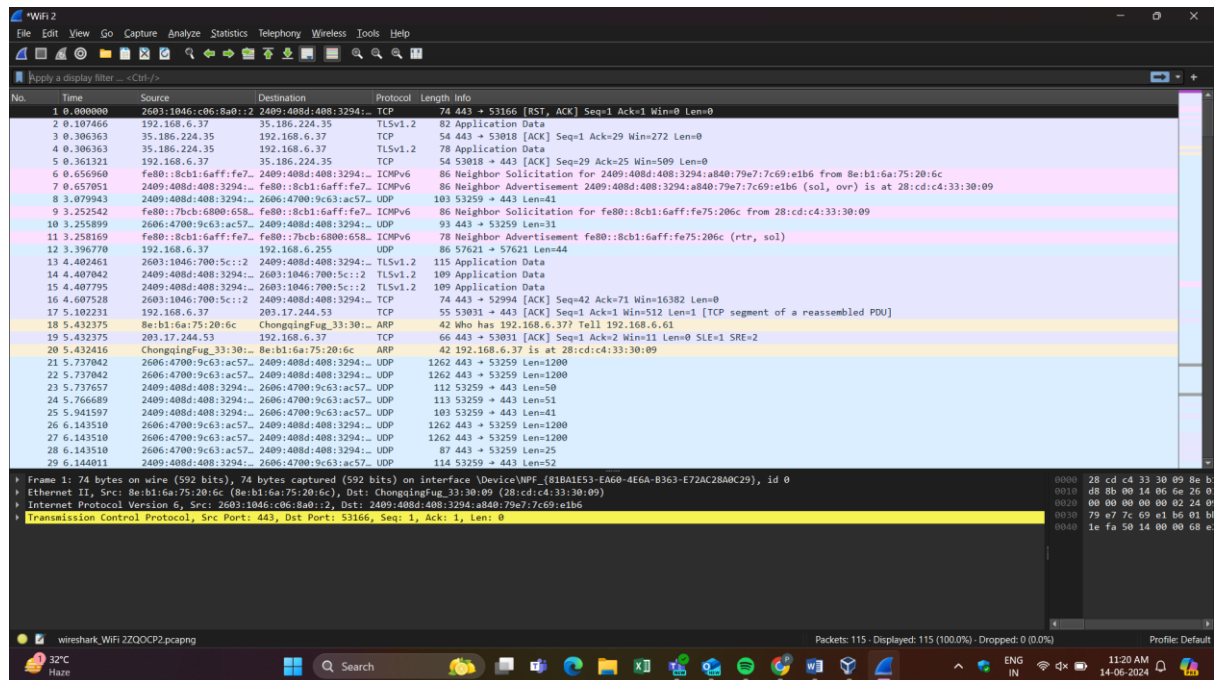
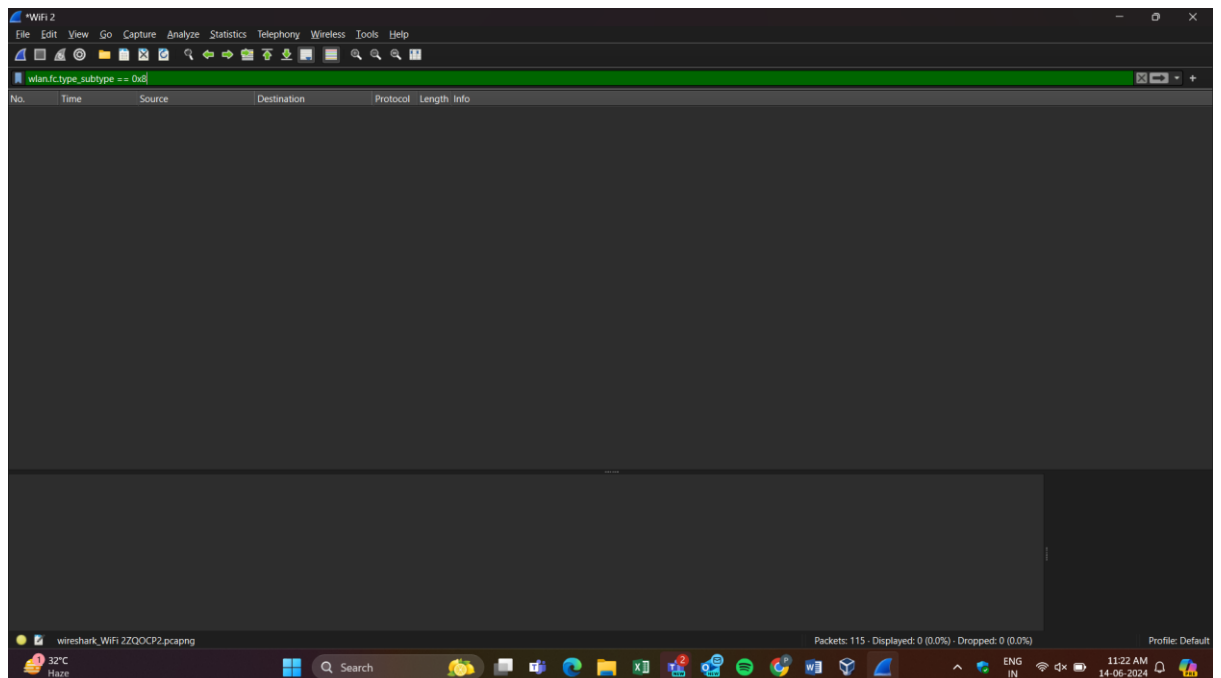


