



Лабораторная работа N°6

по дисциплине Моделирование сетей передачи данных

Ход работы

```
root@mininet-vm:/home/mininet# ifconfig
h1-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.1 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 36:66:ed:a0:69:74 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1484 bytes 314232 (314.2 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1484 bytes 314232 (314.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```

```
root@mininet-vm:/home/mininet# ifconfig
h2-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.2 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 42:b1:05:8a:06:e3 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1758 bytes 336840 (336.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1758 bytes 336840 (336.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```

```
switch s1: (root@mininet-vm)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether ca:fb:29:07:ef:33 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```

```
switch s2: (root@mininet-vm)
    ether b2:de:a5:59:ec:5f txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether ca:fb:29:07:ef:33 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```

Ход работы

```
root@mininet-vm:/home/mininet# ping -c 4 10.0.0.2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=1.76 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.150 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.038 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.033 ms
```

```
--- 10.0.0.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3053ms
rtt min/avg/max/mdev = 0.033/0.495/1.759/0.731 ms
root@mininet-vm:/home/mininet#
```

```
root@mininet-vm:/home/mininet# ifconfig
h2-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.2 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 42:b1:05:8a:06:e3 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1758 bytes 336840 (336.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1758 bytes 336840 (336.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```

Ход работы

```
host: h1" @mininet-vm
Connecting to host 10.0.0.2, port 5201
[ 7] local 10.0.0.1 port 43792 connected to 10.0.0.2 port 5201
[ ID] Interval          Transfer    Bitrate      Retr  Cwnd
[ 7]  0.00-1.00      sec  4.65 GBytes  39.9 Gbits/sec    0   8.24 MBytes
[ 7]  1.00-2.00      sec  4.95 GBytes  42.5 Gbits/sec    0   8.24 MBytes
[ 7]  2.00-3.00      sec  4.70 GBytes  40.4 Gbits/sec    0   8.24 MBytes
[ 7]  3.00-4.00      sec  4.35 GBytes  37.3 Gbits/sec    0   8.24 MBytes
[ 7]  4.00-5.00      sec  3.74 GBytes  32.1 Gbits/sec    0   8.24 MBytes
[ 7]  5.00-6.00      sec  4.02 GBytes  34.5 Gbits/sec    0   8.24 MBytes
[ 7]  6.00-7.00      sec  4.22 GBytes  36.2 Gbits/sec    0   8.24 MBytes
[ 7]  7.00-8.00      sec  4.32 GBytes  37.1 Gbits/sec    0   8.24 MBytes
[ 7]  8.00-9.00      sec  4.47 GBytes  38.3 Gbits/sec    0   8.24 MBytes
[ 7]  9.00-10.00     sec  4.23 GBytes  36.3 Gbits/sec    0   8.24 MBytes
-----
[ ID] Interval          Transfer    Bitrate      Retr
[ 7]  0.00-10.00     sec  43.6 GBytes  37.5 Gbits/sec    0
[ 7]  0.00-10.00     sec  43.6 GBytes  37.5 Gbits/sec

sender
receiver
```

```
iperf Done.
root@mininet-vm:/home/mininet#
```

```
host: h2" @mininet-vm
Accepted connection from 10.0.0.1, port 43790
[ 7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 43792
[ ID] Interval          Transfer    Bitrate
[ 7]  0.00-1.00      sec  4.64 GBytes  39.8 Gbits/sec
[ 7]  1.00-2.00      sec  4.95 GBytes  42.5 Gbits/sec
[ 7]  2.00-3.00      sec  4.71 GBytes  40.4 Gbits/sec
[ 7]  3.00-4.00      sec  4.35 GBytes  37.4 Gbits/sec
[ 7]  4.00-5.00      sec  3.75 GBytes  32.2 Gbits/sec
[ 7]  5.00-6.00      sec  4.01 GBytes  34.4 Gbits/sec
[ 7]  6.00-7.00      sec  4.21 GBytes  36.2 Gbits/sec
[ 7]  7.00-8.00      sec  4.32 GBytes  37.1 Gbits/sec
[ 7]  8.00-9.00      sec  4.46 GBytes  38.3 Gbits/sec
[ 7]  9.00-10.00     sec  4.23 GBytes  36.3 Gbits/sec
[ 7] 10.00-10.00     sec  11.9 MBytes  77.7 Gbits/sec
-----
[ ID] Interval          Transfer    Bitrate
[ 7]  0.00-10.00     sec  43.6 GBytes  37.5 Gbits/sec

receiver

Server listening on 5201
```

Ход работы

```
[ 7]  0.00 10.00  sec  43.0 Mbytes  37.0 Mbits/sec
```

iperf Done.

