



# Emulex<sup>®</sup> Fibre Channel Host Bus Adapters

**Installation Guide**  
**Release 12.8**

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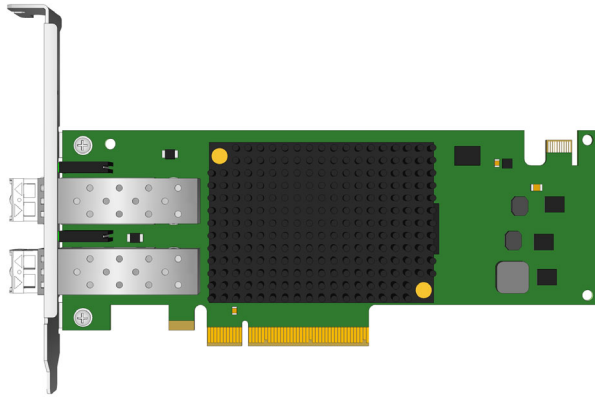
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# Chapter 1: Introduction

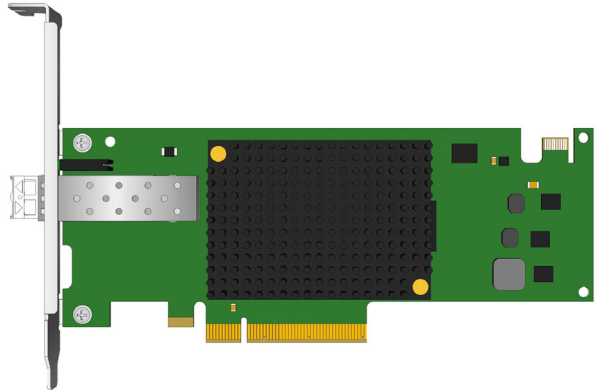
This installation guide describes how to install an Emulex® FC HBA.

**NOTE:** Illustrations in this guide are examples only. The actual hardware might vary.

**Figure 1: Two-Port HBA**



**Figure 2: Single-Port HBA**



## 1.1 HBA Identification

Each HBA ships with several numbers clearly marked on the board. Record these numbers before installation.

- **IEEE address** – An IEEE unique 64-bit identifier used for system configuration.
- **WWN** – Derived from the IEEE address; the FC industry uses the WWN for FC connectivity.
- **Serial number** – Assigned by Emulex. Use this number when communicating with Broadcom® Technical Support.

**NOTE:** If the HBA has two ports, it has two IEEE addresses and two WWNs, one for each port.

## Chapter 2: Installation

The Emulex HBA can be connected to fiber optic cables (used with embedded optical transceivers). Additional information for these cable connections and other installation procedures are described in the following sections.

### 2.1 Preparing the HBA for Installation

Before installing the HBA, perform one or both of the following procedures:

- Change the bracket to a low-profile version as explained in [Section 2.1.1, Changing the Bracket](#).
- Disable or enable the Secure Firmware feature available on selected HBAs using the instructions in [Section 2.1.2, Setting the Secure Firmware Feature](#).

If changes to the HBA are not required, proceed to [Section 2.2, Installing the HBA](#).

#### 2.1.1 Changing the Bracket

A standard, full-height PCIe bracket is factory-installed; however, a low-profile bracket is included in the box with any HBA that supports the low-profile bracket change. The low-profile mounting bracket is shorter than the standard bracket: approximately 3.11 in. (7.9 cm) compared to 4.75 in. (12.06 cm) long.

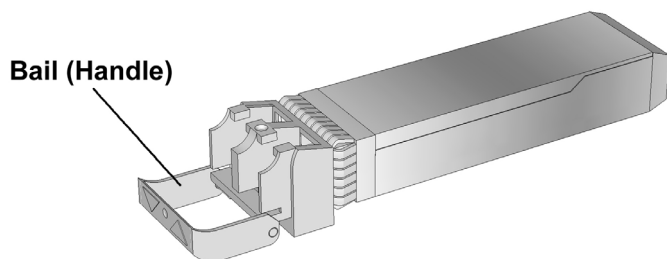
To change the bracket, perform the following steps:

1. Some HBAs have optical transceivers embedded in their cage assemblies. These optical transceivers must be removed before the bracket can be removed. If the HBA contains optical transceivers, continue with the following steps; otherwise, proceed to [Step 4](#).