Module 2 Assignment– Network Performance Measurement Tools

1) Install Wireshark, take capture on WiFi interface

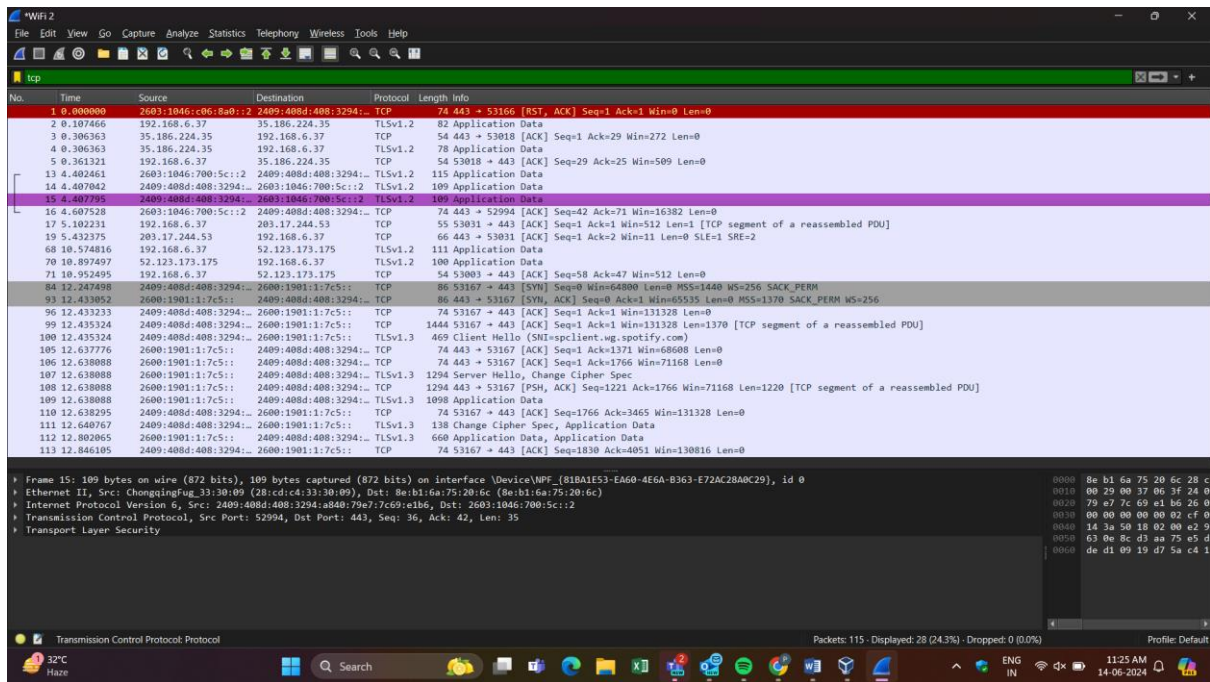


Identify the beacon frame using filter.

