EMULEX®

Firmware
Update Manual

for Emulex® HBAs

Introduction

Compatibility

For information about this firmware release, see the readme.txt file that accompanies the firmware. Such information includes compatibility, cautions and warnings, known issues and files included in this release.

Prerequisites

- Local boot disk.
- The intended Fibre Channel target should be big enough to hold all system files and the swap slice of the current local boot disk.

Things to Know Before You Download

- Firmware differs between HBA models. Make sure you download the appropriate firmware for your HBA.
- Before you download the files, create a directory into which you can download and unzip them.
- As a measure of protection, ensure that critical files on your local boot disk are backed up.
- Depending on the release, the firmware kit contains either a .all file or a .awc file that updates the kernel if the existing kernel is an earlier version. If the update process is interrupted (such as by a power outage) and the kernel is being updated, you may have to return the host bus adapter (HBA) to Emulex for repair.
- Firmware may be bundled with or without boot code. Boot code allows you to designate a Fibre Channel drive as the boot drive. If the HBA's devices will be used to boot the system, Emulex recommends that you use the firmware package that includes boot code, if one is provided. If you select a firmware image that includes boot code, the update procedure will load both the new firmware and boot code at the same time. After updating, refer to the boot code manuals for procedures on enabling the boot code on your HBA.
- If you are currently using an Emulex driver, you can update firmware with the diagnostic utility that was loaded when the driver was installed.

Utilities to Update Firmware

Emulex offers a variety of utilities that you can use to update the HBA firmware. The utilities that you can use depend on your operating system and, in some cases, driver:

Operating System	HBAnyware	lputilnt*	elxcfg**	lputil	EFI Utility	lp6dutil***	Offline Utility***
Windows	X	X	X			X	X
Linux	X			X		X	X
Solaris (lpfc driver)	X			X			
NetWare						X	X
EFI					X		
* SCSIport Miniport and Storport Miniport drivers only ** FC Port driver only ***Requires DOS (will not run in a DOS window)							

After you decide which utility to use, see the appropriate update procedure:

- HBAnyware utility: See page 3.
- lputilnt utility: See page 6.
- elxcfg utility: See page 7
- lputil utility: See page 8.
- EFI utility: See page 8.
- lp6dutil utility: See page 11.
- Offline utility (doslpcfg): See page 13.

Updating Firmware

Updating Firmware with the HBAnyware Utility

Prerequisites

- One of the following drivers is properly installed:
    - SCSIport Miniport driver
    - Storport Miniport driver
    - FC Port driver
    - Emulex driver for Linux
    - Emulex driver for Solaris (lpfc driver)
- The HBAnyware utility is properly installed.
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedure

To update firmware using HBAnyware:

1. Start the HBAnyware utility.
    - In Windows:
        - Click **Start**, **Programs/HBAnyware**.
        - From the command line, type `HBAnyware` and press <Enter>.
    - In Linux or Solaris:
        - su to root and run the following script:
          `/usr/sbin/hbanyware/hbanyware`
2. In the discovery-tree (left pane), select the HBA on which you want to update the firmware.
3. In the property tabs (right pane), select the **Firmware** tab.
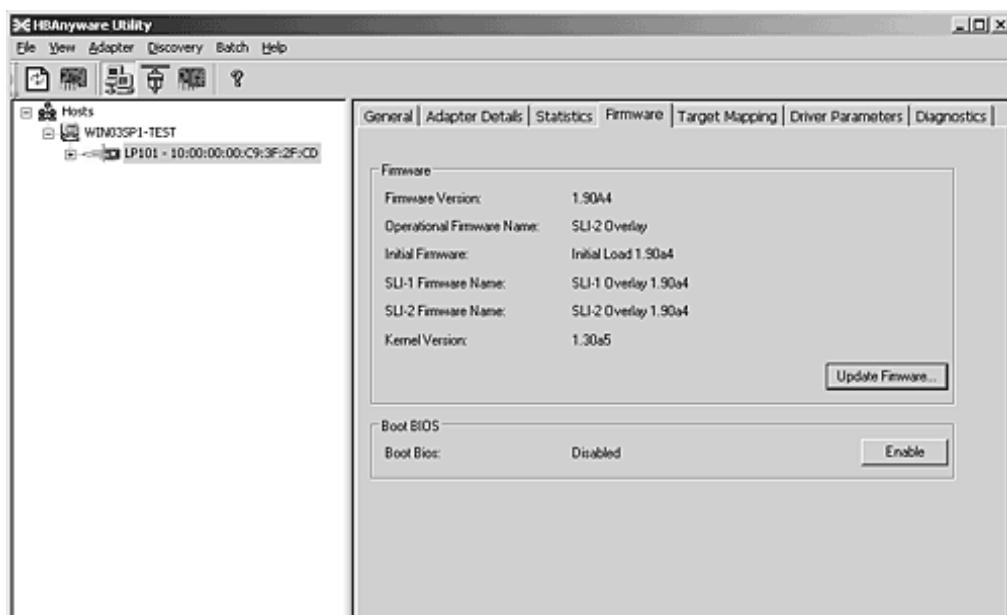
Figure 1: HBAnyware Utility, Firmware Tab (Example)

