

Firmware and Boot Code Release Notes for Emulex OCe14000-series Adapters

Version: 10.6.144.40

Date: March 15, 2016

Purpose and Contact Information

These release notes describe new features, resolved issues, known issues, and technical tips associated with this release of the firmware and boot code for the Broadcom® Emulex® OCe14000-series adapters.

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New Features

1. Added support for Red Hat Enterprise Linux (RHEL) 7.1.
2. Added support for OCe14000B-series adapters.
3. Added support for RoCE version 2 UDP encapsulation on OCe14000B-series adapters.
4. Added support for re-configurable links in OCe14401B adapters to use a breakout cable.
5. Added support for an iBFT crash dump driver for the iSCSI protocol.
6. Added support for esxcli plug-in on VMware ESXi 5.5 and 6.0 systems.
7. Added support for high temperature detection on OCe14000-series 10GBASE-T adapters.
8. Backward compatibility with secure firmware.

If you need to downgrade firmware on an OCe14000B-series adapter from an 11.0 firmware version to a 10.6 firmware version, downgrade to firmware version 10.6.144.40 or later. If you downgrade to an earlier version of firmware, you must open the computer case and change the setting of the secure firmware jumper to complete the downgrade.

Resolved Issues from Firmware Version 10.4.255.25

Firmware Resolved Issues

1. Made changes to enhance performance for the RoCE protocol.
2. Corrected an issue with the Ethernet flow control setting always reverting to TX/RX Flow Control.
3. Corrected an issue with port beaconing not working properly on OCe14000-series 10GBASE-T adapters.
4. Corrected an issue where the port link would go down after updating firmware.

5. Corrected intermittent issues that would occur when pulling cables on an EMC XtremIO array running VMware ESXi 5.5.
6. Corrected an issue that when the initiator IP type was set to IPv4 and the target IP type was set to IPv6, the iSCSI target login would succeed even with invalid initiator IP settings.
7. Corrected an issue with the local loopback test may not working properly, which could result in an unrecoverable error.
8. Corrected an issue that when performing a PHY loopback test in the OneCommand Manager® application on an Emulex OCe14102-NT or OCe14102-UT adapter, the test would fail after a random period of time.
9. Corrected an issue with the “Force, 1Gb” set speed setting not being implemented properly the first time it was selected in the OneCommand Manager application.

General Boot Resolved Issues

Removed references to “NIC-ETS Disabled” in the Boot Version 10.6 for NIC, iSCSI, FCoE, and RoCE Protocols User Manual.

iSCSI UEFI Resolved Issues

Corrected an issue where the iSCSI IPv6 ping and login would fail on the second port when the first port link was not connected.

iSCSI BootBIOS Resolved Issues

1. Corrected an issue where discovery login CHAP authentication had to be provided multiple times – once during discovery, once during log in, and when the boot flag was enabled.
2. Corrected an issue where the iSCSISelect utility would display incorrect iSCSI LUN size for 4 terabyte (TB) LUNs.
3. Corrected an issue where the iSCSI IPv6 ping and login would fail on the second port when the first port link was not connected.

Known Issues

Firmware Known Issues

1. **Firmware versions 10.6.144.21 and later include new features that required new flash regions to support them. Firmware versions earlier than 10.0.803.37 did not have the ability to configure the flash regions to support these new features.**

If you are updating from a firmware version earlier than 10.0.803.37, use one of these methods to update the firmware to 10.6.144.21 or a later version:

- Use the ISO flash tool.
- Use the released 10.6 or later version of the OneCommand Manager application, OneCommand Manager for VMware vCenter application, CIM Provider utility, or online or offline utilities. You must perform the firmware update procedure twice to

make sure the flash regions are properly configured, and you must reboot the system after each firmware update.

- Use the NIC configuration utility that is currently installed. After the new firmware is installed, run the new NIC configuration utility.

If you are updating from firmware version 10.0.803.37 or later, use one of these methods to update the firmware to 10.6.144.21:

- Use the ISO flash tool.
- Use the released 10.6 or later version of the OneCommand Manager application, OneCommand Manager for VMware vCenter application, CIM Provider utility, or online or offline utilities, and reboot the system after the firmware update. (You do not need to perform the firmware update process twice.)
- Use the NIC configuration utility that is currently installed, and reboot the system after the firmware update. After the new firmware is installed, run the new NIC configuration utility.

Note: Do not use Linux inbox drivers when performing the firmware update.

Note: After you have updated the firmware, you must not downgrade the firmware to a version earlier than 10.0.803.37.

Workaround

None.

- 2. Out of Box (OOB) Wake on LAN (WoL) is enabled by default with every power cycle. There is no way to change this behavior.**

WoL can be disabled via configuration software. This setting persists across reboots that continue to supply AUX power to the OCe14000-series adapter. A full power cycle of the system or 'warm' boot which results in AUX power disruption to the OCe14000-series adapter results in default behavior being restored.

