

# ANS Performance Report

## LIST

1.	ANS Routing Forwarding Performance .....	3
1.1.	Testing Environment .....	3
1.2.	Testing Report .....	3
1.2.1.	ANS (1 core) routing forward one way .....	3
1.2.2.	ANS (1 core) routing forward one way with 1000 route .....	4
1.2.3.	ANS (1 core) routing forward both way .....	5
1.2.4.	ANS (2 core) routing forward both way .....	6
1.2.5.	ANS (1 core) routing forward one way with 1000 ACL .....	7
1.2.6.	ANS (2 core) routing forward both way with 1000 ACL .....	8
2.	ANS UDP APP Performance .....	10
2.1.	Testing Environment .....	10
2.2.	Testing Report .....	11
2.2.1.	ANS (1 core) UDP APP send throughput .....	11

# 1. ANS Routing Forwarding Performance

## 1.1. Testing Environment

➤ CPU

Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz

➤ NIC

02:00.0 Ethernet controller: Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)

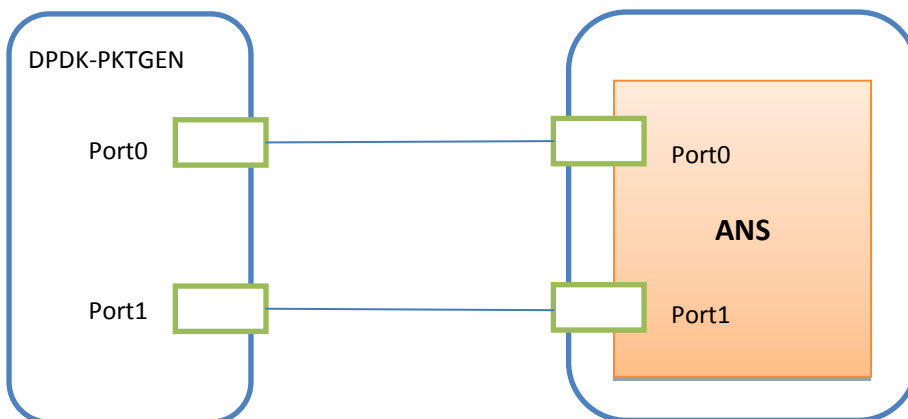
02:00.1 Ethernet controller: Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)

➤ Version

dpdk-17.05.2.tar.xz

Pktgen Ver: 3.4.2 (DPDK 17.05.2)

➤ Network Topology



## 1.2. Testing Report

### 1.2.1. ANS (1 core) routing forward one way

**Pktgen port 0 -> ans routing forward (1 core)-> pktgen port 1**

➤ ANS startup command

```
# ./build/ans -c 0x2 -n 1 --base-virtaddr=0x2aaa2aa0000 -- -p 0x3 --config="(0,0,1), (1,0,1)"
```

## ➤ Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	11.78
128	Line Rate

```

\ Ports 0-3 of 5  <Main Page>  Copyright (c) <2010-2017>, Intel
Flags:Port       : P-----I---g---:0   P-----I---g---:1
Link State       : <UP-10000-FD>         <UP-10000-FD>
Pkts/s Max/Rx    : 0/0                   11784571/11784404
Max/Tx           : 14880872/14880855      1/0
Mbits/s Rx/Tx    : 0/9999                7919/0
Broadcast        : 0                     0
Multicast        : 0                     0
 64 Bytes        : 0                     224795524
65-127           : 0                     0
128-255          : 0                     0
256-511          : 0                     0
512-1023         : 0                     0
1024-1518        : 0                     0
Runts/Jumbos     : 0/0                   0/0
Errors Rx/Tx     : 0/0                   0/0
Total Rx Pkts    : 0                     215956828
Tx Pkts          : 272637982             1
Rx MBs           : 0                     145122
Tx MBs           : 183212                0
ARP/ICMP Pkts   : 0/0                   5/0
Pattern Type     : abcd...               abcd...
Tx Count/% Rate  : Forever /100%         Forever /100%
PktSize/Tx Burst : 64 / 64               64 / 64
Src/Dst Port     : 1234 / 5678            1234 / 5678
Pkt Type:VLAN ID : IPv4 / TCP:0001       IPv4 / TCP:0001
Dst IP Address   : 10.1.0.10             10.0.0.10
Src IP Address   : 10.0.0.10/24          10.1.0.10/24
Dst MAC Address  : 90:e2:ba:92:cc:0c     90:e2:ba:92:cc:0e
Src MAC Address  : 00:16:31:fb:00:58     00:16:31:fb:00:59
VendID/PCI Addr  : 8086:10fb/01:00.0     8086:10fb/01:00.1

