Emulex Driver for Linux

FC and FCoE version 8.2.0.63
NIC version 2.101.374.0
iSCSI version 2.101.374.0

User Manual

P004433-01B Rev. A

One Network.
One Company.
Connect with Emulex.

Emulex, 3333 Susan Street
Costa Mesa, CA 92626

Installation

Driver Information

Supported Features

- SNIA-CTP compliant SMI-S 1.1 Provider
- Topology support: Fibre Channel Arbitrated Loop (FC-AL), point-to-point, fabric with auto-topology negotiation
- Supports 1, 2, 4 and 8 Gb/s capable adapters with auto-rate negotiation. (1Gb/s is not supported on 8 Gb/s adapters.)
- Protocols: SCSI-FCP, FCP-2 (FC-Tape profile, including use of ADISC instead of PLOGI), FC initiator mode and Fibre Channel over Ethernet (FCoE).
    - iSCSI (supported Linux kernel is SLES 10 SP2 and SP3, supported kernel variants for x86 and x86_64)
    - NIC (supported Linux kernel is SLES 10 SP2 and SP3, supported kernel variants for x86 and x86_64)
    - SCSI-FCP
    - FCP-2 (FC-Tape profile, including use of ADISC instead of PLOGI)
    - FC initiator mode and FCoE
- Tested up to thirty-two adapter ports
- Dynamic parameter setting using Emulex's OneCommand™ Manager application as part of a master kit: enabling GUI-based driver configuration and persistent binding management, including in-band (FC) and out-of-band (Transmission Control Protocol/Internet Protocol [TCP/IP]) remote SAN management capability, diagnostics (loopback and diagnostics dump), LUN masking, (Diffie-Hellmann Challenge Handshake Authentication Protocol) FC-SP DHCHAP Authentication, and virtual port support. See the OneCommand Manager User Manual for a complete list of supported features.
- Support for common host bus adapter application programming interface (HBA API)
- Batch firmware download capability
- Support for the sysfs interface
- PCI hot plug support
- Vital Product Data (VPD) support
- "Linux Tools" link on the Linux portion of the Emulex Web site (visit the link to see the available tools)
- Supports FC-SP DHCHAP authentication
- Supports N_Port ID Virtualization (NPIV) virtual ports

New Features in this Release

The Emulex version 8.2.0.x driver for Linux includes the following enhancements:

- Supports boot from storage area network (SAN) with the OCe10100 Universal Converged Network Adapters (CNAs).
- Supports iSCSI, NIC, FC initiator, and FCoE protocols.
- Supports the OneCommand Manager Application, both GUI and CLI.
- Two driver packages are available:
    - LPFC Driver Kit – This kit supports legacy Emulex HBA adapters and only includes the FC/FCoE driver.
    - Unified Linux Drivers Kit (ULDK) – This is a new kit that supports Emulex OneConnect™ UCNAs and includes drivers for FC/FCoE/NIC and iSCSI.

Prerequisites

For the LPFC Driver Kit

To install the LPFC driver kit, the appropriate distribution kernel development packages must be installed for the currently running kernel, which include the gcc compiler and the kernel sources.

The LPFC driver kit supports the following distributions:

- Red Hat Enterprise Linux 5.3 and 5.4 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures).
- SuSE Linux Enterprise Server 10 SP2 and SP3 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures).
- The OneCommand Manager must be installed to use DHCHAP Authentication. The OneCommand Manager includes the fcauthd daemon software. See the OneCommand Manager User Manual on the Emulex Web site for instructions on installing and using the OneCommand Manager.

For the ULDK

To install the Unified Linux Drivers Kit (ULDK) includes downloads for all the drivers for all three protocols, FC/FCoE, NIC and iSCSI. This ULDK includes a single top-level installation script thal detects the Linux kernel and kernel variant, and installs the proper driver versions for all the protocols.

The ULDK supports the following distributions:

- Red Hat Enterprise Linux 5.3 and 5.4 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures).
- SuSE Linux Enterprise Server 10 SP2 and SP3 (Intel x86, Intel Itanium2, Intel EM64T, AMD64, and PowerPC 64-bit architectures).
- The OneCommand Manager must be installed to use DHCHAP Authentication. The OneCommand Manager includes the fcauthd daemon software. See the OneCommand Manager User Manual on the Emulex Web site for instructions on installing and using the OneCommand Manager.

Compatibility

For a list of adapters that are compatible with both the LPFC driver kit and the ULDK, see the specific driver's Downloads page on the Emulex Web site. For compatible firmware versions, see the Downloads page for the specific adapter.

Note: Check the Emulex Web site for the latest firmware releases.

Note: You must install the latest firmware and ULDK at the same time on OneConnect UCNAs. The installation order does not matter.

Note: NPIV is supported on all SLI-4 Emulex OCe10100 Universal CNAs. NPIV is also supported on all SLI-3 Gb/s and 8 Gb/s adapters. Emulex enterprise class (5 digit model number) and midrange class (4 digit model number) adapters support SLI-3. Emulex 3 digit model number adapters do not fully support SLI-3 and therefore do not support NPIV. The LPFC 8.2.X driver supports all adapters running SLI-2, but NPIV support is not available in SLI-2 mode.

For SLI-4 AND SLI-3 supported adapters, use the latest recommended firmware for NPIV support.

Things to Know Before You Download

- You must uninstall any previous LPFC driver kits and/or Application Helper Modules that were installed from the Emulex CD or downloaded from the Emulex Web site, (i.e. not part of a distribution), before installing this driver kit.

Known Issues

- See the product release notes for the latest information.

Installing the LPFC Driver Kit

Note: The driver kit supports legacy HBA adapters. For OneConnect UCNA drivers, see

The lpfc-install script installs the lpfcdriver_2.6 RPM.

The RPM:

- Installs the driver source files to the /usr/src/lpfc directory.
- Builds the driver for the currently running kernel.
- Installs the driver to the proper directory for the currently running kernel. Maintenance and errata kernels are supported.

Once the RPM is installed, the lpfc-install script creates a new ramdisk for the currently running kernel so that the LPFC driver is loaded when the kernel is initialized during system startup.

Note: You must uninstall any previous LPFC driver kits and/or Application Helper Modules that were installed from the Emulex CD or downloaded from the Emulex Web site, (i.e. not part of a distribution), before installing this driver kit. This installation will fail if a previous version of the LPFC driver or the Application Helper Module is detected.

Refer to “Uninstalling the LPFC Driver Kit” on page 8 and “” on page 9 for more information.

When invoked without options, the 'lpfc-install' script automatically archives any driver that is shipped as part of the distribution's kernel during the installation procedure. Old drivers that are archived during installation are then restored when the driver kit is uninstalled.

Note: The OneCommand Manager must be installed separately from the driver. Refer to the “Installing the OneCommand Manager Application” on page 8 for more information.

Note: The lpfc-install script does not support custom kernels. For example, kernels with Version_Release strings that do not match those of the original distribution kernel.

To install the Emulex driver for Linux:

1. Install a supported Emulex adapter in the system. Refer to the adapter's Installation manual for specific hardware installation instructions.
2. Remove any previously installed LPFC driver kits and/or Application Helper Modules that were installed from the Emulex CD or downloaded from the Emulex Web site, (i.e. not part of a distribution’s kernel) before proceeding. Refer to “Uninstalling the LPFC Driver Kit” on page 8 and “” on page 9 for more information.
3. Download the driver kit from the Emulex Web site or copy it to the system from the installation CD.
4. Log on as 'root' to a terminal, and unpack the tarball with the following command:

   ```
   tar xzf lpfc_2.6_driver_kit-<driver version>.tar.gz
   ```

5. Change to the directory that is extracted:

   ```
   cd lpfc_2.6_driver_kit-<driver version>/
   ```

6. Execute the 'lpfc-install' script with no options to install the new driver kit. Type:

   ```
   ./lpfc-install
   ```

Once the 'lpfc-install' script has completed successfully, the Emulex LPFC driver is loaded and Fibre Channel disks that are properly connected to the system are accessible. Reboot the system now to enable the newly added driver options in the ramdisk. You can also reboot the system later if you wish.

LPFC Driver Kit Install Script Options

The following options are available for use with the Emulex install script for Linux:

- -h,--help - Prints a help message describing command line parameters.
- -u,--uninstall - Uninstalls the currently installed driver kit.
- --createramdisk - Creates a new ramdisk image. Use this option after you have modified driver parameters in the /etc/modprobe.conf file.

LPFC Driver Kit Directory Structure

After installation, the following directory is created on the system.

Table 1: Driver Kit Directory Structure

Directory	Description
/usr/src/lpfc	Driver source files.

Installing the LPFC Driver on Unsupported Linux Distributions

The driver kit supports the Linux distributions listed on page 2. As of Linux kernel 2.6.12, the LPFC driver is distributed with the Linux kernel sources. To install the Emulex LPFC driver on an unsupported distribution of Linux, refer to the distribution's Web site or http://kernel.org.

Note: The Emulex version 8.2 driver for Linux is not intended for, and will not operate on, any kernel prior to 2.6.12. If you are using an earlier 2.6 kernel, you must use the Emulex driver for Linux version 8.0.16.x.

Upgrading the Kernel or Applying a Distribution Service Pack or Update

You can install the driver kit into an upgraded kernel. The installation of an update or service pack generally involves updating the kernel.

Note: Some distribution service packs or updates contain an Emulex driver. If the driver version contained in the distribution or service pack is the same version or newer than the currently installed driver kit, re-installation of the driver kit may not be necessary.

Note: The lpfc-install script does not support custom kernels. For example, kernels with Version_Release strings that do not match those of the original distribution kernel.

Note: Follow these steps before installing a new update CD to a distribution or applying a service pack to a distribution. Maintenance and errata kernels are supported.

Installing the LPFC Driver Kit into an Upgraded Kernel

To install the driver kit into an upgraded kernel:

1. Execute the lpfc-install script with the '--uninstall' option. Type:

   ```
   /usr/src/lpfc-install --uninstall
   ```

2. Upgrade the kernel and/or distribution.
3. Reboot the system with the new kernel.
4. Download the driver kit from the Emulex Web site or copy it to the system from the installation CD.
5. Log on as 'root' to a terminal, and unpack the tarball with the following command:

   ```
   tar xzf lpfc_2.6_driver_kit-<driver version>.tar.gz
   ```

6. Change to the directory that is extracted:

   ```
   cd lpfc_2.6_driver_kit-<driver version>/
   ```

7. Execute the 'lpfc-install' script with no options to install the new driver kit. Type:

   ```
   ./lpfc-install
   ```

8. Reboot the system to complete re-installation of the Emulex driver.

Installing the Unified Linux Drivers Kit

For OneConnect UCNAs, Emulex provides the ULDK, which includes all of the supported protocol drivers: FC/FCoE, NIC, and iSCSI.

To install the ULDK:

1. Install a supported Emulex adapter in the system. Refer to the adapter's installation manual for specific hardware installation instructions.
2. Remove any previously installed LPFC driver kits that were installed from the Emulex CD or downloaded from the Emulex Web site, (i.e. not part of a distribution’s kernel) before proceeding. Refer to “Uninstalling the LPFC Driver Kit” on page 7 for more information.
3. Download the ULDK from the Emulex Web site.
4. Log on as 'root' to a terminal, and unpack the tarball with the following command:

   ```
   tar zxvf elx_uldk_1.0.4.1_sles11.tar.gz
   ```

5. Change to the directory that is extracted:

   ```
   cd <driver name>_driver_kit-<driver version>/
   ```

6. Execute the 'elx_uldk_install.sh' script with no options to install the ULDK. Type:

   ```
   ./elx_uldk_install.sh
   ```

   The script installs all the protocol drivers contained in the ULDK (FC/FCoE, NIC, and iSCSI) for the currently running Linux kernel. Once the script has completed successfully, all the drivers are loaded. Reboot the system now to enable the newly added driver options in the ramdisk, or you can reboot the system later if you wish.

Uninstalling the ULDK

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

This section describes how to uninstall the ULDK.

To uninstall the unified driver:

1. Log on as 'root'.
2. If possible, exit all applications that use Fibre Channel-attached drives, then unmount the drives. If you cannot exit all applications that use Fibre Channel-attached drives, the uninstall will work properly, but you must reboot after the uninstallation is complete.
3. Execute the ‘elx_uldk_install.sh’ script. with the '--uninstall' option. Type:

   ```
   ./elx_uldk_install.sh --uninstall
   ```

Booting From a Non-Zero LUN Attached to an Emulex Adapter

This section describes how to configure SLES 10 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 LPFC adapter:

1. Configure the Emulex adapter bootBIOS to boot from the desired LUN.
2. Start the standard SLES 10 SP1 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 the **root partition** (or **boot partition** if you configured one) from the dropdown box.
7. Click the **Boot Loader Options** button. The Boot Loader Options window appears. Select the **Write generic Boot Code to MBR** checkbox.
8. Click **OK**.
9. In the Boot Loader Settings window, Click **Finish**.
10. Proceed with the installation.
11. During the first boot after the installation, use the GRUB command line to change all hd1 references to hd0, then continue the boot process.
12. Edit the GRUB configuration in /boot/grub/menu.lst to change all hd1 references to hd0.

Installing the OneCommand Manager Application

The OneCommand Manager 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 graphical user interface (GUI) and command line interface (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.

Refer to the OneCommand Manager User Manual, which is available on the Emulex Web site, for instructions on installing and using the OneCommand Manager.

Uninstalling the LPFC Driver Kit

Note: Driver parameter changes made using the OneCommand Manager or /etc/modprobe.conf persist if the driver is uninstalled. To return to the default settings, you must modify the settings in /etc/modprobe.conf.

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

This section describes how to uninstall a previous version of the Emulex 8.x driver for Linux. The uninstall procedure automatically restores the archived LPFC driver.

To uninstall the LPFC driver:

1. Log on as 'root'.

2. If possible, exit all applications that use Fibre Channel-attached drives, then unmount the drives. If you cannot exit all applications that use Fibre Channel-attached drives, the uninstall will work properly, but you must reboot after the uninstallation is complete.
3. Stop the OneCommand Manager application. Type:

```
cd /usr/sbin/hbanyware
./stop_ocmanager
```

4. Uninstall the Applications Kit. Refer to the OneCommand Manager User Manual on the Emulex Web site for instructions.
5. Copy the lpfc-install script to the temporary directory. For example:

```
cp /usr/src/lpfc/lpfc-install /tmp
```

6. Execute the lpfc-install script. with the '--uninstall' option. Type:

```
/tmp/lpfc-install --uninstall
```

Configuration

You can configure the driver by:

- Setting module parameters using modprobe and /etc/modprobe.conf.
- Using the sysfs interface (for parameters that can be changed after loading the driver).
- Using the OneCommand Manager. See the OneCommand Manager User Manual for more information.

Note: Driver parameter changes made using modprobe.conf or the OneCommand Manager persist if the driver is uninstalled. To return to the default settings, you must modify the settings in modprobe.conf.

Note: The Linux 2.6 kernel only supports setting the lpfc_log_verbose, lpfc_devloss_tmo and lpfc_use_adisc driver parameters for individual adapters.

Other driver parameters must be applied to all adapters contained in the host. See the “LPFC Driver Parameters Reference Table” on page 13 for a complete list of driver parameters.

Driver Configuration Methods Using modprobe and /etc/modprobe.conf

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

Note: Emulex recommends using the OneCommand Manager or the hbacmd utility to change parameters. See the OneCommand Manager User Manual for more information.

Temporary Configuration Method

When you manually load the driver as a module using the modprobe command and change one or more driver parameter values, it is a temporary configuration. These changes are considered temporary because they are valid for the current session only or until the driver is unloaded again. Modprobe uses the modprobe.conf file, but parameters passed to it using the command line override parameters in the modprobe.conf file.

Values can be expressed in hexadecimal or decimal notation.

Example of Temporary Configuration

You want to temporarily set lun_queue_depth to 20 (default is 30) for all host bus adapters in your system. Load the driver with the following command:

```
modprobe lpfc lpfc_lun_queue_depth=20
```

Persistent Configuration Method

To make the driver parameters persistent across module loads and reboots, modify the /etc/modprobe.conf file. If driver parameters are modified in /etc/modprobe.conf, the 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 12 to learn how.

The driver parameters are specified in /etc/modprobe.conf via the "options" command. For example the following sets the verbose flag.

```
options lpfc lpfc_log_verbose=0xffff
```

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.

Temporary Driver Configuration by Read/Write to sysfs

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

Note: Sysfs changes only exist while the driver is loaded and are lost when the driver is unloaded or rebooted.

The sysfs filesystem is mounted and available as /sys. You must first identify the scsi_host which represents the adapter for which you wish to modify the driver parameters. All scsi_hosts bound to the LPFC 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 driver parameters for this particular adapter as:

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

An example output is as follows:

```
-r--r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/lpfc_ack0
-rw-r--r--  1 root root 4096 Feb 28 17:03 /sys/class/scsi_host/host7/
lpfc_fcp_bind_method
-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
```

Notice that the 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.

For example:

```
[root@emulex]# cat /sys/class/scsi_host/host7/lpfc_log_verbose
0
```

Notice that the current value of lpfc_log_verbose is zero. To set it to 0xffff:

```
[root@emulex]# echo 0xffff > /sys/class/scsi_host/host7/lpfc_log_verbose
[root@emulex]# cat /sys/class/scsi_host/host7/lpfc_log_verbose
0xffff
```

Creating a New Ramdisk Image

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

Note: You must perform this step whenever the LPFC options in /etc/modprobe.conf are changed and you want the change to take effect on the next reboot.

For Installed LPFC Driver Kits

To create a new initial ramdisk image:

1. su to ‘root’.
2. Type:

   ```
   cd /usr/src/lpfc
   ```

3. Execute the lpfc-install script using the '--createramdisk' option. Type:

   ```
   ./lpfc-install --createramdisk
   ```

For Distribution In-Box LPFC Drivers

To create a new initial ramdisk image:

- For SLES10 PPC64 architecture distributions type:

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

- For SLES10 non-PPC64 architecture distributions type:

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

- For RHEL5 PPC64 and non-PPC64 architecture distributions type:

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

Dynamically Adding LUNs and Targets

The Emulex driver for Linux enables you to dynamically add 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 /usr/sbin/lpfc.

LPFC Driver Parameters Reference Table

The driver parameters determine some aspects of the driver behavior. The following tables list the driver parameters. Some driver parameters can be modified and take effect only on a driver load while others can be modified dynamically and take effect immediately. The tables also list the default, minimum and maximum values for these parameters.