**CAUTION!** This is a delicate operation. Take care not to damage the optical transceiver.

The HBA uses different types of optical transceivers. [Figure 3](#) shows an example of one type with the bail (handle) extended.

**Figure 3: Typical Optical Transceiver**



2. To remove a transceiver, pull the bail out and down to release the latch and gently pull out the transceiver. Do not force it. After the latch is released, the transceiver slides out easily.

[Figure 4](#) shows a transceiver with the latch released (bail extended) and another transceiver latched in place.

**Figure 4: Releasing the Latch on an Optical Transceiver**

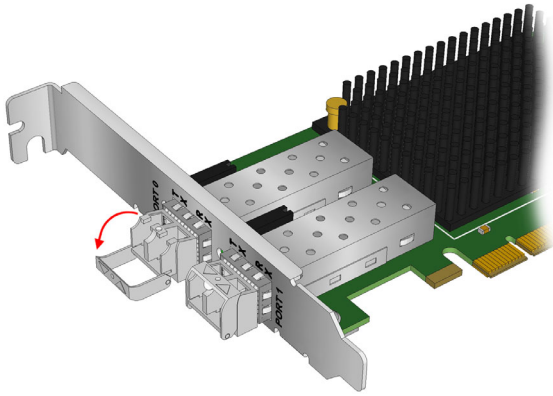
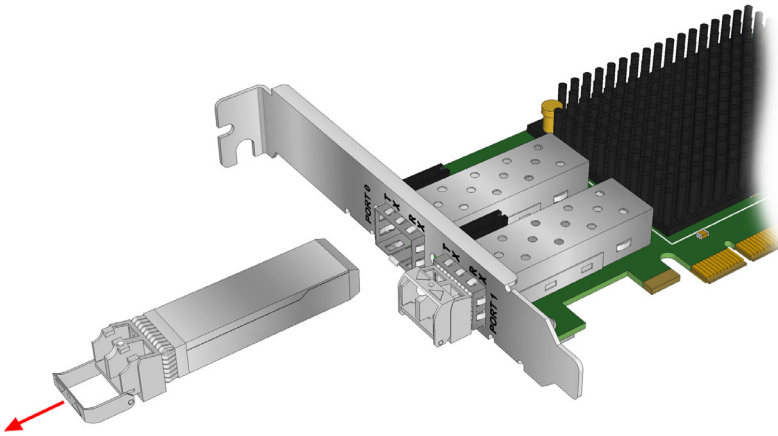
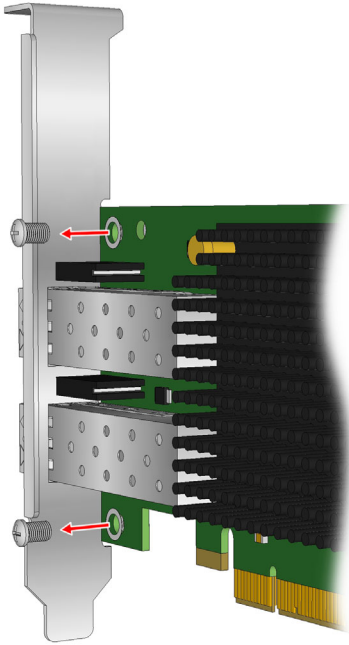


Figure 5 shows an extracted transceiver and another transceiver latched in place.

**Figure 5: Removing an Optical Transceiver**



3. Observing ESD precautions, store the transceiver in an ESD-safe place.
4. Remove the mounting bracket screws and washers from the top of the HBA. Figure 6 shows the screws that are removed from the mounting bracket.