```
root@mininet-vm:/home/mininet# sudo tc qdisc add dev h1-eth0 root tbf rate 10gbit burst 5000000 limit 15000000
```

```
root@mininet-vm:/home/mininet#
```

"host: h2"@mininet-vm

```
[ 7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 43792
```

```
[ ID] Interval          Transfer      Bitrate
```

Ход работы

host: h1" @mininet-vm

Connecting to host 10.0.0.2, port 5201

[7] local 10.0.0.1 port 43796 connected to 10.0.0.2 port 5201

[ID]	Interval		Transfer	Bitrate	Retr	Cwnd
[7]	0.00-1.00	sec	1.12 GBytes	9.64 Gbits/sec	0	1.37 MBytes
[7]	1.00-2.00	sec	1.12 GBytes	9.58 Gbits/sec	0	2.96 MBytes
[7]	2.00-3.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	3.00-4.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	4.00-5.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	5.00-6.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	6.00-7.00	sec	1.11 GBytes	9.57 Gbits/sec	0	2.96 MBytes
[7]	7.00-8.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	8.00-9.00	sec	1.11 GBytes	9.56 Gbits/sec	0	2.96 MBytes
[7]	9.00-10.00	sec	1.11 GBytes	9.53 Gbits/sec	0	3.58 MBytes

[ID]	Interval		Transfer	Bitrate	Retr	sender	receiver
[7]	0.00-10.00	sec	11.1 GBytes	9.57 Gbits/sec	0		
[7]	0.00-10.01	sec	11.1 GBytes	9.56 Gbits/sec			

iperf Done.

root@mininet-vm:/home/mininet#

host: h2" @mininet-vm

Accepted connection from 10.0.0.1, port 43794

[7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 43796

[ID]	Interval		Transfer	Bitrate
[7]	0.00-1.00	sec	1.12 GBytes	9.59 Gbits/sec
[7]	1.00-2.00	sec	1.11 GBytes	9.54 Gbits/sec
[7]	2.00-3.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	3.00-4.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	4.00-5.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	5.00-6.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	6.00-7.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	7.00-8.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	8.00-9.00	sec	1.11 GBytes	9.56 Gbits/sec
[7]	9.00-10.00	sec	1.11 GBytes	9.54 Gbits/sec
[7]	10.00-10.01	sec	573 KBytes	658 Mbits/sec

[ID]	Interval		Transfer	Bitrate	receiver
[7]	0.00-10.01	sec	11.1 GBytes	9.56 Gbits/sec	

Server listening on 5201

switch: s1" (root)@mininet-vm

RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

s2-eth1: flags=4163<UP,BROADCAST,RL
ether ca:fb:29:07:ef:33 tx
RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

s2-eth2: flags=4163<UP,BROADCAST,RL
ether a6:9d:0a:b0:fe:6f tx
RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

root@mininet-vm:/home/mininet#

switch: s2" (root)@mininet-vm

ether b2:de:a5:59:ec:5f tx
RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

s2-eth1: flags=4163<UP,BROADCAST,RL
ether ca:fb:29:07:ef:33 tx
RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

s2-eth2: flags=4163<UP,BROADCAST,RL
ether a6:9d:0a:b0:fe:6f tx
RX packets 0 bytes 0 (0.0
RX errors 0 dropped 0 ove
TX packets 0 bytes 0 (0.0
TX errors 0 dropped 0 over

root@mininet-vm:/home/mininet#

Ход работы

host: h1@mininet-vm

```
Connecting to host 10.0.0.2, port 5201
[ 7] local 10.0.0.1 port 43800 connected to 10.0.0.2 port 5201
[ ID] Interval      Transfer    Bitrate      Retr  Cwnd
[ 7] 0.00-1.00    sec  1.12 GBytes  9.65 Gbits/sec  0    1.60 MBytes
[ 7] 1.00-2.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.67 MBytes
[ 7] 2.00-3.00    sec  1.11 GBytes  9.57 Gbits/sec  0    1.76 MBytes
[ 7] 3.00-4.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.76 MBytes
[ 7] 4.00-5.00    sec  1.11 GBytes  9.57 Gbits/sec  0    1.93 MBytes
[ 7] 5.00-6.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 6.00-7.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 7.00-8.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 8.00-9.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 9.00-10.00   sec  1.11 GBytes  9.56 Gbits/sec  0    2.97 MBytes
-----
[ ID] Interval      Transfer    Bitrate      Retr
[ 7] 0.00-10.00   sec  11.1 GBytes  9.57 Gbits/sec  0
[ 7] 0.00-10.00   sec  11.1 GBytes  9.56 Gbits/sec  0
```

iperf Done.

root@mininet-vm:/home/mininet#

host: h2@mininet-vm

```
Accepted connection from 10.0.0.1, port 43798
[ 7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 43800
[ ID] Interval      Transfer    Bitrate      Retr  Cwnd
[ 7] 0.00-1.00    sec  1.12 GBytes  9.60 Gbits/sec  0    1.60 MBytes
[ 7] 1.00-2.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.67 MBytes
[ 7] 2.00-3.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.76 MBytes
[ 7] 3.00-4.00    sec  1.11 GBytes  9.57 Gbits/sec  0    1.76 MBytes
[ 7] 4.00-5.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 5.00-6.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 6.00-7.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 7.00-8.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 8.00-9.00    sec  1.11 GBytes  9.56 Gbits/sec  0    1.93 MBytes
[ 7] 9.00-10.00   sec  1.11 GBytes  9.53 Gbits/sec  0    2.97 MBytes
[ 7] 10.00-10.00  sec  1.43 MBytes  9.15 Gbits/sec  0
-----
[ ID] Interval      Transfer    Bitrate
[ 7] 0.00-10.00   sec  11.1 GBytes  9.56 Gbits/sec

