory to the directory you choose.

Note: To run the Online Adapter Management Utility, you must install the OneCommand Manager application and the adapter drivers. These components are not included in the Online Adapter Management Utility for Windows.

Updating

To update the Online Adapter Management utility for Windows, unzip the new version and delete the old version.

Uninstalling

To uninstall the Online Adapter Management utility for Windows, remove the win32 or x64 directory that was created during installation.

Extracting the Offline Adapter Standalone Management Utility

The Offline Adapter Standalone Management utility is not installed; you must extract it from its zip file. Once you extract the utility, the following directories are created with the Linux executables in the lx\ directory and the Windows executables in the win\ directory.

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

In Windows for example, three directories should be visible in the kit's root directory after you extract the standalone utility:

```
# 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 top level boot directory and firmware directory are the default directories where elxflash looks for firmware and boot code images. Ensure that firmware and boot code are located in these directories.

The Offline Adapter Standalone Management utility has the same dependencies as Offline utility. See "Platform Pre-requisites" on page 10.

Note: There are no update or uninstall procedures for the Offline Adapter Standalone Management utility.

Firmware and Boot Code Prefixes

Table 2-1 provides the Emulex model names, corresponding firmware, and corresponding boot code file name prefixes. Use the Elxflash Model name with the highest protocol as the 'hbatype' name argument in the string in the fwmatrix.txt file (see Table 2-2, Emulex Adapter Model Name Equivalents, on page 18).

- The F/W File Prefix column lists the two letters that begin the name of the appropriate firmware file name.
- The Boot File Prefix column lists the two letters that begin the name of the boot code file name images:
  - xU=Universal boot
  - xB=x86Boot
  - xO=OpenBoot
  - xP=Pair Boot (x86+EFI)
  - xE=EFIBoot.

Table 2-1 Firmware and Boot Code Prefixes

Emulex Adapter Model	Port Type	F/W File Prefix	Boot File Prefix
LP11000	FC	BD	BU, BB, BO, BE
LP11002	FC	BF	BU, BB, BO, BE
LP1105	FC	BF	BU, BB, BO, BE
LP1150	FC	JF	JB, JP, JE
LPe11000	FC	ZD	ZU, ZB, ZO, ZE
LPe11002	FC	ZF	ZU, ZB, ZO, ZE
LPem11002	FC	ZF	ZU, ZB, ZO, ZE
LPe11004	FC	ZF	ZU, ZB, ZO, ZE
LPem11004	FC	ZF	ZU, ZB, ZO, ZE
LPe1150	FC	WF	WB, WP, WE
LPe12000	FC	UD	UU, UB, UO, UE
LPSe12000	FC	FD	FU
LPe12002	FC	UD	UU, UB, UO, UE
LPSe12002	FC	FD	FU
LPem12002	FC	UD	UU, UB, UO, UE
LPe12004	FC	UD	UU, UB, UO, UE
LPe1250	FC	OF	OB, OP, OE
LPe1252	FC	OF	OB, OP, OE
LPe16000	FC	A	N/A
LPe16002	FC	A	N/A

Table 2-1 Firmware and Boot Code Prefixes (Continued)

Emulex Adapter Model	Port Type	F/W File Prefix	Boot File Prefix
OCe10102	FCoE	oc	N/A
OCe10102	iSCSI	oc	N/A
OCe10102	NIC	oc	N/A
OCe11101	FCoE	oc	N/A
OCe11101	iSCSI	oc	N/A
OCe11101	NIC	oc	N/A
OCe11102	FCoE	oc	N/A
OCe11102	iSCSI	oc	N/A
OCe11102	NIC	oc	N/A

Sample Configuration File

```
// Example FWMATRIX.TXT
//
// This is a tab delimited file forming a table of firmware and boot code
// image file names associated with each HBA type.
//
// Note: All firmware image files are expected to be in the
//       sub-directory named "firmware".
//
// Note: All boot code image files are expected to be in the
//       sub-directory named "boot".
//
// These entries and the actual image filenames are case sensitive.
//
// Note: The HBA types are always Emulex model names.
//
// hbatype           firmware           bootcode
LP11000             BD282A4.ALL        BU512A2.PRG
LP11002             BF282A4.ALL        BU512A2.PRG
LP1105              BF282A4.ALL        BU512A2.PRG
LP1150              JF282A4.ALL        JP512A2.PRG
LPe11000            ZD282A4.ALL        ZU512A2.PRG
LPe11002            ZF282A4.ALL        ZU512A2.PRG
LPe11004            ZF282A4.ALL        ZU512A2.PRG
LPem11002           ZF282A4.ALL        ZU512A2.PRG
LPem11104           ZF282A4.ALL        ZU512A2.PRG
LPe1150             WF282A4.ALL        WP512A2.PRG
LPSe12000           FD110A6.ALL        FU512A3.PRG
LPSe12002           FD110A6.ALL        FU512A3.PRG
```

