QLogic InfiniBand Adapter
Hardware Install Guide
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The QLE7140, QLE7240, and QLE7280 QLogic InfiniBand Adapters are covered by the following patent: 7308535.

<table>
<thead>
<tr>
<th>Document Revision History</th>
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<tbody>
<tr>
<td><strong>Changes</strong></td>
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<tr>
<td>Added QLE734x series information.</td>
</tr>
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</table>
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1 Introduction

This chapter describes the contents, intended audience, and organization of the QLogic InfiniBand Adapter Hardware Install Guide.

The QLogic InfiniBand Adapter Hardware Install Guide contains instructions for installing the QLogic InfiniBand adapters. The following adapters are covered in this guide:

- QLE7140 PCI Express® (PCIe®)
- QLE7240 PCI Express
- QLE7280 PCI Express
- QLE7340 PCI Express
- QLE7342 PCI Express

Who Should Read this Guide

This installation guide is intended for administrators responsible for installing the QLogic QLE7140, QLE7240, QLE7280, QLE7340 or QLE7342 adapter in their Linux® cluster. Additional detailed information and instructions for administering the QLogic cluster can be found in the QLogic OFED+ Host Software Users Guide.

The QLogic InfiniBand Adapter Hardware Install Guide assumes that you are familiar with the specific hardware that you plan to use. Before installing the adapter, you should have basic knowledge of your host and target operating systems.

This document does not contain all the information you need to use basic Linux commands or to perform all system administration tasks. For this information, see the software documentation you received with your system.

How this Guide is Organized

The QLogic InfiniBand Adapter Hardware Install Guide is organized into these sections:

- **Section 1, Introduction**, contains an overview of the InfiniBand™ (IB) adapters and software, describes interoperability with other products, lists all related documentation, and provides QLogic contact information.

- **Section 2, Step-by-Step Hardware Installation Checklist**, provides a high-level overview of the hardware installation procedures.
Section 3, Hardware Installation, includes instructions for installing the QLogic QLE7140, QLE7240, QLE7280, QLE7340, and QLE7342 IB adapters.

Appendix A, Installation Troubleshooting, contains troubleshooting information about issues that may occur during installation.

Overview

The material in this documentation pertains to a QLogic OFED cluster. A cluster is defined as a collection of nodes, each attached to an InfiniBand-based fabric through the QLogic interconnect. The nodes are Linux-based computers, each having up to 16 processors.

The QLogic IB adapters are InfiniBand 4X. The Quad Data Rate (QDR) QLE7340 and QLE7342 adapters have a raw data rate of 40Gbps. The Double Data Rate (DDR) QLE7240 and QLE7280 adapters have a raw data rate of 20Gbps (data rate of 16Gbps). For the Single Data Rate (SDR) QLE7140 adapter, the raw data rate is 10Gbps (data rate of 8Gbps). The QLE7240 and QLE7280 can also run in SDR mode.

The QLogic adapters utilize QLogic InfiniBand switches and cabling. The QLogic interconnect is designed to work with all InfiniBand-compliant switches.

NOTE:

If you are using the QLE7240 or QLE7280, and want to use DDR mode, then DDR-capable switches must be used.

If you are using the QLE7340 or QLE7342, and want to use QDR mode, then QDR-capable switches must be used.

QLogic OFED OpenFabrics software is interoperable with other vendors’ InfiniBand host channel adapters running compatible OpenFabrics releases. There are several options for subnet management in your cluster:

- Use the embedded Subnet Manager (SM) in one or more managed switches supplied by your InfiniBand switch vendor.
- Use a host-based Subnet Manager. QLogic provides one, QLogic Fabric Manager, as a part of the QLogic InfiniBand Fabric Suite download.
- Use the Open source Subnet Manager (OpenSM) component of OpenFabrics.

Interoperability

QLogic TrueScale participates in the standard InfiniBand subnet management protocols for configuration and monitoring. Note that:
TrueScale OpenFabrics (including Internet Protocol over InfiniBand (IPoIB)) is interoperable with other vendors’ InfiniBand adapters running compatible OpenFabrics releases.

The QLogic MPI stack is not interoperable with other InfiniBand host channel adapters and target channel adapters. Instead, it uses an InfiniBand-compliant, vendor-specific protocol that is highly optimized for QLogic MPI and MPI over Verbs.

