



NVIDIA DOCA App Shield

Sample Guide

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Chapter 1. Introduction

DOCA App Shield is a library for monitoring the host and authenticating the integrity of core processes.

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

Chapter 2. Dependencies

The library requires a minimum DPU firmware version of 24.32.1010.

Chapter 3. Prerequisites

Make sure to follow the stages of the library prerequisites detailed in [NVIDIA DOCA App Shield Programming Guide](#) to make sure the library could be used by the samples.

Chapter 4. Samples

4.1. Libs Get

This sample illustrates how to properly initialize DOCA App Shield and use its API to get the list of loadable libraries of a specific process.

The sample logic includes:

1. Opening DOCA device with DMA ability.
2. Creating DOCA Apsh context.
3. Setting and starting the Apsh context.
4. Opening DOCA remote PCI device via given vendor unique identifier (VUID).
5. Creating DOCA Apsh system handler.
6. Setting fields and starting Apsh system handler.
7. Getting the list of system process using Apsh API and searching for a specific process with the given PID.
8. Getting the list of process-loadable libraries using `doca_apsh_libs_get` Apsh API call.
9. Querying the libraries for 3 selected fields using `doca_apsh_lib_info_get` Apsh API call.
10. Printing libraries' attributes to the terminal.
11. Cleaning up.

References:

- ▶ `/opt/mellanox/doca/samples/doca_apsh/libs_get/libs_get.c`
- ▶ `/opt/mellanox/doca/samples/doca_apsh/apsh_common.c`; `/opt/mellanox/doca/samples/doca_apsh/apsh_common.h`

4.2. Modules Get

This sample illustrates how to properly initialize DOCA App Shield and use its API to get the list of installed modules on a monitored system.

The sample logic includes:

1. Opening DOCA device with DMA ability.

2. Creating DOCA Apsh context.
3. Setting and starting the Apsh context.
4. Opening DOCA remote PCI device via given VUID.
5. Creating DOCA Apsh system handler.
6. Setting fields and start Apsh system handler.
7. Getting the the list of system-installed modules using `doca_apsh_modules_get` Apsh API call.
8. Querying the names of modules using `doca_apsh_module_info_get` Apsh API call.
9. Printing the attributes of up to 5 moduless attributes to the terminal.
10. Cleaning up.

References:

- ▶ `/opt/mellanox/doca/samples/doca_apsh/modules_get/modules_get.c`
- ▶ `/opt/mellanox/doca/samples/doca_apsh/apsh_common.c; /opt/mellanox/doca/samples/doca_apsh/apsh_common.h`

4.3. Pslist

This sample illustrates how to properly initialize DOCA App Shield and use its API to get the list of running processes on a monitored system.

The sample logic includes:

1. Opening DOCA device with DMA ability.
2. Creating DOCA Apsh context.
3. Setting and starting the Apsh context.
4. Opening DOCA remote PCI device via given VUID.
5. Creating DOCA Apsh system handler.
6. Setting fields and starting Apsh system handler.
7. Getting the list of processes running on the system using `doca_apsh_processes_get` Apsh API call.
8. Querying the processes for 4 chosen attributes using `doca_apsh_proc_info_get` Apsh API call.
9. Printing the attributes of up to 5 processes to the terminal.
10. Cleaning up.

References:

- ▶ `/opt/mellanox/doca/samples/doca_apsh/pslist/pslist.c`
- ▶ `/opt/mellanox/doca/samples/doca_apsh/apsh_common.c; /opt/mellanox/doca/samples/doca_apsh/apsh_common.h`

4.4. Threads Get

This sample illustrates how to properly initialize DOCA App Shield and use its API to get the list of threads of a specific process.

The sample logic includes:

1. Opening DOCA device with DMA ability.
2. Creating DOCA Apsh context.
3. Setting and starting the Apsh context.
4. Opening DOCA remote PCI device via given VUID.
5. Creating DOCA Apsh system handler.
6. Setting fields and starting Apsh system handler.
7. Getting the list of system processes using Apsh API and searching for a specific process with the given PID.
8. Getting the list of process threads using `doca_apsh_threads_get` Apsh API call.
9. Querying the threads for up to 3 selected fields using `doca_apsh_thread_info_get` Apsh API call.
10. Printing thread attributes to the terminal.
11. Cleaning up.

References:

- ▶ `/opt/mellanox/doca/samples/doca_apsh/threads_get/threads_get.c`
- ▶ `/opt/mellanox/doca/samples/doca_apsh/apsh_common.c`; `/opt/mellanox/doca/samples/doca_apsh/apsh_common.h`

4.5. Vads Get

This sample illustrates how to properly initialize DOCA App Shield and use its API to get the list of virtual address descriptors (VADs) of a specific process.

The sample logic includes:

1. Opening DOCA device with DMA ability.
2. Creating DOCA Apsh context.
3. Setting and start the Apsh context.
4. Opening DOCA remote PCI device via given VUID.
5. Creating DOCA Apsh system handler.
6. Setting fields and starting Apsh system handler.
7. Getting the list of system processes using Apsh API and searching for a specific process with the given PID.
8. Getting the list of process VADs using `doca_apsh_vads_get` Apsh API call.
9. Querying the VADs for 3 selected fields using `doca_apsh_vad_info_get` Apsh API call.

10. Printing the attributes of up to 5 VADs to the terminal.

11. Cleaning up.

References:

- ▶ `/opt/mellanox/doca/samples/doca_apsh/vads_get/vads_get.c`
- ▶ `/opt/mellanox/doca/samples/doca_apsh/apsh_common.c`; `/opt/mellanox/doca/samples/doca_apsh/apsh_common.h`

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