NVIDIA DOCA Capabilities Print Tool

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This document provides instruction on the usage of the DOCA Capabilities Print Tool.

Introduction

This tool is used to print all the available DOCA libraries and devices. For each DOCA device, the tool prints its representor devices and the capabilities it supports in each DOCA library.

Prerequisites

DOCA 2.6.0 and higher.

Description

This tool can be executed on the host or Arm sides.

The following capabilities are supported by this tool:

- DOCA device list – print the PCIe device of every available DOCA device and its capabilities

- DOCA representor device list – for every DOCA device, print the PCIe device of every available DOCA representor device and its capabilities

- DOCA library list – print the available DOCA libraries supported by the running OS and their availability for specific OSs

- DOCA library capabilities – for every DOCA device, print the capabilities it supports in every DOCA library

Execution

- To print all the available DOCA devices and their capabilities, run:

```
/opt/mellanox/doca/tools/doca_caps --list-devs
```

ⓘ **Info**
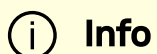
Printing the capabilities of a specific DOCA device can be done using the `--pci-addr` flag.

Example output:

```
/opt/mellanox/doca/tools/doca_caps --list-devs
PCI: 0000:03:00.0
        ibdev_name                                      mlx5_0
        iface_name                                      p0
        mac_addr
94:6d:ae:5c:9e:04
        ipv4_addr                                       0.0.0.0
        ipv6_addr
fe80:0000:0000:0000:966d:aeff:fe5c:9e04
        gid_table_size                                  255
        GID[0]
fe80:0000:0000:0000:966d:aeff:fe5c:9e04
PCI: 0000:03:00.1
        ibdev_name                                      mlx5_1
        iface_name                                      p1
        mac_addr
94:6d:ae:5c:9e:05
        ipv4_addr                                       0.0.0.0
        ipv6_addr
fe80:0000:0000:0000:966d:aeff:fe5c:9e05
        gid_table_size                                  255
        GID[0]
fe80:0000:0000:0000:966d:aeff:fe5c:9e05
PCI: 0000:03:00.0
        ibdev_name                                      mlx5_2
        iface_name
enp3s0f0s0
```

```
        mac_addr
02:c6:d0:fd:56:d7
        ipv4_addr                                   0.0.0.0
        ipv6_addr
fe80:0000:0000:0000:00c6:d0ff:fefd:56d7
        gid_table_size                              255
        GID[0]
fe80:0000:0000:0000:00c6:d0ff:fefd:56d7
PCI: 0000:03:00.1
        ibdev_name                                  mlx5_3
        iface_name
enp3s0f1s0
        mac_addr
02:b6:4f:a9:fa:9a
        ipv4_addr                                   0.0.0.0
        ipv6_addr
fe80:0000:0000:0000:00b6:4fff:fea9:fa9a
        gid_table_size                              255
        GID[0]
fe80:0000:0000:0000:00b6:4fff:fea9:fa9a
```

- To print all the available DOCA representor devices and their capabilities, run:

```
/opt/mellanox/doca/tools/doca_caps --list-rep-devs
```

ⓘ **Info**

This command is available only on the Arm side.

ⓘ **Info**

> Printing the representor list of a specific DOCA device can be done using the `--pci-addr` flag.

Example output:

```
/opt/mellanox/doca/tools/doca_caps --list-rep-devs
PCI: 0000:03:00.0
        representor-PCI: 0000:3b:00.0
                pci_func_type                                   PF
                hotplug                                         no
                vuid
MT2308XZ0BN0MLNXS0D0F0
        representor-PCI: 0000:3b:00.0
                pci_func_type                                   SF
                hotplug                                         no
                vuid
MT2308XZ0BN0ECMLNXS0D0F0SF32800
PCI: 0000:03:00.1
        representor-PCI: 0000:3b:00.1
                pci_func_type                                   PF
                hotplug                                         no
                vuid
MT2308XZ0BN0MLNXS0D0F1
        representor-PCI: 0000:3b:00.1
                pci_func_type                                   SF
                hotplug                                         no
                vuid
MT2308XZ0BN0ECMLNXS0D0F1SF32800
PCI: 0000:03:00.0
PCI: 0000:03:00.1
```

- To print all the supported DOCA libraries by the OS and their availability status, run:

```
/opt/mellanox/doca/tools/doca_caps --list-libs
```

> **ⓘ Info**
>
> Different OSs may support different DOCA libraries.