Workaround

None.

- 3. Changing personalities may disable a Cisco switch's operator mode for priority flow control (PFC).**

Workaround

Perform the following steps:

- a) Check the operator mode by typing

```
show int eth 1/x priority-flow-control
```
- b) If the operator mode is off, for each affected port you must then toggle the priority-flow-control mode to "off" and then back to "auto".

At the switch:

```
priority-flow-control mode off
priority-flow-control mode auto
```

4. Maximum bandwidth settings for NIC functions are ignored when multichannel is enabled.

The rate limiting features on Emulex OCE14000-series adapters are designed to provide a guaranteed rate to a given function (as noted in the minimum bandwidth setting in the Emulex management interface). The notion of work conservation applies to this approach; specifically, that any bandwidth left unused by other functions will be awarded to the function, even in excess of the guaranteed minimum. The maximum bandwidth parameter in the Emulex management interface is for a rate cap (that is, a bandwidth value must not be exceeded regardless of the behavior of other functions). The maximum bandwidth parameter was placed in the Emulex management interface for other products; it is not currently available in the OCE14000-series adapters.

Workaround

None.

5. An incorrect connectivity status may be reported when the initiator link is brought down.

Workaround

None.

6. When performing a PHY loopback test in the OneCommand Manager application, the test may fail when the port is connected to a direct-attach copper (DAC) cable.

Workaround

None.

7. Erroneous warning messages may appear in the Windows Event Log when using an OCE14401 adapter with Avago QSFP AFBR-79EQDZ.

The messages may state text similar to the following:

“Warning: Unqualified SFP+ module detected on Emulex OneConnect OCE14401-UX, NIC, Port 1 from AVAGO part number AFBR-79EQDZ.

Warning: Emulex OneConnect OCE14401-UX, NIC: Incompatible optics - Replace with compatible optics for card to function.”

Workaround

None. This message can be ignored as this Avago QSFP is supported by Emulex.

8. The host may fail to boot on certain vendor system BIOS versions when a single physical function (PF) is configured with SR-IOV disabled.

This is most commonly observed when a 1-port adapter is using the RoCE protocol, but it can also occur when a 1-port adapter uses the NIC protocol with SR-IOV enabled.

Note: This issue can also be observed on 2 and 4-port adapters that support “link reconfigurability” and are reconfigured for a single port.

Affected vendor systems include:

- Colfax/Intel system with S2600C0 motherboard:
- SuperMicro X9SRL-F motherboard:
- SuperMicro X9SCL/X9SCM:

Workaround

None.

9. **On OCe14401 adapters installed on Microsoft Windows systems, the number of VMQueues are reduced when migrating the VMs.**

Workaround

Refer to Knowledge Base article 3031598 on the Microsoft website for more information.

10. **Updating the firmware from version 10.2 to version 10.6 may fail if the OneCommand Manager application version 10.2 or Elxflash utility version 10.2 are used to update the firmware.**

Workaround

You must update the OneCommand Manager application or Elxflash utility version to 10.6 before updating the firmware.

11. **During heavy I/O traffic on Arista switches, PFC traffic may be dropped at the switch.**

Workaround

Increase switch port egress buffers using the following commands:

```
platform trident mmu queue profile emulex
    egress unicast queue 5 threshold 4
platform trident mmu queue profile emulex apply
```

12. **Boot from SAN does not work on x86 systems with OCe14000-series FCoE adapters running Solaris 11.2 and later versions.**

Workaround

None.

13. **The Emulex OneConnect Firmware Update Utility does not provide feedback that all OCe14000-series adapters will be updated when performing a firmware update.**

The utility is not displaying the following text:

“All OC14 controllers will be updated to firmware version <VERSION>”.

This is a cosmetic issue and the installed OCe14000-series adapters will be updated by the utility.

Workaround

When the “Do you want to continue (y/n)” text appears, type “y” to continue. The utility will update all of the OCe14000-series adapters.

NIC UEFI Known Issues

If iBFT boot is non-functional, and version 10.2.370.19 or later firmware is installed, you must update the firmware to the most recent version using the ISO flash image or using a current version of the management application or firmware update utility. You must reboot the system after the firmware update.

If you updated the firmware from a version earlier than 10.0.803.37, you must perform the update process twice using a current version of the management application or firmware update utility. You must reboot the system after each firmware update.

Workaround

None.

iSCSI UEFI Known Issues

1. An iSCSI login does not display an error when providing invalid target information.

Workaround

None.

2. Dell PowerEdge R720 systems may appear to hang when configuring the adapter in the NIC UEFI utility because pop-up messages are not supported on this specific Dell platform.

Note: The system is not in a hang state, but it is actually waiting for the <Esc> key to be pressed.

Workaround

If the system appears to be locked up and making configuration changes, press the <Esc> key to see if the system responds.

