PART C

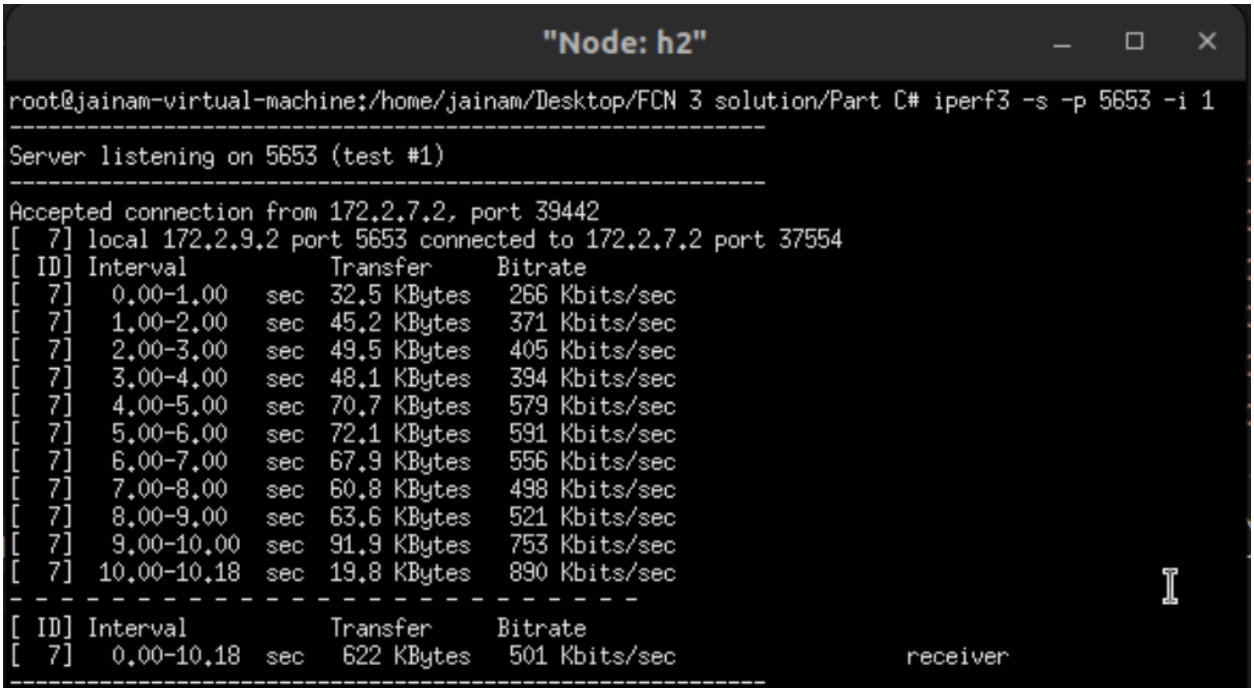
(a) MyIperf.py created

(b) (c) Screenshots for the three scenarios and explaination

