NVIDIA DOCA Socket Relay

User Guide
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Chapter 1. Introduction

DOCA Socket Relay allows Unix Domain Socket (AF_UNIX family) server applications to be offloaded to the DPU while communication between the two sides is proxied by DOCA Comm Channel.

Socket relay only supports SOCK_STREAM communication with a limit of 512 AF_UNIX application clients.

The tool is coupled to the client AF_UNIX server application. That is, a socket relay instance should be initiated per AF_UNIX server application.
Socket relay is transparent to the application.

The following details the communication flow between the client and server:

- The AF_UNIX client application connects to the socket relay AF_UNIX server in the same way as in the original flow.
- The AF_UNIX client application sends SOCK_STREAM packets.
The socket relay (host) AF_UNIX server receives the client application packets, and the Comm Channel client sends them on the channel.

The socket relay (DPU) Comm Channel server receives the client application packets and the AF_UNIX client sends them to the user's AF_UNIX server application.
Chapter 2. Dependencies

NVIDIA® BlueField®-2 firmware version 24.35.1012 or higher.
Chapter 3. Execution

To execute DOCA Socket Relay:
Usage: doca_socket_relay [DOCA Flags] [Program Flags]

**DOCA Flags:**
- `h, --help` Print a help synopsis
- `v, --version` Print program version information
- `l, --log-level` `<CRITICAL=20, ERROR=30, WARNING=40, INFO=50, DEBUG=60>`

**Program Flags:**
- `s, --socket` Unix domain socket path, host side will bind to
- `n, --cc-name` Comm Channel service name
- `d, --dev-pci` Comm Channel DOCA device PCI address
- `r, --rep-pci` Comm Channel DOCA device representor PCI address
  (needed only on DPU)

For example (DPU side):

To run `doca_socket_relay` using a JSON file:
```
doca_socket_relay --json [json_file]
```

For example:
```
doca_socket_relay --json /tmp/doca_socket_relay.json
```
Chapter 4. Arg Parser DOCA Flags

Refer to the NVIDIA DOCA Arg Parser User Guide for more information.

<table>
<thead>
<tr>
<th>Flag Type</th>
<th>Short Flag</th>
<th>Long Flag/JSON Key</th>
<th>Description</th>
<th>JSON Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>General flags</td>
<td>l</td>
<td>log-level</td>
<td>Sets the log level for the application:</td>
<td>&quot;log-level&quot;: 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▶ CRITICAL=20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▶ ERROR=30</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▶ WARNING=40</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>▶ INFO=50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▶ DEBUG=60</td>
<td></td>
</tr>
<tr>
<td>v</td>
<td></td>
<td>version</td>
<td>Print program version information</td>
<td>N/A</td>
</tr>
<tr>
<td>h</td>
<td></td>
<td>help</td>
<td>Print a help synopsis</td>
<td>N/A</td>
</tr>
<tr>
<td>Program flags</td>
<td>s</td>
<td>socket</td>
<td>AF_UNIX (SOCK_STREAM) path. On the host, this is the path of the socket relay AF_UNIX server for the client’s application to connect to. On the DPU, this is the path of the client AF_UNIX server application. This flag is mandatory.</td>
<td>&quot;socket&quot;: &quot;/tmp/uds-server.socket&quot;</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>cc-name</td>
<td>Comm Channel service name</td>
<td>&quot;cc-name&quot;: &quot;sr_channel&quot;</td>
</tr>
<tr>
<td>Flag Type</td>
<td>Short Flag</td>
<td>Long Flag/JSON Key</td>
<td>Description</td>
<td>JSON Content</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>d</td>
<td>d</td>
<td>dev-pci</td>
<td>This flag is mandatory.</td>
<td>&quot;dev-pci&quot;:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Comm Channel DOCA device PCIe address</td>
<td>b1:00.1</td>
</tr>
<tr>
<td>r</td>
<td>r</td>
<td>rep-pci</td>
<td>This flag is mandatory only on the DPU.</td>
<td>&quot;rep-pci&quot;:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Comm Channel DOCA device representor PCIe address</td>
<td>b1:02.2</td>
</tr>
</tbody>
</table>
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