NVIDIA DOCA

Release Notes

MLNX-15-060462 _v2.0.2 | June 2023

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Chapter 1. Introduction

DOCA 2.0.2 is the first DOCA version to support NVIDIA® BlueField®-3 DPU. It also natively supports BlueField-2 DPUs.

With the addition of a data-path acceleration (DPA) engine to BlueField-3, DOCA 2.0.2 supports FlexIO SDK and DPA SDK.

Chapter 2. New Features, Updates, and Enhancements

General

- Added DOCA support for BlueField-3 DPUs

> DOCA version 2.0.2 supports both BlueField-3 and BlueField-2 DPUs.

- Added beta-level support for Data Path Accelerator (DPA) SDK
- Added support for IPsec library in the DOCA for ConnectX package
- Added new GPUNetIO DOCA library
- Added support for VirtIO full emulation with Live Migration on BlueField-3
- Added DOCA support for openEuler OS on the DPU Arm
- BlueField official OS is Ubuntu 22.04
- May 18, 2023 – BlueField-3 tuning update for power and performance
- June 20, 2023 – BlueField-3 tuning update for power and performance

> Important: Make sure to deploy the latest installation files in your environment. Notice the updates to the packages listed under the "Installation Files" section in the NVIDIA DOCA Installation Guide for Linux. Please see the versions of the updated DOCA software components under section Embedded Software Components.

Services

- New DOCA UCC Service (NGC collection): DPU offload of collective communication to the DPU Arm cores

> Contact your NVIDIA representative for details and access.

Enhancements

- Incorporated DOCA Samples into their respective programming guides

Chapter 3. Installation Notes

Refer to the NVIDIA DOCA Installation Guide for Linux for information on:

- Setting up NVIDIA DOCA SDK on your BlueField DPU
- Supported BlueField platforms

3.1. Embedded Software Components

Component	Version
BlueField-3 firmware	32.37.1300
BlueField-2 firmware	24.37.1300
ATF	v2.2(release):4.0.3-3-g886241c
UEFI	4.0.3-1-g2162ecf
doca_apps	2.0.2027-1
doca_grpc	2.0.2027-1
doca_libs	2.0.2027-1
doca-base	23.04-0.5.3.0
MFT	4.24.0-72
MLNX_DPDK	22.11.1.4.2
SPDK	23.01-6
mlx-regex	1.2-ubuntu1
virtio-net-controller	1.5.18-1
collectx-clxapi	1.13.2
libvma	9.8.20-1
SNAP	4.1.0
mlnx-libsnap	1.5.2-5
flexio	23.4.1494-0
dpacc	1.4.0
ucx	1.15.0-1.2304052
GPUNetIO	2.0.2027-1
rxp-compiler	23.04.1
rxpbench	23.04.0

Component	Version
Rivermax	1.30.16

3.2. DOCA Packages

Device	Component	Version	Description
Host	DOCA SDK	2.0.2	Software development kit package for developing host software
	DOCA Runtime	2.0.2	Runtime libraries required to run DOCA-based software applications on host
	DOCA Tools	2.0.2	Tools for developers and administrators on host
	Arm emulated (QEMU) development container	4.0.3	Linux-based BlueField Arm emulated container for developers
Target BlueField-2 DPU (Arm)	BlueField BSP	4.0.3	BlueField image and firmware
	DOCA SDK	2.0.2	Software development kit packages for developing Arm software
	DOCA Runtime	2.0.2	Runtime libraries requied to run DOCA-based software applications on Arm
	DOCA Tools	2.0.2	Tools for developers and administrators for Arm target

3.3. Supported Operating System Distributions

The default operating system of the BlueField DPU (Arm) is Ubuntu 22.04.

The supported operating systems on the host machine are the following:

Note: Only the following generic kernel versions are supported for DOCA local repo package for host installation (whether by SDKM or manually).

Host Operation System	Kernel Support	Arch Support
CentOS 7.6	4.14.0-115.el7a.aarch64	aarch64
	3.10.0-957.el7.x86_64	x86
CentOS 8.0	4.18.0-80.el8.x86_64	
CentOS 8.2	4.18.0-193.el8.x86_64	
RHEL 7.6	3.10.0-957.el7.x86_64	
RHEL 8.0	4.18.0-80.el8.x86_64	
RHEL 8.2	4.18.0-193.el8.x86_64	
Rocky 8.6	4.18.0-372.41.1.el8.x86_64	
Ubuntu 18.04	4.15.0-20-generic	
Ubuntu 20.04	5.4.0-26-generic	
Ubuntu 22.04	5.15.0-52-generic	
Debian 10.8	4.19.0-14-amd64	
Windows	DOCA support for Windows is on DOCA's future roadmap. For Windows driver support, refer to WinOF-2 Release Notes.	

Chapter 4. Technical Support

Customers who purchased NVIDIA products directly from NVIDIA are invited to contact us through the following methods:

- E-mail: enterprisesupport@nvidia.com
- Enterprise Support page: https://www.nvidia.com/en-us/support/enterprise

Customers who purchased NVIDIA M-1 Global Support Services, please see your contract for details regarding Technical Support.

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Chapter 5. Known Issues

The following table lists the known issues and limitations for this release of DOCA SDK.

