

Task3

Task3 在限制 Server 端 (h1) 的带宽为 10Mb 的前提下，观察稳定后的三个 Client 的带宽，将结果截图并简单分析。

由于网卡限速和 meter 表限速并不能进行精确控制，因此采用队列限速。

Python

```
ovs-vsctl set port s1-eth1 qos=@newqos -- \
  --id=@newqos create qos type=linux-htb queues=@q0 -- \
  --id=@q0 create queue other-config:max-rate=10000000
```

因为 h2,h3,h4 发送数据时的指令有先有后，所以采用多次发送的方式取平均值。

Python

```
iperf -u -c 10.0.0.1 -b 10M -t 20 -i 1
```

-u : 指定使用UDP协议进行测试。

-c 10.0.0.1 : 指定客户端连接到服务器的IP地址为10.0.0.1。

-b 10M : 指定每秒钟的数据传输速率为10Mbps。

-t 20 : 指定测试时间为20秒。在这个时间段内，客户端将不断发送数据包到服务器端。

-i 1 : 指定每1秒钟打印一次测试结果。客户端将每秒钟输出一数据数据传输速率和延迟等测试结果。

Mar 28 23:31

root@ubuntu: /home/os/ovs

"Node: h1"

```
root@ubuntu:/home/os/ovs# iperf -u -s
Server listening on UDP port 5001
Receiving 1470 byte datagrams
UDP buffer size: 208 KByte (default)

[ 5] local 10.0.0.1 port 5001 connected with 10.0.0.3 port 34382
[ 6] local 10.0.0.1 port 5001 connected with 10.0.0.2 port 39677
[ 7] local 10.0.0.1 port 5001 connected with 10.0.0.4 port 34192
[ ID] Interval      Transfer     Bandwidth       Jitter    Lost/Total Datagrams
[ 5] 0.0-20.2 sec  8.34 MBytes  3.47 Mbits/sec  22.653 ms  0/ 5951 (0%)
[ 5] 0.0000-20.1948 sec  2 datagrams received out-of-order
[ 6] 0.0-19.9 sec  7.86 MBytes  3.31 Mbits/sec  9.494 ms   0/ 5604 (0%)
[ 6] 0.0000-19.9382 sec  18 datagrams received out-of-order
[ 7] 0.0-19.8 sec  8.27 MBytes  3.51 Mbits/sec  4.818 ms  27/ 5924 (0.46%)
[ 7] 0.0000-19.7695 sec  89 datagrams received out-of-order
[]
```

"Node: h4"

```
[ 5] 1.0- 2.0 sec  457 KBytes  3.82 Mbits/sec
[ 5] 2.0- 3.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 3.0- 4.0 sec  403 KBytes  3.30 Mbits/sec
[ 5] 4.0- 5.0 sec  406 KBytes  3.32 Mbits/sec
[ 5] 5.0- 6.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 6.0- 7.0 sec  356 KBytes  2.92 Mbits/sec
[ 5] 7.0- 8.0 sec  457 KBytes  3.74 Mbits/sec
[ 5] 8.0- 9.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 9.0-10.0 sec  411 KBytes  3.36 Mbits/sec
[ 5] 10.0-11.0 sec  337 KBytes  2.76 Mbits/sec
[ 5] 11.0-12.0 sec  406 KBytes  3.32 Mbits/sec
[ 5] 12.0-13.0 sec  349 KBytes  2.86 Mbits/sec
[ 5] 13.0-14.0 sec  459 KBytes  3.76 Mbits/sec
[ 5] 14.0-15.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 15.0-16.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 16.0-17.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 17.0-18.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 18.0-19.0 sec  369 KBytes  3.02 Mbits/sec
[ 5] 0.0-20.0 sec  8.30 MBytes  3.48 Mbits/sec
[ 5] Sent 5924 datagrams
[ 5] Server Report:
[ 5] 0.0-19.8 sec  8.27 MBytes  3.51 Mbits/sec  4.818 ms  27/ 5924 (0.46%)
[ 5] 0.0000-19.7695 sec  89 datagrams received out-of-order
root@ubuntu:/home/os/ovs#
```

"Node: h3"

```
[ 5] 1.0- 2.0 sec  405 KBytes  3.32 Mbits/sec
[ 5] 2.0- 3.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 3.0- 4.0 sec  405 KBytes  3.32 Mbits/sec
[ 5] 4.0- 5.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 5.0- 6.0 sec  472 KBytes  3.87 Mbits/sec
[ 5] 6.0- 7.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 7.0- 8.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 8.0- 9.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 9.0-10.0 sec  405 KBytes  3.32 Mbits/sec
[ 5] 10.0-11.0 sec  337 KBytes  2.76 Mbits/sec
[ 5] 11.0-12.0 sec  474 KBytes  3.88 Mbits/sec
[ 5] 12.0-13.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 13.0-14.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 14.0-15.0 sec  405 KBytes  3.32 Mbits/sec
```

"Node: h2"

```
[ 5] 1.0- 2.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 2.0- 3.0 sec  471 KBytes  3.86 Mbits/sec
[ 5] 3.0- 4.0 sec  336 KBytes  2.75 Mbits/sec
[ 5] 4.0- 5.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 5.0- 6.0 sec  405 KBytes  3.32 Mbits/sec
[ 5] 6.0- 7.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 7.0- 8.0 sec  339 KBytes  2.78 Mbits/sec
[ 5] 8.0- 9.0 sec  471 KBytes  3.86 Mbits/sec
[ 5] 9.0-10.0 sec  337 KBytes  2.76 Mbits/sec
[ 5] 10.0-11.0 sec  408 KBytes  3.34 Mbits/sec
[ 5] 11.0-12.0 sec  406 KBytes  3.32 Mbits/sec
[ 5] 12.0-13.0 sec  406 KBytes  3.33 Mbits/sec
[ 5] 13.0-14.0 sec  337 KBytes  2.76 Mbits/sec
[ 5] 14.0-15.0 sec  471 KBytes  3.86 Mbits/sec
[ 5] 15.0-16.0 sec  406 KBytes  3.33 Mbits/sec
```