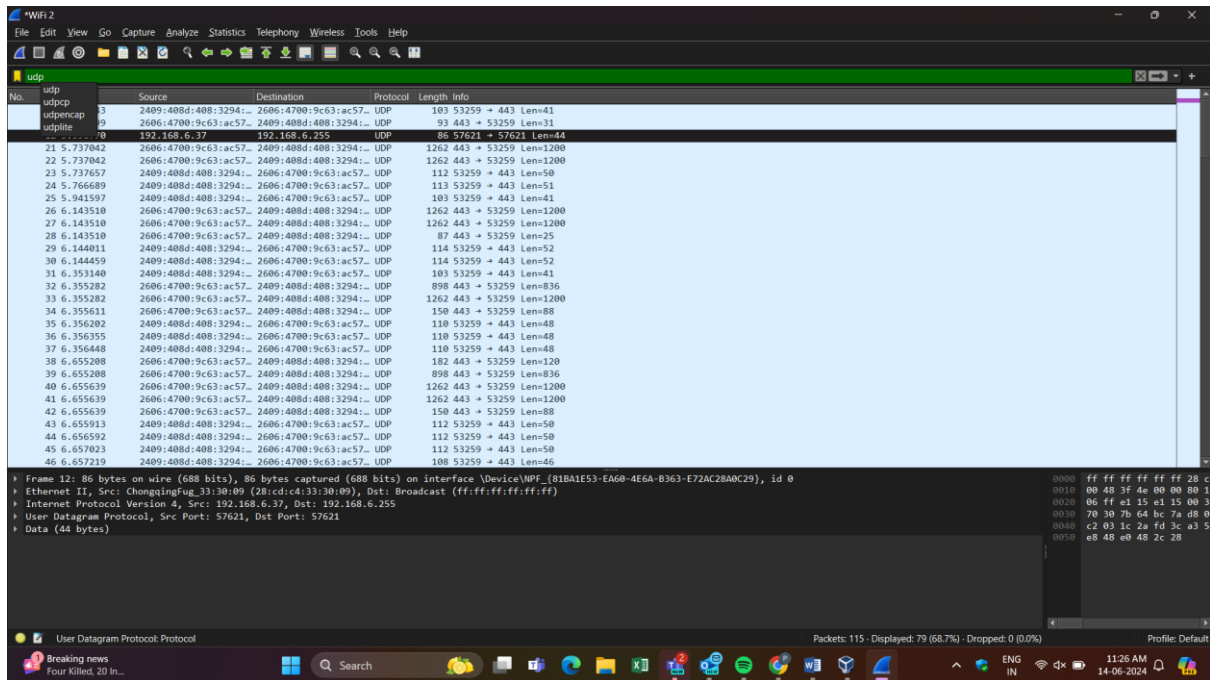


2. Apply filters to view specific packet.

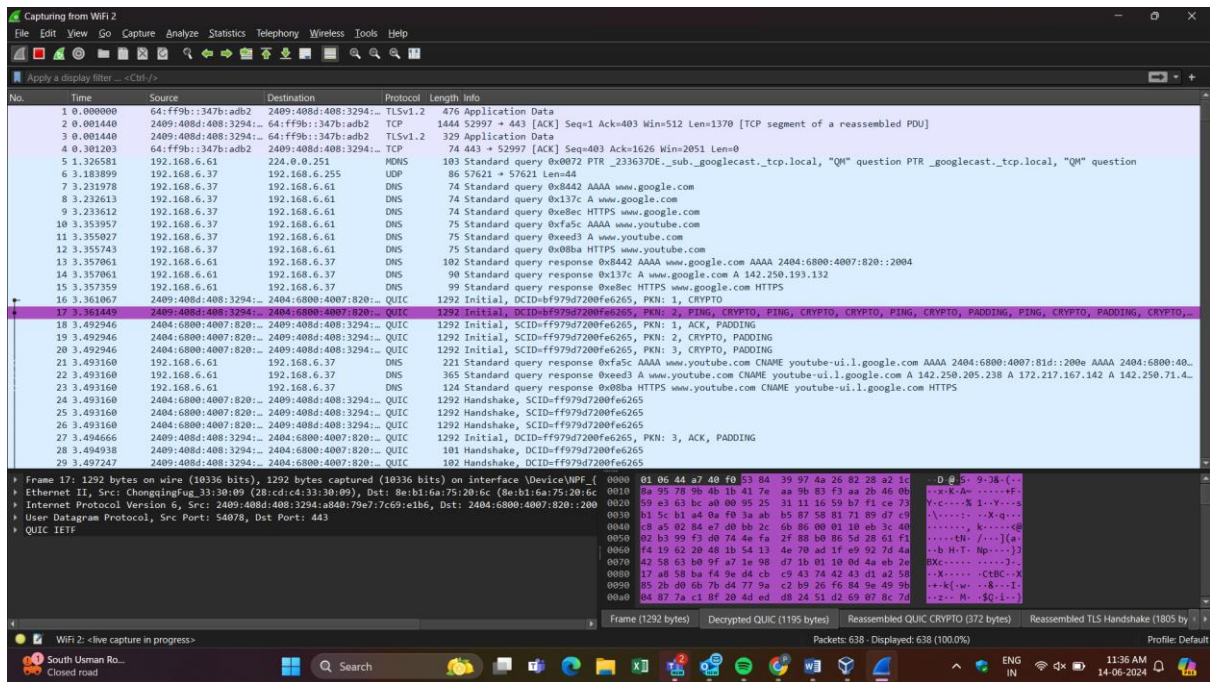
TCP filter



