



NVIDIA DOCA RegEx

Sample Guide

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Chapter 1. Introduction

BlueField DPU supports high-speed hardware regular expression (RegEx) acceleration. This allows accelerating different security and networking applications which require RegEx processing.

This document describes RegEx samples based on the DOCA RegEx library. These samples illustrate how to use the DOCA RegEx API to configure, send, and receive data buffers to and from the BlueField RegEx engine. Processing the data to detect matches requires compilation of regular expressions rules file. The compiled file (.ROF2) is loaded to the RegEx engine using DOCA RegEx APIs.

For more information about DOCA RegEx library, refer to [NVIDIA DOCA RegEx Programming Guide](#).

Chapter 2. Dependencies

N/A

Chapter 3. Prerequisites

Developing an application that leverages the RegEx engine requires pre-run setup:

1. Allocate hugepages:

```
echo 2048 > /sys/kernel/mm/hugepages/hugepages-2048kB/nr_hugepages
```

2. Make sure the RegEx engine is active:

```
systemctl status mlx-regex
```

If the status is inactive (Active: failed), run:

```
systemctl start mlx-regex
```

To run the application, the RegEx compiled rule file (.rof2.binary) must be supplied with it. To compile the sample rules file, run:

```
cd /opt/mellanox/doca/samples/doca_regex/<sample_name>/  
rxpc -f <rules_file_name>.txt -p 0.01 -o /tmp/sample_regex_rules
```



Note: For more information, refer to [NVIDIA RXP Compiler](#).

Chapter 4. Samples

4.1. RegEx Scan

This sample illustrates how to scan data to find matches according to regular expression patterns.

The sample logic includes:

1. Accepting RegEx rules file path and data to scan.
2. Configuring DOCA RegEx device (loading compiled rules, mempool allocation, etc.) to enable RegEx engine to receive jobs.
3. Splitting the user data to 6 chunks.
4. Sending the chunks to RegEx engine, each chunk is a RegEx job.
5. HW scanning data and returning a list of matches.
6. Reporting the results.

References:

- ▶ `/opt/mellanox/doca/samples/doca_regex/regex_scan/regex_scan.c`
- ▶ `/opt/mellanox/doca/samples/doca_regex/regex_scan/regex_rules.txt`
- ▶ `/opt/mellanox/doca/samples/doca_regex/regex_scan/data_to_scan.txt`

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