```
LPe12000              UD201A2.ALL          UU512A2.PRG
LPe12002              UD201A2.ALL          UU512A2.PRG
LPe12004              UD201A2.ALL          UU512A2.PRG
LPe12202              UD201A2.ALL          UU512A2.PRG
LPe12204              UD201A2.ALL          UU512A2.PRG
LPem12002             UD201A2.ALL          UU512A2.PRG
LPe1250               OF200A4.ALL          OP512A2.PRG
LPe1252               OF200A4.ALL          OP512A2.PRG
LPe16000              A1033.GRP
LPe16002              A1033.GRP
```

Emulex Adapter Model Name Equivalents

Table 2-2 Emulex Adapter Model Name Equivalents

Emulex Model	Elxflash 'hbatype'	Port Type
LP1050EX	LP1050	FC
LPe1150	LPe1150	FC
LPe11002	LPe11002	FC
LPe11004	LPe11004	FC
LP1150	LP1150	FC
LP11002	LP11002	FC
LP1105-HP (Mezzanine)	LP1105	FC
LP1050DC (Mezzanine)	LP1050DC	FC
LPe12000	LPe12000	FC
LPe12002	LPe12002	FC
LPe12004	LPe12004	FC
LPe1250	LPe1250	FC
LPe16000	LPe16000	FC
LPe16002	LPe16002	FC
OCe10102	OCe10100-FCoE	FCoE
OCe10102	OCe10100-iSCSI	iSCSI
OCe10102	OCe10100-NIC	NIC
OCe11101	OCe11100-FCoE	FCoE
OCe11101	OCe11100-iSCSI	iSCSI
OCe11101	OCe11100-NIC	NIC
OCe11102	OCe11100-FCoE	FCoE
OCe11102	OCe11100-iSCSI	iSCSI

Table 2-2 Emulex Adapter Model Name Equivalents (Continued)

Emulex Model	Elxflash 'hbatype'	Port Type
OCe11102	OCe11100-NIC	NIC

Firmware images are available on the Emulex support site at:
http://www.emulex.com.

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

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

The OCe11100 UCNA in the example above is an iSCSI adapter.

3. Online Adapter Management Utility Command Line Interface

There are two supported modes for each Adapter Management Utility switch. The first mode relies on the fwmatrix.txt file. It is your responsibility to update the fwmatrix.txt file, firmware and boot code directories with the appropriate firmware and boot code images.

The second mode is auto-discovery. When the /auto switch is used with /ff, /fb, /downgrade, /rewrite, or /update, the Adapter Management Utility auto discovers adapters and, using the firmware and boot subdirectories, performs the specified operation on each adapter.

Auto-Discovery (/auto)

Usage: /auto

The auto-discovery switch instructs the Adapter Management Utility to ignore the fwmatrix.txt file, automatically discover local adapters, and perform specified operations (/f, /ff, /fb, /downgrade, /rewrite, or /update) using the firmware and boot directories.

The /auto switch must be used with an additional operational switch (/f, /ff, /fb, /downgrade, /rewrite, or /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 Adapter Management 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 Adapter Management Utility uses the highest 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 higher 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 lower 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 Adapter Management Utility first tries to match by adapter family and boot type. If a match is not found, the Adapter Management Utility then tries to match by boot type. If the utility is matching by boot type and multiple versions of boot code are detected, downgrade always chooses 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 lower than the currently installed versions, the downgrade versions of firmware or boot code are downloaded to that adapter.

LightPulse 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 and a non-zero error code for any error.

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

Note: If the preview switch is also used, the Status=<description> field is not displayed.

Force Firmware and Boot Code (/f or /ff /fb)

Usage: /f -or- /ff /fb

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. When this switch is used, a Force Firmware and Boot Code operation is performed regardless of any additional switches given on the command line.

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 Adapter Management Utility uses the highest 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.

LightPulse 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 and a non-zero error code for any error.

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

Note: If the preview switch is also used, the Status=<description> field is not displayed.

Force Boot Code (/fb)

Usage: /fb

The Force Boot Code switch forces a boot code download to an adapter regardless of what boot code the adapter currently has installed. When this switch is used, a Force Boot Code operation is performed regardless of any additional 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 Adapter Management Utility uses the highest 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.

LightPulse 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 and a non-zero error code for any error.

Note: If the preview switch is also used, the Status=<description> field is not displayed.

Force Firmware (/ff)

Usage: `/ff`

The Force Firmware switch forces a firmware download to an adapter regardless of what firmware the adapter currently has installed. When this switch is used, a Force Firmware operation is performed regardless of any additional 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 Adapter Management Utility uses the highest 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.

LightPulse 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 and a non-zero error code for any error.

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

Note: If the preview switch is also used, the Status=<description> field is not displayed.

Firmware Matrix Directory Change (/fmd)

Usage: `/fmd`

The firmware matrix directory change switch changes the location of the base directory where 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 on supported UCNAs.

Note: The Flash Override command applies to Linux ElxflashOffline only.

Example usage:

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

- 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 highest versions when performing the firmware and boot code downloads.
- The flash executable is used to download firmware to supported UCNAs.

Example usage:

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

- 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 is used to download firmware to supported UCNAs.

Help (/h or /?)

Usage: `/h` or `/?`

The help switch displays a help message detailing instructions on how to use the Adapter Management 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 and/or boot code are found for an adapter, Elxflash uses the highest versions when performing the firmware and boot code downloads.

`./elxflash /f /i=/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 online/offline utility.

Image Version Display (/iv)

Usage: `/iv = <image file>`

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

Example usage:

`./elxflash /iv=A11100.grp 1.1.10.0`

Log (/log)

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

The log switch appends the output of the Adapter Management Utility to a text file. Log can be used with any switch.

Preview (/p)

Usage: `/p`

The preview switch provides you with a download preview of all adapters that the Adapter Management 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: force firmware, force boot, downgrade, rewrite, and update. When the preview switch is used, the Adapter Management 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 Adapter Management 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 Adapter Management 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 Adapter Management Utility provides a download preview using the highest 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 higher than the currently installed versions, the Adapter Management Utility provides a download preview of firmware or boot code for each adapter that can be updated.

LightPulse 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 only act 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; UCNAs are not displayed.

Note: /fc is not available on ElxflashOffline_NIC_only.

Process UCNAs Only (/ucna)

Usage: `/ucna`

The Process UCNA Only switch causes elxflash to only act on UNCAs.

Example usage:

`./elxflash /q /ucna` - For a query only UCNAs are displayed.

`./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 UCNAs are updated; FC HBAs are not displayed.

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.

LightPulse 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>,
```