4. For HBAnyware versions earlier than 3.0, skip to step 5. In version 3.0, or later click **Update Firmware**. The adapter reset notice appears. Click **Yes**.
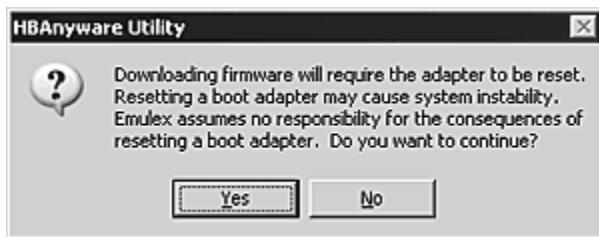
Figure 2: HBAnyware Utility, Adapter Reset Notice

5. Click **Yes**.

6. In HBAnyware versions earlier than 3.0, the **Select Firmware** dialog box appears. In version 3.0 or later, the **Firmware Download** dialog box appears:
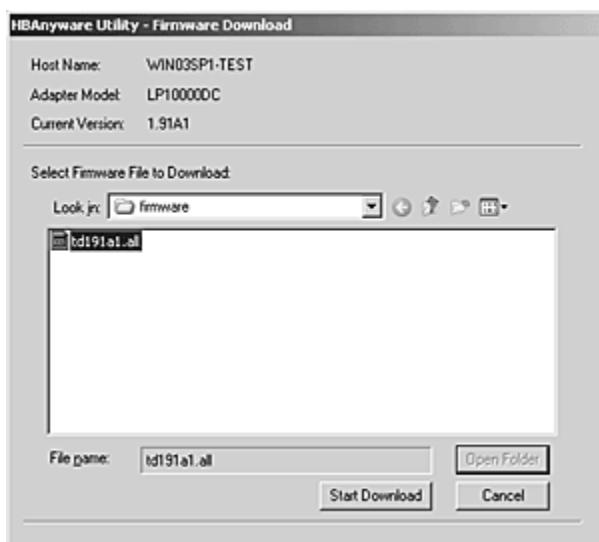
Figure 3: HBAnyware Utility, Firmware Download Dialog Box (Example)

7. Navigate to the extracted firmware file you want to download. Firmware files have a .all extension.

8. Select the firmware file and click **Start Download**. A status bar shows the progress of the download and indicates when the download is complete. In HBAnyware versions earlier than 3.0, the HBA in the discovery-tree is displayed in red text, indicating that is offline. It is displayed in black text when the update is complete.

9. Click **Close**. The **Firmware** tab shows the updated firmware information for the selected HBA.

   If you are updating the firmware on a dual-channel HBA, repeat steps 2 - 9 to update the firmware on the second port.

Note: If the state of the boot code on the board has changed, this change is reflected immediately on the **General** tab (HBAnyware versions 3.0 or later) or the **Adapter Details** tab (versions earlier than 3.0).

Updating Firmware (in Batch Mode) with HBAnyware

Loading firmware in batch mode enables you to install firmware on multiple HBAs in a single step. Batch firmware loading is restricted to a single firmware file and to all accessible HBAs for which that file is compatible.

Note: No other HBAnyware functions can be performed while batch firmware loading is in progress.

