



Red Hat Enterprise Linux (RHEL) 8.0 Driver Release Notes

RHEL 8.0

NOTE:

THIS HARDWARE, SOFTWARE OR TEST SUITE PRODUCT ("PRODUCT(S)") AND ITS RELATED DOCUMENTATION ARE PROVIDED BY MELLANOX TECHNOLOGIES "AS-IS" WITH ALL FAULTS OF ANY KIND AND SOLELY FOR THE PURPOSE OF AIDING THE CUSTOMER IN TESTING APPLICATIONS THAT USE THE PRODUCTS IN DESIGNATED SOLUTIONS. THE CUSTOMER'S MANUFACTURING TEST ENVIRONMENT HAS NOT MET THE STANDARDS SET BY MELLANOX TECHNOLOGIES TO FULLY QUALIFY THE PRODUCT(S) AND/OR THE SYSTEM USING IT. THEREFORE, MELLANOX TECHNOLOGIES CANNOT AND DOES NOT GUARANTEE OR WARRANT THAT THE PRODUCTS WILL OPERATE WITH THE HIGHEST QUALITY. ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT ARE DISCLAIMED. IN NO EVENT SHALL MELLANOX BE LIABLE TO CUSTOMER OR ANY THIRD PARTIES FOR ANY DIRECT, INDIRECT, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING, BUT NOT LIMITED TO, PAYMENT FOR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY FROM THE USE OF THE PRODUCT(S) AND RELATED DOCUMENTATION EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.



Mellanox Technologies
350 Oakmead Parkway Suite 100
Sunnyvale, CA 94085
U.S.A.
www.mellanox.com
Tel: (408) 970-3400
Fax: (408) 970-3403

© Copyright 2019. Mellanox Technologies Ltd. All Rights Reserved.

Mellanox®, Mellanox logo, Connect-IB®, ConnectX®, CORE-Direct®, GPUDirect®, LinkX®, Mellanox Multi-Host®, Mellanox Socket Direct®, UFM®, and Virtual Protocol Interconnect® are registered trademarks of Mellanox Technologies, Ltd.

For the complete and most updated list of Mellanox trademarks, visit <http://www.mellanox.com/page/trademarks>.

All other trademarks are property of their respective owners.

Table of Contents

Table of Contents	3
List Of Tables	4
Chapter 1 Overview	5
1.1 Supported HCAs Firmware Versions	6
1.2 SR-IOV Support	6
1.3 RoCE Support	6
1.4 VXLAN Support	7
1.5 DPDK Support	7
1.6 Open vSwitch Hardware Offloads Support	7
Chapter 2 Changes and New Features	8
Chapter 3 Certifications	10
3.1 RHEL NIC Qualification	10
Chapter 4 Known Issues	11

List Of Tables

Table 1:	Supported Uplinks to Servers	5
Table 2:	Supported HCAs Firmware Versions	6
Table 3:	SR-IOV Support.....	6
Table 4:	RoCE Support	6
Table 5:	VXLAN Support.....	7
Table 6:	DPDK Support.....	7
Table 7:	Open vSwitch Hardware Offloads Support	7
Table 8:	Changes and New Features.....	8
Table 9:	Known Issues	11

1 Overview

These are the release notes of Red Hat Enterprise Linux (RHEL) 8.0 Driver Release Notes. This document provides instructions on drivers for Mellanox Technologies ConnectX® based adapter cards with Red Hat Enterprise Linux (RHEL) 7.4 Inbox Driver environment.

This version supports the uplinks to servers described in the table below.

Table 1 - Supported Uplinks to Servers

Uplink/HCAs	Uplink Speed	Supported Driver
ConnectX®-6	<ul style="list-style-type: none"> InfiniBand: SDR, EDR, HDR Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 100GigE 	mlx5_core (includes the ETH functionality as well), mlx5_ib
BlueField® ^a	<ul style="list-style-type: none"> Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, and 100GigE 	mlx5_core (includes the ETH functionality as well)
ConnectX®-5	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR, FDR10, EDR Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE^b, and 100GigE 	mlx5_core (includes the ETH functionality as well), mlx5_ib
ConnectX®-4	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR, FDR10, EDR Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE^b, and 100GigE 	mlx5_core (includes the ETH functionality as well), mlx5_ib
ConnectX®-4 Lx	<ul style="list-style-type: none"> Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, and 50GigE 	mlx5_core (includes the ETH functionality as well)
ConnectX®-3/ ConnectX®-3 Pro	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR10, FDR Ethernet: 10GigE, 40GigE and 56GigE^b 	mlx4_core, mlx4_en, mlx4_ib
Connect-IB®	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR10, FDR 	mlx5_core, mlx5_ib

a. BlueField is supported as a standard ConnectX-5 Ethernet NIC only.

b. 56GbE is a Mellanox propriety link speed and can be achieved while connecting a Mellanox adapter cards to Mellanox SX10XX switch series or connecting a Mellanox adapter card to another Mellanox adapter card.

1.1 Supported HCAs Firmware Versions

Red Hat Enterprise Linux (RHEL) 7.4 driver supports the following Mellanox network adapter cards firmware versions:

Table 2 - Supported HCAs Firmware Versions

HCA	Recommended Firmware Rev.
ConnectX®-6	20.25.2006
BlueField®	18.25.1600
ConnectX®-5	16.25.1020
ConnectX®-4 Lx	14.25.1020
ConnectX®-4	12.25.1020
ConnectX®-3 Pro	2.42.5000
ConnectX®-3	2.42.5000
Connect-IB®	10.16.1200

1.2 SR-IOV Support

Table 3 - SR-IOV Support

Driver	Support	Notes
mlx4_core, mlx4_en, mlx4_ib	ETH Infiniband - Technical Preview	Running InfiniBand (IB) SR-IOV requires IB Virtualization support on the OpenSM (Session Manager).
mlx5_core (includes ETH functionality), mlx5_ib	ETH Infiniband - Technical Preview	This capability is supported only on OpenSM provided by Mellanox, that is not available in Inbox. This support can be achieved by running the highest-priority OpenSM on a Mellanox switch in an IB fabric. The switch SM can support this feature by enabling the virt flag (<code># ib sm virt enable</code>). Note: This capability is not tested over Inbox environment and considered Tech Preview.