iSCSI and NIC-only Adapter Status Summary

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

Note: On LightPulse adapters, the query switch displays boot code version information only if the adapter has boot code installed.

Note: 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.

Remote (/remote) - (Online Adapter Management Utility only)

Usage: `/remote`

The remote switch enables updates on remote in-band adapters.

Rewrite (/rewrite or /e)

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

The rewrite switch updates the firmware or boot code of each adapter if the currently installed versions are less than or equal to 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 higher than or equal to 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 highest versions are downloaded to the adapter.
- When performing the boot code rewrite operation, the Adapter Management Utility first tries to match by adapter family and boot type. If a match is not found, the Adapter Management Utility then tries to match by boot type. If the utility is matching 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.

LightPulse 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 and a non-zero error code for any error.

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

Note: If the preview switch is also used, the Status =<description> field is not displayed.

Silent (/s)

Usage: `/s`

The silent switch mutes all output to stdout.

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 and/or boot code are found for an adapter, Elxflash uses the highest 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.

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.

- The fwmatrix.txt file is ignored. You must place the desired update versions of firmware 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 highest versions are downloaded to the adapter.
- When performing the boot code update operation, the Adapter Management Utility uses the highest boot code version found. Since multiple compatible versions of boot code may exist, the highest version is selected in the following order:
    1. Universal (U)
    2. Pair (P)
    3. Open (O)
    4. EFI (E)
    5. x86 (B)

Note: The highest 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 higher than the currently installed versions then the update versions of firmware or boot code are downloaded to that adapter.

LightPulse 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 and 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 Adapter Management Utility did not update.

LightPulse 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 and a non-zero error code for any error.

4. Offline Adapter Management Utility Command Line Interface

The Offline Adapter Management Utility allows you to configure Emulex adapters before you install or boot a server operating system.

Caution: Under Linux, the Offline Adapter Management Utility is for offline use only. The adapter must not be connected to any device or fabric while the Linux Offline Adapter Management Utility is in use.

The Offline Adapter Management Utility includes:

- winlpcfg
- linlpcfg

You can use the Offline Adapter Management 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 world wide names (WWNs)
- Enable boot code
- Update configuration regions
- Set the adapter to use soft jumpers
- Run diagnostic tests
- Read and process script files

Command Syntax

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

- win – for the WinPE Offline Adapter Management Utility commands for use on WinPE machines.
- ./lin – for the Linux Offline Adapter Management Utility commands for use on Linux machines.

The Offline Adapter Management 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 Offline Adapter Management Utility commands (for example, ./linlpcfg listhba).

The Offline Adapter Management 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). Concatenate the w0 and w1 values to make the full WWN.

Running the Offline Adapter Management Utility from the Command Prompt

Note: You must start the WinPE and Linux Offline Adapter Management Utility at the command prompt.