**Figure 6: Removing the Mounting Bracket**

5. Remove the mounting bracket, and store it for future use.
  6. Align the new mounting bracket tabs with the holes in the HBA.
- CAUTION!** Be careful not to push the mounting bracket past the grounding tabs on the transceiver housing. Make sure the LEDs are properly aligned with the holes in the mounting bracket.
7. Reinstall the screws and washers that attach the HBA to the mounting bracket.
  8. Reinstall the transceiver by sliding it into the housing. When the latch engages, it clicks.
  9. Push the bail back into place.

## 2.1.2 Setting the Secure Firmware Feature

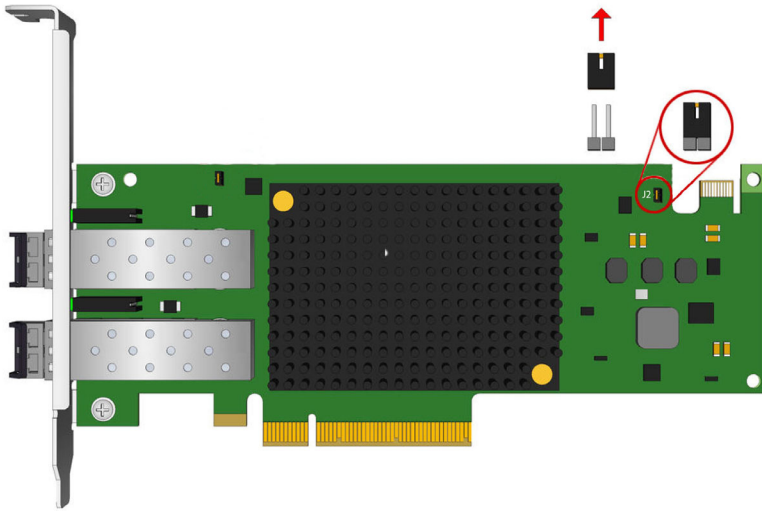
The LPe31000-series and LPe32000-series HBAs have a jumper that enables or disables the Secure Firmware feature as required.

To update the firmware using a tool, such as the Emulex HBA Manager application, boot utilities, or Elxflash utilities, there is no need to remove the jumper. The Secure Firmware feature can remain enabled as long as the update is from one secure firmware version to another secure firmware version. To change the firmware version from a secure firmware version to an unsecured firmware version, you must remove the jumper before updating the firmware.

**NOTE:** The Emulex OneCommand<sup>®</sup> Manager application has been renamed as the Emulex HBA Manager application.

Replace the jumper after the firmware update is complete.

Figure 7 provides an example of a common location of the Secure Firmware jumper.

**Figure 7: Secure Firmware Jumper Location J3**

## 2.2 Installing the HBA

To install the HBA, follow these steps:

1. Turn off the computer.
2. Remove the computer case.
3. For a stand-up HBA, remove the blank panel from an empty PCIe bus slot.
4. Insert the HBA into the selected slot. Press firmly until the HBA is seated.

**NOTE:** Make sure that the HBA is in an appropriate PCIe slot that does not interfere with other components or with the case to prevent damage to the HBA.

5. Secure the HBA mounting bracket to the case with a panel screw or clip.
6. Replace the computer case and tighten the case screws.

The HBA is now installed in the server and is ready for an FC device.

## 2.3 Attaching Media

You can connect fiber optic cables to the HBA.

An HBA does not allow normal data transmission on optical links unless it is connected to a compatible optical interface connection.

