NVIDIA DOCA Arg Parser

Programming Guide

MLNX-15-060520 _v2.2.1 | October 2023

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Chapter 1. Introduction

The Arg Parser module makes it simple to create a user command-line interface to supply program arguments. The module supports both regular command-line arguments and flags from a JSON file.

It also creates help and usage messages for all possible flags when the user provides invalid inputs to the program.

General notes about DOCA Arg Parser:

- Arg Parser checks a variety of errors including invalid arguments and invalid types, and it prints the error along with program usage and exits when it encounters an error
- The module uses long flags as JSON keys
- The options `-j` and `--json` are reserved for Arg Parser JSON and cannot be used

Chapter 2. API

For the library API reference, refer to ARGP API documentation in NVIDIA DOCA Libraries API Reference Manual.

Note: The pkg-config (`*.pc` file) for the Arg Parser library is included in DOCA's regular definitions (i.e., `doca`).

The following sections provide additional details about the library API.

2.1. doca_argp_param

The data structure contains the program flag details needed to process DOCA ARGP. These details are used to identify if the user inserts the flag in the command line, generate usage information for the flag, notify the program in case of matching, etc.

```
struct doca_argp_param;
```

2.2. doca_argp_param_create

Creates a DOCA ARGP parameter instance. The user is required to update the param attributes by calling the respective setter functions and registering the param by calling `doca_argp_register_param()`.

```
doca_error_t doca_argp_param_create(struct doca_argp_param **param);
```

Where:

- `param [out]` – DOCA ARGP param structure with unset attributes

2.3. doca_argp_register_param

Calling this function registers program flags in the Arg Parser database. The registration includes flag details. Those details are used to parse the input arguments and generate usage print. The user must register all program flags before calling `doca_argp_start()`.

```
doca_error_t doca_argp_register_param(struct doca_argp_param *input_param);
```

Where:

- `input_param [in]` – program flag details

2.4. doca_argp_set_dpdk_program

Marks the programs as a DPDK program. Once ARGP is finished with the parsing, DPDK (EAL) flags are forwarded to the program by calling the given callback function.

```
void doca_argp_set_dpdk_program(dpdk_callback callback);
```

Where:

- `callback [in]` – callback function to handle DPDK (EAL) flags

2.5. doca_argp_start

Calling this function starts the classification of command-line mode or JSON mode and is responsible for parsing DPDK flags if needed. If the program is triggered with a JSON file, the DPDK flags are parsed from the file and constructed in the correct format. DPDK flags are forwarded back to the program by calling the registered callback.

```
doca_error_t doca_argp_start(int argc, char **argv);
```

Where:

- `argc [in]` - number of input arguments
- `argv [in]` - program command-line arguments

Chapter 3. DPDK Flags

The following table lists the supported DPDK flags:

Short Flag	Long Flag/ JSON Key	Flag Description	JSON Content	JSON Content Description

a	devices	Add a PCIe device to the list of devices to probe	<pre>"devices": [
			{
			"device": "regex",
			"id": "03:00.0"
			},
			{
			"device": "sf",
			"id": "4",
			"sft": true
			},
			{
			"device": "sf",
			"id": "5",
			"hws": true
			},
			{
			"device": "vf",
			"id": "b1:00.3"
			},
			{
			"device": "pf",
			"id": "03:00.0",
			"sft": true
			},
			{
			"device": "gpu",
			"id": "06:00.0"
			}</pre>
				Passing configuration for six devices:
				1. RegEx device with PCIe address 03:00.0.
				2. SF device with number 4, SFT enabled.
				3. SF device with number 5, HW steering enabled.
				4. VF device with PCIe b1:00.3.
				5. PF device with PCIe address 03:00.0, SFT enabled.
				6. GPU device with PCIe address 06:00.0.

Short Flag	Long Flag/ JSON Key	Flag Description	JSON Content	JSON Content Description
			]	
c	core-mask	Hexadecimal bitmask of cores to run on	"core-mask": "0xff"	Set core mask with value 0xff
l	core-list	List of cores to run on	"core-list": "0-4"	Limit program to use five cores (core-0 to core-4)

Note: Additional DPDK flags may be added in the "flags" JSON field.

Chapter 4. DOCA General Flags

The following table lists the supported DOCA general flags:

Short Flag	Long Flag/ JSON Key	Flag Description	JSON Content	JSON Content Description
l	log-level	Sets the log level for the application: ▶ CRITICAL=20 ▶ ERROR=30 ▶ WARNING=40 ▶ INFO=50 ▶ DEBUG=60	`"log-level": 60`	Set the log level to DEBUG mode
v	version	Print program version information	N/A	Supported only on CLI
h	help	Print a help synopsis	N/A	Supported only on CLI
g	grpc-address	Set the IP address for the gRPC server Note: This flag is mandatory for gRPC mode.	`"grpc-address": "10.10.10.10"`	Set the server's IP address to 10.10.10.10
			`"grpc-address": "10.10.10.10:1234"`	Set the server's IP address to 10.10.10.10 and the server's port to 1234

Chapter 5. DOCA Program Flags

The flags for each program can be found in the document dedicated to that program, including instructions on how to run it, whether by providing a JSON file or by using the command-line interface.

Chapter 6. JSON File Example

An application JSON file can be found under `/opt/mellanox/applications/[APP name]/bin/[APP name]_params.json`.

```
{
  "doca_dpdk_flags": {
    // -a - Add a device to the allow list.
    "devices": [
      {
        "device": "sf",
        "id": "4",
        "sft": true
      },
      {
        "device": "sf",
        "id": "5",
        "sft": true
      }
    ],
    // -c - Hexadecimal bitmask of cores to run on
    "core-mask": "0xff",
    // Additional DPDK (EAL) flags (if needed)
    "flags": ""
  },
  // flags below are for URL Filter application.
  "doca_general_flags": {
    // -l - sets the log level for the application <CRITICAL=20, ERROR=30,
 WARNING=40, INFO=50, DEBUG=60>
    "log-level": 60
  },
  // flags below are for URL Filter application.
  "doca_program_flags": {
    // -p - prints FID when matched in DPI engine
    "print-match": true,

    // -a - set the regex engine pci address
    "pci-addr": "03:00.0"
  }}
```

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