

CN-3530/CS 301 Assignment 2

1. Stop and Wait Protocol

Question 1 – Number of retransmissions and throughput with different retransmission timeout values with stop-and-wait protocol. For each value of retransmission timeout, run the experiments for **5 times** and write down the average **number of retransmissions** and **average throughput**.

Retransmission timeout (ms)	Average number of re-transmissions	Average throughput (Kilobytes per second)
5	242	353.4
10	201.6	279.05
15	174.8	218.34
20	145.8	189.41
25	138.2	170.20
30	126	165.49
40	123.2	129.36
50	118.8	106.15
75	110.2	89.05
100	106	70.26

Question 2 – Discuss the impact of retransmission timeout value on number of retransmissions and throughput. Indicate the optimal timeout value from communication efficiency viewpoint (i.e., the timeout that minimizes the number of retransmissions and keeps the throughput as high as possible).

From the above table, As the timeout increases the no. of retransmissions decreases and settling finally around 106 - 110. The reason behind this is that due to large timeouts the sender gets more time to ack for a packet rather than assuming it as lost and resending. The throughput is also decreasing as the timeout increases. The reason behind the decrease in throughput is that the sender waits for the lost packet and again resend it. this causes decrease in throughput.

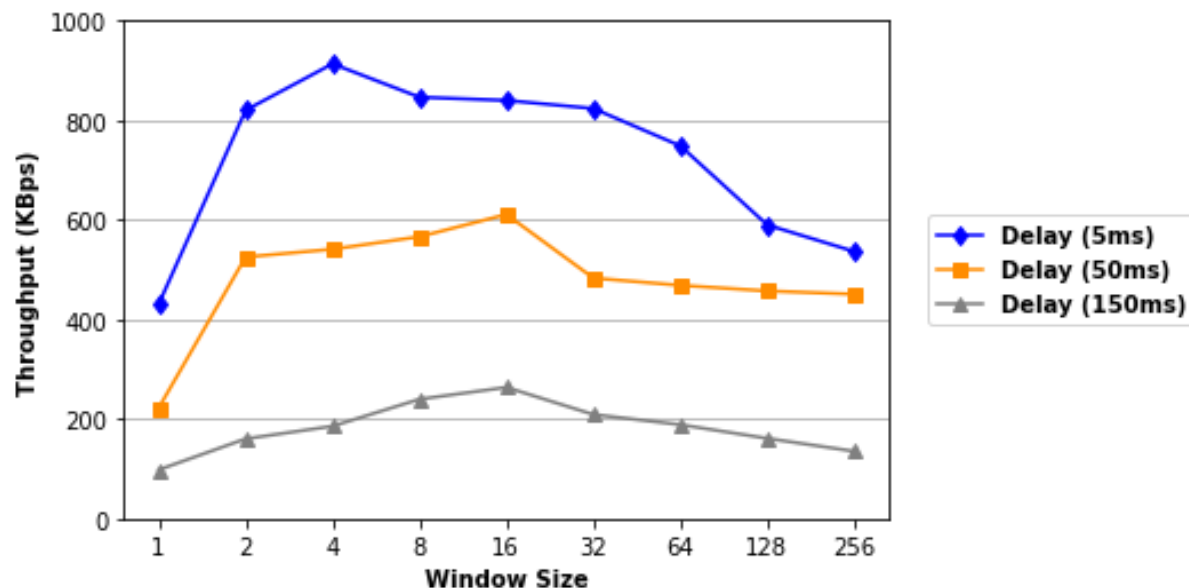
The optimal value of timeout is 30ms.

2. Go back N Protocol

Question 1 – Experimentation with Go-Back-N. For each value of window size, run the experiments **5 times** and write down the **average throughput**.

Window Size	Average throughput (Kilobytes per second)		
	Delay = 5ms	Delay = 25ms	Delay = 100ms
1	430.58	221.96	97.88
2	820.14	525.31	160.16
4	913.48	541.03	185.49
8	846.39	566.13	239.73
16	839.92	610.86	263.53
32	823.65	483.01	208.96
64	748.60	468.46	188.56
128	589.79	457.14	160.98
256	536.46	450.73	135.12

Create a graph similar to the one shown below using the results from the above table:



Question 2 – Discuss your results from Question 1.

As the delay increases, throughput for a given N value decreases, as shown in the table and graph above.

The optimal window size is between 8 and 16. As from graph we can see that the peak lies around that region.

Finally by comparing throughput, compared to stop and wait protocol, Go back N performs far better with a given any window size of go back N.

PLAGIARISM STATEMENT <Include it in your report>

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