

Project CCS:

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1. SENDER IP ADDRESS AND RECEIVER IP ADDRESS

Running on 2 different systems connected to same network:

sender IP - client and receiver ip - server

```
Vigneshs-MacBook-Pro:CS258Project vigy$ javac Server.java
Vigneshs-MacBook-Pro:CS258Project vigy$ java Server
Server is running...
Server IP: 172.20.10.3
Connected to client: /172.20.10.2:58113
Packets received so far: 1000
Packets missed so far: 14
Total packets sent by client so far: 1014
```

2. NUMBER OF PACKETS SENT AND RECEIVED

Server running and got client connection.

Shows 4 things:

- a) packets received so far per 1000 packets we are returning the result
- b) total packets missed till now
- c) total packets actually sent by client = a + b
- d) goodput till now

```
Vigneshs-MacBook-Pro:CS258Project vigy$ javac Server.java
Vigneshs-MacBook-Pro:CS258Project vigy$ java Server
Server is running...
Server IP: 172.20.10.3
Connected to client: /172.20.10.2:58113
Packets received so far: 1000
Packets missed so far: 14
Total packets sent by client so far: 1014
Current Goodput: 0.9862
Packets received so far: 2000
Packets missed so far: 23
Total packets sent by client so far: 2023
Current Goodput: 0.9924
Packets received so far: 3000
Packets missed so far: 34
Total packets sent by client so far: 3034
Current Goodput: 0.9944
Packets received so far: 4000
Packets missed so far: 42
Total packets sent by client so far: 4042
Current Goodput: 0.9958
Packets received so far: 5000
Packets missed so far: 49
Total packets sent by client so far: 5049
Current Goodput: 0.9967
Packets received so far: 6000
Packets missed so far: 63
Total packets sent by client so far: 6063
Current Goodput: 0.9970
Packets received so far: 7000
Packets missed so far: 72
Total packets sent by client so far: 7072
Current Goodput: 0.9974
Packets received so far: 8000
```

3. GOOD-PUT

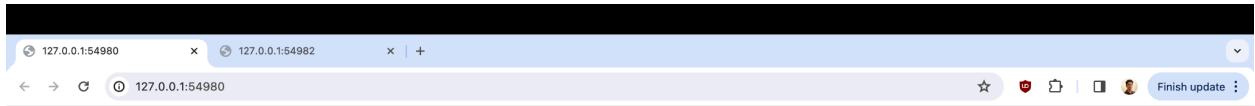
As we are expecting a drop of $< 1\%$,so good put is around 99%

```
Packets missed so far: 628
Total packets sent by client so far: 93628
Current Goodput: 0.9999
Packets received so far: 94000
Packets missed so far: 628
Total packets sent by client so far: 94628
Current Goodput: 0.9999
Packets received so far: 95000
Packets missed so far: 628
Total packets sent by client so far: 95628
Current Goodput: 0.9999
Packets received so far: 96000
Packets missed so far: 628
Total packets sent by client so far: 96628
Current Goodput: 0.9999
Packets received so far: 97000
Packets missed so far: 628
Total packets sent by client so far: 97628
Current Goodput: 0.9999
Packets received so far: 98000
Packets missed so far: 628
Total packets sent by client so far: 98628
Current Goodput: 0.9999
Packets received so far: 99000
Packets missed so far: 628
Total packets sent by client so far: 99628
Current Goodput: 0.9999
Packets received so far: 100000
Packets missed so far: 628
Total packets sent by client so far: 100628
Current Goodput: 0.9999
Connection closed: null
Average Goodput: 0.9991
```

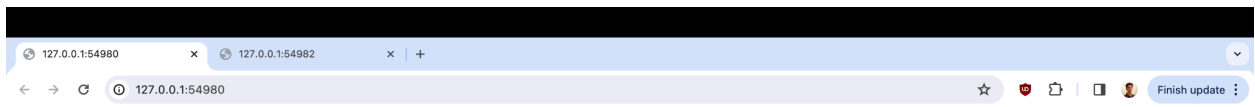
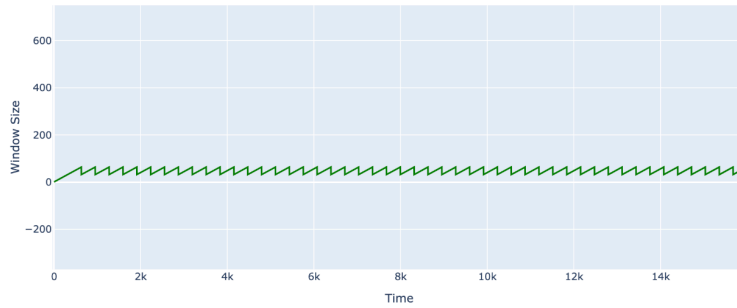
GRAPHS:

