Emulex® Drivers for Linux User Manual

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Supported Driver Versions

The following table lists the Emulex-supported Fibre Channel (FC) drivers that are applicable in this manual.

A checkmark "✓" indicates the type of driver distribution that is supported.

FC Driver Version	Driver Distribution		Operating System Version
	Inbox	Out-of-Box	
8.2.0.121		✓	CentOS 5.5, CentOS 5.6, CentOS 5.7, OL 5.5, OL 5.6, OL 5.7, RHEL 5.5, RHEL 5.6, RHEL 5.7, SLES 10 SP3, and SLES 10 SP4
8.3.5.60		✓	CentOS 6.0 and later, OL 6.0 and later, OL 5.6 UEK, OL 6.0 UEK, RHEL 6.0 and later, and SLES 11 SP1
8.3.5.17	✓		CentOS 6.0, OL 6.0, RHEL 6.0
8.3.5.30.1p	✓		CentOS 6.1, OL 6.1, RHEL 6.1
8.3.5.8.1p	✓		SLES 11 SP1

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1. Introduction

Overview

This *Emulex Drivers for Linux User Manual* provides installing, updating, uninstalling, configuring, and troubleshooting procedures for Emulex-supported FC drivers for Linux.

Supported Versions and Adapters

This manual is applicable to several versions of Linux drivers, operating systems, firmware, and adapters.

- For a list of supported Emulex FC drivers for Linux and their associated compatible operations systems, see "Supported Driver Versions" on page 3.
- For supported firmware versions and their latest release, see the "Downloads" page on the Emulex website for the specific adapter.
- For a list of Emulex LightPulse® family of FC host bus adapters (HBAs) that are compatible with the standalone driver kits, see the "Downloads" page on the Emulex website for the specific driver.

Features

For the latest release, the following feature is new:

- Support for LightPulse 16 Gb/s FC host bus adapters (LPe16000 family).

The Emulex FC drivers for Linux also includes the following features:

- Supports LightPulse Fibre Channel (LPFC) family of adapters.
- Supported protocols:
  - SCSI-FCP
  - FCP-2 (FC-Tape profile, including use of ADISC instead of PLOGI)
  - FC initiator mode
- Supported FC topologies: point-to-point, FC Arbitrated Loop (FC-AL), and fabric with auto-topology negotiation
- Supported FC speeds: 1, 2, 4, 8, and 16 Gb/s FC adapters with auto-rate negotiation

  Note: The driver does not support a 1 Gb/s rate on 8 or 16 Gb/s FC adapters.

- For FC 8.2.0.x drivers, supports Fibre Channel Security Protocol (FC-SP) Diffie-Hellman Challenge Handshake Authentication Protocol (DHCHAP).
- Tested up to 32 adapter ports
- Dynamic parameter setting using the Emulex OneCommand™ Manager application as part of a master kit:

  Enabling graphic user interface (GUI) - based driver configuration, including in-band (FC) and out-of-band (TCP/IP) remote storage area network (SAN)

management capability, diagnostics (loopback and diagnostics dump), virtual port support, personality change and more.

For a complete list of supported features, see the latest *OneCommand Manager Application User Manual*, which is available on the Emulex website.

- Support for common HBA application programming interface (API).
- Batch firmware download capability
- Support for the sysfs (Linux virtual file system) interface. See "Configure Parameters with a Read/Write to sysfs" on page 18.
- Peripheral Component Interconnect (PCI) hot plug support
- Vital product data (VPD) support
- Storage Networking Industry Association - Conformance Testing Program (SNIA-CTP) compliant Storage Management Initiative specification (SMI-S 1.1) provider
- "Linux Tools" hyperlink provided in the Linux portion on the Emulex website: http://www.emulex.com/files/downloads/linux/tools.html
- Supports N_Port ID virtualization (NPIV) virtual ports.

  NPIV is supported on SLI-3 4, 8, and 16 Gb/s adapters. Emulex enterprise class (5-digit adapter model number) and midrange class (4-digit adapter model number) adapters support SLI-3. For SLI-3 supported adapters, use the latest recommended firmware for NPIV support.

  The FC 8.2.0.x and 8.3.5.x drivers support adapters running SLI-2, but NPIV support is not available in SLI-2 mode.

Known Issues

Known issues are defined in the *Emulex Drivers for Linux Release Notes*, which are available on the driver's "Downloads" page on the Emulex website. Also, some known issues are detailed in chapter 4., "Troubleshooting," on page 33.

Abbreviations

ADISC	Discover Address
AMD	Advanced Micro Devices
API	application programming interface
CentOS	Community Enterprise Operating System
CLI	command line interface
DHCHAP	Diffie-Hellman Challenge Handshake Authentication Protocol
DMA	direct memory access
DUD	driver update disc
DUP	driver update package
ELS	extended link service
ETO	extended timeout
FC	Fibre Channel
FC-SP	Fibre Channel Security Protocol
FC-AL	Fibre Channel - Arbitrated Loop
FCP	Fibre Channel Protocol
GCC	GNU Compiler Collection
Gb/s	gigabits per second
GRUB	Grand Unified Bootloader
GUI	graphical user interface
HBA	host bus adapter
INTx	PCIe legacy interrupts, where “x” is variable
IOCB	input/output control block
IP	Internet Protocol
LPFC	LightPulse Fibre Channel
LUN	logical unit number
MBR	master boot record
MSI	message signaled interrupts
MSI-X	message signaled interrupts - extended
NAA	network address authority
NPIV	N_Port ID virtualization
OL	Oracle Linux
PCI	Peripheral Component Interconnect
PCIe	Peripheral Component Interconnect Express
PLOGI	port login
POST	power-on self-test

RHEL	Red Hat Enterprise Linux
RPI	remote port indicator
RPM	resource package manager
RSCN	registered state change notification
RX	receive or receiver
SAN	storage area network
SCSI	Small Computer System Interface
SLES	SUSE Linux Enterprise Server
SLI	Service Level Interface
SMI-S	Storage Management Initiative specification
SNIA-CTP	Storage Networking Industry Association - Conformance Testing Program
TCP	Transmission Control Protocol
UEK	Unbreakable Enterprise Kernel
VPD	vital product data
WWPN	worldwide port name

2. Installing and Uninstalling

General Installation Requirements

Prior to driver installation, follow these general requirements:

- Install a supported Emulex adapter in the system. Refer to the adapter's installation manual for specific hardware installation instructions.
- Use a supported operating system. The standalone driver kit supports the following distributions:
  - CentOS 5.5, 5.6, and 5.7 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - CentOS 6.0 and 6.1 (Intel x86, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - OL 5.5, 5.6, and 5.7 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - OL 6.0 and 6.1 (Intel x86, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - OL 5.6 UEK and OL 6.0 UEK (Intel x86 architectures)
  - RHEL 5.5, 5.6, and 5.7 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - RHEL 6.0 and 6.1 (Intel x86, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - SLES 10 SP3 and SP4 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures)
  - SLES 11 SP1 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures)

Binary RPM FC Driver Kit

The binary RPM FC driver kit contains the following:

- A zipped tar file that includes the driver binary RPMs for a specific driver version and Linux distribution.

  Note: Use only officially-released Linux distribution kernels. The binary RPM packages only support officially-released Linux distribution kernels, and do not support pre-release distribution kernels.

- By default, an installation script, elx_lpfc_install.sh, installs the FC driver binary RPM that corresponds to the target system's architecture and kernel memory variant.
- A README file that provides a description of the kit structure, its contents, and distribution support scope.
- The driver changelog file.

Installing the Binary RPM FC Driver Kit

Note: You must uninstall any FC driver kits that are not part of this distribution. For example, you must uninstall any previous FC driver kits that were installed from the Emulex website before installing this driver kit. This installation fails if a previous version of the FC driver kit is detected. For more information, see "Uninstalling the Binary RPM FC Driver Kit" on page 12.

To install the binary RPM FC driver:

1. Download the appropriate driver kit from the Emulex website.
2. Log on as "root" to a terminal, and unpack the tarball:

   ```
   tar xzf elx-lpfc-dd-<Linux distribution version>-<driver version>.tar.gz
   ```

3. Change to the directory that is extracted:

   ```
   cd elx-lpfc-dd-<Linux distribution version>-<driver version>/
   ```

4. Run the elx_lpfc_install.sh script without options to install the new driver kit:

   ```
   ./elx_lpfc_install.sh
   ```

   Once the elx_lpfc_install.sh script has completed successfully, the new Emulex FC driver is loaded, and devices that are properly connected to the system are accessible.
5. Reboot the system now to enable the newly added driver options in the ramdisk. You can also reboot the system later if you want.

Uninstalling the Binary RPM FC Driver Kit

Note: You must run the uninstall script that shipped with the version of the driver kit you want to remove.

To uninstall the binary RPM FC driver:

1. Log on as "root".
2. If possible, exit all applications that use FC-attached drives, then unmount the drives. If you cannot exit all applications that use FC-attached drives, the uninstall works properly, but you must reboot after the uninstallation is complete.
3. Run the elx_lpfc_install.sh script. with the "--uninstall" option:

   ```
   ./elx_lpfc_install.sh --uninstall
   ```

Booting from a Non-Zero LUN Attached to an Emulex LPFC Adapter

This section describes how to configure SLES 10 SPx or SLES 11 SPx to boot from an FC-attached disk device other than /dev/sda. This example uses /dev/sdb.

To boot from a non-zero LUN attached to an Emulex LPFC adapter:

1. Configure the Emulex adapter to boot from the desired LUN.

2. Start the standard SLES 10 SPx or SLES 11 SPx installation.
3. At the Installation Settings screen, after configuring the desired partitions, select the **Expert** tab.
4. Select **Booting** to change the bootloader configuration.
5. The Boot Loader Settings window appears. Select the **Boot Loader Installation** tab.
6. In the section labeled Boot Loader Location, select **Custom Boot Partition**, then select **root partition** (or **boot partition**, if you configured one) from the drop-down box.
7. Click **Boot Loader Options**. The Boot Loader Options window appears. Select **Write generic Boot Code to MBR**. Click **OK**.
8. In the Boot Loader Settings window, click **Finish**.
9. Proceed with the installation.
10. During the first boot after the installation, use the GRUB command line to change all hd1 references to hd0, then continue the boot process.
11. Edit the GRUB configuration in /boot/grub/menu.lst to change all hd1 references to hd0.

OneCommand Manager Application

The OneCommand Manager application is a powerful, centralized adapter management suite, providing discovery, reporting and management of local and remote adapters from a single console anywhere in the SAN and across platforms. Both a GUI and CLI are provided. This remote configuration capability can be provided by either FC access via host systems on the same FC SAN or by TCP/IP access from IP addresses of remote machines.

For instructions on installing and using the OneCommand Manager application, see the latest *OneCommand Manager Application User Manual*, which is available on the Emulex website.

3. Configuration

FC Driver Configuration

FC Driver Parameters

The FC driver parameters determine some aspects of the driver's behavior. There are two main types, static and dynamic. Changes to the static parameters require a driver reload for the change to take effect. Changes to the dynamic parameters take effect immediately. See the following section and "Dynamic FC Driver Parameters" on page 16, respectively.

Static FC Driver Parameters

Changes to static parameters require a driver reload for the change to take effect. Table 3-1 lists the static FC driver parameters.

Table 3-1 Static FC Driver Parameters

Parameter	Description	sysfs Visible
lpfc_ack0	When enabled, ACK0 is used for Class 2. The enabled value is 1. The disabled value is 0 (default).	Yes
lpfc_dev_loss_initiator	When enabled, engage the devloss timeout for initiators. The enabled value is 1. The disabled value is 0 (default). **Note:** This parameter is applicable to FC 8.2.0.x drivers only.	Yes
lpfc_discovery_threads	Specifies the maximum number of ELS commands that can be outstanding for a discovery. **Note:** The lpfc_discovery_threads parameter defaults to a value of 64 for private loop topologies regardless of the configured value. If there are multiple ports configured on the host the value of 64 is only used for those ports that are connected in a private loop topology. The configured value is used for all other ports. The minimum value is 1. The maximum value is 64. The default value is 32.	No
lpfc_enable_da_id	When enabled, the FC driver issues a DA_ID CT command to the fabric when VPorts log out of the fabric. The enabled value is 1. The disabled value is 0 (default).	No
lpfc_enable_hba_heartbeat	When enabled, the heartbeat logic in the FC driver is able to detect whether the adapter is functional. If the heartbeat logic detects the adapter is not functional, the driver will shut down the adapter. The enabled value is 1 (default). The disabled value is 0.	Yes

Table 3-1 Static FC Driver Parameters (Continued)

Parameter	Description	sysfs Visible
lpfc_enable_hba_reset	When enabled, the FC drivers can pass resets to the adapter. This is typically used for debugging purposes. The enabled value is 1 (default). The disabled value is 0.	Yes
lpfc_enable_npiv	When enabled, the FC driver can use NPIV to create virtual ports (if supported by the fabric). The enabled value is 1 (default). The disabled value is 0.	Yes
lpfc_fcp_class	Specifies either FC Class 2 or 3 for FCP data transmission. For Class 2, the value is 2. For Class 3, the value is 3 (default).	Yes
lpfc_hba_queue_depth	Specifies the maximum number of FCP commands that can queue to an Emulex adapter. The minimum value is 32. The maximum value is 8192 (default).	Yes
lpfc_lun_queue_depth	Specifies the default maximum commands sent to a single logical unit (disk drive). The minimum value is 1. The maximum value is 128. The default value is 30.	Yes
lpfc_max_luns	Specifies the highest available LUN ID per target that are valid. For example, a value of 19 means LUN IDs from 0 to 19 are valid. The SCSI layer scans each target until it reaches the specified LUN ID The minimum value is 0. The maximum value is 65535. The default value is 255.	Yes
lpfc_max_scsicmpl_time	Uses command completion time to control queue depth. The units are in milliseconds. The minimum value is 0 (default). The maximum value is 6000.	Yes
lpfc_multi_ring_rctl	When lpfc_multi_ring_support is enabled, identifies the routing control (R_CTL) for additional ring configuration. The minimum value is 1. The maximum value is 255. The default value is 4.	Yes
lpfc_multi_ring_support	Determines the number of primary SLI rings over which to spread IOCB entries. The minimum value is 1 (default). The maximum value is 2.	Yes
lpfc_multi_ring_type	When lpfc_multi_ring_support is enabled, identifies the TYPE for additional ring configuration. The minimum value is 1. The maximum value is 255. The default value is 5 (LLC/SNAP).	Yes
lpfc_restrict_login	When enabled, restricts virtual ports login to remote initiators. The enabled value is 1 (default). The disabled value is 0.	No
lpfc_scan_down	When enabled, selects the method for scanning the AL_PA from high to low to assign a SCSI ID. The enabled value is 1 (default). The disabled value is 0.	Yes

Table 3-1 Static FC Driver Parameters (Continued)

Parameter	Description	sysfs Visible
lpfc_sg_seg_cnt	Controls the scatter/gather maximum segment count passed to the FC driver. This variable is applicable per SCSI command. The minimum value is 64 (default); and the maximum value is 4096.	Yes (sg_table size)
lpfc_sli_mode	This parameter allows you to force the SLI mode requested by the adapter driver. The possible values are: • 0 = Auto-select (default) • 2 = SLI-2 • 3 = SLI-3	No
lpfc_use_msi	When enabled, determines whether the driver uses MSI or MSI-X. • 0 = MSI disabled; INTx mode is used (default for FC 8.2.0.x drivers). • 1 = MSI; allows a maximum of 32 interrupts. • 2 = MSI-X; allows a maximum of 2048 interrupts (default for FC 8.3.5.x drivers).	Yes

Dynamic FC Driver Parameters

Changes to the dynamic parameters take affect immediately. All LPFC dynamic parameters are read/write using sysfs. Table 3-2 lists the dynamic FC driver parameters.

Table 3-2 Dynamic FC Driver Parameters

Parameter	Description
lpfc_cr_count	This parameter determines the value for I/O coalescing for lpfc_cr_count outstanding commands. The minimum value is 1 (default). The maximum value is 255.
lpfc_cr_delay	This parameter determines the value for I/O coalescing for lpfc_cr_delay (milliseconds) outstanding commands. The minimum value is 0 (default). The maximum value is 63.
lpfc_devloss_tmo	Specifies the number of seconds to hold an I/O error when a device disappears. The minimum value is 0. The maximum value is 255. The default value is 30.
lpfc_enable_auth	Specifies whether DHCHAP support is enabled. When set to 1, DHCHAP is enabled. When set to 0, DHCHAP is disabled. **Note:** This property requires a link reset to activate. **Note:** This parameter is applicable to FC 8.2.0.x drivers only.
lpfc_fdmi_on	Specifies the type of FDMI support. The enabled values are 1 or 2 depending on the type needed. The disabled value is 0 (default).

