# Mellanox WinOF-2 Release Notes

Rev 1.70

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# Release Update History

*Table 1 - Release Update History*

| Release | Date | Description |
|---|---|---|
| Rev 1.70 - FUR 1 | October 22, 2017 | Added Known issue #1168017 to Table 7, "Known Issues," on page 10 |
| | September 18, 2017 | Added Known issue #1136943 and #1135605 to Table 7, "Known Issues," on page 10 |
| | September 13, 2017 | Added bug fixes #1072611 and #969892 to Table 7, "Known Issues," on page 10. |
| | August 27, 2017 | First FUR (fast update release) of this WinOF-2 version.<br>• Added bug fixes #1093185, #958895 and #1091022 to Table 9, "Bug Fixes History," on page 17<br>• Added Known issue #1121688 to Table 7, "Known Issues," on page 10 |
| Rev 1.70 | July 5, 2017 | Added bug fixes #1072611 and #969892 to Table 9, "Bug Fixes History," on page 17. |
| | June 30, 2017 | First release of this WinOF-2 version. |

# 1 Overview

These are the release notes for the first fast update release of Mellanox WinOF-2 Rev 1.70 Ethernet and InfiniBand drivers.

> Please note that WinOF-2 does not support ConnectX-3/ConnectX-3 Pro adapter cards.

## 1.1 Mellanox WinOF-2 Package Contents

The Mellanox WinOF-2 Rev 1.70 for Windows package contains the following components:

- Ethernet driver
- IPoIB driver
- Basic tools
- Performance tools
- Documentation (README file)

## 1.2 Supported Operating System Versions

The following describes the supported operating systems and their roles in a virtualization environment.

*Table 2 - Supported Operating System Versions*

| Virtualization Mode | Supported Host OS | Supported Guest OS |
|---|---|---|
| Native | Windows Server 2012 | N/A |
| | Windows Server 2012 R2 | |
| | Windows Server 2016 | |
| | Windows 8.1 Client (64 bit only) | |
| | Windows 10 Client (64 bit only) | |
| VMQ | Windows Server 2012 | Any supported guest OS for Hyper-V |
| | Windows Server 2012 R2 | |
| | Windows Server 2016 | |
| SR-IOV (Ethernet only) | Windows Server 2012 R2 | • Windows Server 2012<br>• Windows Server 2012 R2<br>• Windows Server 2016<br>• Windows 8.1 Client (64 bit only)<br>• Windows 10 Client (64 bit only)<br>• Ubuntu 16.04 kernel 4.4.0-77.98 |
| | Windows Server 2016 | |
| SR-IOV Ethernet Linux | MLNX_OFED 3.3 and above | Windows Server 2016 |

## 1.3    Certifications

The following describes the driver's certification status per operating system.

*Table 3 - Certifications*

| Operating System | Logo Certification | SDDC Premium Certification |
|---|---|---|
| Windows Client 8.1 | Certified | N/A |
| Windows Client 10 | Certified | N/A |
| Windows Server 2008R2 | Certified | N/A |
| Windows Server 2012 | Certified | N/A |
| Windows Server 2012R2 | Certified | N/A |
| Windows Server 2016 | Certified | Certified |

This section is updated in accordance with the certifications obtainment.

## 1.4 Supported Network Adapter Cards

Mellanox Mellanox WinOF-2 Rev 1.70 supports the following Mellanox network adapter cards:

*Table 4 - Supported Network Adapter Cards*

| NICs | Supported Protocol | Supported Link Speed |
|---|---|---|
| ConnectX®-4 | Ethernet/InfiniBand | 10, 25, 40, 50 and 100Gb/s<br>QDR, FDR10, FDR and EDR |
| ConnectX®-4 Lx | Ethernet | 10, 25, 40, and 50Gb/s |
| ConnectX®-5/Ex | Ethernet/InfiniBand | 10, 25, 40, 50 and 100Gb/s |

### 1.4.1 Firmware Versions

Mellanox WinOF-2 Rev 1.70 provides the following firmware for Mellanox NICs:

*Table 5 - Firmware Versions*

| NICs | Recommended Firmware Rev. | Additional Firmware Rev. Supported |
|---|---|---|
| ConnectX-4® | 12.20.1010 | 12.17.1010[a] |
| ConnectX®-4/Lx | 14.20.1010 | 14.17.1010[a] |
| ConnectX-5/Ex | 16.20.1010 | N/A |

a. For SR-IOV support, please refer to Table 8.