Table 2: LPFC Static Parameters (Requires a driver reload to change)

Variable	Default	Min	Max	Comments	Visible using sysfs
lpfc_ack0	0	0=Off	1=On	Uses ACK0 for class 2.	Yes
lpfc_dev_loss_initiator	0	0	1	Engage devlos timeout for initiators.	Yes
lpfc_discovery_threads	32	1	64	Specifies the maximum number of ELS commands that can be outstanding for a discovery. **NOTE:** The 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.	No
lpfc_enable_da_id	0	0 = Disabled (default) 1 = enable – a DA_ID CT command will be sent to the fabric when logging out.		This parameter controls whether the driver will issue a DA_ID CT command to the fabric when VPorts logout of the fabric.	No
lpfc_enable_hba_ heartbeat	1	0 = heartbeat disabled 1 = heartbeat enabled		Controls the adapter heartbeat logic in the driver. If the heartbeat is enabled and the heartbeat logic detects that the adapter is nonfunctional, the driver will shutdown the adapter.	Yes

Table 2: LPFC Static Parameters (Requires a driver reload to change) (Continued)

Variable	Default	Min	Max	Comments	Visible using sysfs
lpfc_enable_hba_reset	1	0 = hba reset disabled 1 = hba reset enabled		Controls whether hba_resets will be allowed by the driver to pass to the adapter. This is used as a debugging tool.	Yes
lpfc_enable_npiv	0	0	1	Controls the driver's ability to use NPIV to create virtual ports. It defaults to off (0) which prevents the driver from creating any virtual ports. When enabled (set to 1) it enables you to create and delete virtual ports (if supported by the fabric).	Yes
lpfc_fcp_class	3	2	3	The FC class for FCP data transmission.	Yes
lpfc_fcp_imax	10000	636	651042	Sets the maximum number of fast-path FCP interrupts per second. Only applicable for OneConnect UCNAs.	Yes
lpfc_fcp_eq_count	4	1	8	Sets the number of fast-path FCP event queues, if available. Only applicable for OneConnect UCNAs.	Yes
lpfc_fcp_wq_count	4	1	32	Gets the number of fast-path FCP work queues, if available. Only applicable for OneConnect UCNAs.	Yes
lpfc_hba_queue_depth	8192	32	8192	The maximum number of FCP commands that can queue to an Emulex adapter.	Yes
lpfc_lun_queue_depth	30	1	128	The default maximum commands sent to a single logical unit (disk).	Yes
lpfc_scan_down	1	0=Off	1=On	Selects method for scanning ALPA to assign a SCSI ID.	Yes

Table 2: LPFC Static Parameters (Requires a driver reload to change) (Continued)

Variable	Default	Min	Max	Comments	Visible using sysfs
lpfc_sg_seg_cnt SLI-4 CNA All other CNAs and HBAs	 50 64	 50 64	 498 4096	Controls the max scatter gather segment count passed to the driver. **NOTE:** On OneConnect UCNAs, these values are restricted by the LPFC driver to specific values due to restrictions imposed by the hardware. Valid values are 50, 114, 242, and 498.	Yes. Shown as sg_tablesize
lpfc_sli_mode	0	0 = auto (default) 2 = SLI 2 mode 3 = SLI 3 mode		This parameter allows you to force the SLI mode requested by the adapter driver. This parameter has no effect on OneConnect UCNAs.	No
lpfc_max_luns	255	0	65535	Specifies the maximum number of LUN IDs per target. 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.	Yes
lpfc_multi_ring_rctl	4	1	255	Identifies RCTL for additional ring configuration. **NOTE:** Only used when multi_ring_support is enabled.	Yes
lpfc_multi_ring_support	1	1	2	Determines the number of primary SLI rings over which to spread IOCB entries.	Yes
lpfc_multi_ring_type	5	1	255	Identifies TYPE for additional ring configuration. **NOTE:** Only used when multi_ring_support is enabled.	Yes
lpfc_use_msi	0	0 = MSI disabled 1 = MSI enabled 2 = MSI-X enabled		Controls whether the driver uses Message Signaled Interrupts.	Yes

All LPFC dynamic parameters are read/write using sysfs.

Table 3: LPFC Dynamic Parameters (Do not require a driver reload to change)

Variable	Default	Min	Max	Comments
lpfc_cr_count	1	1	255	This parameter determines the values for I/O coalescing for cr_count outstanding commands. Not applicable for OneConnect UCNAs.
lpfc_cr_delay	0	0	63	This parameter determines the values for I/O coalescing for cr_delay (msec) outstanding commands. Not applicable for OneConnect UCNAs.
lpfc_devloss_tmo	30	0	255	Seconds to hold I/O error if device disappears.
lpfc_enable_auth	0	0	1	This driver property specifies if the DHCHAP is enabled or not. When set to 1, DHCHAP is enabled. When set to 0, DHCHAP support is disabled. **NOTE:** This property requires a link reset to activate.
lpfc_fdmi_on	0	0	2	False (0) if disabled. (1) or (2) if enabled depending on type of support needed.
lpfc_link_speed	0	0=auto select 1=1 Gb/s 2=2 Gb/s 4=4 Gb/s 8=8 Gb/s		Sets link speed. **NOTE:** This parameter does not effect FCoE 10 Gb/s capable adapters.
lpfc_log_verbose	0x0	0x0	0xffff	(bit mask) Extra activity logging.
lpfc_nodev_tmo (depreicated)	30	1	255	Seconds to hold I/O error if device disappears. This parameter will not work if you altered lpfc_devloss_tmo. **NOTE:** This is a deprecated field and lpfc_devloss_tmo should be used instead.
lpfc_pci_max_read	2048	512, 1024, 2048, 4096		Maximum DMA read byte count.
lpfc_poll	0	1= poll wiith interrupts enabled 3 = poll and disable FCP ring interrupts		Sets FCP ring polling mode control.
lpfc_poll_tmo	10	1	255	Milliseconds the driver waits between polling FCP ring interrupts.
lpfc_topology	0	0x0=loop then P2P 0x2=P2P only 0x4=loop only 0x6=P2P then loop		FC link topology (defaults to loop, if it fails attempts point-to-point mode). Not applicable for OneConnect UCNAs.

Table 3: LPFC Dynamic Parameters (Do not require a driver reload to change) (Continued)

Variable	Default	Min	Max	Comments
lpfc_use_adisc	0	0=Off	1=On	Sends ADISC instead of PLOGI for device discovery or RSCN.

Using udev for Persistent Naming

SLES 10 is configured by default with udev to provide persistent names for hard disks, including FC attached disks.

Using udev to Discover Logical to Physical Mappings for sd Devices

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 shown below:

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

In the above 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 From SAN Using Persistent Names

To use a persistent name for a boot device (SLES 10):

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 17.
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 which refer to this root partition by either it's /dev/sd name or a file system LABEL to use the persistent name as well.

To use a persistent name for a boot device (RHEL 5):

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 17.

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 it's /dev/sd name or a file system LABEL to use the persistent name as well.

Using udev with st Devices

The udev rules for tape devices are the same for disk devices. There must be a unique ID that persists across initiator reboots and persists regardless of discovery order.

Another thing to consider is whether or not the tape device is one of many SCSI tape devices residing behind an FC controller, or if it is an FC-Tape device. If it an FC-Tape device, then the WWPN is unique and can be used to create the persistent name. In fact, the scsi_id program 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.

Below are examples of each scenario. The first example is that of an FC-Tape device. This example uses SCSI generic (sg) rather than the SCSI tape driver.

```
[root@localhost ~]# scsi_id -g -s /sys/class/scsi_generic/sg0 350060b000029b592
```

The value returned has a leading prefix of 3. This value is the NAA type and what follows is the controller's WWPN.

Below is an example of the same tape device and a scsi_id call. The response is the same.

```
[root@localhost ~]# 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 /etc/scsi_id.config.

Below is another example for a different FC-Tape Vendor. Notice that the answer is similar with respect to the leading digit and the WWPN.

```
[root@localhost ~]# /sbin/scsi_id -g -s sys/class/scsi_tape/nst0 35005076300015101
```

Below is an example of a FC-SCSI Tape device. Notice that when the Emulex driver loads, the SCSI midlayer 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 example below is what the scsi_id call returns:

```
[root@localhost ~]# scsi_id -g -s /sys/class/scsi_tape/nst0
1IBM     ULTRIUM-TD2     1110133831
[[root@localhost ~]# scsi_id -g -s /sys/class/scsi_tape/nst1
1IBM     ULTRIUM-TD2     1110133994
```

Notice that the unique ID is actually comprised of three value with space delimiters. A udev rule must have a unique ID for the device, meaning all three parts of this returned string are required. To do this, use the following command.

```
[root@localhost ~]# scsi_id -u -g -s /sys/class/scsi_tape/nst0
1IBM_____ULTRIUM-TD2_____1110133831
[root@localhost ~]# scsi_id -u -g -s /sys/class/scsi_tape/nst1
1IBM_____ULTRIUM-TD2_____1110133994
```

Creating the udev persistent name for SCSI tape uses the same process as SCSI disk once the SCSI ID call needed to extract a unique ID is known.

Below is the rule for the FC-Tape device:

```
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 follows:

```
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_____1110133831",
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 finally, here is the output of the rule:

```
[root@localhost ~]# udevtrigger
[root@localhost ~]# 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
```

Further Information About Persistent Names

Refer to 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

http://www.novell.com/documentation/sles10/pdfdoc/stor_evms/stor_evms.pdf

Working with Virtual Ports (VPorts)

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 the sysfs section, 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 Applications kit.

When NPIV is enabled and VPorts are configured it may take longer for the adapter to finish discovery in some cases due to the fact that 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 will increase. To compensate for this extended amount of time taken in discovery it is recommended that you set the lpfc_devloss_tmo parameter to 60 when npiv is enabled.

Note: Ensure you are using the latest recommended firmware for VPort functionality. Check the Emulex Web site for the latest firmware.

Note: 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 off line.

Note: You can only create virtual ports on 4 Gb/s and 8 Gb/s adapters. You cannot create virtual ports on 1 Gb/s and 2 Gb/s adapters.

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>
```

For example:

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

would create a VPort with port name of 10000000c94ac63a and a node name of 20010000c94ac63a on the physical port with scsi_host name "host7". This script will fail if the VPort is not created.

Note: You must supply the physical port’s host number, WWPN and WWNN when using the mkvport.sh script.

Note: It is possible for a VPort to be created successfully, but 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 off line.

The rmvport.sh Script

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>
```

For example

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

would delete the VPort with port name of 10000000c94ac63a and node name of 20010000c94ac63a. This script will fail if the VPort is not deleted and may take up to 30 seconds to complete.

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

The lsvport.sh Script

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

For example:

```
[root@curly scripts]# ./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
  lpfc4: host10 10000000c94ac63a:20010000c94ac63a  NPIV Virtual (VPI 1)
lpfc3: host9 10000000c93cc8dc:20000000c93cc8dc LPe12000 NPIV Physical
[root@curly scripts]#
```

For LPFC0 and LPFC1, “NPIV Not Supported” means that this adapter/firmware combination does not support the creation of VPorts.

For LPFC2, “NPIV Physical” refers to a physical port of this adapter.

For LPFC4, “NPIV Virtual” refers to a VPort of this adapter.

The VPort Sysfs Tree

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:

```
[root@curly scripts]# ls /sys/bus/pci/drivers/lpfc/0000:07:00.0/host8/
fc_host:host8  host10  power  scsi_host:host8  uevent
[root@curly scripts]# ls /sys/bus/pci/drivers/lpfc/0000:07:00.0/host8/host10
fc_host:host10  power  scsi_host:host10  uevent
```

Above host 8 is the physical port and host 10 is a virtual port that was created on host 8.

Driver Version 8.2.0.x sysfs Structure

For the 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.

```
[root@doc ~]# ls /sys/class/fc_host/host5/device/
fc_host:host5  power scsi_host:host5
host6 uevent
```

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, but also displays a list of VPorts (in the form of hostx) that were created on this physical port. In the previous example, host6 is a VPort of physical port host5.

Vport sysfs Entries

The following table describes VPort sysfs entries.

Note: Vport sysfs entries in Table 5 are only present if the driver was loaded with lpfc_enable_npiv enabled.

Table 4: Vport sysfs Entries

Vport sysfs Entries	Type	Range/ Input	Location and Description
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 will only exist if the vport_create and vport_delete sysfs entries exist. If an fc_host does not support NPIV then this sysfs entry may not exist. **NOTE:** Use this sysfs entry along with max_npiv_vports to determine whether the maximum number of VPorts have been created on this fc_host.
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_hosts underlying hardware. This sysfs entry will only exist if the vport_create and vport_delete sysfs entries exist. If an fc_host does not support NPIV then this sysfs entry may not exist. **NOTE:** Use this sysfs entry along with npiv_vports_inuse to determine whether the maximum number of VPorts have been created on this fc_host.
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 present a WWPN and WWNN on the fabric as indicated by the WWPN and WWNN that is input to this sysfs entry. This sysfs entry will return a 0 if the VPort creation was successful. A non-zero value indicates that the VPort failed to be 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 4: 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 will be immediately deleted. This entry returns a 0 if the VPort deletion was successful. A non-zero value indicates that the VPort failed to be deleted. If an fc_host does not support NPIV then this sysfs entry may not exist. **NOTE:** This entry will delete the VPort even if there are mounted file systems being accessed through this VPort and/or open files.
node_name	read-only	16 byte hex. value	/sys/class/fc_host/hostX/node_name This entry displays the physical or virtual port's node name. This is the value that is assigned by you upon creation and transmitted to the fabric upon fabric login.
port_name	read-only	16 byte hex. 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. This is the value that you assign when you create a VPort. It is transmitted to the fabric upon fabric login.
lpfc_restrict_login	read/ write	0=Off 1=On (default)	/sys/class/scsi_host/hostX/lpfc_restrict_login (VPorts only) This entry sets the VPort's behavior when discovering targets in the SAN. The default behavior (1) prevents the VPort from logging into other initiator ports in the SAN. It will also reject logins from other ports in the SAN because it assumes that all ports that send a PLOGI are initiators. When this sysfs entry is turned off the driver will attempt to log in to every port that it can access in the SAN and will accept logins from all ports. **NOTE:** This parameter was created to reduce the amount of hardware resources (RPI) that the driver requires. In a SAN where there are other initiators this feature will greatly reduce the number of RPI that the driver utilizes.
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 (0) will only log in to nports 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 ported adapter). If this parameter is turned on (1) then the port will attempt to log in to all nports, even if they are physically located on the same port. **NOTE:** This parameter was created to reduce the amount of hardware resources (RPI) that the driver requires. In a configuration where there are many VPorts on one physical port this feature will greatly reduce the number of RPI that the driver utilizes.

VPort Configuration Limits

The following is a list of limits that are supported by the 8.2 driver and configurations that were tested with it. It is highly recommended that you adhere to these limits. Configurations exceeding any one or more of these limits are unsupported. These limits are broken up into two groups. Enforced limits are limits that the driver is able to enforce and will prevent you from exceeding. Un-enforced limits are limits that the driver cannot enforce and configurations that exceed these limits are unsupported.

Configuration limits:

- All I/O to devices accessed through a VPort must be stopped and all file systems must be unmounted before the VPort is deleted.
- For enterprise class adapters, the maximum number of virtual ports configurable on a physical port is 64. The hardware will allow 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 use-cases of NPIV that involve virtual server environment include associating a virtual port with a virtual machine, and placing the virtual machine in its own zone. This will result 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 will typically be 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 will include devices going lost after link events.
- Minimum lifetime of a virtual port: 60 seconds. There is an un-enforced limit of 60 seconds between the creation of a virtual port and the deletion of the same virtual port. Virtual ports are designed to be an entity that lives 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 Fibre Channel or SCSI discovery when the command to create a virtual port is finished.
- SMB (3 digit model number) adapters must be zoned so that they can not access adapters with virtual ports configured. SMB adapters have a limited number of resources that make it impossible to operate in the same zone as an adapter that has configured virtual ports.

DHCHAP Authentication and Configuration

The LPFC driver for Linux version 8.2.0.x supports the FC-SP/Authentication DHCHAP (Diffie-Hellmann Challenge Handshake Authentication Protocol). To activate FC-SP/Authentication between the adapter host port and fabric F_port using DHCHAP, you 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:

- The fcauthd daemon must be running.
- The lpfc_enable_auth module parameter must be set to enabled.

The 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 loading the LPFC driver 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. Refer to “LPFC Dynamic Parameters (Do not require a driver reload to change)” on page 16 for the parameter values.

The 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 prior to driver load. 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. This script accepts the standard daemon parameters: start, stop, reload, status, restart, and condrestart. 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 (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 is used to display the current status of the fcauthd daemon. The status should be either running or stopped.
- restart - The restart command performs a stop and then a start.
- 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.

Authentication Configuration Parameters

You can configure each port’s authentication parameters using the OneCommand Manager application. Refer to the OneCommand Manager Application User Manual to learn how.

Setting Remote and Local Passwords

You can configure each port’s password using the OneCommand Manager application. Refer to the OneCommand Manager Application User Manual to learn how.

Network Driver Performance Tuning

Network driver performance tuning improves performance of the network and TCP Offload driver for the Windows Server operating system, Linux Server, and ESX Server. The OneConnect UCNA is an x8, Generation 2 ("Gen 2", or Gen2) PCI-Express device and requires substantial memory bandwidth in a system to support 10 Gb/s data streams.

Improving Performance with PCI-Express Bandwidth

OneConnect UCNA performance may be improved by selecting a more efficient PCI-Express packet payload size. If the system BIOS allows selection of a larger PCI-Express packet size, selecting at least a 512-byte PCIe packet payload size provides the best efficiency for PCIe data transfers.

Improving Performance with TCP Offload

TCP offload helps memory bandwidth significantly by eliminating the data copy of receive packets. This higher memory bandwidth leads to better network performance.

Most computers offer multiple distinct memory channels, or memory interleaves, which may not be enabled by default. Check the manufacturer's documentation and BIOS parameters for details ion enabling optimal memory bandwidth features. Typically, all the DIMM slots must be populated to make use of all the memory channels. As a general rule, more DIMMs provide better performance by allowing a higher degree of memory-access interleaving to occur.

Some servers may allow memory mirroring, where the total memory is divided in half and each location is stored twice. This allows fault recovery if one memory location detects an error, but it greatly reduces the perceived memory bandwidth of the system.

Nearly any desktop or low-end server has enough memory bandwidth for OneConnect UCNA to support DMA at 20 Gb/s of data (10 Gb/s read, 10 Gb/s write). However, most of the memory demands come from the processor accessing the data for either packet copies in the non-offloaded networking stack or application accesses. All processor memory accesses use the front side bus (FSB). The clock speed of this bus is critical for allowing efficient memory bandwidth.

Note: Systems with a faster Processor Front Side Bus (FSB) clock speed perform better
Note: than those with slower FSB clock speeds.

Linux Network Driver

The following section discusses ways to use various OneConnect properties and Linux properties to performance tune a system. You can read and set most OneConnect driver settings by using the ethtool utility.

Network Buffer sizes and TCP Options

The optimal size for the network queues and buffers will depend on several factors such as protocol, number of streams (connections), request size, and application behavior. The following network configuration settings are a good combination to get best uni-directional transmit and receive performance with six or more TCP connections/UDP streams:

```
echo 4096 87380 4194304 > /proc/sys/net/ipv4/tcp_rmem
echo 4096 16384 4194304 > /proc/sys/net/ipv4/tcp_wmem
echo 64000000 > /proc/sys/net/core/rmem_default
echo 64000000 > /proc/sys/net/core/rmem_max
echo 32000000 > /proc/sys/net/core/wmem_default
echo 32000000 > /proc/sys/net/core/wmem_max
echo 0 > /proc/sys/net/ipv4/tcp_timestamps
echo 0 > /proc/sys/net/ipv4/tcp_sack
ifconfig eth<N> txqueuelen 100
```

The above settings assume ideal conditions such as low latency, zero or close to zero packet loss in the network, enough free memory, and 1 Gb/s path to peer system.

The tcp_rmem and tcp_wmem values above are also the default values in recent updates of RHEL 5 and SLES 10 distributions. If your application requires best throughput with very small number of connections (less than four), it may help to increase the tcp_rmem and tcp_wmem to much larger values:

```
echo 4096 87380 16777216 > /proc/sys/net/ipv4/tcp_rmem
echo 4096 65536 16777216 > /proc/sys/net/ipv4/tcp_wmem
```

TCP Segmentation Offload (TSO)

TCP Segmentation Offload (TSO) is enabled by default. In networks with very little loss, TSO improves performance considerably and must remain enabled. The proc variable: /proc/sys/net/ipv4/ tcp_tso_win_divisor controls how aggressive the network stack can be in making TSO requests. TSO divisor values in the range 2 to 16 are recommended for a low loss network. The default value of 3 in REHL5 and SLES 10 distributions seem to be the optimal one for a no loss network.

Smaller divisor values will result in larger TSO chunks and better throughput as well as CPU utilization. However, if the receiver or the network is dropping frames (too many retransmits on transmit side as indicated by netstat -st), it may help to make TSO less aggressive by increasing the divisor value or even turn off TSO. To set the divisor to 8, run:

```
echo 8 > /proc/sys/net/ipv4/tcp_tso_win_divisor
```

To turn TSO on or off, run the ethtool commands:

```
ethtool -K <ethX> tso off
ethtool -K <ethX> tso on
```

where ethX is the name of the Ethernet device you are working on.

Flow Control

You can enable and disable the OneConnect to respond to flow control pause frames from the other side (switch or router) using the following ethtool commands:

```
ethtool -A <ethN> rx on
ethtool -A <ethN> tx off
```

where ethN is the number of the Ethernet interface you are working on.

OneConnect can be configured to send flow control pause frames using the following ethtool commands:

```
ethtool -A <ethN> rx on
ethtool -A <ethN> tx off
```

where <ethN> is the number of the Ethernet interface you are working on.

Refer to the switch/router documentation to determine how link level flow control can be configured on the switch/router to which the OneConnect port is connected.

RX Frame Coalescing/Large Receive Offload (LRO)

The OneConnect driver consolidates small TCP segments to a large frame before passing to the network stack. This could give considerable boost to TCP receive performance. RX frame coalescing is enabled by default. In some configurations where the end point for the TCP connection to which the packets belong is not in the current server (e.g.: router), RX coalescing should not be enabled. To disable RX coalescing, run the ethtool comand:

```
ethtool -C <ethN> rx-frames 1
```

where ethN is the number of the Ethernet interface you are working on.

Maximum Transmission Unit (MTU)

The OneConnect driver FOR IINUXsupports a MTUs between 256 bytes and 8974 bytes. The default MTU is set to 1500. If other elements in the network path support larger MTU, you can increase the MTU up to 8974 using the ifconfig command. To do this run:

```
ifconfig <ethN> mtu 8974
```

where <ethN> is the number of the Ethernet interface you are working on.

The largest MTU that does not cause IP fragmentation in the network path will give the best performance. By default, the Linux network stack monitors the lowest path MTU along each open network path (Path MTU Discovery) and adjusts the MSS of established TCP connections to prevent IP fragmentation.

Note: An MTU size of 8174 is recommended for the optimal performance, CPU load and memory utilization.

Interrupt Coalescing

On the OneConnect driver, adaptive interrupt coalescing is enabled by default. In light traffic, the interrupt delay is disabled for lower latency. As the number of interrupts/second increases, the delay is increased to the default higher limit of 120 microseconds. You can disable adaptive interrupt coalescing for both RX and TX, by running the ethool command:

```
ethtool -C <ethN> adaptive-rx off
```

where ethN is the number of the Ethernet interface you are working on.

When adaptive interrupt coalescing is enabled, the default lower and higher interrupt delay limits of 0 and 120 microseconds can be changed. To do this, run the ethtool commands:

```
ethtool -C <ethN> rx-usecs-high 40
ethtool -C <ethN> rx-usecs-low 8
```

where ethN is the number of the Ethernet interface you are working on.

The granularity for delay is 8 microseconds. Although the above commands use the rx option of ethtool, they change the delay for both TX and RX. Currently, there is no separate control for interrupt delay for RX and TX.

If your application requires low/predictive latency, it is recommended that you turn off adaptive interrupt coalescing and set rx-usecs to 0.

CPU Binding Considerations

When using MSI-X, for best performance, the RX and TX interrupts from the OneConnect UCNA must be distributed across all available CPUs. Read /proc/interrupts to see the current distribution of interrupts:

cat /proc/interrupts

```
           CPU0          CPU1
 0         1556391       0             IO-APIC-edge timer
 1         30            2206
 8         1             0
 9         0             0
 12        96            0
 74        2846          7013
 82        0             0
 98        0             0
 114       104806161     0
 122       47578488      0
 130       48014463      0
 138       17150482      0
 169       6             1
 177       6             0
 NMI:      0             0
 LOC:      1555444       1555793
 ERR:      1
 MIS:      0
```

In the above example, RX and TX interrupts from both port0 (eth0) and port1 (eth1) are directed to CPU0. This could lead to CPU0 becoming very busy, making it a bottleneck. To direct the RX and TX interrupts from port1 to CPU1, write the CPU mask into smp_affinity mask of the corresponding interrupt vector:

```
echo 2 > /proc/irq/130/smp_affinity
echo 2 > /proc/irq/138/smp_affinity
```

If there are more than two cores, it is a good idea to direct all the four OneConnect UCNA interrupts to four different cores. If the CPU has four cores, use the four cores that belong to the same physical CPU for best performance.

In an SMP system, although the scheduler attempts to distribute the load, you can achieve more consistent performance by binding the send/receive processes to the appropriate CPU. To find the appropriate CPU to bind to, first find the current utilization of each CPU using the command top. For example, in a quad core system, if the RX and TX interrupts from port0 and port1 are bound to CPUs 0,1, 2 and 3 respectively, and while the application/test is running, top shows that CPUs 0 and 2 are extremely busy and CPUs 1 and 3 are relatively idle, it helps to bind the application(s) sending/receiving data to CPUs 1 and 3. This can be done using the taskset command. For example:

```
# taskset -c 1,3 ./netserver
```

Starts the command netserver with affinity to CPUs 1 and 3.

If the application / test is already running, it can be bound to a set of CPUs by specifying the bit mask of the CPUs and the PID of the process. For example, if the PID of the process is 2045:

```
# taskset -p 0xA 2045
```

sets the affinity to CPUs 1 and 3.

Note: For best send and receive performance, use dual core CPUs with large shared L2 cache.

Use the taskset command in Linux to bind a process to a CPU. For example, to run netserver with affinity to CPU ID 1, run:

```
taskset -c 1 ./netserver
```

MSI-X Interrupts

If your motherboard and Linux version supports MSI-X, you can use the insmod parameter msix=1 to enable MSI-X interrupt instead of INTx interrupts. MSI-X will give better performance in SMP configuration with two OneConnect adapters.

Note: MSI-X is supported in SLES 10 as well as RHEL 5 releases.

SELinux Auditing

Turning off auditing and SELinux could improve CPU utilization and in some cases give better throughput. You can disable auditing by appending audit=0 in the boot command line. You can turn off SELinux by specifying: selinux=0 in the boot command line.

For example, the boot command line:

```
kernel /boot/vmlinux-2.6.18 ro root=/dev/md0 selinux=0 audit=0
```

will boot the Linux kernel with selinux and audit features disabled.

You can get better CPU utilization and in some cases better throughput by disabling kernel debug options like CONFIG_DEBUG_SLAB. This will require you to build the kernel image and modules.

Troubleshooting

Introduction

There are several circumstances in which your system may operate in an unexpected manner. The Troubleshooting section explains many of these circumstances and offers one or more workarounds for each situation.

Unusual Situations and their Resolutions

General Situations

Table 5: General Driver Situations

Situation	Resolution
FC link fails to come up.	If a FC link fails to come up, verify that an 8 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/sec adapters. For LP21000 adapters, ensure the adapter is not in maintenance mode and that it is not running the manufacturing firmware.
Error states "Authentication is enabled but authentication service is not running."	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 check if fcauthd is running execute /etc/init.d/fcauthd status. To start fcauthd execute /etc/init.d/fcauthd start.
If a SAN configuration has 256 targets mapped by the LPFC driver, any additional added targets do not get a target ID mapping by the driver and cause target discovery to fail. Removing targets or reinitializing 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 will clear the driver's consistent binding table and free target IDs for new target nodes.
In some cases, after loading an OEM supplied combined firmware/OpenBoot image you will not be able to enable BootBIOS from the lputil Boot BIOS Maintenance menu. Should you encounter this problem after loading the OEM combined firmware/ OpenBoot image, follow the steps outlined in the resolution.	1. Download the current OpenBoot only image for your adapter from the Emulex Web site. 2. Load the current OpenBoot only image following steps listed in Updating BootBIOS section of this manual. 3. Run lputil, return to Boot BIOS Maintenance menu. 4. Enable BootBIOS.
rmmod fails to unload LPFC 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.	1. Make the Logical Volume Group unavailable. Type: lvchange -a n xxxxxxx where xxxxxx is the Volume Group Name. 2. Stop the OneCommand Manager. 3. Stop Device Mapper.

Table 5: General Driver Situations (Continued)

Situation	Resolution
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.
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 or the fcauthd daemon, when the OneCommand Manager is installed and running or when FC disks connected to a LightPulse adapter are mounted.	Stop the OneCommand Manager before attempting to unload the driver. The script is located in the /usr/sbin/hbanyware directory. Type: ./stop_ocmanager Unmount any disks connected to the adapter. Unload the driver. Type: rmmod lpfc
An lspci will show recent Emulex adapters as "unknown". This is because of the delay of getting new product ID's into the Linux development cycle.	None at this time.
Slow targets or extended link faults on the storage side may result in storage being marked off-line by the mid-layer and remaining off-line (not recovered) when the link faults are corrected.	This version of the driver should eliminate this problem. However, should you experience off-line device issues, increase the SCSI command timeout to a value greater than or equal to sixty seconds. Emulex also provides a script which addresses this issue (for 2.6 kernels). To access the lun_change_state.sh script, click http://www.emulex.com/support/linux/index.jsp, then click the link to the appropriate driver, and click the Linux tools link.
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 midlayer. 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 IO error of hex 6000000.	Emulex provides a script which addresses this issue. To access the set_target_timeout.sh script, click http://www.emulex.com/support/linux/index.jsp, then click the link to the appropriate driver, and click the Linux tools link.
LPFC 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 adapter firmware to minimum supported revision listed in installation guide (or newer).
Loading the LPFC driver on SLES 10 reports "unsupported module, tainting kernel" in system log.	This message is logged by the kernel whenever a module which is not shipped with the kernel is loaded. This message can be ignored.
System panics when booted with a failed adapter installed.	Remove the failed adapter and reboot.
LPFC driver unload on SLES 10 causes messages like the following to be logged in the system log: "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 hotplug scripts and can be safely ignored.

Table 5: General Driver Situations (Continued)

Situation	Resolution
Driver Install 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" error message. When upgrading the kernel, rpm generates the following error: "No module lpfc found for kernel KERNELVERSION". **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.**	These three situations may 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 or not 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.
Driver uninstall fails. The lpfc-install --uninstall script fails with an error.	Try the following solutions: • Uninstall the OneCommand Manager and SSC software packages. These can be removed by running the ./uninstall script from the HBAnyware installation directory. • Unmount all FC disk drives. • Unload the lpfcdfc and LPFC driver. • Use rpm -e lpfcdriver and -e hbanyware and uninstall the new kits.
The OneCommand Manager software package will not install. An error message states that: "inserv Service Elxlpfc has to be enabled for service ElxDiscSrvinserv: exiting now/sbin/ inserv failed exit code 1."	Reinstall the driver with the lpfc-install script.
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 will attempt to install the driver into a ramdisk that follows the naming scheme used by Red Hat or SLES kernels. • The SLES naming scheme for 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: (i.e., /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.

Table 5: General Driver Situations (Continued)

Situation	Resolution
The Linux SCSI subsystem only sees 8 LUNs when more are present.	Some SCSI drivers will not scan past 8 LUNs when the target reports as a SCSI-2 device. Force SCSI bus scan with /usr/sbin/ lpfc/lun_scan. SuSE supplies /bin/rescan-scsi-bus.sh which can be changed to scan everything.
Cannot See Multiple Zones from the Management Server. Cannot see multiple zones on the same screen of my management server running the OneCommand Manager.	Provide a physical FC connection into each of the zones. For each zone you want to see, connect an Emulex OneCommand Manager enabled port into that zone. Use Out-of-Band discovery, Ethernet, to connect to the undiscovered server.

Linux iSCSI

The following table provides Linux iSCSI troubleshooting information for the OneConnect UCNA.

Situation	Resolution
Overall failure.	Use the iSCSISelect utility to clear the Adapter Configuration. 1. From the Adapter menu, select Clear Configuration, then press <Enter>. 2. A message appears asking if you want to clear the current configuration. Press <Y>. 3. You are cautioned that the operation will remove any existing configuration permanently. Press <Y>. 4. After you clear the Adapter Configuration, reboot the system and then reconfigure the OneConnect UCNA.
The firmware fails to flash.	Use the CD-ROM ISO image located on CD2 to flash the firmware.
The iSCSI boot install fails.	• Verify the Boot target/LUN connectivity in iSCSISelect. • Check the system BIOS for boot device priority order.
The firmware becomes corrupted or non-responsive.	Update the firmware by using the Flash utility. To update the firmware, follow these steps: 1. Locate the ISO image file on CD2 and use it to create a bootable CD. 2. Boot to CD on a OneConnect UCNA-installed system. 3. Press <Y> when asked if you want to continue to update the firmware version. The firmware automatically updates 4. When complete, remove the flash CD from the CD drive, reboot, and verify that the BIOS banner shows the updated version.

Linux NIC

The following table provides Linux NIC troubleshooting information for the OneConnect UCNA.

Situation	Resolution
During boot, the system hangs after the OneConnect BIOS banner is displayed.	The firmware may be corrupted and may need to be reflashed. Update the firmware by using the Flash utility: 1. Locate the ISO image file on installation CD2 and create a bootable CD. 2. Boot to a CD on a OneConnect UCNA-installed system. 3. Press <Y> when asked if you want to continue to update to the firmware version. The firmware automatically updates 4. When complete, remove the flash CD from the CD drive, reboot, and verify that the BIOS banner shows the updated version.
The driver works but the transmit and receive data rates are not near 10G/bs line rate.	There could be several reasons for poor performance. The driver logs a warning message if the card is found in a suboptimal slot. If you see this message, in /var/log/messages, move the card to the proper slot. For more information on getting the best performance from a OneConnect UCNA, see “Network Driver Performance Tuning” on page 26.

Linux Event/Error Log Codes

Retrieving Linux NIC Error Log Codes

Like all other driver and operating system messages, all be2net driver messages are also logged in the file /var/log/messages. This log file is an ASCII text file and can be viewed and searched with a text editor such as vim. The log file is automatically rotated as it gets larger, and the rotated log files are named messages.x, where x is an integer.

To search the log file for error messages, at the command prompt type:

```
# cd /var/log
# vim messages
```

For example, you may see the following message:

```
Aug 15 09:57:48 S74 kernel: Invalid MTU requested. Must be between 256 and 8974
bytes
```

Linux NIC Event Log Entries

The following is a list of Linux network driver error log messages. It includes the severity of the error, the message displayed, and the message description. When reporting a problem with the OneConnect device to Emulex, check the kernel message log using the command dmesg or in the file /var/log/messages and report any of these entries that may be present.

Note: In Table 1, <D>, <DD>, or <DDD> in the Message Displayed column refers to decimal values that appear in the actual error messages.

Table 1. NIC Log Entries

Severity	Message Displayed	Description
Error	BniInit() failed – Error <DDD>	Initialization of the host data structures to access the network function of OneConnect reported an error.
Error	Interface initialization failed	Allocation of some resource for the network interface failed.
Error	INTx Request IRQ failed – Errno <DDD>	Request for INTx interrupt registration failed.
Error	pci_enable_device() for BE adapter <DD> failed	Operating System call to enable the OneConnect adapter failed.
Error	Could not set PCI DMA Mask	Operating system call to set DMA mask failed.
Error	OneConnect init failed	Initialization of the OneConnect hardware failed.
Error	no version for "struct_module" found: kernel tainted.	When drivers are initialized on a SLES 10 system, kernel will generate false error messages indicating kernel is tainted. Tainted message can be ignored.
Warning	Could not get link status for eth<D>	The firmware command to get the link status returned an error.

Table 1. NIC Log Entries (Continued)

Severity	Message Displayed	Description
Warning	Could not set Rx buffer size to <DDD>. Using <DDD>	The firmware command to change the RX buffer size failed. The driver should still work with the default buffer size.
Warning	0x00000100MSIX Request IRQ failed – Errno <DDD>	Request for MSIX interrupt registration failed. The driver should still work with INTx interrupts.
Warning	Unsupported receive buffer size (<DDD>) requested. Must be 2048 or 4096. Defaulting to 2048	An unsupported receive buffer size was passed for module parameter rxbuf_size. The driver will still work with a default RX buffer size of 2048.
Warning	Failed to register char device	Could not create the char device used for certain management functions. The driver must still work.
Warning	Cannot support more than 2 OneConnect Adapters	The driver detected more than two OneConnect adapters in the system. The first two adapters will be initialized and will work. The rest will be ignored.
Warning	Unable to get OneConnect firmware version	The firmware command to get version number failed. The reason is most likely due to incompatible firmware.
Warning	alloc_skb() failed	Could not allocate an skb structure to pass to stack a frame received from the network. Transient failure can be ignored. Persistent message points to a memory tight/leak problem.
Warning	Invalid MTU requested. Must be between <DDD> and <DDD> bytes	Invalid MTU size in MTU configuration ioctl. The MTU will not be changed.
Warning	Unable to get pause frame settings	The firmware command to get pause frame settings failed.
Warning	Unable to set pause frame settings	The firmware command to set pause frame settings failed.
Information	MTU changed from <DDD> to <DDD>	MTU size changed as requested.
Information	Link status update: Both ports are down	The link is down on both network ports.
Information	Active port changed due to VLD on switch	The active port of OneConnect changed and the change was triggered by a VLD message from the switch. The current link status will follow this message.
Information	Active port changed due to port link status change	The active port of OneConnect changed and the change was triggered by a change in the link status of the one of the two ports of OneConnect. This could be due to a cable being connected or disconnected to one of the ports or one of the ports failing. The current link status will follow this message.
Information	Link status update	There was a change in the link status. There is no change in the active port. This could be due to a cable being connected or disconnected to one of the ports or one of the ports failing. The current link status will follow this message.

Retrieving Linux iSCSI Error Log Codes

For Linux systems, the OneConnect iSCSI (iscsi) driver generates error codes to the /var/log/messages log file. The log file is an ASCII text file and can be viewed and searched with your preferred text editor.

To search the log file for error messages, at the command prompt type:

```
# cd /var/log
# vim messages
```

For example, you may see the following message:

```
be2iscsi driver detected error 0x12790006

57
```

Linux iSCSI Error Log Code Entries

Table 1. iSCSI Error Log Code Entries

MessageId	Message	Recommended Resolution
0x31880001	The iscsi driver failed to load because initialization failed during a power management bootup.	This failure may be due to the firmware not being present or running currently. This failure may also indicate a hardware problem.
0x3184000c	The iscsi driver failed was unable to map one or more PCI Base Address Register and hence failed to load.	This failure may indicate a low memory condition or a hardware error.
0x3184000b	The iscsi driver ignored a configuration entry since the entry was invalid.	Check the registry configuration for any new entries added for Driver Parameters. The invalid entry needs to be removed or corrected. Refer to the driver read-me file for the correct range of values.
0x31840006	The iscsi driver failed to load due to memory allocation failure.	This failure occurred due to a failed memory allocation in the driver. Check low memory conditions.
0x31840005	The iscsi driver failed to load since it did not find the correct hardware IDs on the board.	This failure indicates the be2iscsi board has an incorrect vendor ID, device ID, subsystem vendor ID, or subsystem device ID. Contact your technical support.
0x31840001	The iscsi driver failed to load because initialization failed during normal bootup.	This failure may be due to the firmware not being present or running currently. This failure may also indicate a hardware problem.
0x31640004	An internal API failed in be2iscsi driver during initialization.	This failure may indicate a low memory condition.
0x14831000	There was an Unrecoverable Error detected by the iscsi driver. Following this error log entry, the next 3 entries will indicate the error codes.	This may be due to hardware errors or due to unhandled exceptions in the hardware or firmware.

Table 1. iSCSI Error Log Code Entries (Continued)

MessageId	Message	Recommended Resolution
0x138e0103	The iscsi driver failed an IOCTL request since the number of scatter gather elements required for the IOCTL buffer exceeded the OneConnect's firmware limit. Following this error log entry, the next entry will indicate the IOCTL opcode and the payload length requested.	This error may indicate an incorrect configuration option for the be2iscsi driver. It may also indicate a low memory condition.
0x138d0101	The iscsi driver detected an error during offloading the iSCSI connection. The operation will be retried again. Following this error log entry, the next entry will indicate the session handle and the OneConnect firmware error code.	This may indicate a target is in error or may point to transient network connectivity issues. It may also indicate a OneConnect firmware error.
0x12990013	The be2iscsi driver did not receive an iSCSI command window update up to 25 seconds during I/O operations. Following this error log entry, the next entry will indicate the session handle where this error occurred. The iscsi driver will trigger a session recovery on the session and continue.	Check for any errors reported at the target. The iSCSI Initiator is only supported with certified Targets. Verify that the iSCSI Target is certified by Microsoft. Check for software updates at the target vendor's Web site. Check for software updates at the Emulex website. If the above fails, contact your technical support.
0x127b0012	The iscsi driver received an invalid iSCSI Command Sequence Number update from the target. Following this error log entry, the next three entries will indicate the session handle and the iSCSI parameters - MaxCmdSN and ExpCmdSN respectively.	Check for any errors reported at the target. The iSCSI Initiator is only supported with certified Targets. Verify that the iSCSI Target is certified by Microsoft. Check for software updates at the target vendor's Web site. Check for software updates at the Emulex Web site. If the above fails, contact your technical support.

Table 1. iSCSI Error Log Code Entries (Continued)

MessageId	Message	Recommended Resolution
0x12790006	A connection to the target was lost for a period exceeding the Extended Timeout (ETO). The error log entry immediately following this entry will indicate the session ID of the target that lost the connection. There will be event log entries from the disk subsystem indicating that the drives were lost. If any I/Os were in progress, the system may see I/O errors or failures.	Check the connection to the target or the state of the target device. If the target is made available, any sessions that existed previously will be reestablished and the devices will be available for I/O.
0x11990007	The iscsi driver received a Task Management Function that is not supported and rejected this request. The error log entry immediately following this entry will indicate the TMF function code that was rejected.	The operating system version is not supported.
0x11940008	The iscsi driver received a Task Management Function Abort request for an I/O request that is not present with the driver.	This may indicate a slow connection to the target. Check network connectivity to the target for any errors.
0x11840002	The iscsi driver encountered a mismatched version of the firmware running on the board. This error may be followed by more error codes 0x31840001 or 0x31880001 indicating that the be2iscsi driver failed to load.	This failure indicates that the driver version that is running on the system does not match the version of the firmware flashed on the board. Fix this by running the installer from the desired version.
0x11840001	The iscsi driver detected a failure in the hardware during initialization. This error may be followed by more error codes 0x31840001 or 0x31880001 indicating that the be2iscsi driver failed to load.	This failure indicates that the hardware has not been initialized or is malfunctioning. This may also indicate that the firmware is not running correctly.

Table 1. iSCSI Error Log Code Entries (Continued)

MessageId	Message	Recommended Resolution
0x11800005	Both Port 0 and Port 1 links were down for a period exceeding the Link Down Timeout (LDTO). If the initiator has connection to the target, there will be event log entries from the disk subsystem indicating that the drives were lost. If any I/Os were in progress, the system may see I/O errors or failures.	Check the links to the OneConnect hardware. If the link is reestablished, any sessions that existed previously will be reestablished and the devices will be available for I/O.
0x11800003	Both Port 0 and Port 1 links are down.	Check the links to the OneConnect hardware.

LPFC Log Messages

Introduction

This section lists the log messages for the LPFC driver.

LPFC error log messages go to /var/log/messages.

Message Log Example

The following is an example of a LOG 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 the above LOG message:

- lpfc 0000:03:06.0: identifies the identifies the pci location of the particular lpfc hardware port.
- 0: identifies Emulex HBA0.
- 1305 identifies the LOG message number.

Note: If the word 'Data:' is present in a LOG message, any information to the right of 'Data:' is intended for Emulex technical support/engineering use only.

Log Events

elx_mes0100: FLOGI failure

DESCRIPTION: An ELS FLOGI command that was sent to the fabric failed.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0101: FLOGI completes successfully

DESCRIPTION: An ELS FLOGI command that was sent to the fabric succeeded.
DATA: (1) ulpWord[4] (2) e_d_tov (3) r_a_tov (4) edtovResolution
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0102: PLOGI completes to NPort <nlp_DID>

DESCRIPTION: The HBA performed a PLOGI into a remote NPort.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout (4)disc (5) num_disc_nodes
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0103: PRLI completes to NPort <nlp_DID>

DESCRIPTION: The HBA performed a PRLI into a remote NPort.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout (4) num_disc_nodes
SEVERITY: Information

LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0104: ADISC completes to NPort <nlp_DID>

DESCRIPTION: The HBA performed a ADISC into a remote NPort.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout (4) disc (5) num_disc_nodes
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0105: LOGO completes to NPort <nlp_DID>

DESCRIPTION: The HBA performed a LOGO to a remote NPort.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout (4) num_disc_nodes
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0106: ELS cmd tag <ulpIoTag> completes

DESCRIPTION: The specific ELS command was completed by the firmware.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0107: Retry ELS command <elsCmd> to remote NPORT <did>

DESCRIPTION: The driver is retrying the specific ELS command.
DATA: (1) retry (2) delay
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0108: No retry ELS command <elsCmd> to remote NPORT <did>

DESCRIPTION: The driver decided not to retry the specific ELS command that failed.
DATA: (1) retry (2) ulpstatus and ulpword[4]
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0109: ACC to LOGO completes to NPort <nlp_DID>

DESCRIPTION: The driver received a LOGO from a remote NPort and successfully issued an ACC response.
DATA: (1) nlp_flag (2) nlp_state (3) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0110: ELS response tag <ulpIoTag> completes

DESCRIPTION: The specific ELS response was completed by the firmware.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulptimeout (4) nlp_DID (5) nlp_flag (6) nlp_state (7) nlp_rpi
SEVERITY: Information

LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0111: Dropping received ELS cmd

DESCRIPTION: 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.

elx_mes0112: ELS command <elsCmd> received from NPORT <did>

DESCRIPTION: Received the specific ELS command from a remote NPort.
DATA: (1) hba_state
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0113: An FLOGI ELS command <elsCmd> was received from DID <did> in Loop Mode

DESCRIPTION: While in Loop Mode an unknown or unsupported ELS command was received.
DATA: None
SEVERITY: Error
LOG: Always
ACTION: Check device DID.

elx_mes0114: PLOGI chkparm OK

DESCRIPTION: Received a PLOGI from a remote NPORT and its Fibre Channel service parameters match this HBA. Request can be accepted.
DATA: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_Rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0115: Unknown ELS command <elsCmd> received from NPORT <did>

DESCRIPTION: Received an unsupported ELS command from a remote NPORT.
DATA: None
SEVERITY: Error
LOG: Always
ACTION: Check remote NPORT for potential problem.

elx_mes0116: Xmit ELS command <elsCmd> to remote NPORT <did>

DESCRIPTION: Xmit ELS command to remote NPORT.
DATA: (1) icmd->ulpIoTag (2) hba_state
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0117: Xmit ELS response <elsCmd> to remote NPORT <did>

DESCRIPTION: Xmit ELS response to remote NPORT.
DATA: (1) icmd->ulpIoTag (2) size

SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0118: Xmit ELS RPS ACC response tag <ulpIoTag>

DESCRIPTION: An RPS ACC response for the specified IO tag has been sent.
DATA: (1) xri (for SLI-4) (2) ulpContext (3) nlp_DID (4) nlp_flag (5) nlp_state (6) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: None required.

elx_mes0119: Issue GEN REQ IOCB for NPORT <ulpWord[5]>

DESCRIPTION: Issue a GEN REQ IOCB for remote NPORT. These are typically used for CT request.
DATA: (1) ulpIoTag (2) hba_state
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0120: Xmit ELS RPL ACC response tag <ulpIoTag>

DESCRIPTION: An RPL ACC response for the specified IO tag has been sent.
DATA: (1) xri (for SLI-4) (2) ulpContext (3) nlp_DID (4) nlp_flag (5) nlp_state (6) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: None required.

elx_mes0121: PLOGI chkparm OK

DESCRIPTION: Received a PLOGI from a remote NPORT and its Fibre Channel service parameters match this HBA. Request can be accepted.
DATA: (1) nlp_DID (2) nlp_state (3) nlp_flag (4) nlp_Rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0125: FDISC Failed (x%x). Fabric out of resources

DESCRIPTION: 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.

elx_mes0126: FDISC failed ulpStatus ulpWord4

DESCRIPTION:
DATA: lsRjtError
SEVERITY: Error
LOG: Always
ACTION: Reconfigure the switch to support more NPIV logins. If problem persists, contact Technical Support.

elx_mes0127: ELS timeout

DESCRIPTION: 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.

elx_mes0128 - Xmit ELS ACC response tag <ulpIoTag>

DESCRIPTION: An ELS accept response for the specified IO tag has been sent.
DATA: (1) ulpContext (2) nlp_DID (3) nlp_flag (4) nlp_state (5) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0129 - Xmit ELS RJT <rejectError> response tag <ulpIoTag>

DESCRIPTION: An ELS reject response with the specified error for the specified IO tag has been sent.
DATA: (1) xri (for SLI-4) (2) ulpContext (3) nlp_DID (4) nlp_flag (5) nlp_state (6) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0130 - Xmit ADISC ACC response tag <ulpIoTag>

DESCRIPTION: An ADISC ACC response for the specified IO tag has been sent.
DATA: (1) xri (for SLI-4) (2) ulpContext (3) nlp_DID (4) nlp_flag (5) nlp_state (6) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0131 - Xmit PRLI ACC response tag <ulpIoTag>

DESCRIPTION: A PRLI ACC response for the specified IO tag has been sent.
DATA: (1) xri (for SLI-4) (2) ulpContext (3) nlp_DID (4) nlp_flag (5) nlp_state (6) nlp_rpi
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0132 - Xmit RNID ACC response tag <ulpIoTag> XRI*

DESCRIPTION: A RNID ACC response for the specified IO tag has been sent.
DATA: (1) ulpContext
SEVERITY: Information
LOG: LOG_ELS verbose
ACTION: No action needed, informational.

elx_mes0133 - PLOGI: no memory for reg_login

DESCRIPTION: 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.

elx_mes0134 - PLOGI cannot issue reg_login

DESCRIPTION: The ELS PLOGI mailbox command has failed.
DATA: (1) nlp_DID 92) nlp_state (3) nlp_flag (4) nlp_rpi
SEVERITY: Error
LOG: LOG_ELS

ACTION: Check the port and switch configuration.

elx_mes2539: Dropped frame rctl:%s type:%s\n

DESCRIPTION: 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.

elx_mes2606: No NPIV Fabric support\nn

DESCRIPTION: The driver was unable to create an NPIV Vport because it is not supported by the attached fabric.
DATA: (1) rctl_names[fc_hdr->fh_r_ctl], (2) type_names[fc_hdr->fh_type])
SEVERITY: Error
LOG: Always
ACTION: Reconfigure the switch to support NPIV.

elx_mes0135 - cannot format reg_login

DESCRIPTION: 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.

elx_mes0136 - PLOGI completes to NPort <DID> completion

DESCRIPTION: A PLOGI has completed for which there is no NDLP.
DATA: (1) ulpStatus (2) ulpWord[4]
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0137 - No retry ELS command <ELS_CMD> to remote

DESCRIPTION:
DATA: (1) ulpStatus (2) ulpWord[4]
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0138 - ELS rsp: Cannot issue reg_login for <DID>

DESCRIPTION: 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.

elx_mes0139 - Ignoring ELS cmd tag <ioTag> completion Data

DESCRIPTION: This ELS command was aborted.
DATA: (1) ulpStatus (2) ulpWord[4] (3) ulpTimeout
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0140 - PLOGI Reject: invalid name

DESCRIPTION: Invalid node WWN provided.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0141 - PLOGI Reject: invalid pname

DESCRIPTION: Invalid port WWN provided.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0142 - PLOGI RSP: Invalid WWN

DESCRIPTION: The PLOGI sent to the port by a remote port had an invalid WWN.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0143 - SLI4 Adapter Hardware Error Data: <status0>/<status1>

DESCRIPTION: The HBA has encountered an unrecoverable error.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Use hbacmd to retrieve a dump file.

elx_mes0144 - Not a valid WCQE code: <Completion Code>

DESCRIPTION: The completion queue handler detected an invalid type.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0145 - Ignoring unsolicited CT HBQ Size <size>

DESCRIPTION: Received an unsolicited ct command with an invalid size.
DATA: ulpStatus
SEVERITY: Information
LOG: LOG_ELS

ACTION: None required.

elx_mes0146 - Ignoring unsolicited CT No HBQ <ulpStatus>

DESCRIPTION: Received an unsolicited ct command without a BDE
DATA: None
SEVERITY: Information
LOG: LOG_ELS
ACTION: None required.

elx_mes0147 - Failed to allocate memory for RSCN event

DESCRIPTION: ry could not be allocated to send the RSCN event to the management application.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0148 - Failed to allocate memory for LOGO event

DESCRIPTION: Memory could not be allocated to send the LOGO event to the FC transport.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0149 - Failed to allocate memory for ELS event

DESCRIPTION: Memory could not be allocated to send the ELS event to the FC transport.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0153 - Authentication LS_RJT Logical busy

DESCRIPTION: The authentication request was rejected because the node was set to NPR.
DATA: None
SEVERITY: Information.
LOG: LOG_ELS
ACTION: None required.

elx_mes0154 - Authentication not complete

DESCRIPTION: TAuthentication was restarted because the previous authentication did not complete.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: Check the switch configuration.

elx_mes0200: CONFIG_LINK bad hba state <hba_state>

DESCRIPTION: 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.

elx_mes0202: Start Discovery hba state <hba_state>

DESCRIPTION: Device discovery / rediscovery after FLOGI, FAN or RSCN has started.
DATA: (1) fc_flag (2) fc_plogi_cnt (3) fc_adisc_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0203: Devloss timeout on WWPN <address> NPort <nlp_DID>

DESCRIPTION: A remote NPort 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.

elx_mes2546: New FCF found index 0x%x tag 0x%x\n

DESCRIPTION: The driver has detected a new FCF in the SAN.
DATA: (1) macqe_fcoe->fcf_index (2) acqe_fcoe->event_tag
SEVERITY: Information
LOG: Always
ACTION: No action needed, informational.

elx_mes0204:Devloss timeout on WWPN <address> NPort <nlp_DID>

DESCRIPTION: A remote NPort 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: Informational
LOG: LOG_DISCOVERY verbose
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.

elx_mes0205: Abort outstanding I/O on NPort <Fabric_DID>

DESCRIPTION: All outstanding I/Os are cleaned up on the specified remote NPort.
DATA: (1) nlp_flag (2) nlp_state (3) nlp_rpi
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0206: Device discovery completion error

DESCRIPTION: This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. Fibre Channel 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.

elx_mes0207: Device <DID> (<WWN>) sent invalid service parameters. Ignoring device.

DESCRIPTION: 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.

elx_mes0208: Skip <Did> NameServer Rsp

DESCRIPTION: The driver received a NameServer response.
DATA: (1) size (2) fc_flag (3) fc_rscn_id_cnt (4)no_rscn_id_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0209: CT request completes <ulpStatus> <CmdRsp>

DESCRIPTION: A RFT request that was sent to the fabric completed.
DATA: (1) latt (2) ulpStatus (3) CmdRsp (4) Context (5) Tag
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0210: Continue discovery with <num_disc_nodes> ADISCs to go

DESCRIPTION: A device discovery is in progress.
DATA: (1) fc_adisc_cnt (2) fc_flag (3) phba->hba_state
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0211: DSM in event <evt> on NPort <nlp_DID> in state <cur_state>

DESCRIPTION: The driver Discovery State Machine is processing an event.
DATA: (1) nlp_flag
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0212: DSM out state <rc> on NPort <nlp_DID>

DESCRIPTION: The driver Discovery State Machine completed processing an event.
DATA: (1) nlp_flag
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0214: RSCN received

DESCRIPTION: An RSCN ELS command was received from a fabric.
DATA: (1) fc_flag (2) payload_len (3) *lp (4)fc_rscn_id_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0215: RSCN processed

DESCRIPTION: An RSCN ELS command was received from a fabric and processed.
DATA: (1) fc_flag (2) cnt (3) fc_rscn_id_cnt (4) hba_state
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0217: Block sgl registration required DMAsize <reqlen> great than a page

DESCRIPTION: The request to post SGL pages does not fit on a page.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes0218: FDMI Request

DESCRIPTION: The driver is sending an FDMI request to the fabric.
DATA: (1) fc_flag (2) hba_state (3) cmdcode
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0220: FDMI rsp failed

DESCRIPTION: An error response was received to FDMI request.
DATA:(1) SWAP_DATA16(fdmi_cmd)
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: The fabric does not support FDMI, check fabric configuration.

elx_mes0221: FAN timeout

DESCRIPTION: 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.

elx_mes0222: Initial FLOG/FDISKI timeout

DESCRIPTION: 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.

elx_mes0223: Timeout while waiting for NameServer login

DESCRIPTION: 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.

elx_mes0224: NameServer Query timeout

DESCRIPTION: Node authentication timeout, node Discovery timeout. A NameServer Query to the Fabric or discovery of reported remote NPorts 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.

elx_mes0225: Device Discovery completes

DESCRIPTION: This indicates successful completion of device (re)discovery after a link up.
DATA: None
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0226: Device discovery completion error

DESCRIPTION: This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. Fibre Channel 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.

elx_mes0227: Node Authentication timeout

DESCRIPTION: The driver has lost track of what NPORTs are being authenticated.
DATA: None
SEVERITY: Error
LOG: Always
ACTION: None required. The driver should recover from this event.

elx_mes0228: CLEAR LA timeout

DESCRIPTION: 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.

elx_mes0230: Unexpected timeout, hba linkstate <link_state>

DESCRIPTION: Discovery has timed out and the HBA state is not ready.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: None required.

elx_mes0231: RSCN timeout

DESCRIPTION: The driver has lost track of what NPORTs 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.

elx_mes0232: Continue discovery with <num_disc_nodes> PLOGIs to go

DESCRIPTION: Device discovery is in progress.