**NOTE:**
See the OpenFabrics web site at [www.openfabrics.org](http://www.openfabrics.org) for more information on the OpenFabrics Alliance.

## Conventions Used in this Guide

This guide uses the typographical conventions listed in Table 1-1.

### Table 1-1. Typographical Conventions

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>command</strong></td>
<td>Fixed-space font is used for literal items such as commands, functions, programs, files and pathnames, and program output.</td>
</tr>
<tr>
<td><strong>variable</strong></td>
<td>Italic fixed-space font is used for variable names in programs and command lines.</td>
</tr>
<tr>
<td><strong>concept</strong></td>
<td>Italic font is used for emphasis and concepts, as well as for documentation names/titles.</td>
</tr>
<tr>
<td><strong>user input</strong></td>
<td>Bold fixed-space font is used for literal items in commands or constructs that you type.</td>
</tr>
<tr>
<td>$</td>
<td>Indicates a command line prompt.</td>
</tr>
<tr>
<td>#</td>
<td>Indicates a command line prompt as a root user.</td>
</tr>
<tr>
<td>[]</td>
<td>Brackets enclose optional elements of a command or program construct.</td>
</tr>
<tr>
<td>...</td>
<td>Ellipses indicate that a preceding element can be repeated.</td>
</tr>
<tr>
<td>&gt;</td>
<td>A right caret identifies the cascading path of menu commands used in a procedure.</td>
</tr>
</tbody>
</table>

**NOTE:** Indicates important information.
Documentation

The product documentation includes:

- The QLogic InfiniBand Adapter Hardware Install Guide
- Release Notes
- Quick Start Guide

Contact Information

Please feel free to contact your QLogic approved reseller or QLogic Technical Support at any phase of integration for assistance. QLogic Technical Support can be reached by the following methods:

Web: http://support.qlogic.com
Email: support@qlogic.com
This section provides an overview of the hardware installation procedures. Detailed steps are found in Section 3 “Hardware Installation”.

The following steps summarize the basic hardware installation procedure:

1. Check that the adapter hardware is appropriate for your platform. See Table 3-1.
2. Check to see that you have the appropriate cables and switches, as described in “Cabling and Switches” on page 3-2.
3. Verify that the BIOS for your system is configured for use with the QLogic adapter. See “Configuring the BIOS” on page 3-3.
4. Following the safety instructions in “Safety with Electricity” on page 3-3. Unpack the adapter (“Unpacking Information” on page 3-4) and verify the package contents.
5. Install the adapter by following the instructions in “Hardware Installation” on page 3-8.
6. Cable the adapter to the switch, as described in “Cabling the Adapter to the InfiniBand Switch” on page 3-12. Check that all InfiniBand switches are configured.
7. Follow the steps in “Completing the Installation” on page 3-13 to finish the installation.
3 Hardware Installation

This section lists the requirements and provides instructions for installing the QLogic InfiniBand adapters. Instructions are included for the QLogic QDR PCI Express adapters, the QLE7340 and QLE7342; QLogic DDR PCI Express adapters, the QLE7240 and QLE7280; the QLogic PCIe adapter and PCIe riser card, the QLE7140. These components are collectively referred to as the adapter and the riser card in the remainder of this document.

The adapter is a low-latency, high-bandwidth, high message rate cluster interconnect for InfiniBand. The QLogic interconnect is InfiniBand 4X, with a raw data rate of 40Gbps for the QLE7340 and QLE7342; 20Gbps (data rate of 16Gbps) for the QLE7240 and QLE7280; and 10Gbps (data rate of 8Gbps) for the QLE7140.

OpenFabrics is interoperable with other vendors' InfiniBand host channel adapters running compatible OpenFabrics releases.

Hardware Installation Requirements

This section lists hardware and software environment requirements for installing the QLogic QLE7340, QLE7342, QLE7240, QLE7280, or QLE7140.

Hardware

QLogic interconnect adapters are for use with UL listed computers. The following statement is true for all the adapters:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

Different adapters work on different platforms. Table 3-1 shows the relationship between the adapter model and different types of motherboards.

Table 3-1. Adapter Models and Related Platforms

<table>
<thead>
<tr>
<th>QLogic Model Number</th>
<th>Platform</th>
<th>Plugs Into</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLE7340</td>
<td>PCI Express systems</td>
<td>Standard PCI Express x8 slot</td>
</tr>
</tbody>
</table>
Hardware Installation

Hardware Installation Requirements

Installation of the QLE7340, QLE7342, QLE7240, QLE7280, or QLE7140 in a 1U or 2U chassis requires the use of a riser card. See Figure 3-4 for an illustration of a PCI Express (PCIe) slot in a typical motherboard.

