

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	262	175.597
10	257	133.341
15	251	133.282
20	231	105.321
25	226	90.899
30	225	87.267
40	226	72.587
50	252	57.555
75	261	45.230
100	267	34.076

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).

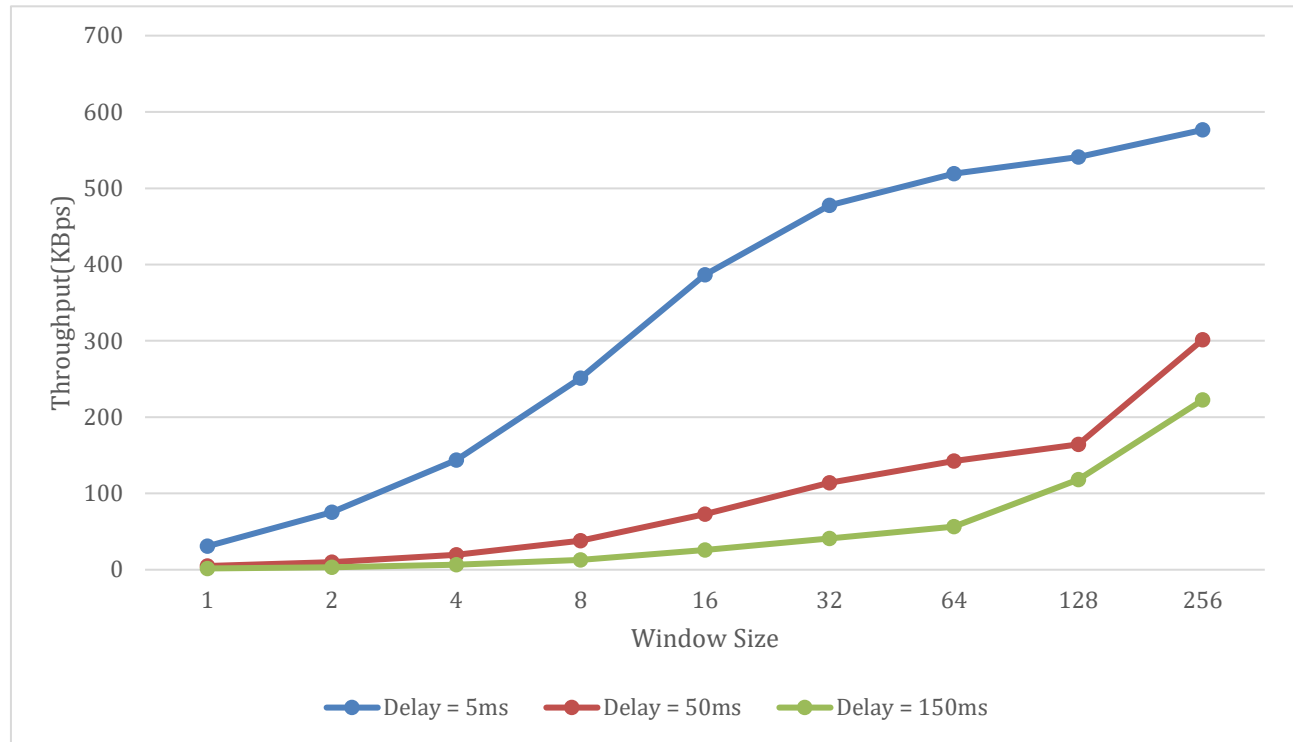
In the above case, as retransmission timeout is increased, average throughput got decreased. As retransmission timeout is increased, average number of retransmissions first got decreased and then increased. The optimal timeout solutions is 25ms as the number of transmissions is relatively less with better throughput. For low retransmission timeout, number of retransmissions are more because the propagation delay is nearly equal to the retransmission timeout. For low retransmission timeout, number of retransmissions increased again due to buffer limit which is set to 100.

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 = 50ms	Delay = 150ms
1	30.728	4.915	1.672
2	75.212	9.772	3.097
4	143.682	19.495	6.698
8	251.018	38.017	12.951
16	386.510	72.895	26.051
32	477.741	114.113	41.146
64	519.170	142.651	56.562
128	540.745	164.376	118.079
256	576.393	301.374	222.469

Create a graph similar to the one shown below using the results from the above table: (Edit: change delays to 5ms, 50ms and 150ms as mentioned in the assignment statement)



Question 2 – Discuss your results from Question 1.

In the above case, as window size increases, average throughput is also increasing. But as delay increases, average throughput is decreasing. Increase in window size increases the extent of pipelining (which increases throughput). Increase in delay, increases time taken which decreases the throughput.

PLAGIARISM STATEMENT

We certify that this assignment/report is our own work, based on our personal study and/or research and that we have acknowledged all material and sources used in its preparation, whether they be books,

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