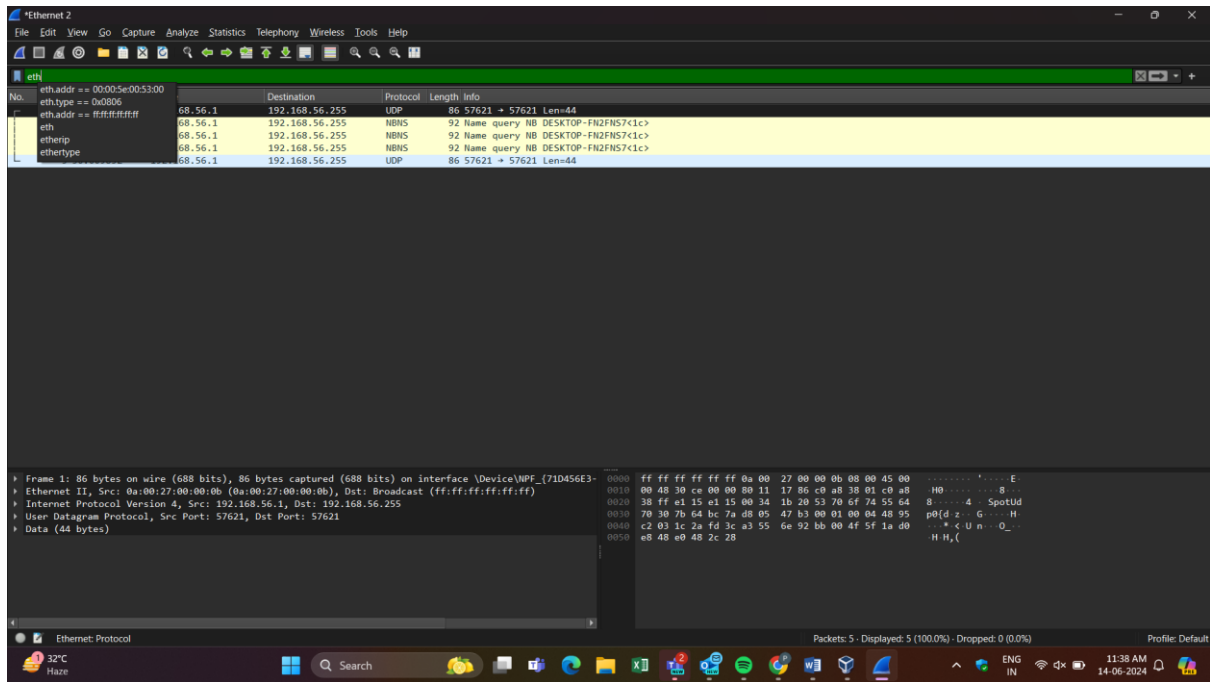
UDP filter



Decrypt the Wireshark pcap using passphrase, to view the encrypted packets.