DATA: (1) fc_plogi_cnt (2) fc_flag (3) phba->hba_state
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0233: Nodelist not empty

DESCRIPTION: Driver unloaded or hotplug detected a node still in use.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: None required.

elx_mes0234: ReDiscovery RSCN

DESCRIPTION: The number / type of RSCNs has forced the driver to go to the nameserver and re-discover all NPORTs.
DATA: (1) fc_rscn_id_cnt (2) fc_flag (3) hba_state
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0235: Deferred RSCN

DESCRIPTION: The driver has received multiple RSCNs and has deferred the processing of the most recent RSCN.
DATA: (1) fc_rscn_id_cnt (2) fc_flag (3) hba_state
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0236: NameServer req

DESCRIPTION: The driver is issuing a NameServer request to the fabric.
DATA: (1) cmdcode (2) fc_flag (3) fc_rscn_id_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0237: Pending Link Event during Discovery: State <hba_state>

DESCRIPTION: Received link event during discovery. Causes discovery restart.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY verbose
ACTION: None required unless problem persists. If persistent check cabling.

elx_mes0238: Process <Did> NameServer Rsp

DESCRIPTION: The driver received a NameServer response.

DATA: (1) nlp_flag (2) fc_flag (3) fc_rscn_id_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0240: NameServer Rsp Error

DESCRIPTION: The driver received a NameServer response containing a status error.
DATA: (1) CommandResponse.bits.CmdRsp (2) ReasonCode (3) Explanation (4) fc_flag
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: Check the fabric configuration. The driver recovers from this and continues with device discovery.

elx_mes0241: NameServer rsp error

DESCRIPTION: 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.

elx_mes0244: Issue FDMI request failed

DESCRIPTION: Cannot issue an FDMI request to the HBA.
DATA: (1) cmdcode
SEVERITY: Information
LOG: LOG_Discovery verbose
ACTION: No action needed, informational.

elx_mes0246: RegLogin failed

DESCRIPTION: 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.

elx_mes0247: Start Discovery Timer state <hba_state>

DESCRIPTION: Start the device discovery / RSCN rescue timer.
DATA: (1) tmo (2) fc_disctmo (3) fc_plogi_cnt (4) fc_adisc_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose
ACTION: No action needed, informational.

elx_mes0248: Cancel Discovery Timer state <hba_state>

DESCRIPTION: Cancel the device discovery / RSCN rescue timer.
DATA: (1) fc_flag (2) fc_plogi_cnt (3) fc_adisc_cnt
SEVERITY: Information
LOG: LOG_DISCOVERY verbose

elx_mes0249: Cannot issue Register Fabric login: Err %d\

DESCRIPTION: 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.

elx_mes0251: NameServer login: no memory

DESCRIPTION: Could not allocate memory for the NDLP structure.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0252: Cannot issue NameServer loginy

DESCRIPTION: 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.

elx_mes0253 - Register VPI: Can’t send mbox\

DESCRIPTION: Could not issue the REG_LOGIN command for this VPort.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes0254 - Register VPI: no memory” goto mbox_err_exit

DESCRIPTION: Could not allocate memory for the REG_LOGIN mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes0255 - Issue FDISC: no IOCB

DESCRIPTION: All of the pre-allocated IOCBs are in use.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0256 - Issue FDISC: Cannot send IOCB\

DESCRIPTION: Unable to send the fabric IOCB.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes0257 - GID_FT Query error

DESCRIPTION: The GID_FT CT request for the nameserver has failed.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: Check the switch configuration.

elx_mes0258 - Register Fabric login error:

DESCRIPTION: The REG_LOGIN for the fabric has failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: Check the port connection and the switch configuration.

elx_mes0259 - No NPIV Fabric support

DESCRIPTION: The swtich to which the port is connected does not support NPIV.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: Check the switch configuration.

elx_mes0260 - Register NameServer error:

DESCRIPTION: The REG_LOGIN mailbox command has failed for the nameserver.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: Check the switch configuration

elx_mes0261 - Cannot register NameServer login:

DESCRIPTION: 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.

elx_mes0262 - No NPIV Fabric support

DESCRIPTION: The switch to which the port is connected does not support NPIV.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: Check the switch configuration.

elx_mes0263 - Discovery Mailbox error: state:

DESCRIPTION: 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.

elx_mes0264 - No NPIV Fabric support

DESCRIPTION: The switch to which the port is connected does not support NPIV.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: Check the switch configuration.

elx_mes0266 - Issue NameServer Req <cmdcode> err <rc> Data: <fc_flag> <fc_rscn_id_cnt>

DESCRIPTION: 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.

elx_mes0267 - NameServer GFF Rsp "<did> Error (<ulpStatus> <un.ulpWord[4]>) Data: <fc_flag> <fc_rscn_id_cnt>

DESCRIPTION: 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.

elx_mes0268 - NS cmd <cmdcode> Error (<ulpStatus> <un.ulpWord[4]>)

DESCRIPTION: The nameServer CT request failed.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: Check the port and switch configurations.

elx_mes0271 - Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data: <nlp_rpi> <nlp_flag>DESCRIPTION:

DESCRIPTION: 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.

elx_mes0272 - Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data: <nlp_rpi> <nlp_flag>

DESCRIPTION: 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.

elx_mes0273 - Unexpected discovery timeout, vport State x%x

DESCRIPTION: The discovery process has timed out.
DATA: None
SEVERITY: Error

LOG: LOG_DISCOVERY
ACTION: Verify that all targets are still visible.

elx_mes0274 - lpfc_nlp_put: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION:
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0275 - lpfc_nlp_put: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION: A kref_put was called again after the node was already inactive.
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0276 - lpfc_nlp_get: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION: A kref_get was attempted on a node that was being released.
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0277 - lpfc_enable_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION: Enable node was attempted on an inactive node.
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0278 - lpfc_enable_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION: Enable node was attempted on an inactive node.
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0281 - lpfc_cleanup_node: ndlp:x%pusgmap:x%x refcnt:%d, void *)ndlp, ndlp->nlp_usg_map, atomic_read(&ndlp->kref.refcount)

DESCRIPTION: Node clean-up wascalled to prepare the node for release.
DATA: None
SEVERITY: Warning
LOG: LOG_NODE
ACTION: None required.

elx_mes0282 - ldid:x%x ndlp:x%pusgmap:x%x refcnt:%d, ndlp->nlp_DID, (void *)ndlp, lpfc_init.c-ndlp->nlp_usg_map,

DESCRIPTION: 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.

elx_mes0283 - Failed to allocate mbox cmd memory

DESCRIPTION: Mailbox allocation error.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0285 - Allocated DMA memory size <alloclen> is less than the requested DMA memorysize<reqlen>

DESCRIPTION: Memory allocation was truncated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0286 - lpfc_nlp_state_cleanup failed to allocate statistical data buffer <nlp_DID>

DESCRIPTION: Memory allocation failed for node's statistical data.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0287 - lpfc_alloc_bucket failed to allocate statistical data buffer DID <nlp_DID>

DESCRIPTION: Memory allocation failed for node's statistical data.
DATA: None
SEVERITY: Error
LOG: LOG_NODE
ACTION: None required.

elx_mes0288 - Unknown FCoE event type <event_type> event tag <event_tag>

DESCRIPTION: The firmware has detected an unknown FCoE event.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: Check the FCoE switch configuration and the HBA DCBX mode.

elx_mes0289 - Issue Register VFI failed: Err <rc>

DESCRIPTION: 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.

elx_mes0290 - The SLI4 DCBX asynchronous event is not handled yet

DESCRIPTION: The SLI-4 DCBX asynchronous event is not handled yet.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0291 - Allocated DMA memory size (x%x) is less than the requested DMA memory size (x%x)

DESCRIPTION: The asychronous DCBX events are not handled in the driver.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Check the switch configuration.

elx_mes0293 - PM resume failed to start worker thread: error=<error>

DESCRIPTION: 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.

elx_mes0294 - PM resume Failed to enable interrupt

DESCRIPTION: The PCI resume (hotplug) could not get an interrupt vector.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Unload and reload the driver.

elx_mes0297 - Invalid device group<pci_dev_grp>

DESCRIPTION: 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.

elx_mes0299 - Invalid SLI revision <sli_rev>

DESCRIPTION: 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.

elx_mes0300: LATT: Cannot issue READ_LA: Data:<rc>

DESCRIPTION: The link attention handler could not issue a READ_LA mailbox command.
DATA: None

SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes0301: READ_SPARAM: no buffers

DESCRIPTION: The driver attempted to issue a READ_SPARAM mailbox command to the HBA, 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 Fibre Channel 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.

elx_mes0302: REG_LOGIN: no buffers

DESCRIPTION: The driver attempted to issue a REG_LOGIN mailbox command to the HBA, but there were no buffers 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 Fibre Channel 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.

elx_mes0303: Ring <ringno> handler: portRspPut <portRspPut> is bigger then rsp ring <portRspMax>

DESCRIPTION: 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.

elx_mes0304: Stray mailbox interrupt, mbxCommand <mbxcommand> mbxStatus <mbxstatus>

DESCRIPTION: 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.

elx_mes0305: Mbox cmd cmpl error - RETRYing

DESCRIPTION: A mailbox command completed with an error status that causes the driver to reissue the mailbox command.
DATA: (1) mbxCommand (2) mbxStatus (3) un.varWords[0] (4) hba_state
SEVERITY: Information
LOG: LOG_MBOX verbose, LOG_SLI verbose

ACTION: No action needed, informational.

elx_mes0306: CONFIG_LINK mbxStatus error <mbxStatus> HBA state <hba_state>

DESCRIPTION: 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.

elx_mes0307: Mailbox cmd <mbxCommand> Cmpl <mbox_cmpl>

DESCRIPTION: A mailbox command completed.
DATA: (1) pmbox (2) varWords[0], (3) varWords[1], (4) varWords[2], (5) varWords[3], (6) varWords[4], (7) varWords[5], (8) varWords[6], (9) varWords[7]
SEVERITY: Information
LOG: LOG_MBOX verbose, LOG_SLI verbose
ACTION: No action needed, informational.

elx_mes0308: Mbox cmd issue - BUSY

DESCRIPTION: The driver attempted to issue a mailbox command while the mailbox was busy processing the previous command. The processing of the new command will be deferred until the mailbox becomes available.
DATA: (1) mbxCommand (2) hba_state (3) sli_flag (4) flag
SEVERITY: Information
LOG: LOG_MBOX verbose, LOG_SLI verbose
ACTION: No action needed, informational.

elx_mes0309: Mailbox cmd <mbxcommand> issue

DESCRIPTION: The driver is in the process of issuing a mailbox command.
DATA: (1) hba_state (2) sli_flag (3) flag
SEVERITY: Information
LOG: LOG_MBOX verbose, LOG_SLI verbose
ACTION: No action needed, informational.

elx_mes0310: Mailbox command <mbxcommand> timeout

DESCRIPTION: 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.

elx_mes0311: Mailbox command <mbxcommand> cannot issue

DESCRIPTION: The driver is in the wrong state to issue the specified command.
DATA: (1) hba_state (2) sli_flag (3) flag
SEVERITY: Information
LOG: LOG_MBOX verbose, LOG_SLI verbose
ACTION: No action needed, informational.

elx_mes0312: Ring <ringno> handler: portRspPut <rspPutInx> is bigger then rsp ring <numRiocb>

DESCRIPTION: The IOCB command rings put pointer is ahead of the get pointer.
DATA: None
SEVERITY: Error
LOG:LOG_SLI
ACTION: None required.

elx_mes0313: Ring <ringno> handler: unexpected Rctl <Rctl> Type <Type> received

DESCRIPTION: 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.

elx_mes0315: Ring <ringno> issue: portCmdGet <local_getidx> is bigger then cmd ring <max_cmd_idx>

DESCRIPTION: 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.

elx_mes0317: iotag <ulp_IoTag> is out of range: max iotag <max_iotag> wd0 <wd0>

DESCRIPTION: 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.

elx_mes0318: Failed to allocate IOTAG. last IOTAG is <last_allocated_iotag>

DESCRIPTION: 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.

elx_mes0319: READ_SPARAM mbxStatus error <mbxStatus> hba state <hba_state>

DESCRIPTION: 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.

elx_mes0320: CLEAR_LA mbxStatus error <mbxStatus> hba state <hba_state>

DESCRIPTION: 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.

elx_mes0322: Ring <ringno> handler: unexpected completion IoTag <IoTag>

DESCRIPTION: 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.

elx_mes0323: Unknown Mailbox command <mbxCommand> Cmpl

DESCRIPTION: 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.

elx_mes0324: Config port initialization error, mbxCmd <mbxCommand> READ_NVPARM, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0325 - Reset HBA

DESCRIPTION: An HBA has been reset.
DATA: (1) hba_state (2) sli_flag
SEVERITY: Information
LOG: LOG_SLI verbose
ACTION: No action needed, informational.

elx_mes0328 - Rsp Ring <ring number> error: IOCB Data:

DESCRIPTION: 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.

elx_mes0330: IOCB wake NOT set

DESCRIPTION: 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.

elx_mes0331: IOCB wake signaled

DESCRIPTION: The IOCB completed successfully.
DATA: None
SEVERITY: Information
LOG: LOG_SLI verbose
ACTION: None required.

elx_mes0332: IOCB wait issue failed

DESCRIPTION: The LPFC driver failed to issue an IOCB.
DATA:(1) retval
SEVERITY: Information
LOG: LOG_SLI verbose
ACTION: None required.

elx_mes0334: Unknown IOCB command

DESCRIPTION: 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.

elx_mes0335: Unknown IOCB command

DESCRIPTION: 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

elx_mes0336 - Rsp Ring <ringno> error: IOCB

DESCRIPTION: 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.

elx_mes0337 - Restart HBA Data: <port_state> <sli_flag>

DESCRIPTION: The driver has been told to restart the HBA.

DATA: None
SEVERITY: Information
LOG: LOG_SLI
ACTION: None required.

elx_mes0340: Adapter temperature is OK now

DESCRIPTION: Adapter temperature has reverted to normal range.
DATA: Temperature in Celsius
SEVERITY: Error
LOG: LOG_TEMP verbose
ACTION: No action needed, informational

elx_mes0341: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>

DESCRIPTION: 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.

elx_mes0342: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words>

DESCRIPTION: 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.

elx_mes0343: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>

DESCRIPTION: There are no more pre-allocated buffers available to handle unsolicited buffers.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0344: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words[7]>

DESCRIPTION: There are no more pre-allocated buffers available to handle unsolicited buffers.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0345: Resetting board due to mailbox timeout iocb. tag 0x%x

DESCRIPTION: 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.

elx_mes0346: 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>

DESCRIPTION: The HBA received an asynchronous event that was not a temperature event.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0347: Adapter is very hot, please take corrective action

DESCRIPTION: 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.

elx_mes0348: NameServer login: node freed

DESCRIPTION: The enable mode failed to free up the nameserver login.
DATA: None
SEVERITY: Error
LOG: LOG_ELSI
ACTION: None required.

elx_mes0349: rc should be MBX_SUCCESS

DESCRIPTION: The next mailbox command on the mailbox queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes0350: rc should have been MBX_BUSY

DESCRIPTION: 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.

elx_mes0351: Config MSI mailbox command failed, mbxCmd <u.mb.mbxComm>, mbxStatus <u.mb.mbxStatus>

DESCRIPTION: The mailbox command sent to the firmware to configure the HBA to use MSI-X has failed.
DATA: None
SEVERITY: Warning
LOG: LOG_MBOX
ACTION: Ensure the hardware platform supports MSI-X.

elx_mes0352: Config MSI mailbox command failed, mbxCmd <u.mb.mbxCommand>, mbxStatus <u.mb.mbxStatus>

DESCRIPTION: 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.

elx_mes0353: Active Mailbox cleared - mailbox timeout exiting

DESCRIPTION: 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.

elx_mes0357: MSI-X interrupt with no EQE

DESCRIPTION: SLI-4 HBA interrupt on the slow path but there is no associated EQE.
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes0358: MSI-X interrupt with no EQE

DESCRIPTION: SLI-4 HBA interrupt on the fast path but there is no associated EQE.
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes0359: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));

DESCRIPTION: SLI-4: The EQE is not valid.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0360:Unsupported EQ count. <entry_count>

DESCRIPTION: Cannot create an event queue of this size.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0361:Unsupported CQ count. <entry_count>

DESCRIPTION: Cannot create an completion queue of this size.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0362:Unsupported MQ count. <entry_count>

DESCRIPTION: Cannot create MQ of this size.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0364:Invalid param:

DESCRIPTION: SLI-4: The post SGL function was passed an invalid XRI
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0365:Slow-path CQ identifier <CQID> does not exist:

DESCRIPTION: 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.

elx_mes0366:Not a valid fast-path completion event: majorcode=<major code hex>, minor-code=<minor code hex>

DESCRIPTION: The major or minor code in the Event Queue field is not valid.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0367: Fast-path completion queue does not exist

DESCRIPTIION:The fast path completion queue referenced by the CQID does not exist.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0368: Mis-matched fast-path completion queue identifier: eqcqid=%d, fcpcqid=%d

DESCRIPTION: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.

elx_mes0369: No entry from fast-path completion queue fcpcqid=<queue_id>

DESCRIPTION: There were no completions in the completion queue referenced by fcpcqid.
DATA: None
SEVERITY: Error

LOG: LOG_SLI
ACTION: None required.

elx_mes0370: Invalid completion queue type <type>

DESCRIPTION:The event queue entry is not for a mailbox or a work queue entry.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0371: No entry from the CQ: identifier <queue_id>, type <type>

DESCRIPTION: There was no completion queue event for this event queue entry.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0372: iotag <iotag> is out of range: max iotag (<sli.last_iotag>)

DESCRIPTION: The IOCB lookup cannot be performed because the iocb_tag is out of range.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0373: FCP complete error: status=<status> hw_status=<hw status>, total_ data_specified=<total data transferred>, "parameter=<rsp word[4]>, word3=<wcqe word 3>

DESCRIPTION: Logs the FCP failure. Status and parameter are equivalent to ulpStatus and ulpWord[4].
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes0374: FCP complete with no corresponding cmdiocb: iotag <iocb iotag>

DESCRIPTION: There was no IOCB on the in-progress list that matched this iotag.
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes0375:FCP cmdiocb not callback function iotag: (%d)

DESCRIPTION: 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.

elx_mes0376: READ_REV Error. SLI Level <sli_rev> FCoE enabled <hba_flag & HBA_FCOE_SUPPORT>

DESCRIPTION: This SLI-4 only HBA setup function was called for a non-SLI-4 device.

DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes0377: Error <rc> parsing vpd. Using defaults.

DESCRIPTION: Could not parse the VPD data, so the driver is using the default values.
DATA: None
SEVERITY: Error
LOG: Always
ACTION: None required.

elx_mes0378W: No support for fcpi mode

DESCRIPTION: Could not configure the port to run in FCP initiator mode.
DATA: None
SEVERITY: Warning
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes0379W: Feature Mismatch Data: <req ftr word2 hex> <req_ftr word3 hex> <cfg_enable_npiv> <max vpi hex>

DESCRIPTION: 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.

elx_mes0381: Error %d during queue setup.

DESCRIPTION: 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.

elx_mes0382: READ_SPARAM command failed status <issue status>, mbxStatus <mailbox status>

DESCRIPTION: 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.

elx_mes0383: Error <rc> during scsi sgl post operation

DESCRIPTION: The SGL entries could not be registered with the HBA.
DATA: None
SEVERITY: Warning
LOG: LOG_MBOX, LOG_SLI
ACTION: Reset the HBA using hbacmd.

elx_mes0384: There is pending active mailbox cmd

DESCRIPTION: 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.

elx_mes0385: rc should have been MBX_BUSY

DESCRIPTION: 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 bus
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes0386W:ELS complete with no corresponding cmdiocb: iotag (%d)

DESCRIPTION: 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.

elx_mes0387:Failed to allocate an iocbq

DESCRIPTION: Failed to get an IOCBQ from the list of available IOCBQs.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0388:Not a valid WCQE code: x<hex cqe_code>

DESCRIPTION: e event code is invalid. This event will be dropped.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: Ensure the adapter’s firmware is current.

