

Emulex[®] LPe35000-Series HBA Firmware and Boot Code

Release 12.8.340.8

Purpose and Contact Information

These release notes describe the new features, resolved issues, known issues, new firmware features or resolved issues that require a host reboot, technical tips, and license notices associated with this firmware and boot code release for Emulex[®] LPe35000-series HBAs.

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

1. The EFIBoot driver now supports NVMe over FC direct-connect point-to-point topology.
2. Persistent FC link topology and private loop topology are supported on LPe35000-series HBAs.
3. A change was made to reduce the PCIe error rate in some server configurations.
4. Additional information was added to firmware dumps.

NOTE: In some cases, a firmware update requires either a firmware reset or a basic PCIe reset, depending on the features available in the new firmware. A firmware reset is performed automatically if it is needed, regardless of the operating system. In some cases, a full reboot is required to activate new firmware, to enable a new feature, or to take advantage of a resolved issue. In such a case, the application that updated the firmware produces a message indicating what is needed.

See the [New Firmware Features or Resolved Issues That Require a Host Reboot](#) section for a list of new features or resolved issues that require a host reboot after a firmware update.

Resolved Issues

Firmware

The scheduler can now drain outstanding work queue entries (WQEs) within the specified timeout period while running a heavy load of I/O.

Boot Code

1. The UEFI 16G FEC configuration now persists across power cycles.
2. A Fabric Assigned Port World Wide Name (FA-PWWN) that was configured in the Emulex HBA Manager application is now reflected in the Emulex UEFI configuration utility.

Known Issues

Firmware

1. In the Linux operating systems, setting the `enable-mds-diags` parameter to disabled does not disable the Cisco MDS switch diagnostics.

Workaround

None

2. To perform a firmware dump on an LPe35000-series adapter with the Ubuntu 18.0.4 inbox driver (except the Ubuntu 18.04.3 HWE release), you cannot use the Emulex HBA Manager application or the Emulex HBA Capture utility. To perform a firmware dump on this driver, see [Technical Tips, Item 1](#), in these release notes.

NOTE: The OneCommand[®] Manager application has been renamed the Emulex HBA Manager application.

NOTE: The OneCapture[™] utility has been renamed the Emulex HBA Capture utility.

3. A host reboot is required after a firmware update on the Ubuntu 18.04 inbox driver (except the Ubuntu 18.04.3 HWE release).
4. Performing a firmware update using `sysfs` on certain inbox Linux operating systems might cause the misleading message `3199 Firmware write complete: Firmware reset required to instantiate to be displayed`. The following Linux inbox drivers are affected:
 - RHEL7.7
 - RHEL 7.8
 - RHEL 8.1
 - SLES12 SP5
 - SLES15 SP1
 - SLES 15 SP2

Workaround

Instead of performing a firmware reset, perform a PCI bus reset to activate newly downloaded firmware. For instructions on issuing a PCI bus reset, refer to the *Emulex Drivers for Linux User Guide*.

Boot Code

1. When configured for NVMe boot support, the Emulex UEFI driver does not understand the various levels of Asymmetric Namespace Access (ANA), also called I/O multipathing. It assumes all boot devices are fully accessible and active. If a boot device that is in an ANA un-optimized or inaccessible state is configured, or if the boot device transitions to such a state over time, the UEFI boot environment might significantly slow or stop its boot sequence. Messages such as `Option ROM POST Error: 2110... Controller I/O timeout failure...` might appear.

Workaround

When you configure UEFI boot devices with storage that supports NVMe ANA, attempt to have optimized paths configured ahead of non-optimized or inaccessible device paths. If the storage array state changes for boot devices, reconfigure the boot device list to order optimized paths ahead of non-optimized or inaccessible storage. Search for Knowledge Base article #1211251400308 on the Broadcom website at the following URL for further information:

www.broadcom.com/support/knowledgebase

2. Updating the NVMe BFS installation from RHEL 8.1 to a later RHEL 8.x release requires the `rhel8u1_upgrade.sh` script, which ensures that the NVMe BFS setup is maintained through the update process.
The `rhel8u1_upgrade.sh` script is packaged in the `nvme-fc-dm--1.rhel8.tar.gz` kit inside the `elx-nvme-fc-dm-<build>-n.tar.gz` preinstallation kit. For more information about the preinstallation kit, refer to the *Emulex Boot for the Fibre Channel and NVMe over FC Protocols User Guide*.
Before you run the script, you must configure the yum repository for the new operating system. You can update the operating system at any time after you have run the script.