```

### 1.2.2. ANS (1 core) routing forward one way with 1000 route

Pktgen port 0 -> ans routing forward (1 core)-> pktgen port 1

## ➤ ANS startup command

```
# ./build/ans -c 0x2 -n 1 --base-virtaddr=0x2aaa2aa0000 --p 0x3 --config="(0,0,1), (1,0,1)"
```

## ➤ Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	11.80

128	Line Rate
-----	-----------

```

/ Ports 0-3 of 5 <Main Page> Copyright (c) <2010-2017>, Intel
  Flags:Port      : P-----I---g---:0 P-----I---g---:1
Link State       : <UP-10000-FD> <UP-10000-FD>
Pkts/s Max/Rx    : 0/0 11801104/11800607
  Max/Tx         : 14881081/14880895 0/0
Mbits/s Rx/Tx    : 0/9999 7930/0
Broadcast        : 0 0
Multicast        : 0 0
  64 Bytes       : 0 236986066
  65-127         : 0 0
  128-255        : 0 0
  256-511        : 0 0
  512-1023       : 0 0
  1024-1518      : 0 0
Runts/Jumbos     : 0/0 0/0
Errors Rx/Tx     : 0/0 0/0
Total Rx Pkts    : 0 225188851
  Tx Pkts        : 283899445 0
  Rx MBs         : 0 151326
  Tx MBs         : 190780 0
ARP/ICMP Pkts    : 0/0 0/0
:
Pattern Type     : abcd... abcd...
Tx Count/% Rate  : Forever /100% Forever /100%
PktSize/Tx Burst : 64 / 64 64 / 64
Src/Dst Port     : 1234 / 5678 1234 / 5678
Pkt Type:VLAN ID : IPv4 / TCP:0001 IPv4 / TCP:0001
Dst IP Address   : 10.1.0.10 10.0.0.10
Src IP Address   : 10.0.0.10/24 10.1.0.10/24
Dst MAC Address  : 90:e2:ba:92:cc:0c 90:e2:ba:92:cc:0e
Src MAC Address  : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr  : 8086:10fb/01:00.0 8086:10fb/01:00.1

```

### 1.2.3. ANS (1 core) routing forward both way

Pktgen port 0 <-> ans routing forward (1 core) <-> pktgen port 1

- ANS startup command  
# ./build/ans -c 0x2 -n 1 -base-virtaddr=0x2aaa2aa0000 -- -p 0x3 -config="(0,0,1), (1,0,1)"
- Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	11.38
128	Line Rate

Ports 0-3 of 5	<Main Page>	Copyright (c) <2010-2017>, Intel
Flags:Port	: P-----I---g---:0	P-----I---g---:1
Link State	: <UP-10000-FD>	<UP-10000-FD>
Pkts/s Max/Rx	: 5689184/5688992	5771792/5688992
Max/Tx	: 14880888/14880845	14881042/14880831
MBits/s Rx/Tx	: 3823/9999	3823/9999
Broadcast	: 0	0
Multicast	: 0	0
64 Bytes	: 86182411	92012731
65-127	: 0	0
128-255	: 0	0
256-511	: 0	0
512-1023	: 0	0
1024-1518	: 0	0
Runts/Jumbos	: 0/0	0/0
Errors Rx/Tx	: 0/0	0/0
Total Rx Pkts	: 84760043	90590308
Tx Pkts	: 231283812	234728106
Rx MBs	: 56958	60876
Tx MBs	: 155422	157737
ARP/ICMP Pkts	: 10/0	0/0
Pattern Type	: abcd...	abcd...
Tx Count/% Rate	: Forever /100%	Forever /100%
PktSize/Tx Burst	: 64 / 64	64 / 64
Src/Dst Port	: 1234 / 5678	1234 / 5678
Pkt Type:VLAN ID	: IPv4 / TCP:0001	IPv4 / TCP:0001
Dst IP Address	: 10.1.0.10	10.0.0.10
Src IP Address	: 10.0.0.10/24	10.1.0.10/24
Dst MAC Address	: 90:e2:ba:92:cc:0c	90:e2:ba:92:cc:0e
Src MAC Address	: 00:16:31:fb:00:58	00:16:31:fb:00:59
VendID/PCI Addr	: 8086:10fb/01:00.0	8086:10fb/01:00.1

