

DPA All-to-all Application

Running on BlueField:

1. Login to BlueField
2. Enter the code folder

```
cd /opt/mellanox/doca/applications
```

3. MPI is used for compilation and running of this application. Make sure that MPI is installed on your setup. By default, DOCA All will provide openmpi but not mpicc. So, need to run below in addition before build the application:

- Check if mpicc is not installed

```
dpkg -l | grep mpich
```

- If not installed, install mpicc

```
apt-get install mpich
```

4. Build DOCA DPA All-to-all Application on BlueField

```
meson /tmp/build -Denable_all_applications=false -Denable_dpa_all_to_all=true  
ninja -C /tmp/build
```

5. Check the mlx device name on BlueField

```
mst status -v  
.....  
PCI devices:  
-----  
DEVICE_TYPE          MST          PCI          RDMA          NET  
NUMA  
BlueField3(rev:1)    /dev/mst/mt41692_pciconf0.1  03:00.1  mlx5_1  net-  
en3f1pf1sf0,net-pf1hpf,net-p1      -1  
BlueField3(rev:1)    /dev/mst/mt41692_pciconf0    03:00.0  mlx5_0  net-  
en3f0pf0sf0,net-p0,net-pf0hpf      -1
```

6. Run DPU All-to-all application with 4 processes, with 32 bytes as message size, and with mlx5_0 as the InfiniBand devices:

```
mpirun -np 4 /tmp/build/dpa_all_to_all/doca_dpa_all_to_all -m 32 -d "mlx5_0"
```

4 Procs

```
[root@bf3-86-host dpa_all_to_all]# mpirun -np 4 ./doca_dpa_all_to_all -m 32 -d "mlx5_0"
[20:29:33:813501][8862][DOCA][INF][dpa_all_to_all_core.c:1753][dpa_a2a] Number of processes = 4, message size = 32, message count = 2, buffer size = 8
-----send buffs-----
Rank 0 | 4943  920  2543  9142  345  3000  2541  3230|
Rank 1 | 3693  6757  5787  8040  8427  3639  6913  5038|
Rank 2 | 4229  5625  5776  4410  9681  4315  343  9645|
Rank 3 | 2190  9799  9615  6632  5125  380  5062  5295|
-----recv buffs-----
Rank 0 | 4943  920  3693  6757  4229  5625  2190  9799|
Rank 1 | 2543  9142  5787  8040  5776  4410  9615  6632|
Rank 2 | 345  3000  8427  3639  9681  4315  5125  380 |
Rank 3 | 2541  3230  6913  5038  343  9645  5062  5295|
```

Buffer size = 8

	-----send buffs-----							
Rank 0	4943	920	2543	9142	345	3000	2541	3230
Rank 1	3693	6757	5787	8040	8427	3639	6913	5038
Rank 2	4229	5625	5776	4410	9681	4315	343	9645
Rank 3	2190	9799	9615	6632	5125	380	5062	5295
	-----recv buffs-----							
Rank 0	4943	920	3693	6757	4229	5625	2190	9799
Rank 1	2543	9142	5787	8040	5776	4410	9615	6632
Rank 2	345	3000	8427	3639	9681	4315	5125	380
Rank 3	2541	3230	6913	5038	343	9645	5062	5295

Notes:

- d is the RDMA device shown in above step
- m is the message size, represent the size of the sendbuf & recvbuf. It's divided to nProcs * Buffer size and BufSize further divided to message count * nProcs

FAQ

Remove previous compilation

```
rm -rf /tmp/build
```