DPDK
DATA PLANE DEVELOPMENT KIT

REGEX Device Drivers

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The following are a list of RegEx (Regular Expression) device drivers, which can be used from an application through RegEx API.

OVERVIEW OF REGEX DRIVERS FEATURES

This section explains the supported features that are listed in the table below.

Cross buffer Support cross buffer detection.

PCRE start anchor Support PCRE start anchor.

PCRE atomic grouping Support PCRE atomic grouping.

PCRE back reference Support PCRE back regerence.

PCRE back tracking ctrl Support PCRE back tracking ctrl.

PCRE call outs Support PCRE call outes.

PCRE forward reference Support Forward reference.

PCRE greedy Support PCRE greedy mode.

PCRE match all Support PCRE match all.

PCRE match as end Support match as end.

PCRE match point rst Support PCRE match point reset directive.

PCRE New line conventions Support new line conventions.

PCRE new line SEQ Support new line sequence.

PCRE look around Support PCRE look around.

PCRE possessive qualifiers Support PCRE possessive qualifiers.

PCRE subroutine references Support PCRE subroutine references.

PCRE UTF 8 Support UTF-8.

PCRE UTF 16 Support UTF-16.

PCRE UTF 32 Support UTF-32.

PCRE word boundary Support word boundaries.

Run time compilation Support compilation during run time.

Armv8 Support armv8 (64bit) architecture.

x86 Support x86 architecture.

Note: Most of the features capabilities should be provided by the drivers via the RegEx `info_get` operation.

REFERENCES

- PCRE: PCRE pattern man page

FEATURES TABLE

Table 3.1: Features availability in regex drivers

Feature	m l x 5
Cross buffer	
PCRE start anchor	
PCRE atomic grouping	
PCRE back reference	
PCRE back tracking ctrl	
PCRE call outs	
PCRE forward reference	
PCRE greedy	
PCRE match all	
PCRE match as end	
PCRE match point rst	
PCRE New line conventions	
PCRE new line SEQ	
PCRE look around	
PCRE possessive qualifiers	
PCRE subroutine references	
PCRE UTF 8	
PCRE UTF 16	
PCRE UTF 32	
PCRE word boundary	
Run time compilation	
Armv8	Y
x86	Y

Note: Features marked with "P" are partially supported. Refer to the appropriate driver guide in the following sections for details.

MLX5 REGEX DRIVER

The MLX5 RegEx (Regular Expression) driver library (**librte_pmd_mlx5_regex**) provides support for **Mellanox BlueField 2** families of 25/50/100/200 Gb/s adapters.

4.1 Design

This PMD is configuring the RegEx HW engine. For the PMD to work, the application must supply a precompiled rule file in rof2 format.

The PMD uses libibverbs and libmlx5 to access the device firmware or directly the hardware components. There are different levels of objects and bypassing abilities to get the best performances:

- Verbs is a complete high-level generic API
- Direct Verbs is a device-specific API
- DevX allows to access firmware objects

Enabling librte_pmd_mlx5_regex causes DPDK applications to be linked against libibverbs.

Mellanox mlx5 pci device can be probed by number of different pci devices, for example net / vDPA / RegEx. To select the RegEx PMD class=regex should be specified as device parameter. The RegEx device can be probed and used with other Mellanox devices, by adding more options in the class. For example: class=net:regex will probe both the net PMD and the RegEx PMD.

4.2 Supported NICs

- Mellanox® BlueField 2 SmartNIC

4.3 Prerequisites

- BlueField 2 running Mellanox supported kernel.
- Enable the RegEx capabilities using system call from the BlueField 2.
- Official support is not yet released.

4.3.1 Run-time configuration

- **ethtool** operations on related kernel interfaces also affect the PMD.