## 1.2.4. ANS (2 core) routing forward both way

Pktgen port 0 <-> ans routing forward (2 core) <-> pktgen port 1

➤ ANS startup command

```
#./build/ans -c 0x6 -n 1 -base-virtaddr=0x2aaa2aa0000 -- -p 0x3 -config="(0,0,1), (1,0,2)"
```

➤ Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	20.71
128	Line Rate

```

- Ports 0-3 of 5  <Main Page>  Copyright (c) <2010-2017>, Intel Corporation
  Flags:Port      :  P-----I---g---:0  P-----I---g---:1
Link State       :  <UP-10000-FD>      <UP-10000-FD>      ----TotalRate----
Pkts/s Max/Rx   :  10356124/10355876   10356136/10355856   20712260/20711732
      Max/Tx     :  14880927/14880870   14880939/14880858   29761866/29761728
MBits/s Rx/Tx   :  6959/9999          6959/9999          13918/19999
Broadcast       :  0                  0
Multicast       :  0                  0
  64 Bytes      :  828449435          828450948
  65-127        :  0                  0
  128-255       :  0                  0
  256-511       :  0                  0
  512-1023      :  0                  0
  1024-1518     :  0                  0
Runts/Jumbos    :  0/0                0/0
Errors Rx/Tx    :  0/0                0/0
Total Rx Pkts   :  819388023          819389544
      Tx Pkts    :  1189461185          1189130630
      Rx MBs     :  550628              550629
      Tx MBs     :  799317              799095
ARP/ICMP Pkts   :  13/0                17/0
      :
Pattern Type    :  abcd...            abcd...
Tx Count/% Rate :  Forever /100%      Forever /100%
PktSize/Tx Burst :  64 / 64           64 / 64
Src/Dst Port    :  1234 / 5678         1234 / 5678
Pkt Type:VLAN ID :  IPv4 / TCP:0001    IPv4 / TCP:0001
Dst IP Address  :  10.1.0.10           10.0.0.10
Src IP Address  :  10.0.0.10/24         10.1.0.10/24
Dst MAC Address :  90:e2:ba:92:cc:0c    90:e2:ba:92:cc:0e
Src MAC Address :  00:16:31:fb:00:58    00:16:31:fb:00:59
VendID/PCI Addr :  8086:10fb/01:00.0    8086:10fb/01:00.1

-- Pktgen Ver: 3.4.2 (DPDK 17.05.2)  Powered by DPDK -----

```

### 1.2.5. ANS (1 core) routing forward one way with 1000 ACL

Pktgen port 0 -> ans routing forward (1 core)-> pktgen port 1

➤ ANS startup command

```
# ./build/ans -c 0x2 -n 1 --base-virtaddr=0x2aaa2aa0000 --p 0x3 --config="(0,0,1), (1,0,1)"
```

```
ans> acl add index 1      srcaddr 2.0.0.0/24 dstaddr 3.0.0.0/24 srcportstart 0 srcportend 65535
dstportstart 1          dstportend 1          protocol 0 iface any drop
```