1.3 RoCE Support

Table 4 - RoCE Support

Driver	Support
mlx4 - RoCE v1/v2	Yes
mlx5 - RoCE v1/v2	Yes

1.4 VXLAN Support

Table 5 - VXLAN Support

Driver	Support
mlx4 - VXLAN offload	Yes
mlx5 - VXLAN offload	Yes (without RSS)

1.5 DPDK Support

Table 6 - DPDK Support

Driver	Support
mlx4	Yes
mlx5	Yes

1.6 Open vSwitch Hardware Offloads Support

Table 7 - Open vSwitch Hardware Offloads Support

Driver	Support
mlx4	No
mlx5	Yes ^a

a. Technical Preview is not a fully supported production feature.

2 Changes and New Features

Table 8 - Changes and New Features

Driver/ Component	Feature/Change	Description
General	ConnectX-6 adapter support	Added ConnectX-6 device ID for hardware enablement and testing. Tech Preview.
	BlueField adapter support	Added BlueField device ID for hardware enablement and testing. Tech Preview (verified with ConnectX-5 functionality)
	Innova IPsec adapter support	Added support for Mellanox Innova IPsec EN adapter card, which provides security acceleration for IPsec-enabled networks.
mlx4	Support CQ moderation	Enhances performance by moderating the number of cookies needed to create an event instead of application having to suffer from event-per-cookie.
	XDP Support	XDP (eXpress Data Path) provides a high performance, programmable network data path in the Linux kernel. XDP provides bare metal packet processing at the lowest point in the software stack which makes it ideal for speed without compromising programmability. For more details visit https://www.iovisor.org/technology/xdp
	mlx4: General driver update	Driver base upstream kernel 4.18
mlx5	Support CQ moderation	Enhance performance by moderating the number of cookies needed to create an event instead of application having to suffer from event-per-cookie.
	Stats group API	Define a new API to create a group of stats and simplifies the way of handling them.
	IPoIB enhanced mode	Added IPoIB enhancements: <ul style="list-style-type: none"> • IPoIB TX NAPI • IPoIB device driver Mutli- pkey.
	RDMA: Support statistics via netlink	Added support for RDMA statistics via netlink to be used by the rdma tool from user-space.
	mlx5_ib: Support flow counters	Added support for flow counters on top of generic verbs counters interface.
	Added adaptive TX interrupt moderation to net DIM	Added adaptive transmit interrupt moderation to net DIM, complete with support for mlx5e driver, to allow reduced interrupt rate for multiple scenarios.
	UDP GSO	Added UDP GSO support providing a significant reduction in UDP cycles/byte.

Table 8 - Changes and New Features

Driver/ Component	Feature/Change	Description
mlx5	XDP Support	XDP (eXpress Data Path) provides a high performance, programmable network data path in the Linux kernel. XDP provides bare metal packet processing at the lowest point in the software stack which makes it ideal for speed without compromising programmability. For more details see: https://www.iovisor.org/technology/xdp
	OVS enhancements	<ul style="list-style-type: none"> • RoCE in Overlay (encap TOS) • QinQ • tc multi-priorities and multi-chain • Representor (slow path) optimizations • tc flower walk optimizations
	mlx5: General driver update	Driver base upstream kernel 4.18
rdma-core	Version Update	Updated to version rdma-core-22-2.el8
mstflint	Version Update	Updated to version mstflint-4.11.0-2.el8
VMA	Version Update	Update to version libvma-8.7.3-0.1.el8

3 Certifications

3.1 RHEL NIC Qualification

RHEL 8.0, Successfully passed RHEL NIC qualification has passed successfully as described in: https://github.com/ctrautma/RHEL_NIC_QUALIFICATION/tree/8.0-Beta

Covering:

- ConnectX-4 Lx and ConnectX-5 adapter cards
- OVS functional, OVS non-offload, OVS-offload, OVS-DPDK

4 Known Issues

The following table describes known issues in this release and possible workarounds.

Table 9 - Known Issues

Internal Ref.	RedHat Ref.	Description
1284047	-	Description: BW degradations due to PTI (Page Table Isolation) in Intel's CPU security fix
		Workaround: PTI can be disabled in run time by writing 0 to <code>/sys/kernel/debug/x86/pti_enabled</code> . Another option is adding "nopti" or "pti=off" to grub.conf.
		Keywords: Performance
1698217	1668480	Description: mstflint tool fails to upgrade the firmware for ConnectX-5 adapter card.
		Workaround: N/A
		Keywords: mstflint, FW, Firmware
1610281	-	Description: Setting speed to 56Gb/s on ConnectX-4 causes FW syndrome (0x1a303e)
		Workaround: N/A
		Keywords: ConnectX-4, syndrome
1609804	-	Description: Kernel panic during MTU change under stress traffic
		Workaround: N/A
		Keywords: panic, MTU
1578022	-	Description: OVS offload: fragmented traffic is not offload. When sending traffic with packets bigger than MTU, traffic runs but is not offloaded.
		Workaround: N/A
		Keywords: OVS offload, fragmentation