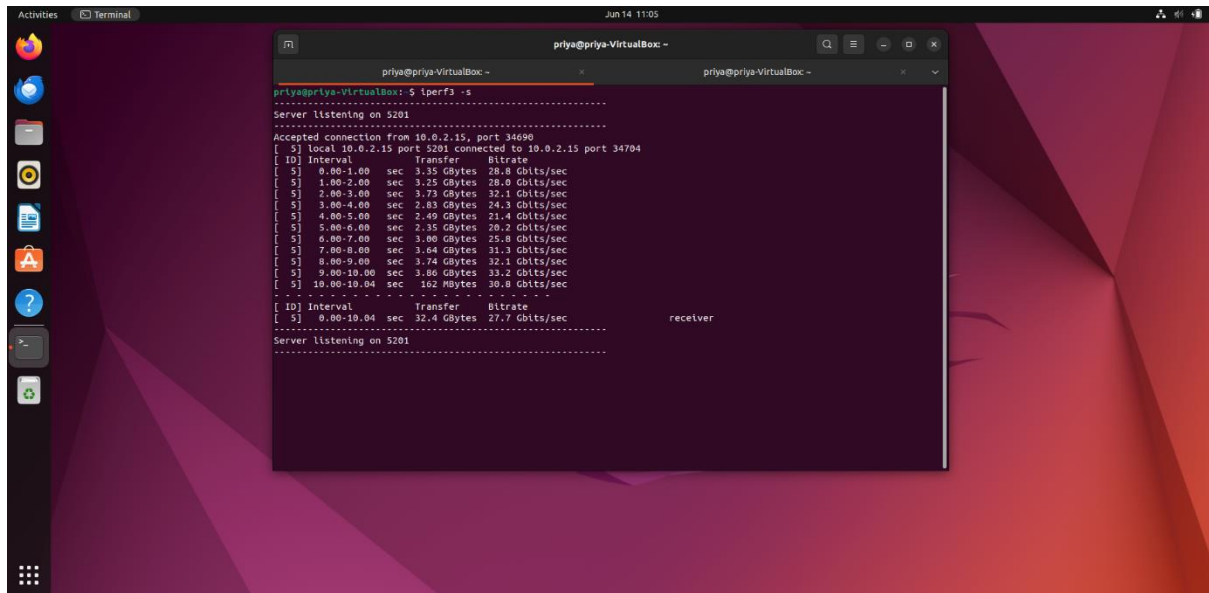


5. Point out Ethernet and 802.11 frames.

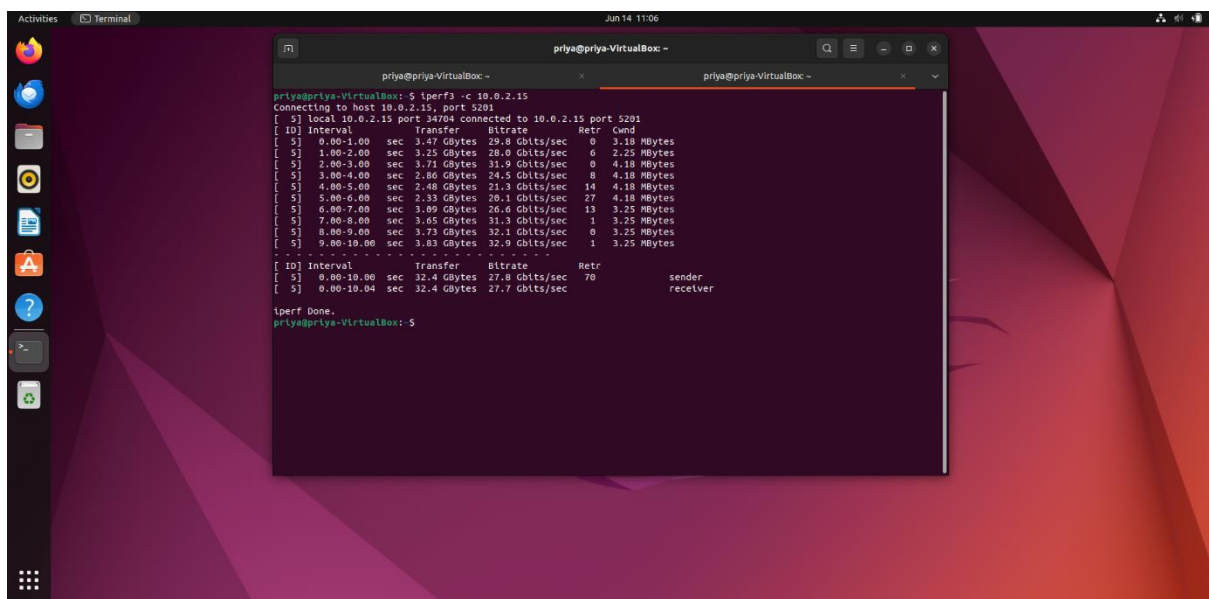


2) Install Iperf on client and server device

1. Run TCP traffic



```
priva@priva-VirtualBox: ~$ iperf3 -s
Server listening on 5201
Accepted connection from 10.0.2.15, port 34704
[ S] local 10.0.2.15 port 5201 connected to 10.0.2.15 port 34704
[ ID] Interval      Transfer      Bitrate
[ S] 0.00-1.00 sec  3.35 GBytes  28.8 Gbits/sec
[ S] 1.00-2.00 sec  3.25 GBytes  28.0 Gbits/sec
[ S] 2.00-3.00 sec  3.73 GBytes  32.1 Gbits/sec
[ S] 3.00-4.00 sec  2.83 GBytes  24.3 Gbits/sec
[ S] 4.00-5.00 sec  2.49 GBytes  21.4 Gbits/sec
[ S] 5.00-6.00 sec  2.35 GBytes  20.2 Gbits/sec
[ S] 6.00-7.00 sec  3.00 GBytes  25.8 Gbits/sec
[ S] 7.00-8.00 sec  3.64 GBytes  31.3 Gbits/sec
[ S] 8.00-9.00 sec  3.74 GBytes  32.1 Gbits/sec
[ S] 9.00-10.00 sec  3.06 GBytes  26.6 Gbits/sec
[ S] 10.00-10.04 sec  162 Mbytes  30.8 Gbits/sec
[ ID] Interval      Transfer      Bitrate
[ S] 0.00-10.04 sec  32.4 GBytes  27.7 Gbits/sec
Server listening on 5201
```