# 2     Changes and New Features in Rev 1.70

This package version is 1.70.51000 The package contains driver version 1.70.18120.

*Table 6 - Changes and New Features in Rev 1.70*

| Category | Description |
|---|---|
| SR-IOV | Added the ability to load the driver on devices configured for SR-IOV and IPoIB, with no SR-IOV support. |
| ECN | The default values for ECN configuration are now taken from the firmware. It is still possible to configure the ECN parameters from the driver. |
| Virtualization | Added support for Linux VF over Hyper-V (Windows PF). |
| Quality of Service | QoS classification of received packets can now consider the DSCP value in addition to the PCP value. |
| RDMA | Added RDMA transport diagnostic counters. |
| Event Log | Added an event log in case the server reaches a certain (configurable) high temperature. |
| Performance | Added threaded DPC support. |
| mlxtool | Added the ability to query ND active connection status. |

For additional information on the new features, please refer to the User Manual.

# 3    Known Issues

The following table provides a list of known bugs and limitations in regards to this release of WinOF-2.

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| - | **Description:** The installation process or restart of the driver does not close any RoCE user space applications running in the background, and may cause a bug check as a result of a stuck cmd |
| | **WA**: It is recommended to close all running RoCE user space applications prior to upgrading the driver. |
| | **Keywords:** Installation/Upgrade |
| – | **Description:** Installation/upgrade fails due to PNP failure to copy the driver files to the driver store, and the following text is printed in the event logs: `Fault bucket, type 0`<br>`Event Name: PnPDriverImportError Response: Not available`<br>`Attached Files: C:\Users\<user>\AppData\Local\Temp\DMI1 51A.tmp.log.xml`<br>`C:\Program Files\Mellanox\ MLNX_WinOF2\Drivers\"Current OS"\mlx5.inf` |
| | **WA**: Reboot the machine and reinstall. |
| | **Keywords:** Installation/Upgrade |
| - | **Description:** Installing both WinOF for ConnectX-3 and ConnectX-3 Pro, and WinOF-2 for ConnectX-4 is supported only from WinOF version 5.00 and above. |
| | **WA**: N/A |
| | **Keywords:** Installation/Upgrade |
| 654674 | **Description:** When trying to uninstall the mlx5 driver manually (by using pnputil/ DPINST or DIFX API), additional hardware scan will be required before viewing the device in the Device Manager or before reinstalling.<br>This used to happen due to a bug in the NetCfgx.dll.<br>(Microsoft case ID is: 115020112345121). |
| | **WA**: Rescan the hardware after performing the uninstallation. |
| | **Keywords:** Installation/Upgrade |
| 650489 | **Description:** While installing the driver on Windows Server 2012, and if SR-IOV mode is disabled in the BIOS and enabled in the firmware, the server might reboot, and the BIOS will hang while loading. |
| | **WA**: To work in SR-IOV mode, enable SR-IOV in BIOS. Otherwise, disable SR-IOV in the firmware using mlxconfig.<br>For further information on how to enable/disbale SR-IOV, please refer to the "Single Root I/O Virtualization (SR-IOV)" section in the User Manual. |
| | **Keywords:** Installation/Upgrade |

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| - | **Description:** On machines configured with NVGRE encapsulation with the encapsulation task offload enabled, incoming VXLAN traffic on the interface may be reported with wrong checksum status. |
| | **WA**: N/A |
| | **Keywords:** Virtualization |
| - | **Description:** Running Ntttcp without the "-a X" flag (X >1) in a NIC configured with 10GbE may cause low bandwidth in TCP single stream |
| | **WA**: Run Ntttcp with "-a 8" for best performance |
| | **Keywords:** Performance |
| - | **Description:** RDMA read on single QP 100GbE RoCE cannot achieve more than 50Gb/s. |
| | **WA**:<br>• Use more than one QP<br>• Use Jumbo packets (4K) |
| | **Keywords:** Performance |
| 576556 | **Description:** "TCP RSC Average Packet Size" counter under network adapter does not count correctly. This is a known operating system issue. |
| | **WA**: N/A |
| | **Keywords:** General |
| 683840 | **Description:** In Windows Server 2016, the following RDMA counters for VPorts that were created to use RDMA capability will show statistics for all the VPorts connected to the same interface and not for a specific VPort:<br>• RDMA Inbound Bytes/sec<br>• RDMA Inbound Frames/sec<br>• RDMA Outbound Bytes/sec<br>• RDMA Outbound Frames/sec |
| | **WA**: N/A |
| | **Keywords:** RDMA |
| 827762/843819 | **Description:** Running SR-IOV VM in Windows Server 2016 over Windows Server 2012 R2 or vice versa, results in VF driver load failure with code 10 error. |
| | **WA**: N/A |
| | **Keywords:** Virtualization |
| 786035 | **Description:** Running applications on top of MS MPI may result in failure. |
| | **WA**: N/A |
| | **Keywords:** RDMA |

