

**Sun Storage 10 GbE FCoE  
ExpressModule Converged Network  
Adapter From QLogic Installation Guide  
For Adapter Models SG-EMFCOE2-Q-SR,  
SG-XEMFCOE2-Q-SR, SG-EMFCOE2-Q-  
TA, SG-XEMFCOE2-Q-TA, and 7101682**

**ORACLE®**

**Part No: E20764-07**  
January 2017



Sun Storage 10 GbE FCoE ExpressModule Converged Network Adapter From QLogic Installation Guide For Adapter Models SG-EMFCOE2-Q-SR, SG-XEMFCOE2-Q-SR, SG-EMFCOE2-Q-TA, SG-XEMFCOE2-Q-TA, and 7101682

**Part No: E20764-07**

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## Using This Documentation

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- **Overview** – Describes how to troubleshoot and maintain the Converged Network Adapter
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – Advanced experience troubleshooting and replacing hardware

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# ◆◆◆ CHAPTER 1

## Converged Network Adapter Overview

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This chapter provides a basic overview of Oracle's Sun Storage 10 GbE FCoE ExpressModule Converged Network Adapter, which uses Cavium, formerly QLogic, technology. This chapter also describes the various operating systems, storage, and infrastructure configurations that support the Converged Network Adapter, and lists the adapter's environmental requirements.

This chapter contains the following topics:

- [“Kit Contents” on page 11](#)
- [“Converged Network Adapter Features and Specifications” on page 11](#)
- [“Operating System and Technology Requirements” on page 13](#)
- [“System Interoperability” on page 14](#)
- [“Environmental Requirements” on page 19](#)

### Kit Contents

- Sun Storage 10 GbE FCoE ExpressModule Converged Network Adapter
- *Accessing Documentation* document

### Converged Network Adapter Features and Specifications

Oracle's Sun Storage 10 GbE FCoE ExpressModule Converged Network Adapter is a standard ExpressModule (EM), dual-port Converged Network Adapter that is available in two models:

- **SG-(X)EMFCOE2-Q-SR** - This model ships with two small form-factor pluggable plus (SFP+) short-range (SR) optical modules and supports a maximum cabling distance of 300 meters over multi-mode fiber.
- **SG-(X)EMFCOE2-Q-TA** - This model is intended for use with SFP+ direct-attach twinaxial (twinax) copper cables, and supports a maximum cabling distance of 10 meters.



**Caution** - Do not replace any of the SFP+ connectors. Doing so will void the warranty or serviceability of the Converged Network Adapter.

Table 1, “Converged Network Adapter Features and Specifications ,” on page 12 lists the features and specifications for this adapter.

**TABLE 1** Converged Network Adapter Features and Specifications

Feature	Description
Form factor	PCI ExpressModule, single wide
Connector types	Support for: <ul style="list-style-type: none"> <li>■ SFP+ SR optics</li> <li>■ SFP+ direct attach twinax copper</li> </ul>
PCIe specification compliance	PCI Express Base Specification, rev. 2.0  PCI Express Card Electromechanical Specification, rev. 2.0  PCI Bus Power Management Interface Specification, rev. 1.2
PCIe training configurations	PCI Express Gen 2 x4 logical slot or PCI Express Gen 1 x8 logical slot
PCIe hot-plug and hot swap functionality	Supported
Maximum power consumption	15 watts
Solaris Dynamic Reconfiguration (DR)	Supports Dynamic Reconfiguration, a software mechanism that allows resources to be attached (logically added) or detached (logically removed) from the Oracle Solaris Operating System control without incurring any system downtime
FCoE full offload in hardware requirement	Meets this requirement
Boot support (Ethernet and FCoE)	For all operating systems <sup>†</sup>
Receive side scaling (RSS)	Supported
MSI-X (message signaled interrupts)	Supported
Fibre Channel support	Support for dual-port FCoE compatible with: <ul style="list-style-type: none"> <li>■ Fibre Channel Generic Services (FC-GS-3)</li> <li>■ Fibre Channel Tape and Medium Changers (FC-Tape)</li> <li>■ Fibre Channel Protocol for SCSI (FCP-3-SCSI)</li> <li>■ Fibre Channel Switch Fabric (FC-SW-4)</li> <li>■ Fabric Provided MAC Address (FPMA) support</li> <li>■ FCoE boot code for all supported operating systems</li> </ul> <p><b>Note</b> - Link Aggregation Control Protocol (LACP) cannot be used on the same port as FCoE or iSCSI.</p>
Ethernet and NIC support	Dual 10G interface support for: <ul style="list-style-type: none"> <li>■ SR optical, and twinax interfaces (SFP+ direct attach)</li> </ul>

Feature	Description
Ethernet and NIC Support (continued)	<ul style="list-style-type: none"> <li>■ Ethernet support operating distance up to 300 meters (SR) and 10 meters (twinax)</li> <li>■ Internal interfaces: IEEE, 10GBase-KX4, 10GBase-KR</li> </ul> <p>Standard Ethernet and Enhanced Ethernet support for:</p> <ul style="list-style-type: none"> <li>■ IEEE 802.1Q VLAN</li> <li>■ IEEE 802.1p</li> <li>■ IEEE 802.3x</li> <li>■ IEEE 802.1Qbb</li> <li>■ IEEE 802.1Qaz</li> <li>■ DCBX</li> </ul>
	<p>Controller hardware support for:</p> <ul style="list-style-type: none"> <li>■ Jumbo frames support for frame sizes of at least 9 Kbytes</li> <li>■ Hardware TCP/UDP checksum generation</li> <li>■ Hardware IPv4/IPv6 checksum offload</li> <li>■ Hardware Large Segmentation offload</li> <li>■ Hardware Header and Data Split</li> <li>■ Full duplex operation</li> <li>■ Up to 128 MAC addresses</li> <li>■ Unicast and multi-cast address filtering</li> <li>■ VMware NetQueue</li> <li>■ Packet filtering based on MAC address or VLAN tag</li> <li>■ Microsoft receive-side scaling (RSS)</li> <li>■ NIC teaming</li> <li>■ PCI hot-plug</li> <li>■ Preboot Execution Environment (PXE) boot</li> <li>■ Multi-boot code</li> </ul>

† For the list of supported operating systems, see [Table 2, “Supported Operating System/Technology Versions \(Minimum\),” on page 13.](#)

## Operating System and Technology Requirements

The Converged Network Adapter requires the operating system (OS) and technology versions listed in the following table.

**TABLE 2** Supported Operating System/Technology Versions (Minimum)

Operating System/Technology	Supported Versions (minimum)
Oracle Solaris OS for the x86 (64-bit) platform	<ul style="list-style-type: none"> <li>■ Oracle Solaris 10 1/13 with patches 149176-02 and 145649-04, at minimum</li> <li>■ Oracle Solaris 11.1 with SRU 7</li> </ul> <p>To obtain the latest patches and SRUs, go to <a href="http://support.oracle.com">http://support.oracle.com</a></p>
Oracle Solaris OS for the SPARC (64-bit) platform	<ul style="list-style-type: none"> <li>■ Oracle Solaris 10 1/13 with patches 149175-02 and 145648-04, at minimum</li> </ul>

Operating System/Technology	Supported Versions (minimum)
	<ul style="list-style-type: none"> <li>■ Oracle Solaris 11.1 with SRU 7</li> </ul>
Linux OS	<p>To obtain the latest patches and SRUs, go to <a href="http://support.oracle.com">http://support.oracle.com</a></p> <ul style="list-style-type: none"> <li>■ Oracle Enterprise Linux 5.9 (Red Hat Compatible Kernel (RHCK) and Unbreakable Enterprise Kernel (UEK) 2, at minimum)</li> <li>■ Oracle Linux 6.4 (RHCK and UEK2, at minimum)</li> <li>■ Red Hat Enterprise Linux 5.9 (64-bit)</li> <li>■ Red Hat Enterprise Linux 6.4 (64-bit)</li> <li>■ SUSE Linux Enterprise Server 11 SP2 (32-bit and 64-bit)</li> </ul>
Microsoft Windows OS Standard, Enterprise, and Datacenter Editions	<ul style="list-style-type: none"> <li>■ Window Server 2008 R2 including SP1 (64-bit)</li> <li>■ Windows Server 2012</li> </ul>
VMware Technology	<ul style="list-style-type: none"> <li>■ VMware ESX/ESXi 5.0</li> <li>■ VMware ESX/ESXi 5.1</li> </ul>

## System Interoperability

This section provides information about platforms, storage systems, switches, and software that are compatible with the heterogeneous Fibre Channel and Ethernet network design of the Converged Network Adapter. This section contains the following topics:

- “Chassis Support” on page 14
- “Host Platform Support” on page 14
- “Storage Support” on page 15
- “Switch Support” on page 17
- “Software Support” on page 17
- “Boot Support” on page 18

### Chassis Support

The Converged Network Adapter can be installed in the following chassis:

- Sun Blade 6000 Modular System
- Sun Blade 6048 Chassis

### Host Platform Support

The Converged Network Adapter is supported by the platforms listed in [Table 3, “Host Platform Support,” on page 15](#). For a list of the operating system versions that are supported by the

adapter, see [Table 2, “Supported Operating System/Technology Versions \(Minimum\),”](#) on page 13. For up-to-date information, see your system Product Notes and web pages.