3. A complete memory dump will not finish in a boot from SAN configuration using iBFT with IPV6.

Workaround

Do not specify complete dumps when using iBFT with IPV6. Choose Automatic or Kernel memory dumps.

PXE BootBIOS Known Issues

1. The PXE Boot Support attribute on the PXESelect utility's Port Configuration page does not match the Option ROM attribute on the UEFI NIC Configuration page.

Workaround

None.

2. PXE VLAN is not supported in multichannel environments.

Workaround

Set the LPVID to the same value as the PXE VLAN.

iSCSI BootBIOS Known Issues

1. Changing the target's digest parameters may cause the boot LUN to revert to LUN 0.

Workaround

None. You must re-select the appropriate boot LUN.

2. iSCSISelect utility may attempt to connect to target even when "connect" option is not selected in iSCSI UEFI utility.

Workaround

None.

3. **Adapter failover using multipath I/O (MPIO) with iSCSI boot may not work properly on VMware ESXi 5.0 systems.**

Workaround

None.

4. **A boot target may not be seen immediately after enabling Discover Boot Target via DHCP.**

Workaround

Use the iSCSI UEFI utility to configure the boot target.

5. **When entering the iSCSI BIOS on Windows Server 2008 x86 SP2 systems, an iSCSI Initiator Name mismatch error message may be displayed.**

The error message states:

“Error: There is an iSCSI Initiator Name mismatch for the OneConnect controllers in this system. Please use the iSCSI Initiator Configuration screen to set a single iSCSI Initiator Name for all controllers in the system.”

Workaround

None.

FCoE x86 BootBIOS Known Issues

The Configure Boot Devices menu only scans for the next 16 LUNs from the starting LUN, which limits the LUNs displayed.

Workaround

None.

Technical Tips

1. **Under SLES 11, the bond 5 and 6 modes must be configured properly to work with the firmware.**

When configuring the bond mode, change the default setting to include “updelay=100”. For example, the correct setting for bond 6 is `BONDING_MODULE_OPTS='mode=6 miimon=100 updelay=100'`.

2. **For Cisco switches, the access mode must be set in trunk mode, and native VLAN cannot be FCoE VLAN, that is, the FCoE VLAN must be in the allowed list. For example, if VLAN 2 is the FCoE VLAN and VLAN 1 is the Ethernet VLAN, you would enter the following:**

- `Switchport mode trunk`
- `Switchport trunk native vlan 1`
- `Switchport trunk allowed vlan 1-2`

3. **For Brocade switches, trunk mode must be set in converged mode. For example, if VLAN 2 is the FCoE VLAN, you would enter the following:**

- `Switchport mode converged`
- `Switchport converged allowed vlan add 2`

4. For best performance, disable the Spanning Tree Protocol (STP) on all networked switches if you are using the following:

- Adapter fault tolerance (AFT)
- Automatic load balancing (ALB)
- Static link aggregation teaming

5. When using SR-IOV within virtual machines (VM) on Windows 2012 and Windows Server 2012 R2 systems, VM-to-VM communication on SR-IOV-enabled switches always works; however, there is a difference in how data is transferred.

- When virtual Ethernet bridge (VEB) is enabled and physical link tracking is disabled, the VF link is always up and VF-VF is always used.
- When VEB and physical link tracking are enabled (default):
 - a) When the physical link is up, VF-VF is used.
 - b) When the physical link is down, an emulated path through a virtual switch is used.
- When virtual Ethernet port aggregator (VEPA) is enabled:
 - a) When the physical link is up, VF-VF is used.
 - b) When the physical link is down, an emulated path through a virtual switch is used.

6. On four-port adapters, only one priority-based flow control (PFC)-enabled protocol is allowed on each port.

iSCSI PFC priority 4 is not enabled by default when an OCe14104-series adapter is configured for converged mode when configuring DCB parameters for the iSCSI, NIC+iSCSI, and NIC+FCoE+iSCSI ports.

Although you can set one port on an OCe14000-series adapter to run multiple protocols, only one priority can be enabled for PFC. The default is to enable FCoE and not iSCSI. iSCSI cannot specify the bandwidth in its own priority group, so the switch must be configured to include it in the default priority group. The adapter will not use the switch settings if the PFC iSCSI priority is manually enabled.

7. UMC NIC channels on the same physical port cannot be placed in the same team on Windows and VMware systems.

Each of the NIC channels is presented to the operating system as a separate and unique port running a NIC function. However, this can create an issue if the NIC channels on the same physical port are placed in the same team.

While teaming can provide increased reliability and increased bandwidth, this is not the case in this circumstance. Since the channels are assigned to the same physical port, reliability is not increased because it is still the same as a single physical port and not equal to two ports combined. In addition, bandwidth increases are not actually realized. Greater throughput could be achieved by assigning the combined bandwidths of the channels to a single channel as the overhead of teaming would not be a factor in that case.

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