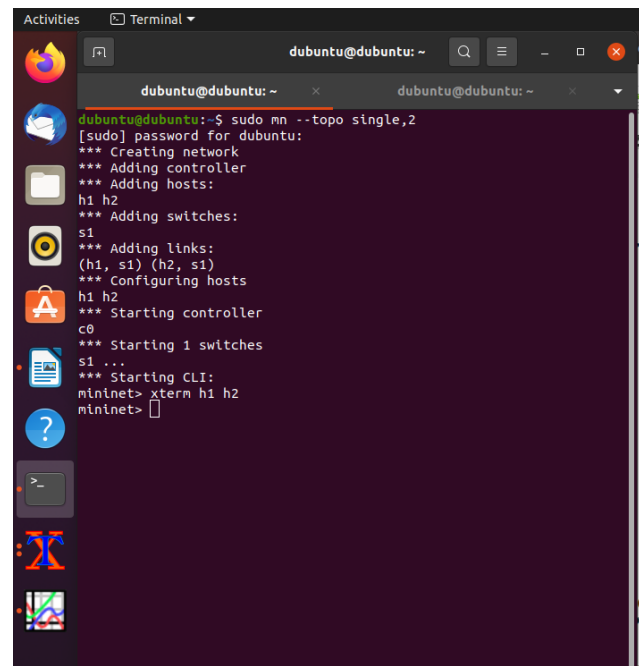


Assignment-7

TCP FLOW THROUGHPUT

```
dubuntu@dubuntu:~$ sudo mn --topo single,2
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1)
*** Configuring hosts
h1 h2
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> xterm h1 h2
mininet>
```



“Node: h1 xterm”

```
root@dubuntu:/home/dubuntu# iperf -s -p 5566 -i 1 > output
```

“Node: h2 xterm”

```
root@dubuntu:/home/dubuntu# iperf -c 10.0.0.1 -p 5566 -t 15
```



“Node: h1 xterm”

[^Croot@dubuntu:/home/dubuntu#](#) **more output**

```
root@dubuntu:/home/dubuntu# iperf -s -p 5566 -i 1 > output
^Croot@dubuntu:/home/dubuntu# more output
-----
Server listening on TCP port 5566
TCP window size: 85.3 KByte (default)
-----
[ 14] local 10.0.0.1 port 5566 connected with 10.0.0.2 port 52650
[ 14] Interval      Transfer      Bandwidth
[ 14] 0.0- 1.0 sec    1.63 GBytes   14.0 Gbits/sec
[ 14] 1.0- 2.0 sec    1.64 GBytes   14.1 Gbits/sec
[ 14] 2.0- 3.0 sec    1.65 GBytes   14.2 Gbits/sec
[ 14] 3.0- 4.0 sec    1.58 GBytes   13.6 Gbits/sec
[ 14] 4.0- 5.0 sec    1.62 GBytes   13.9 Gbits/sec
[ 14] 5.0- 6.0 sec    1.63 GBytes   14.0 Gbits/sec
[ 14] 6.0- 7.0 sec    1.64 GBytes   14.1 Gbits/sec
[ 14] 7.0- 8.0 sec    1.65 GBytes   14.2 Gbits/sec
[ 14] 8.0- 9.0 sec    1.64 GBytes   14.1 Gbits/sec
[ 14] 9.0-10.0 sec    1.82 GBytes   15.6 Gbits/sec
[ 14] 10.0-11.0 sec   2.70 GBytes   23.2 Gbits/sec
[ 14] 11.0-12.0 sec   2.96 GBytes   25.4 Gbits/sec
[ 14] 12.0-13.0 sec   2.92 GBytes   25.1 Gbits/sec
[ 14] 13.0-14.0 sec   2.84 GBytes   24.4 Gbits/sec
[ 14] 14.0-15.0 sec   2.91 GBytes   25.0 Gbits/sec
[ 14] 0.0-15.0 sec   30.8 GBytes   17.6 Gbits/sec
root@dubuntu:/home/dubuntu# cat output | grep sec | head -15 | tr - " " | awk '{print $4,$8}' >
res
```