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| 877750 | **Description:** Occasionally, the adapter card shows an error of duplicate IPv4 address when disabling and enabling the adapter through Device Manager. |
| | **WA**: Reboot the machine instead of disabling and enabling it in the Device Manager. |
| | **Keywords:** Device Manager, IPv4 |
| 825154 | **Description:** Mellanox WinOF-2 Device Diagnostic and PCI Device Diagnostic counters reported in PerfMon are per device. The counters that are reported per adapter under these sets show the counters for all the devices and not only for the specific adapter. |
| | **WA**: N/A |
| | **Keywords:** perfmon, counters |
| 894614 | **Description:** The nd_*_bw and nd_*_lat tools do not work on Windows server 2012, Windows 8.1 and Windows Server 2012 R2. An error message appears, notifying that the api-ms-win-crt.dll is missing. |
| | **WA**: Windows update kb2999226 must be downloaded and installed, in order to obtain the universal c run time dlls. To download the update, go to https://support.microsoft.com/en-us/kb/2999226. <br> To verify that the update is installed, run the following powershell command: <br> `get-hotfix -id kb2999226` |
| | **Keywords:** nd tools, Windows 2012, Windows 2012 R, missing dll, Universal C Runtime |
| 897455F | **Description:** PXE boot using WinPE over InfiniBand is currently not supported. |
| | **WA**: N/A |
| | **Keywords:** PXE boot, InfiniBand |
| 899853 | **Description:** Uninstallation of the driver does not reset all network adapter configurations to the default values. |
| | **WA**: Upon completion of the uninstallation process, run the following powershell command for each network adapter, while replacing <AdapterName> with the name of the relevant network adapter: <br> `Reset-NetAdapterAdvancedProperty -Name "<AdapterName>" -DisplayName "*"` |
| | **Keywords:** Uninstallation, network adapter configurations, Windows Server 2016, Windows 10 |
| 778631 | **Description:** IB utils are currently not a part of the WinOF-2 package |
| | **WA**: Fabric diagnostic can be done from a managed switch or a different node in the fabric with IB utils support. |
| | **Keywords:** InfiniBand, IB utils, fabric diagnostic |
| 900928 | **Description:** The packet sniffer is currently not supported in InfiniBand mode. |
| | **WA**: N/A |
| | **Keywords:** InfiniBand, packet sniffer |

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| 900928 | **Description:** On IPoIB adapters, the network adapter and task manager network counters count all port traffic when only non-RDMA traffic should be shown. |
| | **WA**: N/A |
| | **Keywords:** IPoIB, counters, RDMA |
| 939227 | **Description:** When upgrading from WinOF-2 1.50 to 1.60 or later, the MAC address used for the IPoIB interface changes. |
| | **WA**: N/A |
| | **Keywords:** IPoIB, MAC address |
| 928999 | **Description:** When installing a new driver, driver version queries via WMI may not be up-to-date, due to information caching in the WMI service. |
| | **WA**: Stop and restart the WMI service, running the following CMD commands:<br>`net stop winmgmt`<br>`net start winmgmt` |
| | **Keywords:** driver version queries, WMI, information caching |
| 945026 | **Description:** SR-IOV VFs drivers are not removed correctly in the case of live migration or host driver restart. |
| | **WA**: avoid using live migration or host driver restart when SR-IOV VFs are up. |
| | **Keywords:** SR-IOV, VFs drivers, live migration, host driver restart |
| 964973 | **Description:** SRQ limit event is not supported in the ND and NDK RDMA programming interfaces. |
| | **WA**: N/A |
| | **Keywords:** SRQ, ND, NDK RDMA |
| 964137 | **Description:** The installation/uninstallation process fails in case that the event viewer is open and the mlx5.sys is locked. |
| | **WA**: Make sure to close the event viewer before installing/uninstalling the driver. |
| | **Keywords:** installation, uninstallation, event viewer, mlx5.sys |
| 954496 | **Description:** Windows Server 2016 Switch Embedded Teaming (SET) does not work in SR-IOV mode. |
| | **WA**: N/A |
| | **Keywords:** SET, 2016, SR-IOV |
| 953622 | **Description:** An attempt to run the mlx5cmd -sniffer tool with more than 8 command line arguments would fail. |
| | **WA**: N/A |
| | **Keywords:** mlx5cmd -sniffer |

