



NVIDIA DOCA Tools

Overview

Table of Contents

Chapter 1. Introduction.....	1
Chapter 2. DOCA Tools.....	2
2.1. Comm Channel Admin Tool.....	2
2.2. DPA HART Management Tool.....	2
2.3. DPACC Compiler.....	2
2.4. DPI Compiler.....	2
2.5. FlexIO Build.....	3
2.6. RXP Compiler.....	3
2.7. RXPBench.....	3
2.8. Socket Relay.....	3

Chapter 1. Introduction

DOCA tools are a set of executables/scripts that are needed to produce inputs to some of the DOCA libraries and applications.

All tools are installed with DOCA, as part of the `doca-tools` package, and can either be directly accessed from the terminal or can be found at `/opt/mellanox/doca/tools`. Refer to [NVIDIA DOCA Installation Guide for Linux](#) for more information.

List of tools for both the host and the NVIDIA® BlueField® DPU:

- ▶ DPI compiler
- ▶ RXP compiler (rxpc)
- ▶ RXPBench

Chapter 2. DOCA Tools

2.1. Comm Channel Admin Tool

CLI name: `doca_comm_channel_admin_tool`

The Comm Channel Admin Tool is used to monitor Comm Channel services and connections on both the DPU and the host.

2.2. DPA HART Management Tool

CLI name: `dpahartmgmt`

The DPA HART management tool allows users to manage the DPA's HARTs which are the basic resource of the DPA. The tool enables the resource control of HARTs to optimize the usage of computation resources of the DPA. Using this tool, users may query, create, and destroy HART partitions and groups, thus ensuring proper HART allocation between devices.

2.3. DPACC Compiler

CLI name: `dpacc`

DPACC is a high-level compiler for the DPA processor. It compiles code targeted for the DPA processor into an executable and generates a DPA program.

The DPA program is a host library with interfaces encapsulating the DPA executable. This DPA program can be linked with the host application to generate a host executable where the DPA code is invoked through the FlexIO runtime API.

2.4. DPI Compiler

CLI name: `doca_dpi_compiler`

This tool is used to create one of the necessary inputs to the DOCA DPI library.

The DPI compiler is used to compile a signature file which is loaded into the BlueField RegEx HW accelerator using a dedicated API (`doca_dpi_load_signatures(cdo_file)`). The output for the DPI compiler is a JSON-based CDO file.

2.5. FlexIO Build

CLI name: `build_flexio_device`

The FlexIO Build tool is used to build and compile FlexIO device code into a static library. It is designed to generate a host library that encapsulating DPA execution. This tool relies on DPACC.

2.6. RXP Compiler

CLI name: `rxpc`

This tool is used to generate a ROF file that can be used by a customer application to program the NVIDIA® RXP® accelerator rules memories.

The RXP compiler is used to compile RegExes into RXP Object Format (ROF) to be executed on the RXP accelerator.

The DOCA RegEx library can be used to load the binary ROF file into the RXP.

2.7. RXPBench

CLI name: `rxpbench`

RXPBench is a tool that allows performance comparison between the NVIDIA® RXP® hardware RegEx acceleration engine, found in the NVIDIA® BlueField® DPU, and the Intel® Hyperscan software library. It provides a comprehensive set of options and facilitates ingress of data from live network ports or previously recorded PCAP files.

It is designed to provide a real-world comparison of these technologies and present the results customers could expect to receive after implementing either technology in their products.

2.8. Socket Relay

CLI name: `doca_socket_relay`

DOCA Socket Relay allows Unix Domain Socket (AF_UNIX family) server applications to be offloaded to the DPU while communication between the two sides is proxied by DOCA Comm Channel.

Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. NVIDIA Corporation nor any of its direct or indirect subsidiaries and affiliates (collectively: "NVIDIA") make no representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assume no responsibility for any errors contained herein. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any Material (defined below), code, or functionality.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice.

Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer ("Terms of Sale"). NVIDIA hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the NVIDIA product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.

NVIDIA products are not designed, authorized, or warranted to be suitable for use in medical, military, aircraft, space, or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death, or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer's own risk.

NVIDIA makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer's sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer's product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this document. NVIDIA accepts no liability related to any default, damage, costs, or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this document or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this document. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA.

Reproduction of information in this document is permissible only if approved in advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.

Trademarks

NVIDIA, the NVIDIA logo, and Mellanox are trademarks and/or registered trademarks of Mellanox Technologies Ltd. and/or NVIDIA Corporation in the U.S. and in other countries. The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a world-wide basis. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2023 NVIDIA Corporation & affiliates. All rights reserved.