**IP Project 2**

Observations & Analysis

For all 3 experiments, we measured using traceroute that the number of hops came out to be 35. So we took a Retransmission timeout of “700 ms” for the sake of this project.

**Experiment 1:**

In the first experiment, the value of MSS was taken as 500 and the packet drop probability was taken as 0.05. We started of the experiment by taking the value of N = 1, where N is the window size and went on to take the delay time for this value for 5 times. We then calculated the average delay. Similarly, we increased the value of N to 2 and repeated the same procedure hence getting an average delay. We repeated the procedure for N = 4,8,16,32,64,128,256 and calculated the respected average delays.

Ideally as the value of N increases, the transmission delay should decrease. Our graph mostly follows a similar pattern. Although we experienced a greater transmission delay for N = 2,4 as compared to N = 1, other then that the results were as expected.

**Experiment 2:**

In the second experiment, the value of N(window size) was taken as 64 and the packet drop probability was taken as 0.05. We started of the experiment by taking the value of MSS = 100 bytes, where MSS is the Maximum Segment Size and went on to take the delay time for this value for 5 times. We then calculated the average delay. Similarly, we increased the value of MSS to 200 and repeated the same procedure hence getting an average delay. We repeated the procedure for MSS = 200, 300, 400, 500, 600, 700, 800, 900 and 1000 and calculated the respected average delays.

As the value of MSS increases, the transmission delay should decrease because the amount of information sent in each packet is increases. This results in increase in packet size and decrease in total number of packets, hence the time taken to transfer the file should decrease as the MSS size increase. Our graph follows a similar pattern and the results were as expected.

**Experiment 3:**

In the third experiment, the value of N was taken as 64 and the the Maximum Segment Size(MSS) was taken as 500. We started of the experiment by taking the value of P (Packet drop Probability) = 0.01 and went on to take the delay time for this value for 5 times. We then calculated the average delay. Similarly, we increased the value of P to 0.02 and repeated the same procedure hence getting an average delay. We repeated the procedure for P = 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.1 and calculated the respected average delays.

As the value of P increases, the transmission time should decrease because the number of packets being dropped will increase with increase in value of P and hence forcing the client to retransmit the dropped packets after a certain delay. Our graph follows a similar pattern and the results were as expected.