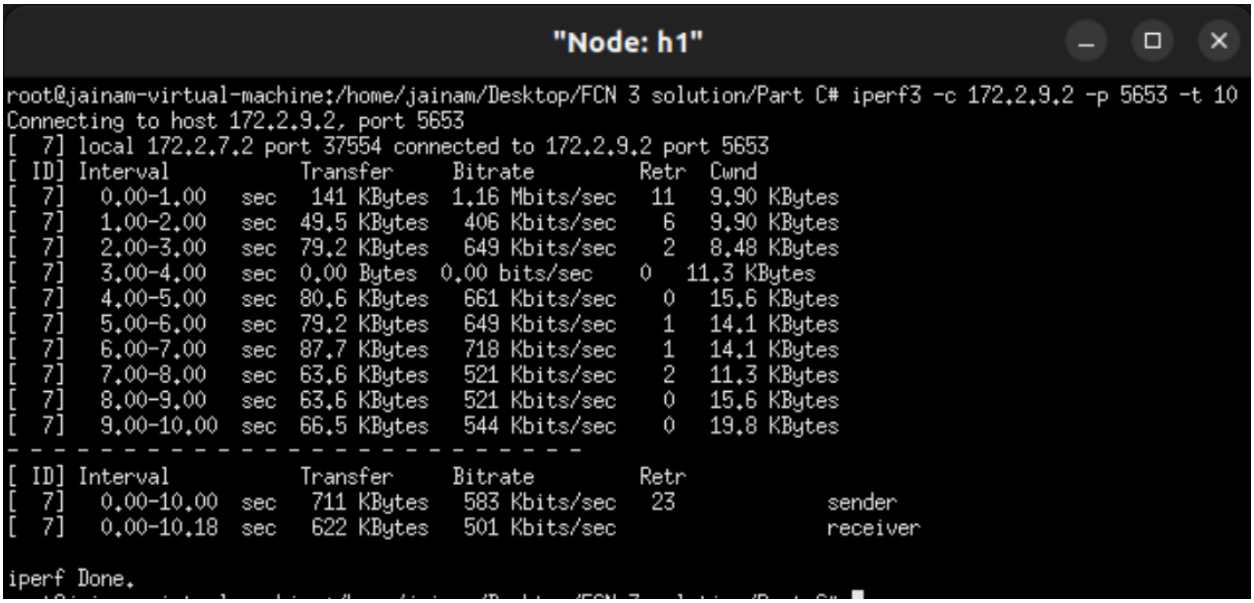
Scenario 1 – Buffer Size 10kb

Command used – *xterm h1 h2*

H2

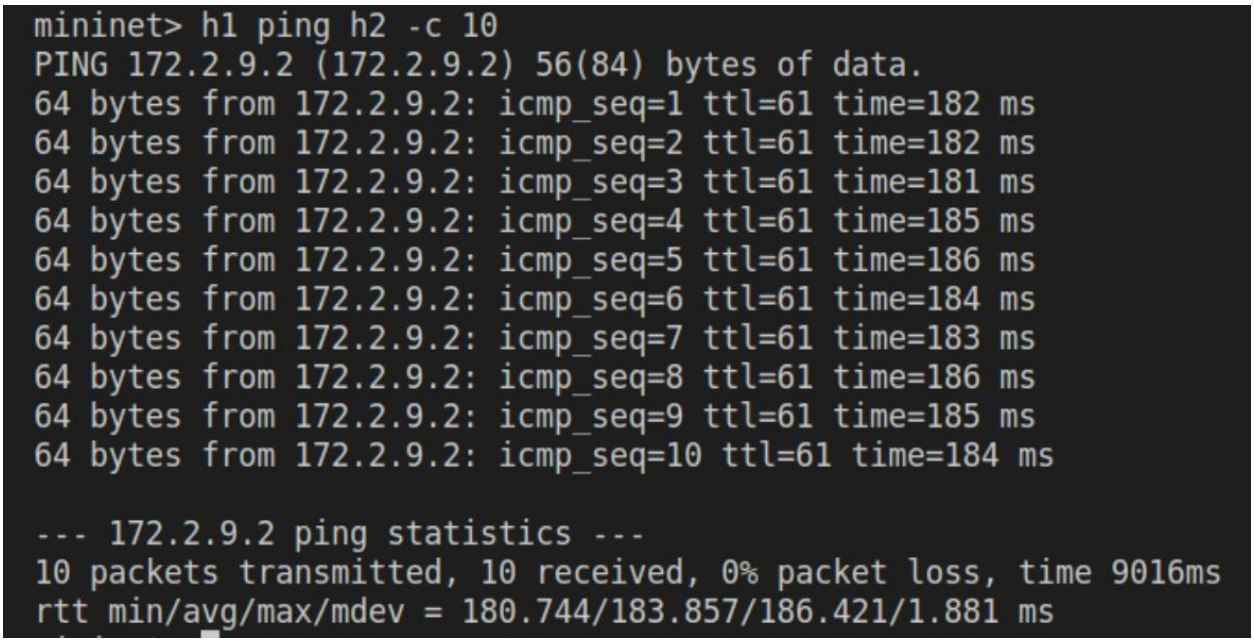


