



Red Hat Enterprise Linux (RHEL) 7.4 Driver Release Notes

RHEL 7.4

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Mellanox Technologies
350 Oakmead Parkway Suite 100
Sunnyvale, CA 94085
U.S.A.
www.mellanox.com
Tel: (408) 9703400
Fax: (408) 9703403

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1 Overview

These are the release notes of Red Hat Enterprise Linux (RHEL) 7.4 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 following uplinks to servers:

Table 1 - Supported Uplinks to Servers

Uplink/HCAs	Uplink Speed	Supported Driver
ConnectX®-5	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR, FDR10, EDR Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE^a, and 100GigE 	mlx5_core (includes the ETH functionality as well), mlx5_ib
ConnectX®-4	<ul style="list-style-type: none"> Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE^a, 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)
Connect-IB®	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR10, FDR 	mlx5_core, mlx5_ib
ConnectX®-3/ ConnectX®-3 Pro	<ul style="list-style-type: none"> InfiniBand: SDR, QDR, FDR10, FDR Ethernet: 10GigE, 40GigE and 56GigE^a 	mlx4_core, mlx4_en, mlx4_ib
ConnectX®-2	<ul style="list-style-type: none"> InfiniBand: SDR, DDR Ethernet: 10GigE, 20GigE 	mlx4_core, mlx4_en, mlx4_ib

a. 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 RHEL 7.4 supports the following Mellanox network adapter cards firmware versions:

Table 2 - Supported HCAs Firmware Versions

HCA	Recommended Firmware Rev.	Additional Firmware Rev. Supported
Connect-IB®	10.16.1020	N/A
ConnectX®-5	16.20.1010	N/A
ConnectX®-4 Lx	14.20.1010	N/A
ConnectX®-4	12.20.1010	N/A
ConnectX®-3 Pro	2.40.7000	N/A
ConnectX®-3	2.40.7000	N/A
ConnectX®-2	2.9.1000	N/A

1.2 SR-IOV Support

Table 3 - SR-IOV Support

Driver	Support
mlx4_core, mlx4_en, mlx4_ib	Technical Preview ^a
mlx5_core (includes ETH functionality), mlx5_ib	Technical Preview ^a

a. Technical Preview is not fully supported production feature.

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 Open vSwitch Hardware Offloads Support

Table 6 - Open vSwitch Hardware Offloads Support

Driver	Support
mlx4	No
mlx5	Technical Preview ^a

a. Technical Preview is not fully supported production feature.

2 Changes and New Features

Table 7 - Changes and New Features

Feature/Change	Description
mlx5	<ul style="list-style-type: none"> • Drop counter for mlx5 • TC hardware offload • SR-IOV trusted VF • SR-IOV ACLs • SR-IOV VF representors • SR-IOV offload VLAN push/pop • SR-IOV offload statistics and link control • SR-IOV QoS Rate limit • SR-IOV offload VXLAN encapsulation/decapsulation • CQE compression • Interrupt frequency moderation • Ethtool aRFS support • Ethtool flow steering • Ethtool auto negotiation • Ethtool self-test • Minimum inline header • TX queue rate limit • eSwitch offload • RSS QP • IPv6 flow steering • NVMe Over Fabrics • Reset Flow for IB kernel ULPs • Report TSO capabilities • Seamless error recovery • RoCE LAG • RAW QP out of buffer counter • Extend flow steering specification • RX buffering refactoring • DCBX CEE API support • Sniffer support • ConnectX-5 PCI IDs • Packet Pacing over verbs • VXLAN steering • TC forward counters • OVS offload for mlx5 • Drivers update • Support for 1PPS • Flow ID • Physical Layer statistics via Ethtool
mlx4	<ul style="list-style-type: none"> • VST QinQ support • DCB PFC support through CEE API • drivers update • Force link speed via Ethtool
Common network	<ul style="list-style-type: none"> • Flower classifier with offloading support • TC hardware offload

Table 7 - Changes and New Features

Feature/Change	Description
rdma	Expand raw packet capabilities
IPoIB	Driver update
Soft-RoCE	Soft-RoCE driver
OVS	<ul style="list-style-type: none">• Kernel support for OVS offload as part of Mellanox' ASAP^2 Direct product (requires OVS userspace as well).• HW offload and VXLAN capabilities to TC. Now it is possible to configure HW rules through TC and have HW offload for any application on top of TC.

3 Known Issues

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

Table 8 - Known Issues (Sheet 1 of 2)

Internal Ref.	RedHat Ref.	Description
1646807	1615865	Description: Due to a missing kernel support, creating 127 VFs on a ConnectX-5 adapter card fails. The failure may occur even with lower number of VFs (higher than 60).
		Workaround: N/A
		Keywords: ConnectX-5, VFs
831038	-	Description: On rare occasions, under heavy traffic and loading/unloading the mlx4_en, mlx4_ib and ml4_core drivers may cause VPD access failure.
		Workaround: N/A
		Keywords: mlx4, Firmware
-	1189428	Description: kdump over mlx5 driver is not supported. However, it is supported on Ethernet interfaces but it requires preserving enough memory to support it.
		Workaround: As kdump is supported on Ethernet interfaces, make sure to preserve enough memory by adding <code>crashkernel=512M</code> to the kernel command line.
		Keywords: kdump, mlx5
-	-	Description: Atomic Operations in Connect-IB® are limited on little-endian machines (e.g. x86).
		Workaround: N/A
		Keywords: Atomic Operations in Connect-IB®
-	1371075	Description: When booting with ConnectX®-4 NIC, kernel oops related to the mlx5 drivers might occur.
		Workaround: Update firmware to 12.12.1010 and newer. The last firmware GA can be found: http://www.mellanox.com/page/firmware_table_ConnectX4IB
		Keywords: ConnectX®-4, firmware
-	1177729 / 1252687	Description: ConnectX®-2 Ethernet VF cannot be attached to the guest.
		Workaround: N/A
		Keywords: ConnectX®-2

Table 8 - Known Issues (Sheet 2 of 2)

Internal Ref.	RedHat Ref.	Description
1063787 / 1063314 / 1062945	1462242 / 1461961	Description: Open vSwitch hardware offloads is partially supported.
		Workaround: N/A
		Keywords: mlx5, Open vSwitch
1045713	1460489	Description: ConnectX®-4 100GbE Multi-thread TCP throughput performance degradation might occur.
		Workaround: N/A
		Keywords: ConnectX®-4, performance, TCP throughput
1034905	-	Description: Occasionally running <code>ibv_asyncwatch</code> and performing firmware error simultaneously, may cause kernel crash on ConnectX®-3/ConnectX®-3 Pro adapters.
		Workaround: N/A
		Keywords: ConnectX®-3, firmware error
-	1450329	Description: Occasionally, under special circumstances, Virtual Function can be removed.
		Workaround: N/A
		Keywords: mlx5, SR-IOV
-	1460579	Description: Bond creation on mlx4 Virtual Function interfaces might fail with error -524.
		Workaround: N/A
		Keywords: mlx4, SR-IOV
-	1462591	Description: InfiniBand mlx5 SR-IOV is not supported using OpenSM.
		Workaround: Use the SM on the Mellanox Switch/UFM/mlnx_opensm
		Keywords: mlx5, SR-IOV, OpenSM