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| 1000390 | **Description:** Configuring different RoCE modes for the VF and PF is not supported. |
| | **WA**: N/A |
| | **Keywords:** RoCE, VF, PF |
| 960950 | **Description:** SR-IOV VFs drivers are not removed correctly in the case of live migration or host driver restart. |
| | **WA**: Avoid using live migration or host driver restart when SR-IOV VFs are up. |
| | **Keywords:** SR-IOV, VF, live migration |
| 961251 | **Description:** On a dual port device, when the first port is IPoIB and the second port is Ethernet, the device will not start over ISCSI and Windows 2012 in the Ethernet port. |
| | **WA**: N/A |
| | **Keywords:** IPoIB port, Ethernet port, ISCSI, Windows 2012 |
| 966409 | **Description:** Windows Server 2016 Switch Embedded Teaming (SET) is not supported in SR-IOV mode. |
| | **WA**: N/A |
| | **Keywords:** SR-IOV, SET |
| 1000390 | **Description:** Configuring a different RoCE mode between VF and PF is not supported |
| | **WA**: N/A |
| | **Keywords:** RoCE, VF, PF |
| 1070241 | **Description:** SR-IOV VF's live migration is at Beta level. Therefore, not all flows are supported. |
| | **WA**: N/A |
| | **Keywords:** SR-IOV, VF, live migration |
| 917856 | **Description:** All folders under `%PROGRAMFILES%Mellanox\MLNX_WINOF2` are deleted in case of upgrade failure. The old driver remains, and no connectivity loss should occur. The issue occurs only when the upgrade fails after the old version was removed. |
| | **WA**: Following the upgrade failure, reinstall the new package folder. |
| | **Keywords:** Installation, setup, missing folders |

*Table 7 - Known Issues*

| Internal Ref. | Issue |
|---|---|
| 1121688 | **Description:** Mellanox WinOF-2 Device Diagnostics and Mellanox WinOF-2 PCI Device Diagnostics counters in Perfmon are available only on the adapter that was initialized first, which is the counters' owner.<br>In case both adapters are viewed in Perfmon:<br>1. The owner will receive correct values, while the second adapter will only receive zeros.<br>2. If the owner goes down, the ownership will move to the second adapter. |
| | **WA**: N/A |
| | **Keywords:** WinOF-2 Device Diagnostics, Mellanox WinOF-2 PCI Device Diagnostics, Perfmon, ownership |
| 1136943 | **Description:** In case of traffic stress in VMQ mode, the following false alarms could appear in the event viewer. In case they appear, they can be ignored:<br>**Event ID: 0x15**<br>Message:<br><Adapter name> device reports a send completion handling timeout on TxQueue <Pointer>. Attempting recovery.<br>**Event ID: 0x44**<br>Message:<br><Adapter name>: mstdump %SystemRoot%\Temp\<File name>.log was created after a timeout on TxQueue. |
| | **WA**: N/A |
| | **Keywords:** VMQ, event viewer, false alarms |
| 1135605 | **Description:** Running a Windows host with a Linux host in IPoIB mode, and configuring both of them to the same MTU, while sending packets with MTU size will cause the traffic drop on Windows. |
| | **WA**: Maintain a fixed gap of 14 bytes between Linux hosts and Windows hosts (either decrease Linux by 14 bytes or increase Windows by 14 bytes).<br>For example: Linux 2030, Windows 2044. |
| | **Keywords:** Windows host, Linux host, MTU, traffic drop |
| 1168017 | **Description:** A system crash can occur when working with WinOF2 Version 1.70 and iSCSI boot using Windows 2016 Server. |
| | **WA**: N/A |
| | **Keywords:** WinOF2 Version 1.70, iSCSI boot, Windows 2016 Server, system crash |

## 3.1 SR-IOV Support Limitations

The below table summarizes the SR-IOV working limitations, and the driver's expected behavior in unsupported configurations.

*Table 8 - SR-IOV Support Limitations*

| WinOF-2 Version | ConnectX-4 Firmware Level | Adapter Mode | | |
|---|---|---|---|---|
| | | InfiniBand | | Ethernet |
| | | SR-IOV On | SR-IOV Off | SR-IOV On/Off |
| Earlier versions | Up to 12.16.1020 | Driver will fail to load and show "Yellow Bang" in the device manager. | | No limitations |
| 1.50 onwards | 12.17.2020 onwards (IPoIB supported) | "Yellow Bang" unsupported mode - disable SR-IOV via mlxConfig | OK | No limitations |

For further information on how to enable/disable SR-IOV, please refer to the "Single Root I/O Virtualization (SR-IOV)" section in the User Manual.