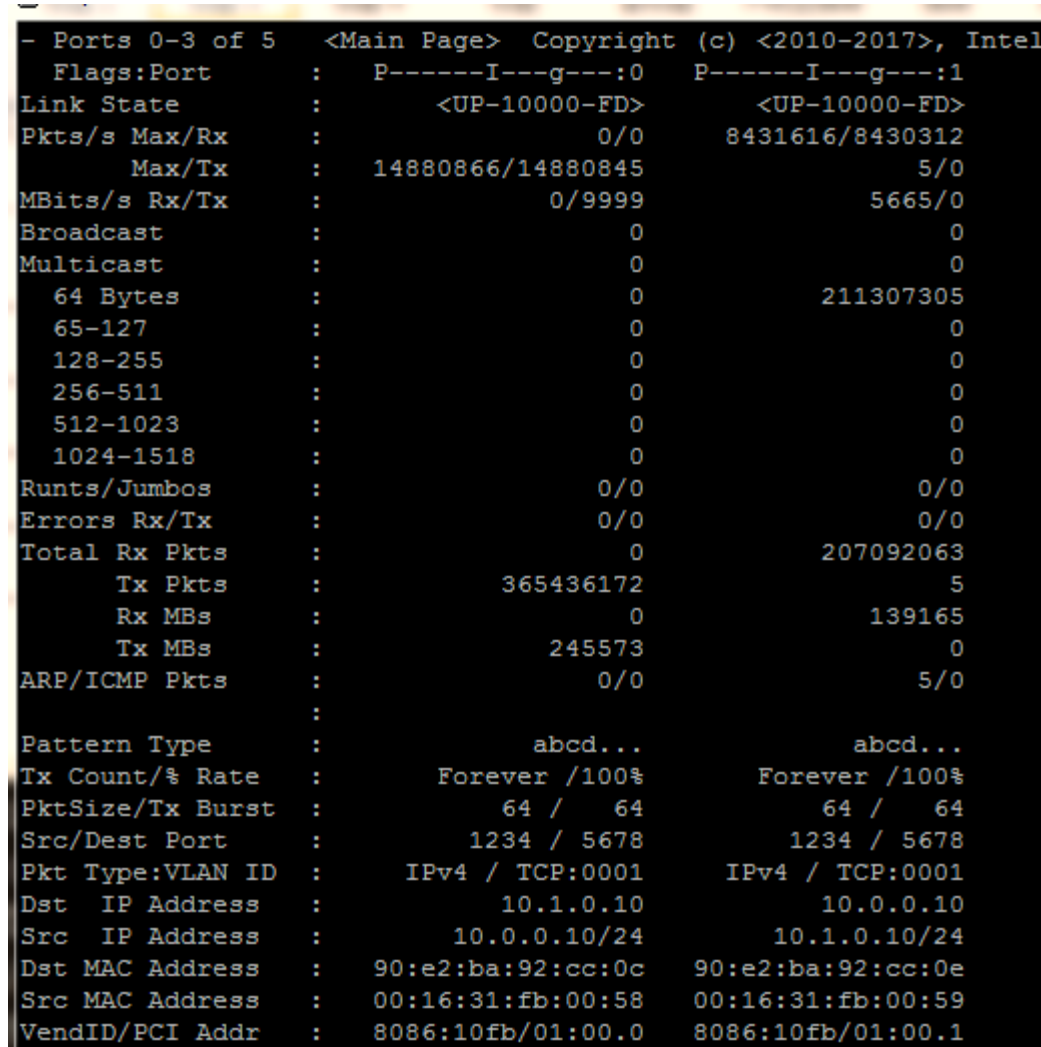
....

```
ans> acl add index 1000 srcaddr 2.0.0.0/24 dstaddr 3.0.0.0/24 srcportstart 0 srcportend 65535
dstportstart 1000 dstportend 1000 protocol 0 iface any drop
```

## ➤ Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	8.43
128	Line Rate

=====64 byte =====



- Ports 0-3 of 5		<Main Page>	Copyright (c) <2010-2017>, Intel
Flags:Port	:	P-----I---g---:0	P-----I---g---:1
Link State	:	<UP-10000-FD>	<UP-10000-FD>
Pkts/s Max/Rx	:	0/0	8431616/8430312
Max/Tx	:	14880866/14880845	5/0
MBits/s Rx/Tx	:	0/9999	5665/0
Broadcast	:	0	0
Multicast	:	0	0
64 Bytes	:	0	211307305
65-127	:	0	0
128-255	:	0	0
256-511	:	0	0
512-1023	:	0	0
1024-1518	:	0	0
Runts/Jumbos	:	0/0	0/0
Errors Rx/Tx	:	0/0	0/0
Total Rx Pkts	:	0	207092063
Tx Pkts	:	365436172	5
Rx MBs	:	0	139165
Tx MBs	:	245573	0
ARP/ICMP Pkts	:	0/0	5/0
Pattern Type	:	abcd...	abcd...
Tx Count/% Rate	:	Forever /100%	Forever /100%
PktSize/Tx Burst	:	64 / 64	64 / 64
Src/Dst Port	:	1234 / 5678	1234 / 5678
Pkt Type:VLAN ID	:	IPv4 / TCP:0001	IPv4 / TCP:0001
Dst IP Address	:	10.1.0.10	10.0.0.10
Src IP Address	:	10.0.0.10/24	10.1.0.10/24
Dst MAC Address	:	90:e2:ba:92:cc:0c	90:e2:ba:92:cc:0e
Src MAC Address	:	00:16:31:fb:00:58	00:16:31:fb:00:59
VendID/PCI Addr	:	8086:10fb/01:00.0	8086:10fb/01:00.1