1. TCP Sender and Receiver Window Size over time in X axis:

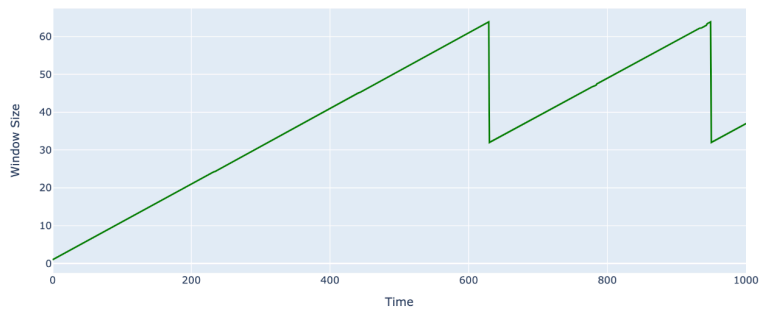




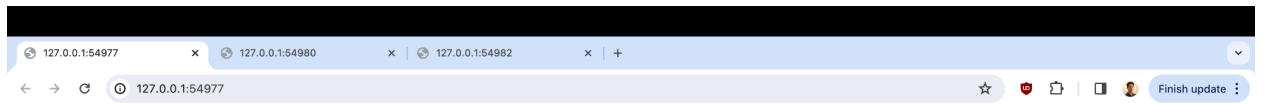
TCP Sender and Receiver Window Size over Time in the X-axis



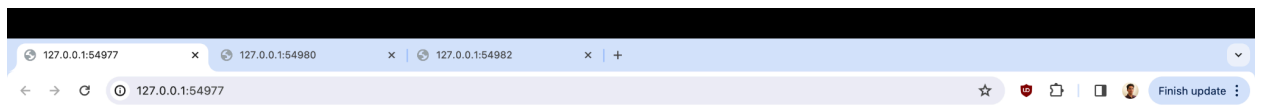
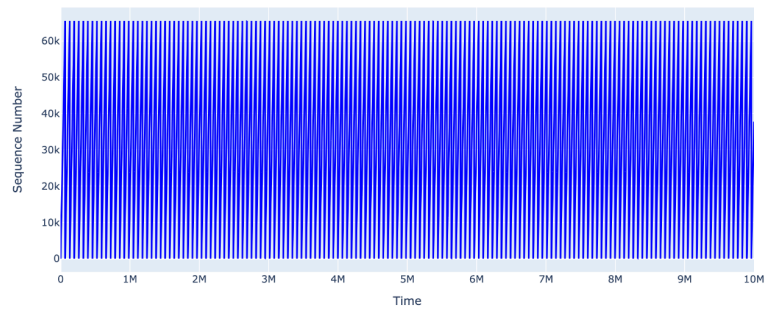
TCP Sender and Receiver Window Size over Time in the X-axis



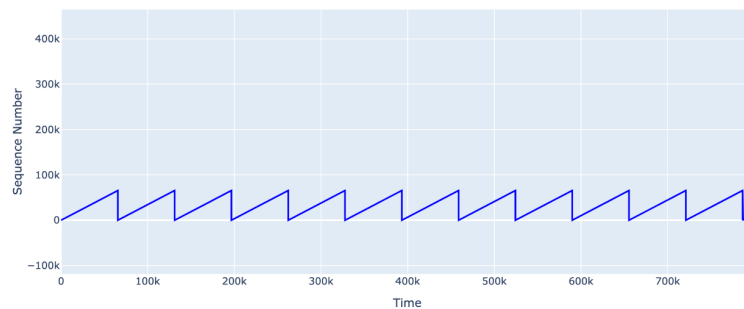
2. TCP Sequence number Received over time in the X-axis:

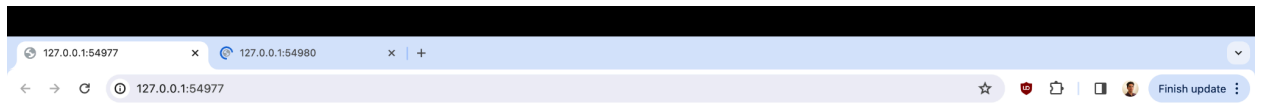


TCP Sequence Number Received over Time in the X-axis

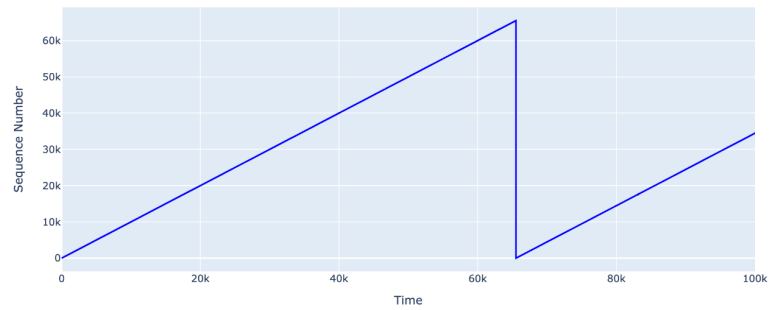


TCP Sequence Number Received over Time in the X-axis

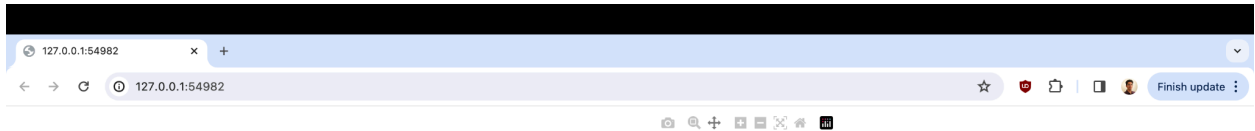




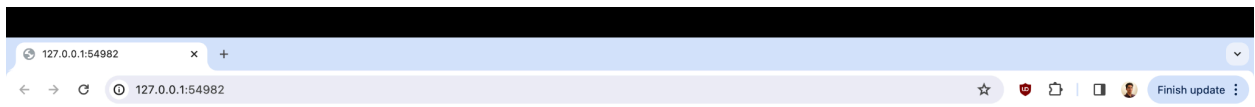
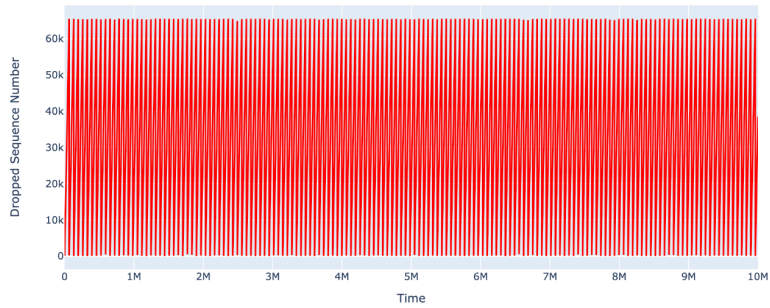
TCP Sequence Number Received over Time in the X-axis



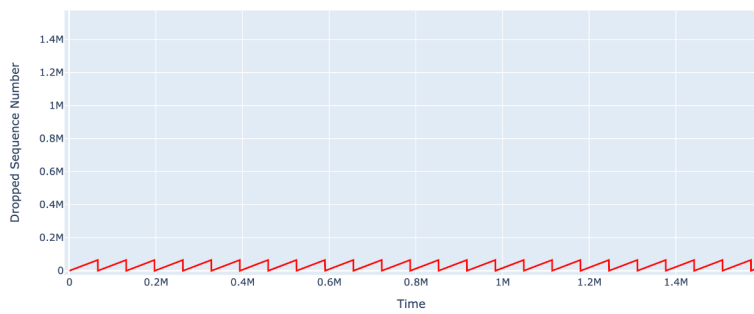
3. TCP Sequence number Dropped over time in the X-axis:



TCP Sequence Number Dropped over Time in the X-axis



TCP Sequence Number Dropped over Time in the X-axis





TABLE

Number of retransmissions done from client side vs Number of packets dropped

retransmission_sequence_number	number_of_packets_dropped					
1	0					
2	0					
3	0					
4	0					
5	0					
6	0					
7	0					
8	0					
9	0					
10	0					
11	0					
12	0					
13	0					
14	0					
15	0					
16	0					
17	2					
18	0					
19	0					
20	0					
21	1					
22	0					
23	0					
24	0					
25	0					
26	0					
27	0					
28	0					
29	1					
30	0					
31	0					
32	0					
33	1					
34	0					
35	1					