1. Boot the system with a supported operating system.
2. Start the Offline Adapter Management Utility with a valid command or a valid script file name.
   - To start an Offline Adapter Management 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)
     ```
     o For example, starting the WinPE Offline Adapter Management Utility with a reset command:

       ```
       winlpcfg reset n=2
       ```
     o For example, starting the Linux Offline Adapter Management Utility with a reset command:

       ```
       ./linlpcfg reset n=2
       ```
   - To start an Offline Adapter Management Utility with a script file name, from the directory where the oslpcfg.exe file resides, type

     ```
     oslpcfg @<script file name>
     ```
     o For example, starting an Offline Adapter Management Utility with script1.txt in the c:\test directory:

       ```
       oslpcfg @C:\test\script1.txt
       ```

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

```
oslpcfg listboot n=1 >result.out
```

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

Running the Standalone Adapter Management Utility

The Standalone Adapter Management Utility allows you to update firmware on Emulex adapters without needing to install any tools. No drivers are included in the Standalone kit. No applications are installed because the utility runs from inside the kit.

The Standalone Adapter Management Utility has the same capability as the Offline Adapter Management Utility, except that you use the following scripts to run the utility:

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

For example in Windows:

After extracting the standalone utility, change to the win directory from the kit's root directory. The following files are present:

```
# cd win


07/02/2012  03:15 PM    <DIR>          .
07/02/2012  03:15 PM    <DIR>          ..
07/02/2012  03:15 PM             25,786 elxflash.bat
07/02/2012  03:15 PM    <DIR>          win32
07/02/2012  03:15 PM             25,786 winlpcfg.bat
07/02/2012  03:15 PM    <DIR>          x64
```

The elxflash.bat script is used to run elxflash.exe, which behaves like previous versions of elxflash.exe. The winlpcfg.bat script is used to run winlpcfg.exe. It also behaves like previous versions of winlpcfg.exe.

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

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

To display a list of HBAs in Windows, type

```
# winlpcfg.bat  listhba
```
from the Win directory

Note: The adapter being managed by the Standalone Adapter Management utility must not be simultaneously managed by other Emulex utilities including OneCommand Manager.

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

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

On Linux these files are called:

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

Supported Commands

Table 13-1 lists all Offline Adapter Management Utility commands that are supported or not supported on Emulex traditional LightPulse HBAs and OneConnect adapters on various platforms.

✓ indicates commands are supported on both WinLpCfg and LinLpCfg.

L indicates commands are supported only on LinLpCfg.

FCoE only indicates commands are supported only by FCoE UCNAs.

Table 4-1 Supported Commands

COMMANDS	FC Adapters				FCoE, NIC, and iSCSI Adapters	
	X86	X64	IA64	PPC	X86	X64
Operating Systems	RH 5.5+	RH 5.5+	RH 5.5+	RH 5.5+	RH 5.5+	RH 5.5+
	RH 6.0+	RH 6.0+		RH 6.0+	RH 6.0+	RH 6.0+
	SLES 11.1+	SLES 11.1+	SLES 11.1+	SLES 11.1+	SLES 11.1+	SLES 11.1+
	WinPE 2.x	WinPE 2.x			WinPE 2.x	WinPE 2.x
Config See Note 7 page 39	✓	✓	✓	L	FCoE only	FCoE only
DirectDownload See Note 7 page 39	L	L	L	L	N/A	N/A
DisableBoot	✓	✓	✓	L	N/A	N/A
disableBootDevice	✓	✓	✓	L	FCoE	FCoE
DmaTest See Note 1 page 39 See Note 7 page 39	N/A	N/A	N/A	N/A	✓	✓
Download See Note 5 page 39	✓	✓	✓	L	✓	✓
EnableBoot	✓	✓	✓	L	FCoE	FCoE
enableBootDevice	✓	✓	✓	L	FCoE	FCoE
extLoopback See Note 2 page 39	✓	✓	✓	L	✓	✓
Help	✓	✓	✓	L	✓	✓
intLoopback See Note 3 page 39	✓	✓	✓	L	✓	✓
ListBoot	✓	✓	✓	L	N/A	N/A
listHBA See Note 4 page 39	✓	✓	✓	L	✓	✓

Table 4-1 Supported Commands (Continued)

| COMMANDS | FC Adapters | | | | FCoE, NIC, and iSCSI Adapters | |
	X86	X64	IA64	PPC	X86	X64
listRev	✓	✓	✓	L	FCoE only	FCoE only
listMAC	N/A	N/A	N/A	N/A	NIC	NIC
listWWN	✓	✓	✓	L	FCoE only	FCoE only
logFile	✓	✓	✓	L	✓	✓
pciLoopback	✓	✓	✓	L	FCoE only	FCoE only
postTest See Note 7 page 39	✓	✓	✓	L	N/A	N/A
personalityInfo	N/A	N/A	N/A	N/A	✓	✓
changePersonality	N/A	N/A	N/A	N/A	✓	✓
readAltBoot	✓	✓	✓	L	FCoE only	FCoE only
readBootDevice	✓	✓	✓	L	FCoE only	FCoE only
readConfigc	✓	✓	✓	L	FCoE only	FCoE only
reset	✓	✓	✓	L	FCoE only	FCoE only
restoreDefWWN	✓	✓	✓	L	FCoE only	FCoE only
restoreNVWWN	✓	✓	✓	L	FCoE only	FCoE only
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 Note 6 on page 39	✓	✓	✓	L	✓	✓
writeWWN	✓	✓	✓	L	FCoE only	FCoE only