Table 3-2 Dynamic FC Driver Parameters (Continued)

Parameter	Description
lpfc_link_speed	Specifies the FC link speed. The possible values are: • 0 = Auto-select (default) • 1 = 1 Gb/s • 2 = 2 Gb/s • 4 = 4 Gb/s • 8 = 8 Gb/s • 16 = 16 Gb/s
lpfc_log_verbose	Specifies the log verbosity level of the messages posted by the driver. Extra activity logging (bit mask). The minimum value is 0x0 (default). The maximum value is 0xffff.
lpfc_nodev_tmo (deprecated)	**Note:** This is a deprecated field and lpfc_devloss_tmo should be used instead. This parameter will not work if you altered lpfc_devloss_tmo. Specifies the number of seconds to hold an I/O error when a device disappears. The minimum value is 1. The maximum value is 255. The default value is 30.
lpfc_pci_max_read	Specifies the maximum DMA read byte count. The possible values are 512, 1024, 2048 (default), and 4096.
lpfc_poll	Sets the FCP ring polling mode control. The possible values are: • 0 = no polling (default) • 1 = poll with interrupts enabled • 3 = poll and disable FCP ring interrupts
lpfc_poll_tmo	Specifies the number of milliseconds that the driver waits between polling FCP ring interrupts. The minimum value is 1. The maximum value is 255. The default value is 10.
lpfc_topology	This parameter sets the link topology. The possible values are: • 0x0 = loop first; if loop fails, then point-to-point (default) • 0x2 = point-to-point only • 0x4 = loop only • 0x6 = point-to-point first; if point-to-point fails, then loop
lpfc_use_adisc	When enabled, an ADISC is sent instead of a PLOGI for device discovery or RSCN. The enabled value is 1. The disabled value is 0.

Configuring FC Driver Parameters

You can configure the FC driver parameters by using:

- modprobe and /etc/modprobe.conf
- the sysfs interface (to view and modify parameters after loading the FC driver)
- the OneCommand Manager application (See the *OneCommand Manager Application User Manual* for more information.)

Note: FC driver parameter changes made using modprobe.conf or the OneCommand Manager application persist if the FC driver is uninstalled. To return to the default settings, you must reset them in the modeprobe.conf file and reload the driver.

Configure Parameters with modprobe and /etc/modprobe.conf

The following sections describe how to set FC driver parameters using the modprobe Linux program and by manually editing the /etc/modprobe.conf file.

Temporary Configuration with modprobe

When you manually load the FC driver as a module using the modprobe command, and you change one or more driver parameter values in the command line, the configuration is temporary. These changes are considered temporary because they are valid for the current session only or until the FC driver is unloaded.

Modprobe uses the modprobe.conf file, but parameters passed to it using the command line override the parameters in the modprobe.conf file. Values can be expressed in hexadecimal or decimal notation.

If you want to temporarily set lun_queue_depth to 20 (default is 30) for all HBAs in your system, load the FC driver with the following command:

```
modprobe lpfc lpfc_lun_queue_depth=20
```

Persistent Configuration with /etc/modprobe.conf

To make the FC driver parameters persist across module loads and reboots, modify the /etc/modprobe.conf file. If driver parameters are modified in /etc/modprobe.conf, the FC driver must be reloaded for the parameters to take effect. Also, a new ramdisk image is required if you want the changes to take effect in the next boot. See “Creating a New Ramdisk Image” on page 19.

The FC driver parameters are specified in /etc/modprobe.conf via the “options” command. For example, the following command sets the verbose flag:

```
options lpfc lpfc_log_verbose=0xffffffff
```

If the same option is specified in both the /etc/modprobe.conf and on the modprobe command line, the option setting in the command line takes precedence.

Configure Parameters with a Read/Write to sysfs

Sysfs is a virtual file system that exposes the structure of the system. It also includes interfaces to driver parameters through which the FC driver parameters can be viewed and modified. Since these interfaces are available only after driver load, only dynamic FC driver parameters can be changed. However, both static and dynamic FC driver parameters can be read through sysfs.

Note: Sysfs changes exist only during driver load and are lost when the FC driver is unloaded or the system is rebooted.

Viewing Parameters with sysfs

The sysfs file system is mounted and available as /sys. You must first identify the scsi_host that represents the adapter for which you want to modify the FC driver parameters. All scsi_hosts bound to the FC driver can be viewed with the following command:

```
ls -d /sys/bus/pci/drivers/lpfc/*/host*
```

Assuming you are interested in adapter scsi_host 7, you can list the FC driver parameters for this particular adapter as:

```
ls -l /sys/class/scsi_host/host7/lpfc*
```

An example output follows:

```
-r--r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_ack0
-r--r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_fcp_class
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/
lpfc_fdmi_on
-r--r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_link_speed
-rw-r--r--  1 root root 4096 Feb 28 15:34 /sys/class/scsi_host/host7/lpfc_log_verbose
-r--r--r--  1 root root 4096 Feb 28 17:03
/sys/class/scsi_host/host7/lpfc_lun_queue_depth
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_max_luns
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_nodev_tmo
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_scan_down
-r--r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_topology
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_use_adisc
```

Temporary Configuring Parameters with sysfs

In the previous example, notice that the FC driver parameters are available as files. Reading a file displays the current value of a driver parameter. If the permissions allow it, you can write a value to the file and it will take effect immediately.

Reading the lpfc_log_verbose file may show that its value is “0”:

```
cat /sys/class/scsi_host/host7/lpfc_log_verbose
0
```

To modify the lpfc_log_verbose value to 0xffffffff:

```
echo 0xffffffff > /sys/class/scsi_host/host7/lpfc_log_verbose
```

Reading the lpfc_log_verbose file now shows a value of 0xffff:

```
cat /sys/class/scsi_host/host7/lpfc_log_verbose
0xffffffff
```

Creating a New Ramdisk Image

The lpfc-install script creates a ramdisk image containing the FC driver for the currently running kernel.

Note: You must create a new ramdisk image whenever the LPFC options in /etc/modprobe.conf are changed and you want the change to take effect on the next reboot.

To create a new initial ramdisk image for inbox FC drivers and installed binary RPM FC driver kits:

- For SLES 10 PPC64 architecture distributions, type

```
mkinitrd -k vmlinux -i initrd
```

- For SLES 10 non-PPC64 architecture distributions and SLES11 SPx distributions, type

```
mkinitrd -k vmlinuz -i initrd
```

- For RHEL 5.x

```
mkinitrd -f /boot/initrd-<kernel-version>.img
<kernel-version>
```

- For RHEL 6.x distributions, type

```
dracut -f /boot/initramfs-<kernel-version>.img
<kernel-version>
```

Dynamically Recognizing LUNs and Targets (using scan)

The FC driver enables you to dynamically recognize LUNs and targets without unloading or reloading the lpfc module and without resetting the adapter.

To rescan an adapter's targets with sysfs, given the adapter's host number (in this example, 3), type

```
echo "- - -" > /sys/class/scsi_host/host3/scan
```

To limit the rescan to a particular target, given the adapter's host number (in this example, 3) and the target number (in this example, 2), type

```
echo "- 2 -" > /sys/class/scsi_host/host3/scan
```

You can also use the Emulex lun_scan script in the /usr/sbin/lpfc directory.

Persistent Naming

The generic device manager for the Linux kernel is "udev", which primarily manages device nodes in the /dev directory.

Using udev to Discover Logical to Physical Mappings for sd Devices

In Linux, the driver for SCSI disk drives is "sd". A disk device name has an sd prefix. Persistent names for sd devices are provided in the /dev/disk/by-id directory. To find the persistent udev name for the disk, which is currently "sdc", type

```
cd /dev/disk/by-id
ls -l | grep sdc
```

The sample output is:

```
lrwxrwxrwx 1 root root 9 2006-08-01 19:08 scsi-32000000c5005d6e6 -> ../../sdc
```

In the previous example, the disk has no partitions. If the disk had two partitions, the output would look like the following:

```
lrwxrwxrwx 1 root root 9 2006-08-01 19:08 scsi-32000000c5005d6e6 -> ../../sdc
lrwxrwxrwx 1 root root 10 2006-08-01 19:08 scsi-32000000c5005d6e6-part1 -> ../../sdc1
lrwxrwxrwx 1 root root 10 2006-08-01 19:08 scsi-32000000c5005d6e6-part2 -> ../../sdc2
```

Configuring the System to Boot Using Persistent Names

For SLES 10 SPx and SLES 11 SPx

Note: SLES 10 SPx and SLES 11 SPx are configured by default with udev to provide persistent names for hard disks, including FC-attached disks.

To use a persistent name for a boot device with SLES 10 SPx and SLES 11 SPx:

1. In /boot/grub/menu.lst, find the kernel line for the default boot. For example:
   ```
   kernel /boot/vmlinuz root=/dev/sda2 vga=0x314
   ```
2. Find the persistent name for the root partition (following "root=" on the kernel line) by using the instructions in "Using udev to Discover Logical to Physical Mappings for sd Devices" on page 20.
3. In the same file, /boot/grub/menu.lst, replace the text after "root=" with the partition's persistent name. For example:
   ```
   kernel /boot/vmlinuz root=/dev/disk/by-id/scsi-32000000c5005d6e6-part2
   vga=0x314
   ```
4. Change any mounts listed in /etc/fstab that refer to this root partition by either its /dev/sd name or a file system label to use the persistent name as well.

For RHEL 5.x and RHEL 6.x

To use a persistent name for a boot device with RHEL 5.x and RHEL 6.x:

1. In /boot/grub/grub.conf, find the kernel line for the default boot. For example:
   ```
   kernel /boot/vmlinuz -<kernel version> ro root=/dev/sda2
   ```
2. Find the persistent name for the root partition (following "root=" on the kernel line) by using the instructions in "Using udev to Discover Logical to Physical Mappings for sd Devices" on page 20.
3. In the same file, /boot/grub/menu.lst, replace the text after "root=" with the partition's persistent name. For example:
   ```
   kernel /boot/vmlinuz -<kernel version> ro
   root=/dev/disk/by-id/scsi-32000000c5005d6e6-part2
   ```
4. Change any mounts listed in /etc/fstab which refer to this root partition by either its /dev/sd name or a file system label to use the persistent name as well.

Using udev with st Devices

In Linux, the driver for SCSI tape drives is "st". A tape device name has an "st" prefix. The udev rules for tape devices are the same as for disk devices. There must be a unique ID that persists across initiator reboots and persists regardless of discovery order.

You must consider whether the tape device is an FC tape device or an FC-SCSI tape device (in which there are multiple SCSI tape devices that reside behind an FC controller). If it is an FC tape device, then the WWPN is unique and can be used to create the persistent name. In this case, the scsi_id command should return this as the unique identifier with a single digit prefix. If the FC controller has multiple SCSI tape devices behind it, the WWPN is not unique, and the persistent name must use multiple information elements to build the unique ID. The following are examples of each scenario.

FC Tape Device Examples

The following is an FC tape device example using the SCSI generic driver (sg) rather than the SCSI tape driver.

```
scsi_id -g -s /sys/class/scsi_generic/sg0
350060b000029b592
```

The value returned has a leading prefix of 3, which is the NAA type. The remaining digits represent the FC controller's WWPN.

The following is an FC tape device example using the SCSI tape driver. The value returned is the same as the previous example.

```
scsi_id -g -s /sys/class/scsi_tape/nst0
350060b000029b592
```

In both examples, "-g" was needed because the vendor and model for this tape device were not in the /etc/scsi_id.config file.

The following is an example for a different FC tape vendor. Notice that the value returned is similar to the previous examples, with respect to the leading digit and the WWPN.

```
/sbin/scsi_id -g -s sys/class/scsi_tape/nst0
35005076300015101
```

FC-SCSI Tape Device Example

The following is an example of a FC controller with multiple SCSI tape devices behind it (FC-SCSI tape device). When the Emulex driver is loaded, the SCSI mid-level discovers the SCSI tape devices as follows:

```
scsi scan: INQUIRY to host 14 channel 0 id 0 lun 0
scsi: unknown device type 12
Vendor: ADIC      Model: SNC 4000          Rev: 42d4
Type:   RAID                               ANSI SCSI revision: 03
Attached scsi generic sg5 at scsi14, channel 0, id 0, lun 0,  type 12
scsi scan: INQUIRY to host 14 channel 0 id 0 lun 1
Vendor: ADIC      Model: Scalar 24         Rev: 227A
Type:   Medium Changer                     ANSI SCSI revision: 02
Attached scsi generic sg6 at scsi14, channel 0, id 0, lun 1,type 8
scsi scan: INQUIRY to host 14 channel 0 id 0 lun 2
Vendor: IBM       Model: ULTRIUM-TD2       Rev: 38D0
Type:   Sequential-Access                  ANSI SCSI revision: 03
Attached scsi tape st0 at scsi14, channel 0, id 0, lun 2
st0: try direct i/o: yes (alignment 512 B), max page reachable by HBA 4503599627370495
```

```
Attached scsi generic sg7 at scsi14, channel 0, id 0, lun 2,  type 1
scsi scan: INQUIRY to host 14 channel 0 id 0 lun 3
Vendor: IBM       Model: ULTRIUM-TD2       Rev: 38D0
Type:   Sequential-Access                  ANSI SCSI revision: 03
Attached scsi tape st1 at scsi14, channel 0, id 0, lun 3
st1: try direct i/o: yes (alignment 512 B), max page reachable by HBA 4503599627370495
Attached scsi generic sg8 at scsi14, channel 0, id 0, lun 3,  type 1
```

This log output shows a controller at LUN 0, the medium changer at LUN 1, and two SCSI tape devices at LUNs 2 and 3.

The following example is the result of a scsi_id call:

```
scsi_id -g -s /sys/class/scsi_tape/nst0
1IBM     ULTRIUM-TD2     1110133831
scsi_id -g -s /sys/class/scsi_tape/nst1
1IBM     ULTRIUM-TD2     1110133994
```

Notice that the unique ID comprises three values with space delimiters. A udev rule must have a unique ID for the device, so that all three parts of this returned string are required. To do this, use the following command:

```
scsi_id -u -g -s /sys/class/scsi_tape/nst0
1IBM_____ULTRIUM-TD2_____1110133831
scsi_id -u -g -s /sys/class/scsi_tape/nst1
1IBM_____ULTRIUM-TD2_____1110133994
```

Creating the udev Persistent Name for SCSI Tape Device

After you know the SCSI ID call needed to extract a unique ID, use the same process to create a udev persistent name for a SCSI tape device as on a SCSI disk device.

The rule for the FC tape device is

```
BUS="scsi", SYSFS{vendor}="HP", SYSFS{model}="ULTRIUM 3-SCSI",
PROGRAM="/sbin/scsi_id -p 0x83 -u -g -s
/sys/class/scsi_tape/nst%n",RESULT="350060b000029b592",
SYMLINK="fc_lun_st%n"
```

The rule for the FC-SCSI tape device is

```
BUS="scsi", SYSFS{vendor}="IBM", SYSFS{model}="ULTRIUM-TD2",
PROGRAM="/sbin/scsi_id -p 0x83 -u -g -s
/sys/class/scsi_tape/nst%n",RESULT="1IBM_____ULTRIUM-TD2_____111013
3831", SYMLINK="fc_lun_st%n"
BUS="scsi", RESULT="1IBM_____ULTRIUM-TD2_____1110133994",
SYMLINK="fc_lun_st%n"
```

Create a new file named /etc/udev/rules.d/45-local.rules and put the appropriate rule in it. Then run “udevtrigger” to reload the udev rules, and the output of the rules will follow:

```
udevtrigger
ls -al /dev/fc*
lrwxrwxrwx  1 root root 3 Apr  7 15:03 fc_lun_st0 -> st0
lrwxrwxrwx  1 root root 3 Apr  7 15:03 fc_lun_st1 -> st1
```

Persistent Naming References

See the following references for more information on persistent naming:

- http://www.reactivated.net/udevrules.php by Daniel Drake (dsd)
- http://kernel.org/pub/linux/utils/kernel/hotplug/udev_vs_devfs by Greg Kroah-Hartman

Virtual Port (VPort) Configuration

VPort Configuration Prerequisites

Before configuring VPorts, note the following:

- Ensure you are using the latest recommended firmware for VPort functionality. Check the Emulex website for the latest firmware.
- Loop devices and NPIV are not supported on the same port simultaneously. If you are running a loop topology and you create a VPort, the VPort's link state is offline.
- You can create virtual ports only on 4, 8, and 16 Gb/s adapters. You cannot create virtual ports on 1 and 2 Gb/s adapters.
- VPorts do not persist across system reboots.

Creating, Deleting, and Displaying VPorts

VPorts are created through sysfs entries that are presented in the physical port's sysfs directory. The vport_create and vport_delete sysfs entries are discussed in "VPort sysfs Entries" on page 27, but there are also three scripts for creating, deleting and displaying VPorts. The scripts reside in the /usr/sbin/lpfc directory and are part of the OneCommand Manager application kit.

When NPIV is enabled and VPorts are configured, it may take longer for the adapter to finish discovery in some cases because each virtual port must perform discovery independently. As more VPorts are configured, the amount of time that the driver and adapter take to finish discovery of remote ports on the SAN increases. To compensate for this extended amount of time taken in discovery, set the lpfc_devloss_tmo parameter to 60 seconds when NPIV is enabled.

Creating VPorts Using the mkvport.sh Script

You can use the mkvport script to create VPorts. To see the usage information, run the script with no parameters specified. The mkvport.sh script uses the following syntax:

```
./mkvport.sh <Physical Port's Host number> <Port Name> <Node Name>
```

You must supply the physical port's host number, WWPN, and WWNN when using the mkvport.sh script. For example, to create a VPort with port name of 10000000c94ac63a and a node name of 20010000c94ac63a on the physical port with scsi_host name "host7", type

```
./mkvport.sh host7 10000000c94ac63a 20010000c94ac63a
```

This script fails if the VPort is not created.

Note: It is possible for a VPort to be created successfully but to be in failed state. For example, loop devices and NPIV are not supported on the same port simultaneously. If you are running a loop topology and you create a VPort, the VPort's link state will be offline.