# 4 Bug Fixes History

Table 9 lists the bugs fixed in this release.

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 1091022 | **Description:** Fixed an issue where high memory utilization and fake transmit stuck detection could occur in times of heavy outgoing traffic, due to completion queue starvation. |
| | **Keywords:** high memory utilization, transmit stuck, completion queue starvation |
| | **Discovered in Release:**1.60 |
| | **Fixed in Release:** 1.70 FUR 1 |
| 1093185 | **Description:** Fixed an issue where observing RSS statistics counters during RSS base processor change could cause a driver crash. |
| | **Keywords:** RSS statistics counters, RSS base processor, driver crash |
| | **Discovered in Release:** 1.70 |
| | **Fixed in Release:** 1.70 FUR 1 |
| 958895 | **Description:** Fixed an issue where traffic counters were not updated between two consequential reads, in case they were read more than once within 100ms. |
| | **Keywords:** Traffic counters |
| | **Discovered in Release:** 1.70 |
| | **Fixed in Release:** 1.70 FUR 1 |
| 969892 | **Description:** Fixed the issue where driver required auto-negotiation by default. This could cause link connectivity problems with devices that do not support auto-negotiation. |
| | **Keywords:** Link connectivity, "SavedLinkSpeedValue" |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.70 |
| 1072611 | **Description:** Fixed a BSOD issue when opening RSS counters on perfmon while the machine had only one RSS core that was different from 0. |
| | **Keywords:** RSS, counters |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.70 |
| 960900 | **Description:** Fixed the traffic counter name from "Packets Received Discarded" to "Packets Received Discarded - No Receive WQEs", as it counts only packets that were dropped due to a lack of receive WQEs. |
| | **Keywords:** traffic counter, Receive WQE |
| | **Discovered in Release:** 1.70 |
| | **Fixed in Release:** 1.70 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 964551 | **Description:** Fixed an issue where the WinOF-2 driver was not loaded on an adapter with an enabled SR-IOV, when the port mode was set to InfiniBand. An error message appeared, stating that the firmware does not support IPoIB. |
| | **Keywords:** SR-IOV, IPoIB |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.70 |
| 962960 | **Description:** Fixed an issue were in InfiniBand mode, non-default prefix was not supported. |
| | **Keywords:** InfiniBand, not-default prefix |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.70 |
| 960941 | **Description:** Fixed an issue that caused the command line parsing of mlx5cmd -sniffer to fail when many arguments were provided. |
| | **Keywords:** mlx5cmd -sniffer |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.70 |
| 969764 | **Description:** Fixed an issue that could cause the values of the "Minor Stall Watermark Reached" and "Critical Stall Watermark Reached" pause resiliency counters to be reported as zero in some cases, regardless of the real values. |
| | **Keywords:** "Minor Stall Watermark Reached", "Critical Stall Watermark Reached" |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.70 |
| 1048938 | **Description:** Fixed an issue that could cause an installation failure when installing the same package twice with the following argument: ADDLOCAL=All. |
| | **Keywords:** Installation |
| | **Discovered in Release:** 1.60.51000 |
| | **Fixed in Release:** 1.60.53000 |
| 951130 | **Description:** Fixed an issue which caused driver unload failure and blue screen with code 9F, when shutting down a machine while NDK traffic is running. |
| | **Keywords:** RDMA, unload, blue screen, shutdown, NDK |
| | **Discovered in Release:** 1.60 |
| | **Fixed in Release:** 1.60 |
| 926267 | **Description:** Fixed an issue which caused VLAN tagging to not operate on ConnectX-5 family devices. |
| | **Keywords:** VLAN tagging, ConnectX-5 |
| | **Discovered in Release:** 1.50 |
| | **Fixed in Release:** 1.60 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 903536 | **Description:** Fixed an issue where Environment variables were added only to the current user and not to all users |
| | **Keywords:** Environment variables |
| | **Discovered in Release:** 1.50 |
| | **Fixed in Release:** 1.60 |
| 704364 | **Description:** Fixed an issue which caused a failure to remove ND providers upon uninstallation of the driver. |
| | **Keywords:** Uninstallation, ND providers |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.60 |
| 894229 | **Description:** Fixed an issue which led to a false report of event log Error Number 66. |
| | **Keywords:** False error, event log |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 859577 | **Description:** Fixed an error message on bad command line arguments. |
| | **Keywords:** Sniffer |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 858620 | **Description:** Fixed an issue which caused the link speed to be persistent over machine reboots when setting it using mlx5cmd. |
| | **Keywords:** mlx5cmd, link speed |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 842953 | **Description:** Fixed a wrong RSS hash calculation for encapsulated traffic which led to the wrong usage of RSS CPUs. |
| | **Keywords:** RSS hash calculation |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 803652 | **Description:** Fixed an issue which caused the driver to request more resources from the OS than it actually requires. |