### 1.2.6. ANS (2 core) routing forward both way with 1000 ACL

Pktgen port 0 <-> ans routing forward (2 core) <-> pktgen port 1

## ➤ ANS startup command

```
#./build/ans -c 0x6 -n 1 -base-virtaddr=0x2aaa2aa0000 -- -p 0x3 -config="(0,0,1), (1,0,2)"
```

```
ans> acl add index 1 srcaddr 2.0.0.0/24 dstaddr 3.0.0.0/24 srcportstart 0 srcportend 65535
dstportstart 1 dstportend 1 protocol 0 iface any drop
```

....



```
ans> acl add index 1000 srcaddr 2.0.0.0/24 dstaddr 3.0.0.0/24 srcportstart 0 srcportend 65535
dstportstart 1000 dstportend 1000 protocol 0 iface any drop
```

➤ Testing result

Packet Size (Bytes)	Throughput (Mpps)
64	16.95
128	28.14
256	Line Rate

=====64 byte =====

```
/ Ports 0-3 of 5 <Main Page> Copyright (c) <2010-2017>, Int
Flags:Port      : P-----I---g---:0 P-----I---g---:1
Link State      : <UP-10000-FD> <UP-10000-FD>
Pkts/s Max/Rx   : 8461791/8456307 8495685/8492832
Max/Tx          : 14880911/14880816 14880928/14880834
Mbits/s Rx/Tx   : 5682/9999 5707/9999
Broadcast       : 0 0
Multicast       : 0 0
64 Bytes        : 177457584 178198296
65-127          : 0 0
128-255         : 0 0
256-511         : 0 0
512-1023        : 0 0
1024-1518       : 0 0
Runts/Jumbos    : 0/0 0/0
Errors Rx/Tx    : 0/0 0/0
Total Rx Pkts   : 173230418 173952863
Tx Pkts         : 304606307 304528961
Rx MBs          : 116410 116896
Tx MBs          : 204695 204643
ARP/ICMP Pkts   : 0/0 0/0
Pattern Type     : abcd... abcd...
Tx Count/% Rate : Forever /100% Forever /100%
PktSize/Tx Burst : 64 / 64 64 / 64
Src/Dst Port     : 1234 / 5678 1234 / 5678
Pkt Type:VLAN ID : IPv4 / TCP:0001 IPv4 / TCP:0001
Dst IP Address   : 10.1.0.10 10.0.0.10
Src IP Address   : 10.0.0.10/24 10.1.0.10/24
Dst MAC Address  : 90:e2:ba:92:cc:0c 90:e2:ba:92:cc:0e
Src MAC Address  : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr  : 8086:10fb/01:00.0 8086:10fb/01:00.1
```

=====128 byte =====

```

- Ports 0-3 of 5 <Main Page> Copyright (c) <2010-2017>, Intel Corporation
  Flags:Port      : P-----I---g---:0 P-----I---g---:1
Link State       : <UP-10000-FD> <UP-10000-FD> ----TotalRate----
Pkts/s Max/Rx    : 7986284/7985756 7985992/7985780 15971936/15971536
                  : 8445927/8445927 8445923/8445916 16891843/16891843
                  : 9455/9999 9455/9999 18910/19999
Mbits/s Rx/Tx    :
Broadcast        : 0 0
Multicast        : 0 0
  64 Bytes       : 0 0
  65-127         : 0 0
  128-255        : 191783796 191820879
  256-511        : 0 0
  512-1023       : 0 0
  1024-1518      : 0 0
Runts/Jumbos     : 0/0 0/0
Errors Rx/Tx     : 0/0 0/0
Total Rx Pkts    : 184795984 184833095
                  Tx Pkts : 195468872 195424285
                  Rx MBs  : 218798 218842
                  Tx MBs  : 231435 231382
ARP/ICMP Pkts    : 0/0 0/0
Pattern Type     : abcd... abcd...
Tx Count/% Rate  : Forever /100% Forever /100%
PktSize/Tx Burst : 128 / 64 128 / 64
Src/Dest Port    : 1234 / 5678 1234 / 5678
Pkt Type:VLAN ID : IPv4 / TCP:0001 IPv4 / TCP:0001
Dst IP Address   : 10.1.0.10 10.0.0.10
Src IP Address   : 10.0.0.10/24 10.1.0.10/24
Dst MAC Address  : 90:e2:ba:92:cc:0c 90:e2:ba:92:cc:0e
Src MAC Address  : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr  : 8086:10fb/01:00.0 8086:10fb/01:00.1