elx_mes0391:Error during rpi post operation

DESCRIPTION: 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.

elx_mes0393:Error <rc> during rpi post operation

DESCRIPTION: 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.

elx_mes0394: Failed to allocate CQ_EVENT entry

DESCRIPTION: 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.

elx_mes0395: The mboxq allocation failed

DESCRIPTION: 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.

elx_mes0396:The lpfc_dmabuf allocation failed

DESCRIPTION: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.

elx_mes0397:The mbuf allocation failed

DESCRIPTION: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.

elx_mes0398 Invalid link fault code: < hex link_fault>

DESCRIPTION: The attempt to read the link attention register has returned an unknown value.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0399 Invalid link attention type: <hex link_type>

DESCRIPTION: The READ_LA mailbox command has returned an invalid link type.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0400: lpfc_nodev_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>

DESCRIPTION: 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.

elx_mes0401: Ignoring change to nodev_tmo because devloss_tmo is set

DESCRIPTION: Attempting to change the nodev timeout when the devloss has already been set.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0402:Cannot find virtual addr for buffer tag on ring <ringno>

DESCRIPTION: 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.

elx_mes0403: lpfc_nodev_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>]

DESCRIPTION: 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.

elx_mes0404: lpfc_devloss_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>]

DESCRIPTION: 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.

elx_mes0405: lpfc_link_speed attribute cannot be set to %d, allowed values are ["LPFC_LINK_SPEED_STRING"]

DESCRIPTION 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.

elx_mes0406: Adapter maximum temperature exceeded <temperature>, taking this port offline

DESCRIPTION: 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.

elx_mes0407: Ignoring nodev_tmo module parameter because devloss_tmo is set.

DESCRIPTION: 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.

elx_mes0410: Cannot find virtual addr for mapped buf on ring <ringno>

DESCRIPTION: 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.

elx_mes0421: MSI-X slow-path request_irq failed <rc>

DESCRIPTION: 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).

elx_mes0422: lpfc_restrict_login attribute cannot be set to <val>, allowed range is [0, 1]

DESCRIPTION: 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)

elx_mes0423: lpfc_"#attr" attribute cannot be set to %d, allowed range is ["#minval", "#maxval"]

DESCRIPTION: 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.

elx_mes0424:lpfc_"#attr" attribute cannot be set to %d, allowed range is ["#minval", "#maxval"]

DESCRIPTION: 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.

elx_mes0425:lpfc_restrict_login attribute cannot be set to %d, allowed range is [0, 1]

DESCRIPTION: 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].

elx_mes0426: Failed to enable interrupt

DESCRIPTION: The driver failed to start the interrupt.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Unload and reload the driver.

elx_mes0427: Cannot re-enable interrupt after slot reset

DESCRIPTION: 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.

elx_mes0429: MSI-X fast-path request_irq failed (<rc>)

DESCRIPTION: The driver received an error for the request_irq_call.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: Unload and reload the driver

elx_mes0430: PM resume Failed to enable interrupt

DESCRIPTION: 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.

elx_mes0431: Failed to enable interrupt.

DESCRIPTION: The driver failed to start the interrupt.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Unload and reload the driver.

elx_mes0433: Wakeup on signal: rc=<rc>

DESCRIPTION: 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.

elx_mes0434: PM resume failed to start worker thread: error=<error>

DESCRIPTION: 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.

elx_mes0435: Adapter failed to get Option ROM version status <rc>

DESCRIPTION: 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.

elx_mes0436: Adapter failed to init, timeout, status reg <status>
DESCRIPTION: The adapter failed during powerup 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.

elx_mes0437: Adapter failed to init, chipset, status reg <status>

DESCRIPTION: The adapter failed during powerup 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.

elx_mes0438: Adapter failed to init, chipset, status reg <status>

DESCRIPTION: The adapter failed during powerup 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.

elx_mes0439: Adapter failed to init, mbxCmd <mbxCommand> READ_REV, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0440: Adapter failed to init, READ_REV has missing revision information

DESCRIPTION: 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.

elx_mes0441: VPD not present on adapter, mbxCmd <mbxCommand> DUMP VPD, mbxStatus <mbxStatus>

DESCRIPTION: The DUMP_VPD mailbox command failed.
DATA: None
SEVERITY: Information
LOG: LOG_INIT verbose
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0442: Adapter failed to init, mbxCmd <mbxCommand> CONFIG_PORT, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0443: Adapter failed to set maximum DMA length mbxStatus <u.mb.mbxStatus>

DESCRIPTION: 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.

elx_mes0446: Adapter failed to init, mbxCmd <mbxCommand> CFG_RING, mbxStatus <mbxStatus>, ring <num>

DESCRIPTION: 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.

elx_mes0447: Adapter failed init, mbxCmd <mbxCommand> CONFIG_LINK mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0448: Adapter failed to init, mbxCmd <mbxCommand> READ_SPARM, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0449: lpfc_%attr attribute cannot be initialized to %d, allowed range is [%min, %max]

DESCRIPTION: 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.

elx_mes0450: lpfc_%attr attribute cannot be set to %d, allowed range is [%min, %max]

DESCRIPTION: 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.

elx_mes0451: Enable interrupt handler failed

DESCRIPTION: 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.

elx_mes0453: Adapter failed to init, mbxCmd <mbxCommand> READ_CONFIG, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0454: Adapter failed to init, mbxCmd <mbxCommand> INIT_LINK, mbxStatus <mbxStatus>

DESCRIPTION: 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.

elx_mes0455: Vital Product

DESCRIPTION: Vital product data (VPD) contained in the HBA flash.
DATA: (1) vpd[0] (2) vpd[1] (3) vpd[2] (4) vpd[3]
SEVERITY: Information
LOG: LOG_INIT verbose
ACTION: No action needed, informational.

elx_mes0456: Adapter failed to issue ASYNCEVT_ENABLE mbox status x%x

DESCRIPTION: 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.

elx_mes0457: Adapter Hardware Error

DESCRIPTION: 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.

elx_mes0458: Bring adapter online

DESCRIPTION: 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.

elx_mes0459: Adapter heartbeat failure, taking this port offline.

DESCRIPTION: The Heartbeat mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT:
ACTION: Ensure the adapter firmware is current. Reload the driver.

elx_mes0460: Bring adapter offline

DESCRIPTION: 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.

elx_mes0462: PCI enable MSI mode success

DESCRIPTION: MSI has been enabled for the port.
DATA: None

SEVERITY: Information
LOG: LOG_INIT:
ACTION: None required.

elx_mes0463: lpfc_soft_wwpn attribute set failed to reinit adapter - <stat1>

DESCRIPTION: The adapter failed to restart after setting a new WWPN.
DATA: None
SEVERITY: Information
LOG: LOG_INIT:
ACTION: Perform a dump using the hbacmd.

elx_mes0464: lpfc_soft_wwpn attribute set failed to reinit adapter - <stat2>

DESCRIPTION: The adapter failed to restart after setting a new WWPN.
DATA: None
SEVERITY: Information
LOG: LOG_INIT:
ACTION: Perform a dump using the hbacmd.

elx_mes0466: Outstanding IO when bringing Adapter offline

DESCRIPTION: IO is still pending while attempting to stop the driver.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes0467: lpfc_topology attribute cannot be set to %d, allowed range is [0, 6], phba->brd_no, val.

DESCRIPTION: Topology module parameter is invalid.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Use a topology value in the valid range.

elx_mes0468: lpfc_restrict_login must be 0 for Physical ports. “vport->cfg_restrict_login = 0;

DESCRIPTION: Cannot restrict the login for the physical port.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0469: lpfc_link_speed attribute cannot be set to %d, allowed range is [0, 8]

DESCRIPTION: The link speed module parameter is invalid.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Use a link speed parameter in the valid range.

elx_mes0472: PCI channel I/O permanent failure

DESCRIPTION: The PCI bus has detected an error.
DATA: None

SEVERITY: Error
LOG: LOG_INIT
ACTION:Issue an HBA reset.

elx_mes0474: Unable to allocate memory for issuing MBOX_CONFIG_MSI command

DESCRIPTION:Mailbox memory pool allocation error.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0475: Not configured for supporting MSI-X cfg_use_msi: 0x%x

DESCRIPTION: 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.

elx_mes0476: HBA not supporting SLI-3 or later SLI Revision: <sli_rev>

DESCRIPTION: 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.

elx_mes0478W: MSI request_irq failed (<rc>)

DESCRIPTION: The request_irq kernel API has failed.
DATA: None
SEVERITY: Warning
LOG: LOG_INI
ACTION: Set lpfc_use_msi = 0.

elx_mes0479: Deferred Adapter Hardware Error

DESCRIPTION: 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.

elx_mes0483:Invalid link-attention link speed: x%x", bf_get(lpfc_acqe_link_speed, acqe_link).

DESCRIPTION: The link speed reported in the link attention interrupt is invalid.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Check the switch configuration.

elx_mes0485: MSI-X slow-path request_irq failed (<rc>)

DESCRIPTION:Th e request_irq kernel API has failed.
DATA: None
SEVERITY: Warning

LOG: LOG_INIT
ACTION: Set module parameter lpfc_use_msi = 0.

elx_mes0486: MSI-X fast-path (<index>) request_irq failed (<rc>).

DESCRIPTION: The request_irq kernel API has failed.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT:
ACTION: Set module parameter lpfc_use_msi = 0.

elx_mes0490: MSI request_irq failed (<rc>)

DESCRIPTION: The request_irq kernel API has failed.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT:
ACTION: Set module parameter lpfc_use_msi = 0.

elx_mes0492: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command

DESCRIPTION: Mailbox memory pool allocation error.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0493: SLI_CONFIG_SPECIAL mailbox failed with status<rc>

DESCRIPTION: Mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Ensure the adapter’s firmware is current. Unload and reload the driver.

elx_mes0494: Unable to allocate memory for issuing "SLI_FUNCTION_RESET mailbox command"

DESCRIPTION: Mailbox memory pool allocation error.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0495:SLI_FUNCTION_RESET mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>.

DESCRIPTION: Mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Reset the HBA.

elx_mes0496: Failed allocate slow-path EQ

DESCRIPTION: The event queue for the slow path was not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Unload and reload the driver.

elx_mes0497: Failed allocate fast-path EQ

DESCRIPTION: The event queue for the fast path was not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: Unload and reload the driver.

elx_mes0499: Failed allocate fast-path FCP CQ (<fcp_cqidx>).

DESCRIPTION: 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.:

elx_mes0500: Failed allocate slow-path mailbox CQ

DESCRIPTION: Failed to allocate slow-path mailbox CQ.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0501: Failed allocate slow-path ELS CQ

DESCRIPTION: Failed to allocate slow-path ELS CQ.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0503: Failed allocate fast-path FCP

DESCRIPTION: Failed to allocate fast-path FCP.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0504: Failed allocate slow-path ELS WQ

DESCRIPTION: Failed to allocate slow-path ELS WQ
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0505: Failed allocate slow-path ELS MQ

DESCRIPTION:
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0506: Failed allocate receive HRQ\n

DESCRIPTION:
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0507: Failed allocate receive DRQ

DESCRIPTION: Failed to allocate receive DRQ.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0520: Slow-path EQ not allocated

DESCRIPTION: The slow-path EQ not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0522: Fast-path EQ <fcp_eqidx> not allocated

DESCRIPTION: The fast-path EQ is not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0523: Failed setup of fast-path EQ <fcp_eqidx>, rc = <rc>

DESCRIPTION: The fast-path EQ setup failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0526: Fast-path FCP CQ <fcp_cqidx> not allocated

DESCRIPTION: The fast-path FCP is not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0527: Failed setup of fast-path FCP CQ <fcp_cqidx>, rc = <rc>

DESCRIPTION: The fast-path FCP CQ setup failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required .

elx_mes0528: Mailbox CQ not allocated

DESCRIPTION: The mailbox CQ not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0530: ELS CQ not allocated

DESCRIPTION: The ELS CQ is not allocated
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0534: Fast-path FCP WQ <fcp_wqidx> not allocated

DESCRIPTION: The fast-path FCP WQ is not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0535: Failed setup of fast-path FCP WQ <fcp_wqidx>, rc = <rc>

DESCRIPTION: The fast-path FCP WQ setup failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0536: Slow-path ELS WQ not allocated

DESCRIPTION: The slow-path ELS WQ not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0538: Slow-path MQ not allocated

DESCRIPTION: The slow-path MQ not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0540: Receive Queue not allocated

DESCRIPTION:The Receive Queue is not allocated.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0542: lpfc_create_static_vport failed to allocate mailbox memory

DESCRIPTION: Failed to allocate mailbox memory for VPort creation.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0543:lpfc_create_static_vport failed to allocate vport_info\n"))

DESCRIPTION: Failed to allocate vport_info.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0544: lpfc_create_static_vport failed to issue dump mailbox command ret 0x%x status 0x%x\n", rc, mb->mbxStatus)

DESCRIPTION: Failed to issue a dump mailbox command for statis VPort creation.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes0545: 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);

DESCRIPTION: Invalid information header; the signature or revision is invalid.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes0546:lpfc_create_static_vport failed to create vport

DESCRIPTION: Failed to create vport
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes0560: lpfc_enable_auth attribute cannot be set to <val>, allowed range is [0, 1]

DESCRIPTION: The lpfc_enable_auth attribute can only be 0 or 1.
DATA: None
SEVERITY: Error

LOG: LOG_INIT
ACTION: None required.

elx_mes0582:Error <rc> during sgl post operation

DESCRIPTION: The SGL post operation failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_IP verbose
ACTION: None required.

elx_mes0600: FARP-RSP received from DID <did>

DESCRIPTION: A FARP response was received.
DATA: None
SEVERITY: Information
LOG: LOG_IP verbose
ACTION: None required.

elx_mes0601: FARP-REQ received from DID <did>

DESCRIPTION: An unsolicited FARP request was received.
DATA: None
SEVERITY: Information
LOG: LOG_IP verbose
ACTION: None required.

elx_mes0602: Failed to allocate CQ_EVENT entry

DESCRIPTION: Failed to allocate a CQ_EVENT entry.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0603: Invalid work queue CQE subtype (x%x)\n", cq-<subtype>

DESCRIPTION: Invalid work queue CQE.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes0700: Bus Reset on target <i> failed

DESCRIPTION: The bus reset for the specified target failed.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required.

elx_mes0702: Issue Target Reset OR LUN Reset to TGT <num>

DESCRIPTION: The SCSI layer detected that it needs to abort all I/O to a specific target. This results in an FCP Task Management command to abort the I/O in progress.
DATA: (1) rpi (2) flags

SEVERITY: Information
LOG: LOG_FCP verbose
ACTION: Check the state of the target in question.

elx_mes0704: At limitation of <total> preallocated command buffers

DESCRIPTION: The maximum number of command buffers have already been allocated.
DATA: None
SEVERITY: Warning
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0705: Allocation request of <num> command buffers will exceed max of <hba_queue_depth>. Reducing allocation request to <size>

DESCRIPTION: 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.

elx_mes0707: Driver's buffer pool is empty, IO busied

DESCRIPTION: Resources were not available to process an IO request. A busy status will be returned.
DATA: None
SEVERITY: Information
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0708: Allocation request of <num_to_alloc> command buffers did not succeed. Allocated <num_allocated> buffers.

DESCRIPTION: 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.

elx_mes0710: Iodone <target>/<lun>cmd <cmd> error <result> SNS <lp> <lp3>

DESCRIPTION: This error indicates that the Fibre Channel driver is returning a SCSI command to the SCSI layer in error or with sense data.
DATA: (1) retry (2) resid
SEVERITY: Information
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0711: Detected queue full - lun queue depth adjusted to %d

DESCRIPTION: 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.

elx_mes0713: SCSI layer issued Device Reset (%d, %d)

DESCRIPTION: A device reset was issued.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required.

elx_mes0714: SCSI layer issued bus reset

DESCRIPTION: 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.

elx_mes0716: FCP read underrun, expected <len>, residual <resid>

DESCRIPTION: An FCP device provided less data than was requested.
DATA: (1) fcpi_parm (2) cmnd[0] (3) underflow
SEVERITY: Information
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0717: FCP command <cmd> residual underrun converted to error

DESCRIPTION: The driver converted this underrun condition to an error based on the underflow field in the SCSI command.
DATA: (1) len (2) resid (3) underflow
SEVERITY: Information
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0720 - FCP command <cmnd[0]> residual overrun error

DESCRIPTION: 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.

elx_mes0721 - Device Reset rport failure: rdata <rdata>

DESCRIPTION: The reset of the Rport failed.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required.

elx_mes0722 - Target Reset rport failure: rdata <rdata>

DESCRIPTION: The reset of the target failed.
DATA: None
SEVERITY: Error

LOG: LOG_FCP
ACTION: None required.

elx_mes0723- SCSI layer issued Target Reset (%d, %d)

DESCRIPTION: The SCSI layer issued a target reset.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required.

elx_mes0724 -I/O flush failure for context <“LUN”,”TGT”,”HOST”,”Unknown”>: cnt <cnt>

DESCRIPTION: The I/O flush to the {LUN TARGET or HOST] has failed.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required.

elx_mes0727 - TMF <cmd> to TGT <TGT#> LUN <LUN#> failed (<ulpStatus>, <ulpWord[4]>)

DESCRIPTION: The task management command failed.
DATA: None
SEVERITY: Error
LOG: LOG_FCP
ACTION: None required

elx_mes0729: FCP cmd <cmnd> failed <target>/<lun> status: <status> result: <result>

DESCRIPTION: 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.

elx_mes0730: FCP command failed: RSP

DESCRIPTION: 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.

elx_mes0734: FCP read check error

DESCRIPTION: 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.

elx_mes0735: FCP Read Check Error and Underrun Data

DESCRIPTION: 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.

elx_mes0748: Abort handler timed out waiting for abort to complete:ret <status> D <target id> LUN <lun id>

DESCRIPTION: The abort handler timed out waiting for abort to complete.
DATA: None
SEVERITY: Error
LOG: Always
ACTION: None required.

elx_mes0749: SCSI layer issued abort device

DESCRIPTION: The SCSI layer aborted a device.
DATA: (1) ret (2) id (3) lun (4) snum
SEVERITY: Warning
LOG: LOG_FCP verbose
ACTION: None required.

elx_mes0900: Cleanup node for NPort <nlp_DID>

DESCRIPTION: The driver node table entry for a remote NPort was removed.
DATA: (1) nlp_flag (2) nlp_state (3) nlp_rpi
SEVERITY: Information
LOG: LOG_NODE verbose
ACTION: None required.

elx_mes0904: NPort state transition x%06x, %s -> %s\n", ndlp->nlp_DID, lpfc_nlp_state_name(name1, sizeof(name1), old_state), lpfc_nlp_state_name(name2, sizeof(name2), state));

DESCRIPTION: .
DATA: None
SEVERITY: Information
LOG: LOG_NODE
ACTION: None required.

Elx_mes 0911 cmpl_unreg_vpi, mb status = <mbxStatus>

DESCRIPTION:
DATA: None
SEVERITY: Information
LOG: LOG_NODE
ACTION: None required.

Elx_mes 0912 cmpl_reg_vpi, mb status = <mbxStatus>

DESCRIPTION:
DATA: None
SEVERITY: Information
LOG: LOG_NODE
ACTION: None required.

Elx_mes 0915 Register VPI failed:<mbxStatus>

DESCRIPTION: Could not register the VPI.

DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes0929: FIND node DID unmapped

DESCRIPTION: The driver is searching for a node table entry, on the unmapped node list, based on DID.
DATA: (1) ndlp (2) nlp_DID (3) nlp_flag (4) data1
SEVERITY: Information
LOG: LOG_NODE verbose
ACTION: None required.

elx_mes0932: FIND node did <did> NOT FOUND

DESCRIPTION: The driver was searching for a node table entry based on the DID and the entry was not found.
DATA: (1) order
SEVERITY: Information
LOG: LOG_NODE verbose
ACTION: None required.

Elx_msg1003 Send dhchap challenge local wwpn <) local_wwpn > remote_wwpn < remote_wwpn >

DESCRIPTION: Informational message during DHCHAP authentication challenge and response process.
DATA: (1) local_wwpn (2) remote_wwpn
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Software driver Info. Contact Technical Support for further information.