The motherboard vendor is the optimal source for information about the layout and use of PCI Express-enabled expansion slots on supported motherboards.

Form Factors

The QLE7340, QLE7342, QLE7240, QLE7280, and QLE7140 are the model numbers for the adapters that ship in the standard PCI Express half-height, short-form factor. These adapters can be used with either full-height or low-profile face plates.

Run `ipath_control -i` to see information on which adapter is installed. The file `/sys/class/infiniband/ipath0/device/boardversion` contains the same information. For more information, see the Useful Programs and Files appendix in the QLogic OFED+ Host Software Users Guide.

Cabling and Switches

The adapters use standard IB cables. These cables can be passive copper, active copper, fiber optic or Quad Small Form-factor Pluggable (QSFP) active optical.

Contact QLogic for a list of qualified IB cables.

**NOTE:**

If you want to use the QLE7240 or QLE7280 in DDR mode, a DDR-capable IB switch must be used.

If you want to use the QLE7340 or QLE7342 in QDR mode, a QDR-capable IB switch must be used.

For cabling instructions, see “Cabling the Adapter to the InfiniBand Switch” on page 3-12.

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### Table 3-1. Adapter Models and Related Platforms (Continued)

<table>
<thead>
<tr>
<th>QLogic Model Number</th>
<th>Platform</th>
<th>Plugs Into</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLE7342</td>
<td>PCI Express systems</td>
<td>Standard PCI Express x8 slot</td>
</tr>
<tr>
<td>QLE7280</td>
<td>PCI Express systems</td>
<td>Standard PCI Express x16 slot</td>
</tr>
<tr>
<td>QLE7240</td>
<td>PCI Express systems</td>
<td>Standard PCI Express x8 or x16 slot</td>
</tr>
<tr>
<td>QLE7140</td>
<td>PCI Express systems</td>
<td>Standard PCI Express x8 or x16 slot</td>
</tr>
</tbody>
</table>
Configuring the BIOS

To achieve the best performance with QLogic adapters, you need to configure your BIOS with specific settings. The BIOS settings, which are stored in non-volatile memory, contain certain parameters characterizing the system. These parameters may include date and time, configuration settings, and information about the installed hardware.

**NOTE:**

The Advanced Configuration and Power Interface (ACPI) BIOS option must be enabled.

For more information, see “Enable Advanced Configuration and Power Interface (ACPI)” on page A-1 and the Troubleshooting section of the QLogic OFED+ Host Software Users Guide.

Some other BIOS settings can be adjusted for better adapter performance. See “Adapter and Other Settings” in the QLogic Fabric Software Installation Guide.

For specific instructions about BIOS settings, follow the hardware documentation that came with your system.

Safety with Electricity

Observe these guidelines and safety precautions when working around computer hardware and electrical equipment:

- Locate the power source shutoff for the computer room or lab where you are working. This is where you will turn OFF the power in the event of an emergency or accident. Never assume that power has been disconnected for a circuit; always check first.

- Do not wear loose clothing. Fasten your tie or scarf, remove jewelry, and roll up your sleeves. Wear safety glasses when working under any conditions that might be hazardous to your eyes.

- Shut down and disconnect the system’s power supply from AC service before you begin work, to insure that standby power is not active. Power off all attached devices such as monitors, printers, and external components. Note that many motherboards and power supplies maintain standby power at all times. Inserting or removing components while standby is active can damage them.

- Use normal precautions to prevent electrostatic discharge, which can damage integrated circuits.
Unpacking Information

This section provides instructions for safely unpacking and handling the QLogic adapter. To avoid damaging the adapter, always take normal precautions to avoid electrostatic discharge.

Verify the Package Contents

The QLogic adapter system should arrive in good condition. Before unpacking, check for any obvious damage to the packaging. If you find any obvious damage to the packaging or to the contents, please notify your reseller immediately.

List of the Package Contents

The package contents for the QLE7340 adapter are:

- QLogic QLE7340
- Additional short bracket
- Quick Start Guide

Standard PCIe risers can be used, typically supplied by your system or motherboard vendor.