Notes on Supported Commands

- DmaTest is supported on OneConnect adapters only.
  Syntax:

  ```
  DmaTest n=<adapter index> p=<pattern> c=<byte count> r=<repeat count>
  p: 3 to 8-HEX byte pattern
  c: 64 to 4096
  r: 1 to 4096
  ```

- An external loopback plug is required. Syntax for OneConnect adapters:

  ```
  extLoopback n=<adapter index> p=<pattern> c=<byte count> r=<repeat count>
  p: 3 to 8-HEX byte pattern
  c: 1500 to 8192
  r: 1 to 4096
  ```

- Syntax for OneConnect adapters:

  Note: An internal loopback plug is required.

  ```
  intLoopback n=<adapter index> p=<pattern> c=<byte count> r=<repeat count>
   t=<type>
  p: 3 to 8-HEX byte pattern
  c: 1500 to 8192
  r: 1 to 4096
  t: 2
  ```

- The listHBA command displays all HBAs installed in the systems, OneConnect adapters included with all basic properties: Serial number, Physical number, Universal CNA type, NIC-Only/iSCSI/FCoE type.

- The download command does not support a= <adapter name> with OneConnect adapters.

- VPD is supported for the following UCNA functions:
  - OCe10102, FCoE functions only
  - OCe11102, FCoE functions, NIC and iSCSI functions
  - VPD is supported for all FC devices.

- The Config, DirectDownload, DmaTest, and postTest commands are not supported by the LPe16000 or LPe16002 adapters.

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:

```
oslpcfg help download
```

or

```
oslpcfg ? 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

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

To reset all adapters in the system, type

```
oslpcfg reset n=all
```

Running the Power-On Self-Test (posttest)

This command runs the power-on self-test (POST) on the selected adapter.

To run the adapter POST test, type

```
oslpcfg posttest n=<all/adapter number>
```

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

```
oslpcfg posttest n=1
```

Viewing Adapter Information

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

Adding a - /c to any command that uses the parameter a= to return adapter data causes the command to return an Emulex conventional model for the adapter rather than the model name in the adapter. The following commands use the -/c operator:

- config
- download
- directdownload

Examples of Emulex conventional model names:

- LPe12000
- LPe11002
- LP10000DC

Example of model names in (usually OEM) VDP data:

- LPe1104-M4

Viewing the Offline Adapter Management Utility Version Information (version)

This command shows the Offline Adapter Management Utility version information.

To view this information, type

```
oslpcfg version
```

Viewing Vital Product Data (VPD)

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

To display VPD, type

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

The following examples show VPD output:

```
WinLpCfg.exe vpd n=1
```

Sample legacy FC response:

```
Product Name              : LPe12002, 8GB/S, 2-PORT, FC, PCI EXPRESS HBA, DIAG, OPTICS
PN (Part Number)          :LPE12002-M8
SN (Serial Number)        :VM80175529
V0                        :VM80175529
V1                        :Emulex LPe12002-M8 8Gb 2-port PCIe Fibre Channel Adapter
V2                        :LPe12002-M8
V3                        :T2:78,T3:79,7A,7B,7D,7E,7F,T7:73,TB:73,TFF:78
V4                        :0
Command completed, NO Error
```

Sample LPe 16000 HBA response:

```
Product Name              :Emulex LightPulse LPe16002-M6-D 2-Port 16Gb Fibre Channel
                           Adapter, FC PF
PN (Part Number)          :LPe16002-M6-D
SN (Serial Number)        :99999999
MN (Manufacture ID)       :1028
VS                        :DSV1028VPDR.VER1.0
VP                        :NPY2
VM                        :PMT7
VV                        :NMVEMULEX CORPORATION
VT                        :DTINIC
V0                        :99999999
V1                        :Emulex LightPulse LPe16002-M6-D 2-Port 16Gb Fibre Channel
                           Adapter
V2                        :LPe16002-M6-D
Command completed, NO Error
```

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 #1:

```
oslpcfg readbootdevice n=1
```

Note: The readbootdevice command does not read boot device settings for EFI (IA64) adapter boot. This command is supported only for x86 and x86_64 adapter boot configurations. You can modify or show EFI boot settings using hbacmd or the EFI shell.

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, specified by its number. If the selected adapter does not have any BootBIOS loaded, it returns error code 39.

To list BootBIOS versions, type

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

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

```
oslpcfg listboot n=3
```

Viewing all Adapters in the System (listhba)

This command lists all installed adapters in the system. Information includes the adapter number (base 1), the Institute of Electrical and Electronic Engineers (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
```

