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Release Notes

Emulex® Drivers for Linux

Release	RHEL 7.6	12.0.344.0
	SLES 12 SP4	Inbox
	All other supported OS	12.0.261.26

Purpose and Contact Information

These release notes describe the new features, resolved issues, known issues, and technical tips associated with this release of the Emulex® drivers for Linux.

For the latest product documentation, go to www.broadcom.com. If you have questions or require additional information, contact an authorized Broadcom® Technical Support representative at ecd-tech.support@broadcom.com.

New Features

- Adds support for the following operating system:
  - RHEL 7.6
  - SLES 12 SP4 (inbox only)
- Adds support for LPe35000-series adapters.

NOTE: Do not use a driver earlier than the drivers documented in these release notes with LPe35000-series adapters.

Adds duration support for the Link Cable Beacon command. This avoids situations in which the blinking of an HBA LED might be initiated, but no command is sent to stop the blinking.

Resolved Issues

There are no resolved issues in this release.

Known Issues

1. Known issues related to software migration.

   Beginning with software release 11.2, FC HBAs and OneConnect® adapters have independent software kits. Before updating earlier drivers and applications to the software in release 12.0.3, refer to the *Emulex Software Kit Migration User Guide* for special instructions and considerations for using the 11.2 and later software kits for FC HBAs and OneConnect adapters.

2. Certain inbox drivers do not support LPe31000-series, LPe32000-series, and LPe35000-series adapters as described in the following table:

Table 1: Operating System and Support for LPe31000-Series, LPe32000-Series, and LPe35000-Series Adapters

Operating System	Support for LPe31000-Series and LPe32000-Series Adapters	Support for LPe35000-Series Adapters
RHEL 7.3	Yes	No; use the driver disk
RHEL 7.4	Yes	No; use the driver disk
RHEL 7.5	Yes	No; use the driver disk
RHEL 7.6	Yes	Yes
RHEL 6.8	Yes	No; use the driver disk
RHEL 6.9	Yes	No; use the driver disk
RHEL 6.10	Yes	No; use the driver disk
SLES 11 SP3	No; use the driver disk	No; use the driver disk
SLES 11 SP4	No; use the driver disk	No; use the driver disk
SLES 12 SP2	Yes	No; use the driver disk
SLES 12 SP3	Yes	No; use the driver disk
SLES 12 SP4	Yes	Yes
SLES 15	Yes	Yes
UEK 3 R7	Yes	No
UEK 4 (OL 6.8 and 7.3)	Yes	No
Ubuntu 15.04	No	No
Ubuntu 16.04	Yes	Yes
XenServer 6.5	No	No
XenServer 7.0	Yes	No
XenServer 7.1	Yes	No

Workaround

Follow the guidelines in Table 1.

3. PCI Hot Plug might cause applications, such as the Emulex OneCommand® Manager application or third-party applications that use the Emulex libraries (for example, an HBA API), to malfunction.

   Workaround

   a. Stop all applications that are accessing the Light Pulse Fibre Channel (LPFC) HBA API interface (Emulex OneCommand Manager application or third-party applications) before performing PCI Hot Plug of an LPFC adapter.

   b. Use the following command to stop the Emulex OneCommand Manager application:
   `#/usr/sbin/ocmanager/stop_ocmanager`

   c. After performing PCI Hot Plug of the adapter, restart the applications.

4. SCSI errors might occur on deletion of Vports or PCI Hot Unplug.

   On occasion, the kernel might report SCSI errors when deleting Vports through the `sysfs` interface or performing a PCI Hot Unplug of an Emulex adapter:

   ```
   kernel: Synchronizing SCSI cache for disk
   kernel: FAILED
   ```

   Or:

   ```
   SCSI error: return code = 0x00010000
   ```

Workaround

None. Ignore these messages; they do not indicate a functional failure.

5. An issue exists while deleting Vports when devices are in use.

   Emulex provides management utilities that allow you to delete Vports. However, no mechanism exists for the LPFC driver to detect whether devices accessed through that Vport are in use. This situation means you can delete a Vport when devices accessible through the Vport are mounted or when I/O is outstanding to the device. When file systems are mounted on Vports and Vports are deleted, the file systems still appear to be mounted; however, they are inaccessible.

   Workaround

   Before deleting Vports, you must prepare the system affected by the Vport deletion accordingly, by unmounting all the devices accessible through the Vports and ensuring there is no outstanding I/O.

6. Devloss timeout occurs after swapping ports.

   The driver might not finish discovery when two initiator ports are swapped. This situation causes all devices accessible through one or both of these initiator ports to time out and all I/O to fail.

   Workaround

   Do one of the following:

   – When swapping cables, replace each cable, one at a time, and allow discovery to finish before replacing the next cable. To determine if discovery is finished, read the `state sysfs` parameter.
   – When swapping cables, allow the devloss timeout to occur before replacing the cables (this action fails all outstanding I/O).