New Firmware Features or Resolved Issues That Require a Host Reboot

This section lists the new firmware features or resolved issues that require a host reboot to be activated after they are installed through a firmware update.

Firmware Version 12.8.340.8

1. A change was made to reduce the PCIe error rate in some server configurations.
2. Additional information was added to firmware dumps.

Firmware Version 12.6.240.42

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.6.240.40

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.6.240.21

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.6.182.8

1. The PCIe firmware component was updated to support new PCIe Gen4 processor functionality and to improve the overall operating margin.

2. Error messages are no longer encountered if an Emulex HBA Manager CLI `Reset` command is issued while I/O is running.
3. Changes were made to support the suite of tests performed at the PCI-SIG industry workshop.
4. PCIe error messaging was enhanced.

Firmware Version 12.4.243.23

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.4.243.22

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.4.243.16

1. An issue with function level reset (FLR) error handling and recovery was resolved.
2. To improve consistency across Emulex HBAs, the PCI Rev_ID value was changed from 1 to 0.

Firmware Version 12.2.299.32

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.2.299.23

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.2.299.14

No firmware features in this release require a host reboot after a firmware update.

Firmware Version 12.2.212.14

This was the initial factory release of firmware for LPe35000-series adapters.

NOTE: If you downgrade the firmware to a version that did not require a host reboot after a firmware update, from a newer version that required a host reboot after a firmware update (such as version 12.4.243.16), you must perform a host reboot after installing the older, downgraded version.

Technical Tips

1. To perform a firmware dump on the Ubuntu 18.0.4 inbox driver as described in [Firmware Known Issues, Item 2](#), perform the following steps:
 - a. Ensure that the latest Emulex HBA Manager core application kit for Linux is installed on the host.
 - b. Download the LPe35000-series HBA FW Dump Tool from the Broadcom website at www.broadcom.com.

c. Type the following commands to extract and install the tool:

```
tar xzf elx-lpe-35000-fw-dump-tool-<version>-ds-1.tar.gz
cd elx-lpe-35000-fw-dump-tool-<version>-ds-1/
rpm -ivh elx-lpe-35000-fw-dump-tool-<version>.<platform>.rpm
```

A window similar to the following is displayed.

```
[root@perfi69 elx-lpe-35000-fw-dump-tool-12.8.267.0-ds-1]# elx-lpe-35000-fw-dump-tool
*****
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LPe35000 Devices Detected:
1. pci 0000:a3:00.0 WWPN 0x10000000c9126956 host0 <-- Current handle
2. pci 0000:a3:00.1 WWPN 0x10000000c9126957 host2

Warning:      Triggering a dump on current port handle (host0)
              will also affect port(s): host2

Menu options:
  1. Change port handle.
  2. Trigger Firmware Dump.
  3. Exit.
Please enter option [1 - 3]: █
```

d. Type 1 and press **Enter** to select the port for which you want to perform the firmware dump.

A window similar to the following is displayed.

```
[root@perfi69 elx-lpe-35000-fw-dump-tool-12.8.267.0-ds-1]# elx-lpe-35000-fw-dump-tool
*****
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LPe35000 Devices Detected:
1. pci 0000:a3:00.0 WWPN 0x10000000c9126956 host0 <-- Current handle
2. pci 0000:a3:00.1 WWPN 0x10000000c9126957 host2

Warning:      Triggering a dump on current port handle (host0)
              will also affect port(s): host2

Menu options:
  1. Change port handle.
  2. Trigger Firmware Dump.
  3. Exit.
Please enter option [1 - 3]: 1█
```

NOTE: A warning message appears if initiating a firmware dump on a specific port will also affect another port on the same adapter ASIC.

- e. Type the number of the port for which you want to perform the firmware dump, and press **Enter**.