Prerequisites

- The driver is properly installed.
- The HBAnyware utility is properly installed.
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedure

To update firmware in batch mode using HBAnyware:

1. Start the HBAnyware utility (see page 3).
2. From the menu, select **Batch** and click **Download Firmware**. The Select Firmware File dialog box appears.

Note: You do not need to select a particular tree element for this operation.

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3. Navigate to the extracted firmware file you want to download. Select the firmware file and click **Open**. A tree-view shows all HBAs, and their corresponding hosts, that are compatible with the selected firmware file.
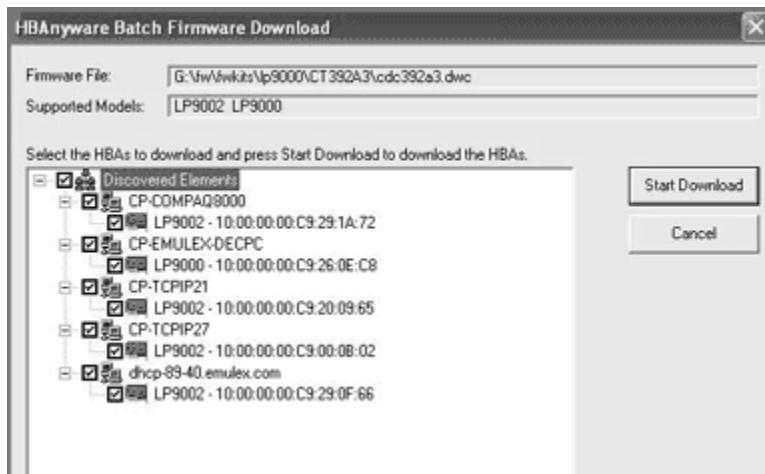
Figure 4: HBAnyware Utility, Selecting HBAs to Update (Example)

4. Click the box next to an HBA to select or remove the HBA from the batch process. Click the box next to a host to select or remove all eligible HBAs for the host from the batch process.
5. Click **Start Download**.

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6. Firmware downloading begins and the tree-view displays the progress. As firmware for a selected HBA is being downloaded, it appears orange in the tree-view. When the download is finished, the entry changes to green (Figure 5). If the download failed, the entry changes to red.

Figure 5: HBAnyware Utility, Download Complete (Example)

7. When downloading is finished, click **Print Log** to print a hard copy of the activity log.
8. Click **Close** to exit the batch procedure.

Updating Firmware with lputilnt

Prerequisites

- One of the following drivers is properly installed:
    - SCSIport Miniport
    - Storport Miniport
- The lputilnt utility is properly installed.
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.
- The system is in a state in which this type of maintenance can be performed:
    - I/O activity on the bus has been quieted.
    - Cluster software, or any other software that relies on the HBA to be available, has been stopped or paused.

Procedure

To update firmware using lputilnt:

1. Click **Start**, **Programs**, **Emulex** and **lputilnt**.
2. Select the desired host bus adapter.
3. Select **Firmware Maintenance** from the **Category** list.

> **Note:** If the letter W appears next to a firmware entry, it indicates that the image is represented in the wakeup parameters. This means that the HBA will use that specific image if it needs a firmware image.

4. Click **Download**.
5. Locate the new firmware file.
6. Click **Open**. Firmware downloading begins.

If you are updating firmware on a dual-channel HBA, repeat steps 2 through 6 to update the firmware on the second port.

Updating Firmware with elxcfg

Prerequisites

- The FC Port driver is properly installed.
- The elxcfg utility is properly installed
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedure

> **Caution:** Using elxcfg to change the HBA firmware to an earlier version may cause the system to lock or devices connected to the HBA to become unavailable. If this happens, reboot the system.

