



# Red Hat Enterprise Linux (RHEL) 7.4-ALT Driver Release Notes

---

RHEL 7.4-ALT

## NOTE:

THIS HARDWARE, SOFTWARE OR TEST SUITE PRODUCT ("PRODUCT(S)") AND ITS RELATED DOCUMENTATION ARE PROVIDED BY MELLANOX TECHNOLOGIES "ASIS" 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 NON-INFRINGEMENT 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 2017. Mellanox Technologies Ltd. All Rights Reserved.

Mellanox®, Mellanox logo, Accelio®, BridgeX®, CloudX logo, CompustorX®, Connect-IB®, ConnectX®, CoolBox®, CORE-Direct®, EZchip®, EZchip logo, EZappliance®, EZdesign®, EZdriver®, EZsystem®, GPUDirect®, InfiniHost®, InfiniBridge®, InfiniScale®, Kotura®, Kotura logo, Mellanox CloudRack®, Mellanox CloudXMellanox®, Mellanox Federal Systems®, Mellanox HostDirect®, Mellanox Multi-Host®, Mellanox Open Ethernet®, Mellanox OpenCloud®, Mellanox OpenCloud Logo®, Mellanox PeerDirect®, Mellanox ScalableHPC®, Mellanox StorageX®, Mellanox TuneX®, Mellanox Connect Accelerate Outperform logo, Mellanox Virtual Modular Switch®, MetroDX®, MetroX®, MLNX-OS®, NP-1c®, NP-2®, NP-3®, NPS®, Open Ethernet logo, PhyX®, PlatformX®, PSIPHY®, SiPhy®, StoreX®, SwitchX®, Tiler®, Tiler logo, TestX®, TuneX®, The Generation of Open Ethernet logo, UFM®, Unbreakable Link®, Virtual Protocol Interconnect®, Voltaire® and Voltaire logo are registered trademarks of Mellanox Technologies, Ltd.

All other trademarks are property of their respective owners.

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

## Table of Contents

<b>Table of Contents</b> .....	<b>3</b>
<b>List Of Tables</b> .....	<b>4</b>
<b>Chapter 1 Overview</b> .....	<b>5</b>
1.1 Supported HCAs Firmware Versions .....	5
1.2 SR-IOV Support .....	6
1.3 RoCE Support .....	6
1.4 VXLAN Support .....	6
1.5 Open vSwitch Hardware Offloads Support .....	6
<b>Chapter 2 Changes and New Features</b> .....	<b>7</b>
<b>Chapter 3 Known Issues</b> .....	<b>8</b>

## List Of Tables

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

# 1 Overview

These are the release notes of Red Hat Enterprise Linux (RHEL) 7.4-ALT Driver for Arm and PPC architectures tested on IBM-Power8 and Cavium-Arm.

This document provides instructions on drivers for Mellanox Technologies ConnectX® based adapter cards with Red Hat Enterprise Linux (RHEL) 7.4-ALT 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"> <li>InfiniBand: SDR, QDR, FDR, FDR10, EDR</li> <li>Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE<sup>a</sup>, and 100GigE</li> </ul>	mlx5_core (includes the ETH functionality as well), mlx5_ib
ConnectX®-4	<ul style="list-style-type: none"> <li>Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE<sup>a</sup>, and 100GigE</li> </ul>	mlx5_core (includes the ETH functionality as well), mlx5_ib
ConnectX®-4 Lx	<ul style="list-style-type: none"> <li>Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, and 50GigE</li> </ul>	mlx5_core (includes the ETH functionality as well)
Connect-IB®	<ul style="list-style-type: none"> <li>InfiniBand: SDR, QDR, FDR10, FDR</li> </ul>	mlx5_core, mlx5_ib
ConnectX®-3/ ConnectX®-3 Pro	<ul style="list-style-type: none"> <li>InfiniBand: SDR, QDR, FDR10, FDR</li> <li>Ethernet: 10GigE, 40GigE and 56GigE<sup>a</sup></li> </ul>	mlx4_core, mlx4_en, mlx4_ib
ConnectX®-2	<ul style="list-style-type: none"> <li>InfiniBand: SDR, DDR</li> <li>Ethernet: 10GigE, 20GigE</li> </ul>	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-ALT 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	16.21.1000	N/A
ConnectX®-4 Lx	14.21.1000	N/A
ConnectX®-4	12.21.1000	N/A
ConnectX®-3 Pro	2.42.5000	N/A
ConnectX®-3	2.42.5000	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 <sup>a</sup>
mlx5_core (includes ETH functionality), mlx5_ib	Technical Preview <sup>a</sup>

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 <sup>a</sup>

a. Technical Preview is not fully supported production feature.

## 2 Changes and New Features

**Table 7 - Changes and New Features**

Driver	Feature/Change	Description
mlx5	On Demand Paging	Added On-Demand-Paging (ODP), a technique to alleviate much of the shortcomings of memory registration.
	Support 4K User Access Regions (UAR)	Allows a more efficient use of device memory mapped I/O as UAR (User Access Region) Each process requires an area from the device memory in order to trigger operations on the device such as sending a message to the wire. This area is taken from the memory covered by BAR0-1 of the device. This kind of memory is called UAR. This feature will make more efficient use of this area allowing more processes to run concurrently. The effect is especially significant on PPC machines since they use 64KB for a system page.
	SR-IOV Bandwidth Share for Ethernet/RoCE	Added the ability to guarantee the minimum rate of a certain VF in SR-IOV mode.

### 3 Known Issues

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

**Table 8 - Known Issues**

Internal Ref.	Bugzilla Ref.	Description
1110158	-	<b>Description:</b> NVMe IO may fail due to a block layer merge BIOS that does not comply to the virtual boundary.
		<b>Workaround:</b> Disable all merge tries, run "echo 2 > /sys/block/<dev>/queue/nomerges".
		<b>Keywords:</b> mlx5, NVMe
1081902	1468598	<b>Description:</b> When using a large block size (over 1G) iSER, memreg may fail and cause an IO error.
		<b>Workaround:</b> N/A
		<b>Keywords:</b> mlx5, iSER