Измерение и тестирование пропускной способности сети. Интерактивный эксперимент

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Введение

Основной целью работы является знакомство с инструментом для измерения пропускной способности сети в режиме реального времени – iPerf3, а также получение навыков проведения интерактивного эксперимента по измерению пропускной способности моделируемой сети в среде Mininet

Выполнение задачи

```
mininet@mininet-vm:~$ sudo mn --topo=single,2 -x
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1)
*** Configuring hosts
h1 h2
*** Running terms on localhost:10.0
*** Starting controller
c0
*** Starting 1 switches
s1 ...X11 connection rejected because of wrong authentication.
X11 connection rejected because of wrong authentication.
X11 connection rejected because of wrong authentication.
X11 connection rejected because of wrong authentication.

*** Starting CLI:
mininet> net
h1 h1-eth0:s1-eth1
h2 h2-eth0:s1-eth2
s1 lo:  s1-eth1:h1-eth0 s1-eth2:h2-eth0
c0
mininet> link
invalid number of args: link end1 end2 [up down]
mininet> dump
<Host h1: h1-eth0:10.0.0.1 pid=806>
<Host h2: h2-eth0:10.0.0.2 pid=808>
<OVSSwitch s1: lo:127.0.0.1,s1-eth1:None,s1-eth2:None pid=813>
<Controller c0: 127.0.0.1:6653 pid=799>
```

```
mininet> h2 iperf3 -s &
mininet> h1 iperf3 -c h2
Connecting to host 10.0.0.2, port 5201
[  5] local 10.0.0.1 port 40682 connected to 10.0.0.2 port 5201
[ ID] Interval           Transfer     Bitrate         Retr  Cwnd
[  5]   0.00-1.00   sec  4.08 GBytes  35.0 Gbits/sec    9   5.25 MBytes
[  5]   1.00-2.00   sec  4.89 GBytes  42.0 Gbits/sec    2   10.6 MBytes
[  5]   2.00-3.00   sec  5.12 GBytes  44.0 Gbits/sec    2   10.6 MBytes
[  5]   3.00-4.00   sec  5.89 GBytes  50.6 Gbits/sec    0   10.6 MBytes
[  5]   4.00-5.00   sec  5.91 GBytes  50.8 Gbits/sec    0   18.6 MBytes
[  5]   5.00-6.00   sec  5.55 GBytes  47.7 Gbits/sec    0   18.6 MBytes
[  5]   6.00-7.00   sec  5.93 GBytes  51.0 Gbits/sec    0   18.6 MBytes
[  5]   7.00-8.00   sec  5.84 GBytes  50.2 Gbits/sec    0   18.6 MBytes
[  5]   8.00-9.00   sec  5.66 GBytes  48.7 Gbits/sec    0   18.6 MBytes
[  5]   9.00-10.00  sec  4.92 GBytes  42.2 Gbits/sec    8   18.6 MBytes
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Retr
[  5]   0.00-10.00  sec  53.8 GBytes  46.2 Gbits/sec   21             sender
[  5]   0.00-10.00  sec  53.8 GBytes  46.2 Gbits/sec                  receiver

iperf Done.
```

Выполнение задачи

```
mininet>  h2 killall iperf3
warning: this system does not seem to support IPv6 - trying IPv4
------------------------------------------------------------
Server listening on 5201
------------------------------------------------------------
Accepted connection from 10.0.0.1, port 40680
[  5] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 40682
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-1.00   sec  4.05 GBytes  34.8 Gbits/sec
[  5]   1.00-2.00   sec  4.89 GBytes  42.0 Gbits/sec
[  5]   2.00-3.00   sec  5.14 GBytes  44.2 Gbits/sec
[  5]   3.00-4.00   sec  5.89 GBytes  50.6 Gbits/sec
[  5]   4.00-5.00   sec  5.88 GBytes  50.5 Gbits/sec
[  5]   5.00-6.00   sec  5.58 GBytes  47.9 Gbits/sec
[  5]   6.00-7.00   sec  5.93 GBytes  51.0 Gbits/sec
[  5]   7.00-8.00   sec  5.84 GBytes  50.2 Gbits/sec
[  5]   8.00-9.00   sec  5.66 GBytes  48.7 Gbits/sec
[  5]   9.00-10.00  sec  4.89 GBytes  42.0 Gbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-10.00  sec  53.8 GBytes  46.2 Gbits/sec                  receiver
------------------------------------------------------------
Server listening on 5201
------------------------------------------------------------
iperf3: interrupt - the server has terminated
mininet>
```