H1

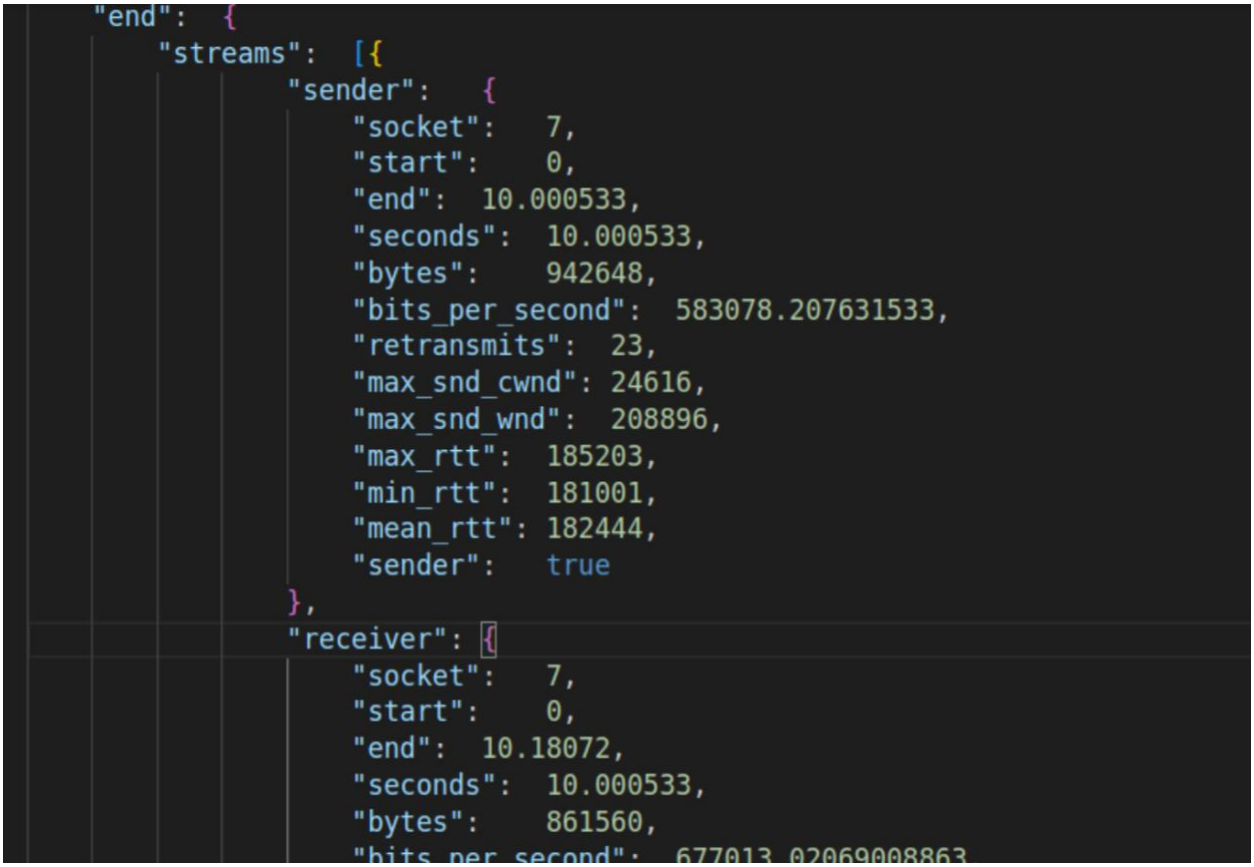


RTT

Command used - *H1 ping h2 -c 10*



Created a client2.json



Explanation:

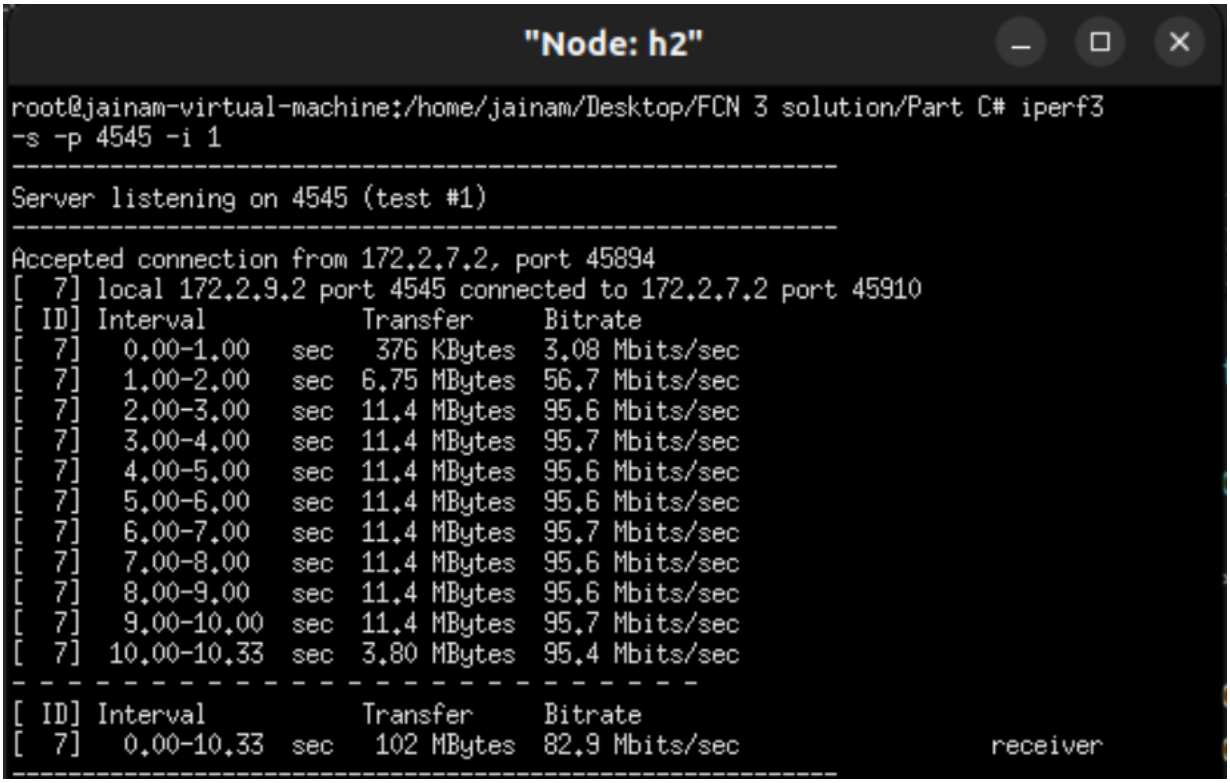
Here I take the bits_per_second and mean_rtt values

BDP = Average Bandwidth * Average RTT = 583078.207631533 * 182444 / 1000000 bits = 132.973kb. Here is buffer size is 10kb. Now here we can see that there are 23 retransmissions. This happened because the buffer size is too low compares to the BDP, so the buffer gets full and the packets get lost. Since the buffer size is just 10 kb/s, we receive a bandwidth of 583 kb/s. Prior to using our entire 100 mbps of bandwidth, our buffer fills up a couple times.