Sample response:

```
HBA 1: FCoE 10000000 C95B3C99 Functional FW: 2.701.126.5 OCe10102-F
HBA 2: FCoE 10000000 C95B3C9B Functional FW: 2.701.126.5 OCe10102-F
HBA 3: 10000000 C95B38CA Functional FW: US1.10N1  LPe12002
HBA 4: 10000000 C95B38CB Functional FW: US1.10N1  LPe12002
HBA 5: 10000000 C951AC67 Functional FW: WS2.50A4  LPe1150-F4
HBA 6: iSCSI  MAC:00.00.c9.5b.3f.f5 devID:702 Port:1 Func:2 Univ:YES OCe10102-I
HBA 7: iSCSI  MAC:00.00.c9.5b.3f.f7 devID:702 Port:0 Func:3 Univ:YES OCe10102-I
HBA 8: NIC    MAC:00.00.c9.5b.3f.f4 devID:700 Port:1 Func:0 Univ:YES OCe10102-I
HBA 9: NIC    MAC:00.00.c9.5b.3f.f6 devID:700 Port:0 Func:1 Univ:YES OCe10102-I
HBA 10: NIC    MAC:00.00.c9.5b.3c.98 devID:700 Port:1 Func:0 Univ:YES OCe10102-F
HBA 11: NIC    MAC:00.00.c9.5b.3c.9a devID:700 Port:0 Func:1 Univ:YES OCe10102-F
Command completed, NO Error!
```

In this example:

- HBAs 1,2, 10, and 11 are FCoE OneConnect UCNAs
- HBAs 6-9 are iSCSI OneConnect UCNAs
- HBAs 3-5 are LightPulse HBAs

Note: listHBA with option -/c displays the LightPulse 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 scriptwwnn 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:

    *os*lpcfg listwwn

Sample response:

```
adapter 1: LPe11002
           Factory IEEE:  10000000    C92774AF
           Non-Volatile WWPN: 10A2A2A2 C92774AF,   WWNN: 20A2A2A2 C92774AF
adapter 2: LPe11002
           Factory IEEE:  10000000    C92774AE
           Volatile WWPN: 10FFFFFF C92774AE,       WWNN: 20FFFFFF 00000000
adapter 3: LPe11004-M4
           Factory IEEE:  10000000    C93CCE08
           Non-Volatile WWPN: 10A3A3A3 C93CCE08,   WWNN: 20A3A3A3 C93CCE08
adapter 4: LPe11004-M4
           Factory IEEE:  10000000    C93CCE09
           Volatile WWPN: 10000000 C93CCE09,       WWNN: 20000000 C93CCE09
```

Viewing the MAC Address (listmac)

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

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

    *os*lpcfg listmac n=<adapter number>

Sample response:

    adapter 2: NIC Permanent MAC 00-00-c9-5b-3a-f4 MAC 00-00c9-5b3ac2

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 #3:

```
oslpcfg listrev n=3
```

Sample response:

```
Chipset Rev:
BIU:                                           1001206D
SM FW:                                         0BC12792
FW Rev:
Current FW:                                    SLI-3 Overlay
Kernel Rev:                                    FFC01213
Kernel          LP110021.20a3
Init FW:        LP11002Init Load 2.72a2
                (BS2.72A2)
SLI-2:          LP11002Overlay 2.72a2
                (B2F2.72A2)
SLI-3:          LP11002Overlay 2.72a2
                (B3F2.72A2)
FC-PH Version Supported:
Highest FC-PH Version Supported = 4.3
Lowest FC-PH Version Supported = 4.3
Feature Availability = 0000 00ef
```

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, for example, writing data to it.

To read a configuration, type

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

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

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

Sample Response:

```
00000000:  10000000  c93ccce08
00000008:  20000000  c93ccce08
00000010:  00000000
```

Firmware and Boot Code Download Commands

Downloading a File (download)

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

Note: This download command is not supported with CEE firmware (used with LP21002 and LP21000 CNAs).

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 43.

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 zb200a1.prg (x86) BootBIOS file to adapter # 6; in this example, the x86 BootBIOS file is for an LPe11000 adapter:

```
oslpcfg download n=6 i=zb200a1.prg
```

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 read-only memory (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-channel adapter or one dual-channel adapter in the system. For more information on the listHBA command, see "Viewing all Adapters in the System (listhba)" on page 43.

Note: You cannot use directdownload in a script file.

Note: This command does not support a CEE firmware directdownload.

You can use this feature on the following Emulex adapters:

- LP21000 and LP21002
- LPe12000, LPe12002 and LPe1250
- LPe11000, LPe11002, LPe1150 and LPe11004
- LP11002, LP11000 and LP1150
- LP10000ExDC and LP1050Ex
- LP10000DC and LP10000
- LP1005DC-CM2
- LP1050 and LP1050DC

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-channel adapter or one dual-channel 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.

Dual-channel adapters include:

- LP21002
- LPe12002
- LPe11002
- LP11002
- LP10000ExDC
- LP10000DC
- LP1050DC

Four-channel adapters include:

- LPe11004
- LPe12004

World Wide Name Commands

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 non-volatile parameters (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.

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 #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 #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 #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 NVWWN, type

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

The following example restores the NVWWN on adapter #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 defwwn, type

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

The following example restores the defwwn on adapter #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/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 43 for more information.)