```

## 2. ANS UDP APP Performance

### 2.1. Testing Environment

#### ➤ CPU

Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz

#### ➤ NIC

02:00.0 Ethernet controller: Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)

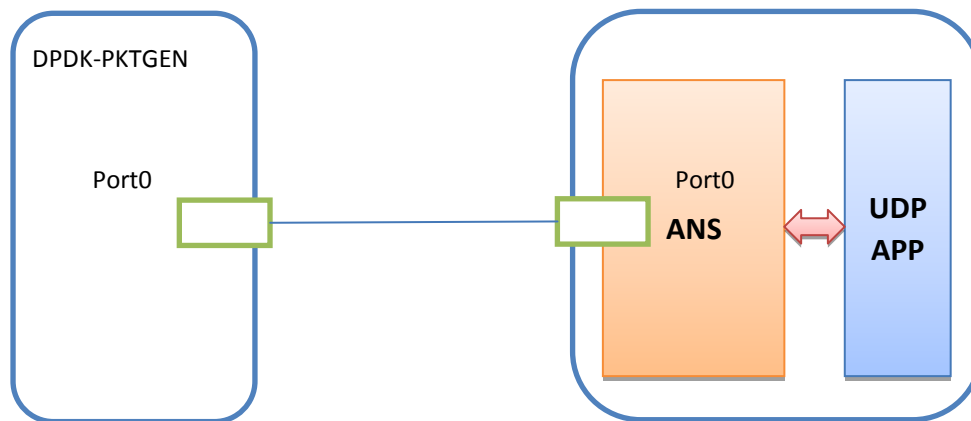
02:00.1 Ethernet controller: Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)

#### ➤ Version

dpdk-17.05.2.tar.xz

Pktgen Ver: 3.4.2 (DPDK 17.05.2)

➤ Network Topology



## 2.2. Testing Report

### 2.2.1. ANS (1 core) UDP APP send throughput

**ans udp app(1 fd) -> ans L4/L3/L2(1 core)-> pktgen port 0**

➤ ANS startup command

```
# ./build/ans -c 0x2 -n 1 --base-virtaddr=0x2aaa2aa0000 -- -p 0x3 --config="(0,0,1), (1,0,1)"
```

```
# ./build/dpdk_udp 4
```

➤ Testing result

Packet Size (Bytes)	Throughput (MBps)
64	3664
128	5971
256	10000

===64 bytes

```

\ Ports 0-3 of 5  <Main Page> Copyright (c) <2010-2017>, Intel Corporation
Flags:Port       : P-----I---g---:0 P-----:1
Link State       : <UP-10000-FD> <UP-10000-FD> ----TotalRate----
Pkts/s Max/Rx   : 5210681/5205704 0/0 5210681/5205704
Max/Tx          : 0/0 0/0 0/0
Mbits/s Rx/Tx   : 3664/0 0/0 3664/0
Broadcast       : 0 0
Multicast       : 0 0
  64 Bytes      : 0 0
  65-127        : 25823518 0
  128-255       : 0 0
  256-511       : 0 0
  512-1023      : 0 0
  1024-1518     : 0 0
Runts/Jumbos    : 0/0 0/0
Errors Rx/Tx    : 0/0 0/0
Total Rx Pkts   : 23869570 0
Tx Pkts         : 0 0
Rx MBs          : 16804 0
Tx MBs          : 0 0
ARP/ICMP Pkts   : 0/0 0/0
Pattern Type    : abcd... abcd...
Tx Count/% Rate : Forever /100% Forever /100%
PktSize/Tx Burst : 64 / 64 64 / 64
Src/Dest Port   : 9999 / 8888 1234 / 5678
Pkt Type:VLAN ID : IPv4 / UDP:0001 IPv4 / TCP:0001
Dst IP Address  : 10.0.0.2 192.168.0.1
Src IP Address  : 10.0.0.10/24 192.168.1.1/24
Dst MAC Address : 90:e2:ba:92:cc:0c 00:16:31:fb:00:58
Src MAC Address : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr : 8086:10fb/01:00.0 8086:10fb/01:00.1

-- Pktgen Ver: 3.4.2 (DPDK 17.05.2) Powered by DPDK -----