Server listening on 5201
]
```

Поиск

switch: s1@mininet-vm

```
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether ca:fb:29:07:ef:33 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
root@mininet-vm:/home/mininet# sudo tc qdisc add dev s1-eth2 root tbf rate 10gbit bur
st 5000000 limit 15000000
root@mininet-vm:/home/mininet#
```

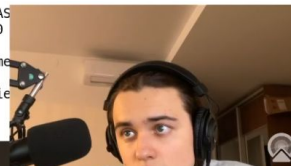
switch: s2@mininet-vm

```
ether b2:de:a5:59:ec:5f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether ca:fb:29:07:ef:33 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

root@mininet-vm:/home/mininet#



Ход работы

```
host: h1@mininet-vm
Connecting to host 10.0.0.2, port 5201
[ 7] local 10.0.0.1 port 43804 connected to 10.0.0.2 port 5201
[ ID] Interval      Transfer    Bitrate    Retr  Cwnd
[ 7] 0.00-1.00      sec 215 MBytes 1.80 Gbits/sec 180 3.14 MBytes
[ 7] 1.00-2.00      sec 229 MBytes 1.92 Gbits/sec 0 3.37 MBytes
[ 7] 2.00-3.00      sec 228 MBytes 1.91 Gbits/sec 0 3.56 MBytes
[ 7] 3.00-4.00      sec 222 MBytes 1.87 Gbits/sec 1215 2.63 MBytes
[ 7] 4.00-5.00      sec 228 MBytes 1.91 Gbits/sec 0 2.76 MBytes
[ 7] 5.00-6.00      sec 229 MBytes 1.92 Gbits/sec 0 2.87 MBytes
[ 7] 6.00-7.00      sec 228 MBytes 1.91 Gbits/sec 0 2.95 MBytes
[ 7] 7.00-8.00      sec 228 MBytes 1.91 Gbits/sec 0 3.01 MBytes
[ 7] 8.00-9.00      sec 229 MBytes 1.92 Gbits/sec 0 3.05 MBytes
[ 7] 9.00-10.00     sec 228 MBytes 1.91 Gbits/sec 0 3.08 MBytes
-----
[ ID] Interval      Transfer    Bitrate    Retr
[ 7] 0.00-10.00     sec 2.21 GBytes 1.90 Gbits/sec 1395
[ 7] 0.00-10.01     sec 2.20 GBytes 1.89 Gbits/sec

iperf Done.
root@mininet-vm:/home/mininet#

host: h2@mininet-vm
Accepted connection from 10.0.0.1, port 43802
[ 7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 43804
[ ID] Interval      Transfer    Bitrate
[ 7] 0.00-1.00      sec 204 MBytes 1.71 Gbits/sec
[ 7] 1.00-2.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 2.00-3.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 3.00-4.00      sec 222 MBytes 1.86 Gbits/sec
[ 7] 4.00-5.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 5.00-6.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 6.00-7.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 7.00-8.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 8.00-9.00      sec 228 MBytes 1.91 Gbits/sec
[ 7] 9.00-10.00     sec 228 MBytes 1.91 Gbits/sec
[ 7] 10.00-10.01    sec 2.92 MBytes 1.84 Gbits/sec
-----
[ ID] Interval      Transfer    Bitrate
[ 7] 0.00-10.01     sec 2.20 GBytes 1.89 Gbits/sec

Server listening on 5201
]
```

```
switch: s1 (root@mininet-vm)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet# sudo tc qdisc add dev s1-eth2 root tbf rate 10gbit burst 5000000 limit 15000000
root@mininet-vm:/home/mininet# sudo tc qdisc del dev s1-eth2 root
root@mininet-vm:/home/mininet# sudo tc qdisc add dev s1-eth2 root handle 1: netem delay 10ms
root@mininet-vm:/home/mininet# sudo tc qdisc add dev s1-eth2 parent 1: handle 2: tbf rate 2gbit burst 1000000 limit 2000000
root@mininet-vm:/home/mininet#

switch: s2 (root@mininet-vm)
ether b2:de:a5:59:ec:5f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether ca:fb:29:07:ef:33 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

s2-eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether a6:9d:0a:b0:fe:6f txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@mininet-vm:/home/mininet#
```




Вывод

Я познакомился с принципами работы дисциплины очереди **Token Bucket Filter**, которая формирует входящий/исходящий трафик для ограничения пропускной способности, а также получил навыки моделирования и исследования поведения трафика посредством проведения интерактивного и воспроизводимого экспериментов в **Mininet**.