The package contents for the QLE7342 adapter are:

- QLogic QLE7342
- Additional short bracket
- Additional standard bracket
- Quick Start Guide

Standard PCIe risers can be used, typically supplied by your system or motherboard vendor.

The package contents for the QLE7240 adapter are:

- QLogic QLE7240
- Additional short bracket
- Quick Start Guide

Standard PCIe risers can be used, typically supplied by your system or motherboard vendor.

The package contents for the QLE7280 adapter are:

- QLogic QLE7280
- Additional short bracket
- Quick Start Guide

Standard PCIe risers can be used, typically supplied by your system or motherboard vendor.
The package contents for the QLE7140 adapter are:

- QLogic QLE7140
- Quick Start Guide

Standard PCIe risers can be used, typically supplied by your system or motherboard vendor. The contents are illustrated in Figure 3-3.

The IBA6120, IBA7220 and IBA7322 are the QLogic ASICs, which are the central components of the interconnect. The location of the IBA7322 ASIC on the adapter is shown in Figure 3-1.

**NOTE:**

The QLE7342 also contains the IBA7322 ASIC. The only difference is the QLE7342 has two external IB ports.

The location of the IBA7220 ASIC on the adapter is shown in Figure 3-2. The location of the IBA6120 ASIC on the adapter is shown in Figure 3-3.

![Figure 3-1. QLogic QLE7340 with IBA7322 ASIC](image-url)
Figure 3-2. QLogic QLE7280 with IBA7220 ASIC

Figure 3-3. QLogic QLE7140 Card with Riser, Top View
Unpacking the QLogic Adapter

Follow these steps when unpacking the QLogic adapter:

1. When unpacking, ground yourself before removing the QLogic adapter from the anti-static bag.

2. Grasping the QLogic adapter by its face plate, pull the adapter out of the anti-static bag. Handle the adapter only by its edges or the face plate. Do not allow the adapter or any of its components to touch any metal parts.

3. After checking for visual damage, store the adapter and the riser card in their anti-static bags until you are ready to install them.
Hardware Installation

This section contains hardware installation instructions for the QLE7340, QLE7342, QLE7240, QLE7280, and QLE7140.

Hardware Installation for QLE734x, QLE7240, QLE7280, or QLE7140 with PCI Express Riser

Installation for the QLE734x, QLE7240, QLE7280, and QLE7140 is similar. The following instructions are for the QLE7140, but can be used for any of these adapters.

Most installations will be in 1U and 2U chassis, using a PCIe right angle riser card. This results in an installation of the adapter that is parallel to the motherboard.

Installing the QLogic QLE7140 in a 1U or 2U chassis requires a PCIe right angle riser card.

A taller riser card can be used if necessary. The QLE7140 can connect to any of the standard compatible PCI Express riser cards.

Dual Adapter Installation

If you have a motherboard with dual PCIe slots, dual adapters can be installed. The adapters must match. For example, on a motherboard with two x16 slots, dual QLE7280 adapters can be installed, but not a QLE7240 adapter and a QLE7280 adapter. Check the design of your motherboard to see how riser cards can be used.

Follow the instructions in "Installation Steps" on page 3-8.

See the Using MPI section in the QLogic OFED+ Host Software Users Guide for information on using the IPATH_UNIT environment variable to control which host channel adapter to use.

Installation Steps

To install the QLogic adapter with a PCIe riser card:

1. The BIOS should already be configured properly by the motherboard manufacturer. However, if any additional BIOS configuration is required, it usually needs to be done before installing the QLogic adapter. See "Configuring the BIOS" on page 3-3.

2. Shut down the power supply to the system into which you will install the QLogic adapter.

3. Take precautions to avoid electrostatic damage (ESD) to the cards by properly grounding yourself or touching the metal chassis to discharge static electricity before handling the cards.
4. Remove the cover screws and cover plate to expose the system’s motherboard. For specific instructions on how to do this, follow the hardware documentation that came with your system.

5. Locate the PCIe slot on your motherboard. Note that the PCIe slot has two separate sections, with the smaller slot opening located towards the front (see Figure 3-4). These two sections correspond to the shorter and longer connector edges of the adapter and riser.

![Figure 3-4. PCIe Slot in a Typical Motherboard](image)

6. Determine if a blanking panel is installed in your chassis. If it is, remove it so that the InfiniBand connector will be accessible. Refer to your system vendor instructions for how to remove the blanking panel.