   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 51 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/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 #6:

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

To disable BootBIOS, type

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

The following example disables BootBIOS on adapter #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 #1, LUN #46 with a desired topology of Arbitrated Loop:

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

Note: If port login (PLOGI) fails after 50 msecs, the command is retried once.

Note: The setbootdevice command does not configure boot device settings for EFI (IA64) adapter boot. This command is supported only for the x86 and x86_64 adapter boot configuration. You can modify or display EFI boot settings using the EFI shell.

Enabling or Disabling Boot Devices (enablebootdevice/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>
```

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
```

Sample response:

```
Alt Boot 1-
Boot Device WWN:       10000000       C920A4D6
Boot Device LUN:           1

Alt Boot 2-
Boot Device WWN:       10000000       C920A4D8
Boot Device LUN:           4

Alt Boot 3-
Boot Device WWN:       10000000       C920A4DA
Boot Device LUN:           3

Alt Boot 4-
Boot Device WWN:       10000000       C920A4DC
Boot Device LUN:           2

Alt Boot 5-
Boot Device WWN:       10000000       C920A4DE
Boot Device LUN:           1

Alt Boot 6-
Boot Device WWN:       10000000       C920A4F2
Boot Device LUN:          14
```

Note: The readaltboot command does not read boot device settings for EFI (IA64) adapter boot. This command is supported only for x86 and x86_64 adapter boot configuration. EFI boot settings can be modified or displayed using hbacmd or the EFI shell.

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 1 to 7.

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 set the alternate boot device on adapter #1, LUN #3:

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

Note: The setaltboot command does not configure boot device settings for EFI (IA64) adapter boot. This command is supported only for x86 and x86_64 adapter boot configuration. EFI boot settings can be modified or displayed using hbacmd or the EFI shell.

Configuration Commands

Updating Configuration Regions (config)

There are two forms of configuration:

- 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 43.

The following example updates region 6 of all LP11000 adapters with ctplus1.cfl:

```
oslpcfg config a=lp11000 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
```

Viewing Personality Information (personalityInfo)

This command displays the current personality and the 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 #3:

    oslpcfg personalityInfo n=3

Sample response:

    Current Personality: FCoE
    Configured Personality: FCoE
    Available Personalities:
    NIC
    iSCSI
    FCoE
    Command completed, NO Error

Changing Personality Information (changePersonality)

This command changes the personality of the adapter to the selected one.

To change personality, type

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

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

    oslpcfg changePersonality n=3 p=iSCSI

Sample response:

    Please REBOOT the system now to activate the Personality change
    Command completed, NO Error

Running Tests

Running the External Loopback Test (extloopback)

This command runs the external loopback test. You must put a loopback plug in each adapter channel 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 for stop
- o=2 for repeat
- o=3 for ignore

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 #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 for stop
- o=2 for repeat
- o=3 for ignore

Note: 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 #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 for stop
- o=2 for repeat
- o=3 for ignore

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=all r=100 o=1
```

Using Script Files

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. The offline utility allows you to:

- 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=lpe11000 i=c:\temp\zd272a2.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=all r=10 o=1
extloopback n=all 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 10 times.

```
repeat r=10
```

Enabling or Disabling Test Messages on the Screen (screendisplay)

This command enables or disables test message display 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, 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=lpe11000 i=c:\temp\zd272a2.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 #1:

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

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

Note: 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 scriptwwnn command with caution. If you use the same WWNN 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 #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 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 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.

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

Note: Once 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 VWWNN 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 #1:

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

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.

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

Note: Once 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 #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.

Sample log file:

```
>>>>>>>> Test Script starts on Tue Jul 31 14:52:36 2007>>>>>>>>
listhba
adapter 1:  C96C146D          Functional FW: WS2.70A5      LPe1150-F4
adapter 2:  C94B0718          Functional FW: ZS2.72A2      LPe11002-F4