| | **Keywords:** General |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 778145 | **Description:** Fixed an issue which prevented adapters with customized device description containing a back slash character not to have counter instances in perfmon.<br>**Note:** For the fix to take effect, the machine must be rebooted after driver update. |
| | **Keywords:** perfmon, counters |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 767939 | **Description:** Removed the registry key that reported the MUP version from the mlx5.inf file in Windows Server 2016. |
| | **Keywords:** MUP, INF, Installation |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 689176 | **Description:** Fixed an issue which cause the driver unload process on a machine with many adapter cards to take longer than required. |
| | **Keywords:** General |
| | **Discovered in Release:** 1.45 |
| | **Fixed in Release:** 1.50 |
| 828869 | **Description:** Fixed an issue which prevented VxlanUDPPortNumber update from the driver "Advance properties" tab. |
| | **Keywords:** GUI |
| | **Discovered in Release:** 1.40 |
| | **Fixed in Release:** 1.45 |
| 823973 | **Description:** Fixed an issue where changing the priority on a server while running SMB Direct traffic could cause a blue screen (BSOD). |
| | **Keywords:** RDMA |
| | **Discovered in Release:** 1.40 |
| | **Fixed in Release:** 1.45 |
| 824167 | **Description:** Fixed an issue in Windows Server 2016 which caused a PowerShell query to get stuck and cause the installer to hang. |
| | **Keywords:** Installation, setup |
| | **Discovered in Release:** 1.40 |
| | **Fixed in Release:** 1.45 |
| 751204 | **Description:** Fixed an issue which caused some connections to fail if the IP source port requested was 0 when running many concurrent ND or NDK connections. |
| | **Keywords:** RDMA |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 752051 | **Description:** Removed the "VPI" from Network Device's description. The Network Device's description is now "Mellanox ConnectX-4 Adapter" instead of "Mellanox ConnectX-4 VPI Adapter". |
| | **Keywords:** Network Adapters |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |
| 778372 | **Description:** Fixed an issue causing VMQ VMs multicast traffic to be duplicated when traffic ran on the same physical host. |
| | **Keywords:** VMQ VMs multicast traffic |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |
| 768279 | **Description:** Fixed a BSOD issue when NDK consumers posted to a Queue Pair more work requests than the Queue Pair's size without polling for completions. |
| | **Keywords:** NDK |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |
| 689041 | **Description:** Fixed an issue causing Virtual Machines' incoming and outgoing tagged traffic to be dropped by the internal eSwitch when QoS policy traffic classes were customized by the user (using, for example, TCP port or EtherType). |
| | **Keywords:** Virtualization |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |
| 752616 | **Description:** Fixed an issue that caused VLAN priority tagging (IEEE 802.1p class of service) not to be added into RDMA packets when VLAN ID is set to 0 (no VLAN). |
| | **Keywords:** General |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |
| 690163 | **Description:** Fixed an issue that resulted in the message below when enabling/disabling ECN and causing the driver to perform a miniport reset:<br>`"FW command fails. op 0x822, status 0x3, errno -22, syndrome 0x507ee9"`<br>`"mstdump %SystemRoot%\Temp\<filename>.log was created after fatal error"` |
| | **Keywords:** Performance |
| | **Discovered in Release:** 1.35 |
| | **Fixed in Release:** 1.40 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 654655 | **Description:** Fixed the issue where there was no traffic when configuring VLAN over an SRIOV vSwitch. |
| | **Keywords:** SR-IOV |
| | **Discovered in Release:** 1.30 |
| | **Fixed in Release:** 1.35 |
| 614123 | **Description:** Fixed the issue where the receive counters of "Mellanox WinOF-2 VPort Traffic Counters" in Perfmon tool included packets that have been discarded in layers above the link layer. |
| | **Keywords:** SR-IOV |
| | **Discovered in Release:** 1.30 |
| | **Fixed in Release:** 1.35 |
| 664227 | **Description:** Fixed the issue where firmware upgrade did not work in unattended mode. |
| | **Keywords:** Installation |
| | **Discovered in Release:** 1.30 |
| | **Fixed in Release:** 1.35 |
| 591753 | **Description:** Fixed QoS counters to count properly. |
| | **Keywords:** General |
| | **Discovered in Release:** 1.20 |
| | **Fixed in Release:** 1.30 |
| 536727 | **Description:** Fixed the issue of when Get-NetAdapterQoS PowerShell command did not return correct values once traffic classes were configured. |
| | **Keywords:** General |
| | **Discovered in Release:** 1.10 |
| | **Fixed in Release:** 1.30 |
| 515408 | **Description:** Fixed the issue of when traffic counters in the "Task Manager" may show higher numbers than the actual number. |
| | **Keywords:** Ethernet |
| | **Discovered in Release:** 1.10 |
| | **Fixed in Release:** 1.20 |
| - | **Description:** Fixed some general stability issues. |
| | **Keywords:** Ethernet |
| | **Discovered in Release:** 1.10 |
| | **Fixed in Release:** 1.20 |