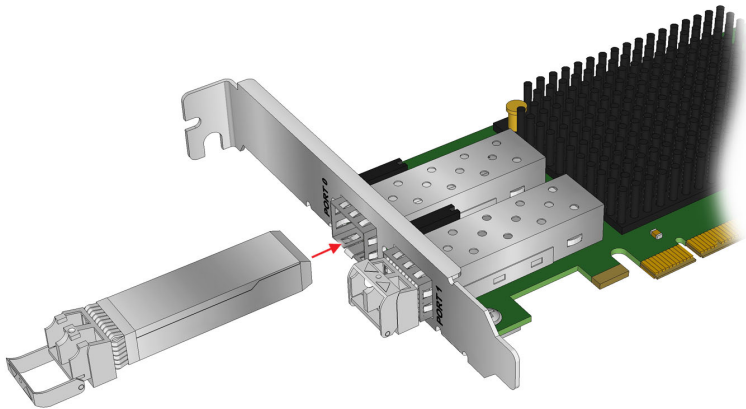
**NOTE:** Use short range (SR), direct-connecting receptacle (DCR) multimode fiber cable for interface connections to a network.

To attach media to the HBA, follow these steps:

1. Ensure that the cages have optical transceivers installed in them. If necessary, insert an optical transceiver into each cage.

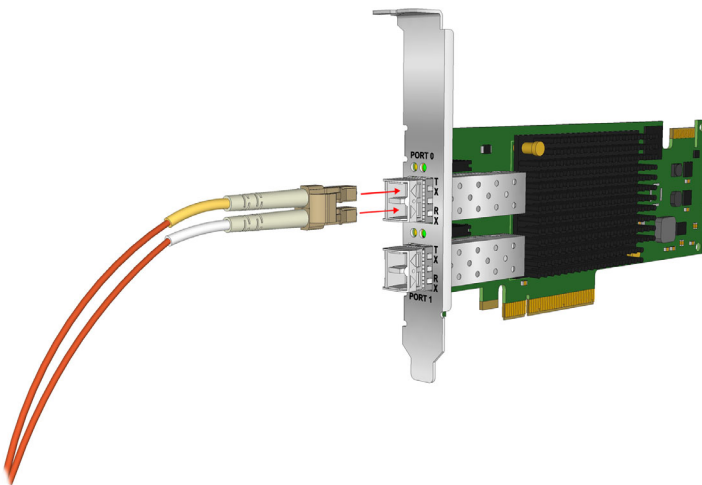


**Figure 8: Installing an Optical Transceiver**



2. Insert an appropriate optical cable into the LC connectors on the HBA.

**Figure 9: Connecting a Fiber Optic Cable**



3. Connect the other end to the FC device.

You are ready to apply power to the system.

## 2.4 Applying Power

To apply power:

1. Verify that the HBA is securely installed in the system.
2. Verify that the correct media is attached.
3. Plug in the computer and turn it on.
4. Watch the LEDs for POST results.

## 2.5 Viewing the LEDs

You can view the green and yellow LEDs through openings in a stand-up HBA's mounting bracket. The yellow LED indicates port activity or link speed, and the green LED indicates firmware operation. Each port has a corresponding set of yellow and green LEDs.

**Figure 10: Optical HBA LED Indicators**



The following table summarizes POST conditions and results:

**NOTE:** For the link rate conditions, a 1s pause occurs when the yellow LED is off between each group of fast blinks (2, 3, 4, or 5, depending on the HBA). Observe the LED sequence for several seconds to be sure you have correctly identified the pattern.

**Table 1: POST Conditions and Results**

Yellow LED	Green LED	State
Off	Off	No SFP module installed or a boot failure occurred (dead board)
On	Off	POST failure (dead board)
Slow blink	Off	Boot failure after POST
Flashing	Off	POST processing in progress
Off	On	Failure in the common code module
On	On	Failure in the common code module
1 fast blink	On	Normal (link up at 2GFC) (legacy compatibility only)
2 fast blinks	On	Normal (link up at 4GFC)
3 fast blinks	On	Normal (link up at 8GFC)
4 fast blinks (LPe12002-M8 HBAs only)		
4 fast blinks	On	Normal (link up at 16GFC)
5 fast blinks	On	Normal (link up at 32GFC)
Off	Slow blink	Normal (link down)
Fast blink	Fast blink	Beaconing