To update firmware using elxcfg:

1. Click **Start**, **Programs**, **Emulex** and **elxcfg**. The main window is displayed.
2. Locate and select an HBA from the Available Adapters list.
3. Select **Download Firmware** from the **Tools** menu. A browse window is displayed.
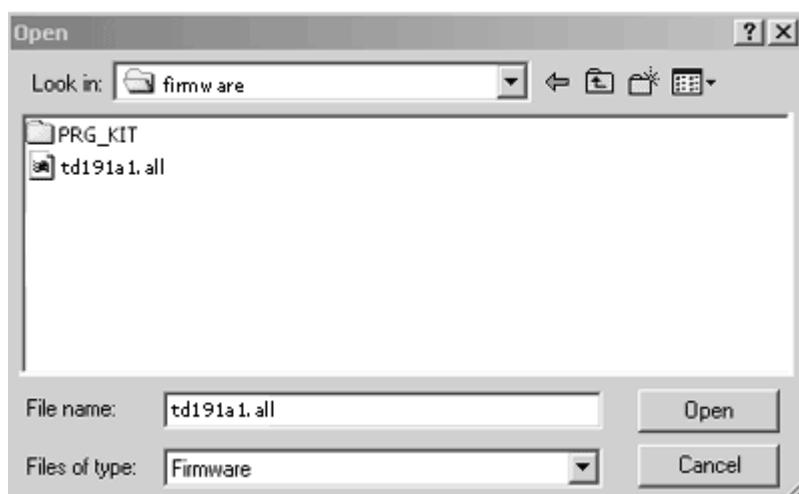
Figure 6: elxcfg Utility, Browse Window

4. Browse to the directory into which you extracted the firmware file and select the firmware file.

5. Click **Open**.

   Firmware is verified and downloaded, and the following confirmation window is displayed.

```
Downloading Firmware...

Download Successful!!

        OK
```
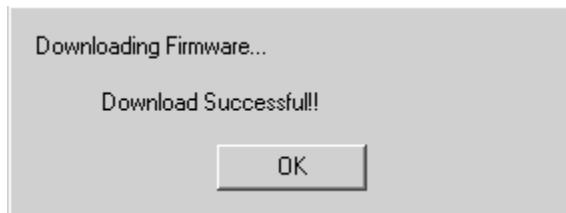
Figure 7: elxcfg Utility, Download Confirmation Window

6. Click **OK** to close the confirmation window.

If you are updating firmware on a dual-channel HBA, repeat steps 2 through 6to update the firmware on the second port.

Updating Firmware with lputil

Prerequisites

- The driver for Linux or Solaris (lpfc) is properly installed.
- The lputil utility is properly installed.
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedure

Caution: Do not interrupt this process or power down the system until the process is complete.

To update firmware using lputil:

1. Start the utility by entering the complete path to lputil. The path in the example reflects the default installation path. If the installation path was modified, adjust the command appropriately.

   `/usr/sbin/lpfc/lputil`

2. From the **Main** menu, enter 3, **Firmware Maintenance**.

3. If prompted, choose the HBA that is being updated.

4. Enter 1, **Load Firmware Image**.

5. Enter the full path to the firmware file. Firmware downloading begins.

If you are updating firmware on a dual-channel HBA, repeat steps 2 through 5 to update the firmware on the second port.

Updating Firmware with the EFI Utility (EFI Shell)

Prerequisites

- The EFI image is burned into the HBA.
- The EFI utility is properly installed.
- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedure

To update firmware using the EFI utility:

1. Switch to the disk that contains the firmware file. For example:

   ```
   Shell>fs0:<Enter>
   ```

2. Start the EFI utility and view Emulex driver handle information, at the shell prompt type:

   ```
   drivers
   ```

   A list of drivers is displayed:

```
            T  D
         Y  C  I
         P  F  A
D        E  G  G  WD WC DRIVER NAME                              IMAGE NAME
R
V  VERSION
== ======== = = = == == ================================= ====================
10 00000010 B - -  4 10 PCI Bus Driver                         PciBus
14 00000029 D - -  2  - Usb Ohci Driver                        UsbOhci
15 00000010 B - -  2  2 USB Bus Driver                         UsbBus
16 00001010 D X -  1  - Usb Keyboard Driver                    UsbKb
17 00000010 ? - -  -  - Usb Mouse Driver                       UsbMouse
18 00000010 D - -  1  - Usb Bot Mass Storage Driver            UsbBot
19 00000010 ? - -  -  - Usb Cbi0 Mass Storage Driver           UsbCbi0
1A 00000010 ? - -  -  - <UNKNOWN>                              UsbCbi1
1B 00000010 D - -  1  - Generic USB Mass Storage Driver        UsbMassStorage
1C 00000010 ? - -  -  - UGA Console Driver                     GraphicsConsole
1D 00000000 D - -  1  - PCI VGA Mini Port Driver               PciVgaMiniPort
1E 00000010 D - -  1  - VGA Class Driver                       VgaClassDriver
1F 00000010 B - -  1  1 Serial 16550 UART Driver               Serial16550
20 00000010 B - -  1  1 Serial Terminal Driver                 Terminal
21 00000010 D - -  2  - Platform Console Management Driver      ConPlatform
22 00000010 D - -  2  - Platform Console Management Driver      ConPlatform
23 00000010 B - -  2  2 Console Splitter Driver                ConSplitter
86 00031114 B X X  1  - Emulex SCSI Pass Thru Driver           Elxcli311a4
```