extloopback n=all r=500 o=1


**Start tests on Adapter 1
Run EXT Loopback
 Pass 500 test(s)
*Complete tests on Adapter 1, NO error


**Start tests on Adapter 2
Run EXT Loopback
 Pass 500 test(s)
*Complete tests on Adapter 2, NO error


intloopback n=all r=500 o=1


**Start tests on Adapter 1
Run INT Loopback
 Pass 500 test(s)
```

```
*Complete tests on Adapter 1, NO error

**Start tests on Adapter 2
Run INT Loopback
 Pass 500 test(s)
*Complete tests on Adapter 2, NO error

pciloopback n=all r=500 o=1

**Start tests on Adapter 1
Run PCI Loopback
 Pass 500 test(s)
*Complete tests on Adapter 1, NO error

**Start tests on Adapter 2
Run PCI Loopback
 Pass 500 test(s)
*Complete tests on Adapter 2, NO error

extloopback n=all r=500 o=1

**Start tests on Adapter 1
EXTLB: Error - Link is not UP
Encounter Error, stop all tests
>>>>>>> Test Script stops on Tue Jul 31 14:53:45 2007
```

5. Offline and Online Adapter Management Utility Status Messages

The Offline Adapter Management Utility uses two methods to compute the return status of a command. The Offline Adapter Management Utility takes a very strict approach when an operation is performed using the fwmatrix.txt file. When an operation is performed using auto-discovery, the Offline Adapter Management Utility is less stringent.

Status Messages When Using the fwmatrix.txt File

If a supported adapter entry is found in the fwmatrix.txt file, an operation is conducted using the specified firmware and boot code versions. A supported adapter is defined as an adapter with an entry in the fwmatrix.txt file that is recognized by the Offline Adapter Management Utility. The entry in fwmatrix.txt must match the Offline Adapter Management Utility internal identification.

Table 5-1 fwmatrix.txt File Status Messages

Message Number	Message Title	Message Details
0	GOOD_ALL_UPGRADES_OK	Returned if and only if all the supported adapters had a successful download performed.
1	GOOD_NO_UPDATES_NEEDED	Returned if and only if the supported adapters did not need an update, downgrade, or rewrite operation.
2	ERROR_ALL_UPGRADES_FAILED	Returned if all of the supported adapters failed to complete the requested download.
3	ERROR_SOME_UPGRADES_FAILED	Returned if some of the supported adapters failed to complete the requested download.
4	ERROR_EMULEX_APPS_NOT_INSTALLED	Returned if the Offline Adapter Management Utility cannot find HBACMD. This return code applies only to ElxFlashOnline.
5	ERROR_NO_SUPPORTED_HBA_FOUND	Returned if the installed adapter has no entry in fwmatrix.txt or if the entry in the fwmatrix.txt does not match the Offline Adapter Management Utility internal identification of the adapter.

Status Messages When Using Auto-Discovery

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

Table 5-2 Auto-Discovery Status Messages

Message Number	Message Title	Message Details
0	GOOD_ALL_UPGRADES_OK	Returned if one, some or all of the discovered adapters had a successful download performed.
1	GOOD_NO_UPDATES_NEEDED	Returned if one, some or all of the discovered adapters did not need an update, downgrade, or rewrite operation. This should never be returned during a force firmware or force boot code download operation.
2	ERROR_ALL_UPGRADES_FAILED	Returned if all of the discovered adapters that had a download attempted failed during the operation.
3	ERROR_SOME_UPGRADES_FAILED	Returned if some of the discovered adapters that had a download attempted failed during the operation.
4	ERROR_EMULEX_APPS_COMMAND	Returned if Elxflash cannot execute an external executable such as: • oslpcfg (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 the user, attempting to run the executable, is not an administrator (Windows) or root (Linux).

Table 5-2 Auto-Discovery Status Messages (Continued)

Message Number	Message Title	Message Details
9	ERROR_UNSUPPORTED_OS	Used by the ExIflash Standalone execution scripts. Returned when the scripts are run on an unsupported OS.
10	ERROR_UNSUPPORTED_ARCH	Used by the ExIflash 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 UCNA/HBAs succeeded.
12	GOOD_NO_UPDATES_NEEDED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and no updates were needed on the other UCNA/HBAs.
13	ERROR_ALL_UPGRADES_FAILED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and all downloads to the other UCNA/HBAs failed.
14	ERROR_SOME_UPGRADES_FAILED_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, and some downloads to the other UCNA/HBAs failed.
15	ERROR_NO_SUPPORTED_HBA_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, but no other HBA/UCNAs were discovered.
16	GOOD_NO_UPGRADES_AVAILABLE_SKIPPED_UNSUP_OC10	An unsupported OCe10100 was discovered, but no applicable firmware or boot code images where found for supported HBA/UCNAs.
19	ERROR_IMAGE_VERSION	An error occurred when decoding image version. **Note:** This is returned only when using the /iv=<image_version> switch.

6. Offline Adapter Management Utility Error Codes

Table 6-1 Offline Adapter Management Utility 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

Table 6-1 Offline Adapter Management Utility Error Codes (Continued)

Error Code	Description
29	Read_rev error
30	Dump configuration region error
31	Read file error
32	Short file error
33	Read NVPARMS error
34	Write NVPAMRMS 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 erasable read-only memory (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 Initialize
62	Unable to allocate memory

Table 6-1 Offline Adapter Management Utility Error Codes (Continued)

Error Code	Description
63	DFC_InitDiagEnv error
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	Milliservice 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	SLI4 management error
80	Reboot required
141	General error from Mili
200	General error

7. Troubleshooting

The Force Firmware (/ff), Force Boot (/fb), and the 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 Offline Adapter Management Utility outputs 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. The supported drivers and Linux distributions are listed in this document.

Updating Adapters without Boot Code

The Offline Adapter Management Utility reports an adapter's Boot Code version as "NONE" when the adapter does not have boot code installed. The Offline Adapter Management 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.