**TABLE 3** Host Platform Support

Platform	Supported OS/Technology
<b>Oracle SPARC Servers</b>	
SPARC T3-4	Oracle Solaris
SPARC T4-1B	Oracle Solaris
SPARC T4-4	Oracle Solaris
SPARC T5-1B	Oracle Solaris
Sun Blade T6320	Oracle Solaris
Sun Blade T6340	Oracle Solaris
<b>Oracle x86 Servers</b>	
Sun Blade X3-2B	Oracle Solaris, Linux, VMware, and Windows
Sun Blade X4-2B	Oracle Solaris, Linux, VMware, and Windows
Sun Blade 6000	Oracle Solaris, Linux, VMware, and Windows
Sun Blade 6048	Oracle Solaris, Linux, VMware, and Windows
Sun Fire X4800 M2	Oracle Solaris, Linux, VMware, and Windows
Sun Server X2-8	Oracle Solaris, Linux, VMware, and Windows
Sun Server X4-8	Oracle Solaris, Linux, VMware, and Windows

## Storage Support

This section lists the arrays, disk systems, and tape storage devices supported by the Converged Network Adapter. This section provides the following topics:

- [“Array Support” on page 15](#)
- [“Disk System Support” on page 16](#)
- [“Tape Storage Support” on page 16](#)
- [“Unified Storage Support” on page 16](#)

## Array Support

The Converged Network Adapter supports connecting to, using a supported switch, the following arrays:

- StorageTek 2540

- StorageTek 6140
- Sun Storage 6180 Disk Controller
- StorageTek 6540
- StorageTek 6580/6780 with 8Gb Fibre Channel host interface cards

## Disk System Support

The Converged Network Adapter supports connecting to, using a supported switch, the following disk system storage:

- StorageTek 9980/9985/9985V System
- StorageTek 9990/9990V System

## Tape Storage Support

The Converged Network Adapter supports connecting to, using a supported switch, the following tape storage devices:

- StorageTek SL24 tape autoloader
- StorageTek SL48 tape library
- StorageTek SL500 modular library
- StorageTek SL3000 modular library
- StorageTek SL8500 modular library
- StorageTek L1400 tape library
- StorageTek T10000A and T10000B tape drives
- StorageTek 9840C and 9840D tape drives
- IBM LTO3 and LTO4 tape drives
- Quantum DLT-S4 tape drive

## Unified Storage Support

The Converged Network Adapter supports connecting to, using a supported switch, the following disk system storage:

- Sun Storage 7110
- Sun Storage 7210
- Sun Storage 7310



- Sun Storage 7410

## Switch Support

The Converged Network Adapter supports connecting to the following Fibre Channel over Ethernet (FCoE) switches:

- Brocade 8000 (FCoE top-of-rack [ToR] switch)



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**Caution** - When operating with Oracle's Solaris 10 10/09 OS, logging in to a Brocade Elara 8000 switch requires VLAN 1002 configuration for that port. This is not a requirement in later versions of the Oracle Solaris OS.

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- Brocade FCoE10-24 Blade for DCX
- Cisco Nexus 5010 (FCoE ToR switch)
- Cisco Nexus 5020 (FCoE ToR switch)

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**Note** - The Converged Network Adapter has been verified to function with Cisco 5xxx FCoE switches; however, Oracle Services does not support customers with questions or issues about these switches. Direct all inquiries about the use of Cisco 5xxx switches to Cisco Systems.

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**Note** - When used strictly as a NIC, the Converged Network Adapter supports the use of any 10 GbE SFP+ Ethernet switch. However, to implement FCoE functionality with the Converged Network Adapter, you must use only the FCoE switches specified in this section.

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**Note** - Link Aggregation Control Protocol (LACP) cannot be used on the same port as FCoE or iSCSI.

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## Software Support

The Converged Network Adapter supports the software utilities, diagnostics, and applications listed in [Table 4, “Supported Converged Network Adapter Utilities,” on page 18](#), [Table 5, “Supported Converged Network Adapter Diagnostics,” on page 18](#), and [Table 6, “Other Supported Software Applications,” on page 18](#).

**TABLE 4** Supported Converged Network Adapter Utilities

Software	Supported OS
Converged Network Adapter firmware update utility	Oracle Solaris, Linux, VMware, and Windows
Converged Network Adapter configuration and management utility	Oracle Solaris, Linux, VMware, and Windows
Converged Network Adapter installation wizard	Windows
Solaris fcinfo utility compatibility	Oracle Solaris

**TABLE 5** Supported Converged Network Adapter Diagnostics

Software	Supported OS
Oracle Validation Test Suite (Oracle VTS)	Oracle Solaris
Fault Management Architecture (FMA)	Oracle Solaris

**TABLE 6** Other Supported Software Applications

Software	Supported OS
Solaris Cluster 3.x	Oracle Solaris
VERITAS NetBackup 6.5	Oracle Solaris
Sun StorageTek Enterprise Backup Software (EBS) 7.2/7.3/7.4	Oracle Solaris, Linux, and Windows
Support for native multi-pathing	Oracle Solaris, Linux, and Windows

## Boot Support

The Converged Network Adapter supports the following boot types:

- Oracle Solaris 10 01/13 for the x86 and SPARC environments
- Oracle Solaris 11.1 for the x86 and SPARC environments
- Preboot Execution Environment (PXE) boot capable (for x86 systems)
- RHEL 5.9 and 6.4
- SLES 11 SP2
- Oracle Enterprise Linux 5.9 and 6.4
- VMware ESX/ESXi 5.0 and 5.1
- Windows Server 2008 R2 including SP1
- Windows Server 2012

## Environmental Requirements

The Converged Network Adapter environmental requirements are listed in [Table 7, “Converged Network Adapter Environmental Requirements,”](#) on page 19.

**TABLE 7** Converged Network Adapter Environmental Requirements

Specification	Operating	Non-Operating
Temperature	0°C to 55°C, non-condensing	–40°C to 70°C, non-condensing
Humidity	10% RH to 90% RH, non-condensing, 27°C max wet bulb	93% RH, non-condensing, 38°C max wet bulb
Altitude	3000m	12,000m
Vibration	0.20G in all axes, 5-500 Hz sine	1.0G in all axes, 5–500 Hz sine
Shock	5G, 11 ms half-sine	30G 11 ms half-sine



# ◆◆◆ CHAPTER 2

## Hardware Installation and Removal

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This chapter describes how to install and remove the Converged Network Adapter (adapter). Refer to your system installation or service manual for detailed instructions.

This chapter contains the following topics:

- [“Observing ESD and Handling Precautions” on page 21](#)
- [“Installing the Hardware” on page 22](#)
- [“Converged Network Adapter LEDs” on page 26](#)
- [“Testing the Installation” on page 28](#)
- [“Updating the PXE” on page 35](#)
- [“Updating the Multi-Boot Code” on page 37](#)
- [“Removing the Hardware” on page 38](#)

## Observing ESD and Handling Precautions



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**Caution** - Damage to the Converged Network Adapter can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the adapter with care to avoid damage to electrostatic sensitive components.

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To minimize the possibility of ESD-related damage, use both a workstation antistatic mat and an ESD wrist strap. You can get an ESD wrist strap from any reputable electronics store or from Oracle as part number 250-1007. Observe the following precautions to avoid ESD-related problems:

- Leave the adapter in its antistatic bag until you are ready to install it in the system.
- Always use a properly fitted and grounded wrist strap or other suitable ESD protection when handling the adapter and observe proper ESD grounding techniques.
- Hold the adapter by the edge of the board, not the connectors.

- Place the adapter on a properly grounded antistatic work surface pad when it is out of its protective antistatic bag.

## Installing the Hardware

Follow the procedures in this section to install the hardware:

- [“To Install the Converged Network Adapter” on page 22](#)
- [“To Connect the Optical Cables” on page 24](#)
- [“To Connect the Copper Cables” on page 25](#)

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**Note** - Because the Windows Server 2008 R2 OS does not have inbox driver support for the Converged Network Adapter, you must ensure that both the Fibre Channel and Ethernet drivers are installed prior to connecting the adapter to an Ethernet or Fibre Channel network. For more information, see [“Installing Software for the Windows OS” on page 51](#).

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### ▼ To Install the Converged Network Adapter

1. If the system in which you are installing the adapter is running the Oracle Solaris OS, install the two driver patches for your platform, as listed in [“Installing Software for the Oracle Solaris OS” on page 41](#).
2. Attach an ESD wrist strap (see [“Observing ESD and Handling Precautions” on page 21](#)).
3. Refer to your system installation or service manual to determine an appropriate PCI Express slot in which to install the Converged Network Adapter.
4. Refer to your system documentation to shut down, power off, and unplug the system, if required.

5. **Press down the plastic tab to release the ExpressModule latch and pull the lever out until it is nearly perpendicular with the ExpressModule front panel.**



6. **Insert the adapter into an empty PCIe x8 or larger slot.**  
Be careful that the tooth on the bottom of the lever does not come in contact with the chassis sheet metal during insertion.
7. **When the adapter is inserted nearly all the way into its slot, carefully push the lever back into its fully closed position, allowing the lever tooth to insert the adapter fully into place.**

---

**Note** - Inserting the Converged Network Adapter in an abrupt or rough manner could unintentionally cause the initialization process of the Converged Network Adapter to start. To prevent the process from starting, be sure to insert the adapter gently, but firmly, into place.

---

The adapter is now installed and you can connect the optical or copper cables.

## ▼ To Connect the Optical Cables

---

**Note** - The Converged Network Adapter does not allow normal data transmission on an optical link unless it is connected to another similar or compatible Fibre Channel over Ethernet (FCoE) product (that is, another Converged Network Adapter or FCoE switch using compatible short range optics).

---

Use multi-mode fiber-optic cable, intended for short-wave lasers, that adheres to the specifications listed in [“Converged Network Adapter Features and Specifications”](#) on page 11.