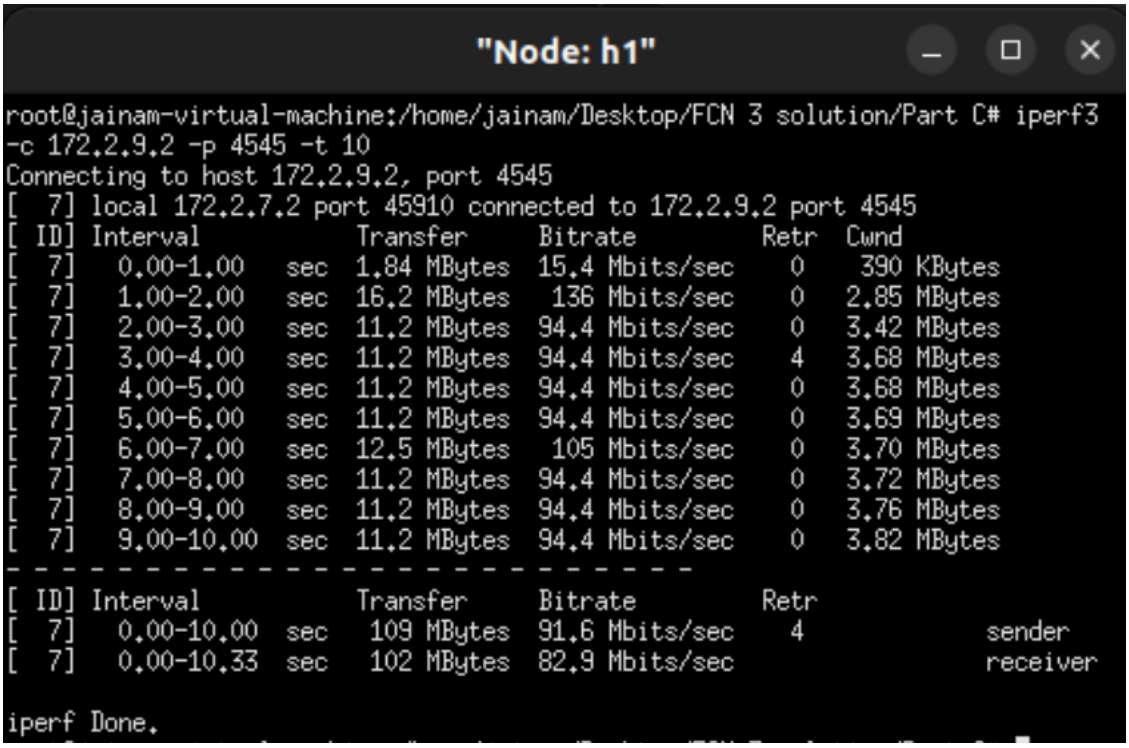
Scenario 2 – Buffer Size 10mb

Command used – *xterm h1 h2*

H2

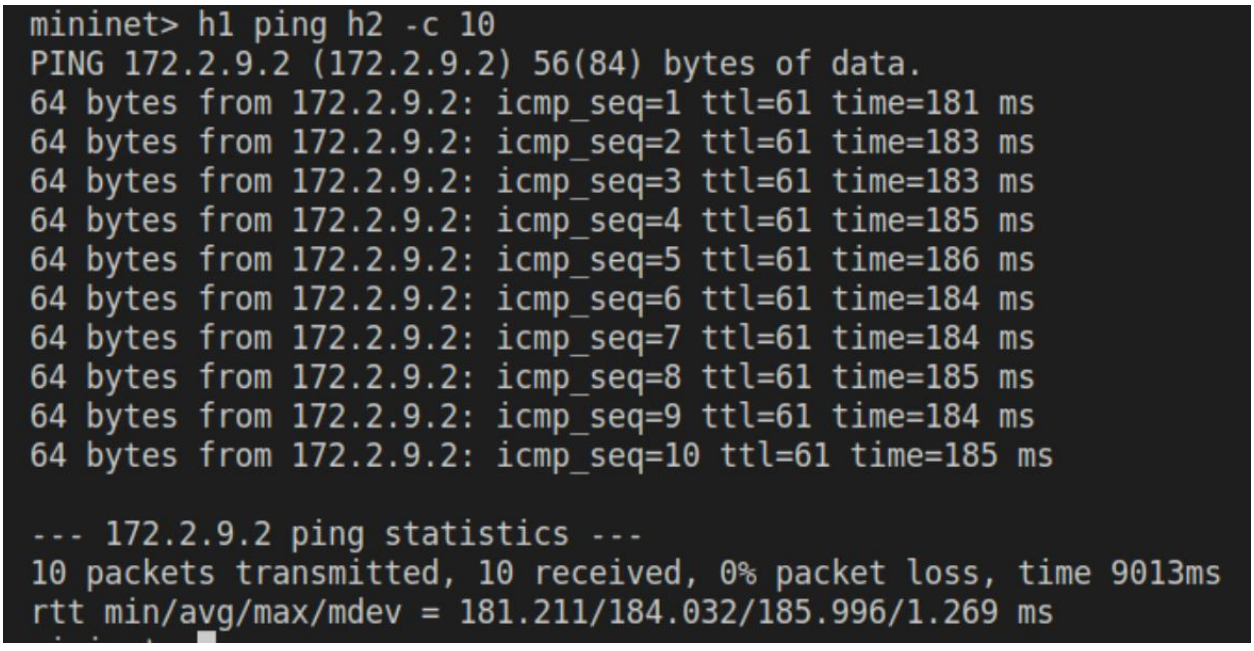

"Node: h2"
root@jainam-virtual-machine:/home/jainam/Desktop/FCN 3 solution/Part C# iperf3 -s -p 4545 -i 1
Server listening on 4545 (test #1)
Accepted connection from 172.2.7.2, port 45894
[7] local 172.2.9.2 port 4545 connected to 172.2.7.2 port 45910
[ID] Interval Transfer Bitrate
[7] 0.00-1.00 sec 376 KBytes 3.08 Mbits/sec
[7] 1.00-2.00 sec 6.75 MBytes 56.7 Mbits/sec
[7] 2.00-3.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 3.00-4.00 sec 11.4 MBytes 95.7 Mbits/sec
