SDNFV Lab4

I used the following command to test the path. Port 1 of s1 is connected to h1, so the rx of port 1 has lots of data (13791854 bytes). Port2 of s1 is connected to s2, and the tx (transmit) is approximately the same as rx of port1, showing that the data will go to the s2, s3 and to s5.

```
mininet> h2 iperf -s -u &
mininet> h1 iperf -c h2 -u -b 10M &
mininet> sh ovs-ofctl dump-ports -O OpenFlow14 s1
OFPST_PORT reply (OF1.4) (xid=0x2): 4 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=224.391s
  port  "s1-eth1": rx pkts=17859, bytes=13791854, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=180, bytes=24096, drop=0, errs=0, coll=0
          duration=224.414s
  port  "s1-eth2": rx pkts=173, bytes=23458, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=18016, bytes=13814072, drop=0, errs=0, coll=0
          duration=224.416s
  port  "s1-eth3": rx pkts=177, bytes=23922, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=173, bytes=23458, drop=0, errs=0, coll=0
          duration=224.411s
```

S4 further shows that the iperf client did not go through s4

```
mininet> sh ovs-ofctl dump-ports -O OpenFlow14 s4
OFPST_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=316.474s
  port  "s4-eth1": rx pkts=233, bytes=31697, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=237, bytes=32161, drop=0, errs=0, coll=0
          duration=316.481s
  port  "s4-eth2": rx pkts=239, bytes=32439, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=233, bytes=31697, drop=0, errs=0, coll=0
          duration=316.481s
```

After disabling the link between s1 and s2, the iperf client will go through s4. You can see that the rx of port1 is larger than tx of port2, showing that some packets are dropped due to the rate limit.

```
mininet> sh ovs-ofctl dump-ports -O OpenFlow14 s4
OFPST_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=1943.562s
  port  "s4-eth1": rx pkts=37361, bytes=28060475, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=1294, bytes=178759, drop=0, errs=0, coll=0
          duration=1943.569s
  port  "s4-eth2": rx pkts=1296, bytes=179037, drop=0, errs=0, frame=0, over=0, crc=0
          tx pkts=14970, bytes=1081435, drop=0, errs=0, coll=0
          duration=1943.569s
```