

Emulex Drivers for VMware Release Notes

Versions: ESXi 5.1 FC/FCoE: 10.4.245.0
ESXi 5.1 NIC: 10.4.242.0
ESXi 5.1 iSCSI: 10.4.255.7

ESXi 5.5 FC/FCoE: 10.4.245.0
ESXi 5.5 NIC: 10.4.255.13
ESXi 5.5 iSCSI: 10.4.255.17

ESXi 6.0 FC/FCoE: 10.4.236.0
ESXi 6.0 NIC: 10.4.255.13
ESXi 6.0 iSCSI: 10.4.255.17

Systems: ESXi 5.1, 5.5, and 6.0

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Purpose and Contact Information

These release notes describe the recommended firmware versions, new features, resolved issues, known issues, and technical tips associated with these Emulex[®] drivers for VMware.

For the latest product documentation, go to www.Emulex.com. If you have questions or require additional information, contact an authorized Emulex technical support representative at tech.support-elx@avagotech.com, 800-854-7112 (US/Canada toll free), +1 714-885-3402 (US/International), or +44 1189-772929 (Europe, Middle East, and Africa).

Recommended Firmware Versions

See the Emulex website for supported firmware and boot code versions for the following adapters:

- Emulex OneConnect[®] OCe14000-series
- Emulex OneConnect OCe11100-series
- Emulex LightPulse[®] LPe16000-series
- Emulex LightPulse LPe12000-series

New Features

1. Added support for virtual volumes (VVOLs) in the ESXi 6.0 FC/FCoE and iSCSI drivers.
2. Added support for receive-side scaling (RSS) to enhance NIC driver performance for ESXi 5.5 and 6.0.
3. Added support for ESXi 6.0 iSCSI IPv6 in the IMA plug-in.
4. Discontinued support for OCe10100-series adapters.
5. Improved driver log messages by adding log levels.

Resolved Issues

All Versions Resolved Issues

1. Enhanced performance of FCoE drivers on OCe14000-series products.
2. Enhanced performance of iSCSI drivers on OCe14000-series products.

Known Issues

Known Issues, Multiple Versions

1. **For ESXi 5.1, 5.5, and 6.0: Concurrent firmware upgrades performed on the same ESXi host may not be fully copied.**

If a firmware upgrade is attempted using the http protocol, the firmware file is copied to the / filesystem of the ESXi system. This file is deleted after the firmware upgrade is complete. Therefore, if concurrent firmware upgrades are performed on the same ESXi host, due to space constraints, the firmware file may not be copied fully, and the firmware upgrades may fail with an error # 40197, which indicates the firmware image is corrupt.

Workaround

None.

2. **For ESXi 5.1, 5.5, and 6.0: Link Aggregation Control Protocol (LACP) cannot be used on the same port as Fibre Channel over Ethernet (FCoE) or Internet Small Computer System Interface (iSCSI).**

Workaround

None.

3. **For ESXi 5.1, 5.5, and 6.0: The adapter model name and description do not match the vendor brand name field.**

The VMware vSphere client shows adapter family model names with a single port. For example, it shows the OneConnect OCe11102 universal converged network adapter (UCNA) as the OneConnect OCe11100 10GbE, FCoE UCNA. This issue is seen with the native tool lspci as well. The vSphere client gets the adapter model name and description from xml package files installed with the operating system or with an out-of-box kit rather than from the adapter's VPD data. Other native tools work in a similar manner.

Workaround

For ESXi 5.1:

To see the correct model name and description, read the driver's procfs node with this command:

```
cat /proc/scsi/lpfc820/<Instance_Number>
```

or use the Emulex OneCommand Manager application.

For ESXi 5.5 and ESXi 6.0:

To show all KV instances available, use the following command:

```
/usr/lib/vmware/vmkmgmt_keyval/vmkmgmt_keyval -d
```

For storage adapters, you should look for vmhbaX/Emulex.