Figure 8: EFI Utility, Driver List (Example)

Note: To view driver handle information one page at a time, type:
```
      fs0:> drivers -b
```

---

3. To execute the Emulex EFI configuration utility, enter "drvcfg -s" followed by the driver handle. The example in step 1 shows 86 as the driver handle (your driver handle number may be different):

   ```
   drvcfg -s 86
   ```

4. Press <Enter>. An HBA listing is displayed:

001	LP10000DC	PCI-X	100 MHZ	BUS#: 40	Dev#: 01	Func# 00
002	LP8000	PCI	66 MHZ	BUS#: 61	Dev#: 02	Func# 00
003	LP8000	PCI	66 MHZ	BUS#: 61	Dev#: 02	Func# 00
004	LP952	PCI-X	100 MHZ	BUS#: A0	Dev#: 01	Func# 00
005	LP850	PCI	66 MHZ	BUS#: C0	Dev#: 02	Func# 00
006	LP982	PCI-X	100 MHZ	BUS#: C0	Dev#: 01	Func# 00
007	LP9802	PCI-X	100 MHZ	BUS#: E1	Dev#: 01	Func# 00
008	LP9802	PCI-X	100 MHZ	BUS#: E1	Dev#: 01	Func# 00

Figure 9: EFI Utility, HBA Listing (Example)

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5. Locate the HBA on which you are updating firmware. Select (highlight) the row and press <Enter>. The main EFI utility menu is displayed:.

Figure 10: EFI Utility, Main Menu

6. Select 2, **Firmware Update** and press <Enter>. Enter the directory path for the firmware file and press <Enter>. Enter the filename field and press <Enter>:

Figure 11: EFI Utility, Directory Path Window (Example)

Functions are displayed as each system function is finished:

Figure 12: EFI Utility, Firmware Update Completed (Example)

7. Reboot the system.

Note: To update several HBAs at one time, repeat steps 2 through 6 for each HBA and reboot the system. You only need to reboot the system once when you have finished updating the HBAs.

Updating Firmware with lp6dutil

Prerequisites

- The firmware file has been downloaded from the Emulex Web site and extracted to a directory on your local drive.

Procedures

You can use lp6dutil to load firmware using the menu bar or the command line. The menu bar method allows you to load firmware on one HBA at a time. The command line method allows you to load firmware on one HBA or to all HBAs of the same type in your system.