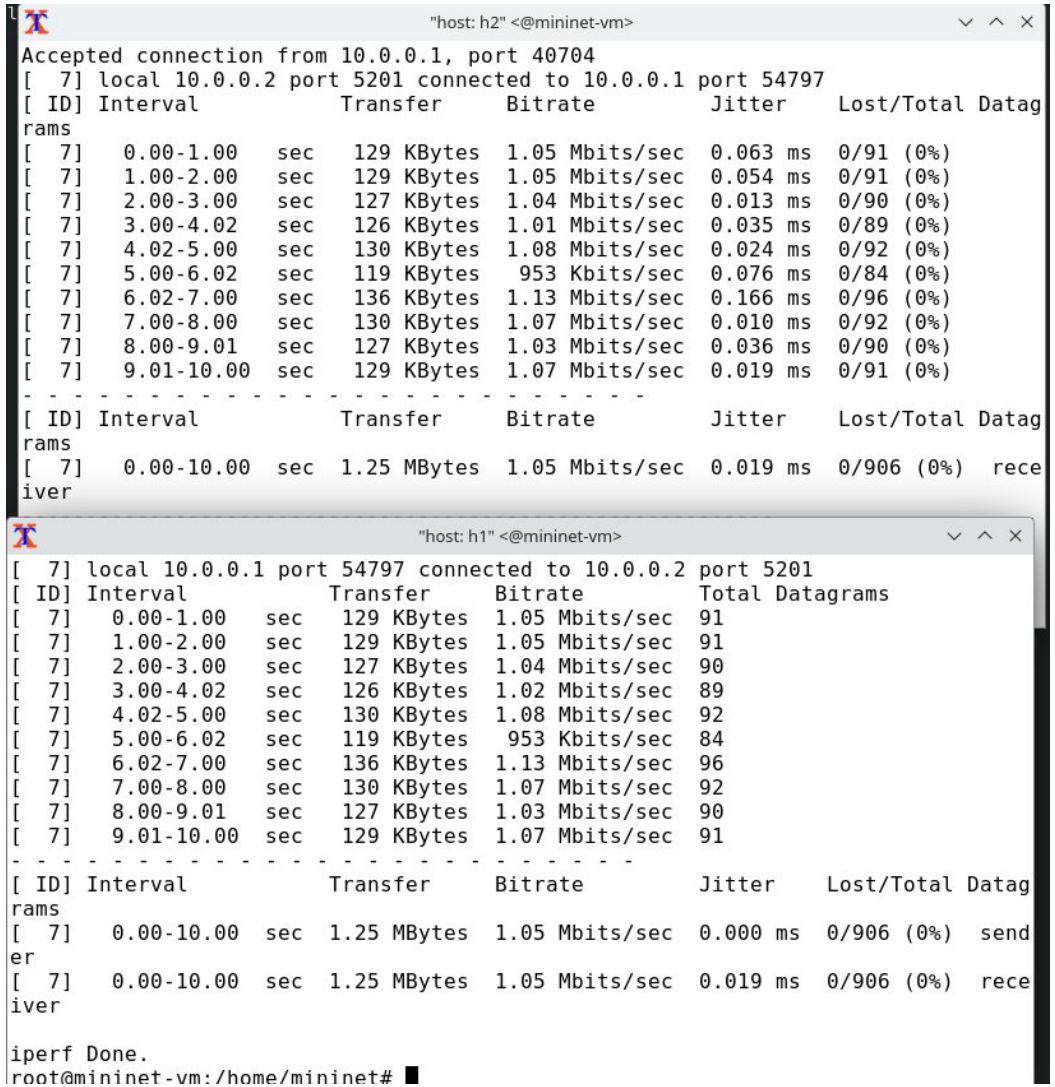
"host: h2" <@mininet-vm>

```
root@mininet-vm:/home/mininet# iperf3 -s
warning: this system does not seem to support IPv6 - trying IPv4
------------------------------------------------------------
Server listening on 5201
------------------------------------------------------------
Accepted connection from 10.0.0.1, port 40700
[  7] local 10.0.0.2 port 5201 connected to 10.0.0.1 port 40702
[ ID] Interval           Transfer     Bitrate
[  7]   0.00-1.00   sec  6.08 GBytes  52.2 Gbits/sec
[  7]   1.00-2.00   sec  5.54 GBytes  47.6 Gbits/sec
[  7]   2.00-2.74   sec  4.39 GBytes  51.0 Gbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate
[  7]   0.00-2.74   sec  16.0 GBytes  50.2 Gbits/sec                  receiver
------------------------------------------------------------
Server listening on 5201
------------------------------------------------------------
```

