

Open vSwitch - Provisioning and Monitoring with vswitch Extended NIC stats - User Guide

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This epic implements new functionality named „Custom statistics“. General idea is to allow any netdev implementation to return custom counters and expose those through Open Flow and OVSDb. This implementation covers API extension in netdev to expose those counters. Current implementation in netdev-dpdk returns all “dropped”, “error” and “management” counters taken from DPDK XSTATS (http://dpdk.org/doc/api/struct rte__eth__xstat.html).

At current state, exposed counters are chosen based on “name”, if counter returned from XSTATS DPDK will contain string “_error”, “_dropped” or “_management_”, it will be collected and exposed. Please note that number of counters provided by DPDK can vary between different driver implementations.

1. OVS Configuration

The only difference in configuration of OVS, is that created bridge needs to be OpenFlow 1.4+ compatible. To do so, following command can be used:

```
sudo ovs-ofctl add-br br0 -- set bridge br0 datapath_type=netdev protocols=OpenFlow10,OpenFlow11,OpenFlow12,OpenFlow13,OpenFlow14,OpenFlow15
```

Above command enables all OpenFlow protocols.

2. OVS – getting stats

To get “Custom statistics” it is enough to execute “dump-ports” command through ovs-ofctl:

```
sudo utilities/ovs-ofctl -O OpenFlow14 dump-ports br0
```

Note: To trigger custom statistics collection there are two important steps to follow:

- 1) It is mandatory to trigger a counter collection for OpenFlow14, otherwise “Custom statistics” won’t be collected.**
- 2) Bridge has to be configured to support OpenFlow 1.4+ (please see previous point “a. OVS configuration”).**

Please find example below for IXGBE:

Note: Counter types for different drivers may vary.

```

[root@silpika00389819 ovs]# sudo utilities/ovs-ofctl -O OpenFlow14 dump-ports br0
OFFSEI_PORT reply (OF1.4) (xid=0x2): 3 ports
  port LOCAL: rx pkts=0, bytes=0, drop=0, errs=0, frame=0, over=0, crc=0
    tx pkts=0, bytes=0, drop=0, errs=0, coll=0
    duration=301.322s
  port dpdk0: rx pkts=0, bytes=0, drop=0, errs=0, frame=0, over=0, crc=0
    tx pkts=0, bytes=0, drop=0, errs=0, coll=0
    duration=300.795s
    rx rfc2819 1_to_64_packets=0, 65_to_127_packets=0, 128_to_255_packets=0, 256_to_511_packets=0, 512_to_1023_packets=0, broadcast_
packets=0, rx_jabber_errors=0,
    tx rfc2819 1_to_64_packets=0, 65_to_127_packets=0, 128_to_255_packets=0, 256_to_511_packets=0, 512_to_1023_packets=0, multicast_
packets=0, broadcast_packets=0,
    CUSTOM Statistics
      rx_errors=0, tx_errors=0, rx_mbuf_allocation_errors=0,
      rx_crc_errors=0, rx_illegal_byte_errors=0, mac_local_errors=3,
      mac_remote_errors=0, rx_length_errors=0, rx_fragment_errors=0,
      rx_undersize_errors=0, rx_oversize_errors=0, rx_jabber_errors=0,
      rx_management_dropped=0, rx_mac_short_packet_dropped=0, flow_director_filter_add_errors=0,
      flow_director_filter_remove_errors=0, rx_fcce_crc_errors=0, rx_fcce_dropped=0,
      rx_fcce_mbuf_allocation_errors=0, rx_priority0_mbuf_allocation_errors=0, rx_priority1_mbuf_allocation_errors=0,
      rx_priority2_mbuf_allocation_errors=0, rx_priority3_mbuf_allocation_errors=0, rx_priority4_mbuf_allocation_errors=0,
      rx_priority5_mbuf_allocation_errors=0, rx_priority6_mbuf_allocation_errors=0, rx_priority7_mbuf_allocation_errors=0,
      rx_priority0_dropped=0, rx_priority1_dropped=0, rx_priority2_dropped=0,
      rx_priority3_dropped=0, rx_priority4_dropped=0, rx_priority5_dropped=0,
      rx_priority6_dropped=0, rx_priority7_dropped=0,
  port dpdk1: rx pkts=0, bytes=0, drop=0, errs=0, frame=0, over=0, crc=0
    tx pkts=0, bytes=0, drop=0, errs=0, coll=0
    duration=300.234s
    rx rfc2819 1_to_64_packets=0, 65_to_127_packets=0, 128_to_255_packets=0, 256_to_511_packets=0, 512_to_1023_packets=0, broadcast_
packets=0, rx_jabber_errors=0,
    tx rfc2819 1_to_64_packets=0, 65_to_127_packets=0, 128_to_255_packets=0, 256_to_511_packets=0, 512_to_1023_packets=0, multicast_
packets=0, broadcast_packets=0,
    CUSTOM Statistics
      rx_errors=0, tx_errors=0, rx_mbuf_allocation_errors=0,
      rx_crc_errors=0, rx_illegal_byte_errors=0, mac_local_errors=2,
      mac_remote_errors=2, rx_length_errors=0, rx_fragment_errors=0,
      rx_undersize_errors=0, rx_oversize_errors=0, rx_jabber_errors=0,
      rx_management_dropped=0, rx_mac_short_packet_dropped=0, flow_director_filter_add_errors=0,
      flow_director_filter_remove_errors=0, rx_fcce_crc_errors=0, rx_fcce_dropped=0,
      rx_fcce_mbuf_allocation_errors=0, rx_priority0_mbuf_allocation_errors=0, rx_priority1_mbuf_allocation_errors=0,
      rx_priority2_mbuf_allocation_errors=0, rx_priority3_mbuf_allocation_errors=0, rx_priority4_mbuf_allocation_errors=0,
      rx_priority5_mbuf_allocation_errors=0, rx_priority6_mbuf_allocation_errors=0, rx_priority7_mbuf_allocation_errors=0,
      rx_priority0_dropped=0, rx_priority1_dropped=0, rx_priority2_dropped=0,
      rx_priority3_dropped=0, rx_priority4_dropped=0, rx_priority5_dropped=0,
      rx_priority6_dropped=0, rx_priority7_dropped=0,

```