Deleting VPorts Using the rmvport.sh Script

Note: You must un-map, un-mount, and flush I/Os to VPort-connected devices before deleting the VPort.

You can use the rmvport script to delete VPorts. To see the usage information, run the script with no parameters specified. The rmvport.sh script uses the following syntax:

```
./rmvport.sh <Virtual Port's Host number>
```

- or -

```
./rmvport.sh <Port Name> <Node Name>
```

To delete the VPort with a port name of 10000000c94ac63a and a node name of 20010000c94ac63a, type

```
./rmvport.sh 10000000c94ac63a 20010000c94ac63a
```

This script may take up to 30 seconds to finish. The script fails if the VPort is not deleted.

Displaying VPorts Using the lsvport.sh Script

You can use the lsvport script to display the VPorts and physical ports that are present on the system. Run the script with no parameters to display port information. For example:

```
./lsvport.sh
lpfc0: host6 10000000c93a5b5e:20000000c93a5b5e LP10000 NPIV Not Supported
lpfc1: host7 10000000c93a5b5d:20000000c93a5b5d LP10000 NPIV Not Supported
lpfc2: host8 10000000c93cc8dd:20000000c93cc8dd LPe12000 NPIV Physical
lpfc3: host9 10000000c93cc8dc:20000000c93cc8dc LPe12000 NPIV Physical
lpfc4: host10 10000000c94ac63a:20010000c94ac63a  NPIV Virtual (VPI 1)
```

In reference to the previous example:

- For LPFC0 and LPFC1, "NPIV Not Supported" means that this adapter/firmware combination does not support the creation of VPorts.
- For LPFC2 and LPFC3, "NPIV Physical" refers to a physical port of this adapter.
- For LPFC4, "NPIV Virtual" refers to a VPort of this adapter.

VPort sysfs

VPort sysfs Tree

For FC 8.2.0.x Drivers

When a VPort is created, two new directories are created in the class tree:

```
/sys/class/scsi_host/hostY/
/sys/class/fc_host/hostY/
```

Creating a new VPort also creates a new sysfs directory in the bus and devices tree:

```
ls /sys/bus/pci/drivers/lpfc/0000:07:00.0/host8/
fc_host:host8 host10 power scsi_host:host8 uevent
ls /sys/bus/pci/drivers/lpfc/0000:07:00.0/host8/host10
fc_host:host10 power scsi_host:host10 uevent
```

In this example, host 8 is the physical port, and host 10 is a virtual port that was created on host 8.

For FC 8.3.5.x Drivers

When a VPort is created, three new directories are created in the class tree:

```
/sys/class/scsi_host/hostY/
/sys/class/fc_host/hostY/
/sys/class/fc_vports/vport-X:0-Z/-
```

Creating a new VPort also creates a new sysfs directory in the bus and devices tree:

```
/sys/bus/pci/drivers/lpfc/0000:A:B:C/hostX/vport-X:0-Z/hostY
/sys/devices/pci0000:A/0000:A:B:C/hostX/vport-X:0-Z/hostY
```

In both directories there is a hostY directory that contains the remote ports that this new host can access:

```
/sys/bus/pci/drivers/lpfc/0000:A:B:C/hostX/vport-X:0-Z/hostY
/sys/bus/pci/drivers/lpfc/0000:A:B:C/hostX/vport-X:0-Z/hostY/rport-Y:0-0
/sys/bus/pci/drivers/lpfc/0000:A:B:C/hostX/vport-X:0-Z/hostY/rport-Y:0-1
/sys/bus/pci/drivers/lpfc/0000:A:B:C/hostX/vport-X:0-Z/hostY/rport-Y:0-2
```

In this example:

- “Y” indicates the new host value for the virtual port that was created.
- “X” indicates the host value for the parent fc_host that this virtual port was created from.
- “Z” indicates the instance of virtual port created from the parent fc_host. A, B, and C indicate the PCI hierarchy for each physical LPFC port.

In other words, hostY is the new host created for the new virtual port. vport-X:0-Z uniquely identifies the VPort and indicates the parent host structure (X) that this virtual port was created by.

For example, if a VPort is created from host5, a new scsi_host, a new fc_host, a new fc_vport, and a new entry under the bus tree are created as well.

```
ls /sys/class/scsi_host/
host0  host1  host4  host5  host6
ls /sys/class/fc_host/
host4  host5  host6
ls /sys/class/fc_vports/
vport-5:0-0
```

VPort sysfs Entries

Note: VPort sysfs entries in Table 3-3 are only present if the driver was loaded with lpfc_enable_npiv enabled.

Table 3-3 VPort sysfs Entries

VPort sysfs Entries	Type	Range/Input	Location and Description
lpfc_peer_port_ login	Read/ Write	0=Off (default) 1=On	`/sys/class/scsi_host/hostX/lpfc_peer_port_ login` This entry sets the port's behavior when discovering targets in the SAN. The default behavior (value=0) will login only to N_Ports that are physically located on a different port. The port will still attempt to log in to targets on all other ports (including the other port in a dual-port adapter). If this parameter is turned on (value=1), then the port attempts to log in to all N_Ports, even if they are physically located on the same port. **Note:** This parameter was created to reduce the amount of hardware resources (for example, RPIs) that the driver requires. In a configuration where there are many VPorts on one physical port, this feature greatly reduces the number of RPIs that the driver uses.
lpfc_restrict_ login	Read/ Write	0=Off 1=On (default)	`/sys/class/scsi_host/hostX/lpfc_restrict_log in (VPorts only)` This entry sets the VPort's behavior when discovering targets in the SAN. The default behavior (value=1) prevents the VPort from logging into other initiator ports in the SAN. It also rejects logins from other ports in the SAN, because it assumes that all ports that send a PLOGI are initiators. If this sysfs entry is turned off, the driver attempts to log in to every port that it can access in the SAN, and accepts logins from all ports. **Note:** This parameter was created to reduce the amount of hardware resources (for example, RPIs) that the driver requires. In a SAN where there are other initiators, this feature greatly reduces the number of RPIs that the driver uses.

Table 3-3 VPort sysfs Entries (Continued)

VPort sysfs Entries	Type	Range/Input	Location and Description
max_npiv_vports	Read-only	integers	`/sys/class/fc_host/hostX/max_npiv_vports` This entry displays the maximum number of VPorts that are supported by the fc_host's underlying hardware. This sysfs entry exists only if the vport_create and vport_delete sysfs entries exist. If an fc_host does not support NPIV, this sysfs entry may not exist. Use this sysfs entry with npiv_vports_inuse to determine whether the maximum number of VPorts have been created on this fc_host.

node_name	Read-only	16-byte hexadecimal value	`For FC 8.2.0.x drivers: /sys/class/fc_host/hostX/node_name`
			`For FC 8.3.5.x drivers /sys/class/fc_host/hostX/node_name/sys/class /fc_vports/vport-X:0-Z/node_name`
			These entries display the physical or virtual port's node name. You assign this value when the VPort is created, and it is transmitted to the fabric upon fabric login.

npiv_vports_inuse	Read-only	integers	`/sys/class/fc_host/hostX/npiv_vports_inuse` This entry displays the number of VPorts that were created on this fc_host. This sysfs entry exists only if the vport_create and vport_delete sysfs entries exist. If an fc_host does not support NPIV, this sysfs entry may not exist. Use this sysfs entry with max_npiv_vports to determine whether the maximum number of VPorts have been created on this fc_host.
port_name	Read-only	16-byte hexadecimal value	`/sys/class/fc_host/hostX/port_name/sys/class /fc_vports/vport-X:0-Z/port_name` This entry displays the physical or virtual port's port name. You assign this value when the VPort is created, and it is transmitted to the fabric upon fabric login.
vport_create	Write-only	WWPN; WWNN	`/sys/class/fc_host/hostX/vport_create` This entry creates a VPort on the physical port that hostX is located on. The new VPort will have a WWPN and WWNN present on the fabric based on the WWPN and WWNN that are entered with this sysfs entry. This entry returns a "0" if the VPort creation was successful. A non-zero value indicates that the VPort was not created. If an fc_host does not support NPIV, then this sysfs entry may not exist. **Note:** It is possible for the VPort creation to succeed but for the VPort to be in a failed or inoperative state. Use the new sysfs tree created by the new VPort to check the state of the new VPort.

Table 3-3 VPort sysfs Entries (Continued)

VPort sysfs Entries	Type	Range/Input	Location and Description
vport_delete	Write-only	WWPN; WWNN	`/sys/class/fc_host/hostX/vport_delete` This entry deletes a VPort on the physical port that hostX is located on. The VPort matching the WWPN and WWNN is immediately deleted. This entry returns a "0" if the VPort deletion was successful. A non-zero value indicates that the VPort was not deleted. If an fc_host does not support NPIV, then this sysfs entry may not exist. **Note:** This entry deletes the VPort even if there are mounted file systems being accessed through this VPort, or if there are open files on it.

Monitoring VPorts with fc_vport

For FC 8.2.0.x Drivers

In the FC 8.2.0.x driver, the fc_vport directory does not exist (yet) so a link from the physical port to the VPort is present in the fc_host's device directory.

```
ls /sys/class/fc_host/host5/device/
fc_host:host5 power scsi_host:host5
host6 uevent
```

In this example, host6 is a VPort of physical port host5.

To find the VPorts that have been created by a physical port, you can list the fc_host's device directory for the physical port. This gives you a link to the fc_host and scsi_host directory as usual, and it also displays a list of VPorts (in the form of hostx) that were created on this physical port.

For FC 8.3.5.x Drivers

In the FC 8.3.5.x driver, the transport creates an fc_vports directory that you can use to monitor VPorts. This directory is populated entirely of VPorts and has links from each to the fc_host associated with that VPort.

```
ls /sys/class/fc_vports/
vport-5:0-0
ls -d /sys/bus/pci/drivers/lpfc/*/host*/*/host*
/sys/bus/pci/drivers/lpfc/0000:03:06.1/host5/vport-5:0-0/host6
ls /sys/devices/pci*/*/host5/vport-5*/host6
power rport-6:0-0 rport-6:0-1 rport-6:0-2 uevent
ls /sys/devices/pci*/*/host5/vport-5*/host6/rport-*
/sys/devices/pci00:03/00:03:06.1/host5/vport-5:0-0/host6/rport-6:0-0:
power uevent

/sys/devices/pci00:03/00:03:06.1/host5/vport-5:0-0/host6/rport-6:0-1:
```

```
power uevent

/sys/devices/pci00:03/00:03:06.1/host5/vport-5:0-0/host6/rport-6:0-2:
power target6:0:0 uevent
```

In this example:

- There is a new entry in the fc_vports directory for the VPort (vport-5:0-0). The vport-5:0-0 entry indicates that the VPort was created from host5 and it is the first (0) VPort to be created on that fc_host.
- The new host for the virtual port is host6, and it will appear in the usual directories.
- There is also a new directory in the bus tree. This new directory indicates that host6 was created under vport-5:0-0 (which was created from host5).

VPort Configuration Limits

VPort configuration limits are designated as enforced or unenforced. Enforced limits are limits that the driver enforces and prevents the user from exceeding. Unenforced limits are limits that the driver cannot enforce, but configurations that exceed them are unsupported.

The following VPort configuration limits have been tested with and are supported by the Emulex driver. Configurations that exceed one or more of these limits are unsupported.

- Before the VPort is deleted or the driver is unloaded, I/O devices accessed through a VPort must be stopped and file systems must be unmounted.
- For enterprise class adapters, the maximum number of virtual ports configurable on a physical port is 64. The hardware allows more than 64 VPorts to be created, but the driver has only been qualified at 64. For mid-range adapters, the maximum number of VPorts configurable on a physical port is 16.
- The maximum number of LUNs supported on each driver port is 256.
- The maximum number of targets supported for each driver port is 255.
- The maximum number of driver ports in one zone is 64. This limit is based on the system's ability to recover from link events within the time constraints of the default timers.

  The NPIV use-cases that involve virtual server environment include associating a virtual port with a virtual machine, and placing the virtual machine in its own zone. This results in one virtual port per zone. In the case of load balanced environments, this can increase typically to two virtual ports per virtual machine, to a practical limit of something far less than 50.

  In the NPIV cases not related to virtual server environments, zoning is typically initiator-zoning, again resulting in one virtual port, or a low number of virtual ports in the case of load-balancing, within a given zone. If there are too many virtual ports within a single zone, expected behavior includes devices being lost after link events.
- The minimum lifetime of a virtual port is 60 seconds. There is an unenforced limit of 60 seconds between the creation of a virtual port and the deletion of the

same virtual port. Virtual ports are designed to live for a long time in the system, and the creation of VPorts is asynchronous. This means that a virtual port might not be finished with FC or SCSI discovery when the command to create a virtual port is finished.

DHCHAP Authentication and Configuration

Note: This section is applicable to FC 8.2.0.x drivers only.

To activate FC-SP/Authentication between the adapter host port and fabric F_Port using DHCHAP, modify the DHCHAP-associated driver properties in the driver configuration file.

The LPFC driver for Linux version 8.2.0.x supports MD5 and SHA-1 hash functions and supports the following DH groups: Null, 1024, 1280, 1536, and 2048.

Enabling Authentication

Enabling authentication is a two-step process. To enable authentication:

- Start the fcauthd daemon.
- Set the lpfc_enable_auth module parameter to 1 (enabled).

fcauthd Daemon

The LPFC driver requires the fcauthd daemon to perform authentication tasks for it. To enable authentication, you must have this daemon running. If you want to load the LPFC driver with authentication enabled, the fcauthd daemon should be running before the driver is loaded. The LPFC driver can start with authentication enabled if the daemon is not running, but all ports are placed into an error state.

When the daemon is started, the LPFC driver should discover the daemon and reset the adapter to enable the LPFC driver to perform authentication. To test if this daemon is running, start the daemon, or stop the daemon, you must use the /etc/init.d/fcauthd script.

The script syntax is /etc/init.d/fcauthd <parameter>.

fcauthd Daemon Parameters

The fcauthd daemon supports the following parameters:

- start - To start the fcauthd daemon, pass the start command to the fcauthd script. This command loads the daemon into memory, opens a netlink connection for the driver, and reads the authentication configuration database into memory for use by the LPFC driver.
- stop - To stop the fcauthd daemon, pass the stop command to the fcauthd script. This command takes down the netlink connection between the fcauthd daemon and the lpfc driver, and stops the fcauthd daemon.
- reload - The reload command reloads the authentication configuration database into memory. This is done whenever the database is changed by another

application (such as the OneCommand Manager application) or by you. If the database is changed, the new configuration information is not used until the fcauthd daemon reloads the database.

- status - This command displays the current status of the fcauthd daemon. The status should be either running or stopped.
- restart - The restart command stops the fcauthd daemon and then restarts it.
- condrestart - The conditional restart command checks the status of the fcauthd daemon. If it is running, it issues a stop and then a start command. If the fcauthd daemon is not running, nothing happens.

lpfc_enable_auth Module Parameter

Use the lpfc_enable_auth module parameter to enable or disable authentication support. This module parameter can be set when the LPFC driver is loaded to enable or disable authentication on all Emulex adapters in the system, or it can be set dynamically after the LPFC driver is loaded to enable or disable authentication for each port (physical and virtual). The default setting for the lpfc-enable-auth module parameter is disabled. See “Dynamic FC Driver Parameters” on page 16.

Authentication Configuration Parameters

You can configure each port’s authentication parameters using the OneCommand Manager application. See the latest *OneCommand Manager Application User Manual*.

Setting Remote and Local Passwords

You can configure each port’s password using the OneCommand Manager application. See the latest *OneCommand Manager Application User Manual*.

4. Troubleshooting

FC Driver Situations and their Resolutions

This section explains some of the FC situations in which your system may operate in an unexpected manner, and some possible resolutions.

Table 4-1 FC Driver Situations and their Resolutions

Situation	Resolution
FC link fails to come up.	If an FC link fails to come up, verify that an 8 or 16 Gb/s adapter is not attempting to connect to a 1 Gb/s device. Only 2, 4, and 8 Gb/s devices are supported on 8 Gb/s adapters. Only 2, 4, 8, and 16 Gb/s devices are supported on 16 Gb/s adapters. For LP21000 series adapters, ensure the adapter is not in maintenance mode and it is not running the manufacturing firmware.

"Authentication is enabled but authentication service is not running." Error Message	If you see this message in /var/log/messages and the adapter is in an error state, the fcauthd daemon probably is not running. To determine whether fcauthd is running, run
	`/etc/init.d/fcauthd status.`
	To start fcauthd, run
	`/etc/init.d/fcauthd start.`

If a SAN configuration has 256 targets mapped by the FC driver, any additional added targets do not get a target ID mapping by the driver and cause target discovery to fail.	Removing targets or re-initializing the link does not solve the problem. Unload and reload the driver to reset available target IDs. Ensure that the SAN configuration is correct prior to rebooting the driver. This clears the driver's consistent binding table and frees target IDs for new target nodes.
rmmod fails to unload FC driver module due to "ERROR: Module lpfc is in use."	This message can appear when you attempt to remove the driver and there is a Logical Volume Group dependent on the driver. To resolved this situation: 1) Make the Logical Volume Group unavailable. Type `lvchange -a n xxxxxxx` The "`xxxxxxx`" parameter is the Volume Group Name. 2) Stop the OneCommand Manager application. 3) Stop Device Mapper.
rmmod of lpfc driver hangs and module reference count is 0.	Due to a small race condition in the kernel, it is possible for an rmmod command to hang. Issue the rmmod -w command. If this does not help, reboot the computer.