**1. Connect the fiber-optic cable, or cables, to an LC connector on the adapter.**

The following figure shows how to connect the dual-port adapter with fiber-optic cables.





2. **Connect the other end of the cable, or cables, to the FCoE switch.**

---

**Note** - Link Aggregation Control Protocol (LACP) cannot be used on the same port as FCoE or iSCSI.

---

## ▼ To Connect the Copper Cables

Use only SFP+ direct attach twinax cables approved by Oracle. The following table lists the part numbers for the approved twinax copper cables.

Brocade Part Number	Oracle Part Number	Cable Description
SN-TWX-0101	SG-XSWBROSFP-1M1PK	Brocade Twinax, 1 Meter, 1 Pack, SN
SN-TWX-0301	SG-XSWBROSFP-3M1PK	Brocade Twinax, 3 Meter, 1 Pack, SN
SN-TWX-0501	SG-XSWBROSFP-5M1PK	Brocade Twinax, 5 Meter, 1 Pack, SN

---

**Note** - If you are connecting this Converged Network Adapter to a Cisco FCoE switch, do not use the cables listed in this section. Instead, use OM-3 twin-ax cables that are supported by Cisco. Check with Cisco for the recommended twin-ax cables to use with the specific Cisco switch that you are using. If any issues occur due to the use of Cisco cables, contact Cisco support for resolution.

---

1. **Insert one end of the copper cable, or cables, into an empty SFP+ cage on the adapter.**

Confirm that the cable is fully inserted and engaged.

The following figure shows how to connect the dual-port adapter with copper cables.



2. **Insert the other end of the copper cable, or cables, into an empty SFP+ cage on the FCoE switch.**

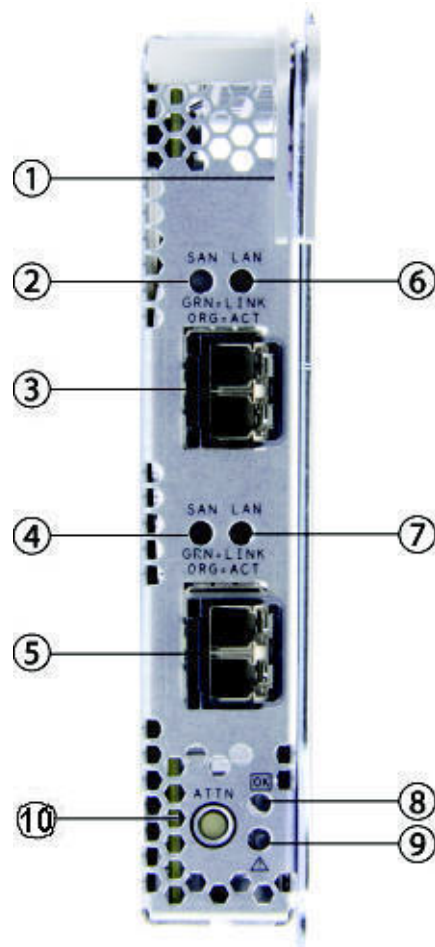
---

**Note** - Link Aggregation Control Protocol (LACP) cannot be used on the same port as FCoE or iSCSI.

---

## Converged Network Adapter LEDs

This section describes the light-emitting diodes (LEDs) on the adapter, as shown in the following figure.



Callout	Description
1	ExpressModule latch
2	Port 1 SAN LED
3	Port 1 LC Connector
4	Port 2 SAN LED
5	Port 2 LC Connector
6	Port 1 LAN LED
7	Port 2 LAN LED
8	OK LED (system operating normally)

Callout	Description
9	Attention LED (system requires attention)
10	Attention button

Table 8, “Converged Network Adapter LAN and SAN LED Status,” on page 28 summarizes the LAN and SAN LED status conditions.

**TABLE 8** Converged Network Adapter LAN and SAN LED Status

LAN Traffic Green LED	SAN Traffic Green LED	LAN Traffic Orange LED	SAN Traffic Orange LED	Hardware State
Off	Off	Off	Off	Power off
Slow flashing (unison)	Slow flashing (unison)	Off	Off	Power on; no link
Slow flashing	On	Off	Off	Power on; link established; no activity
Flashing	On	Off	Off	Power on; link established; receive and transmit LAN activity only
Slow flashing	Flashing	Off	Off	Power on; link established; receive and transmit SAN (FCoE) activity only
Flashing	Flashing	Off	Off	Power on; link established; receive and transmit LAN and SAN activity
Off	On or flashing	On	Off	Fatal error detected on LAN function; SAN functioning normally
On or flashing	Off	Off	On	Fatal error detected on SAN function; LAN functioning normally
Off	Off	On	On	Fatal error affecting both LAN and SAN functions
Slow flashing, alternating with other LED	Slow flashing, alternating with other LED	Off	Off	Beaconing

In addition, the OK and Attention LEDs indicate the following:

- The OK LED is static green when the hardware is powered on and operating normally, and off when the hardware is powered off.
- The Attention button LED is static green when the hardware is powered on and operating normally, flashing green when the -ATTN button is pressed, and off when the hardware is powered off.

## Testing the Installation

This section contains the following topics:

- [“To Verify Proper Installation \(Oracle SPARC Systems\)” on page 29](#)
- [“To Verify Attached Storage \(Oracle SPARC Systems\)” on page 31](#)
- [“To Verify Proper Installation \(Oracle x86 Systems\)” on page 32](#)

## ▼ To Verify Proper Installation (Oracle SPARC Systems)

1. Use the `show-devs` command at the `ok` prompt to list the installed devices.

The Converged Network Adapter can be identified in the output by looking for the `SUNW,qlc@n` and `SUNW,qlc@n,1` node names, where `n` is usually a single-digit number from 0 to 9.

```
show-devs
/os-io
/ramdisk-root
/pci@3,700000
/pci@2,600000
/pci@1,700000
/pci@0,600000
/pci@8,4000
/cmp@408,0
/cmp@400,0
/pseudo-mc@200,200
/nvram
/pseudo-console
/virtual-memory
/memory@m3c0000000000
/aliases
/options
/openprom
/chosen
/packages
/pci@2,600000/SUNW,qlc@0,3
/pci@2,600000/SUNW,qlc@0,2
/pci@2,600000/ethernet@0,1
/pci@2,600000/ethernet@0
/pci@2,600000/SUNW,qlc@0,3/fp@0,0
/pci@2,600000/SUNW,qlc@0,3/fp@0,0/disk
/pci@2,600000/SUNW,qlc@0,2/fp@0,0
/pci@2,600000/SUNW,qlc@0,2/fp@0,0/disk
/pci@0,600000/pci@0
/pci@0,600000/pci@0/pci@9
/pci@0,600000/pci@0/pci@8
/pci@0,600000/pci@0/pci@8/pci@0,1
```

```
/pci@0,600000/pci@0/pci@8/pci@0
/pci@0,600000/pci@0/pci@8/pci@0/network@2,1
/pci@0,600000/pci@0/pci@8/pci@0/network@2
/pci@0,600000/pci@0/pci@8/pci@0/scsi@1
/pci@0,600000/pci@0/pci@8/pci@0/scsi@1/disk
/pci@0,600000/pci@0/pci@8/pci@0/scsi@1/tape
/pci@8,4000/ebus@1
/pci@8,4000/ebus@1/panel@14,280030
/pci@8,4000/ebus@1/scfc@14,200000
/pci@8,4000/ebus@1/serial@14,400000
/pci@8,4000/ebus@1/flashprom@10,0
/cmp@408,0/core@1
/cmp@408,0/core@0
/cmp@408,0/core@1/cpu@1
/cmp@408,0/core@1/cpu@0
/cmp@408,0/core@0/cpu@1
/cmp@408,0/core@0/cpu@0
/cmp@400,0/core@1
/cmp@400,0/core@0
/cmp@400,0/core@1/cpu@1
/cmp@400,0/core@1/cpu@0
/cmp@400,0/core@0/cpu@1
/cmp@400,0/core@0/cpu@0
/openprom/client-services
/packages/hsfs-file-system
/packages/ufs-file-system
/packages/obp-tftp
/packages/terminal-emulator
/packages/disk-label
/packages/deblocker
/packages/SUNW,builtin-drivers
/packages/SUNW,probe-error-handler
```

2. **To identify the port as a Sun Storage 10 GbE FCoE ExpressModule Converged Network Adapter port, use the `cd` command to change to the `SUNW,qlc@n` directories, and use the `.properties` command, as shown in the following example.**

```
cd /pci@0/pci@0/pci@8/pci@0/pci@2/SUNW,qlc@0
```

In the next example, the `.properties` command output displays the properties of one port in a dual-port Converged Network Adapter.

```
{3} ok .properties
status                okay
assigned-addresses    81020310 00000000 00000600 00000000 00000100
```

```

82020314 00000000 0010c000 00000000 00004000
8202031c 00000000 00500000 00000000 00100000
82020330 00000000 00600000 00000000 00040000
adapter          Dual Port PCIe 10Gb FCoE
manufacturer     QLGC
oem              SUNW
release-date     2010-01-11 19:29
revision-level   3.12
port#            00000001
version          QEM8152 Host Adapter FCode(SPARC): 3.15 2010-01-11 19:29
model            QEM8152
node-wwn         20 00 00 c0 dd 0a b4 73
port-wwn         21 00 00 c0 dd 0a b4 73
reg              00020300 00000000 00000000 00000000 00000000
                  01020310 00000000 00000000 00000000 00000100
                  03020314 00000000 00000000 00000000 00001000
compatible       pciex1077,8001.1077.183.2
                  pciex1077,8001.1077.183
                  pciex1077,183
                  pciex1077,8001.2
                  pciex1077,8001
                  pciclass,c0400
short-version    3.12 2010-01-11 19:29
devsel-speed     00000000
max-latency      00000000
min-grant        00000000
#size-cells      00000000
#address-cells   00000002
device_type      scsi-fcp
name             SUNW,qlc
fcode-rom-offset 0000b800
interrupts       00000004
cache-line-size  00000010
class-code       000c0400
subsystem-id     0000020D
subsystem-vendor-id 00001077
revision-id      00000002
device-id        00008001
vendor-id        00001077

```

## ▼ To Verify Attached Storage (Oracle SPARC Systems)

- If online storage is connected to the Converged Network Adapter, use the `show-children` command to list the attached storage.