[root@dubuntu:/home/dubuntu#](#) **cat output | grep sec | head -15 | tr - " " | awk '{print \$4,\$8}' >**

res

[root@dubuntu:/home/dubuntu#](#) **more res**

```
[ 14] 0.0-15.0 sec   30.8 GBytes   17.6 Gbits/sec
root@dubuntu:/home/dubuntu# cat output | grep sec | head -15 | tr - " " | awk '
{print $4,$8}' > res
root@dubuntu:/home/dubuntu# more res
1.0 14.0
2.0 14.1
3.0 14.2
4.0 13.6
5.0 13.9
6.0 14.0
7.0 14.1
8.0 14.2
9.0 14.1
10.0 15.6
11.0 23.2
12.0 25.4
13.0 25.1
14.0 24.4
15.0 25.0
root@dubuntu:/home/dubuntu# gnuplot
```

[root@dubuntu:/home/dubuntu#](#) **gnuplot**

[root@dubuntu:/home/dubuntu#](#) **plot "res" title "TCP FLOW THROUGHPUT" with linespoints**

[root@dubuntu:/home/dubuntu#](#) **set xlabel "Time"**

[root@dubuntu:/home/dubuntu#](#) **set ylabel "TCP Throughput"**

[root@dubuntu:/home/dubuntu#](#) **replot**

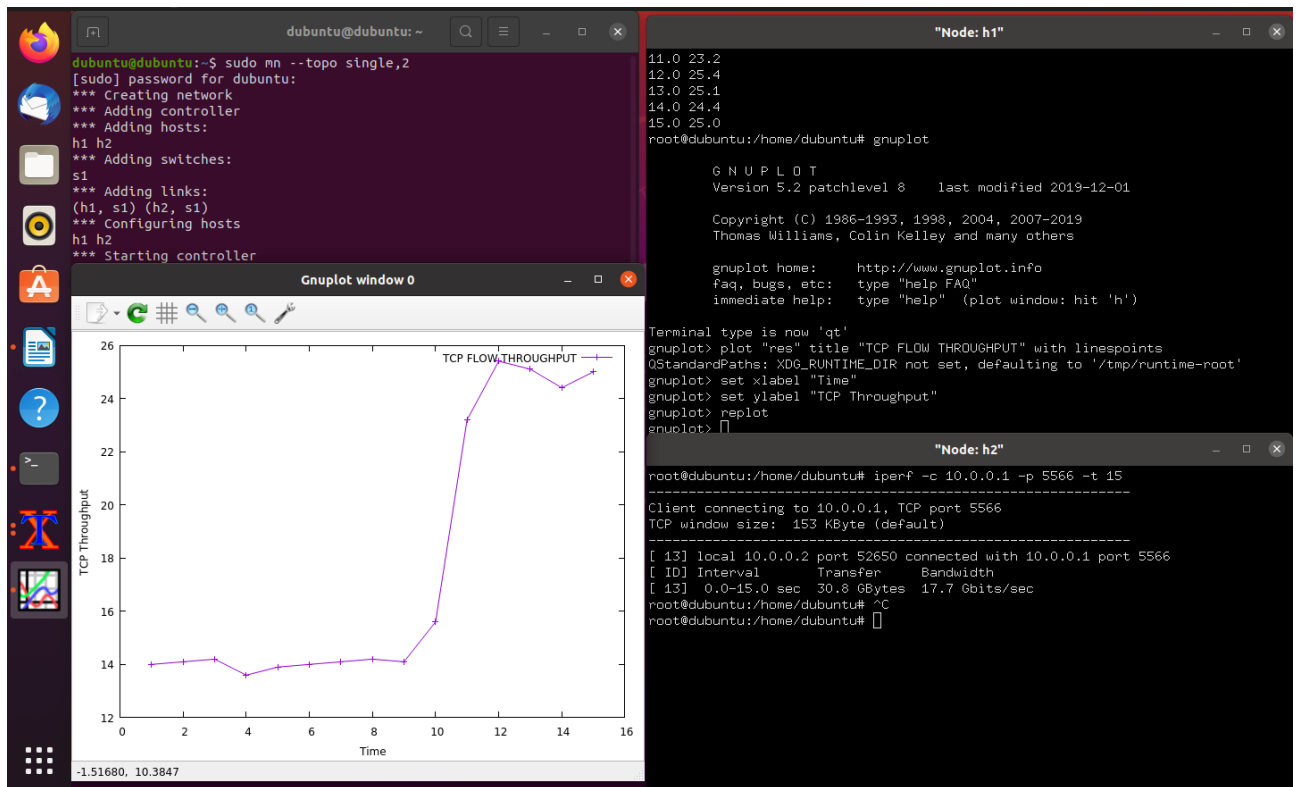
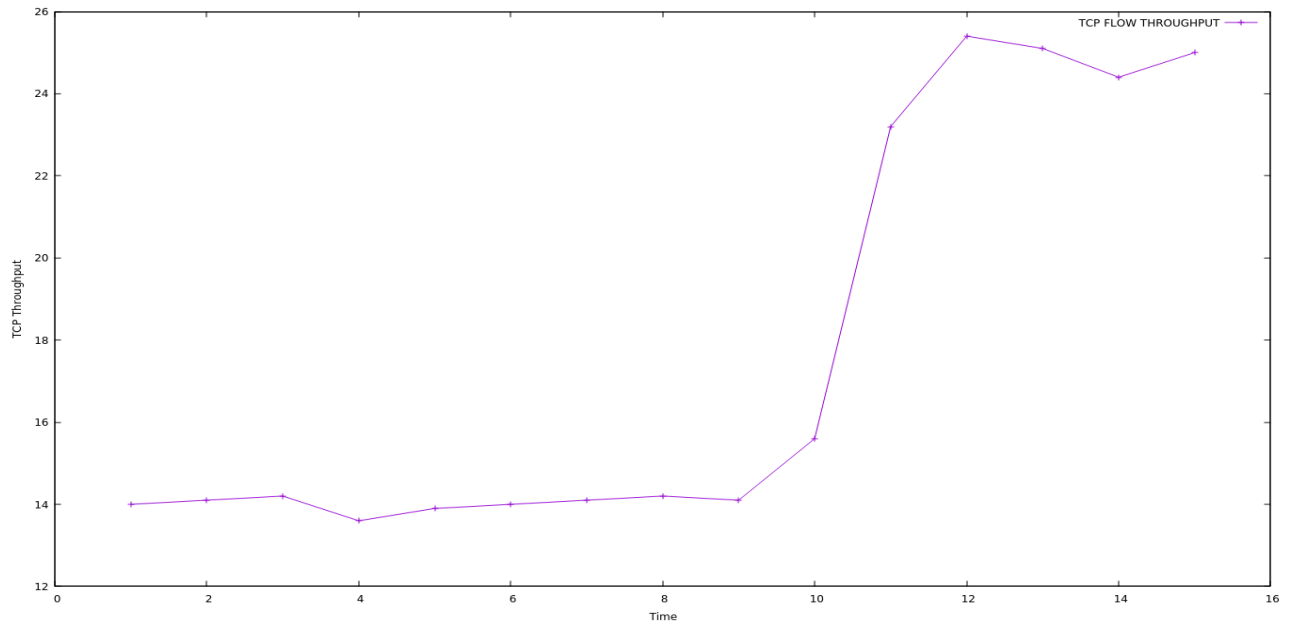
```
"Node: h1"
15.0 25.0
root@dubuntu:/home/dubuntu# gnuplot

G N U P L O T
Version 5.2 patchlevel 8    last modified 2019-12-01

Copyright (C) 1986-1993, 1998, 2004, 2007-2019
Thomas Williams, Colin Kelley and many others

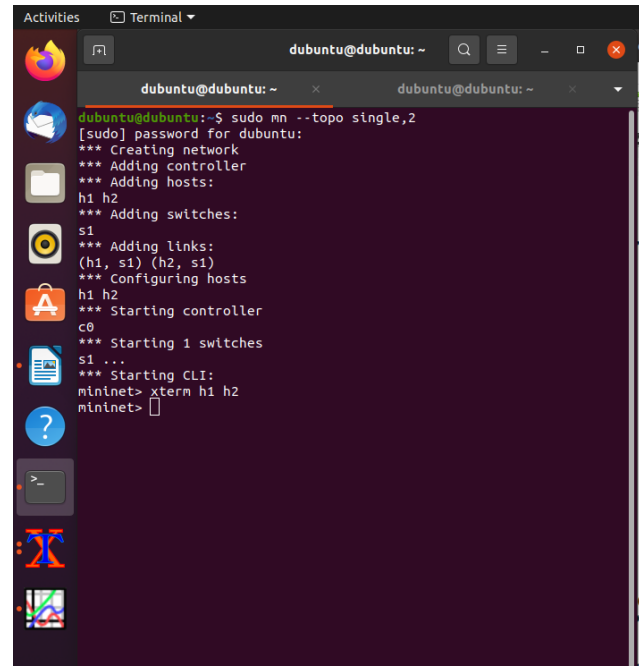
gnuplot home:      http://www.gnuplot.info
faq, bugs, etc:    type "help FAQ"
immediate help:    type "help" (plot window: hit 'h')

Terminal type is now 'qt'
gnuplot> plot "res" title "TCP FLOW THROUGHPUT" with linespoints
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
gnuplot> set xlabel "Time"
gnuplot> set ylabel "TCP Throughput"
gnuplot> replot
gnuplot>
```