```
priva@priva-VirtualBox: ~$ iperf3 -c 10.0.2.15
Connecting to host 10.0.2.15, port 5201
[ S] local 10.0.2.15 port 5201 connected to 10.0.2.15 port 5201
[ ID] Interval      Transfer      Bitrate      Retr      Cwnd
[ S] 0.00-1.00 sec  3.47 GBytes  29.8 Gbits/sec  0  3.18 Mbytes
[ S] 1.00-2.00 sec  3.25 GBytes  28.0 Gbits/sec  0  2.25 Mbytes
[ S] 2.00-3.00 sec  3.71 GBytes  31.9 Gbits/sec  0  4.18 Mbytes
[ S] 3.00-4.00 sec  2.80 GBytes  24.5 Gbits/sec  8  4.18 Mbytes
[ S] 4.00-5.00 sec  2.40 GBytes  21.3 Gbits/sec  10  4.18 Mbytes
[ S] 5.00-6.00 sec  2.33 GBytes  20.1 Gbits/sec  27  4.18 Mbytes
[ S] 6.00-7.00 sec  3.09 GBytes  26.6 Gbits/sec  13  3.25 Mbytes
[ S] 7.00-8.00 sec  2.65 GBytes  23.3 Gbits/sec  1  3.25 Mbytes
[ S] 8.00-9.00 sec  3.73 GBytes  32.1 Gbits/sec  0  3.25 Mbytes
[ S] 9.00-10.00 sec  3.83 GBytes  32.9 Gbits/sec  1  3.25 Mbytes
[ ID] Interval      Transfer      Bitrate      Retr      Cwnd
[ S] 0.00-10.00 sec  32.4 GBytes  27.8 Gbits/sec  70
[ S] 0.00-10.04 sec  32.4 GBytes  27.7 Gbits/sec
iperf Done.
priva@priva-VirtualBox: ~$
```

