

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	221.1	348.7215001
10	142	285.0546543
15	140.3	197.1460848
20	139.7	180.5047469
25	136.2	171.2680423
30	128.9	168.9002731
40	126.3	127.3159071
50	123	108.8099170
75	119.7	87.4609425
100	116	68.1574097

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).

Optimal retransmission timeout = 30 ms

For timeout values in range (5-10)ms, the number of retransmissions are around 150 and the throughput is around 300 kbps.

As timeout increases the average number of retransmissions decreases but throughput also decreases.

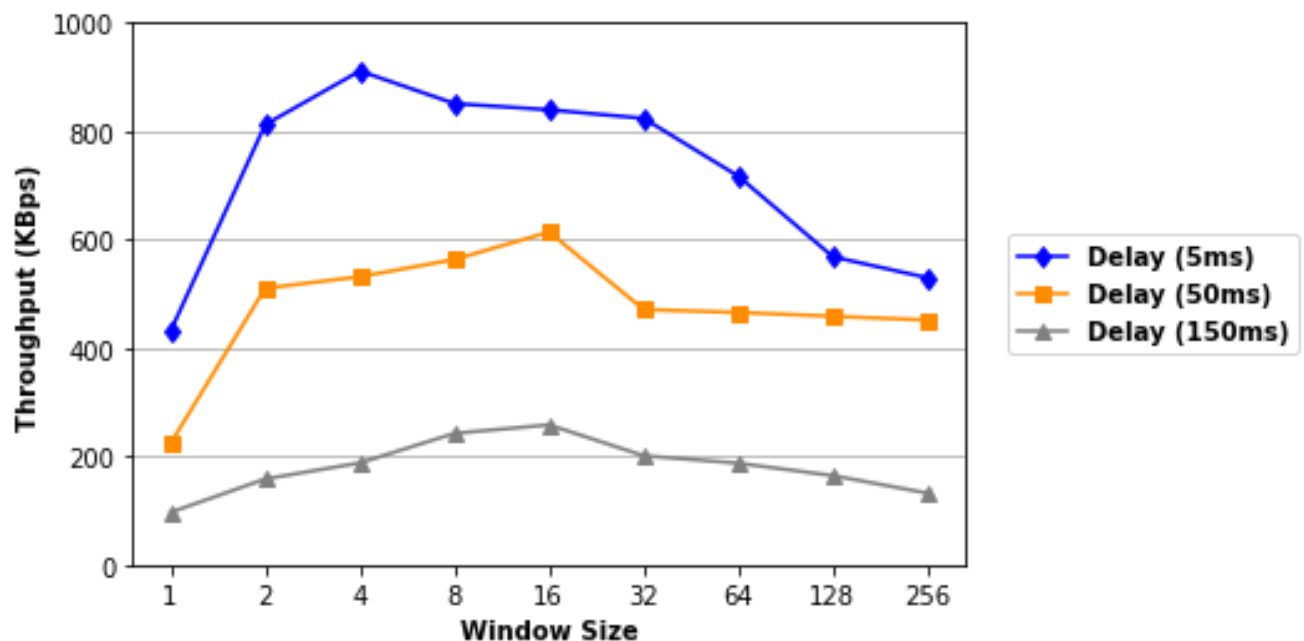
So we need to trade off between these two values to get optimal throughput.

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	430.8516388	223.638788	96.6197535
2	812.1345264	510.1216268	158.3162109
4	911.1895025	531.5472442	187.9724304
8	851.0196573	563.2514505	242.4695895
16	839.5640127	613.9929652	258.1674724
32	823.7346109	470.9817219	201.1879229
64	716.9658203	465.6019979	187.4587912
128	568.1498053	458.5373441	164.464387
256	529.5582165	451.4678644	132.1637607

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



Question 2 – Discuss your results from Question 1.

For a delay of 5ms, window size of 4 gives optimal throughput.

For a delay of 50ms, window size of 16 gives optimal throughput.

For a delay of 150ms, window size of 16 gives optimal throughput.

PLAGIARISM STATEMENT

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