Table 4-1 FC Driver Situations and their Resolutions (Continued)

Situation	Resolution

rmmod fails to unload driver due to Device or resource busy.	This message occurs when you attempt to remove the driver without first stopping the OneCommand Manager application or the fcauthd daemon when the OneCommand Manager application is installed and running, or when FC disks connected to a LightPulse adapter are mounted. To resolved this situation:
	1) Stop the OneCommand Manager application before attempting to unload the driver. The script is located in the /usr/sbin/ocmanager directory. Type
	`./stop_ocmanager`
	2) Unmount any disks connected to the adapter.
	3) Unload the driver. Type
	`rmmod lpfcdfc`
	4) Type
	`rmmod lpfc`

An lspci shows recent Emulex adapters as unknown.	This situation occurs because of the delay of getting new product IDs into the Linux development cycle. There is no resolution at this time.
Slow targets or extended link faults on the storage side may result in storage being marked offline by the mid-level and remaining offline (not recovered) when the link faults are corrected.	This version of the driver should eliminate this problem. However, if you experience offline device issues, increase the SCSI command timeout to a value greater than or equal to 60 seconds. Emulex also provides a script which addresses this issue. To access the lun_change_state.sh script, go to http://www.emulex.com/files/downloads/linux/tools.html.
Under certain conditions of an I/O load, some targets cannot retire an I/O issued by a Linux initiator within the default timeout of 30 seconds given by the scsi mid-level.	If the situation is not corrected, the initiator-to-target condition deteriorates into abort/recovery storms, leading to I/O failures in the block layer. These types of failures are preceded by a SCSI I/O error of hex 6000000. Emulex provides a script that addresses this issue. To access the set_target_timeout.sh script, go to http://www.emulex.com/files/downloads/linux/tools.html.
The FC driver fails to recognize an adapter and logs “unknown IOCB” messages in the system log during driver load.	The adapter is running outdated firmware. Upgrade the adapter firmware.
Loading the FC driver on SLES 10 SPx and SLES 11 SPx reports “unsupported module, tainting kernel” in system log.	This message is logged by the kernel whenever a module that is not shipped with the kernel is loaded. This message can be ignored.
The system panics when it is booted with a failed adapter installed.	Remove the failed adapter and reboot the system.

Table 4-1 FC Driver Situations and their Resolutions (Continued)

Situation	Resolution
Unloading the FC driver on SLES 10 SP*x* or SLES 11 SP*x* may cause a message to be logged in the system log such as the following: `umount: /dev/disk/bypath/pci-0000:02:04.0-scsi-0:0:1:0: not mounted`	These messages are normal output from the SLES 10 SPx and SLES 11 SPx hotplug scripts and can be safely ignored.
Driver installation fails.	The lpfc-install script fails to install the driver. The install script may fail for the following reasons: • A previous version of the driver is installed. Run the lpfc-install --uninstall script and then try to install the driver. • The current driver is already installed. • Run a supported RHEL or SLES kernel.
"No module lpfc found for kernel KERNELVERSION" RPM error message when upgrading the kernel.	These three situations can be resolved by upgrading the kernel. There are two ways to install the driver into an upgraded kernel. The method you use depends on whether you are upgrading the driver. • Upgrade the kernel using the same version of the driver. • Upgrade the kernel using a new version of the driver. See the Installation section for these procedures.
A recently upgraded kernel cannot find the ramdisk. After upgrading the kernel, the kernel cannot find the ramdisk, which halts or panics the system.	
The driver is not loaded after a system reboot after upgrading the kernel.	
Driver uninstallation fails.	The lpfc-install --uninstall script fails with an error. Try the following solutions: • Uninstall the OneCommand Manager application; see the *OneCommand Manager Application User Manual* for instructions. • Unmount all FC disk drives. • Unload the lpfcdfc and FC driver. • Use rpm -e lpfcdriver and -e ocmanager and uninstall the new kits.
lpfc-install script exit code.	The lpfc-install script contains exit codes that can be useful in diagnosing installation problems. See the lpfc-install script for a complete listing of codes and definitions.

Table 4-1 FC Driver Situations and their Resolutions (Continued)

Situation	Resolution

The Emulex driver for Linux does not load in ramdisk for a custom built kernel.	Custom built kernels are not supported by Emulex. However, the Emulex install script attempts to install the driver into a ramdisk that follows the naming scheme used by Red Hat or SLES kernels.
	• The SLES naming scheme for an Intel Itanium IA64 ramdisk images is:
	`/boot/efi/efi/suse/initrd.`
	• The SLES naming scheme for ramdisk images on all other architectures is:
	`/boot/initrd.`
	If a custom built kernel has a ramdisk image that does not follow the appropriate naming scheme, the name of the image can be changed using the following procedure:
	1) Change the name of the ramdisk image to match the SLES naming scheme.
	2) Update any file links to the ramdisk image.
	3) Edit the boot loader configuration file (for example, /etc/lilo.conf, /etc/yaboot.conf, /boot/grub/grub.conf, /boot/grub/menu.lst), find any references to the old ramdisk image name, and replace them with the new name.
	4) Reboot the system to verify the changes.
	5) Install the Emulex lpfc Linux driver kit.

The Linux SCSI subsystem sees only eight LUNs when more are present.	Some SCSI drivers do not scan past eight LUNs when the target reports itself as a SCSI-2 device. To resolve this situation, force a SCSI bus scan with the following command: `/usr/sbin/ lpfc/lun_scan.` SUSE supplies a /bin/rescan-scsi-bus.sh script, which can be changed to scan everything.

FC Log Messages

Retrieving FC Driver Log Messages

LPFC error log messages are logged in the /var/log/messages file.

An example of an LPFC message:

```
Jul 2 04:23:34 daffy kernel: lpfc 0000:03:06.0: 0:1305 Link Down
Event x2f2 received Data: x2f2 x20 x110
```

In this example:

- `lpfc 0000:03:06.0` - identifies the identifies the PCI location of the particular LPFC hardware port.
- `0:` - indicates Emulex adapter 0

- `1305` - indicates a log message number of 1305.

Note: If "Data:" is present in a log message, any information following "Data:" is intended for Emulex technical support/engineering use only.

LPFC Error Log Messages and their Descriptions

Table 4-2 lists LPFC error log messages and their descriptions.

Table 4-2 LPFC Error Log Messages and their Descriptions

`0111: Dropping received ELS cmd`

The driver decided to drop an ELS Response ring entry.
Data: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout
Severity: Error
Log: Always
Action: This error could indicate a software driver or firmware problem. If problems persist report these errors to Technical Support.

`0113: An FLOGI ELS command <elsCmd> was received from DID <did> in Loop Mode`

While in Loop Mode an unknown or unsupported ELS command was received.
Data: None
Severity: Error
Log: Always
Action: Check device DID.

`0115: Unknown ELS command <elsCmd> received from NPORT <did>`

Received an unsupported ELS command from a remote N_Port.
Data: None
Severity: Error
Log: Always
Action: Check remote N_Port for potential problem.

`0125: FDISC Failed (x%x). Fabric out of resources`

The fabric rejected an FDISC because the switch can not support any more virtual ports.
Data: lsRjtError
Severity: Error
Log: Always
Action: Reconfigure the switch to support more NPIV logins. If problem persists, contact Technical Support.

`0126: FDISC failed ulpStatus ulpWord4`

Data: lsRjtError
Severity: Error
Log: Always
Action: Reconfigure the switch to support more NPIV logins. If problem persists, contact Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0127: ELS timeout`

An ELS IOCB command was posted to a ring and did not complete within ULP timeout seconds.
Data: (1) elscmd (2) remote_id (3) ulpcommand (4) ulpIoTag
Severity: Error
Log: Always
Action: If no ELS command is going through the adapter, reboot the system; If problem persists, contact Technical Support.

`0133: PLOGI: no memory for reg_login`

Memory allocation error.
Data: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_rpi
Severity: Error
Log: LOG_ELS
Action: Memory allocation error. Check system resources. Unload unused modules.

`0134: PLOGI cannot issue reg_login`

The ELS PLOGI mailbox command has failed.
Data: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_rpi
Severity: Error
Log: LOG_ELS
Action: Check the port and switch configuration.

`0135: cannot format reg_login`

Could not allocate an RPI or DMA buffer for the mailbox command.
Data: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_rpi
Severity: Error
Log: LOG_ELS
Action: None required.

`0136: PLOGI completes to NPort <DID> completion`

A PLOGI has completed for which there is no NDLP.
Data: (1) ulpStatus (2) ulpWord[4]
Severity: Error
Log: LOG_ELS
Action: None required.

`0137: No retry ELS command <ELS_CMD> to remote`

Data: (1) ulpStatus (2) ulpWord[4]
Severity: Error
Log: LOG_ELS
Action: None required.

`0138: ELS rsp: Cannot issue reg_login for <DID>`

REG_LOGIN mailbox command failed.
Data: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_rpi
Severity: Error
Log: LOG_ELS
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0139: Ignoring ELS cmd tag <ioTag> completion Data`

This ELS command was aborted.
Data: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout
Severity: Error
Log: LOG_ELS
Action: None required.

`0140: PLOGI Reject: invalid name`

Invalid node WWN provided.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0141: PLOGI Reject: invalid pname`

Invalid port WWN provided.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0142: PLOGI RSP: Invalid WWN`

The PLOGI sent to the port by a remote port had an invalid WWN.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0143: SLI4 Adapter Hardware Error Data: <status0>/<status1>`

The HBA has encountered an unrecoverable error.
Data: None
Severity: Error
Log: LOG_INIT
Action: Use hbacmd to retrieve a dump file.

`0144: Not a valid WCQE code: <Completion Code>`

The completion queue handler detected an invalid type.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0147: Failed to allocate memory for RSCN event`

Memory could not be allocated to send the RSCN event to the management application.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0148: Failed to allocate memory for LOGO event`

Memory could not be allocated to send the LOGO event to the FC transport.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0149: Failed to allocate memory for ELS event`

Memory could not be allocated to send the ELS event to the FC transport.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0154: Authentication not complete`

Authentication was restarted because the previous authentication did not complete.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: Check the switch configuration.

`0200: CONFIG_LINK bad hba state <hba_state>`

A CONFIG_LINK mbox command completed and the driver was not in the right state.
Data: None
Severity: Error
Log: Always
Action: Software driver error. If this problem persists, report these errors to Technical Support.

`0203: Devloss timeout on WWPN <address> NPort <nlp_DID>`

A remote N_Port that was discovered by the driver disappeared for more than lpfc_devloss_tmo seconds.
Data: (1) nlp_flag (2) nlp_state (3) nlp_rpi
Severity: Error
Log: Always
Action: If the device generating this message is not a target to which the HBA is connected, this error will not affect the data integrity of the I/O between the HBA and the attached storage and can be ignored.

`0206: Device discovery completion error`

This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. FC devices will not be accessible if this message is displayed.
Data: None
Severity: Error
Log: Always
Action: Reboot the system. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0207: Device <DID> (<WWN>) sent invalid service parameters. Ignoring device.`

Invalid service parameters were received from DID. Ignoring this remote port.

Data: DID, WWN
Severity: Error
Log: Always
Action: Verify the remote port's configuration. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

`0217: Block sgl registration required DMAsize <reqlen> great than a page`

The request to post SGL pages does not fit on a page.

Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`0221: FAN timeout`

A link up event was received without the login bit set, so the driver waits E_D_TOV for the Fabric to send a FAN. If no FAN if received, a FLOGI will be sent after the timeout.

Data: None
Severity: Warning
Log: LOG_DISCOVERY verbose
Action: None required. The driver recovers from this condition by issuing a FLOGI to the fabric.

`0222: Initial FLOG/FDISKI timeout`

The driver sent the initial FLOGI or FDISK to the fabric and never got a response back.

Data: None
Severity: Error
Log: Always
Action: Check Fabric configuration. The driver recovers from this and continues with device discovery.

`0223: Timeout while waiting for NameServer login`

Our login request to the NameServer was not acknowledged within RATOV.

Data: None
Severity: Error
Log: Always
Action: Check the fabric configuration. The driver recovers from this and continues with device discovery.

`0224: NameServer Query timeout`

Node authentication timeout, node Discovery timeout. A NameServer Query to the Fabric or discovery of reported remote N_Ports is not acknowledged within R_A_TOV.

Data: (1) fc_ns_retry (2) fc_max_ns_retry
Severity: Error
Log: Always
Action: Check Fabric configuration. The driver recovers from this and continues with device discovery.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0226: Device discovery completion error`

This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. FC devices will not be accessible if this message is displayed.

Data: None
Severity: Error
Log: Always
Action: Reboot the system. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

`0227: Node Authentication timeout`

The driver has lost track of what N_Ports are being authenticated.

Data: None
Severity: Error
Log: Always
Action: None required. The driver should recover from this event.

`0228: CLEAR LA timeout`

The driver issued a CLEAR_LA that never completed.

Data: None
Severity: Error
Log: Always
Action: None required. The driver should recover from this event.

`0230: Unexpected timeout, hba linkstate <link_state>`

Discovery has timed out and the HBA state is not ready.

Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

`0231: RSCN timeout`

The driver has lost track of what N_Ports have RSCNs pending.

Data: (1) fc_ns_retry (2) lpfc_max_ns_retry
Severity: Error
Log: Always
Action: None required. The driver should recover from this event.

`0233: Nodelist not empty`

Driver unloaded or hotplug detected a node still in use.

Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

`0237: Pending Link Event during Discovery: State <hba_state>`

Received link event during discovery. Causes discovery restart.

Data: None
Severity: Warning
Log: LOG_DISCOVERY verbose
Action: None required. unless problem persists. If persistent, check cabling.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0241: NameServer rsp error`

The driver received a NameServer response containing a status error.

Data: (1) CommandResponse.bits.CmdRsp (2) ReasonCode (3) Explanation (4) fc_flag
Severity: Error
Log: LOG_DISCOVERY verbose
Action: Check the fabric configuration. The driver recovers from this and continues with device discovery.

`0246: RegLogin failed`

The firmware returned a failure for the specified RegLogin.

Data: (1) Did (2) mbxStatus (3) hbaState
Severity: Error
Log: Always
Action: This message indicates that the firmware could not do RegLogin for the specified DID. There may be a limitation on how many nodes an HBA can see.

`0249: Cannot issue Register Fabric login: Err %d\`

Could not issue the fabric reg login, the err value is unique for each possible failure.

Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0251: NameServer login: no memory`

Could not allocate memory for the NDLP structure.

Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0252: Cannot issue NameServer login`

Could not issue an ELS PLOGI to the NameServer DID.

Data: None
Severity: Error
Log: LOG_ELS
Action: Check the port connection and the switch configuration.

`0253: Register VPI: Can't send mbox\`

Could not issue the REG_LOGIN command for this VPort.

Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`0254: Register VPI: no memory" goto mbox_err_exit`

Could not allocate memory for the REG_LOGIN mailbox command.

Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0255: Issue FDISC: no IOCB`

All of the pre-allocated IOCBs are in use.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0256: Issue FDISC: Cannot send IOCB\`

Unable to send the fabric IOCB.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`0257: GID_FT Query error`

The GID_FT CT request for the NameServer has failed.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch configuration.

`0258: Register Fabric login error:`

The REG_LOGIN for the fabric has failed.
Data: None
Severity: Error
Log: LOG_MBOX
Action: Check the port connection and the switch configuration.

`0259: No NPIV Fabric support`

The switch to which the port is connected does not support NPIV.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch configuration.

`0260: Register NameServer error:`

The REG_LOGIN mailbox command has failed for the NameServer.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch configuration

`0261: Cannot register NameServer login:`

Either a memory allocation issue or an invalid parameter was sent to the REG_LOGIN.
Data: None
Severity: Error
Log: LOG_ELS
Action: At least one message (0142 0121 0133 0134 0135) should precede this message.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0262: No NPIV Fabric support`

The switch to which the port is connected does not support NPIV.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch configuration.

`0263: Discovery Mailbox error: state:`

Either the driver could not allocate resources or it could not send sparam_mbox or cfglink_mbox.
Data: (1) address of sparam_mbox command (2) address of cfglink_mbox command
Severity: Error
Log: LOG_MBOX
Action: Attempt to unload and reload the driver when it is convenient.

`0264: No NPIV Fabric support`

The switch to which the port is connected does not support NPIV.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch configuration.

`0266: Issue NameServer Req <cmdcode> err <rc> Data: <fc_flag> <fc_rscn_id_cnt>`

The driver was not able to send the NameServer CT command.
Data: (1) vports fc_flag (2) vports fc_rscn_id_cn
Severity: Error
Log: LOG_DISCOVERY
Action: Check the port and switch configurations.

`0267: NameServer GFF Rsp <did> Error (<ulpStatus> <un.ulpWord[4]>) Data: <fc_flag> <fc_rscn_id_cnt>`

The NameServer GFF CT request failed.
Data: (1) vports fc_flag (2) vports fc_rscn_id_cnt
Severity: Error
Log: LOG_DISCOVERY
Action: Check the port and switch configurations.

`0268: NS cmd <cmdcode> Error (<ulpStatus> <un.ulpWord[4]>)`

The nameServer CT request failed.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: Check the port and switch configurations.

