

Lab 4: Go-back-N Protocol Report

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1 Observations

1.1 Packet Drop Probability = 0

When 400 packets are sent with a packet drop probability of 0 we have no retransmissions and the ratio of the total number of transmissions and total packets acknowledged will be equal to 1, since all packets are transmitted and all the acknowledgements are received here is the output without any debug

```
Total packets sent: 400
Total packets acknowledged: 400
Retransmission Ratio: 1.0
Average RTT: 0.575815439224243
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

1.2 Packet Drop Probability = 0.2

When 400 packets are sent with a packet drop probability of 0.2 we have multiple retransmissions and the ratio of the total number of transmissions and total packets acknowledged becomes more than 1 here is the output without any debug

```
Total packets sent: 400
Total packets acknowledged: 400
Retransmission Ratio: 1.59
Average RTT: 0.5120718479156502
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

1.3 Packet Drop Probability = 0.99

When 400 packets are sent with a packet drop probability of 0.99 we may not have packets transmitted to the other end and acknowledgments will not be received, so the Retransmission ratio would be infinitely large. So we do not print the ratio.

```
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$ python3 Send.py -d -s
Total packets sent: 4
Total packets acknowledged: 0
Average RTT: 0
```

2 Experiments on Packet size and Drop Probability

2.1 Packet Drop Probability = 0.00000001

We transmitted 10000 packets each packet of size **1024 bytes** with a drop probability of 10^{-8} here are the results

```
Total packets sent: 10000
Total packets acknowledged: 10000
Retransmission Ratio: 1.0
Average RTT: 0.6337907552719105
```

```
Random Probability for dropping 1e-08
Receiver terminated
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

We transmitted 10000 packets each packet of size **128 bytes** with a drop probability of 10^{-8} here are the results

```
Total packets sent: 10000
Total packets acknowledged: 10000
Retransmission Ratio: 1.0
Average RTT: 0.5838437318801876
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

```
Seq 1734 TIME RECEIVED: 1000/0000:0219202 Pa
Random Probability for dropping 1e-08
Receiver terminated
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

Observation: The RTT average decreased with the decrease in packet size, But since the drop probability is low in both cases, the retransmission ratio is equal to **1.0**

2.2 Packet Drop Probability = 0.0001

We transmitted 10000 packets, each packet of size **1024 bytes** with a drop probability of 10^{-4} Here are the results where the retransmission ratio is not exactly one which means because the number of packets is much higher there are quite a few retransmissions happened

```
Total packets sent: 10000
Total packets acknowledged: 10000
Retransmission Ratio: 1.0003
Average RTT: 0.3418539762496952
```

```
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$ python3 Receive.py -p 6666 -n 10000 -e 0.0001
Random Probability for dropping 0.0001
Receiver terminated
```

We transmitted 10000 packets each packet of size **128 bytes** with a drop probability of 10^{-4} here are the results

```
Total packets sent: 10000
Total packets acknowledged: 10000
Retransmission Ratio: 1.0004
Average RTT: 0.6266452789306634
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

```
Random Probability for dropping 0.0001
Receiver terminated
yuvansasubilli@Yuvan-PC:/mnt/d/CS3205/lab4$
```

Observation: The RTT average decreased with the increase in packet size which is different from the above observation, But since the drop probability is low in both cases but not as low as the previous case, the retransmission ratio is not equal to **1.0** it is equal to **1.0003** and **1.0004** respectively