UDP FLOW THROUGHPUT

```
dubuntu@dubuntu:~$ sudo mn --topo single,2
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1)
*** Configuring hosts
h1 h2
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> xterm h1 h2
mininet>
```

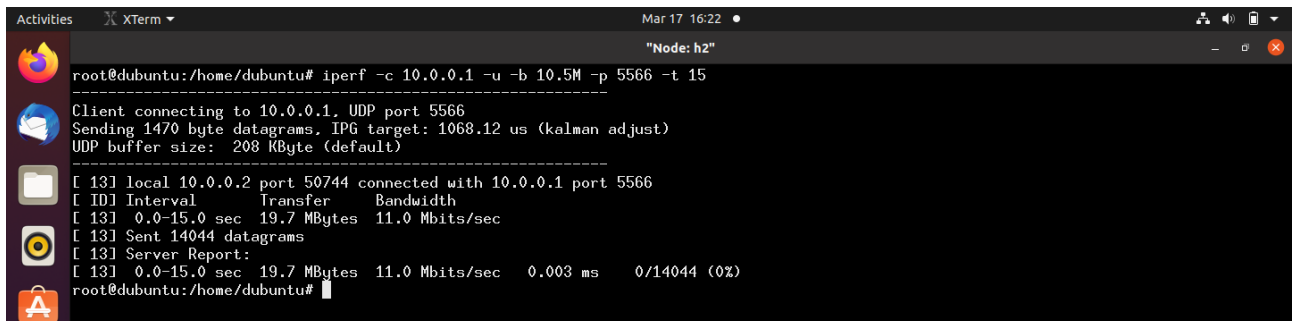


“Node: h1 xterm”

```
root@dubuntu:/home/dubuntu# iperf -s -u -p 5566 -i 1 > output
```

“Node: h2 xterm”

```
root@dubuntu:/home/dubuntu# iperf -c 10.0.0.1 -u -b 10.5M -p 5566 -t 15
```



