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# CSE 534: FCN - Assignment 3, Part C

### Tasks:

## **IPerf Test**

Command to run Iperf test with host\_2 as the server is:

host\_2 iperf3 -c -D

On specifying -D, the server will run as a daemon in the background

NOTE: The mean RTT is obtained from the respective log file generated for each of the three buffers. The JSON files can be found in the host\_1 folder.

Running iperf test with host\_1 as client and host\_2 as the server for the following buffer sizes:

1. Buffer size: 10kb

mininet> host_1 iperf3 -c 157.0.1.1 -b 100m -w 10k -t 10  Connecting to host 157.0.1.1, port 5201  [ 4] local 152.0.1.1 port 50430 connected to 157.0.1.1 port 5201  [ ID] Interval	i. Danoi c	3120: TOND						
[ 4] local 152.0.1.1 port 50430 connected to 157.0.1.1 port 5201 [ ID] Interval								
[ ID] Interval	Connecting to host 157.0.1.1, port 5201							
[ 4] 0.00-1.00 sec 32.5 KBytes 266 Kbits/sec 0 19.8 KBytes [ 4] 1.00-2.00 sec 32.5 KBytes 266 Kbits/sec 0 19.8 KBytes [ 4] 2.00-3.00 sec 29.7 KBytes 243 Kbits/sec 0 19.8 KBytes [ 4] 3.00-4.00 sec 38.2 KBytes 313 Kbits/sec 0 19.8 KBytes [ 4] 4.00-5.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4] local 152.0.1.1 port 50430 connected to 157.0.1.1 port 5201							
[ 4] 1.00-2.00 sec 32.5 KBytes 266 Kbits/sec 0 19.8 KBytes [ 4] 2.00-3.00 sec 29.7 KBytes 243 Kbits/sec 0 19.8 KBytes [ 4] 3.00-4.00 sec 38.2 KBytes 313 Kbits/sec 0 19.8 KBytes [ 4] 4.00-5.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ ID] In	terval		Transfer	Bandwidth	Retr	Cwnd	
[ 4] 2.00-3.00 sec 29.7 KBytes 243 Kbits/sec 0 19.8 KBytes [ 4] 3.00-4.00 sec 38.2 KBytes 313 Kbits/sec 0 19.8 KBytes [ 4] 4.00-5.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes 2								
[ 4] 3.00-4.00 sec 38.2 KBytes 313 Kbits/sec 0 19.8 KBytes [ 4] 4.00-5.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	1.00-2.00	sec				19.8 KBytes	
[ 4] 4.00-5.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	2.00-3.00	sec					
[ 4] 5.00-6.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	3.00-4.00	sec					
[ 4] 6.00-7.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes [ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes	[ 4]	4.00-5.00	sec					
[ 4] 7.00-8.00 sec 28.3 KBytes 232 Kbits/sec 0 19.8 KBytes [ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes  [ ID] Interval Transfer Bandwidth Retr [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	5.00-6.00	sec	33.9 KBytes	278 Kbits/sec	0	19.8 KBytes	
[ 4] 8.00-9.00 sec 36.8 KBytes 301 Kbits/sec 0 19.8 KBytes [ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes  [ ID] Interval Transfer Bandwidth Retr [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	6.00-7.00	sec	33.9 KBytes	278 Kbits/sec	0	19.8 KBytes	
[ 4] 9.00-10.00 sec 33.9 KBytes 278 Kbits/sec 0 19.8 KBytes         [ ID] Interval Transfer Bandwidth Retr         [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender         [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	7.00-8.00	sec	28.3 KBytes	232 Kbits/sec	0	19.8 KBytes	
[ ID] Interval Transfer Bandwidth Retr [ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	8.00-9.00	sec				19.8 KBytes	
[ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ 4]	9.00-10.00	sec	33.9 KBytes	278 Kbits/sec	0	19.8 KBytes	
[ 4] 0.00-10.00 sec 337 KBytes 276 Kbits/sec 0 sender [ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver	[ ID] [-4]							
[ 4] 0.00-10.00 sec 328 KBytes 269 Kbits/sec receiver								
			sec				sender	
iperf Done.	[ 4]	0.00-10.00	sec	328 KBytes	269 Kbits/sec		rece i ver	
iperf Done.								
	iperf Do	ne.						

