

Emulex[®] LPe31000-Series and LPe32000-Series HBA Firmware and Boot Code

Releases 12.6.240.22, 12.6.240.40, and 12.6.240.42

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[®] LPe31000-series and LPe32000-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

Release 12.6.240.42

This release adds support for Boot from SAN on NVMe over FC on the VMware ESXi 7.0 U1 operating system. For implementation instructions, see [Technical Tips Item 5](#) in these release notes.

Release 12.6.240.40

No new features were added to this release.

Release 12.6.240.22

This release adds support for Arm servers. Boot from SAN and NVMe over FC functionality are not supported on Arm servers. Refer to the *Emulex Drivers for Linux Release Notes* for additional information.

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

Release 12.6.240.42

Firmware

No firmware issues were resolved in this release.

Boot Code

When you add or configure NVMe boot devices, the NVMe namespaces list in the **Add NVMe over FC Boot Device** menu is no longer empty.

Release 12.6.240.40

Firmware

No firmware issues were resolved in this release.

Boot Code

1. Booting from SAN using NVMe no longer results in Windows Server 2019 going into repair mode.
2. The Emulex UEFI configuration utility now discovers an NVMe target on an IBM FlashSystem 900 array.

Release 12.6.240.22

Firmware

Running the `dporttest` command with the `-time` parameter from a Brocade® switch no longer causes erroneous port failure messages.

Boot Code

The link speed setting correctly changes to `AUTO` when using the using the Emulex x86 BIOS utility `reset default` option.

Known Issues

General

1. Beginning with software release 11.2, FC HBAs and OneConnect® converged network adapters (CNAs) have independent software kits. Before updating earlier drivers and applications to the software in this release, 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 CNAs.

- Updating the NVMe BFS installation from RHEL 8.1 to a later RHEL 8.x release requires a special procedure.
You must use the `rhel8u1_upgrade.sh` script contained in the `nvme-fc-dm--1.rhel8.tar.gz` kit to update an NVMe BFS installation from RHEL 8.1 to RHEL 8.2 or later. The script ensures that the NVMe BFS setup is maintained through the update process.
Before you run the script, you must configure the yum repository for the new operating system. The script uses this new repository to update the `nvme-cli` utility.
The update script performs the following actions:
 - Backs up the `hostnqn` file
 - Removes the `RHEL8u1 nvme-fc-dm` package
 - Upgrades the `nvme-cli` utility to the RHEL 8.2 or later package
 - Restores the `hostnqn` file
 - Installs a new version of the `nvme-fc-dm` packageYou can update the operating system at any time after you have run the script.
- Boot from SAN is not supported if FC-SP-2 authentication (DH-CHAP) is enabled.

Hardware and Drivers

- On LPe31000-series and LPe32000-series adapters, the system might stop responding when the HBA tries to send commands to the HBA driver. This occurs in a system with a large number of LUNs when the driver lags behind the HBA in processing I/Os.

Workaround

Limit the number of outstanding I/Os each LUN can have by changing the LUN queue depth using the `lpfc_lun_queue_depth` driver parameter. For example:

```
lpfc_lun_queue_depth=6
```

Alternatively, you can limit the number of outstanding I/Os each HBA can have by changing the HBA queue depth using the `lpfc_hba_queue_depth` driver parameter:

```
lpfc_hba_queue_depth=64
```

NOTE: The optimal array configuration is affected by a variety of factors, including the following:

- Number of LUNs configured
 - LUN queue depth setting
 - HBA queue depth setting
 - Response time of the array
 - CPU speed
- Some LPe31000-series and LPe32000-series adapters were shipped without the shunt that allows you to enable the secure firmware jumper.

Workaround

Refer to section on setting the secure firmware jumper in the *Emulex Fibre Channel Host Bus Adapters Installation Guide* for instructions.

To obtain a replacement shunt, contact an authorized Broadcom Technical Support representative, as described in [Purpose and Contact Information](#).

3. Locked optics are not supported on Broadcom 16Gb/s transceivers with serial numbers prior to SN:x@1319xxxxx. The serial number (SN:) is located above the bar code on the Broadcom manufacturer's label that is affixed to the transceiver.

Firmware

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

Workaround

None.

2. Performing a firmware update on the second port of a two-port HBA using the Emulex HBA Manager application on a Linux operating system might cause the operating system to stop responding.

Workaround

Update the firmware on the first port of the HBA. It is not necessary to update firmware on the second port of an LPe31002 or LPe32002.

3. 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 command:

```
portdisable p#; portcfgdport --disable p#; portenable p#
```

Refer to the Brocade switch documentation for more information.