Example output:

```
/opt/mellanox/doca/tools/doca_caps --list-libs
    common                                    installed
    aes_gcm                                   installed
    apsh                                      installed
    argp                                      installed
    cc                                        installed
    comm_channel                              installed
    compress                                  installed
    dma                                       installed
    dpa                                       installed
    dpdk_bridge                               installed
    erasure_coding                            installed
    eth                                       installed
    ipsec                                     installed
    flow                                      installed
    flow_ct                                   installed
    pcc                                       installed
    rdma                                      installed
    sha                                       installed
    telemetry                                 installed
```

- To print all the capabilities for all the available libraries, that have capabilities, for every DOCA device, run:

```
/opt/mellanox/doca/tools/doca_caps
```

> ⓘ **Info**
>
> Printing the capabilities of one specific DOCA device can be done using the `--pci-addr` flag.

> ⓘ **Info**
>
> Printing the capabilities of one specific DOCA library can be done using the `--lib` flag.

Example output:

```
/opt/mellanox/doca/tools/doca_caps
PCI: 0000:03:00.0
    common
        mmap_export_pci
supported
        mmap_create_from_export_pci
supported
        hotplug_manager
unsupported
        rep_filter_all
supported
```

```
        rep_filter_net
supported
        rep_filter_emulated
unsupported
    aes_gcm
        task_encrypt
supported
        task_encrypt_get_max_iv_len                 12
        task_encrypt_tag_96
supported
        task_encrypt_tag_128
supported
        task_encrypt_128b_key
supported
        task_encrypt_256b_key
supported
        task_encrypt_max_buf_size                   2097152
        task_encrypt_max_list_buf_num_elem          128
        task_decrypt
supported
        task_decrypt_get_max_iv_len                 12
        task_decrypt_tag_96
supported
        task_decrypt_tag_128
supported
        task_decrypt_128b_key
supported
        task_decrypt_256b_key
supported
        task_decrypt_max_buf_size                   2097152
        task_decrypt_max_list_buf_num_elem          128
        max_num_tasks                               65536
    cc
        server
supported
```

```
                client
supported
        max_name_len                               120
        max_msg_size                               4080
        max_recv_queue_size                        8192
        max_send_tasks                             8192
        max_clients                                512
        consumer
supported
        consumer_max_num_tasks                     65536
        consumer_max_buf_size                      2097152
        producer
supported
        producer_max_num_tasks                     65536
        producer_max_buf_size                      2097152
    comm_channel
        max_service_name_len                       120
        max_message_size                           4080
        max_send_queue_size                        8192
        max_recv_queue_size                        8192
        service_max_num_connections                512
    compress
        task_compress_deflate
unsupported
        task_compress_deflate_get_max_buf_size     0
        task_compress_deflate_get_max_buf_list_len 0
        task_decompress_deflate
supported
        task_decompress_deflate_get_max_buf_size   2097152
        task_decompress_deflate_get_max_buf_list_len 128
        task_decompress_lz4
supported
        task_decompress_lz4_get_max_buf_size       2097152
        task_decompress_lz4_get_max_buf_list_len   128
        max_num_tasks                              65536
    dma
```

```
            task_memcpy
supported
            max_buf_size                          2097152
            max_buf_list_len                      64
            max_num_tasks                         65536
    dpa
            dpa
supported
            max_threads_per_kernel                128
            kernel_max_run_time                   12
    erasure_coding
            task_galois_mul
supported
            task_create
supported
            task_update
supported
            task_recover
supported
            max_block_size                        1048576
            max_buf_list_len                      128
    eth
            rxq_cyclic_cpu
unsupported
            rxq_cyclic_gpu
supported
            rxq_managed_mempool_cpu
unsupported
            rxq_managed_mempool_gpu
supported
            rxq_regular_cpu
unsupported
            rxq_regular_gpu
supported
            rxq_max_recv_buf_list_len             32
            rxq_max_packet_size                   16384
```

```
        rxq_max_burst_size                              32768
        txq_regular_cpu