`0271: Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data: <nlp_rpi> <nlp_flag>`

The current node state does not have a handler for this event.
Data: (1) nlp_rpi (2) nlp_flag
Severity: Error
Log: LOG_DISCOVERY
Action: Verify that all targets are still visible to the SCSI mid-layer.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0272: Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data: <nlp_rpi> <nlp_flag>`

The driver is completing a PLOGI but do not have the rcv_plogi flag set.
Data: (1) nlp_rpi (2) nlp_flag
Severity: Error
Log: LOG_DISCOVERY
Action: Verify that all targets are still visible to the SCSI mid-layer.

`0273: Unexpected discovery timeout, vport State x%x`

The discovery process has timed out.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: Verify that all targets are still visible.

`0274: lpfc_nlp_put: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0275: lpfc_nlp_put: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

A kref_put was called again after the node was already inactive.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0276: lpfc_nlp_get: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

A kref_get was attempted on a node that was being released.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0277: lpfc_enable_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

Enable node was attempted on an inactive node.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0278: lpfc_enable_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

Enable node was attempted on an inactive node.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0280: lpfc_cleanup_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

Node clean-up was attempted on a node that has already been marked for memory free.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0281: lpfc_cleanup_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)`

Node clean-up was called to prepare the node for release.
Data: None
Severity: Warning
Log: LOG_NODE
Action: None required.

`0282: ldid:x%x ndlp:x%pusgmap:x%x refcnt:%d, ndlp->nlp_DID, (void *)ndlp, lpfc_init.c-ndlp->nlp_usg_map,`

Driver clean-up has found a node that is still on the node list during driver unload or PCI hotplug removal.
Data: None
Severity: Error
Log: LOG_NODE
Action: None required.

`0283: Failed to allocate mbox cmd memory`

Mailbox allocation error.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0285: Allocated DMA memory size <alloclen> is less than the requested DMA memorysize<reqlen>`

Memory allocation was truncated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0286: lpfc_nlp_state_cleanup failed to allocate statistical data buffer <nlp_DID>`

Memory allocation failed for node’s statistical data.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0287: lpfc_alloc_bucket failed to allocate statistical data buffer DID <nlp_DID>`

Memory allocation failed for node's statistical data.
Data: None
Severity: Error
Log: LOG_NODE
Action: None required.

`0289: Issue Register VFI failed: Err <rc>`

The driver could not register the Virtual Fabric Index for the FCFI.
Data: None
Severity: Error
Log: LOG_ELS
Action: Check the switch and port configurations.

`0290: The SLI4 DCBX asynchronous event is not handled yet`

The SLI-4 DCBX asynchronous event is not handled yet.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0291: Allocated DMA memory size (x%x) is less than the requested DMA memory size (x%x)`

The asynchronous DCBX events are not handled in the driver.
Data: None
Severity: Error
Log: LOG_INIT
Action: Check the switch configuration.

`0293: PM resume failed to start worker thread: error=<error>`

The PCI resume (hotplug) could not start the worker thread for the driver.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0294: PM resume Failed to enable interrupt`

The PCI resume (hotplug) could not get an interrupt vector.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0297: Invalid device group<pci_dev_grp>`

While unloading the driver, the driver detect a PCI device that it should not have claimed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0299: Invalid SLI revision <sli_rev>`

While processing a host attention or unrecoverable error, the driver detected an invalid SLI revision.

Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0300: LATT: Cannot issue READ_LA: Data:<rc>`

The link attention handler could not issue a READ_LA mailbox command.

Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`0301: READ_SPARAM: no buffers`

The driver attempted to issue a READ_SPARAM mailbox command to the adapter, but there were no buffers available.

Data: None
Severity: Warning
Log: LOG_MBOX verbose
Action: This message indicates: (1) Kernel virtual memory is depleted. Check that the system meets minimum RAM requirements for the Emulex FC adapter. Try closing other applications to free some memory. (2) A possible driver buffer management problem. If the problem persists, report the error to Technical Support.

`0302: REG_LOGIN: no buffers`

The driver attempted to issue a REG_LOGIN mailbox command to the adapter, but there no buffers were available.

Data: (1) Did, (2) flag
Severity: Warning
Log: LOG_MBOX verbose
Action: This message indicates: (1) Kernel virtual memory is depleted. Check that the system meets minimum RAM requirements for the Emulex FC adapter. Try closing other applications to free some memory. (2) A possible driver buffer management problem. If the problem persists, report the error to Technical Support.

`0313: Ring <ringno> handler: unexpected Rctl <Rctl> Type <Type> received`

The RCTL/Type of a received frame did not match any for the configured masks for the specified ring.

Data: None
Severity: Warning
Log: LOG_SLI verbose
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0303: Ring <ringno> handler: portRspPut <portRspPut> is bigger then rsp ring <portRspMax>`

The port rsp ring put index is larger than the size of the rsp ring.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

`0304: Stray mailbox interrupt, mbxCommand <mbxcommand> mbxStatus <mbxstatus>`

Received a mailbox completion interrupt and there are no outstanding mailbox commands.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0306: CONFIG_LINK mbxStatus error <mbxStatus> HBA state <hba_state>`

The driver issued a CONFIG_LINK mbox command to the HBA that failed.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

`0310: Mailbox command <mbxcommand> timeout`

A mailbox command was posted to the adapter and did not complete within 30 seconds.

Data: (1) hba_state (2) sli_flag (3) mbox_active
Severity: Error
Log: Always
Action: This error could indicate a software driver or firmware problem. If no I/O is going through the adapter, reboot the system. If the problem persists, report the error to Technical Support.

`0312: Ring <ringno> handler: portRspPut <rspPutInx> is bigger then rsp ring <numRiocb>`

The IOCB command rings put pointer is ahead of the get pointer.

Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0313: Ring <ringno> handler: unexpected Rctl <Rctl> Type <Type> received`

The Rctl/Type of a received frame did not match any for the configured masks for the specified ring.

Data: None
Severity: Warning
Log: LOG_SLI verbose
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0315: Ring <ringno> issue: portCmdGet <local_getidx> is bigger then cmd ring <max_cmd_idx>`

The port cmd ring get index is greater than the size of cmd ring.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

`0317: iotag <ulp_IoTag> is out of range: max iotag <max_iotag> wd0 <wd0>`

The IoTag in the completed IOCB is out of range.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

`0318: Failed to allocate IOTAG. last IOTAG is <last_allocated_iotag>`

The driver cannot allocate an IoTag. Display the last value used.

Data: None
Severity: Error
Log: Always
Action: This message indicates the adapter HBA I/O queue is full. Typically this happens when heavy I/O is running on a low-end (3 digit) adapter. We suggest you upgrade to a higher-end adapter.

`0319: READ_SPARAM mbxStatus error <mbxStatus> hba state <hba_state>`

The driver issued a READ_SPARAM mbox command to the HBA that failed.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

`0320: CLEAR_LA mbxStatus error <mbxStatus> hba state <hba_state>`

The driver issued a CLEAR_LA mbox command to the HBA that failed.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

`0322: Ring <ringno> handler: unexpected completion IoTag <IoTag>`

The driver could not find a matching command for the completion received on the specified ring.

Data: (1) ulpStatus, (2) ulpWord[4], (3) ulpCommand, (4) ulpContext
Severity: Warning
Log: LOG_SLI verbose
Action: This error could indicate a software driver or firmware problem. If problems persist, report these errors to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0323: Unknown Mailbox command <mbxCommand> Cmpl`

A unknown mailbox command completed.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

`0324: Config port initialization error, mbxCmd <mbxCommand> READ_NVPARM, mbxStatus <mbxStatus>`

A read nvparams mailbox command failed during port configuration.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

`0328: Rsp Ring <ring number> error: IOCB Data:`

The firmware has returned an error for this IOCB.
Data: (1) <iocb word[0]…iocb word[7]>, (2) <rsp word[0]…rsp[word[7]>
Severity: Warning
Log: LOG_SLI
Action: None required.

`0330: IOCB wake NOT set`

The completion handler associated with the IOCB was never called.
Data: (1) timeout (2) timeleft/jiffies
Severity: Error
Log: Always
Action: This error could indicate a software driver, firmware or hardware problem. If the problem persists, report the error to Technical Support.

`0334: Unknown IOCB command`

Received an unknown IOCB command completion.
Data: (1) type (2) ulpCommand (3) ulpStatus (4) ulpIoTag (5) ulpContext)
Severity: Error
Log: Always
Action: This error could indicate a software driver or firmware problem. If these problems persist, report these errors to Technical Support.

`0335: Unknown IOCB command`

Received an unknown IOCB command completion.
Data: (1) ulpCommand (2) ulpStatus (3) ulpIoTag (4) ulpContext)
Severity: Error
Log: Always
Action: This error could indicate a software driver or firmware problem. If these problems persist, report these errors to Technical Support

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0336: Rsp Ring <ringno> error: IOCB`

An IOCB error has occurred on the specified ring.

Data: (1) ulpWord[0], (2) ulpWord[1], (3) ulpWord[2], (4) ulpWord[3], (5) ulpWord[4], (6) ulpWord[5], (7) irsp+6, (8) irsp+7

Severity: Warning

Log: LOG_SLI verbose

Action: If the problem persists, check the targets. If the targets are okay, report the error to Technical Support.

`0340: Adapter temperature is OK now`

Adapter temperature has reverted to normal range.

Data: Temperature in Celsius

Severity: Error

Log: LOG_TEMP verbose

Action: No action needed, informational

`0341: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>`

There are no more pre-allocated buffers available to handle unsolicited buffers.

Data: None

Severity: Error

Log: LOG_SLI

Action: Ensure this port is not being managed by multiple ports.

`0342: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words>`

This is a multiple IOCB unsolicited command and sufficient buffer space cannot be allocated for it.

Data: None

Severity: Error

Log: LOG_SLI

Action: None required.

`0343: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>`

There are no more pre-allocated buffers available to handle unsolicited buffers.

Data: None

Severity: Error

Log: LOG_SLI

Action: None required.

`0344: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words[7]>`

There are no more pre-allocated buffers available to handle unsolicited buffers.

Data: None

Severity: Error

Log: LOG_SLI

Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0345: Resetting board due to mailbox timeout iocb. tag 0x%x`

A mailbox command failed to complete. The driver is resetting the port.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: If the mailbox command fails again, set the lpfc_log_verbose to LOG_MBOX and retry.

`0346: Ring <ring number> handler: unexpected ASYNC_STATUS evt_code <evt code> W0 <hex w0> W1 <hex w1> W2 <hex W2> W3 <hex W3> W4 <hex W4> W5 <hex W5> W6 <hex W6> W7 <hex W7> W8 <hex W8> W9 <hex W9> W10 <hex W10> W11<hex W11>`

The HBA received an asynchronous event that was not a temperature event.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0347: Adapter is very hot, please take corrective action`

Adapter temperature is above normal range.
Data: Temperature in Celsius
Severity: Error
Log: LOG_TEMP verbose
Action: Shutdown and remove the HBA. Contact Technical Support.

`0348: NameServer login: node freed`

The enable mode failed to free up the nameserver login.
Data: None
Severity: Error
Log: LOG_ELSI
Action: None required.

`0349: rc should be MBX_SUCCESS`

The next mailbox command on the mailbox queue has failed.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0350: rc should have been MBX_BUSY`

Attempting to unregister a default RPI from an interrupt context and the mailbox state is not busy.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0351: Config MSI mailbox command failed, mbxCmd <u.mb.mbxComm>, mbxStatus <u.mb.mbxStatus>`

The mailbox command sent to the firmware to configure the adapter to use MSI-X has failed.
Data: None
Severity: Warning
Log: LOG_MBOX
Action: Ensure the hardware platform supports MSI-X.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0352: Config MSI mailbox command failed, mbxCmd <u.mb.mbxCommand>, mbxStatus <u.mb.mbxStatus>`

The mailbox command sent to the firmware to configure the HBA to use MSI-X has failed.
Data: None
Severity: Error
Log: LOG_MBOX
Action: Ensure the hardware platform supports MSI-X.

`0353: Active Mailbox cleared - mailbox timeout exiting`

The mailbox timeout handler has determined that the driver is in the process of completing this mailbox command.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0357: MSI-X interrupt with no EQE`

SLI-4 adapter interrupt on the slow path but there is no associated EQE.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0358: MSI-X interrupt with no EQE`

SLI-4 adapter interrupt on the fast path but there is no associated EQE.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0359:Not a valid slow-path completion " event: majorcode=x%x, minorcode=x%x\n", bf_get(lpfc_eqe_major_code, eqe), bf_get(lpfc_eqe_minor_code, eqe));`

SLI-4: The EQE is not valid.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0360:Unsupported EQ count. <entry_count>`

Cannot create an event queue of this size.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0361:Unsupported CQ count. <entry_count>`

Cannot create an completion queue of this size.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0362:Unsupported MQ count. <entry_count>`

Cannot create MQ of this size.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0364:Invalid param:`

SLI-4: The post SGL function was passed an invalid XRI
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0365:Slow-path CQ identifier <CQID> does not exist:`

The Completion Queue ID passed in the Event Queue entry does not reference a valid completion queue.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0366:Not a valid fast-path completion event: majorcode=<major code hex>, minor-code=<minor code hex>`

The major or minor code in the Event Queue field is not valid.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0367: Fast-path completion queue does not exist`

The fast path completion queue referenced by the CQID does not exist.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0368: Mis-matched fast-path completion queue identifier: eqcqid=%d, fcpcqid=%d`

The CQID in the event queue entry does not match the fcp_cqid that was passed into the routine.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0369: No entry from fast-path completion queue fcpcqid=<queue_id>`

There were no completions in the completion queue referenced by fcp_cqid.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0370: Invalid completion queue type <type>`

The event queue entry is not for a mailbox or a work queue entry.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0371: No entry from the CQ: identifier <queue_id>, type <type>`

There was no completion queue event for this event queue entry.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0372: iotag <iotag> is out of range: max iotag (<sli.last_iotag>)`

The IOCB lookup cannot be performed because the iocb_tag is out of range.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0373: FCP complete error: status=<status> hw_status=<hw status>, total_data_specified=<total data transferred>, parameter=<rsp word[4]>, word3=<wcqe word 3>`

Logs the FCP failure. Status and parameter are equivalent to ulpStatus and ulpWord[4].
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0374: FCP complete with no corresponding cmdiocb: iotag <iocb iotag>`

There was no IOCB on the in-progress list that matched this iotag.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0375: FCP cmdiocb not callback function iotag: <iocb iotag>`

The IOCB found for this iotag does not have a completion handler set in it.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0377: Error <rc> parsing vpd. Using defaults.`

Could not parse the VPD data, so the driver is using the default values.
Data: None
Severity: Error
Log: Always
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0378: No support for fcpi mode.`

Could not configure the port to run in FCP initiator mode.
Data: None
Severity: Warning
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0379: Feature Mismatch Data: <req ftr word2 hex> <req_ftr word3 hex> <cfg_enable_npiv> <max vpi hex>`

The features passed in to the driver as module parameters do not match what the firmware can do. Setting to default values.
Data: None
Severity: Warning
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0381: Error %d during queue setup.`

Could not set up all the queues that driver requires to exchange IOs with the HBA.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: Reload the driver.

`0382: READ_SPARAM command failed status <issue status>, mbxStatus <mailbox status>`

The READ_SPARAM mailbox command has failed during initialization. The HBA has been set to error state.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI:
Action: Take a dump with hbacmd and then try reloading the driver.

`0383: Error <rc> during scsi sgl post operation`

The SGL entries could not be registered with the adapter.
Data: None
Severity: Warning
Log: LOG_MBOX, LOG_SLI
Action: Reset the adapter using hbacmd.

`0384: There is pending active mailbox cmd`

The mailbox commands have overlapped. This command should have been added to the mailbox queue.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0385: rc should have been MBX_BUSY`

The completion handler for REG_LOGIN detected the IMMED_UNREG flag and tried to issue the unreg_login command from an interrupt level. The mailbox status should still be busy.

Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`0386: ELS complete with no corresponding cmdiocb: iotag <iotag>`

The completion that the ISR is handling cannot find a tag associated with the IOTAG.

Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`0387:Failed to allocate an iocbq`

Failed to get an IOCBQ from the list of available IOCBQs.

Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0388:Not a valid WCQE code: x<hex cqe_code>`

The event code is invalid. This event will be dropped.

Data: None
Severity: Error
Log: LOG_SLI
Action: Ensure the adapter's firmware is current.

`0391:Error during rpi post operation`

The driver was trying to post pages to the firmware to be used to keep target login information and encountered a failure.

Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: Unload and reload the driver.

`0393:Error <rc> during rpi post operation`

The driver was trying to post pages to the firmware to keep target login information and encountered a failure.

Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: Unload and reload the driver.

`0394: Failed to allocate CQ_EVENT entry`

The asynchronous event handler was not able to allocate an event queue entry to which to transfer the asynchronous event.

Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: This could be a V-LINK clear from the switch or a fatal error from the firmware. Perform a dump from the OneCommand Manager application.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0395: The mboxq allocation failed`

The asynchronous link event handler could not allocate a mailbox command to issue the READ_LA (read link attention) mailbox command.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0396:The lpfc_dmabuf allocation failed`

The asynchronous link event handler could not allocate a mailbox command to issue the READ_LA (read link attention) mailbox command.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0397:The mbuf allocation failed`

The asynchronous link event handler could not allocate DMA-able memory for the READ_LA mailbox command.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0398 Invalid link fault code: < hex link_fault>`

The attempt to read the link attention register has returned an unknown value.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0399 Invalid link attention type: <hex link_type>`

The READ_LA mailbox command has returned an invalid link type.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required

`0400: lpfc_nodev_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>`

The attempt to set the devloss timeout value failed because the value is out of the allowable range.
Data: None
Severity: Error
Log: LOG_INIT
Action: Use a value between the minimum and maximum values.