```

=== 128 byte

```

/ Ports 0-3 of 5 <Main Page> Copyright (c) <2010-2017>, Intel Corporation
Flags:Port      : P-----I---g---:0 P-----:1
Link State      : <UP-10000-FD> <UP-10000-FD> ----TotalRate----
Pkts/s Max/Rx   : 4920384/4910858 0/0 4920384/4910858
Max/Tx          : 0/0 0/0 0/0
Mbits/s Rx/Tx   : 5971/0 0/0 5971/0
Broadcast       : 0 0
Multicast       : 0 0
64 Bytes        : 0 0
65-127          : 0 0
128-255         : 193424100 0
256-511         : 0 0
512-1023        : 0 0
1024-1518       : 0 0
Runts/Jumbos    : 0/0 0/0
Errors Rx/Tx    : 0/0 0/0
Total Rx Pkts   : 192808306 0
Tx Pkts         : 0 0
Rx MBs          : 234454 0
Tx MBs          : 0 0
ARP/ICMP Pkts   : 0/0 0/0
Pattern Type    : abcd... abcd...
Tx Count/% Rate : Forever /100% Forever /100%
PktSize/Tx Burst : 64 / 64 64 / 64
Src/Dest Port   : 9999 / 8888 1234 / 5678
Pkt Type:VLAN ID : IPv4 / UDP:0001 IPv4 / TCP:0001
Dst IP Address  : 10.0.0.2 192.168.0.1
Src IP Address  : 10.0.0.10/24 192.168.1.1/24
Dst MAC Address : 90:e2:ba:92:cc:0c 00:16:31:fb:00:58
Src MAC Address : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr : 8086:10fb/01:00.0 8086:10fb/01:00.1

-- Pktgen Ver: 3.4.2 (DPDK 17.05.2) Powered by DPDK -----

```

=== 256 byte

```

| Ports 0-3 of 5  <Main Page> Copyright (c) <2010-2017>, Intel Corporation
  Flags:Port      : P-----I---g---:0 P-----:1
Link State       : <UP-10000-FD> <UP-10000-FD> ----TotalRate----
Pkts/s Max/Rx   : 4464334/4464332 0/0 4464334/4464332
  Max/Tx        : 0/0 0/0 0/0
MBits/s Rx/Tx   : 10000/0 0/0 10000/0
Broadcast       : 0 0
Multicast       : 0 0
  64 Bytes      : 0 0
  65-127        : 0 0
  128-255       : 0 0
  256-511       : 173572751 0
  512-1023      : 0 0
  1024-1518     : 0 0
Runts/Jumbos    : 0/0 0/0
Errors Rx/Tx    : 0/0 0/0
Total Rx Pkts   : 169666154 0
  Tx Pkts       : 0 0
  Rx MBs        : 380052 0
  Tx MBs        : 0 0
ARP/ICMP Pkts   : 0/0 0/0
:
Pattern Type    : abcd... abcd...
Tx Count/% Rate : Forever /100% Forever /100%
PktSize/Tx Burst : 64 / 64 64 / 64
Src/Dest Port   : 9999 / 8888 1234 / 5678
Pkt Type:VLAN ID : IPv4 / UDP:0001 IPv4 / TCP:0001
Dst IP Address  : 10.0.0.2 192.168.0.1
Src IP Address  : 10.0.0.10/24 192.168.1.1/24
Dst MAC Address : 90:e2:ba:92:cc:0c 00:16:31:fb:00:58
Src MAC Address : 00:16:31:fb:00:58 00:16:31:fb:00:59
VendID/PCI Addr : 8086:10fb/01:00.0 8086:10fb/01:00.1

-- Pktgen Ver: 3.4.2 (DPDK 17.05.2) Powered by DPDK -----

```