---

**Note** - You might need to run the `reset-all` command before using the `show-children` command.

---

In the following example, a RAID device shows one target and 10 LUNs attached to an FCoE switch connected to one port of a dual-port Converged Network Adapter.

```
{0} ok show-disks
a) /pci@7c0/pci@0/pci@8/SUNW,qlc@0,3/fp@0,0/disk
b) /pci@7c0/pci@0/pci@8/SUNW,qlc@0,2/fp@0,0/disk
c) /pci@7c0/pci@0/pci@1/pci@0,2/LSILogic,sas@2/disk
d) /pci@7c0/pci@0/pci@1/pci@0/ide@8/cdrom
e) /pci@7c0/pci@0/pci@1/pci@0/ide@8/disk
q) NO SELECTION
Enter Selection, q to quit: b

{0} ok select /pci@7c0/pci@0/pci@8/SUNW,qlc@0,2
QLogic QEM8152 Host Adapter FCode(SPARC): 3.15 2013-01-11 19:29
ISP Firmware version 5.03.02
MPI FW version 1.39.00

{0} ok show-children
Adapter portID - 11401
***** Fabric Attached Devices *****
Dev# 0(0) PortID 10500 Port WWN 200600a0b819e3b8
LUN 0(0) DISK SUN CSM100_R_FC 0619
LUN 1(1) DISK SUN CSM100_R_FC 0619
LUN 2(2) DISK SUN CSM100_R_FC 0619
LUN 3(3) DISK SUN CSM100_R_FC 0619
LUN 4(4) DISK SUN CSM100_R_FC 0619
LUN 5(5) DISK SUN CSM100_R_FC 0619
LUN 6(6) DISK SUN CSM100_R_FC 0619
LUN 7(7) DISK SUN CSM100_R_FC 0619
LUN 8(8) DISK SUN CSM100_R_FC 0619
LUN 9(9) DISK SUN CSM100_R_FC 0619
```

## ▼ To Verify Proper Installation (Oracle x86 Systems)

1. During system power-on initiation, the following system booting BIOS initialization screen is displayed.

```
QLogic Corporation
QEM8152 PCI3.0 Fibre Channel ROM BIOS version 2.14
```



Copyright (c) QLogic Corporation 1992-2009. All rights reserved.  
www.qlogic.com

Press <CTRL-Q> or <ALT-Q> for Fast!UTIL  
BIOS for Adapter 0 is disabled  
BIOS for Adapter 1 is disabled  
ROM BIOS NOT INSTALLED

**2. Immediately press ctrl-q.**

The following QLogic *Fast!UTIL* menu is displayed.

QLogic Corporation  
QEM8152 PCI3.0 Fibre Channel ROM BIOS version 2.14  
Copyright (c) QLogic Corporation 1993-2009. All rights reserved.  
www.qlogic.com

Press <CTRL-Q> or <ALT-Q> for Fast!UTIL

BIOS for Adapter 0 is disabled

BIOS for Adapter 1 is disabled  
ROM BIOS NOT INSTALLED

<CTRL-Q> Detected, Initialization in progress, Please wait...

Then the following QLogic *Fast!UTIL* menu is displayed.

```

                QLogic Fast!UTIL
                Select Host Adapter
                -----
Adapter Type   Address  Slot  Bus  Device  Function
-----
QEM8152       E800    01   05   00      2
QEM8152       EC00    01   05   00      3
    
```

**3. Use the Arrow key to highlight the Converged Network Adapter port that has connected devices and press Enter.**

The QLogic *Fast!UTIL* menu is displayed as shown in the following example.

```

                QLogic Fast!UTIL
                Selected Adapter
                -----
Adapter Type   Address  Slot  Bus  Device  Function
-----
QEM8152       E800    01   05   00      2
    
```

```
-----  
Fast!UTIL Options  
  
Configuration Settings  
Scan Fibre Devices  
Fibre Disk Utility  
Loopback Data Test  
Select Host Adapter  
Exit Fast!UTIL
```

**4. Use the Arrow key to highlight Scan Fibre Devices and press Enter.**

The following example shows two RAID devices attached to one port of a dual-port Converged Network Adapter.

```
QLogic Fast!UTIL  
  
Select Fibre Channel Device  
  
ID  Vendor  Product          Rev  Port Name  Port ID  
0   SUN     CSM200_R        0619  
1   SUN     CSM200_R        0619  
2   No device present  
3   No device present  
4   No device present  
5   No device present  
6   No device present  
7   No device present  
8   No device present  
9   No device present  
10  No device present  
11  No device present  
12  No device present  
13  No device present  
14  No device present  
15  No device present
```

**5. To exit the QLogic *Fast!UTIL*, press the Escape key.**

The following QLogic *Fast!UTIL* menu is displayed.

```
QLogic Fast!UTIL  
Selected Adapter  
  
-----
```

Adapter Type	Address	Slot	Bus	Device	Function
QEM8152	E800	01	05	00	2

-----  
Fast!UTIL Options

Configuration Settings  
Scan Fibre Devices  
Fibre Disk Utility  
Loopback Data Test  
Select Host Adapter  
Exit Fast!UTIL

**6. Highlight Exit Fast!UTIL and press Enter.**

The following QLogic *Fast!UTIL* menu is displayed.

QLogic Fast!UTIL

Exit Fast!UTIL  
-----

Reboot System  
Return to Fast!UTIL

---

**Note** - If the QLogic BIOS or PXE banner does not display during POST, confirm that the EM FUNC OPTION ROM is enabled in the system BIOS.

---

## Updating the PXE

If you are installing the adapter in an x86 system, and you plan to use Preboot Execution Environment (PXE) functionality, you might need to update the Converged Network Adapter PXE under the BIOS and UEFI environments. This section provides the following PXE information:

- [“PXE Operating Systems” on page 35](#)
- [“Package Files” on page 36](#)

## PXE Operating Systems

Supported operating systems for the BIOS PXE installation include:

- Windows Server 2008 R2 including SP1 64-bit
- SLES 11 SP2 64-bit
- RedHat 5.9 and 6.4 64-bit
- Oracle's Sun JumpStart PXE server

---

**Note** - When installing an operating system from the PXE Server, ensure that the selected OS supports the Converged Network Adapter relative to the BIOS or the UEFI environment. Also ensure that the adapter supporting NIC and Fibre Channel drivers is loaded on the PXE Server.

---

## Package Files

The multi-boot image package is available on the Oracle Recommended Software page located here:

[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)

The package contains the following BIOS files:

- `x8xyyyy.bin` - Combined binary file, which includes the binaries for the firmware, PXE, multi-boot code, UEFI, and BIOS.
- `readme.txt` - Package and configuration information.
- `release.txt` - Reference the separate PXE (BIOS) and EFI PXE (EFI) release notes.
- `update.bat` - DOS batch file that calls the executable files to update the adapter PXE in the BIOS environment.
- `FlasUtil.exe` - Utility to update multi-boot code and firmware.
- `VPD.exe` - Utility to update the adapter's Vital Product Data (VPD).
- `s8152mc.dat` - Message Passing Interface (MPI) configuration data.

---

**Note** - For instructions about booting from FCoE, refer to the `Readme.txt` file in the multi-boot package located at the URL provided earlier in this section.

---

## Updating the Multi-Boot Code

Multi-boot code for the Converged Network Adapter supports both Ethernet and FCoE boot. This section provides the following information about the multi-boot update:

- [“Hardware and Software Configuration for Multi-Boot” on page 37](#)
- [“Multi-Boot Code Update Utilities” on page 38](#)

## Hardware and Software Configuration for Multi-Boot

Hardware configuration includes the following:

- Oracle's SPARC Solaris boot client
- Oracle Solaris boot server
- Converged Network Adapter installed in Oracle's SPARC Solaris boot client

Software configuration requires that you verify (via the `.properties` command) the multi-boot version and release date by viewing the values of the following properties:

- `revision-level` - **3.15** or later
- `release-date` - **2010-04-30** or later

The following example session shows how to perform an Ethernet boot at the OpenBoot `ok` prompt on Oracle's SPARC boot client console.

```
{0} ok show-nets
a) /pci@7c0/pci@0/pci@9/ethernet@0,1
b) /pci@7c0/pci@0/pci@9/ethernet@0
c) /pci@7c0/pci@0/pci@2/network@0,1
d) /pci@7c0/pci@0/pci@2/network@0
e) /pci@780/pci@0/pci@1/network@0,1
f) /pci@780/pci@0/pci@1/network@0
q) NO SELECTION
Enter Selection, q to quit: b
/pci@7c0/pci@0/pci@9/ethernet@0 has been selected.
Type ^Y ( Control-Y ) to insert it in the command line.
e.g. ok nvalias mydev ^Y
      for creating devalias mydev for
/pci@7c0/pci@0/pci@9/ethernet@0
```

```
{0} ok boot /pci@7c0/pci@0/pci@9/ethernet@0 -v
```

## Multi-Boot Code Update Utilities

You can update the multi-boot code using the QLogic command-line interface (CLI) utility. This utility is located on the Oracle support area of the QLogic web site:

[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)

Before updating the multi-boot code, install the latest Oracle Solaris Converged Network Adapter driver. Then copy the multi-boot binary file Q8Qxyyy.BIN from the preceding link to the Oracle SPARC system under the root (/) directory.