Mean RTT: 267223 ms

Bandwidth: 276 Kbits/sec = 0.276 Mbits/sec Therefore, BDP = 276 \* 267223 = 9.22 Mbyte

### 2. Buffer size: 5mb

```
mininet> host_1 iperf3 -c 157.0.1.1 -b 100m -w 5m -t 10
Connecting to host 157.0.1.1, port 5201
  41 local 152.0.1.1 port 50438 connected to 157.0.1.1 port 5201
 ID1 Interval
                                        Bandwidth
                          Transfer
                                                         Retr
                                                                Cwnd
  4]
        0.00 - 1.00
                                        58.7 Mbits/sec
                          7.00 MBytes
                                                            0
                                                                67.9 KBytes
                     sec
  4]
        1.00-2.00
                          1.25 MBytes
                                        10.5 Mbits/sec
                                                            0
                                                                1.14 MBytes
                     sec
                          8.25 MBytes
                                        69.2 Mbits/sec
                                                                5.75 MBytes
  4]
        2.00 - 3.00
                                                            0
                     sec
   4]
        3.00 - 4.00
                          11.2 MBytes
                                        94.4 Mbits/sec
                                                            0
                                                                5.75 MBytes
                     sec
   4]
        4.00-5.00
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                            0
                                                                5.75 MBytes
                     sec
   41
        5.00-6.00
                     sec
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                           0
                                                                5.75 MBytes
   41
        6.00-7.00
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                                5.75 MBytes
                     sec
                                                           0
   4]
        7.00-8.00
                          11.2 MBytes
                                        94.4 Mbits/sec
                                                           0
                                                                5.75 MBytes
                     sec
   4]
        8.00 - 9.00
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                           0
                                                                5.75 MBytes
                     sec
   4]
        9.00-10.00
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                            0
                                                                5.75 MBytes
                     sec
  ID1 Interval
                          Transfer
                                        Bandwidth
                                                         Retr
  4]
        0.00 - 10.00
                          95.9 MBytes
                                        80.4 Mbits/sec
                                                            Θ
                                                                           sender
                     sec
   41
        0.00 - 10.00
                     sec
                          94.1 MBytes
                                        78.9 Mbits/sec
                                                                           rece i ver
iperf Done.
```

Mean RTT: 303859 ms Bandwidth: 80.4 Mbits/sec

Therefore BDP = 80.4 \* 303859 = 3053.78 Mbyte

#### 3. Buffer size: 25mb

```
mininet> host_1 iperf3 -c 157.0.1.1 -b 100m -w 25m -t 10
Connecting to host 157.0.1.1, port 5201
  41 local 152.0.1.1 port 50446 connected to 157.0.1.1 port 5201
 ID] Interval
                                                               Cwnd
                          Transfer
                                        Bandwidth
                                                          Retr
                          10.9 MBytes
  4]
        0.00 - 1.00
                     sec
                                        91.2 Mbits/sec
                                                            0
                                                                67.9 KBytes
                          11.0 MBytes
        1.00-2.00
                                                                1.15 MBytes
  4]
                     sec
                                        92.3 Mbits/sec
                                                            0
        2.00-3.00
                          6.00 MBytes
                                        50.3 Mbits/sec
                                                                1.63 MBytes
  4]
                                                            0
                     sec
  4]
        3.00 - 4.00
                          7.00 MBytes
                                        58.7 Mbits/sec
                                                            0
                                                                1.90 MBytes
                     sec
  4]
        4.00 - 5.00
                          8.25 MBytes
                                        69.2 Mbits/sec
                                                            0
                                                                2.20 MBytes
                     sec
  4]
        5.00 - 6.00
                          9.75 MBytes
                                        81.8 Mbits/sec
                                                            0
                                                                2.54 MBytes
                     sec
        6.00-7.00
                          10.9 MBytes
  4]
                                        91.2 Mbits/sec
                                                            0
                                                                2.82 MBytes
                     sec
  41
        7.00-8.00
                          11.4 MBytes
                                        95.4 Mbits/sec
                                                            0
                                                                3.02 MBytes
                     sec
        8.00-9.00
  4]
                     sec
                          11.0 MBytes
                                        92.3 Mbits/sec
                                                            0
                                                                3.20 MBytes
        9.00-10.00
                                        95.4 Mbits/sec
                                                                3.42 MBytes
   41
                          11.4 MBytes
                                                            0
                     sec
 ID 1
      Interval
                          Transfer
                                        Bandwidth
                                                          Retr
        0.00 - 10.00
                          97.5 MBytes
                                        81.8 Mbits/sec
  41
                                                            0
                                                                           sender
                     sec
        0.00 - 10.00
                          80.1 MBytes
  4]
                     sec
                                        67.2 Mbits/sec
                                                                           rece i ver
iperf Done.
```

Mean RTT: 251672 ms Bandwidth: 81.8 Mbits/sec

Therefore BDP = 10.225 \* 251672 = 2573.35 Mbyte

The above results for the specified buffer sizes can be obtained in a JSON log file by adding the additional flag "-J –logfile filename.json" to the above command.