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

4. Performing a firmware update using `sysfs` on certain inbox Linux operating systems might cause the misleading message `3199 Firmware write complete: Firmware write complete: Firmware reset required to instantiate to be displayed`.

The following Linux inbox drivers are affected:

- RHEL 7.7
- RHEL 8.1
- SLES 12 SP5
- SLES 15 SP1

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*.

x86 BIOS Utility

After logging in to the switch, connected adapter ports appear as G_Ports until you log in to the fabric.

Workaround

None.

UEFI Configuration Utility

1. If FEC is disabled and either a cold boot or a system reboot is performed, the setting reverts to enabled.

Workaround

Use the Emulex UEFI configuration utility to reset FEC to disabled, and perform a warm boot.

2. When configured for NVMe boot support, the Emulex UEFI environment 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 `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. Refer to Knowledge Base article #1211251400308 for further information.

3. A value for FA-PWWN that was configured in the Emulex HBA Manager application is not reflected in the Emulex UEFI configuration utility.

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 12.6.240.42

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

Firmware Version 12.6.240.40

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

Firmware Version 12.6.240.22

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

Technical Tips

1. 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.

- The Emulex UEFI configuration utility does not immediately display the adapter's default values after they have been set.

Workaround

Reset or reconnect the adapter. The Emulex UEFI configuration utility displays the new values.

- The adapter firmware notifies the Cisco switch that the transceiver optical test is not supported when the reflector loopback capabilities are queried. Cisco HBA Link Diagnostics (Cisco MDS Tests) are not supported when the `Xcvr-optical` parameter is not supported.

Workaround

Replace the adapter's SFP with a supported SFP.

- The `elx-nvmefc-dm-<build>-n.tar.gz` preinstallation kit must be used for both inbox and out-of-box drivers to configure BFS for NVMe over FC on Linux.
- To configure Boot from SAN for NVMe over FC on the VMware ESXi 7.0 U1 operating system, perform the following steps:
 - Refer to the *NVMe over FC Boot Settings* section in the *Emulex Boot for the Fibre Channel Protocol User Guide* to configure NVMe over FC boot and to add an NVMe boot device using the UEFI utility.

NOTE: Before starting the installation, zone the target WWN appropriately to the initiator WWNs. Create the Namespace of an appropriate size in the NVMe target, and map it to the initiator NQNs as described in the *Emulex Boot for the Fibre Channel Protocol User Guide*.

- Attach the operating system installation media to the server, and reboot or power on the server using the **UEFI Boot Menu**.

NOTE: Use a custom ESXi 7.0 U1 ISO image with version 12.8.x.x FC driver and NVMe transport driver for ESXi 7.0 U1 for NVMe over FC BFS on VMware.

- When the installation GUI appears, wait for the **Welcome to the VMware ESXi 7.0.1 Installation** window to appear.
- Press **Alt+F1** to switch to the ESXi console window.
- Enter `root` as the login credential and press **Enter**. Leave the password blank, and press **Enter** to continue.
- Since `hostd` is not available, use `localcli` instead of `esxcli` to perform operations in this shell.
- At the command prompt, run the `localcli nvme info get` command to obtain the host NVMe qualified name (NQN).
- Make a note of the NQN string, and provide it to the storage administrator to configure the boot namespace in the NVMe target.
- Issue the `localcli storage core adapter list` command to obtain a list of available FC adapters.
- After the host NQN is configured on the target, trigger a discovery at the host to discover the newly configured namespace for `BOOT`. This discovery can be started using one of the following methods:
 - Perform a Loop Initialization Primitive (LIP) reset to a given FC adapter by typing the following command:

```
#localcli storage core adapter list localcli storage san fc reset -A <vmhba#>
```
 - Use the following native `nvme fabrics VMware` command to discover an NVMe controller on the specified target port through the specified NVMe adapter:

```
#localcli nvme fabrics discover -a<vmhba#> -W=<Target WWNN> -w=<Target WWPN>
```

For example:

```
localcli nvme fabrics discover -a vmhba66 -W=20:2c:00:a0:98:c1:fe:52  
-w=20:6d:00:a0:98:c1:fe:52
```

- k. Verify whether the new subsystem and namespace are discovered using the following commands in the shell:
- ```
#localcli nvme controller list
#localcli nvme namespace list
```
- l. After the new namespace is discovered, press **ALT+F2** to return to the installation GUI and continue the installation process.
- m. The newly assigned namespace for `BOOT` will appear in the **Select a Disk to install or Upgrade** menu under the **Remote:** section.
- n. Select the displayed namespace and continue the operating system installation following the on-screen prompts.
- o. After successful operating system installation, ensure that the Emulex adapter is configured as the first boot device in the BIOS and proceed with boot.

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Code Release Notes

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