Elx_msg1005 AUTHENTICATION_FAILURE Nport:<port>

DESCRIPTION: 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 >

DESCRIPTION: 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 >

DESCRIPTION: 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>

DESCRIPTION: 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>

DESCRIPTION: 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.

Elx_msg1010 Bad Tag 1 <message>

DESCRIPTION: 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

DESCRIPTION: 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>

DESCRIPTION: 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

DESCRIPTION: 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>

DESCRIPTION: 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>

DESCRIPTION: 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>

DESCRIPTION: 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.

Elx_msg1017 dhchap challenge could not find DH Group

DESCRIPTION: 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

DESCRIPTION: There is no Public key for the non-NULL DH Group.
DATA: None
SEVERITY: Error
LOG: LOG_SECURITY
ACTION: None required.

Elx_mes1019 Request tranid <tran_id> timed out

DESCRIPTION: A transaction with storage array could not complete due to timeout.
DATA: (1) tran_id
SEVERITY: Warning
LOG: LOG_SECURITYverbose
ACTION: Software driver warning. If this problem persists, report these errors to Technical Support.

Elx_mes1021 ERROR: attempted to queue security work, when no workqueue created

DESCRIPTION: 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.

Elx_mes1022 Security request does not exist

DESCRIPTION: 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.

Elx_mes1023 Warning - data may have been truncated. Data: <data> reqdl: <data_len> mesdl:<data_len>

DESCRIPTION: 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_ msg1025 Received security config local_wwpn:< > remote_wwpn:<> mode:<> hash <>:bidir <> dh_group<> reauth_interval <>

DESCRIPTION: Re-Authentication succeeded.
DATA: (1) local_wwpn (2) remote_wwpn (3) auth_mode (4) hash_len (5) hash_priority (6) bidirectional (7) dh_group_len (8) dh_group_priority (9) reauth_interval
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1028 Start Authentication: No buffers

DESCRIPTION: 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.

Elx_msg1029 Reauthentication Failure

DESCRIPTION: 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

DESCRIPTION: 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

DESCRIPTION: 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>

DESCRIPTION: 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

DESCRIPTION: 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>

DESCRIPTION: 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>

DESCRIPTION: 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.

Elx_ msg1038 Authentication not required by the fabric Disabled

DESCRIPTION: For a given security configuration Authentication is disabled by the fabric as it not required.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1039 Not Expecting Reply - rejecting. State <state>

DESCRIPTION: 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>

DESCRIPTION: 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_msg1041 Authentication Successful

DESCRIPTION: Authentication succeeded.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1042 Re-Authentication Successful

DESCRIPTION: Re-Authentication succeeded.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1043 Authentication LS_RJT

DESCRIPTION: The authentication request was rejected.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

Elx_msg1045 Issue AUTH_NEG failed Status:%x

DESCRIPTION: The authentication negotiation failed.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

Elx_msg1046 Authentication Successful

DESCRIPTION: Authentication Succeeded.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1047 Re-Authentication Successful

DESCRIPTION: Re-Authentication succeeded.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1048 Issue AUTH_REJECT failed

DESCRIPTION: 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

DESCRIPTION: 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

DESCRIPTION: 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.

Elx_msg1053 Start Authentication: Security service offline

DESCRIPTION: 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

DESCRIPTION: 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_msg 1056 Authentication mode is disabled, but is required by the fabric

DESCRIPTION: The discovery failed because fabric requires authentication mode but that mode is currently disabled.
DATA: None
SEVERITY: Information
LOG: LOG_SECURITY
ACTION: Informational message only. If you have questions, contact the Technical Support.

Elx_msg1057 Authentication transaction reject. reason <reason> exp <explanation>

DESCRIPTION: 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_mes1058 Waiting for authentication service

DESCRIPTION: 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.

Elx_mes1059 Authentication became available

DESCRIPTION: 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.

elx_mes1201 Failed to allocate dfc_host

DESCRIPTION: Failed to allocate memory for the dfc_host_struct.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes1209: C_CT request error

DESCRIPTION: The CT response returned more data than the user buffer could hold.
DATA: (1) outdmp->flag (2) 4096
SEVERITY: Information
LOG: LOG_LIBDFC verbose
ACTION: Modify the user application issuing a CT request to allow for a larger response buffer.

elx_mes1210 Invalid cmd size: cmd <cmd> cmdsz <cmdsize> rspsz <rspsize>

DESCRIPTION: The management command for LPFC 2100 has failed.
DATA: None
SEVERITY: Error
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1211 genreq alloc failed\n");

DESCRIPTION: Resource allocation failure.
DATA: (1) return code
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Kernel memory resources too low.

elx_mes1213 FCoE cmd overflow: off <#> + cnt <#> > cmdsz <#>

DESCRIPTION: Application has tried to read more data than originally requested.
DATA: (1) response offset (2) size (3) cmd size
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Application may have sent a invalid command.

elx_mes1214 Can not issue FCoE cmd SLI not active: <#> rc= -EACCESS

DESCRIPTION: The SLI layer has not been initialized.
DATA: (1) offset
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Restart the HBA.

elx_mes1215 Can not issue FCoE cmd: not ready or not in maint mode"

DESCRIPTION: Either the external link is unplugged, link down, and the FCoE is not in maintenance mode.
DATA: (1) current offset (2) return code.
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Plug external cable in or set FCoE in maintenance mode.

elx_mes1216 FCoE IOCB failed: off <#> rc <#>

DESCRIPTION: FCoE command generated by the application has failed.
DATA: (1) offset (2) return code.
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Application should retry the command.

elx_mes1223 menlo_write: couldn't alloc genreq

DESCRIPTION: Resource allocation failure.
DATA: None
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Kernel memory resources too low.

elx_mes1224 FCoE iocb failed off <#> rc=<#>",

DESCRIPTION: FCoE command failed in SLI.
DATA: (1) offset (2) return code
LOG: LOG_LIBDFC
SEVERITY: Informational.
ACTION: Retry the command, if it fails again, reset HBA when convenient.

elx_mes1227W FCoE IOCB TMO: handler set for <context3>

DESCRIPTION: The management command for the LPFC 2100 has timed out.
DATA: None
SEVERITY: Warning
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1228 FCoE IOCB TMO: handler set for <context3>

DESCRIPTION: A management IOCB for the LPFC 2100 has timed out
DATA: None.
SEVERITY: Warning
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1229 Waiting for menlo mnt

DESCRIPTION: Waiting for the LPFC 2100 to enter maintenance method.
DATA: None.
SEVERITY: Warning
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1230 Could not find buffer for FCoE cmd:off <#> indmp <addr> off <#>

DESCRIPTION: Could not find resources associated with this FCoE cmd.
DATA: (1) current offset (2) buffer desc pointer (3) size.
SEVERITY: Error
LOG: LOG_LIBDFC
ACTION: Try reloading the driver when convenient.

elx_mes1231: bad bpl:

DESCRIPTION: A bad buffer list was detected upon completion.
DATA: None.
SEVERITY: Error
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1235 Could not find buffer for FCoE cmd: off:<#> poff:<#> cnt:<#> mlastcnt:<#> addl:<x> addh:<x> mdsz:<#>

DESCRIPTION: FCoE command failed because it could not find the resource.
DATA: (1) current offset (2)previous offset (3) count (4) last count (5) address low (6) address high
SEVERITY: Error
LOG: LOG_LIBDFC
ACTION: No action needed, informational.

elx_mes1238 FCoE IOCB failed: off <#> rc=<#>

DESCRIPTION: The command generated by the driver to check the FCoE has failed.
DATA: (1) offset (2) return code
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: Make sure link is up or the adapter has set menlo in maintenance mode.

elx_mes1240: Unable to allocate command buffer memory

DESCRIPTION: Could not allocate memory for the command buffer.
DATA: None.
SEVERITY: Error
LOG: LOG_LINK_EVENT
ACTION: None required.

elx_mes1243: Menlo command error. code=%d.\n", mlorsp->code

DESCRIPTION: The Menlo maintenance command failed.
DATA: None.
SEVERITY: Error
LOG: LOG_LINK_EVENT
ACTION: None required.

elx_mes1244: Unable to allocate response buffer memory.

DESCRIPTION: Could not allocate memory for the management command response.
DATA: None.
SEVERITY: Error
LOG: LOG_LINK_EVENT
ACTION: None required.

elx_mes1246 FCoE chip is running golden firmware. Update FCoE chip firmware immediately <fw_type>

DESCRIPTION: The FCoE is running the golden firmware.
DATA: (1) firmware-type
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode and disable maintenance mode.

elx_mes1247 FCoE chip is running diagnostic firmware. Operational use suspended. <fw_type>

DESCRIPTION: The FCoE is running a diagnostic.
DATA:(1) firmware-type
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode.

elx_mes1248 FCoE chip is running unknown firmware. <fw_type>

DESCRIPTION: The FCoE is running a unknown.
DATA: (1) firmware-type
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode. Try loading latest FCoE firmware.

elx_mes1249 Invalid FRU data found on adapter. Return adapter to Emulex for repair.

DESCRIPTION: The FRU data on the FCoE chip is invalid.
DATA:(1) firmware-type
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode. Try loading latest FCoE firmware or send the HBA back to Emulex for repair.

elx_mes1250 Menlo command error. code=<#>

DESCRIPTION: The IOCB driver sent to check FCoE state has bad header size.
DATA: (1) return code
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode.

elx_mes1251 Menlo command error. code=<#>

DESCRIPTION: The IOCB driver sent to check FCoE state has failed, no resources.
DATA: (1) return code
LOG: LOG_LINK_EVENT

Severity: Error
ACTION: Try resetting the FCoE to operational mode.

elx_mes1252 Menlo command error. code=<#>

DESCRIPTION: The IOCB driver sent to check FCoE state has failed.
DATA: (1) return code
LOG: LOG_LINK_EVENT
Severity: Error
ACTION: Try resetting the FCoE to operational mode.

elx_mes1257 lpfc_menlo_issue_iocb: handler set for <context3>.

DESCRIPTION:
DATA: None
LOG: LOG_LIBDFC
Severity: Warning
ACTION: None required.

elx_mes1259 Issued mailbox cmd <u.mb.mbxCommand> while in stopped state.

DESCRIPTION: Only the dump mailbox command and reset HBA mailbox command are allowed when in the stopped state.
DATA: None
LOG: LOG_MBOX
Severity: Warning
ACTION: None required.

elx_mes1262 Failed to allocate dfc_host

DESCRIPTION: Could not allocate memory the dfc_host_struct.
DATA: None
LOG: LOG_LIBDFC
SEVERITY: Error
ACTION: None required.

elx_mes1268 Find ndlp returned NULL for oxid:x%x SID:x%x", oxid, sid.(int)off, rc.

DESCRIPTION: Could not find the node for this DID.
DATA: None
LOG: LOG_ELS
SEVERITY: Warning
ACTION: None required.

elx_mes1301: Re-establishing Link

DESCRIPTION: The driver detected a condition in which it had to re-initialize the link.
DATA: (1) status (2) status1 (3) status2
SEVERITY: Information
LOG: LOG_LINK_EVENT verbose
ACTION: If numerous link events are occurring, check the physical connections to the Fibre Channel network.

elx_mes1302: Invalid speed for this board: Reset link speed to auto: <cfg_link_speed>

DESCRIPTION: The driver is reinitializing the link speed to auto-detect.
DATA: None

SEVERITY: Warning
LOG: LOG_LINK_EVENT verbose
ACTION: None required.

elx_mes1303: Link Up Event <eventTag> received

DESCRIPTION: 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 Fibre Channel network.

elx_mes1304: Link Up Event ALPA map

DESCRIPTION: 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 Fibre Channel network.

elx_mes1305: Link Down Event <eventTag> received

DESCRIPTION: 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 Fibre Channel network.

elx_mes1306: Link Up Event in loop back mode x%x received Data: x%x x%x x%x x%x

DESCRIPTION: 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.

elx_mes1307: READ_LA mbox error <mbxStatus> state <hba_state>

DESCRIPTION: The driver cannot determine what type of link event occurred.
DATA: None
SEVERITY: Information
LOG: LOG_LINK_EVENT verbose
ACTION: If numerous link events are occurring, check the physical connections to the Fibre Channel network. May indicate a possible hardware or firmware problem.

elx_mes1308: Menlo Maint Mode Link up Event x%x rcvd Data: x%x x%x x%x

DESCRIPTION: 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.

elx_mes1309: Link Up Event npiv not supported in loop topology

DESCRIPTION: NPIV is not supported in loop topology.
DATA: None
SEVERITY: Error
LOG: LOG_LINK_EVENT
ACTION: None required.

elx_mes1310: Menlo Maint Mode Link up Event <eventTag> rcvd

DESCRIPTION: 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.

elx_mes1312: Link Down Event <eventTag> received

DESCRIPTION: Maintenance mode link up notofication 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.

elx_mes1400: Failed to initialize sgl list.

DESCRIPTION: Failed to initialize SGL list during initialization.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1401:Failed to enable pci device.

DESCRIPTION: Failed to enable PCI device during initialization.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1402: Failed to set up pci memory space.

DESCRIPTION: PCI initialization failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1403: Failed to set up driver resource.

DESCRIPTION: Driver resource initialization failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT

ACTION: None required.

elx_mes1404: Failed to set up driver resource.

DESCRIPTION: Driver resource initialization failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1405: Failed to initialize iocb list.

DESCRIPTION: Driver resource initialization failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1406: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1407: Failed to create scsi host.

DESCRIPTION: Initialization failed to create SCSI host.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1408: 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),

DESCRIPTION: The HBA’s power on self test has failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1409: Failed to enable pci device.

DESCRIPTION: Failed to enable PCI device during initialization.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1410: Failed to set up pci memory space.

DESCRIPTION: Initialization failed to set up PCI memory space.
DATA: None

SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1411: Failed to set up driver resource.

DESCRIPTION:
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1412: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1413: Failed to initialize iocb list.

DESCRIPTION: Initialization failed to initialize the IOCB list.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1414: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1415: Failed to create scsi host.

DESCRIPTION: Initialization failed to create SCSI host.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1416: Failed to allocate sysfs attr

DESCRIPTION: Initialization failed to sysfs attribute.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1418: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None

SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1419: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1420: Invalid HBA PCI-device group:<dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1421: Failed to set up hba

DESCRIPTION: Initialization failed to set up the HBA.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1422: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>

DESCRIPTION: 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.

elx_mes1423: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>

DESCRIPTION: 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.

elx_mes1424: Invalid PCI device group:<pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1425: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1426: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1427: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1428: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1429: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1430: Failed to initialize sql list

DESCRIPTION: Failed to initialize SQL list
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1431: Invalid HBA PCI-device group: <pci_dev_grp>

DESCRIPTION: Invalid HBA PCI-device group detected.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1432: Failed to initialize rpi headers.

DESCRIPTION: Failed to initialize RPI headers.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1476: Failed to allocate sysfs attr

DESCRIPTION: Failed to allocate sysfs attrIbutes.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1477: Failed to set up hba

DESCRIPTION: Failed to set up the HBA.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes1601: libdfc ioctl entry

DESCRIPTION: The entry point for processing an ioctl.
DATA:(1) lpfc_cmd (2) lpfc_arg1 (3) lpfc_arg2 (4) lpfc_outsz
SEVERITY: Information
LOG: LOG_LIBDFC verbose
ACTION: None required.

elx_mes1602: libdfc ioctl exit

DESCRIPTION: The exit point for processing an ioctl.
DATA:(1) rc (2) lpfc_outsz (3) lpfc_dataout
SEVERITY: Information
LOG: LOG_LIBDFC verbose
ACTION: None required.

elx_mes1603:Loopback test did not receive expected data length. actual length <len>expected length <full_size>.

DESCRIPTION: The loopback test did not receive the same amount of data that it transmitted.
DATA: None
SEVERITY; Error
LOG: LOG_LIBDFC
ACTION: None required.

elx_mes1800 Could not issue unreg_vpi

DESCRIPTION: 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.

elx_mes1801 Create vport work array FAILED: cannot do scsi_host_get

DESCRIPTION: 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.

elx_mes1802 HBQ <index>: local_hbqGetIdx <index> is > than hbqp->entry_count <count>

DESCRIPTION: An error occurred when processing queue related to an HBA in a particular slot.
DATA: (1) hbqno (2) local_hbqGetIdx (3) entry_count
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1803 Bad hbq tag. Data: <tag> <count>

DESCRIPTION: An error occurred when processing queue related tags for an HBA in a particular slot.
DATA: (1) tag (2) buffer_count
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1804: Invalid asynchrous event code: <evt code>

DESCRIPTION: The asynchronous event code that the firmware passed to the driver is invalid.
DATA: None
SEVERITY; Error
LOG: LOG_SLI
ACTION: None required.

elx_mes1805 Adapter failed to init.Data: <command> <status> <queue num>

DESCRIPTION: An error occurred when processing queue related tags for an HBA in a particular slot.
DATA: (1) mbxCommand (2) mbxStatus (3) hbaqno
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1806 Mbox <command> failed. No vport.

DESCRIPTION: A mailbox command could not be communicated because there was no VPort associated with the mailbox command.
DATA: mbxCommand
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1807 IOCB <value> failed. No vport

DESCRIPTION: An IOCB command could not be communicated because there was no VPort associated with the mailbox command.
DATA: (1) ulpCommand
SEVERITY: Error
LOG: LOG_VPORT verbose

ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1808 Create VPORT failed: NPIV is not enabled: SLImode <mode>

DESCRIPTION: The driver failed to create a port because the HBA was in wrong mode or was not capable of NPIV.
DATA: (1) sli_rev
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Load the driver with npiv enabled on an HBA that supports SLI-3.

elx_mes1809 Create VPORT failed: Max VPORTs (<vpi>) exceeded.

DESCRIPTION: The driver failed to create a port because the maximum number of port supported by the driver will be exceeded.
DATA: (1) max_vpi
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: No Action. The driver can not create any more VPorts.

elx_mes1810 Create VPORT failed: Cannot get instance number.

DESCRIPTION: The driver failed to allocate resources for an adapter and could not assign an instance number.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1811 Create VPORT failed: vpi x<vpi>

DESCRIPTION: The driver failed to create a port and had to eliminate all its resources.
DATA: (1) vpi
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1812 vport_delete failed: Cannot delete physical host

DESCRIPTION: An attempt to delete a port failed because it was to delete a physical port and not a virtual port. Only VPorts on physical ports can be deleted on an NPIV system.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1813 Create VPORT failed. Cannot get sparam.

DESCRIPTION: The port could not be created because it could not be initialized possibly due to unavailable resources.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1814: I Mbox x%x failed, no vport\

DESCRIPTION: The vport field of this mailbox command was not completed.
DATA: None
SEVERITY; Error
LOG: LOG_MBOX, LOG_VPORT
ACTION: None required.

elx_mes1815 Could not issue unreg_did (default rpis)

DESCRIPTION: Attempt to unregister rpi failed.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1816 FLOGI NPIV supported, response data <port>

DESCRIPTION: The fabric reports support for NPIV upon FLOGI.
DATA: (1) response_multiple_NPort
SEVERITY: Warning
LOG: LOG_VPORT verbose
ACTION: No action needed, informational.

elx_mes1817 Fabric does not support NPIV - configuring single port mode

DESCRIPTION: The fabric reports no support for NPIV upon FLOGI.
DATA: None
SEVERITY: Warning
LOG: LOG_VPORT verbose