4. For ESXi 5.1, 5.5, and 6.0: Restriction in assigning Data Center Bridging (DCB) priorities to priority groups.

Although there are eight priority groups to which priorities can be assigned, you are able to assign priorities and bandwidths to only two of the priority groups. To one priority group you must assign the FCoE or iSCSI priority and to the other priority group you must assign the other seven (NIC) priorities.

Note: If you are using a DCBX-enabled switch to configure the priority groups, configure it for only two priority groups to work correctly with the OneConnect adapter.

Workaround

None.

5. For ESXi 5.5 and 6.0: Zoneset membership of 60 or higher can lead to path loss fault recovery.

Note: This is not an issue for ESXi 5.1 or earlier driver releases.

Zoneset membership of 60 or higher can result in missing logical unit number (LUN) paths or All Path Down (APD) events. These issues may occur if one of the following situations is present:

- The fabric zone has 64 or more members with some or all of the targets with higher FCID assignments.
- Each target port is rotating through several FCIDs and the driver logs into six or more targets.

Workaround

For zones whose membership exceeds 50 members, split your fabric zone into smaller node counts or consult any best practices from your target/switch/operating system vendors.

If splitting the zone set up is unacceptable or you experience APD events, set a driver parameter to resize the node table and put the server(s) back into production.

To make the node table larger – for example 128 nodes

```
esxcli system module parameters set -p lpfc_nlp_slab_cnt=128 -m lpfc  
reboot
```

Run this command on each impacted server. Emulex has found that a value of 128 is sufficient for many cases.

ESXi 5.1 Known Issues

1. If single root I/O virtualization (SR-IOV) is enabled OCe14000-series adapters, you cannot create more than 16 virtual functions (VFs) per port.

Workaround

None.

ESXi 5.5 Known Issues

1. There is a significant performance gap between Physical NIC mode (PNIC) and Universal Multi-Channel (UMC) mode.

The default interfaces of each physical function belonging to a port are programmed in VLAN promiscuous and Media Access Control (MAC) promiscuous mode.

ESXi 5.5 drivers use non-promiscuous mode for PNIC mode. Non-promiscuous mode filters non-relevant traffic and does not forward any invalid VLANs to the driver.

ESXi 5.5 drivers use promiscuous mode for UMC mode. Promiscuous mode does not filter non-relevant traffic and forwards everything to the driver.

Vmotion traffic is not only forwarded to the virtual port, but physical ports as well. This additional burden results in a significant performance gap between PNIC and UMC performance.

Workaround

None.

2. Correction for the *Emulex Driver for VMware ESXi User Manual*, Installing the NIC Driver heading, Installing the Native Mode Ethernet Driver esxcli Plug-In for ESXi 5.5 topic.

In the procedure for Installing the Native Mode Ethernet Driver esxcli Plug-In for ESXi 5.5, remove step 4 and replace it with the following text:

4. Once the driver is restarted, the elxnet namespace appears under elxnet.

Supported commands

- Stats – The stats command is invoked as follows:

```
esxcli elxnet stats get -p <pci dev name>
```

For example:

```
esxcli elxnet stats get -p 0000:003:00.1
```

- Regdump (fatdump) – The regdump command is invoked as follows:

```
esxcli elxnet regdump get -f <absolute file pathname> -p <pci device name>
```

For example:

```
esxcli elxnet regdump get -f /fat.txt -p 0000:02:00.0
```

3. The ESXi 5.5 NIC driver has limited support for extended SR-IOV support options.

ESXi 5.5 has limited support for extended configuration networking options of a virtual function that is assigned to a virtual machine with compatibility for ESXi 5.5 or later.

Supported extended SR-IOV options

- Enabling Virtual Guest Tagging (VGT)
- Enabling VLAN Switch Tagging (VST) mode

Extended SR-IOV option limitations

- Cannot change the size of the maximum transmission unit (MTU) (cannot enable jumbo frames)
- Cannot accept or drop incoming frames for a new address with the MAC address change option

- Cannot enable global promiscuous mode for virtual machine network adapters

For more information regarding supported networking configurations see the *Emulex Drivers Version for VMware ESXi User Manual* and the support section of the VMware website.