7. The Linux Loader (LILO) boot loader is not supported on i386 and x86_64 architectures.

   The LILO boot loader on i386 and x86_64 architectures is not supported for this driver. If the LILO boot loader is used, after the LPFC driver package is installed and upon reboot, an incorrect initial ramdisk is used, and the system might not boot correctly.

   Workaround

   The boot loader supported with this driver is Grand Unified Bootloader (GRUB), which is the default boot loader for most of the Linux distributions. LILO is an older boot loader used on i386 and x86_64 architectures only. GRUB works correctly with the driver package installation script.

8. A potential multipath path loss occurs on the SLES 11 SP3 operating system.

   During the controller failback test, multipath cannot recover all paths. For SLES 11 SP3, a new `uid_attribute` method obtains the LUN serial number that is defined in the `multipath.conf` file. This method calls `scsi_id` to send the `sg_io`. If any I/Os are returned with a busy status, multipath does not reinstate that path.

   Workaround

   Edit the `multipath.conf` file and replace:

   ```
   uid_attribute ‘ID_SERIAL’
   ```

   with:

   ```
   getuid_callout ‘/lib/dev/scsi_id --whitelisted --device=/dev/%n’
   ```

9. Enabling the ExpressLane™ feature on a LUN, when maximum LUNs are already enabled for ExpressLane, might result in an error.

   Workaround

   Use the `/usr/sbin/lpfc/lpfc_clean_xlane_conf.sh` script to clear any unwanted entries and retry enabling ExpressLane.

10. An error message `Failed to issue SLI_CONFIG ext-buffer` might be displayed when multiple queue operations are performed.

    Workaround

    During firmware update operations, do not perform queue operations, such as resetting the adapter, the bus, the target, or the host.

11. Diffie Hellman - Challenge Handshake Authentication Protocol (DH-CHAP) is not implemented in this release. The `lpfc_enable_auth` driver parameter has no effect.

    Workaround

    None.

12. Cisco Multilayer Director Switch (MDS) diagnostics might fail on LPe31000-series adapters running on SLES12 SP3 systems.

    Workaround

    None.

13. The FOIT AFCT-57F3TMZ-ELX (16GFC longwave optic transceiver) does not support D_Port (also called ClearLink) for Brocade® switches and MDS Diagnostic for Cisco switches.

    Workaround

    None.

14. The behavior of the static FC driver parameter `lpfc_tgt_queue_depth` has been changed from static to dynamic.

    Workaround

    None.

15. The behavior of the static FC driver parameter `lpfc_fdmi_on` is changed to be ON by default.

    Workaround

    None.

16. The FC error codes pertaining to locked optics are not applicable.

    Workaround

    None.

17. On SLES 11 systems, the `hbacmd listhba` command takes several minutes to complete. This issue is not seen on SLES 12 systems.

    Workaround

    None.

18. The SLES 12 SP3 driver fails to install on the SLES 12 SP3 GA driver.

    Workaround

    The minimum kernel on which the SLES 12 SP3 driver can be installed is maintenance kernel 718 (4.4.126-94.22.1) from SUSE, dated April 23, 2018.

19. Invalid link fault code messages might be generated, followed by mailbox command failures. .

    Workaround

    For example:

    ```
    kernel:
    lpfc 0000:05:00.2: 2:0398 Invalid link fault code: x3
    ```

    This is the result of improper handling of a new firmware link fault code by inbox Linux drivers.

    The issue is fixed in inbox Linux drivers version 12.0.0.3 and later, such as the following Linux operating systems versions:

    – SLES12 SP3 maintenance update 4.4.140-94.42.1 and later
    – SLES15 maintenance update 4.12.14-25.3.1 and later

    The issue is also fixed in out-of-box Linux driver version 12.0.193.22 and later.

Technical Tips

1. Locked optics are supported on Emulex LPe31000-series and LPe32000-series adapters.

   The adapters perform the following operations:

   – Detect and enable both Broadcom or Emulex certified SFP optics.
   – For firmware revision 11.x and later, unqualified optics are disabled, the link is down, and an error message is written to the log file.
   – The `lpfc` out-of-box driver revision 11.x and later shows this message, and the link will not come up.
     `"3176 Port Name [wwpn] Unqualified optics - Replace with Avago optics for Warranty and Technical support"`

   When a 32 Gb/s optic is installed in an Emulex LPe31000-series, LPe32000-series, or LPe35000-series adapter, the link supports 32 Gb/s, 16 Gb/s, and 8 Gb/s speeds.

   When a 16 Gb/s optic is installed in an Emulex LPe31000-series or LPe32000-series adapter, the link supports 16 Gb/s, 8 Gb/s, and 4 Gb/s speeds.

2. This release supports UEFI secure boot for RHEL 7.x. If secure boot is enabled in the system BIOS, you must download the public key file for RHEL 7.x from www.broadcom.com and place it in the system's key ring before installing the signed driver for RHEL 7.x. Refer to the Red Hat documentation for instructions on adding a kernel module to the system.

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