*Table 9 - Bug Fixes History*

| Internal Ref. | Issue |
|---|---|
| 515406 | **Description:** Fixed the issue of when running performance benchmarks for a short period of time (< 1 sec), this may provide bad latency in Ethernet. |
| | **Keywords:** Performance |
| | **Discovered in Release:** 1.10 |
| | **Fixed in Release:** 1.20 |
| 574565 | **Description:** Fixed the issue of when there is a pressure in TCP connection establishments, some of these connections may fail. |
| | **Keywords:** Performance |
| | **Discovered in Release:** 1.10 |
| | **Fixed in Release:** 1.20 |

# 5 Change Log History

*Table 10 - Change Log History*

| Feature/Change | Description |
|---|---|
| **Rev.1.60** ||
| **General** | Added Beta support for ConnectX-5/ConnectX-5 Ex devices |
| **Ethernet** | Added Differentiated Services Code Point (DSCP), a mechanism that uses the 6-bit Differentiated Services Field (DS or DSCP field) in the IP header for packet classification. |
| | Added a resiliency mechanism that stops transmission of pauses from the NIC port if pauses are sent for a long period of time. |
| | Added the ability to handle packet bursts, while avoiding packet drops that may occur when a large amount of packets is sent in a short period of time. |
| | Added Head of Queue Lifetime Limit, a feature that enables the system to drop the packets that have been awaiting transmission for a long period of time, preventing the system from hanging. |
| **Diagnostics** | Added a new diagnostics counters set with information about RSS traffic spread per core, and new RDMA diagnostic counters. |
| **Virtualization** | Added the ability to limit the number of memory pages in the host that are used for contexts of VF resources. |
| | Extended SR-IOV support for up to 96 VFs per port. |
| **Security** | Added an anti-spoofing mechanism for the host driver to configure filters on outgoing traffic. |
| **Rev.1.50** ||
| **InfiniBand** | Added support for InfiniBand and IPoIB including EDR link speed. |
| **RoCEv2 Congestion Management (RCM)** | Switches running ECN will report congestion to the sources using CNP messages.<br>The sources (Host), in turn, react by throttling down their injection rates, thus preventing congestion in the fabric. |
| **DCBX** | Added support for Data Center Bridging Exchange Protocol at GA level |
| **Receive Path Activity Monitoring** | Monitors the devices status continuously tot when the receive pipeline is stalled for a period longer than a pre-configured timeout. |
| **Performance** | Optimized MSI-X interrupt vectors' usage to enable efficient work on machines with high core counts. |
| **Debug-ability** | Extended data collected by the system snapshot tool to include QoS configurations. |
| | Added a counter to detect how many times the link went down and up. |
| | Added counters for NIC PCIe errors |
| | Added low level device counters to enable performance analysis. |
| | Added counters for driver reset. |
| **Rev. 1.45** ||