Using the Menu Bar

1. Boot your system with DOS.

2. From the directory where the lp6dutil.exe file resides, enter the following command:

   ```
   lp6dutil
   ```

   A window is displayed with the menu bar near the top and the lp> prompt near the bottom:


```
C:\lp6dutil\LP6DUTIL.EXE
   File   Adapter   Info   Test   Flash   Debug   Help




LP6DUTIL version 9.3A4
Copyright (c) 2005, Emulex Corporation

To run diagnostic tests or to obtain adapters information,
do one of the following:

1) Using Menu Bar: Hit ALT key + desired highlighted key.
2) Using Command Line: Enter desired command.
   <Enter help to display available commands>

lp> _
```
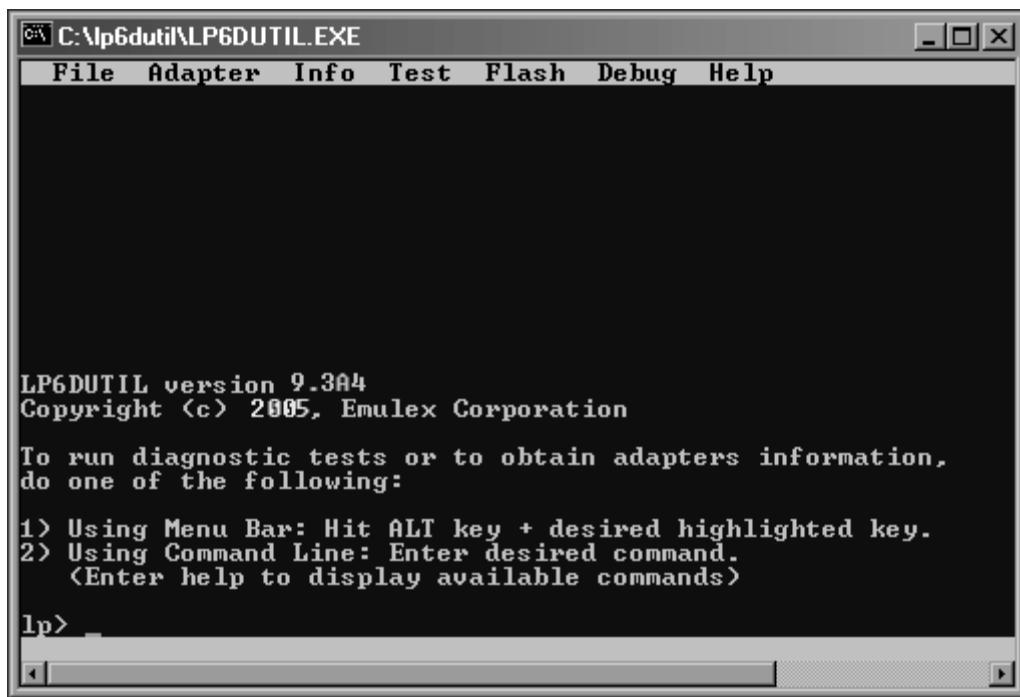
Figure 13: lp6dutil Opening Window

3. Press and hold down the <Alt> key and press **L**. The **Flash** menu is displayed.:


```
 File  Adapter  Info  Test  Flash  Debug  Help

                         Display Flash...
                         Download...
                         Direct Download...

                         Boot Bios...
                         Soft Jumpers...
                         Makeup Parms...
                         Configuration Regions
```

Figure 14: lp6dutil Flash Menu

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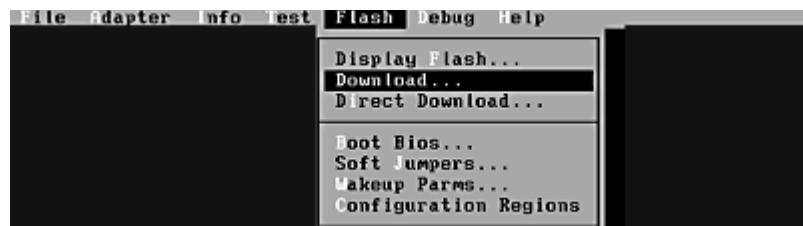
4. Press **D**. The **Download Image** window is displayed. Figure 15 shows an example of one image containing the files that are included in several firmware versions. In this case, you would want the HBA to automatically reset after the download and update is complete. If you are downloading several files from the firmware version, you might not want the HBA to reset until all files are downloaded and updated.
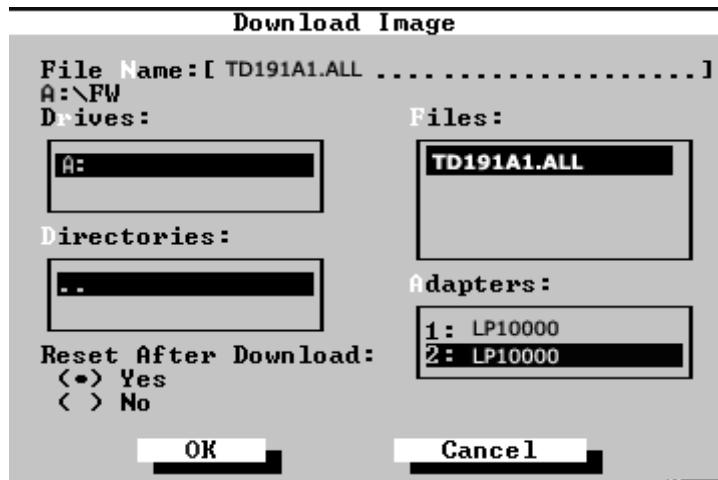

Figure 15: lp6dutil Utility, Download Image Window (Example)

5. Specify the location of the firmware file and the HBA to be updated:

   a. Highlight the HBA in the Adapters list.

   b. Press the <Enter> key.

   c. Highlight the firmware file name in the Files list.

   d. Press the <Enter> key.