For procedures on updating multi-boot and MPI tables using the QLogic utility, refer to the QLogic CLI user's guide.

## Removing the Hardware

The following instructions describe how to remove the Converged Network Adapter, in the event that you need to do so. Refer to your system installation or service manual for detailed adapter removal instructions.

The following steps summarize the hardware removal process:

1. Prepare the adapter for hot-plug removal with one of the following:
  - The adapter Attention (ATTN) button
  - The Oracle Solaris OS
2. Remove the adapter hardware.

### ▼ To Prepare the Adapter for Removal Using the Adapter Attention Button

1. **Press and release the Attention (ATTN) button near the bottom of the adapter front panel.**

The Attention LED near the button will blink for approximately five seconds, indicating that the adapter is being prepared for removal.

---

**Note** - When pressing the Attention button, press the button straight in, and upon release, ensure that the button has not become wedged beneath the faceplate. If the Attention button remains depressed, or is wedged beneath the faceplate, press the button again to release it, and then start this procedure again.

---

2. **If you want to stop the operation, press the ATTN button again before the LED stops blinking.**
3. **When the LED stops blinking and goes dark, you can remove the adapter.**

## ▼ To Prepare the Adapter for Hot-Plug Removal Using the Oracle Solaris OS

If you want to remove the adapter without first halting the operating system and removing power from the associated system, you can prepare the adapter for removal as follows:

1. **Use the `cfgadm -al` command to identify the adapter to be removed.**

Ap_Id	Type	Receptacle	Occupant	Condition
PCI-EM0	etherne/hp	connected	configured	ok

2. **Use the `ifconfig` command to identify the Ethernet ports on the adapter to be disconnected (or, use `ifconfig -a` to show the plumbed Ethernet ports).**

```
qlge0: flags=1004843<UP,BROADCAST,RUNNING,MULTICAST,DHCP,IPv4> mtu 1500 index 4
  inet 0.0.0.0 netmask ff000000
  ether 0:c0:dd:15:d5:44
qlge1: flags=1004843<UP,BROADCAST,RUNNING,MULTICAST,DHCP,IPv4> mtu 1500 index 6
  inet 0.0.0.0 netmask ff000000
  ether 0:c0:dd:15:d4:da
```

3. **Use the `ifconfig qlge(<port-number>) unplumb` command to disconnect the Ethernet ports on the adapter.**
4. **Use the `cfgadm -c unconfigure` command to unconfigure the attachment point ID (`Ap_Id`) for the adapter. For example:**

```
cfgadm -c unconfigure PCI-EM0
```

```
..  
cfgadm -c disconnect PCI-EM0???
```

5. **Use the `cfgadm -c disconnect` command to prepare the adapter for removal.**

A blinking Power LED indicates that the adapter is being prepared for removal. A dark Power LED indicates that the adapter is ready to be removed.

## ▼ To Remove the Adapter

1. **Prepare for removal, as described in [“To Prepare the Adapter for Removal Using the Adapter Attention Button”](#) on page 38 or [“To Prepare the Adapter for Hot-Plug Removal Using the Oracle Solaris OS”](#) on page 39.**
2. **Disconnect the Fibre Channel and Ethernet cables.**
3. **With an ESD wrist strap attached, press down on the ExpressModule latch to disengage the adapter.**
4. **Pull forward on the ejector lever to dislodge the adapter.**
5. **Remove the adapter.**



# ◆◆◆ CHAPTER 3

## Software Installation

---

After you have completed the hardware installation and powered on the system, follow the instructions in this chapter for your operating system to install the Converged Network Adapter driver and any other utilities required by the adapter.

This chapter contains the following topics:

- [“Installing Software for the Oracle Solaris OS” on page 41](#)
- [“Installing Software for the Oracle Linux, Red Hat, or SUSE Linux OS” on page 43](#)
- [“Installing Software for the Oracle VM OS and VMware Technology” on page 51](#)
- [“Installing Software for the Windows OS” on page 51](#)
- [“Installing the CLI for Updating the BIOS and FCode” on page 61](#)

### Installing Software for the Oracle Solaris OS

This section contains the following topic:

- [“Installing the Oracle Solaris Drivers” on page 41](#)
- [“Diagnostic Support for the Oracle Solaris OS” on page 42](#)

### Installing the Oracle Solaris Drivers

The `qlc` and `qlge` drivers are included with the Oracle Solaris 10 01/13 and the Oracle Solaris 11.1 OSES (or later), and provide support for FCoE functionality with the Converged Network Adapter. You must load the latest `qlc` and `qlge` drivers by installing the appropriate platform patches and SRUs:

- **Oracle Solaris 10 01/13 (for the SPARC environment):** patches 149175-02 and 145648-04
- **Oracle Solaris 10 1/13 (for the x86 environment):** patches 149176-02 and 45649-04
- **Oracle Solaris 11.1:** SRU 7

You can download the latest patches and SRUs from this web site:

<http://support.oracle.com>

## ▼ To Install or Update the qlc and qlge Converged Network Adapter Drivers From a Patch

Installing or updating the qlc and qlge Converged Network Adapter drivers from the patches listed in the previous section adds or updates both the FCoE driver and the networking driver. No additional steps are required to install or update those drivers on the Oracle Solaris OS.

1. **Log in as the root user.**
2. **Navigate to the directory that contains the patch.**
3. **Add the latest patch by using the patchadd command.**

```
# patchadd patch-number
```

4. **Repeat steps 1 through 3 for the other patch.**
5. **To confirm that the drivers are loaded, issue the following command:**

```
# modinfo | grep ql
101 7bb76000 14e2b0 318 1 qlc (SunFC QLogic FCA v20100301-x.xx)
136 7b6fa000 1a708 326 1 qlge (GLDv3 QLogic 81XX 10-1.0x-xx)
```

## Diagnostic Support for the Oracle Solaris OS

Diagnostic support for the Converged Network Adapter is included in the Oracle VTS software. The Oracle VTS software is available for download at: <http://support.oracle.com/>

For information about the Oracle VTS software, see the Oracle VTS documentation at: <http://docs.oracle.com/cd/E19719-01/index.html>

Oracle VTS includes the qlctest utility, which supports the following functions:

- Connectivity verification
- Firmware version and checksum testing
- Self-testing

- Loopback tests, including:
  - External
  - Internal, single-bit
  - Mailbox

## Installing Software for the Oracle Linux, Red Hat, or SUSE Linux OS

This section describes how to download and install the fibre channel drivers required by the Converged Network Adapter. It also describes how to install diagnostic support software for the Converged Network Adapter. This section contains the following topics:

- “[Downloading the Oracle Linux, Red Hat, or SUSE Linux Drivers](#)” on page 43
- “[Installing the Red Hat or SUSE Linux Drivers](#)” on page 44
- “[Diagnostic Support for the Red Hat or SUSE OS](#)” on page 50

## Downloading the Oracle Linux, Red Hat, or SUSE Linux Drivers

This section describes how to download the FCoE driver for the Converged Network Adapter.

### ▼ To Download the FCoE Driver

1. **Go to the Oracle support area of the QLogic web site at:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
2. **Locate the table containing your model number.**
3. **At the bottom of the table, in the Software for: row, click Linux.**
4. **Navigate to the table for your specific OS, and find the appropriate driver (the file name is in the format `ql2xxx-src-vu.vv.wv.xx.yy.zz.tar.gz`, where `yy` and `zz` represent the OS version of the driver (for example 11.0 for SLES 11)).**

---

**Note** - Oracle Linux, RHEL 5.9 and later, and SLES 11 SP2 and later have Converged Network Adapter driver support in the distro; driver download is not required.

---

5. **Click the driver version that you want to download, read through the software license agreement, and click I Agree to continue with the download.**
6. **Save the file to a directory on the hard disk of the system.**

---

**Note** - Because the driver distribution file is now larger than 1.44 MB, it cannot fit on a 1.44MB floppy disk; therefore, you must use a USB drive or local hard disk to download the file.

---

## ▼ To Download the Networking Driver

1. **Go to the Oracle support area of the QLogic web site at:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
2. **Locate the table containing your model number.**
3. **At the bottom of the table, in the Software for: row, click Linux.**
4. **In the Oracle Linux, Red Hat, or SUSE Linux table, and find the appropriate driver (the file name is in the format ql2xxx-src-vu.vv.wv.xx.yy.zz.tar.gz, where yy and zz represent the OS version of the driver (for example 11.0 for SLES 11)).**

---

**Note** - Oracle Linux, RHEL 5.9 and later, and SLES 11 SP2 and later have Converged Network Adapter driver support in the distro; driver download is not required.

---

5. **Click the driver version that you want to download, read through the software license agreement, and click I Agree to continue with the download.**
6. **Save the file to a directory on the hard disk of the system.**

---

**Note** - Because the driver distribution file is now larger than 1.44 MB, it cannot fit on a 1.44MB floppy disk; therefore, you must use a USB drive or local hard disk to download the file.