[7] 4.00-5.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 5.00-6.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 6.00-7.00 sec 11.4 MBytes 95.7 Mbits/sec
[7] 7.00-8.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 8.00-9.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 9.00-10.00 sec 11.4 MBytes 95.7 Mbits/sec
[7] 10.00-10.33 sec 3.80 MBytes 95.4 Mbits/sec
[ID] Interval Transfer Bitrate
[7] 0.00-10.33 sec 102 MBytes 82.9 Mbits/sec receiver

H1



RTT

Command used - *H1 ping h2 -c 10*



Created a client1.json

Explanation:

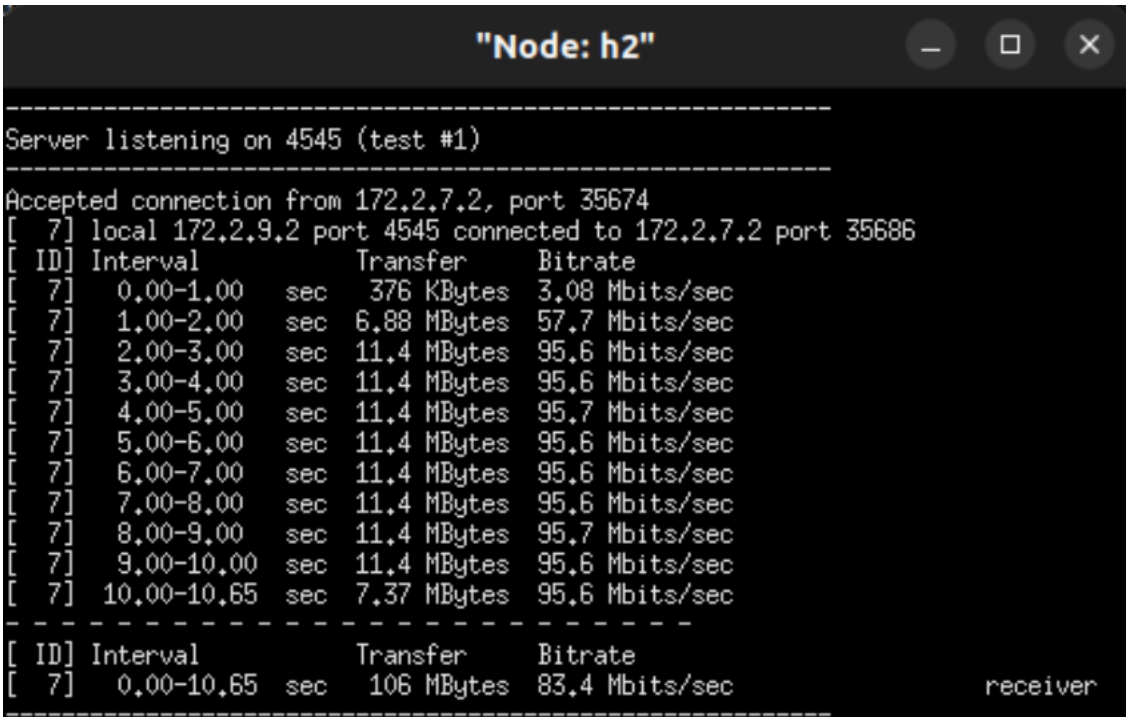
Here I take the bits_per_second and mean_rtt values