A window similar to the following is displayed.

```

LPe35000 Devices Detected:
1. pci 0000:a3:00.0 WWPN 0x10000000c9126956 host0 <-- Current handle
2. pci 0000:a3:00.1 WWPN 0x10000000c9126957 host2
Please select new handle: 2
-----

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LPe35000 Devices Detected:
1. pci 0000:a3:00.0 WWPN 0x10000000c9126956 host0
2. pci 0000:a3:00.1 WWPN 0x10000000c9126957 host2 <-- Current handle

Warning:      Triggering a dump on current port handle (host2)
              will also affect port(s): host0

Menu options:
  1. Change port handle.
  2. Trigger Firmware Dump.
  3. Exit.
Please enter option [1 - 3]: █

```

- f. When the desired port is identified as the current port, type 2 and press **Enter** to initiate the firmware dump on the current port.

If the firmware dump is successful, the firmware dump tool closes automatically.

- g. Restart the `elxhbamgrd` service by typing the following command:

```
service elxhbamgrd restart
```

This command allows such applications as the Emulex HBA Manager application to be refreshed.

By default, the firmware dump file is available on the host in the `/var/opt/Emulex/ocmanager/Dump/` directory after the `elxhbamgrd` service has been restarted.

2. If a firmware update requires a system reboot, you cannot perform a firmware dump until the reboot has occurred.

Workaround

None.

- Trunking is not supported at 8Gb/s speeds.
- Dynamic D_Port cannot coexist with the trunking feature. If trunking is enabled, the LPe35000 firmware automatically disables Dynamic D_Port.
- If you reset an adapter to its default values while trunking is configured, trunking is disabled after reboot, and all boot parameters are set to default.
- If trunking is configured, the trunk port link speed displayed by the Emulex x86 BIOS utility or the Emulex UEFI configuration utility is always shown as the aggregate speed. If a physical port is inactive, the displayed speed does not change from the aggregate speed.

7. To configure BFS for NVMe over FC on a Linux operating system, you must use the `elx-nvmefc-dm-<build>-n.tar.gz` preinstallation kit for both inbox and out-of-box drivers. Refer to the *Emulex Boot for the Fibre Channel and NVMe over FC Protocols User Guide* for more information.

8. D_Port and FA-PWWN cannot be enabled simultaneously.

Workaround

If D_Port is enabled and you want to enable FA-PWWN, you must first disable D_Port. If FA-PWWN is enabled and you want to enable D_Port, you must first disable FA-PWWN.

NOTE: You must disable D_Port using an Emulex application that allows you to do so, such as the Emulex HBA Manager application.

9. BFS is not supported if DH-CHAP authentication is enabled.

10. The link fails to come up on some 16Gb/s arrays that are directly attached to an adapter when FEC is enabled at the array.

Workaround

Disable FEC using one of the following applications:

- Emulex HBA Manager application
- Emulex HBA Manager for VMware vCenter application
- Emulex x86 BIOS utility
- Emulex UEFI configuration utility

Refer to the appropriate drivers user guide and the *Emulex HBA Manager Application User Guide*, the *Emulex HBA Manager Application CLI User Guide*, or the *Emulex HBA Manager for VMware vCenter User Guide* for information about changing parameters. Refer to the *Emulex Boot for the Fibre Channel Protocol User Guide* for information about changing the FEC setting in the Emulex x86 BIOS utility or in the Emulex UEFI configuration utility.

11. Using the Brocade `portdporttest` command with the `stop` option causes the HBA to stop responding when running D_Port tests from the switch. Disabling a port while running D_Port tests from the switch can cause the switch port to get stuck in D_Port mode.

Workaround

Do not stop D_Port tests while they are running from the switch. Do not disable a port while D_Port tests are running from the switch.

If the HBA stops responding, remove the D_Port configuration from the switch port by issuing the following commands. Refer to the Brocade® switch documentation for more information.

```
portdisable <portnumber>
portcfgdport --disable <portnumber>
portenable <portnumber>
```

If the switch port is stuck in D_Port mode, use the `portdporttest --exit` command to clear the configuration.

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