---

## Installing the Red Hat or SUSE Linux Drivers

After you download the drivers, as described in “[Downloading the Oracle Linux, Red Hat, or SUSE Linux Drivers](#)” on page 43, you can install the drivers by following the procedures in the order listed in this section:

- [“To Build the FCoE Driver ” on page 45](#)
- [“Loading the Newly Built FCoE Driver” on page 46](#)
- [“Deploying the Networking Driver” on page 47](#)

---

**Note** - You do not need to install any drivers for the Oracle Linux OS.

---

## ▼ To Build the FCoE Driver

The driver installation makes extensive use of the `build.sh` script, which is located in driver source (`extras/build.sh`).

From the source code, you can build a `qla2xxx.ko` module for the host. You can then choose either to manually or automatically load the driver, as described in [“Loading the Newly Built FCoE Driver” on page 46](#).

1. **In the directory that contains the source driver file, `qla2xxx-x.yy.zz-dist.tgz`, enter the commands shown in the following example.**

```
# tar -xvzf *.tgz
# cd qla2xxx-src-u.vv.wv.xx.yy.zz-k
```

2. **Build and install the driver modules from the source code by executing the `build.sh` script.**

```
# ./extras/build.sh install
```

This build script does the following:

- **Builds the driver `.ko` files.**
- **Copies the `.ko` files to the appropriate directory:**  
 For RHEL: `/lib/modules/2.6.../kernel/drivers/scsi/qla2xxx` For SLES: `/lib/modules/2.6.../update`

3. **Choose how you want to load the driver, as described in [“Loading the Newly Built FCoE Driver” on page 46](#).**

## Loading the Newly Built FCoE Driver

After you build the FCoE driver, as described in [“To Build the FCoE Driver ” on page 45](#), you can choose to manually or automatically load the driver. This section contains the following topics:

- [“To Manually Load the FCoE Driver” on page 46](#)
- [“To Automatically Load the FCoE Driver” on page 46](#)

### ▼ To Manually Load the FCoE Driver

After building the FCoE driver, you can choose to manually load the driver. If you want to automatically load the driver, skip to [“To Automatically Load the FCoE Driver” on page 46](#).

1. **Build the driver binary, as described in [“To Build the FCoE Driver ” on page 45](#).**
2. **Manually load the driver by using the `modprobe -v` command.**

---

**Note** - On SLES 11, before running the `modprobe -v` command, modify the `/etc/modprobe.d/unsupported-modules` file by changing the line, `allow_unsupported_modules 0`, to `allow_unsupported_modules 1`.

---

```
# modprobe -v qla2xxx
```

3. **If you want to manually unload the driver, use the `modprobe -r` command.**

```
# modprobe -r qla2xxx
```

### ▼ To Automatically Load the FCoE Driver

After building the Fibre Channel driver, you can choose to automatically load the driver. If you want to manually load the driver, see [“To Manually Load the FCoE Driver” on page 46](#).

1. **Build the driver binary, as described in [“To Build the FCoE Driver ” on page 45](#).**
2. **Install the driver module (\*.ko) files to the appropriate kernel module directory.**

```
# ./extras/build.sh install
```

3. **For SUSE Linux users, edit the `/etc/sysconfig/kernel` file and modify the `INITRD_MODULES` directive as shown in the following example.**

```
...
INITRD_MODULES="... qla2xxx"
...
```

4. **Change to the `/boot` directory.**
5. **Back up the current RAMDISK image.**

```
# cp -f initrd-2.6.kernel-version.img initrd-2.6.kernel-version.img.bak
```

6. **Build the RAMDISK image with the `mkinitrd` command.**

```
Red Hat: # mkinitrd -f initrd-2.6.kernel-version.img kernel-version
SUSE: # /sbin/mkinitrd
```

7. **Reboot the system to load the RAMDISK image with the driver.**

## Deploying the Networking Driver

Networking driver deployment includes creating, installing, and removing the driver. This section contains the following topics:

- [“To Create the Driver” on page 47](#)
- [“To Install the Driver” on page 48](#)
- [“To Rebuild the Driver” on page 48](#)
- [“To Remove the Driver” on page 49](#)

### ▼ To Create the Driver

1. **Move the base driver tar file to a directory; for example:**

```
/home/user-name
```

2. **Untar the archive by issuing the following command:**

```
tar -xvzf qlge-x.x.x.x.tgz
```

3. **Change to the driver src directory as follows:**

```
cd qlge/
```

4. **Compile the driver module by issuing the following command:**

```
make install
```

The binary is installed as follows:

```
/lib/modules/[KERNEL_VERSION]/kernel/drivers/net/qlge/qlge.[k]o
```

---

**Note** - The install locations shown in this section are the default locations. Some Linux distributions might use other locations.

---

## ▼ To Install the Driver

- **Load the module by issuing the following command:**

```
modprobe -v qlge <parameter>=<value>
```

When utilizing an out-of-box driver for SLES 10 SP2, follow these steps to ensure that the module loads on reboot:

## ▼ To Rebuild the Driver

1. **Rebuild the RAMDISK as follows:**

- a. **Open /etc/sysconfig/kernel.**
- b. **Edit the INITRD\_MODULES= line to append qlge; for example:**

```
INITRD_MODULES=piix thermal fan reiserfs qlge
```

- c. **Issue the mkinitrd command; for example:**



```
mkinitrd -i initrd-2.6.16.60-0.21-smp-qlge -k vmlinuz-2.6.16.60-0.21-smp -M boot/  
System.map-2.6.16.60-0.21-smp
```

---

**Note** - Type the entire preceding command on a single line.

---

- d. **Modify the `menu.lst` file to include the new RAMDISK as an option to boot from.**
  - e. **Reboot the system.**
2. **Modify the variables in the `sysconfig` as follows:**

- a. **Open the following file to edit:**

```
/etc/sysconfig/kernel
```

- b. **Locate the following line:**

```
MODULES_LOADED_ON_BOOT=""
```

- c. **Add `qlge` to the line; for example:**

```
MODULES_LOADED_ON_BOOT="qlge"
```

- d. **Reboot to automatically load the module.**

If the module does not auto-load on reboot, follow this step (this should not be necessary with RHEL 5.3):

- e. **Open the `/etc/modprobe.conf` file and add the following line:**

```
alias eth# qlge
```

Where `#` is the Ethernet port number for the adapter.

## ▼ To Remove the Driver

1. **Issue the following command:**

```
modprobe -r qlge
```

For Kernel 2.6.x, issue the `rmmod` command instead:

```
rmmod qlge
```

2. **To uninstall the binary module, issue the following command:**

```
make uninstall
```

3. **To clean the driver build directory, issue the following command:**

```
make clean
```

## Diagnostic Support for the Red Hat or SUSE OS

Diagnostic support for the Converged Network Adapter is available through the QLogic graphical user interface (GUI) utility or the command-line interface (CLI) utility. These utilities support the following functions:

- Connectivity verification
- BIOS, multi-boot code, EFI, and firmware version information
- Link status, including topology, data rate, and statistics
- Vital product data (VPD) information
- Attached devices list
- Option ROM, NVRAM update utilities
- Loopback test
- Read/Write Buffer test

### ▼ To Install Diagnostic Support for the Red Hat or SUSE Linux OS

1. **Go to the Oracle support area of the QLogic web site at:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
2. **Locate the table containing your Converged Network Adapter model.**

3. **At the bottom of the table, in the Software for: row, click Linux.**
4. **Locate the QLogic CLI and GUI utilities for your Linux OS version.**
5. **Click the utility name to download the utility to a local file system.**
6. **For additional information, click the Read Me link for the utility.**

## Installing Software for the Oracle VM OS and VMware Technology

The Converged Network Adapter drivers included on the Oracle VM and VMware distribution are sufficient for supporting the Converged Network Adapter. No further action is required.

To verify that the drivers loaded successfully, look for the following lines in the `/var/log/vmkernel` file:

```
Initialization for qle8100_707_vmw succeeded with module ID 2.  
[timestamp] b12-4600a vmkernel: 0:00:01:18.878 cpu1:1041)qle8100_707_vmw loaded  
successfully.
```

The first line indicates that the fibre channel driver loaded successfully.

## Installing Software for the Windows OS

This section describes how to download and install the fibre channel drivers required by the Converged Network Adapter. It also describes how to install diagnostic support software for the Converged Network Adapter. This section contains the following topics:

- [“Downloading the Windows Drivers” on page 51](#)
- [“Installing the Windows Drivers” on page 53](#)
- [“Diagnostic Support for the Windows OS” on page 60](#)

## Downloading the Windows Drivers

The Converged Network driver requires download of both the QLogic FCoE driver and networking driver (QLogic 10 GbE NDIS miniport driver). This section provides procedures for downloading both drivers.

## ▼ To Download the FCoE Driver

1. **Go to the Oracle support area of the QLogic web site at:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
2. **Locate the table containing your Converged Network Adapter model.**
3. **At the bottom of the table, in the Software for: row, click Windows.**
4. **In the table for your Windows operating system, find the appropriate driver.**
5. **Save the file to a directory on the hard disk of the system.**
6. **Unzip (extract) the driver files to a location on the hard disk of the system.**

## ▼ To Download the Networking Driver and Then Create a Driver Disk

The 10GbE Converged Network Adapter NDIS miniport driver for Windows supports all NDIS 5.1/5.2/6.0/6.1 features. The driver package contains the following files:

- qlge.inf - Driver installation file
- qlge.sys - 10GbE Converged Network Adapter NDIS miniport driver
- qlge.cat - Catalog file
- Release.txt - Release notes
- Readme.txt - Installation instructions and other useful information

This release of the FCoE Adapter 10GbE NDIS miniport driver works with Windows Server 2012 and Windows Server 2008 as shown in the following table.