`0401: Ignoring change to nodev_tmo because devloss_tmo is set`

Attempting to change the nodev timeout when the devloss has already been set.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0402:Cannot find virtual addr for buffer tag on ring <ringno>`

A DMA buffer is not available for this unsolicited command.
Data: (1) tag (2) next (3) prev (4) postbufq_cnt
Severity: Error
Log: LOG_INIT
Action: None required.

`0403: lpfc_nodev_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>]`

Attempt to set the nodev timeout value is outside the range of the devloss timeout range.
Data: None
Severity: Error
Log: LOG_INIT
Action: Set the nodev timeout between the minimum and maximum timeout range.

`0404: lpfc_devloss_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>]`

Attempt to set the devloss timeout value is outside the allowed range.
Data: None
Severity: Error
Log: LOG_INIT
Action: Set the devloss timeout between the minimum and maximum devloss range.

`0405: lpfc_link_speed attribute cannot be set to %d, allowed values are ["LPFC_LINK_SPEED_STRING"]`

Attempt to set the link speed value outside the allowed range.
Data: None
Severity: Error
Log: LOG_INIT
Action: Set the link speed between 0 and the maximum.

`0406: Adapter maximum temperature exceeded <temperature>, taking this port offline`

The driver has received an error for the HBA indicating that the maximum allowable temperature has been exceeded.
Data: (1) work_hs (2) work_status[0] (3) work_status[1]
Severity: Error
Log: LOG_INIT
Action: Ensure the server fans are not blocked. Shut down the server if the airflow is restricted.

`0407: Ignoring nodev_tmo module parameter because devloss_tmo is set.`

Both module parameters (nodev and devloss) were set so the driver is ignoring the nodev parameter.
Data: None
Severity: Error
Log: LOG_INIT
Action: Only one of these parameters must be set.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0410: Cannot find virtual addr for mapped buf on ring <ringno>`

The driver cannot find the specified buffer in its mapping table. Thus it cannot find the virtual address needed to access the data.

Data: (1) phys (2) next (3) prev (4) postbufq_cnt
Severity: Error
Log: Always
Action: This error could indicate a software driver or firmware problem. If the problem persists report these errors to Technical Support.

`0421: MSI-X slow-path request_irq failed <rc>`

The kernel API to request an IRQ has failed.

Data: None
Severity: Warning
Log: LOG_INIT
Action: Use module parameter lpfc_use_msi=0 (INTx).

`0422: lpfc_restrict_login attribute cannot be set to <val>, allowed range is [0, 1]`

Attempt to set the restrict login parameter to something other than on or off.

Data: None
Severity: Error
Log: LOG_INIT
Action: Use 0 (Off) or 1 (On)

`0423: lpfc_"#attr" attribute cannot be set to %d, allowed range is ["#minval", "#maxval"]`

This is a compile time macro that is used by several module parameters during initialization. Each module parameter has its own minimum and maximum values that are displayed.

Data: None
Severity: Error
Log: LOG_INIT
Action: Set the module parameter between the minimum and maximum values.

`0424:lpfc_"#attr" attribute cannot be set to %d, allowed range is ["#minval", "#maxval"]`

This is a compile time macro that is used by several module parameters to set the value.

Data: None
Severity: Error
Log: LOG_INIT
Action: Set the module parameter between the minimum and maximum values.

`0425:lpfc_restrict_login attribute cannot be set to %d, allowed range is [0, 1]`

The module parameter lpfc_restrict_login can only be set to 0 (off) or 1 (on).

Data: None
Severity: Error
Log: LOG_INIT
Action: Set lpfc_restrict_login=[0,1].

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0426: Failed to enable interrupt`

The driver failed to start the interrupt.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0427: Cannot re-enable interrupt after slot reset`

The driver was not able to enable the interrupt after an HBA reset.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0429: MSI-X fast-path request_irq failed (<rc>)`

The driver received an error for the request_irq_call.
Data: None
Severity: Warning
Log: LOG_INIT
Action: Unload and reload the driver.

`0430: PM resume Failed to enable interrupt`

The driver’s power management resume function could not enable the interrupt.
Data: None
Severity: Error
Log: LOG_INIT
Action: Perform another PM suspend and resume or HBA reset.

`0431: Failed to enable interrupt.`

The driver failed to start the interrupt.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0433: Wakeup on signal: rc=<rc>`

A signal other than the LPFC_DATA_READY was received on the worker thread.
Data: None
Severity: Error
Log: LOG_ELS
Action: Unload and reload the driver.

`0434: PM resume failed to start worker thread: error=<error>`

The driver's power management resume function could not start the worker thread.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0435: Adapter failed to get Option ROM version status <rc>`

The driver could not read the HBA's option ROM.

Data: None
Severity: Error
Log: LOG_INIT
Action: Reset the HBA. Ensure the adapter's firmware is current.

`0436: Adapter failed to init, timeout, status reg <status>`

The adapter failed during power-up diagnostics after it was reset.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0437: Adapter failed to init, chipset, status reg <status>`

The adapter failed during power-up diagnostics after it was reset.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0438: Adapter failed to init, chipset, status reg <status>`

The adapter failed during power-up diagnostics after it was reset.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0439: Adapter failed to init, mbxCmd <mbxCommand> READ_REV, mbxStatus <mbxStatus>`

Adapter initialization failed when issuing a READ_REV mailbox command.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0440: Adapter failed to init, READ_REV has missing revision information`

A firmware revision initialization error was detected.

Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. Update the firmware. If the problem persists, report the error to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0442: Adapter failed to init, mbxCmd <mbxCommand> CONFIG_PORT, mbxStatus <mbxStatus>`

Adapter initialization failed when issuing a CONFIG_PORT mailbox command.
Data: (1) hbainit
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0443: Adapter failed to set maximum DMA length mbxStatus <u.mb.mbxStatus>`

Cannot set the maximum DMA length to reflect cfg_pci_max_read.
Data: None
Severity: Error
Log: LOG_INIT
Action: Set module parameter lpfc_pci_max_read to 512, 1024, 2048, or 4096.

`0446: Adapter failed to init, mbxCmd <mbxCommand> CFG_RING, mbxStatus <mbxStatus>, ring <num>`

Adapter initialization failed when issuing a CFG_RING mailbox command.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0447: Adapter failed init, mbxCmd <mbxCommand> CONFIG_LINK mbxStatus <mbxStatus>`

Adapter initialization failed when issuing a CONFIG_LINK mailbox command.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0448: Adapter failed to init, mbxCmd <mbxCommand> READ_SPARM, mbxStatus <mbxStatus>`

Adapter initialization failed when issuing a READ_SPARM mailbox command.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0449: lpfc_%attr attribute cannot be initialized to %d, allowed range is [%min, %max]`

The sysfs attribute value written exceeds attribute range.
Data: (1) attribute name (2) value written (3) minimum value (3) maximum value
Severity: Error
Log: Always
Action: Write a value within the supported range.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0450: lpfc_%attr attribute cannot be set to %d, allowed range is [%min, %max]`

The sysfs attribute value written exceeds attribute range.
Data: (1) attribute name (2) value written (3) minimum value (3) maximum value
Severity: Error
Log: Always
Action: Write a value within the supported range.

`0451: Enable interrupt handler failed`

The driver attempted to register the HBA interrupt service routine with the host operating system, but failed.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or driver problem. If the problem persists, report the error to Technical Support.

`0453: Adapter failed to init, mbxCmd <mbxCommand> READ_CONFIG, mbxStatus <mbxStatus>`

Adapter initialization failed when issuing a READ_CONFIG mailbox command.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0454: Adapter failed to init, mbxCmd <mbxCommand> INIT_LINK, mbxStatus <mbxStatus>`

Adapter initialization failed when issuing an INIT_LINK mailbox command.
Data: None
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

`0456: Adapter failed to issue ASYNCEVT_ENABLE mbox status x%x`

The mailbox command to enable an asynchronous event notification failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: Ensure the adapter firmware is current. Reload the driver.

`0457: Adapter Hardware Error`

The driver received an interrupt indicating a possible hardware problem.
Data: (1) status (2) status1 (3) status2
Severity: Error
Log: Always
Action: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0458: Bring adapter online`

The FC driver has received a request to bring the adapter online. This may occur when running lputil.

Data: None
Severity: Warning
Log: LOG_INIT verbose
Action: None required.

`0459: Adapter heartbeat failure, taking this port offline.`

The Heartbeat mailbox command failed.

Data: None
Severity: Error
Log: LOG_INIT
Action: Ensure the adapter firmware is current. Reload the driver.

`0460: Bring adapter offline`

The FC driver has received a request to bring the adapter offline. This may occur when running lputil.

Data: None
Severity: Warning
Log: LOG_INIT verbose
Action: None required.

`0466: Outstanding IO when bringing Adapter offline`

IO is still pending while attempting to stop the driver.

Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`0467: lpfc_topology attribute cannot be set to %d, allowed range is [0, 6], phba->brd_no, val.`

Topology module parameter is invalid.

Data: None
Severity: Error
Log: LOG_INIT
Action: Use a topology value in the valid range.

`0468: lpfc_restrict_login must be 0 for Physical ports. "vport->cfg_restrict_login = 0;`

Cannot restrict the login for the physical port.

Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0469: lpfc_link_speed attribute cannot be set to %d, allowed range is [0, 8]`

The link speed module parameter is invalid.

Data: None
Severity: Error
Log: LOG_INIT
Action: Use a link speed parameter in the valid range.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0472: PCI channel I/O permanent failure`

The PCI bus has detected an error.
Data: None
Severity: Error
Log: LOG_INIT
Action: Issue an HBA reset.

`0474: Unable to allocate memory for issuing MBOX_CONFIG_MSI command`

Mailbox memory pool allocation error.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0475: Not configured for supporting MSI-X cfg_use_msi: 0x%x`

The lpfc_use_msi module parameter should have been set to 2.
Data: None
Severity: Error
Log: LOG_INIT
Action: Set module parameter lpfc_use_msi = 2.

`0476: HBA not supporting SLI-3 or later SLI Revision: <sli_rev>`

The HBA does not support SLI-3 or SLI-4.
Data: None
Severity: Error
Log: LOG_INIT
Action: This HBA does not support msi. Set lpfc_use_msi=0.

`0478: MSI request_irq failed (<rc>).`

The request_irq kernel API has failed.
Data: None
Severity: Warning
Log: LOG_INIT
Action: Set lpfc_use_msi=0.

`0479: Deferred Adapter Hardware Error`

An adapter hardware error was sent to the driver.
Data: (1) work_hs, (2) work_status[0], (3) work_status[1]
Severity: Error
Log: LOG_INIT
Action: Perform a dump using hbacmd.

`0483:Invalid link-attention link speed: x%x", bf_get(lpfc_acqe_link_speed, acqe_link).`

The link speed reported in the link attention interrupt is invalid.
Data: None
Severity: Error
Log: LOG_INIT
Action: Check the switch configuration.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0485: MSI-X slow-path request_irq failed (<rc>).`

The request_irq kernel API has failed.
Data: None
Severity: Warning
Log: LOG_INIT
Action: Set module parameter lpfc_use_msi=0.

`0486: MSI-X fast-path (<index>) request_irq failed (<rc>).`

The request_irq kernel API has failed.
Data: None
Severity: Warning
Log: LOG_INIT
Action: Set module parameter lpfc_use_msi=0.

`0490: MSI request_irq failed (<rc>).`

The request_irq kernel API has failed.
Data: None
Severity: Warning
Log: LOG_INIT
Action: Set module parameter lpfc_use_msi=0.

`0492: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command`

Mailbox memory pool allocation error.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0493: SLI_CONFIG_SPECIAL mailbox failed with status<rc>`

Mailbox command failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: Ensure the adapter’s firmware is current. Unload and reload the driver.

`0494: Unable to allocate memory for issuing "SLI_FUNCTION_RESET mailbox command"`

Mailbox memory pool allocation error.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0495: SLI_FUNCTION_RESET mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>.`

Mailbox command failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: Reset the HBA.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0496: Failed allocate slow-path EQ`

The event queue for the slow path was not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0497: Failed allocate fast-path EQ`

The event queue for the fast path was not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.

`0499: Failed allocate fast-path FCP CQ (<fcp_cqidx>).`

The completion queue event for the fast path could not be allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: Unload and reload the driver.:

`0500: Failed allocate slow-path mailbox CQ`

Failed to allocate slow-path mailbox CQ.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0501: Failed allocate slow-path ELS CQ`

Failed to allocate slow-path ELS CQ.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0503: Failed allocate fast-path FCP`

Failed to allocate fast-path FCP.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0504: Failed allocate slow-path ELS WQ`

Failed to allocate slow-path ELS WQ
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0505: Failed allocate slow-path ELS MQ`
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0506: Failed allocate receive HRQ\n`
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0507: Failed allocate receive DRQ`
Failed to allocate receive DRQ.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0520: Slow-path EQ not allocated`
The slow-path EQ not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0522: Fast-path EQ <fcp_eqidx> not allocated`
The fast-path EQ is not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0523: Failed setup of fast-path EQ <fcp_eqidx>, rc = <rc>`
The fast-path EQ setup failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0526: Fast-path FCP CQ <fcp_cqidx> not allocated`
The fast-path FCP is not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0527: Failed setup of fast-path FCP CQ <fcp_cqidx>, rc = <rc>`
The fast-path FCP CQ setup failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0528: Mailbox CQ not allocated`

The mailbox CQ not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0530: ELS CQ not allocated`

The ELS CQ is not allocated
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0534: Fast-path FCP WQ <fcp_wqidx> not allocated`

The fast-path FCP WQ is not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0535: Failed setup of fast-path FCP WQ <fcp_wqidx>, rc = <rc>`

The fast-path FCP WQ setup failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0536: Slow-path ELS WQ not allocated`

The slow-path ELS WQ not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0538: Slow-path MQ not allocated`

The slow-path MQ not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0540: Receive Queue not allocated`

The Receive Queue is not allocated.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0542: lpfc_create_static_vport failed to allocate mailbox memory`

Failed to allocate mailbox memory for VPort creation.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0543: lpfc_create_static_vport failed to allocate vport_info\n"))`

Failed to allocate vport_info.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0544: lpfc_create_static_vport failed to issue dump mailbox command ret <rc> status <mbxStatus>`

Failed to issue a dump mailbox command for static VPort creation.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`0545: lpfc_create_static_vport bad information header 0x%x 0x%x\n"\, le32_to_cpu(vport_info->signature), le32_to_cpu(vport_info->rev) & VPORT_INFO_REV_MASK);`

Invalid information header; the signature or revision is invalid.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0546: lpfc_create_static_vport failed to create vport`

Failed to create a VPort.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`0560: lpfc_enable_auth attribute cannot be set to <val>, allowed range is [0, 1]`

The lpfc_enable_auth attribute can only be 0 or 1.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`0582: Error <rc> during sgl post operation`

The SGL post operation failed.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_IP verbose
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0602: Failed to allocate CQ_EVENT entry`

Failed to allocate a CQ_EVENT entry.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0603: Invalid work queue CQE subtype (x%x)\n", cq-<subtype>`

Invalid work queue CQE.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`0700: Bus Reset on target <i> failed`

The bus reset for the specified target failed.
Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`0704: At limitation of <total> preallocated command buffers`

The maximum number of command buffers have already been allocated.
Data: None
Severity: Warning
Log: LOG_FCP verbose
Action: None required.

`0705: Allocation request of <num> command buffers will exceed max of <hba_queue_depth>. Reducing allocation request to <size>`

The number of command buffers requested will exceed the maximum so a smaller quantity will be allocated.
Data: None
Severity: Warning
Log: LOG_FCP verbose
Action: None required.

`0708: Allocation request of <num_to_alloc> command buffers did not succeed. Allocated <num_allocated> buffers.`

The allocation request for the specified command buffers did not succeed. However, the specified number of buffers has been allocated.
Data: None
Severity: Warning
Log: LOG_FCP
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0711: detected queue full - lun queue depth adjusted to%d`

The driver detected a queue full status on a SCSI command response. New LUN queue depth is reported.

Data: (1) New LUN queue depth
Severity: Warning
Log: LOG_FCP verbose
Action: This may indicate an oversubscribed target array. Check your SAN configuration and IO workload.

`0713: SCSI layer issued Device Reset (%d, %d)`

A device reset was issued.

Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`0714: SCSI layer issued bus reset`

The SCSI layer is requesting the driver to abort all I/Os to all targets on this HBA.

Data: (1) ret
Severity: Error
Log: Always
Action: Check the state of the targets in question.

`0720: FCP command <cmnd[0]> residual overrun error`

A residual overrun error has occurred while processing the specified FCP command.

Data: (1) request_bufflen (2) resid
Severity: Warning
Log: LOG_FCP verbose
Action: If the problem persists, check the targets for errors.

`0721: Device Reset rport failure: rdata <rdata>`

The reset of the R_Port failed.

Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`0722: Target Reset rport failure: rdata <rdata>`

The reset of the target failed.

Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`0723: SCSI layer issued Target Reset (%d, %d)`

The SCSI layer issued a target reset.

Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0724: I/O flush failure for context <"LUN","TGT","HOST","Unknown">: cnt <cnt>`

The I/O flush to the {LUN TARGET or HOST] has failed.
Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`0727: TMF <cmd> to TGT <TGT#> LUN <LUN#> failed (<ulpStatus>, <ulpWord[4]>)`

The task management command failed.
Data: None
Severity: Error
Log: LOG_FCP
Action: None required

`0729: FCP cmd <cmnd> failed <target>/<lun> status: <status> result: <result>`

The specified device failed an FCP command.
Data: (1) ulpContext (2) iotag
Severity: Warning
Log: LOG_FCP verbose
Action: Check the state of the target in question.

`0730: FCP command failed: RSP`

The FCP command failed with a response error.
Data: (1) resp_info (2) scsi_status (3) ResId (4) SnsLen (5) RspLen (6)rspInfo3
Severity: Warning
Log: LOG_FCP verbose
Action: Check the state of the target in question.

`0734: FCP read check error`

The issued FCP command returned a read check error.
Data: (1) fcpDl (2) rspResId (3) fcpi_parm (4) cmd[0]
Severity: Warning
Log: LOG_FCP verbose
Action: Check the state of the target in question.

`0735: FCP Read Check Error and Underrun Data`

HBA reported under run from storage array.
Data: (1) vpi (2) fcpDI (3) res_id (4) fcpi_parm
Severity: Warning
Log: LOG_FCP_ERROR verbose
Action: No action needed, informational.

`0748: Abort handler timed out waiting for abort to complete:ret <status> D <target id> LUN <lun id>`

The abort handler timed out waiting for abort to complete.
Data: None
Severity: Error
Log: Always
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`0749: SCSI layer issued abort device`

The SCSI layer aborted a device.
Data: (1) ret, (2) id, (3) lun, (4) snum
Severity: Warning
Log: LOG_FCP verbose
Action: None required.

`0915 Register VPI failed:<mbxStatus>`

Could not register the VPI.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`elx_msg1005: AUTHENTICATION_FAILURE Nport:<port>`

The system detected DHCHAP authentication failure on a port.
Data: (1) nlp_DID
Severity: Error
Log: LOG_SECURITY
Action: Verify authentication settings and keys on local and remote port.

`elx_msg1006: Bad Name tag in auth message < message >`

DHCHAP Authentication process failed when invalid tag was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1007: Bad Name length in auth message < message >`

DHCHAP Authentication process failed when invalid name was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1008: Bad Number of Protocols <message>`

DHCHAP Authentication process failed due to unexpected protocol number.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1009: Bad param type <message>`

DHCHAP Authentication process failed when invalid protocol was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`elx_msg1010: Bad Tag 1 <message>`

DHCHAP Authentication process failed when bad Tag was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg 1011: Auth_neg no hash function chosen`

DHCHAP Authentication process failed when an incorrect hash function was specified.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1012: Auth_negotiate Bad Tag <message>`

DHCHAP Authentication process failed due to bad Tag for auto negotiation.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg 1013: Auth_negotiate no DH_group found`

DHCHAP Authentication process failed when incorrect or missing DH Group was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1014: dhchap challenge bad name tag <message>`

DHCHAP Authentication process failed when incorrect Challenge name tag was detected.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1015: dhchap challenge bad name length <message>`

DHCHAP Authentication process failed due to unexpected Challenge name length.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1016: dhchap challenge Hash ID not Supported <message>`

DHCHAP Authentication process failed due to uncorroborated Challenge Hash ID.
Data: (1) message
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`elx_msg1017: dhchap challenge could not find DH Group`

DHCHAP Authentication process failed due to uncorroborated Challenge Group.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1018: dhchap challenge No Public key for non-NULL DH Group`

There is no Public key for the non-NULL DH Group.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: None required.

`1019: Request tranid <tran_id> timed out`

A transaction with storage array could not complete due to timeout.
Data: (1) tran_id
Severity: Warning
Log: LOG_SECURITY verbose
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`1021: ERROR: attempted to queue security work, when no workqueue created`

Driver encountered missing queue required for processing security information.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report these errors to Technical Support.

`1022: Security request does not exist`

A security request operation failed because there was no match found for such request.
Data: None
Severity: Warning
Log: LOG_SECURITY
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`1023: Warning - data may have been truncated. Data: <data> reqdl: <data_len> mesdl:<data_len>`

A security message exchange operation failed because the response was missing or unreliable.
Data: None
Severity: Warning
Log: LOG_SECURITY
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`elx_msg1028: Start Authentication: No buffers`

The authentication failed because some memory resources were not allocated.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`elx_msg1029: Reauthentication Failure`

The driver encountered errors and there was a failure to re-authenticate.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg 1031: Start Authentication: Get config failed`

The authentication failed due to some error during port configuration.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1032: Start Authentication: get config timed out`

The node authentication was aborted because waiting for port configuration to complete, timed out.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1033: Received auth_negotiate from Nport: < nlp_DID>`

Unsolicited authentication negotiation message received from a port.
Data: (1) nlp_DID
Severity: Warning
Log: LOG_SECURITY
Action: No action, this message is informational.

`elx_msg1034: Not Expecting Challenge - Rejecting Challenge`

Unsolicited authentication challenge received from a port, was rejected.
Data: None
Severity: Warning
Log: LOG_SECURITY
Action: Software driver warning. If this problem persists, report errors to the Technical Support.

`elx_mag1036: Authentication transaction reject - re-auth request reason <reason> exp <explanation>`

An Authentication was rejected and requested again due to reason as displayed with explanation.
Data: (1) reason (2) explanation.
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1037: Authentication transaction reject - restarting authentication, reason <reason> exp <explanation>`

An Authentication process was rejected then restarted and authentication requested again due to reason as displayed with explanation.
Data: (1) reason (2) explanation.
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`elx_msg1039: Not Expecting Reply – rejecting. State <state>`

An unanticipated reply was received during authentication and was subsequently rejected.
Data: (1) auth_state.
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1040: Bad Reply trans_id- rejecting. Trans_id < trans_id > Expecting: < trans_id>`

Unexpected transaction id was received during authentication and was subsequently rejected.
Data: (1) auth_state
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1043: Authentication LS_RJT`

The authentication request was rejected.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`elx_msg1045: Issue AUTH_NEG failed Status:%x`

The authentication negotiation failed.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`elx_msg1048: Issue AUTH_REJECT failed`

Could not issue the reject for the authentication request.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`elx_ msg1049: Authentication is enabled but authentication service is not running`

Discovery failed because DHCHAP Authentication was enabled while no authentication service was established.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Start the authentication daemon (fcauthd).

`elx_ msg1050: Authentication mode is disabled, but is required by the fabric`

Discovery failed because the switch fabric required authentication, but authentication was not configured or the authentication mode for this port pair is disabled.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Configure the driver to authenticate with the switch or disable authentication on the switch to this port.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`elx_msg1053: Start Authentication: Security service offline`

The authentication failed because security service was not available.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`elx_msg1055: Authentication parameter is disabled, but is required by the fabric`

FLOGI failed because the fabric has indicated that Authentication is required, but authentication has not yet been configured or enabled on the HBA.
Data: None
Severity: Error
Log: LOG_SECURITY
Action: Configure authentication on this HBA.

`elx_msg1057: Authentication transaction reject. reason <reason> exp <explanation>`

An Authentication was rejected and requested again due to reason as displayed with explanation.
Data: (1) reason (2) explanation.
Severity: Error
Log: LOG_SECURITY
Action: Software driver Error. If this problem persists, report errors to the Technical Support.

`1058: Waiting for authentication service`

There was a delay when the authentication service was not initially available as expected.
Data: None
Severity: Warning
Log: LOG_SECURITY
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`1059: Authentication became available`

The authentication service came online but was not initially available as expected.
Data: None
Severity: Warning
Log: LOG_SECURITY
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`1201: Failed to allocate dfc_host`

Failed to allocate memory for the dfc_host_struct.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`1210: Invalid cmd size: cmd <cmd> cmdsz <cmdsize> rspsz <rspsize>`

The management command for LPFC 2100 has failed.
Data: None
Severity: Error
Log: LOG_LIBDFC
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1211: genreq alloc failed\n");`

Resource allocation failure.
Data: (1) return code
Log: LOG_LIBDFC
Severity: Error
Action: Kernel memory resources too low.

`1223: menlo_write: couldn't alloc genreq`

Resource allocation failure.
Data: None
Log: LOG_LIBDFC
Severity: Error
Action: Kernel memory resources too low.

`1229: Waiting for menlo mnt`

Waiting for the LPFC 2100 to enter maintenance method.
Data: None.
Severity: Warning
Log: LOG_LIBDFC
Action: None required.

`1231: bad bpl:`

A bad buffer list was detected upon completion.
Data: None.
Severity: Error
Log: LOG_LIBDFC
Action: None required.

`1240: Unable to allocate command buffer memory`

Could not allocate memory for the command buffer.
Data: None.
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1243: Menlo command error. code=%d.\n", mlorsp->code`

The Menlo maintenance command failed.
Data: None.
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1244: Unable to allocate response buffer memory.`

Could not allocate memory for the management command response.
Data: None.
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1257: lpfc_menlo_issue_iocb: handler set for <context3>.`

Data: None
Log: LOG_LIBDFC
Severity: Warning
Action: None required.

`1259: mbox: Issued mailbox cmd <u.mb.mbxCommand> while in stopped state.`

Only the dump mailbox command and reset adapter mailbox command are allowed when in the stopped state.
Data: None
Severity: Warning
Log: LOG_MBOX
Action: None required.

`1262: Failed to allocate dfc_host`

Could not allocate memory the dfc_host_struct.
Data: None
Log: LOG_LIBDFC
Severity: Error
Action: None required.

`1268: Find ndlp returned NULL for oxid:x%x SID:x%x, oxid, sid.(int)off, rc.`

Could not find the node for this DID.
Data: None
Severity: Warning
Log: LOG_ELS
Action: None required.

`1302: Invalid speed for this board: Reset link speed to auto: <cfg_link_speed>`

The driver is re-initializing the link speed to auto-detect.
Data: None
Severity: Warning
Log: LOG_LINK_EVENT verbose
Action: None required.

`1303: Link Up Event <eventTag> received`

A link up event was received. It is possible for multiple link events to be received together.
Data: (1) fc_eventTag (2) granted_AL_PA (3) UlnkSpeed (4) alpa_map[0]
Detail: If link events received, log (1) last event number received, (2) ALPA granted, (3) Link speed (4) number of entries in the loop init LILP ALPA map. An ALPA map message is also recorded if LINK_EVENT verbose mode is set. Each ALPA map message contains 16 ALPAs.
Severity: Error
Log: Always
Action: If numerous link events are occurring, check the physical connections to the FC network.

`1304: Link Up Event ALPA map`

A link up event was received.
Data: (1) wd1, (2) wd2, (3) wd3, (4) wd4
Severity: Warning
Log: LOG_LINK_EVENT verbose
Action: If numerous link events are occurring, check the physical connections to the FC network.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1305: Link Down Event <eventTag> received`

A link down event was received.
Data: (1) fc_eventTag (2) hba_state (3) fc_flag
Severity: Error
Log: Always
Action: If numerous link events are occurring, check the physical connections to the FC network.

`1306: Link Up Event in loop back mode x%x received Data: x%x x%x x%x x%x`

Link up notification; configured for loopback.
Data: (1) fc_eventTag (2) granted_AL_PA (3) UlnkSpeed (4) alpa_map[0]
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1308: Menlo Maint Mode Link up Event x%x rcvd Data: x%x x%x x%x`

Link down notification; configured for loopback.
Data: (1) fc_eventTag (2) port_state (3) vport fc_flag
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1309: Link Up Event npiv not supported in loop topology`

NPIV is not supported in loop topology.
Data: None
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1310: Menlo Maint Mode Link up Event <eventTag> rcvd`

The link is up in maintenance mode; only management commands are allowed.
Data: (1) fc_eventTag (2) port_state (3) vport fc_flag
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1312: Link Down Event <eventTag> received`

Maintenance mode link up notification received without entering link down.
Data: (1) fc_eventTag (2) port_state (3) vport fc_flag
Severity: Error
Log: LOG_LINK_EVENT
Action: None required.

`1400: Failed to initialize sgl list.`

Failed to initialize SGL list during initialization.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1401: Failed to enable pci device.`

Failed to enable PCI device during initialization.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1402: Failed to set up pci memory space.`

PCI initialization failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1403: Failed to set up driver resource.`

Driver resource initialization failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1404: Failed to set up driver resource.`

Driver resource initialization failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1405: Failed to initialize iocb list.`

Driver resource initialization failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1406: Failed to set up driver resource.`

Initialization failed to set up driver resource.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1407: Failed to create scsi host.`

Initialization failed to create SCSI host.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1408: Failure HBA POST Status: sta_reg=0x%x, ""perr=x%x, sfi=x%x, nip=x%x, ipc=x%x, xrom=x%x, ""dl=x%x, pstatus=x%x\n", sta_reg.word0, bf_get(lpfc_hst_state_perr, &sta_reg),`

The HBA's power on self test has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1409: Failed to enable pci device.`

Failed to enable PCI device during initialization.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1410: Failed to set up pci memory space.`

Initialization failed to set up PCI memory space.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1411: Failed to set up driver resource.`

Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1412: Failed to set up driver resource.`

Initialization failed to set up driver resource.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1413: Failed to initialize iocb list.`

Initialization failed to initialize the IOCB list.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1414: Failed to set up driver resource.`

Initialization failed to set up driver resource.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1415: Failed to create scsi host.`

Initialization failed to create SCSI host.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1416: Failed to allocate sysfs attr`

Initialization failed to sysfs attribute.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1418: Invalid HBA PCI-device group: <dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1419: Invalid HBA PCI-device group: <dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1420: Invalid HBA PCI-device group:<dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1421: Failed to set up hba`

Initialization failed to set up the HBA.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1422: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>`

The HBA has notified the driver that it has encountered an unrecoverable error.
Data: None
Severity: Error
Log: LOG_INIT
Action: A dump from the OneCommand Manager application should be taken. Then, the driver should be unloaded and reloaded.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1423: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>`

The HBA has notified the driver that it has encountered an unrecoverable error.
Data: None
Severity: Error
Log: LOG_INIT
Action: A dump from the OneCommand Manager application should be taken. Then, the driver should be unloaded and reloaded.

`1424: Invalid PCI device group:<pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1425: Invalid PCI device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1426: Invalid PCI device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1427: Invalid PCI device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1428: Invalid PCI device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1429: Invalid PCI device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1430: Failed to initialize sql list`

Failed to initialize SQL list
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1431: Invalid HBA PCI-device group: <pci_dev_grp>`

Invalid HBA PCI-device group detected.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1432: Failed to initialize rpi headers.`

Failed to initialize RPI headers.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1476: Failed to allocate sysfs attr`

Failed to allocate sysfs attrIbutes.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1477: Failed to set up hba`

Failed to set up the HBA.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`1603: Loopback test did not receive expected data length. actual length <len>expected length <full_size>.`

The loopback test did not receive the same amount of data that it transmitted.
Data: None
Severity: Error
Log: LOG_LIBDFC
Action: None required.

`1800: Could not issue unreg_vpi`

Driver attempt to unregister vpi failed.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: Software driver error. If this problem persists, report these errors to Technical Support.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1801: Create vport work array FAILED: cannot do scsi_host_get`

The driver was unable to get a reference to a SCSI host.

Data: None
Severity: Warning
Log: LOG_VPORT verbose
Action: Software driver warning. If this problem persists, report these errors to Technical Support.

`1816: FLOGI NPIV supported, response data <port>`

The fabric reports support for NPIV upon FLOGI.

Data: (1) response_multiple_NPort
Severity: Warning
Log: LOG_VPORT verbose
Action: No action needed, informational.

`1817: Fabric does not support NPIV - configuring single port mode`

The fabric reports no support for NPIV upon FLOGI.

Data: None
Severity: Warning
Log: LOG_VPORT verbose
Action: No action needed, informational.

`1818: VPort failed init, mbxCmd <mailbox command> READ_SPARM mbxStatus <mailbox status> , rc = <status>`

A pending mailbox command issued to initialize port, failed.

Data: (1) mbxCommand (2) mbxStatus (3) rc
Severity: Error
Log: LOG_VPORT verbose
Action: Software driver error. If this problem persists, report these errors to Technical Support.

`1819: Unrecognized lpfc_sli_mode parameter: <mode>`

The user has attempted to set the SLI mode to an invalid value. The only valid values for the SLI mode are 0, 2, and 3.

Data: (1) lpfc_sli_mode
Severity: Error
Log: LOG_VPORT verbose
Action: The lpfc_sli_mode driver parameter setting must be corrected. Valid values are 0, 2, and 3.

`1820: Unable to select SLI-3. Not supported by adapter.`

The HBA is not capable of operating in a given mode.

Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: SLI-3 mode is only available on some HBAs. Do not attempt to force the SLI mode to 3 on HBAs that do not support SLI-3 mode. This is an informational message. HBAs that do not support SLI-3 will be configured to run in SLI-2 mode, but it is recommended to use the auto setting (0).

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1821: Create VPORT failed. Invalid WWN format`

The port could not be created due to an invalid WWNN or WWPN format.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: Provide a valid WWN when creating Vports.

`1822: Invalid <name>: <xx: xx: xx: xx: xx: xx: xx: xx>`

An invalid WWN was used when creating a VPort.
Data: (1) type_name (2) wwn[1] (3) wwn[3] (3) wwn[5] (4) wwn[7]
Severity: Error
Log: LOG_VPORT verbose
Action: When creating a VPort you must furnish a valid WWN.