7. Remove the QLogic adapter from the anti-static bag.

8. Locate the face plate on the connector edge of the card.

9. Connect the QLogic adapter and PCIe riser card together, forming the assembly that you will insert into your motherboard. First, visually line up the adapter slot connector edge with the edge connector of the PCIe riser card (see Figure 3-5).
3–Hardware Installation

Hardware Installation

10. Holding the QLogic adapter by its edges, carefully insert the card slot connector into the PCIe riser card edge connector, as shown in Figure 3-5. The result is a combined L-shaped assembly of the PCIe riser card and QLogic adapter. This assembly is what you will insert into the PCIe slot on the motherboard in the next step.

11. Turn the assembly so that the riser card connector edge is facing the PCIe slot on the motherboard, and the face plate is toward the front of the chassis.

12. Holding this assembly above the motherboard at about a 45 degree angle, slowly lower it so that the connector on the face plate clears the blanking panel opening of the chassis from the inside. Slowly align the connector edge of the riser card with the motherboard’s PCIe slot. The short section of the connector must align with the short section of the slot.

Figure 3-5. QLogic PCIe Host Channel Adapter Assembly with Riser Card
13. Insert the riser assembly into the motherboard’s PCIe slot, ensuring good contact. The QLogic adapter should now be parallel to the motherboard and about one inch above it (see Figure 3-6).

![Figure 3-6. Assembled PCIe Host Channel Adapter with Riser](image)

14. Secure the face plate to the chassis. The QLogic adapter has a screw hole on the side of the face plate that can be attached to the chassis with a retention screw. The securing method may vary depending on the chassis manufacturer. Refer to the system documentation for information about mounting details such as mounting holes, screws to secure the card, or other brackets.

The QLogic PCIe host channel adapter with PCIe riser card is now installed. Next, install the cables as described in “Cabling the Adapter to the InfiniBand Switch” on page 3-12. Then test your installation by powering up and verifying link status (see “Completing the Installation” on page 3-13).

### Hardware Installation for QLE734x, QLE7240, QLE7280, and QLE7140 Without a PCI Express Riser

Installing the QLogic QLE734x, QLE7240, QLE7280, or QLE7140 without a PCI Express riser card requires a 3U or larger chassis.

To install the QLogic adapter without a riser card:

1. The BIOS should already be configured properly by the motherboard manufacturer. However, if any additional BIOS configuration is required, it usually needs to be done before installing the QLogic adapter. See “Configuring the BIOS” on page 3-3.

2. Shut down the power supply to the system into which you will install the QLogic adapter.
3. Take precautions to avoid electrostatic discharge (ESD) damage to the cards by properly grounding yourself or touching the metal chassis to discharge static electricity before handling the cards.

4. If you are installing the QLogic adapter into a covered system, remove the cover screws and cover plate to expose the system's motherboard. For specific instructions on how to do this, follow the hardware documentation that came with your system.

5. Locate the PCIe slot on your motherboard.

6. Remove the QLogic adapter from the anti-static bag. Hold the card by the top horizontal section of the bracket, and the top rear corner of the card. Be careful not to touch any of the components on the printed circuit card.

7. Without fully inserting, gently align and rest the adapter card’s gold fingers on top of the motherboard’s PCIe slot.

8. Insert the card by pressing firmly and evenly on the top of the horizontal bracket and the top rear corner of the card simultaneously. The card should insert evenly into the slot. Be careful not to push, grab, or put pressure on any other part of the card, and avoid touching any of the components.

9. Secure the face plate to the chassis. The QLogic adapter has a screw hole on the side of the face plate that can be attached to the chassis with a retention screw. The securing method may vary depending on the chassis manufacturer. Refer to the system documentation for information about mounting details such as mounting holes, and screws to secure the card or other brackets.

Next, install the cables, as described in “Cabling the Adapter to the InfiniBand Switch” on page 3-12. Then test your installation by powering up the system (see “Completing the Installation” on page 3-13).

Switch Configuration and Monitoring

The QLogic interconnect is designed to work with all InfiniBand-compliant switches, such as the the QLogic 12000 series. Follow the applicable switch documentation for installing and configuring your switches.

Cabling the Adapter to the InfiniBand Switch

Follow the recommendations of your cable vendor for cable management and proper bend radius.

The QLE7340, QLE7342, QLE7240, QLE7280, and QLE7140 adapters are all cabled the same way.

To install the InfiniBand cables:
1. Check that you have removed the protector plugs from the cable connector ends.