4. Errant NULL print string write to console log may occur.

Workaround

None.

5. When the same iSCSI target is connected to multiple ports on the same host, LUNs are not discovered in the OneCommand[®] Manager for VMware vCenter.

Workaround

Connect the iSCSI target to only a single port on the host.

6. Disabling MultiQueue (MQ) may seriously impact performance of the LPFC driver.

Workaround

Do not disable MQ.

7. Elxnet network stats for SR-IOV VFs are not working properly.

PFs on Emulex adapters do not support retrieval of VF network statistics from the PF interface.

Workaround

None.

8. 1Gbps connectivity is lost after you disable the netqueue feature in the ESXi host.

The native driver framework of the vmkernel has an issue in the netqueues disabled path that causes transmit packets to be sent to the elxnet driver with an invalid Tx queue ID. This causes the elxnet driver to drop the Tx packets that are marked with an invalid TxQID. This issue is PR 1122401 tracked by VMware and is resolved in vSphere 2015.

Workaround

Keep the netqueues feature of the ESXi host enabled, but load the elxnet driver in legacy interrupt mode. This results in creating a single net queue.

```
esxcli system module parameter set -p "msix=0" -m elxnet
```

ESXi 6.0 Known Issues

There are no known issues for this release.

Technical Tips

1. Safe method of changing firmware in flash memory.

For operations such as firmware download, Emulex recommends the server be brought into ESXi maintenance mode prior to flashing the firmware.

2. Installing an offline bundle locally on ESXi 5.1, 5.5, or 6.0 with the esxcli command.

Install an offline bundle on a VMware ESXi server locally using the esxcli command.

```
[root@testmachine ~]# esxcli software vib install --maintenance-mode -d  
<offline-bundle.zip>
```

Where <offline-bundle.zip> is the file name of the offline bundle to be installed.

3. Throughput performance degrades on block sizes greater than 64KB on Emulex adapters.

This issue is fixed in this driver release, but you must administratively set this fix and reboot the system. There is one prerequisite, the ESX operating system release must be ESXi 5.1 GA - build #799733 or higher.

To engage this fix, enter the follow commands:

```
esxcfg-module -s "lpfc_dma_boundary=1" lpfc820  
reboot
```

4. The default VMware driver settings may be inappropriate for optimal performance in all scenarios.

If performance appears to be lower than expected, there are several driver and system settings that can be modified to improve performance. See the server documentation to determine the correct system settings and the optimal memory and processor configuration.

Along with proper hardware configuration, some driver settings can be modified to improve performance. The following are some recommended settings to examine while tuning for better performance. See the *Emulex Drivers for VMware ESX/ESXi User Manual* for an explanation of the available settings.

- Use the “vmxnet 3” adapter type for all guest operating system interfaces.
- Install VMware Tools for all guest operating systems.

5. Using esxcli vib for the ESXi 5.5 and ESXi 6.0 operating systems provide extended statistics and complete VXLAN statistics, since there is a limit of a 4K size output for the vsish command.

Note: You can download the esxcli plug-in from the Emulex website.

For example:

```
~ # esxcli software vib install  
--viburl=/vmware-esx-elxcli-10.0.727.14.vib --maintenance-mode  
Installation Result  
Message: The update completed successfully, but the system needs to be  
rebooted for the changes to be effective.  
Reboot Required: true  
VIBs Installed: emulex_bootbank_vmware-esx-elxcli-10.0.727.14_1.0-03  
VIBs Removed:
```

VIBs Skipped:

~ #

6. The ESXi 5.5 and ESXi 6.0 NIC drivers can be configured using the vSphere Client.

ESXi 5.5 and ESXi 6.0 have full support for configuration networking options of a virtual function that is assigned to a virtual machine with compatibility for ESXi 5.1 or later versions.

The *Emulex Drivers Version for VMware ESXi User Manual* provides instructions for default VLAN Tagging, VGT, and configuring a static MAC for a virtual function using the ESXi driver.

You can also perform these configuration tasks using the vSphere Client. For more information regarding the vSphere Client, see the support section of the VMware website.

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