`1823: Create VPORT failed. Duplicate WWN on HBA.`

The port could not be created because it would duplicate an existing WWNN HBA address. The resources for the port had to be discarded.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: Provide a WWN that is unique.

`1824: NPIV enabled: Override lpfc_sli_mode parameter (<mode>) to auto(0)`

The lpfc_enable_npiv and lpfc_sli_mode driver parameter settings conflict. The HBA must be configured for SLI-3 mode to support NPIV.
Data: (1) lpfc_sli_mode
Severity: Error
Log: LOG_VPORT verbose
Action: This is an informational message that indicates that the lpfc_enable_npiv and lpfc_sli_mod parameter settings are not compatible. Resolve the parameter conflict by setting the SLI mode to 0 or 3 or, if SLI-2 mode is required then disable NPIV.

`1825: Vport Created.`

This message is displayed to indicate that a port was created in the system. It is displayed at this level to ensure it is always appears at all log levels.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: No action, informational.

`1826: Vport Disabled.`

The port had to be disabled in the system.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: No action, informational.

`1827: Vport Enabled`

The port had to be enabled after possible recovery from some errors.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: No action, informational.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1828: Vport Deleted`

A Vport was deleted.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: No action, informational.

`1829: CT command failed to delete objects on fabric.`

A command issued to the fabric to delete an associated resource for an object such as for a port, failed.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: Software driver error. If this problem persists, report these errors to Technical Support.

`1830: Signal aborted mbxCmd <command>`

A pending mailbox command was aborted because the thread received a signal.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: You should retry the attempted command.

`1831: Create VPORT Interrupted`

The port creation process was unexpectedly interrupted at a critical time and the operation was unsuccessful.
Data: None
Severity: Error
Log: LOG_VPORT verbose
Action: The process was interrupted while creating a VPort. Retry the command.

`1832: No pending MBOX command to handle`

Data: None
Severity: Error
Log: LOG_MBOX
Action:

`1835: Vport discovery quiesce failed: state <port_state> fc_flags <fc_flag> wait msecs <jiffies_to_msecs(jiffies - start_time)>`

Could not pause discovery on this VPort.
Data: None
Severity: Error
Log: LOG_VPORT
Action: None required.

`1836: Could not issue unreg_login(all_rpis) status <rc>`

The unreg_login cannot be issued.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_VPORT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`1837: Vport_delete failed: Cannot delete static vport`

Static VPorts cannot be deleted.
Data: None
Severity: Error
Log: LOG_VPORT
Action: None required.

`1838: Failed to INIT_VPI on vpi <vpi> status <rc>`

Failed to INIT_VPI.
Data: None
Severity: Error
Log: LOG_VPORT
Action: None required.

`2000: Failed to allocate mbox for read_FCF cmd`

Failed to allocate mbox for READ_FCF command.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2001: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command`

Unable to allocate memory for issuing the SLI_CONFIG_SPECIAL mailbox command.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2002: Error Could not grow rpi count`

An error occurred because the RPI count could not be increased.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2004: Failed to allocate XRI.last XRITAG is <XRI> Max XRI is <MAX_XRI>, Used XRI is <USED_XRI>.`

All XRIs are in use.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`2005: Unable to deregister pages from HBA: <rc>`

The SGL pages could not be unregistered from the firmware.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2007: Only Limited Edition cmd Format supported <iocb.ulpCommand>`

The SGL pages could not be unregistered from the firmware.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2008: Error <rc> posting all rpi headers`

The RPI headers could not be posted to the firmware.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2009: Failed to allocate mbox for ADD_FCF cmd`

Failed to allocate mailbox for ADD_FCF command.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2010: Resume RPI Mailbox failed status <status>, mbxStatus <mbx status>`

Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2011: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command`

Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2012: Mailbox failed , mbxCmd <mbx_cmd> READ_CONFIG, mbxStatus <mbx status>`

The READ_CONFIG mailbox command failed.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2013: Could not manually add FCF record 0, status <rc>`

Could not add FCF record to the FCF list.
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2014: Invalid command <iocb.ulpCommand>`

The IOCB command is invalid.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2015: Invalid CT %x command <iocb.ulpCommand>`

Invalid Command-Type in the IOCB is not supported.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2017: REG_FCFI mbxStatus error <mbx status> HBA state <port_state>`

The REG_FCFI mailbox command has failed.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2018: REG_VFI mbxStatus error <mbx status> HBA state <port_state>`

The REG_VFI mailbox command has failed.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2020: Failed to allocate mbox for ADD_FCF cmd`

Failed to allocate mailbox for ADD_FCF command.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2022: VPI Mailbox failed status <status>, mbxStatus <mbxStatus>`

The INIT VPI mailbox command has failed.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2401: Failed to allocate memory for ELS XRI management array of size <els_xri_cnt>.`

Initialization failed to allocate memory for the ELS XRI management array.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2500: EQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to create the event queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2501: CQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to create the completion queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2502: MQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to create the mailbox queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2503: WWQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to create the work queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2504: RQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to create the receive queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2505: EQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the event queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2506: CQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the completion queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2507: MQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the mailbox queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2508: WQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the work queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2509: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the work queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2510: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the work queue has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2511: POST_SGL mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>n`

The mailbox command sent to post the SGL pages to the firmware has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2512: REMOVE_ALL_SGL_PAGES mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to delete the SGL pages from the firmware has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2513: POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>`

The mailbox command sent to post the SGL pages to the firmware has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2514: POST_RPI_HDR mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>`

The mailbox command sent to post the RPUI header pages to the firmware has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2515: ADD_FCF_RECORD mailbox failed with status <rc>`

The mailbox command to add the FCF record has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2516: DEL FCF of default FCF Index failed mbx status <rc>, status <shdr_status> add_status<shdr_add_status>`

The mailbox command to delete the FCF record has failed.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2517: Unregister FCFI command failed status %d, mbxStatus x%x", rc, bf_get(lpfc_mqe_status, &mbox->u.mqe)`

The driver was unable to unregister the FCFI from the firmware.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2518: Requested to send 0 NOP mailbox cmd`

Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2519: Unable to allocate memory for NOP mailbox command`

Memory allocation for this mailbox command has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2520: NOP mailbox command failed status x%x add_status x%x mbx status x%x, shdr_status, shdr_add_status, rc.`

The NOP mailbox command has failed.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`2521: READ_FCF_RECORD mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx`

The READ_FCF_RECORD mailbox command failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2523: Allocated DMA memory size (<alloc_len>) is less than the requested DMA memory size (<req_len>)`

The ADD_FCF_RECORD mailbox command failed to retrieve the length required from the firmware.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2524: Failed to get the non-embedded SGE virtual address`

The READ_FCF_RECORD mailbox command could not retrieve the Scatter Gather Entry that was requested.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2527: Failed to allocate non-embedded SGE array.`

Failed to allocate the non-embedded SGE array.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2528: Mailbox command <vpi> cannot issue`

The mailbox command could not be issued because the mailbox interrupt is disabled.
Data: (1) mbxCommand (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2529: Mailbox command <vpi> cannot issue`
Data: (1) mbxCommand (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2530: Mailbox command <vpi> cannot issue`
The SLI layer in the driver is inactive.
Data: (1) mb.mbxCommand (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2531: Mailbox command <cpi> cannot issue`
Data: (1) mb.mbxCommand (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2532: Mailbox command <vpi> (<mbxCommand>) cannot issue`
The mailbox bootstrap code detected that the SLI layer is active.
Data: (1) sli4_mbox_opcode (2) sli_flag,(3) MBX_POLL
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2533: Mailbox command <vpi> (<mbxCommand>) cannot issue`
Data: (1) sli4_mbox_opcode (2) sli_flag (3) MBX_NOWAIT
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2535: Unsupported RQ count. (<entry_count>)`
The receive queue ring can only be 512, 1024, 2048, or 4096.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2536: Unsupported RQ count. (<entry_count>)`
The receive queue ring can only be 512, 1024, 2048, or 4096.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2537: Receive Frame Truncated!`
The receive unsolicited handler detected a truncated frame.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2539: Dropped frame rctl:%s type:%s\n`

An unsupported frame was received by the port and dropped.
Data: (1) rctl_names[fc_hdr->fh_r_ctl], (2) type_names[fc_hdr->fh_type]
Severity: Error
Log: Always
Action: No action needed, informational.

`2540: Ring <ring #> handler: unexpected Rctl <fh_rctl> Type <fh_type>`

The received frame has an unsupported RCTL or FH_TYPE.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`2541: Mailbox command <vpi> (<mbxCommand>) cannot issue`

Data: (1) sli_mbox_opcode (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2542: Try to issue mailbox command <vpi> (<mbxCommand>) synchronously ahead of async mailbox command queue`

Attempting to send a synchronous mailbox command ahead of the asynchronous mailbox commands.
Data: (1) sli4_mbx_opcode or sli_mbox_opcode, (2) sli_flag, (3) flag
Severity: Warning
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2543: Mailbox command <vpi> (<mbxCommand>) cannot issue`

The mailbox command does not have all of the fields set correctly.
Data: (1) sli_mbox_opcode (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2544: Mailbox command <vpi> (<mbxCommand>) cannot issue`

The HBA cannot be accessed on the PCI bus.
Data: (1) sli_mbox_opcode (2) sli_flag (3) flag
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2546: New FCF found index <index> tag <event_tag>`

A new FCF has been found.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2547: Read FCF record failed`

Could not read the FCF record from the firmware.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

`2548: FCF Table full count <count> tag <event_tag>`

The FCF table is full.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2549: FCF disconnected from network index <index> tag <event_tag>`

The FCF has disconnected from the network.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

`2550: UNREG_FCFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>.`

The Unregister FCFI mailbox failed.
Data: None
Severity: Error
Log: LOG_DISCOVERY. LOG_MBOX
Action: None required.

`2551: UNREG_FCFI mbox allocation failed HBA state <port_state>`

The allocation for the UNREG_FCFI mailbox command has failed.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2552: UNREG_FCFI issue mbox failed rc <rc> HBA state <port_state>.`

The Unregister FCFI mailbox command has failed.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2553: lpfc_unregister_unused_fcf failed to read FCF record HBA state.`

Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2554: Could not allocate memory for fcf record`

Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2555: UNREG_VFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>`

The Unregister VFI mailbox command failed.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2556: UNREG_VFI mbox allocation failed HBA state <port_state>`

Could not allocate memory for UNREG_VFI mailbox command.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2557: UNREG_VFI issue mbox failed rc <rc> HBA state <port_state>`

Could not issue the UNREG_VFI mailbox command.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2558: ADD_FCF_RECORD mailbox failed with status<shdr_status> add_status <shdr_add_status>`

The ADD_FCF_RECORD mailbox command has failed.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2559: Block sgl registration required DMA size <reqlen> great than a page.`

Attempting to register more Scatter Gather Entries with the firmware than can fit in a page.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`2560: Failed to allocate mbox cmd memory\n`

Failed to allocate mailbox command memory.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2561: Allocated DMA memory size (<alloclen>) is less than the requested DMA memory size (<reqlen>)`

Could not get the memory required for the number of XRIs that are attempting to be posted.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2562: No room left for SCSI XRI allocation max_xri=<sli4_hba.max_cfg_param.max_xri>, els_xri=<els_xri_cnt>n`

The number of allocated XRIs has reached the max_xri value.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2563: Failed to allocate memory for SCSI XRI management array of size <sli4_hba.scsi_xri_max>.`

Initialization could not allocate memory to hold the XRIs.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2564: POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>`

The list of XRI SGEs failed to be registered with the firmware.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2566: Failed to allocate table entry`

Failed to allocate connection table entry.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2567: Config region 23 has bad signature`

The driver was unable to read Config Region 23 because it has a bad signature.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2568: Config region 23 has bad version`

The driver was unable to read Config Region 23 because it is an invalid version.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2572: Failed allocate memory for fast-path per-EQ handle array`

Failed to allocate memory for the fast-path per-EQ handle array.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2573: Failed allocate memory for msi-x interrupt vector entries`

The driver was unable to allocate memory during initialization of the MSI-X interrupt array.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2574: Not enough EQs (<sli4_hba.max_cfg_param.max_eq>) from the pci function for supporting FCP EQs (<cfg_fcp_eq_count>)`

Failed to create the minimum fast-path event queues.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2575: Not enough EQs (<max_eq>) from the pci function for supporting the requested FCP EQs (<cfg_fcp_eq_count>), the actual FCP EQs can be supported: <eq_count>`

The driver was not configured with enough fast-path event queues.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`2576: Failed allocate memory for fast-path EQ record array`

Failed to allocate memory for the fast-path EQ record array.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2577: Failed allocate memory for fast-path CQ record array`

Failed to allocate memory for the fast-path EQ record array.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2578: Failed allocate memory for fast-path WQ record array`

Failed to allocate memory for the fast-path EQ record array.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2579: Slow-path wqe consume event carries miss-matched qid: wcqe-qid=<wcqe_quid>, sp-qid=<sp_quid>`

The consumed entry does not have the slow path's queueID.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2580: Fast-path wqe consume event carries miss-matched qid: wcqe-qid=<fcp_wqid>.`

The consumed entry does not have the fast path's queueID.
Data: None
Severity: Warning
Log: LOG_SLI
Action: None required.

`2581: Not enough WQs (<sli4_hba.max_cfg_param.max_wq>) from the pci function for supporting FCP WQs (<cfg_fcp_wq_count>)`

The driver was not configured with the minimum number of fast-path work queues.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2582: Not enough WQs (<max_wq>) from the pci function for supporting the requested FCP WQs (<cfg_wq_count>), the actual FCP WQs can be supported: <wq_count>`

The driver was not configured with enough fast-path work queues.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`2593: The FCP EQ count(<cfg_fcp_eq_count>) cannot be greater than the FCP WQ count(<cfg_fcp_wq_count>), limiting the FCP EQ count to <cfg_fcp_wq_count>`

The fast-path event queue cannot be greater than the fast-path work queue count.
Data: None
Severity: Warning
Log: LOG_INIT
Action: None required.

`2597: Mailbox command <vpi> (<mbxCommand>) cannot issue`

Synchronou(2) sli_flag (3) flag
Data: None
Severity: Error
Log: LOG_MBOX, LOG_SLI
Action: None required.

`2598: Adapter Link is disabled.`

The adapter link has been disabled.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2599: Adapter failed to issue DOWN_LINK mbox command rc <rc>`

The driver was unable to issue the Down Link Mailbox command.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2600: lpfc_sli_read_serdes_param failed to allocate mailbox memory`

Failed to allocate mailbox memory.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2605: lpfc_dump_static_vport: memory allocation failed`

Failed to allocate mailbox memory.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2606: No NPIV Fabric support`

No NPIV Fabric support.
Data: None
Severity: Error
Log: LOG_ELS
Action: None required.

`2607: Failed to allocate init_vpi mailbox`

Failed to allocate init_vpi mailbox\n.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2608: Failed to issue Init VPI mailbox`

The driver was unable to send an initialize VPI mailbox command.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2609: Init VPI mailbox failed <u.mb.mbxStatus>`

The Initialize VPI mailbox command failed.
Data: None
Severity: Error
Log: LOG_MBOX
Action: None required.

`2610: UNREG_FCFI mbox allocation failed`

Failed to allocate mailbox memory.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2611: UNREG_FCFI issue mbox failed`

Could not issue the UNREG_FCFI mailbox command.
Data: None
Severity: Error
Log: LOG_DISCOVERY, LOG_MBOX
Action: None required.

`2619: Config region 23 has bad signature`

Configuration region 23 has an invalid signature.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2620: Config region 23 has bad version`

Configuration region 23 has an invalid version.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2621: Failed to allocate mbox for query firmware config cmd`

Failed to allocate mailbox memory.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.

`2622: Query Firmware Config failed mbx status <rc>, status <shdr_status> add_status <shdr_add_status>`

Could not read the firmware configuration.
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2707: Ring <Ring#> handler: Failed to allocate iocb Rctl <fh_rctl> Type <fh_type> received`

The driver was unable to allocate memory to send a query config mailbox command
Data: None
Severity: Error
Log: LOG_SLI
Action: None required.

`2717: CT context array entry [<index>] over-run: oxid:<fh_ox_id>, sid:<fh_SID>`

All of the array slots to hold buffers that are passed to the application are in use.
Data: None
Severity: Warning
Log: LOG_ELS
Action: None required.

Table 4-2 LPFC Error Log Messages and their Descriptions (Continued)

`2718: Clear Virtual Link Received for VPI <index> tag <event_tag>`

A Clear virtual link was received from the Fabric for this VPI.
Data: None
Severity: Error
Log: LOG_DISCOVERY
Action: None required.

`2719: Invalid response length: tgt <TGT_ID> lun <LUN> cmnd <CMD> rsplen <RSPLEN>`

The response length for this FCP command is not supported.
Data: None
Severity: Error
Log: LOG_FCP
Action: None required.

`2721: ndlp null for oxid %x SID %x\n, icmd->ulpContext, dfchba->ct_ctx[tag].SID);`

The Node value for this SID is not in the node list.
Data: None
Severity: Warning
Log: LOG_ELS
Action: None required.

`2726: READ_FCF_RECORD Indicates empty FCF table`

The driver requested the firmware provide a list of FCF entries to connect to and the firmware responded that the FCF table is empty.
Data: None
Severity: Error
Log: LOG_INIT
Action: None required.