“Node: h1 xterm”

^Croot@dubuntu:/home/dubuntu# **more output**

root@dubuntu:/home/dubuntu# **cat output | grep sec | head -15 | tr - " " | awk '{print \$4,\$8}' > res**

root@dubuntu:/home/dubuntu# **more res**

```
root@dubuntu:/home/dubuntu# iperf -s -u -p 5566 -i 1 > output
^Croot@dubuntu:/home/dubuntu# more output
-----
Server listening on UDP port 5566
Receiving 1470 byte datagrams
UDP buffer size: 208 KByte (default)
-----
[ 13] local 10.0.0.1 port 5566 connected with 10.0.0.2 port 50744
[ 13] Interval      Transfer      Bandwidth      Jitter      Lost/Total Datagrams
[ 13] 0.0- 1.0 sec    1.31 MBytes    11.0 Mb/s      0.041 ms    0/ 937 (0%)
[ 13] 1.0- 2.0 sec    1.31 MBytes    11.0 Mb/s      0.106 ms    0/ 936 (0%)
[ 13] 2.0- 3.0 sec    1.31 MBytes    11.0 Mb/s      0.040 ms    0/ 936 (0%)
[ 13] 3.0- 4.0 sec    1.31 MBytes    11.0 Mb/s      0.062 ms    0/ 937 (0%)
[ 13] 4.0- 5.0 sec    1.31 MBytes    11.0 Mb/s      0.060 ms    0/ 936 (0%)
[ 13] 5.0- 6.0 sec    1.31 MBytes    11.0 Mb/s      0.003 ms    0/ 936 (0%)
[ 13] 6.0- 7.0 sec    1.31 MBytes    11.0 Mb/s      0.003 ms    0/ 937 (0%)
[ 13] 7.0- 8.0 sec    1.31 MBytes    11.0 Mb/s      0.004 ms    0/ 936 (0%)
[ 13] 8.0- 9.0 sec    1.31 MBytes    11.0 Mb/s      0.006 ms    0/ 936 (0%)
[ 13] 9.0-10.0 sec    1.31 MBytes    11.0 Mb/s      0.002 ms    0/ 936 (0%)
[ 13] 10.0-11.0 sec   1.31 MBytes    11.0 Mb/s      0.004 ms    0/ 936 (0%)
[ 13] 11.0-12.0 sec   1.31 MBytes    11.0 Mb/s      0.005 ms    0/ 937 (0%)
[ 13] 12.0-13.0 sec   1.31 MBytes    11.0 Mb/s      0.004 ms    0/ 936 (0%)
[ 13] 13.0-14.0 sec   1.31 MBytes    11.0 Mb/s      0.003 ms    0/ 936 (0%)
[ 13] 14.0-15.0 sec   1.31 MBytes    11.0 Mb/s      0.004 ms    0/ 936 (0%)
[ 13] 0.0-15.0 sec   19.7 MBytes    11.0 Mb/s      0.004 ms    0/14044 (0%)
root@dubuntu:/home/dubuntu# cat output | grep sec | head -15 | tr - " " | awk '{print $4,$8}' > res
root@dubuntu:/home/dubuntu# more res
1.0 11.0
2.0 11.0
3.0 11.0
4.0 11.0
5.0 11.0
6.0 11.0
7.0 11.0
8.0 11.0
9.0 11.0
10.0 11.0
11.0 11.0
12.0 11.0
13.0 11.0
14.0 11.0
15.0 11.0
root@dubuntu:/home/dubuntu# gnuplot
```

root@dubuntu:/home/dubuntu# **gnuplot**

root@dubuntu:/home/dubuntu# **plot "res" title "TCP FLOW THROUGHPUT" with linespoints**

root@dubuntu:/home/dubuntu# **set xlabel "Time"**

root@dubuntu:/home/dubuntu# **set ylabel "TCP Throughput"**

root@dubuntu:/home/dubuntu# **replot**