BDP = Average Bandwidth * Average RTT = 91601863.320937 * 400517 / 1000000 bits = 4.586mb. Here is buffer size is 5mb. We receive 4 retransmissions as the buffer fills up since the buffer size is smaller than BDP, which results in packet loss. As expected, we see that this time around, we receive less retransmissions than we did in the previous instance. With a larger buffer, fewer packets are lost. Here, because our buffer size is higher than in previous instances, we achieve a bandwidth of 91.6 mbps. We are using the majority of our 100 mbps maximum bandwidth.

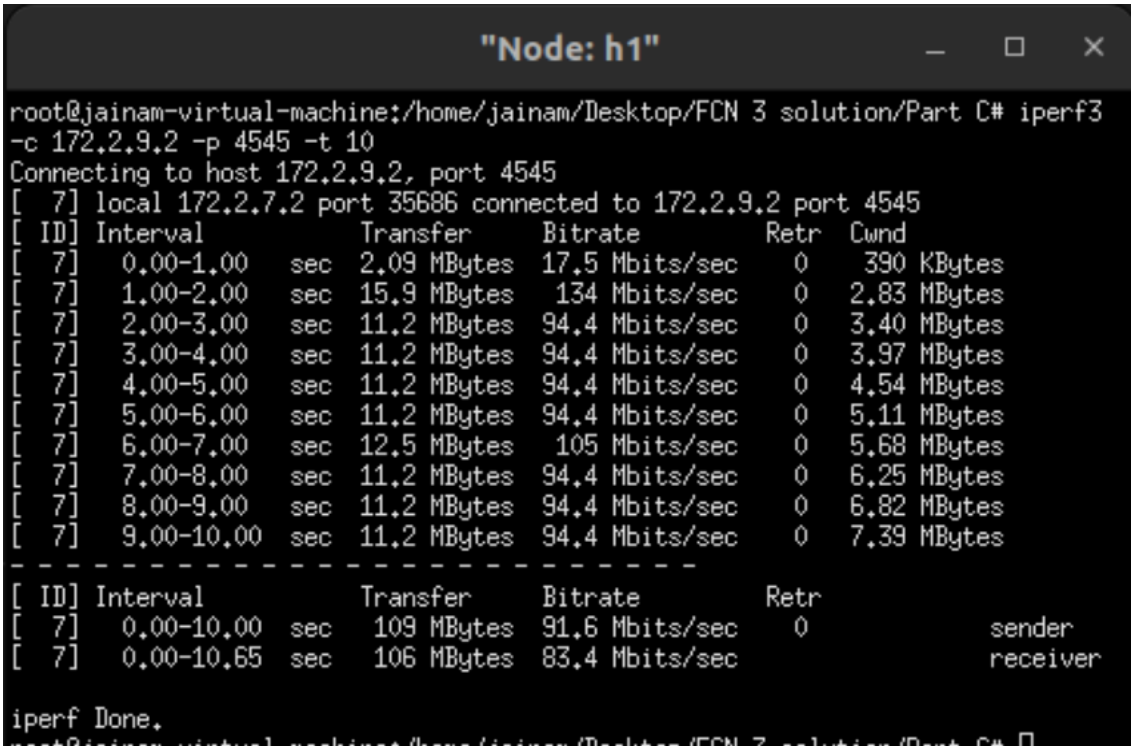
Scenario 3 – Buffer Size 25mb

Command used – *xterm h1 h2*

H2

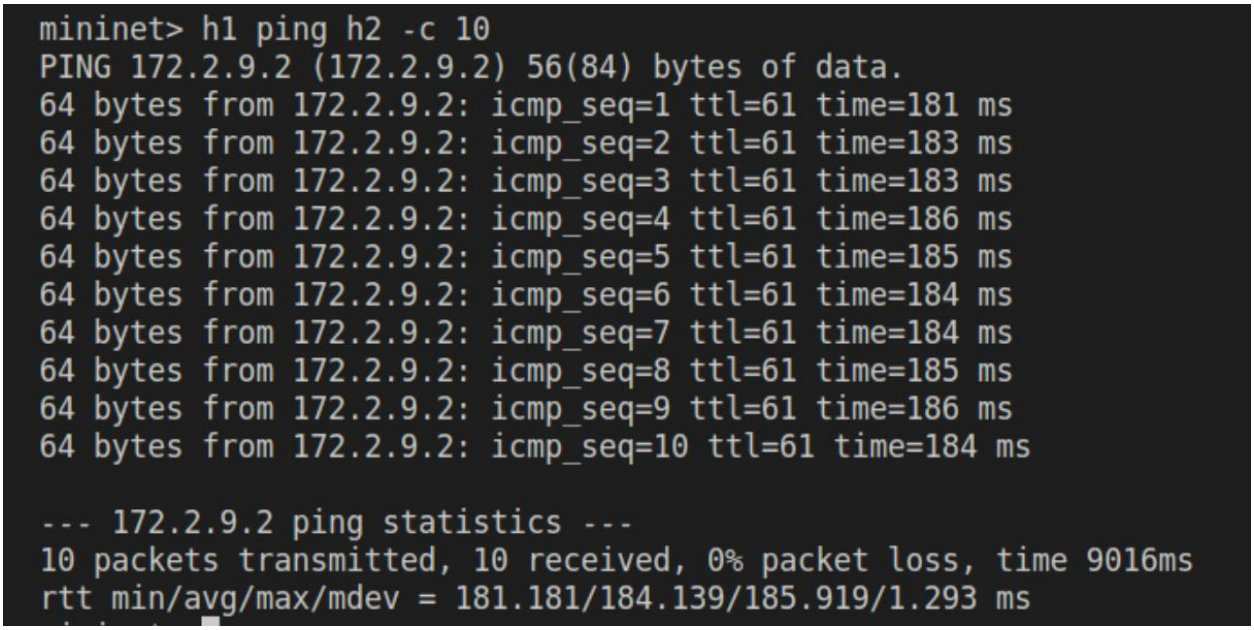

"Node: h2"
Server listening on 4545 (test #1)
Accepted connection from 172.2.7.2, port 35674
[7] local 172.2.9.2 port 4545 connected to 172.2.7.2 port 35686
[ID] Interval Transfer Bitrate
[7] 0.00-1.00 sec 376 KBytes 3.08 Mbits/sec
[7] 1.00-2.00 sec 6.88 MBytes 57.7 Mbits/sec
[7] 2.00-3.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 3.00-4.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 4.00-5.00 sec 11.4 MBytes 95.7 Mbits/sec
[7] 5.00-6.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 6.00-7.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 7.00-8.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 8.00-9.00 sec 11.4 MBytes 95.7 Mbits/sec
[7] 9.00-10.00 sec 11.4 MBytes 95.6 Mbits/sec
[7] 10.00-10.65 sec 7.37 MBytes 95.6 Mbits/sec
[ID] Interval Transfer Bitrate
[7] 0.00-10.65 sec 106 MBytes 83.4 Mbits/sec receiver

H1



RTT

Command used - *H1 ping h2 -c 10*



Created a client.json

Explaination

Here I take the bits_per_second and mean_rtt values
BDP = Average Bandwidth * Average RTT = 91644424.3380231 * 378451 / 1000000 bits = 4.335mb. Here is buffer size is 25mb. Since the buffer size exceeds BDP, there is no packet loss and no retransmission, which is what was anticipated. Here, because our buffer size is higher than in previous instances, we achieve a bandwidth of 91.6 mbps. We are using the majority of our 100 mbps maximum bandwidth. We can see that the bandwidth in this situation and the one before is nearly identical.