unsupported
        txq_regular_gpu
supported
        txq_max_send_buf_list_len                       48
        txq_max_lso_header_size                         256
        txq_txq_max_lso_msg_size                        262144
        txq_l3_chksum_offload
supported
        txq_l4_chksum_offload
supported
        txq_wait_on_time_type
unsupported
    flow_ct
        flow_ct
supported
    ipsec
        task_sa_create
supported
        task_sa_destroy
supported
    nvrd_transport
        task_write
supported
        rc_max_src_buf_list_len                         0
        dc_max_src_buf_list_len                         0
    pcc
        pcc
unsupported
        pcc_np
unsupported
        min_num_threads                                 0
        max_num_threads                                 0
    rdma
```

```
        task_send
supported
        task_send_imm
supported
        task_read
supported
        task_write
supported
        task_write_imm
supported
        task_atomic_cmp_swp
supported
        task_atomic_fetch_add
supported
        task_receive
supported
        rc_transport_type
supported
        dc_transport_type
unsupported
        rc_task_receive_get_max_dst_buf_list_len      31
        dc_task_receive_get_max_dst_buf_list_len      0
        task_remote_net_sync_event_get
supported
        task_remote_net_sync_event_notify_set
supported
        task_remote_net_sync_event_notify_add
supported
        max_send_queue_size                           32768
        max_recv_queue_size                           32768
        max_send_buf_list_len                         13
        max_message_size
1073741824
    sha
        sha1
unsupported
```

```
        sha256
unsupported
        sha512
unsupported
        sha1_partial
unsupported
        sha256_partial
unsupported
        sha512_partial
unsupported
        max_list_num_elem                          0
        max_src_buf_size                           0
        sha1_min_dst_buf_size                      0
        sha256_min_dst_buf_size                    0
        sha512_min_dst_buf_size                    0
        sha1_partial_hash_block_size               0
        sha256_partial_hash_block_size             0
        sha512_partial_hash_block_size             0
PCI: 0000:03:00.1
    common
        mmap_export_pci
supported
        mmap_create_from_export_pci
supported
        hotplug_manager
unsupported
        rep_filter_all
supported
        rep_filter_net
supported
        rep_filter_emulated
unsupported
    aes_gcm
        task_encrypt
supported
        task_encrypt_get_max_iv_len                12
```

```
            task_encrypt_tag_96
supported
            task_encrypt_tag_128
supported
            task_encrypt_128b_key
supported
            task_encrypt_256b_key
supported
            task_encrypt_max_buf_size                       2097152
            task_encrypt_max_list_buf_num_elem              128
            task_decrypt
supported
            task_decrypt_get_max_iv_len                     12
            task_decrypt_tag_96
supported
            task_decrypt_tag_128
supported
            task_decrypt_128b_key
supported
            task_decrypt_256b_key
supported
            task_decrypt_max_buf_size                       2097152
            task_decrypt_max_list_buf_num_elem              128
            max_num_tasks                                   65536
    cc
            server
supported
            client
supported
            max_name_len                                    120
            max_msg_size                                    4080
            max_recv_queue_size                             8192
            max_send_tasks                                  8192
            max_clients                                     512
            consumer
supported
```

```
        consumer_max_num_tasks                          65536
        consumer_max_buf_size                           2097152
        producer
supported
        producer_max_num_tasks                          65536
        producer_max_buf_size                           2097152
    comm_channel
        max_service_name_len                            120
        max_message_size                                4080
        max_send_queue_size                             8192
        max_recv_queue_size                             8192
        service_max_num_connections                     512
    compress
        task_compress_deflate
unsupported
        task_compress_deflate_get_max_buf_size          0
        task_compress_deflate_get_max_buf_list_len      0
        task_decompress_deflate
supported
        task_decompress_deflate_get_max_buf_size        2097152
        task_decompress_deflate_get_max_buf_list_len    128
        task_decompress_lz4
supported
        task_decompress_lz4_get_max_buf_size            2097152
        task_decompress_lz4_get_max_buf_list_len        128
        max_num_tasks                                   65536
    dma
        task_memcpy
supported
        max_buf_size                                    2097152
        max_buf_list_len                                64