Miniport Driver Version	Works With
32-bit NDIS 6.0/6.1	Windows Server 2008 (x86)
	Windows Server 2008 Server Core (x86)
	Windows Server 2008 SP2 (x86)
64-bit NDIS 6.0/6.1	Windows Server 2008 (x64)
	Windows Server 2008 Server Core (x64)
	Windows Server 2008 SP2 (x64)

Miniport Driver Version	Works With
	Windows Server 2008 SP2 Server Core (x64)
	Windows Server 2008 R2 (x64)
	Windows Server 2008 R2 Server Core (x64)
	Windows Server 2012

- 1. Go to the following web site:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
- 2. Click the Converged Network Adapters icon.**
- 3. In the selection list, select your adapter model in the second column, select your Windows platform in the third column, and then click the Go button.**
- 4. Under Drivers, click the download link for the appropriate driver.**
- 5. Read the license agreement, and then click Agree.**
- 6. When prompted, select to save the driver to a temporary location on the hard drive or a blank disk.**

The disk should have the following file structure:

qlge.inf - Driver installation file

qlge.sys - 10GbE Converged Network Adapter NDIS miniport driver

qlge.cat - Catalog file

Release.txt - Release Notes

Readme.txt - Installation instructions and other useful information

## Installing the Windows Drivers

The Converged Network driver requires installation of both the FCoE driver and networking driver. This section provides procedures for installing both drivers:

- [“To Install the FCoE Driver” on page 54](#)
- [“To Install the Driver on Windows 2008” on page 54](#)
- [“Updating the Existing FCoE Driver” on page 55](#)
- [“Installing the Networking Driver” on page 56](#)

## ▼ To Install the FCoE Driver

After installing the Converged Network Adapter and restarting the system, the Windows OS detects the newly installed device and displays the Found New Hardware with FCoE Controller message. The Found New Hardware wizard launches.

---

**Note** - This procedure requires a system configured with the latest Service Pack and Windows Update.

---

1. **On the first window of the Found New Hardware wizard, click Search for a suitable driver for my device (recommended), and then click Next.**
2. **Browse to the location on the disk where you downloaded the FCoE driver, then click Next.**  
Windows displays a message, letting you know it found a driver for this device.
3. **On the Completing the Found New Hardware Wizard window, click Finish.**
4. **If the system displays the following message, click Yes to restart the system:**

System Settings Change. Windows has finished installing a new device. The software that supports your device requires that you restart your computer. You must restart your computer before the new settings will take effect. Do you want to restart your computer now?

## ▼ To Install the Driver on Windows 2008

1. **Power down the system.**
2. **Insert the card into a proper PCIe slot.**
3. **Power on the system.**  
When the system boots up, the PNP subsystem displays a dialog box informing you that new hardware (Fibre Channel Controller) has been found and prompts you to install the driver.
4. **Do one of the following:**
  - **If you are installing the driver from removable media, follow these steps:**
    - a. **Insert the media.**

- b. **Click Locate and install driver software (recommended).**
- c. **If the Hardware Update Wizard prompts you to search online, click Don't search online.**
- d. **Click Next.**

The Update wizard locates the driver and automatically completes the installation.

- **If you are not installing the driver from removable media, follow these steps:**
  - a. **Click I don't have the disc. Show me other options.**
  - b. **Click Browse my computer for driver software (advanced).**
  - c. **Browse to the location of the driver, and then click Next.**

A warning message might be displayed regarding the Digital Signature for Windows Logo certification.

- 5. **To continue with installation, click Yes.**
- 6. **To complete the installation, click Finish.**

---

**Note** - A system reboot is not generally required after installing the driver.

---

## Updating the Existing FCoE Driver

Follow the appropriate procedure for your Windows operating system:

- [“To Update the Driver on Windows ” on page 55](#)

### ▼ To Update the Driver on Windows

- 1. **Open the Device Manager by doing the following:**
  - a. **Right-click My Computer, and then click Manage.**
  - b. **In the Computer Management dialog box, double-click Device Manager in the left pane.**

2. **In the right pane, double-click SCSI and RAID Controller.**
3. **Right-click the FCoE Adapter, and then click Update Driver.**
4. **Do one of the following:**
  - **If you are installing the driver from from removable media, follow these steps:**
    - a. **Click Search automatically for updated driver software.**
    - b. **If the Hardware Update Wizard prompts you to search online, click Don't search online.**

The Update Wizard locates the driver, and then automatically completes the installation.
  - **If you are not installing from removable media, follow these steps:**
    - a. **Click Browse my computer for driver software.**
    - b. **Click I don't have the disk. Show me other options.**
    - c. **Click Browse my computer for driver software (advanced).**
    - d. **Browse to the location of the driver, and then click Next.**

A warning message might be displayed regarding the Digital Signature for Windows Logo Certification.
5. **To continue with the installation, click Yes.**
6. **To complete the installation, click Finish.**

---

**Note** - A system reboot is not required after installing the driver.

---

## Installing the Networking Driver

The operating system manages and controls the driver installation process; the driver follows the process dictated by the OS. The driver installation cannot deviate from this process.



This section provides the most common ways of installing and upgrading the driver, as documented for each operating system. For other installation procedures, please consult the OS manuals.

This section contains procedures for the following:

- [“To Install the Networking Driver on Windows ” on page 57](#)
- [“Updating the Existing NDIS Miniport Driver” on page 58](#)
- [“To Update the Networking Driver on Windows ” on page 58](#)

---

**Note** - The Converged Network Adapter is a multifunction device. When installed in a PNP system, the OS detects two functions for each adapter: Ethernet Controller and Fibre Channel Controller. The Ethernet Controller refers to the Ethernet (NDIS) function.

---

## ▼ To Install the Networking Driver on Windows

1. **Power down the system.**
2. **Insert the card into a proper PCIe slot.**
3. **Power on the system.**

When the system boots up, the PNP subsystem displays a dialog box informing you that new hardware (Ethernet Controller) has been found and prompts you to install the driver.
4. **Do one of the following:**
  - **If you are installing the driver from removable media, follow these steps:**
    - a. **Insert the media.**
    - b. **Click Locate and install driver software (recommended).**
    - c. **If the Hardware Update Wizard prompts you to search online, click Don't search online.**
    - d. **Click Next.**

The Update wizard locates the driver and automatically completes the installation.
  - **If you are not installing the driver from removable media, follow these steps:**
    - a. **Click I don't have the disc. Show me other options.**

b. **Click Browse my computer for driver software (advanced).**

c. **Browse to the location of the driver, and then click Next.**

A warning message might be displayed regarding the Digital Signature for Windows Logo certification.

5. **To continue with the installation, click Yes.**

6. **To complete the installation, click Finish.**

---

**Note** - A system reboot is not required after installing the driver.

---

### Updating the Existing NDIS Miniport Driver

Follow the appropriate procedure for your Windows operating system.

#### ▼ To Update the Networking Driver on Windows

1. **To open the Device Manager:**

a. **Right-click My Computer, and then click Manage.**

b. **In the Computer Management dialog box, double-click Device Manager in the left pane.**

2. **In the right pane, double-click Network Adapters.**

3. **Right-click the 10 GbE PCI Ethernet Adapter, and then click Update Driver.**

4. **Do one of the following:**

■ **If you are installing the driver from removable media, follow these steps:**

a. **Click Search automatically for updated driver software.**

b. **If the Hardware Update Wizard prompts you to search online, click Don't search online.**

The Update Wizard locates the driver, and then automatically completes the installation.

- **If you are not installing the driver from removable media, follow these steps:**
  - a. **Click Browse my computer for driver software.**
  - b. **Click I don't have the disk. Show me other options.**
  - c. **Click Browse my computer for driver software (advanced).**
  - d. **Browse to the location of the driver, and then click Next.**

A warning message might be displayed regarding the Digital Signature for Windows Logo Certification.
- 5. **To continue with the installation, click Yes.**
- 6. **To complete the installation, click Finish.**

---

**Note** - A system reboot is not required after installing the driver.

---

## ▼ **To Remove the Driver**

To remove the driver in a Windows environment, uninstall it as a Plug and Play device as follows:

1. **Power down your system.**
2. **Remove the device from your system according to the manufacturer's instructions.**

---

**Note** - Generally, you do not have to use the Device Manager or the Hardware wizard to uninstall a Plug and Play device. After you remove the device from your system and restart your system, Windows recognizes that it has been removed.

---

The following additional notes apply:

- When the driver is updated on one port of the adapter, the second adapter port might show the incorrect driver version. Both ports of the adapter will be updated with the new driver when the update is performed.
- To configure the jumbo frame for IPv6, issue the following command at the command prompt after enabling the jumbo frame using adapter properties:

```
netsh int ipv6 set <index> mtu = 9014
```

Where <index> is the interface index number for the adapter.

## Diagnostic Support for the Windows OS

Diagnostic support for the Converged Network Adapter is available through QLogic's SANsurfer FC HBA Manager (GUI), SANsurfer FC HBA CLI, and SANsurfer Converged Network Adapter Networking CLI tools. These tools support the following functions:

- Connectivity verification
- BIOS, FCode, multi-boot code, EFI, and firmware version information
- Link status, including topology, data rate, and statistics
- Vital Product Data (VPD) information
- Attached devices list
- Option ROM, NVRAM update utilities
- Loopback test
- Read/Write Buffer test

### ▼ To Install Diagnostic Support for the Windows OS

1. **Go to the Oracle support area of the QLogic web site at:**  
[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)
2. **Locate the table containing your Converged Network Adapter model.**
3. **At the bottom of the table, in the Software for: row, click Windows.**
4. **Locate the CLI and GUI utilities for your Windows OS version.**
5. **Click the utility name to download the utility to a local file system.**
6. **For additional information, click the Read Me link for the utility.**

## Installing the CLI for Updating the BIOS and FCode

If you need to update the fibre channel BIOS and FCode, you can do so by using the QLogic SANsurfer command-line interface (CLI). Oracle recommends that you update to the latest FCode when using this Converged Network Adapter.