2. Run UDP traffic


```

Activities Terminal Jun 14 11:09

priya@priya-VirtualBox ~
[ 5] 3.00-4.00 sec 2.83 GBytes 24.3 Gb/s/sec
[ 5] 4.00-5.00 sec 2.40 GBytes 21.4 Gb/s/sec
[ 5] 5.00-6.00 sec 2.35 GBytes 20.2 Gb/s/sec
[ 5] 6.00-7.00 sec 3.00 GBytes 25.8 Gb/s/sec
[ 5] 7.00-8.00 sec 3.64 GBytes 31.3 Gb/s/sec
[ 5] 8.00-9.00 sec 3.74 GBytes 32.1 Gb/s/sec
[ 5] 9.00-10.00 sec 3.80 GBytes 33.2 Gb/s/sec
[ 5] 10.00-10.04 sec 102 MBytes 30.8 Gb/s/sec
-----
[ ID] Interval Transfer Bitrate
[ 5] 0.00-10.04 sec 32.4 GBytes 27.7 Gb/s/sec receiver
Server listening on S201
Accepted connection from 10.0.2.15, port 40904
[ 5] local 10.0.2.15 port S201 connected to 10.0.2.15 port 37452
[ ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams
[ 5] 0.00-1.00 sec 128 KBytes 1.05 Mb/s/sec 0.000 ms 0/4 (0%)
[ 5] 1.00-2.00 sec 128 KBytes 1.05 Mb/s/sec 0.030 ms 0/4 (0%)
[ 5] 2.00-3.00 sec 128 KBytes 1.05 Mb/s/sec 0.047 ms 0/4 (0%)
[ 5] 3.00-4.00 sec 128 KBytes 1.05 Mb/s/sec 0.071 ms 0/4 (0%)
[ 5] 4.00-5.00 sec 128 KBytes 1.05 Mb/s/sec 0.075 ms 0/4 (0%)
[ 5] 5.00-6.00 sec 128 KBytes 1.05 Mb/s/sec 0.095 ms 0/4 (0%)
[ 5] 6.00-7.00 sec 128 KBytes 1.05 Mb/s/sec 0.107 ms 0/4 (0%)
[ 5] 7.00-8.00 sec 128 KBytes 1.05 Mb/s/sec 0.114 ms 0/4 (0%)
[ 5] 8.00-9.00 sec 128 KBytes 1.05 Mb/s/sec 0.100 ms 0/4 (0%)
[ 5] 9.00-10.00 sec 128 KBytes 1.05 Mb/s/sec 0.089 ms 0/4 (0%)
-----
[ ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams
[ 5] 0.00-10.05 sec 1.25 MBytes 1.04 Mb/s/sec 0.089 ms 0/40 (0%) receiver
Server listening on S201

```

```

Activities Terminal Jun 14 11:09

priya@priya-VirtualBox ~
[ 5] 3.00-4.00 sec 2.86 GBytes 24.5 Gb/s/sec 8 4.18 MBytes
[ 5] 4.00-5.00 sec 2.48 GBytes 21.3 Gb/s/sec 14 4.18 MBytes
[ 5] 5.00-6.00 sec 2.35 GBytes 20.1 Gb/s/sec 27 4.18 MBytes
[ 5] 6.00-7.00 sec 3.00 GBytes 26.6 Gb/s/sec 13 3.25 MBytes
[ 5] 7.00-8.00 sec 3.65 GBytes 31.3 Gb/s/sec 1 3.25 MBytes
[ 5] 8.00-9.00 sec 3.73 GBytes 32.1 Gb/s/sec 0 3.25 MBytes
[ 5] 9.00-10.00 sec 3.83 GBytes 32.9 Gb/s/sec 1 3.25 MBytes
-----
[ ID] Interval Transfer Bitrate Retr sender
[ 5] 0.00-10.00 sec 32.4 GBytes 27.8 Gb/s/sec 70 sender
[ 5] 0.00-10.04 sec 32.4 GBytes 27.7 Gb/s/sec receiver
iperf Done.
priya@priya-VirtualBox:~$ iperf3 -c 10.0.2.15 -u
Connecting to host 10.0.2.15, port S201
[ 5] local 10.0.2.15 port 37452 connected to 10.0.2.15 port S201
[ ID] Interval Transfer Bitrate Total Datagrams
[ 5] 0.00-1.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 1.00-2.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 2.00-3.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 3.00-4.01 sec 128 KBytes 1.04 Mb/s/sec 4
[ 5] 4.01-5.00 sec 128 KBytes 1.06 Mb/s/sec 4
[ 5] 5.00-6.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 6.00-7.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 7.00-8.00 sec 128 KBytes 1.05 Mb/s/sec 4
[ 5] 8.00-9.01 sec 128 KBytes 1.04 Mb/s/sec 4
[ 5] 9.01-10.00 sec 128 KBytes 1.06 Mb/s/sec 4
-----
[ ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams
[ 5] 0.00-10.00 sec 1.25 MBytes 1.05 Mb/s/sec 0.000 ms 0/40 (0%) sender
[ 5] 0.00-10.05 sec 1.25 MBytes 1.04 Mb/s/sec 0.089 ms 0/40 (0%) receiver
iperf Done.
priya@priya-VirtualBox:~$

```

Check for the bandwidth and drops reported in the results.