        max_num_tasks                                   65536
    dpa
        dpa
supported
        max_threads_per_kernel                          128
```

```
            kernel_max_run_time                              12
    erasure_coding
        task_galois_mul
supported
        task_create
supported
        task_update
supported
        task_recover
supported
        max_block_size                                   1048576
        max_buf_list_len                                 128
    eth
        rxq_cyclic_cpu
unsupported
        rxq_cyclic_gpu
supported
        rxq_managed_mempool_cpu
unsupported
        rxq_managed_mempool_gpu
supported
        rxq_regular_cpu
unsupported
        rxq_regular_gpu
supported
        rxq_max_recv_buf_list_len                        32
        rxq_max_packet_size                              16384
        rxq_max_burst_size                               32768
        txq_regular_cpu
unsupported
        txq_regular_gpu
supported
        txq_max_send_buf_list_len                        48
        txq_max_lso_header_size                          256
        txq_txq_max_lso_msg_size                         262144
```

```
        txq_l3_chksum_offload
supported
        txq_l4_chksum_offload
supported
        txq_wait_on_time_type
unsupported
    flow_ct
        flow_ct
supported
    ipsec
        task_sa_create
supported
        task_sa_destroy
supported
    nvrd_transport
        task_write
supported
        rc_max_src_buf_list_len                                0
        dc_max_src_buf_list_len                                0
    pcc
        pcc
unsupported
        pcc_np
unsupported
        min_num_threads                                        0
        max_num_threads                                        0
    rdma
        task_send
supported
        task_send_imm
supported
        task_read
supported
        task_write
supported
```

```
        task_write_imm
supported
        task_atomic_cmp_swp
supported
        task_atomic_fetch_add
supported
        task_receive
supported
        rc_transport_type
supported
        dc_transport_type
unsupported
        rc_task_receive_get_max_dst_buf_list_len        31
        dc_task_receive_get_max_dst_buf_list_len        0
        task_remote_net_sync_event_get
supported
        task_remote_net_sync_event_notify_set
supported
        task_remote_net_sync_event_notify_add
supported
        max_send_queue_size                             32768
        max_recv_queue_size                             32768
        max_send_buf_list_len                           13
        max_message_size
1073741824
    sha
        sha1
unsupported
        sha256
unsupported
        sha512
unsupported
        sha1_partial
unsupported
        sha256_partial
unsupported
```

```
          sha512_partial
unsupported
          max_list_num_elem                          0
          max_src_buf_size                           0
          sha1_min_dst_buf_size                      0
          sha256_min_dst_buf_size                    0
          sha512_min_dst_buf_size                    0
          sha1_partial_hash_block_size               0
          sha256_partial_hash_block_size             0
          sha512_partial_hash_block_size             0
PCI: 0000:03:00.0
    common
          mmap_export_pci
supported
          mmap_create_from_export_pci
supported
          hotplug_manager
unsupported
          rep_filter_all
unsupported
          rep_filter_net
unsupported
          rep_filter_emulated
unsupported
    aes_gcm
          task_encrypt
supported
          task_encrypt_get_max_iv_len                12
          task_encrypt_tag_96
supported
          task_encrypt_tag_128
supported
          task_encrypt_128b_key
supported
          task_encrypt_256b_key
supported
```

```
            task_encrypt_max_buf_size                2097152
            task_encrypt_max_list_buf_num_elem       128
            task_decrypt
supported
            task_decrypt_get_max_iv_len              12
            task_decrypt_tag_96
supported
            task_decrypt_tag_128
supported
            task_decrypt_128b_key
supported
            task_decrypt_256b_key
supported
            task_decrypt_max_buf_size                2097152
            task_decrypt_max_list_buf_num_elem       128
            max_num_tasks                            65536
      cc
            server
unsupported
            client
supported
            max_name_len                             120
            max_msg_size                             4080
            max_recv_queue_size                      8192
            max_send_tasks                           8192
            max_clients                              0
            consumer
supported
            consumer_max_num_tasks                   65536
            consumer_max_buf_size                    2097152
            producer
supported
            producer_max_num_tasks                   65536
            producer_max_buf_size                    2097152
      comm_channel
            max_service_name_len                     120
```

```
        max_message_size                              4080