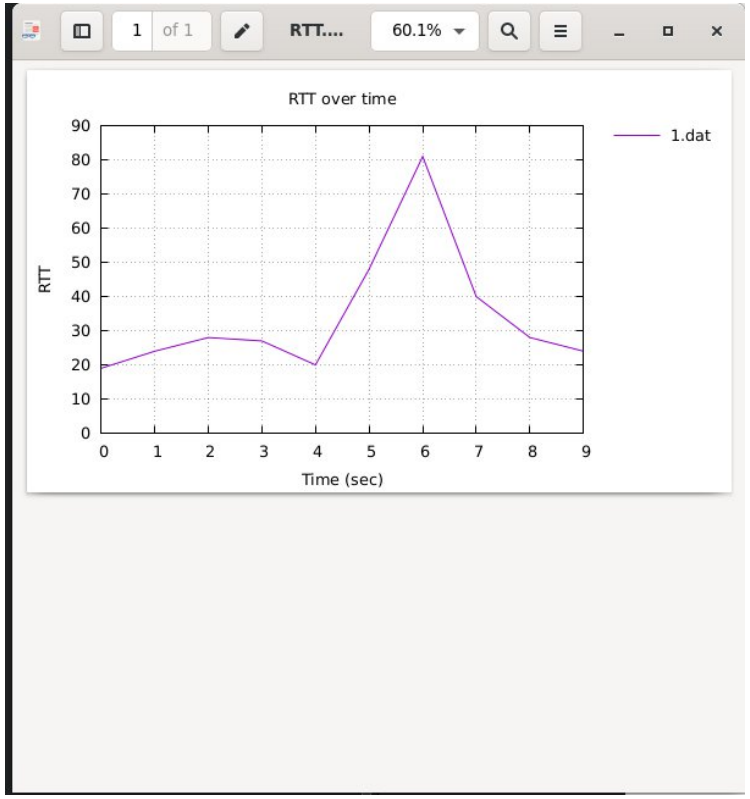
"host: h1" <@mininet-vm>

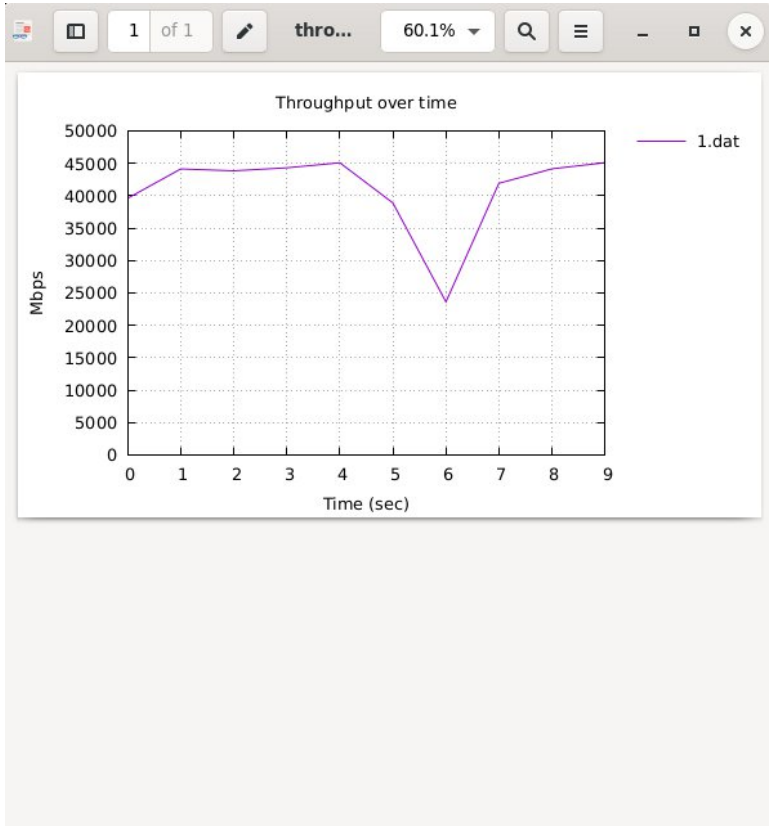
```
root@mininet-vm:/home/mininet# iperf3 -c 10.0.0.2 -n 16G
Connecting to host 10.0.0.2, port 5201
[  7] local 10.0.0.1 port 40702 connected to 10.0.0.2 port 5201
[ ID] Interval           Transfer     Bitrate         Retr  Cwnd
[  7]   0.00-1.00   sec  6.08 GBytes  52.2 Gbits/sec    0   1011 KBytes
[  7]   1.00-2.00   sec  5.54 GBytes  47.6 Gbits/sec    0   1.70 MBytes
[  7]   2.00-2.74   sec  4.39 GBytes  51.0 Gbits/sec    0   1.97 MBytes
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Retr
[  7]   0.00-2.74   sec  16.0 GBytes  50.2 Gbits/sec    0             sender
[  7]   0.00-2.74   sec  16.0 GBytes  50.2 Gbits/sec                  receiver

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

Выполнение задачи



Выполнение задачи





Спасибо За Внимание