If you have not done so already, you can download the SANsurfer FC HBA CLI and SANsurfer Converged Network Adapter Networking CLI tools from the Oracle support area of the QLogic web site at:

[http://driverdownloads.qlogic.com/QLogicDriverDownloads\\_UI/Oracle\\_Search.aspx](http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/Oracle_Search.aspx)

Follow the installation instructions in the README.TXT file. Installation instructions are also available in the QLogic user's guides for those tools, which can be found on the QLogic web site, <http://www.qlogic.com/pages/default.aspx>

For instructions on how to update the BIOS and FCode, see the *SANsurfer FC HBA CLI User's Guide* and *SANsurfer Converged Network Adapter Networking CLI User's Guide* on the QLogic web site.



## Known Issues

---

This chapter provides supplementary and workaround information for the adapter. Specific bug identification numbers are provided for Service Personnel.

This chapter contains the following topics:

- “Link Aggregation Control Protocol (LACP) Cannot Be Used In Certain Conditions” on page 63
- “vpd r/w failed Error Messages Are Displayed” on page 64
- “Error Message Occurs After Running the `cfgadm -c configure ap-id` Script” on page 64
- “Adapter is Automatically Configured Upon Insertion Into a Chassis, But Then Goes Offline” on page 65
- “FCIO\_RESET\_LINK Error Message Occurs After Issuing the `luxadm -e forcelp` Command” on page 65
- “System Panic After Installing the Adapter in an x86 System” on page 67
- “LEDs Turn On Sporadically After Pressing the Attention Button For Hot-Plug Removal” on page 68
- “qlge Driver Keeps Sending NOTICE: Messages to the Console” on page 68
- “The Adapter Is Not Logging Into the Brocade 8000 Switch” on page 68
- “Windows Server 2008 R2 Stop Error” on page 69

### Link Aggregation Control Protocol (LACP) Cannot Be Used In Certain Conditions

**Bug 18707752**

**Conditions:**

- System Platform: All supported systems using the Oracle Solaris driver

- Operating Protocol Mode of Universal HBA: FC, CNA
- Environment: Universal HBA connected directly to supported storage

**Issue:**

LACP cannot be used on the same port as FCoE or iSCSI.

**Workaround:**

None.

## vpd r/w failed Error Messages Are Displayed

CR 20084365, 19154195

**Conditions:**

- Operating System: Any operating system (OS) based on Red Hat Linux 5.9 or greater, including, but not limited to, Oracle Enterprise Linux 5.9 OS with Unbreakable Enterprise Kernel (UEK) 3, RHEL 6.6 OS, or OVM 3.3.1
- Operating Protocol Mode: CNA and HBA
- Environment: Universal HBA installed in an x86 system, during functional check procedures

**Issue:**

If you are using any operating system based on the Red Hat Linux operating system, you might receive “vpd r/w failed” messages upon issuing functional check commands, such as `dmesg` and `lspci`.

**Workaround:**

None. Ignore these messages as they do not adversely affect the functionality of the universal HBA.

## Error Message Occurs After Running the `cfgadm -c configure ap-id` Script

Bug 15750655

**Issue:**



When attempting to script rapid unconfiguration/configuration of the Converged Network Adapter, you might encounter the following error message:

```
nwamd_ncu_handle_link_action_event: ignoring action for link:qlge1: permission denied
```

Workaround:

When running such scripts, keep in mind that it takes time to discover every device connected to the Converged Network Adapter. Greater numbers of connected devices require more time for discovery. If there are many devices connected to the Converged Network Adapter, perform such configurations manually at first, and note how much time is required for all devices to become visible and usable. Add a 10% time cushion to the maximum time encountered (for safety) and build that into the script after each `cfgadm` command. If you continue to encounter the error message, add more time to the maximum time encountered variable in the script.

## Adapter is Automatically Configured Upon Insertion Into a Chassis, But Then Goes Offline

Bug 15678657

Issue:

Upon inserting the adapter into the chassis of a system, the system shows the adapter in the online state, as if the adapter has been configured, even though you did not press the Attention button on the adapter (which is a necessary step for adapter configuration). In some instances, the adapter then goes offline, without any intervention from you, the user.

Workaround:

This might occur during installation if you insert the adapter quickly into the chassis, and at an angle, causing the Attention button to become depressed and to potentially remain stuck in the On position. To avoid this from occurring, follow the installation instructions in this guide and take your time when installing the adapter into a chassis. If you install the adapter smoothly into the chassis, the Attention button does not get stuck in the On position.

## FCIO\_RESET\_LINK Error Message Occurs After Issuing the `luxadm -e forcelp` Command

Bug 15632822

**Issue:**

You might encounter this error message after issuing the `luxadm -e forcelpip` command from a system with the following configuration:

- Oracle Solaris 10 10/09 OS running
- Adapter installed and connected to a Brocade 8000 FCoE switch
- Brocade 8000 FCoE switch connected to a tape zone on a FC SAN with an SL48-LTO4 FC tape library

If you issue the `luxadm -e forcelpip` command upon the removal of a device from the tape zone, this message might be generated:

```
Error: FCIO_RESET_LINK ioctl failed.
Could not reset the loop
```

**Workaround:**

To avoid encountering the error message, manually unconfigure the unusable device (the device removed from the tape zone) at the attachment point of the device:

## ▼ To Manually Unconfigure the Unusable Device

1. **Issue the `cfgadm -al unusable-device-attachment-point` command to list the unusable device, as described in the following procedure.**

In this example, the attachment point of the unusable device is `c1`.

```
> cfgadm -al c1
Ap_Id          Type          Receptacle  Occupant
Condition
c1             fc-fabric    connected   configured
unknown
c1::12340080e512b600  disk        connected   configured
unknown
c1::123400a0b82804a6  disk        connected   configured
unusable
c1::123410a0008beb2a  tape        connected   configured
unknown
>
```

2. **Issue the `cfgadm -c unconfigure -o unusable_SCSI_LUN unusable-device-attachment-point` command to unconfigure the unusable devices on the attachment point.**

```
> cfgadm -c unconfigure -o unusable_SCSI_LUN c1
```

---

**Note** - If a device is manually unconfigured, it must then be manually configured in order to return to the tape zone.

---

## System Panic After Installing the Adapter in an x86 System

### Bug 15635205

#### Issue:

If you install the adapter in an x86 system that is running the Oracle Solaris 10 10/09 OS, the system might panic when you perform any of the following actions:

1. Reboot the system.
2. Update the flash software on the adapter (via `scli`).
3. Detach the driver (by issuing the `cfgadm unconfigure` command) and then reattach the driver (by issuing the `cfgadm configure` command).

#### Workaround:

Reboot the system. If this does not address the issue, ensure that the `kmem_flags` are disabled on the system by doing the following:

1. Shut down the system.
2. Physically remove the adapter from the system and reboot.
3. Access the `/etc/system` file and verify that the `kmem_flags` are disabled: `kmem_flags=0`
4. If the `kmem_flags` does not have a value of `0`, edit the `/etc/system` file so that it does.
5. Shut down the system.
6. Reinstall the adapter and reboot the system.

If the system panics continue to occur with the `kmem_flags` disabled, or you need to keep the `kmem_flags` enabled, for any reason, contact Oracle Service to obtain and apply the appropriate IDR patch.

## LEDs Turn On Sporadically After Pressing the Attention Button For Hot-Plug Removal

### **Bug 15675267**

#### **Issue:**

When attempting to prepare the adapter for hot-plug removal, the LEDs are not behaving as expected after pressing the Attention button on the adapter.

#### **Workaround:**

This is due to the Attention button remaining depressed or becoming wedged in the faceplate of the module during hot-plug removal, which causes the initialization process of the Converged Network Adapter to start. To prevent this from occurring, press the Attention button again to ensure it is fully released.

## qlge Driver Keeps Sending NOTICE: Messages to the Console

### **Bug 15639510**

#### **Issue:**

Every time the cable is plugged in or out, the console displays these “NOTICE:” messages.

#### **Workaround:**

None. You can ignore these messages as they do not affect performance in any way.

## The Adapter Is Not Logging Into the Brocade 8000 Switch

### **Bug 15622146**

#### **Issue:**

When configuring an Oracle Solaris 10 system with the adapter, the host-side adapter might not log into the Brocade 8000 switch unless VLAN 1002 is configured on the switch; specifically on the port to which the adapter is connected.

**Workaround:**

Configure the Brocade 8000 port that is connected to the host-side adapter so that the port is included in VLAN 1002. For more information, see the Brocade documentation that describes how to configure ports.

## Windows Server 2008 R2 Stop Error

**Bug 15657319**

Issue:

With the Windows Server 2008 R2 operating system, a stop error (BSOD or “blue screen of death”) occurs when you connect storage devices and the correct drivers are not installed.

Workaround:

Ensure that you have downloaded and installed the NDIS Miniport and Fibre Channel drivers before installing the adapter hardware. For details, see [“Installing Software for the Windows OS” on page 51](#).