ACTION: No action needed, informational.

elx_mes1818 VPort failed init, mbxCmd <mailbox command> READ_SPARM mbxStatus <mailbox status> , rc = <status>

DESCRIPTION: 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.

elx_mes1819 Unrecognized lpfc_sli_mode parameter: <mode>

DESCRIPTION: 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.

elx_mes1820 Unable to select SLI-3. Not supported by adapter.

DESCRIPTION: 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).

elx_mes1821 Create VPORT failed. Invalid WWN format

DESCRIPTION: 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.

elx_mes1822 Invalid <name>: <xx: xx: xx: xx: xx: xx: xx: xx>

DESCRIPTION: 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.

elx_mes1823 Create VPORT failed. Duplicate WWN on HBA.

DESCRIPTION: 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.

elx_mes1824 NPIV enabled: Override lpfc_sli_mode parameter (<mode>) to auto(0)

DESCRIPTION: 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.

elx_mes1825 Vport Created.

DESCRIPTION:. 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.

elx_mes1826 Vport Disabled.

DESCRIPTION: The port had to be disabled in the system.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: No action, informational.

elx_mes1827 Vport Enabled

DESCRIPTION: The port had to be enabled after possible recovery from some errors.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: No action, informational.

elx_mes1828 Vport Deleted

DESCRIPTION: A Vport was deleted.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT verbose
ACTION: No action, informational.

elx_mes1829 CT command failed to delete objects on fabric.

DESCRIPTION: 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.

elx_mes1830 Signal aborted mbxCmd <command>

DESCRIPTION: 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.

elx_mes1831 Create VPORT Interrupted

DESCRIPTION: 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.

elx_mes1832 No pending MBOX command to handle

DESCRIPTION:
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION:

elx_mes1835: Vport discovery quiesce failed: state <port_state> fc_flags <fc_flag> wait msecs <jiffies_to_msecs(jiffies - start_time)>

DESCRIPTION: Could not pause discovery on this VPort.
DATA: None
SEVERITY: Error

LOG: LOG_VPORT
ACTION: None required.

elx_mes1836: Could not issue unreg_login(all_rpis) status <rc>

DESCRIPTION: The unreg_login cannot be issued.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_VPORT
ACTION: None required.

elx_mes1837: Vport_delete failed: Cannot delete static vport

DESCRIPTION: Static VPorts cannot be deleted.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT
ACTION: None required.

elx_mes1838: Failed to INIT_VPI on vpi <vpi> status <rc>

DESCRIPTION: Failed to INIT_VPI.
DATA: None
SEVERITY: Error
LOG: LOG_VPORT
ACTION: None required.

elx_mes2000 Failed to allocate mbox for read_FCF cmd

DESCRIPTION: Failed to allocate mbox for READ_FCF command.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2001 Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command

DESCRIPTION: Unable to allocate memory for issuing the SLI_CONFIG_SPECIAL mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2002 Error Could not grow rpi count

DESCRIPTION: An error occurred because the RPI count could not be increased.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2004 Failed to allocate XRI.last XRITAG is <XRI> Max XRI is <MAX_XRI>, Used XRI is <USED_XRI>.

DESCRIPTION:All XRIs are in use.

DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes2005 Unable to deregister pages from HBA: <rc>

DESCRIPTION:The SGL pages could not be unregistered from the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2007: Only Limited Edition cmd Format supported <iocb.ulpCommand>

DESCRIPTION:The SGL pages could not be unregistered from the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2008: Error <rc> posting all rpi headers

DESCRIPTION:The RPI headers could not be posted to the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2009 Failed to allocate mbox for ADD_FCF cmd

DESCRIPTION: Failed to allocate mailbox for ADD_FCF command.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2010: Resume RPI Mailbox failed status <status>, mbxStatus <mbx status>

DESCRIPTION:
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2011: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command

DESCRIPTION: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2012: Mailbox failed , mbxCmd <mbx_cmd> READ_CONFIG, mbxStatus <mbx status>

DESCRIPTION: The READ_CONFIG mailbox command failed.

DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2013:Could not manually add FCF record 0, status <rc>

DESCRIPTION: Could not add FCF record to the FCF list.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2014: Invalid command <iocb.ulpCommand>

DESCRIPTION: The IOCB command is invalid.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2015: Invalid CT %x command <iocb.ulpCommand>

DESCRIPTION: Invalid Command-Type in the IOCB is not supported.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2017: REG_FCFI mbxStatus error <mbx status> HBA state <port_state>

DESCRIPTION:The REG_FCFI mailbox command has failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2018: REG_VFI mbxStatus error <mbx status> HBA state <port_state>

DESCRIPTION: The REG_VFI mailbox command has failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2020 Failed to allocate mbox for ADD_FCF cmd

DESCRIPTION: Failed to allocate mailbox for ADD_FCF command.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2022 VPI Mailbox failed status <status>, mbxStatus <mbxStatus>

DESCRIPTION: The INIT VPI mailbox command has failed.
DATA: None

SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2401 Failed to allocate memory for ELS XRI management array of size <els_xri_cnt>.

DESCRIPTION: Initialization failed to allocate memory for the ELS XRI management array.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2500: EQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the event queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2501: CQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the completion queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2502:MQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the mailbox queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2503: WWQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the work queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2504: RQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the receive queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2505:EQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION:The mailbox command sent to delete the event queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2506:CQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the completion queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2507:MQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the mailbox queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2508: WQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the work queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2509: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the work queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2510: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the work queue has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2511: POST_SGL mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>n

DESCRIPTION: The mailbox command sent to post the SGL pages to the firmware has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2512: REMOVE_ALL_SGL_PAGES mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the SGL pages from the firmware has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2513: POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>

DESCRIPTION: The mailbox command sent to post the SGL pages to the firmware has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2514: POST_RPI_HDR mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: 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.

elx_mes2515:ADD_FCF_RECORD mailbox failed with status <rc>

DESCRIPTION: The mailbox command to add the FCF record has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2516:DEL FCF of default FCF Index failed mbx status <rc>, status <shdr_status> add_status<shdr_add_status>

DESCRIPTION: The mailbox command to delete the FCF record has failed.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

lx_mes2517:Unregister FCFI command failed status %d, mbxStatus x%x", rc, bf_get(lpfc_mqe_status, &mbox->u.mqe)

DESCRIPTION: e driver was unable to unregister the FCFI from the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2518: Requested to send 0 NOP mailbox cmd

DESCRIPTION:
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes2519: Unable to allocate memory for NOP mailbox command

DESCRIPTION: Memory allocation for this mailbox command has failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2520: NOP mailbox command failed status x%x add_status x%x mbx status x%x", shdr_status, shdr_add_status, rc.

DESCRIPTION: The NOP mailbox command failed.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes2521: READ_FCF_RECORD mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx

DESCRIPTION: The READ_FCF_RECORD mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2523: Allocated DMA memory size (<alloc_len>) is less than the requested DMA memory size (<req_len>)

DESCRIPTION: 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.

elx_mes2524: Failed to get the non-embedded SGE virtual address

DESCRIPTION: 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.

elx_mes2527: Failed to allocate non-embedded SGE array.

DESCRIPTION: Failed to allocate the non-embedded SGE array.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2528: Mailbox command <vpi> cannot issue

DESCRIPTION: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.

elx_mes2529: Mailbox command <vpi> cannot issue

DESCRIPTION:
DATA: (1) mbxCommand (2) sli_flag (3) flag
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2530: Mailbox command <vpi> cannot issue

DESCRIPTION: 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.

elx_mes2531: Mailbox command <cpi> cannot issue

DESCRIPTION:
DATA: (1) mb.mbxCommand (2) sli_flag (3) flag
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2532: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: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.

elx_mes2533: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION:

DATA: (1) sli4_mbox_opcode (2) sli_flag (3) MBX_NOWAIT
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2535: Unsupported RQ count. (<entry_count>)

DESCRIPTION: The receive queue ring can only be 512, 1024, 2048, or 4096.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2536: Unsupported RQ count. (<entry_count>)

DESCRIPTION: The receive queue ring can only be 512, 1024, 2048, or 4096.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2537: Receive Frame Truncated!

DESCRIPTION: The receive unsolicited handler detected a truncated frame.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2539: Dropped frame rctl:<“RCTL TYPE”> type:<“FH TYPE”>

DESCRIPTION: The receive frame has an unsupported RCTL or FH_TYPE.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2540: Ring <ring #> handler: unexpected Rctl <fh_rctl> Type <fh_type>

DESCRIPTION: The receive frame has an unsupported RCTL or FH_TYPE.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2541: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION:
DATA: (1) sli_mbox_opcode (2) sli_flag (3) flag
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2542: Try to issue mailbox command <vpi> (<mbxCommand>) synchronously ahead of async mailbox command queue

DESCRIPTION:Attempting to send a synchronous mailbox command ahead of the asynchronous mailbox commands.
DATA: (1) sli_mbox_opcode (2) sli_flag (3) flag
SEVERITY: Warning
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2543 Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: 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.

elx_mes2544: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: 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.

elx_mes2546: New FCF found index <index> tag <event_tag>

DESCRIPTION: A new FCF has been found.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: None required.

elx_mes2547: Read FCF record failed

DESCRIPTION: Could not read the FCF record from the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY
ACTION: None required.

elx_mes2548: FCF Table full count <count> tag <event_tag>

DESCRIPTION: The FCF table is full.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2549: FCF disconnected from network index <index> tag <event_tag>

DESCRIPTION: The FCF has disconnected from the network.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY

ACTION: None required.

elx_mes2550: UNREG_FCFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>.

DESCRIPTION: The Unregister FCFI mailbox failed.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY. LOG_MBOX
ACTION: None required.

elx_mes2551: UNREG_FCFI mbox allocation failed HBA state <port_state>

DESCRIPTION: e allocation for the UNREG_FCFI mailbox command has failed.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2552: UNREG_FCFI issue mbox failed rc <rc> HBA state <port_state>.

DESCRIPTION: The unregister FCFI mailbox command has failed.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2553: lpfc_unregister_unused_fcf failed to read FCF record HBA state.

DESCRIPTION:
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2554: Could not allocate memory for fcf record

DESCRIPTION: .
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2555: UNREG_VFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>

DESCRIPTION: The Unregister VFI mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2556: UNREG_VFI mbox allocation failed HBA state <port_state>

DESCRIPTION: Could not allocate memory for UNREG_VFI mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2557: UNREG_VFI issue mbox failed rc <rc> HBA state <port_state>

DESCRIPTION: Could not issue the UNREG_VFI mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2558: ADD_FCF_RECORD mailbox failed with status<shdr_status> add_status <shdr_add_status>

DESCRIPTION: he ADD_FCF_RECORD mailbox command has failed.
DATA: None
SEVERITY; Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2559: Block sgl registration required DMA size <reqlen> great than a page.

DESCRIPTION: Attempting to register more SGEs with the firmware than can fit in a page.
DATA: None
SEVERITY:Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes2560: Failed to allocate mbox cmd memory\n

DESCRIPTION: Failed to allocate mailbox command memory.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2561: Allocated DMA memory size (<alloclen>) is less than the requested DMA memory size (<reqlen>)

DESCRIPTION: 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.

elx_mes2562: No room left for SCSI XRI allocation max_xri=<sli4_hba.max_cfg_param.max_xri>, els_xri=<els_xri_cnt>n

DESCRIPTION: The number of allocated XRIs has reached the max_xri value.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2563: Failed to allocate memory for SCSI XRI management array of size <sli4_hba.scsi_xri_max>.

DESCRIPTION: Initialization could not allocate memory to hold the XRIs.

DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2564 POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>

DESCRIPTION: The list of XRI SGEs failed to be registered with the firmware.
DATA: None
SEVERITY: Error
LOG: LOG_SLI
ACTION: None required.

elx_mes2566: Failed to allocate table entry
DESCRIPTION: Failed to allocate connection table entry.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2567: Config region 23 has bad signature

DESCRIPTION: 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.

elx_mes2568: Config region 23 has bad version

DESCRIPTION: 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.

elx_mes2569: lpfc_dump_fcoe_param: memory allocation failed

DESCRIPTION: Memory allocation has failed.
DATA: None
SEVERITY: Warning
LOG: LOG_MBOX
ACTION: None required.

elx_mes2570: Failed to read FCoE parameters

DESCRIPTION: The driver failed to read FCoE parameters.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX, LOG_INIT
ACTION: None required.

elx_mes2572: Failed allocate memory for fast-path per-EQ handle array

DESCRIPTION: Failed to allocate memory for the fast-path per-EQ handle array.

DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2573: Failed allocate memory for msi-x interrupt vector entries

DESCRIPTION: 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.

elx_mes2574 Not enough EQs (<sli4_hba.max_cfg_param.max_eq>) from the pci function for supporting FCP EQs (<cfg_fcp_eq_count>)

DESCRIPTION: Failed to create the minimum fast-path event queues.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2575 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>

DESCRIPTION:The driver was not configured with enough fast-path event queues.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes2576 Failed allocate memory for fast-path EQ record array

DESCRIPTION: Failed to allocate memory for the fast-path EQ record array.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2577 Failed allocate memory for fast-path CQ record array

DESCRIPTION: Failed to allocate memory for the fast-path EQ record array.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2578 Failed allocate memory for fast-path WQ record array

DESCRIPTION: Failed to allocate memory for the fast-path EQ record array.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2579 Slow-path wqe consume event carries miss-matched qid: wcqeqid=< wcqe_quid>, sp-qid=<sp_quid>

DESCRIPTION: The consumed entry does not have the slow path's queueID.
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes2580 Fast-path wqe consume event carries miss-matched qid: wcqe-qid=<fcp_wqid>.

DESCRIPTION: The consumed entry does not have the fast path's queueID.
DATA: None
SEVERITY: Warning
LOG: LOG_SLI
ACTION: None required.

elx_mes2581: Not enough WQs (<sli4_hba.max_cfg_param.max_wq>) from the pci function for supporting FCP WQs (<cfg_fcp_wq_count>)

DESCRIPTION: TThe driver was not configured with the minimum number of fast-path work queues.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2582: 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>

DESCRIPTION: The driver was not configured with enough fast-path work queues.
DATA: None
SEVERITY: Warning
LOG: LOG_INIT
ACTION: None required.

elx_mes2593: 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>

DESCRIPTION: 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.

elx_mes2597: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: Synchronou(2) sli_flag (3) flag
SEVERITY; Error
LOG: LOG_MBOX, LOG_SLI
ACTION: None required.

elx_mes2598: Adapter Link is disabled.

DESCRIPTION: The adapterl link has been disabled.
DATA: None
SEVERITY: Error

LOG:LOG_INIT
ACTION: None required.

elx_mes2599: Adapter failed to issue DOWN_LINK mbox command rc <rc>

DESCRIPTION: The driver was unable to issue the Down Link Mailbox command.
DATA: None
SEVERITY: Error
LOG:LOG_INIT
ACTION: None required.

elx_mes2600: lpfc_sli_read_serdes_param failed to allocate mailbox memory

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
SEVERITY: Error
LOG: LOG_INIT
ACTION: None required.

elx_mes2605: lpfc_dump_static_vport: memory allocation failed

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2606: No NPIV Fabric support

DESCRIPTION: No NPIV Fabric support.
DATA: None
SEVERITY: Error
LOG: LOG_ELS
ACTION: None required.

elx_mes2607: Failed to allocate init_vpi mailbox

DESCRIPTION: Failed to allocate init_vpi mailbox\n.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2608: Failed to issue Init VPI mailbox

DESCRIPTION: The driver was unable to send an initialize VPI mailbox command.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX
ACTION: None required.

elx_mes2609: Init VPI mailbox failed <u.mb.mbxStatus>

DESCRIPTION: The Initialize VPI mailbox command failed.
DATA: None
SEVERITY: Error
LOG: LOG_MBOX

ACTION: None required.

elx_mes2610: UNREG_FCFI mbox allocation failed

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
SEVERITY: Error
LOG:LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2611: UNREG_FCFI issue mbox failed

DESCRIPTION: Could not issue the UNREG_FCFI mailbox command.
DATA: None
SEVERITY: Error
LOG:LOG_DISCOVERY, LOG_MBOX
ACTION: None required.

elx_mes2619: Config region 23 has bad signature

DESCRIPTION: Configuration region 23 has an invalid signature.
DATA: None
SEVERITY: Error
LOG:LOG_INIT
ACTION: None required.

elx_mes2620: Config region 23 has bad version

DESCRIPTION: Configuration region 23 has an invalid version.
DATA: None
SEVERITY: Error
LOG:LOG_INIT
ACTION: None required.

elx_mes2621: Failed to allocate mbox for query firmware config cmd

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
SEVERITY: Error
LOG:LOG_INIT
ACTION: None required.

elx_mes2622: Query Firmware Config failed mbx status <rc>, status <shdr_status> add_status <shdr_add_status>

DESCRIPTION: Could not read the firmware configuration.
DATA: None
SEVERITY: Error
LOG:LOG_SLI
ACTION: None required.

elx_mes2623: FCoE Function not supported by firmware. Function mode = <function_mode>>

DESCRIPTION: FCoE is not supported by this firmware.
DATA: None
SEVERITY: Error
LOG:LOG_SLI

ACTION: Use the OneCommand Manager application to update to the latest firmware.

elx_mes2707: Ring <Ring#> handler: Failed to allocate iocb Rctl <fh_rctl> Type <fh_type> received

DESCRIPTION: The driver was unable to allocate memory to send a query config mailbox command
DATA: None
SEVERITY: Error
LOG:LOG_SLI
ACTION: None required.

elx_mes2717: CT context array entry [<index>] over-run: oxid:<fh_ox_id>, sid:<fh_SID>

DESCRIPTION: 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.

elx_mes2718: Clear Virtual Link Received for VPI <index> tag <event_tag>

DESCRIPTION: A Clear virtual link was received from the Fabric for this VPI.
DATA: None
SEVERITY: Error
LOG:LOG_DISCOVERY
ACTION: None required.

elx_mes2719: Invalid response length: tgt <TGT_ID> lun <LUN> cmnd <CMD> rsplen <RSPLEN>

DESCRIPTION: The response length for this FCP command is not supported.
DATA: None
SEVERITY: Error
LOG:LOG_FCP
ACTION: None required.

elx_mes2721: ndlp null for oxid %x SID %x\n", icmd->ulpContext, dfchba->ct_ctx[tag].SID);

DESCRIPTION: tHe Node value for this SID is not in the node list.
DATA: None
SEVERITY: Warning
LOG:LOG_ELS
ACTION: None required.

elx_mes2726: READ_FCF_RECORD Indicates empty FCF table

DESCRIPTION: 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.