        max_send_queue_size                           8192
        max_recv_queue_size                           8192
        service_max_num_connections                   0
    compress
        task_compress_deflate
unsupported
        task_compress_deflate_get_max_buf_size        0
        task_compress_deflate_get_max_buf_list_len    0
        task_decompress_deflate
supported
        task_decompress_deflate_get_max_buf_size      2097152
        task_decompress_deflate_get_max_buf_list_len  128
        task_decompress_lz4
supported
        task_decompress_lz4_get_max_buf_size          2097152
        task_decompress_lz4_get_max_buf_list_len      128
        max_num_tasks                                 65536
    dma
        task_memcpy
supported
        max_buf_size                                  2097152
        max_buf_list_len                              64
        max_num_tasks                                 65536
    dpa
        dpa
supported
        max_threads_per_kernel                        128
        kernel_max_run_time                           12
    erasure_coding
        task_galois_mul
supported
        task_create
supported
        task_update
supported
```

```
            task_recover
supported
        max_block_size                          1048576
        max_buf_list_len                        128
    eth
        rxq_cyclic_cpu
supported
        rxq_cyclic_gpu
supported
        rxq_managed_mempool_cpu
supported
        rxq_managed_mempool_gpu
supported
        rxq_regular_cpu
supported
        rxq_regular_gpu
supported
        rxq_max_recv_buf_list_len               32
        rxq_max_packet_size                     16384
        rxq_max_burst_size                      32768
        txq_regular_cpu
supported
        txq_regular_gpu
supported
        txq_max_send_buf_list_len               48
        txq_max_lso_header_size                 256
        txq_txq_max_lso_msg_size                262144
        txq_l3_chksum_offload
supported
        txq_l4_chksum_offload
supported
        txq_wait_on_time_type
unsupported
    flow_ct
        flow_ct
unsupported
```

```
        ipsec
            task_sa_create
unsupported
            task_sa_destroy
unsupported
        nvrd_transport
            task_write
supported
            rc_max_src_buf_list_len                        0
            dc_max_src_buf_list_len                        0
        pcc
            pcc
unsupported
            pcc_np
unsupported
            min_num_threads                                0
            max_num_threads                                0
        rdma
            task_send
supported
            task_send_imm
supported
            task_read
supported
            task_write
supported
            task_write_imm
supported
            task_atomic_cmp_swp
supported
            task_atomic_fetch_add
supported
            task_receive
supported
            rc_transport_type
supported
```

```
        dc_transport_type
unsupported
        rc_task_receive_get_max_dst_buf_list_len      31
        dc_task_receive_get_max_dst_buf_list_len      0
        task_remote_net_sync_event_get
supported
        task_remote_net_sync_event_notify_set
supported
        task_remote_net_sync_event_notify_add
supported
        max_send_queue_size                           32768
        max_recv_queue_size                           32768
        max_send_buf_list_len                         13
        max_message_size
1073741824
    sha
        sha1
unsupported
        sha256
unsupported
        sha512
unsupported
        sha1_partial
unsupported
        sha256_partial
unsupported
        sha512_partial
unsupported
        max_list_num_elem                             0
        max_src_buf_size                              0
        sha1_min_dst_buf_size                         0
        sha256_min_dst_buf_size                       0
        sha512_min_dst_buf_size                       0
        sha1_partial_hash_block_size                  0
        sha256_partial_hash_block_size                0
        sha512_partial_hash_block_size                0
```

```
PCI: 0000:03:00.1
    common
        mmap_export_pci
supported
        mmap_create_from_export_pci
supported
        hotplug_manager
unsupported
        rep_filter_all
unsupported
        rep_filter_net
unsupported
        rep_filter_emulated
unsupported
    aes_gcm
        task_encrypt
supported
        task_encrypt_get_max_iv_len                      12
        task_encrypt_tag_96
supported
        task_encrypt_tag_128
supported
        task_encrypt_128b_key
supported
        task_encrypt_256b_key
supported
        task_encrypt_max_buf_size                        2097152
        task_encrypt_max_list_buf_num_elem               128
        task_decrypt
supported
        task_decrypt_get_max_iv_len                      12
        task_decrypt_tag_96
supported
        task_decrypt_tag_128
supported
```

```
                task_decrypt_128b_key
supported
                task_decrypt_256b_key
supported
                task_decrypt_max_buf_size                   2097152
                task_decrypt_max_list_buf_num_elem          128
                max_num_tasks                               65536