*Table 10 - Change Log History*

| Feature/Change | Description |
|---|---|
| The feature below is applicable to all supported Operating System: | |
| **Link Speed** | Added to mlx5cmd the capability to query supported link speeds according to the adapter card. Additionally, it enables the user to force set the range of speeds the adapter supports. |
| The list of features below are applicable to **Window Server 2016** OS: | |
| **NDKPI** | Added support for NDKPI v2.0 interface. |
| **Virtualization** | Added support for RoCE in SR-IOV VM. |
| | Added support for RoCE in virtualization mode in the hypervisor. |
| | Added support for "VMMQ" - RSS load-balancing offload in HW for non-SRIOV VMs.<br>**Note**: RSS for SR-IOV VMs is already available in older versions. |
| **VXLAN Stateless Off-load** | Added support for send/receive checksum, LSOv2 and VMQ hardware off-loads on VXLAN encapsulated frames. |
| **PacketDirect** | Added support for PacketDirect Provider Interface (PDPI). |
| **Rev. 1.40** | |
| **WPP Traces Extraction** | WinOF-2 Mellanox driver automatically dumps trace messages that can be used for debugging issues that have recently occurred on the machine. |
| **MTT Optimization** | Hardware resource utilization improvement for RDMA applications that use contiguous memory buffers |
| **Data Center Bridging Exchange (DCBX)** | **[Beta]** DCBX is used by DCB devices to exchange configuration information with directly connected peers. DCBX uses Link Layer Discovery Protocol (LLDP) to exchange parameters between two link peers. |
| **Packet Sniffer** | Added to mlx5cmd a command that allows sniffing packets as seen by the device and creating a .pcap file. |
| **Rev. 1.35** | |
| **Documentation** | Release Notes and User Manual documents were removed from the package. A new README file which includes basic installation instructions, summary of main features and requirements has replaced them. |
| **Operating Systems** | Added support for Windows 8.1 Client. |
| **RDMA** | Changed the default value of RoCE mode from v1 to v2. |
| | Added the option to configure the RoCE version per adapter. |
| | Changed UDP source port calculation according to IB spec. |
| **SR-IOV** | SR-IOV is at GA level. |
| | Added support for SR-IOV mode for Windows VM over Linux KVM hypervisor. |

*Table 10 - Change Log History*

| Feature/Change | Description |
|---|---|
| Tools | Added the option to view information of current adapter configuration in the snapshot tool. |
| | Added mstdump utility to reflect the state of a certain adapter by producing several types of events. |
| Congestion Control | (**At beta level)** Added support for Explicit Congestion Notification (ECN) to avoid congestion hot spots and optimize the throughput of the fabric. |
| QoS | Priority Flow Control (PFC) is at GA level. |
| | Enhanced Transmission Selection (ETS) is at GA level. |
| Performance | Improved RDMA latency, RoCE with high scale and cache line alignments. |
| Utilities | Added support for mlx5cmd utility, which is a generic utility that contains the trace, information and performance tuning utilities. |
| Wake On LAN | Added the option for a network admin to remotely power on a system or wake it up from sleep mode. |
| Cables | Added a notification pop-up upon bad cable state in the event viewer. |
| VF Counters | Added new traffic counters per Virtual Function (VF). |
| **Rev. 1.21** | |
| Virtualization | Single Root I/O Virtualization (SR-IOV) is a technology that allows a physical PCIe device to present itself multiple times through the PCIe bus. **Note:** SR-IOV is currently at Beta level and is disabled by default in both the driver and the firmware. In order to enable it, please refer to WinOF-2 User Manual at www.mellanox.com. |
| QoS | Added support for configuring the global pause mode on the two sides (Rx and Tx). This feature is enabled by default. |
| **Rev. 1.20** | |
| NVGRE | Network Virtualization using Generic Routing Encapsulation (NVGRE) is a network virtualization technology that attempts to alleviate the scalability problems associated with large cloud computing deployment. |
| Ethernet Network | Enhanced Transmission Selection (ETS) provides a common management framework for assignment of bandwidth to frame priorities. |
| Installation | Added support for downgrade. Note that Rev 1.20 is the older version to which downgrade is possible. |
| Diagnostics | Added the "mlxstat" tool to WinOF-2 package. mlxstat displays information of Mellanox NIC attributes. |
| **Rev. 1.10 (Beta)** | |
| RDMA | Added support for RoCE through NDSPI and NDKPI |
| Ethernet | Added QoS support for both global and priority-based flow controls |
| | Added support for VMQ |
| | Added support for Receive Side Coalescing (RSC) |

*Table 10 - Change Log History*

| Feature/Change | Description |
|---|---|
| **UI** | Added the following proprietary counters as part of the Performance Monitor:<br>• Mellanox WinOF-2 Traffic Counters<br>• Mellanox WinOF-2 QoS Counters |
| | Made some fixes in the Device Manager Properties Information tab |