Reference	Description
3444073	Description: `mlxfwreset` is not supported in this release.
	Workaround: Power cycle the host.
	Keyword: mlxfwreset; support
	Reported in version: 2.0.2
3448841	Description: While running CentOS 8.2, switchdev Ethernet DPU runs in "shared" RDMA net namespace mode instead of "exclusive".
	Workaround: Use `ib_core` module parameter `netns_mode=0`. For example: `echo "options ib_core netns_mode=0" >> /etc/modprobe.d/mlnx-bf.conf`
	Keyword: RDMA; isolation; Net NS
	Reported in version: 2.0.2
3365363	Description: On BlueField-3, when booting virtio-net emulation device using a GRUB2 bootloader, the bootloader may attempt to close and re-open the virtio-net device. This can result in unexpected behavior and possible system failure to boot.
	Workaround: N/A
	Keyword: BlueField-3; virtio-net; UEFI
	Reported in version: 2.0.2
3232444	Description: After live migration of virtio-net devices using the VFE driver, the `max_queues_size` output from the `virtnet list` may be wrong. This does not affect the actual value.
	Workaround: N/A
	Keyword: Virtio-net; live migration
	Reported in version: 2.0.2
3454119	Description: When retrieving `rdma_read` result, the `data_len` field of the destination buffers may be updated to an incorrect length.
	Workaround: To avoid the bug, when constructing the destination buffers, make sure the data segment end is aligned with the end of the buffer. To fix the issue after it has occurred, after the job is complete, reset the `data_len` of each of the destination buffers to its value before the job was submitted.
	Keyword: RDMA
	Reported in version: 2.0.2

Reference	Description
3259805	Description: Following many power cycles on the BlueField DPU, the virtio-net controller may fail to start with the error `failed to register epoll` in the log.
	Workaround: Restart the controller service.
	Keyword: Virtio-net; power cycle; epoll
	Reported in version: 2.0.2
3448228	Description: On virtio-net devices with LSO enabled, bogus packets may be captured on the SF representor when running heavy `iperf` traffic.
	Workaround: Disable TSO.
	Keyword: Virtio-net; iperf
	Reported in version: 2.0.2
3373849	Description: Different OVS-based packages can include their own systemd services which prevents `/sbin/mlnx_bf_configure` from identifying the right one.
	Workaround: Use a specific service name in `/sbin/mlnx_bf_configure`.
	Keyword: OVS; systemd
	Reported in version: 2.0.2
2706803	Description: When an NVMe controller, SoC management controller, and DMA controller are configured, the maximum number of VFs is limited to 124.
	Workaround: N/A
	Keyword: VF; limitation
	Reported in version: 2.0.2
3380260	Description: Double encryption (running the script twice to encrypt without destroying in between) causes revert failures.
	Workaround: N/A
	Keyword: IPsec; east-west-overlay-encryption
	Reported in version: 2.0.2
3380586	Description: Public key acceleration is not enabled on OpenEuler BFB due to missing configurations in the `openssl.cnf` file.
	Workaround: N/A
	Keyword: PKA; OpenSSL
	Reported in version: 2.0.2
3273435	Description: Changing the mode of operation between NIC and DPU modes results in different capabilities for the host driver which might cause unexpected behavior.
	Workaround: Reload the host driver or reboot the host.
	Keyword: Modes of operation; driver
	Reported in version: 2.0.2
3440413	Description: DOCA Graph does not work if the first (root) node is of user-data type.
	Workaround: N/A
	Keyword: Graph; core; failure
	Reported in version: 2.0.2

Reference	Description
3438222	Description: On BlueField DPU running Rocky, openEuler or Centos8.2 with default huge page size not equal to 2M, rxpbench fails to initialize as no mounted `hugetlbfs` is found for the 2M size.
	Workaround: N/A
	Keyword: rxpbench
	Reported in version: 2.0.2
3438248	Description: `dev_rep` API running on the host side sometimes returns `DOCA_ERROR_INVALID_INPUT` instead of `DOCA_ERROR_NOT_SUPPORTED`.
	Workaround: N/A
	Keyword: `dev_rep`; API; error
	Reported in version: 2.0.2
3377199	Description: After installing OpenEuler 20.03sp1 BFB, the 2nd port may raise configured with legacy mode.
	Workaround: Reboot the DPU.
	Keyword: OpenEuler; legacy
	Reported in version: 2.0.2
3362822	Description: Running the gRPC firewall application in interactive mode and trying to add and remove the same entry leads to a failure on the server side which severs the connection to the server.
	Workaround: N/A
	Keyword: gRPC; firewall; interactive; connection
	Reported in version: 2.0.2
3275690	Description: To install DOCA on an Ubuntu 22.04 host, use the following command: `apt-get install doca-runtime doca-sdk doca-tools openvswitch-switch -y`
	Workaround: N/A
	Keyword: Installation; Ubuntu 22.04; OVS; openvswitch-switch
	Reported in version: 1.5.1
3274589	Description: Comm channel fails to initiated in Rocky Linux.
	Workaround: N/A
	Keyword: Comm channel; Rocky
	Reported in version: 1.5.1

3264749	Description: In Rocky and CentOS 8.2 inbox-kernel BFBs, RegEx requires the following extra huge page configuration for it to function properly:
	`sudo hugeadm --pool-pages-min DEFAULT:2048M`
	`sudo systemctl start mlx-regex.service`
	`systemctl status mlx-regex.service`
	If these commands have executed successfully you should see `active (running)` in the last line of the output.

	Workaround: N/A
	Keyword: RegEx; hugepages
	Reported in version: 1.5.1

Reference	Description
3240153	Description: DOCA kernel support only works on a non-default kernel.
	Workaround: N/A
	Keyword: Kernel
	Reported in version: 1.5.0
3217627	Description: The `doca_devinfo_rep_list_create` API returns success on the host instead of `Operation not supported`.
	Workaround: N/A
	Keyword: DOCA core; InfiniBand
	Reported in version: 1.5.0

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