        cc
                server
unsupported
                client
supported
                max_name_len                                120
                max_msg_size                                4080
                max_recv_queue_size                         8192
                max_send_tasks                              8192
                max_clients                                 0
                consumer
supported
                consumer_max_num_tasks                      65536
                consumer_max_buf_size                       2097152
                producer
supported
                producer_max_num_tasks                      65536
                producer_max_buf_size                       2097152
        comm_channel
                max_service_name_len                        120
                max_message_size                            4080
                max_send_queue_size                         8192
                max_recv_queue_size                         8192
                service_max_num_connections                 0
        compress
                task_compress_deflate
unsupported
                task_compress_deflate_get_max_buf_size      0
                task_compress_deflate_get_max_buf_list_len  0
```

```
            task_decompress_deflate
supported
            task_decompress_deflate_get_max_buf_size      2097152
            task_decompress_deflate_get_max_buf_list_len  128
            task_decompress_lz4
supported
            task_decompress_lz4_get_max_buf_size          2097152
            task_decompress_lz4_get_max_buf_list_len      128
            max_num_tasks                                 65536
    dma
            task_memcpy
supported
            max_buf_size                                  2097152
            max_buf_list_len                              64
            max_num_tasks                                 65536
    dpa
            dpa
supported
            max_threads_per_kernel                        128
            kernel_max_run_time                           12
    erasure_coding
            task_galois_mul
supported
            task_create
supported
            task_update
supported
            task_recover
supported
            max_block_size                                1048576
            max_buf_list_len                              128
    eth
            rxq_cyclic_cpu
supported
            rxq_cyclic_gpu
supported
```

```
        rxq_managed_mempool_cpu
supported
        rxq_managed_mempool_gpu
supported
        rxq_regular_cpu
supported
        rxq_regular_gpu
supported
        rxq_max_recv_buf_list_len                 32
        rxq_max_packet_size                       16384
        rxq_max_burst_size                        32768
        txq_regular_cpu
supported
        txq_regular_gpu
supported
        txq_max_send_buf_list_len                 48
        txq_max_lso_header_size                   256
        txq_txq_max_lso_msg_size                  262144
        txq_l3_chksum_offload
supported
        txq_l4_chksum_offload
supported
        txq_wait_on_time_type
unsupported
    flow_ct
        flow_ct
unsupported
    ipsec
        task_sa_create
unsupported
        task_sa_destroy
unsupported
    nvrd_transport
        task_write
supported
        rc_max_src_buf_list_len                   0
```

```
        dc_max_src_buf_list_len                     0
    pcc
        pcc
unsupported
        pcc_np
unsupported
        min_num_threads                             0
        max_num_threads                             0
    rdma
        task_send
supported
        task_send_imm
supported
        task_read
supported
        task_write
supported
        task_write_imm
supported
        task_atomic_cmp_swp
supported
        task_atomic_fetch_add
supported
        task_receive
supported
        rc_transport_type
supported
        dc_transport_type
unsupported
        rc_task_receive_get_max_dst_buf_list_len    31
        dc_task_receive_get_max_dst_buf_list_len    0
        task_remote_net_sync_event_get
supported
        task_remote_net_sync_event_notify_set
supported
```

```
                  task_remote_net_sync_event_notify_add
supported
          max_send_queue_size                          32768
          max_recv_queue_size                          32768
          max_send_buf_list_len                        13
          max_message_size
1073741824
     sha
          sha1
unsupported
          sha256
unsupported
          sha512
unsupported
          sha1_partial
unsupported
          sha256_partial
unsupported
          sha512_partial
unsupported
          max_list_num_elem                            0
          max_src_buf_size                             0
          sha1_min_dst_buf_size                        0
          sha256_min_dst_buf_size                      0
          sha512_min_dst_buf_size                      0
          sha1_partial_hash_block_size                 0
          sha256_partial_hash_block_size               0
          sha512_partial_hash_block_size               0
```

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