6. The HBA resets automatically after the image is downloaded. Set this option to No if you are loading several individual files to one HBA:

   • The Reset After Download option defaults to Yes.

   • To select no for resetting the HBA after the download, tab to the area and press the down arrow key.

7. Hold down the <Alt> key and press O to select **OK**.

   The download process begins. Various steps of the download process are displayed along with the results of the download (success or error).

If you are updating firmware on a dual-channel HBA, repeat steps 3 through 7 to update the firmware on the second port.

Using the Command Line

• Load and update a firmware image file to one HBA specified by the HBA number:

```
download n =2  i =a:\td191a1.all
```

In this example, *n = 2* indicates the HBA number 2 as the target of the update, and *i =a:\td191a1.all* indicates the path where the firmware image is located.

• Load and update a firmware image file to all HBAs of the same type in your system:

```
download a =lp10000 i =a:\td191a1.all
```

In this example, *a = lp10000* indicates the HBA family type, and *i =a:\td191a1.all* indicates the path where the firmware image is located.

Updating Firmware with the Offline Utility (doslpcfg)

The Offline Utility (doslpcfg) is an Emulex program to configure Emulex HBAs before a server operating system is installed or booted. The Offline Utility includes the download command to update firmware.

Prerequisites

- The Offline Utility on a bootable media with MS-DOS or FreeDOS.

Offline Utility Guidelines

- Commands are not case-sensitive.
- Commands require one space between the command name and the first argument and one space between additional arguments. There is no space before or after the equal sign within an argument.
- The Offline Utility detects the number of HBAs it can support if your system has limited memory (530 KB or less). If your system has limited memory, a message specifies an additional argument you must add to each command, such as:

    "Insufficient Memory to support 8 adapters. Use max=7 at the end of EACH command."

    As directed in the message, you would need to add max=7 to the end of each command. In this example, if your system had eight HBAs and you entered max=7 at the end of a command, only the first seven HBAs would be seen by the Offline Utility. If your system has more than 530 KB of memory, the Offline Utility can support up to twelve HBAs and no Insufficient Memory message is displayed.

Running the Offline Utility from the Command Prompt

Note: You cannot start the Offline Utility at the DOS prompt in Windows.

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1. Boot the system with MS-DOS or FreeDOS.
2. You can start the Offline Utility with a valid command or a valid script file name.
    - To start the Offline Utility with a command, from the directory where the DOSLPCFG.exe file resides, type:

        ```
        doslpcfg <valid command>
        ```
    - Example of starting the Offline Utility with a command to show firmware versions that are loaded in the flash of HBA, #2.

        ```
        doslpcfg listrev n=2 s=1
        ```
    - To start the Offline Utility with a script file name, from the directory where the DOSLPCFG.exe file resides, type:

        ```
        doslpcfg @<script file name>
        ```
    - Example of starting the Offline Utility with script1.txt in the c:\test directory:

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

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

Example:
```
DOSLPCFG listboot n=1 >result.out
```

Downloading a File - download

This command downloads a firmware or boot code file to all HBAs of the same name or to a specific HBA.

- To download a firmware image file to all HBAs of the same specified name, type:

```
doslpcfg download a=<adapter name> i=<firmware image filename>
```

> **Note:** The adapter name is the name that appears when you run the listHBA command. For more information on the listHBA command, see the Troubleshooting and Maintenance User Manual for Emulex HBAs.

The following example downloads the hd100a4.all firmware file to all LP9802 HBAs:

```
doslpcfg download a=lp9802 i=c:\image\hd100a4.all
```

- To download a firmware image file to an HBA specified by its number, type:

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

The following example downloads the 1.91a5 firmware file to HBA # 6; in this example, the firmware file is for an LP982 HBA:

```
doslpcfg download n=6 i=lf191a5.all
```