2. Different vendor cables might have different latch mechanisms. Determine if your cable has a spring-loaded latch mechanism.
   - If your cable is spring-loaded, grasp the metal shell and pull on the plastic latch to release the cable. To insert, push and the cable snaps into place. You will hear a short “click” sound from the cable connector when it snaps in.
   - If your cable latch mechanism is not spring-loaded, push on the metal case, then push the plastic latch to lock the cable in place.

3. The InfiniBand cables are symmetric; either end can be plugged into the switch. Connect the InfiniBand cable to the connector on the QLogic QLE7340, QLE7342, QLE7240, QLE7280 or QLE7140. Depress the side latches of the cable when connecting. (On some cables, this latch is located at the top of the cable connector.) Make sure the lanyard handle on the cable connector is slid forward toward the card connector until fully engaged.

4. Connect the other end of the cable to the InfiniBand switch.

**Completing the Installation**

To complete the hardware installation:

1. Complete any other installation steps for other components.
2. Replace the cover plate and back panel.
3. Verify that the power cable is properly connected.
4. Turn on the power supply and boot the system normally.
5. Watch the LED indicators. The LEDs will flash only once, briefly, at power-up. The LEDs are functional only after the TrueScale software has been installed, the driver has been loaded, and the system is connected to an InfiniBand switch. To use the LEDs to check the state of the adapter, see “LED Link and Data Indicators” on page 3-13.

**LED Link and Data Indicators**

The LEDs function as link and data indicators once the TrueScale software has been installed, the driver has been loaded, and the fabric is being actively managed by a subnet manager.
Table 3-2 describes the LED states. The green LED indicates the physical link signal; the amber LED indicates the link. The green LED normally illuminates first. The normal state is **Green On, Amber On**. The QLE7340, QLE7342, QLE7240 and QLE7280 have an additional state, as shown in Table 3-2.

### Table 3-2. LED Link and Data Indicators

<table>
<thead>
<tr>
<th>LED States</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green OFF, Amber OFF</td>
<td>The switch is not powered up. The software is neither installed nor started. Loss of signal. Verify that the software is installed and configured with <code>ipath_control -i</code>. If correct, check both cable connectors.</td>
</tr>
<tr>
<td>Green ON, Amber OFF</td>
<td>Signal detected and the physical link is up. Ready to talk to SM to bring the link fully up. If this state persists, the SM may be missing or the link may not be configured. Use <code>ipath_control -i</code> to verify the software state. If all host channel adapters are in this state, then the SM is not running. Check the SM configuration, or install and run <code>opensmd</code>.</td>
</tr>
<tr>
<td>Green ON, Amber ON</td>
<td>The link is configured, properly connected, and ready. Signal detected. Ready to talk to an SM to bring the link fully up. The link is configured. Properly connected and ready to receive data and link packets.</td>
</tr>
<tr>
<td>Green BLINKING (quickly), Amber ON</td>
<td>Indicates traffic</td>
</tr>
<tr>
<td>Green BLINKING, Amber BLINKING</td>
<td>Locates the adapter This feature is controlled by `ipath_control -b [On</td>
</tr>
</tbody>
</table>
Installation
Troubleshooting

The following sections contain information about issues that may occur during installation.

Hardware Issues

Some of the hardware issues that may occur during installation are described in the following sections. Use the LEDs, as described in “LED Link and Data Indicators” on page 3-13, to help diagnose problems.

Node Spontaneously Reboots

If a node repeatedly and spontaneously reboots when attempting to load the TrueScale driver, it may be because the QLogic adapter is not installed correctly in the PCI Express slot.

BIOS Settings

This section covers issues related to BIOS settings. You can check and adjust BIOS settings using the BIOS Setup utility. For specific instructions, follow the hardware documentation that came with your system.

Enable Advanced Configuration and Power Interface (ACPI)

This setting must be enabled. If ACPI is disabled, it may cause initialization problems, as described in the Troubleshooting section of the QLogic OFED+ Host Software Users Guide.
Miscellaneous

Configuring Virtual Lanes for the QLE734x Adapters

For the QLE734x adapters, configuring the number of virtual lanes (VLs) is specified via a driver parameter (num_vls) in the /etc/modprobe.conf file. For example:

```bash
options ib_qib num_vls=x
```

where \( x \) equals the number of VLs (the range is 1 to 8).

If this parameter is not specified, the virtual lane default is 2.