

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	148	329.3545946353
10	107	288.5433536299
15	136	239.3448504042
20	195	236.6856036372
25	144	217.6243014553
30	125	192.5072898357
40	119	144.7887284678
50	80	136.3500863168
75	63	129.2958741455
100	41	73.76687194709

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).

Here we can see from the table that the number of retransmissions are decreasing as we increase the retransmission timeout and also the throughput is also decreasing. This is because as the retransmission timeout increases the programs have to wait for a longer time than expected hence the overall time to complete increases and therefore throughput decreases.

Also I think around 20 ms would be the optimal timeout as per optimal values of throughput and number of retransmissions

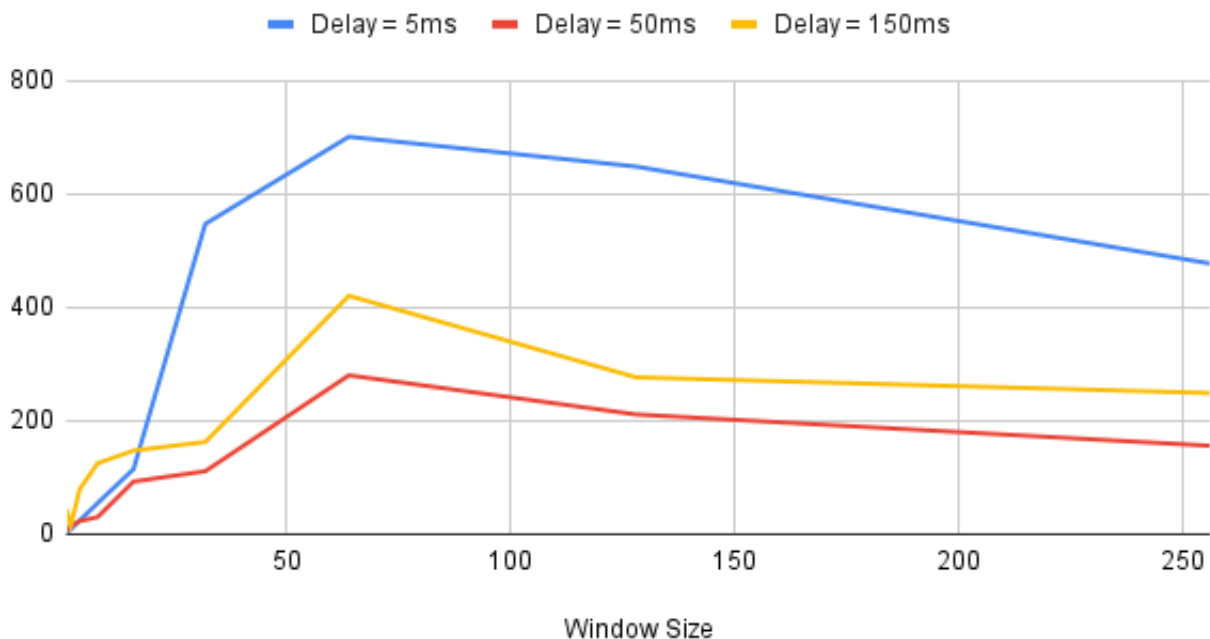
2. Go back N Protocol

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	3.396335511108	7.45492133396792	44.863468424238
2	8.629257686488	14.8853585831025	15.385590039735
4	24.07219284823	23.0590601046875	79.317849642138
8	54.89128468459	30.1807857043106	125.04833935832
16	114.8080769727	92.8113440036672	147.53355133385
32	547.3400219965	111.047065640054	162.67063734209
64	701.1950553291	280.2958385614345	420.54826493558
128	648.540682747	211.217729775741	276.71807508275
256	477.451889605	155.976864131367	249.03835739788

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)

Delay = 5ms, Delay = 50ms and Delay = 150ms



Question 2 – Discuss your results from Question 1.

From the graph we can clearly see that the throughput is increasing continuously and then attains a peak value somewhere between 50 and 100 as window size and then starts decreasing.

Also we can observe that the throughput is greater in case of delay of 5 ms when compared to 50 ms and 150 ms.

Hence most efficient way would be delay around 5 ms and window size in between 50 and 100 (around 64)

PLAGIARISM STATEMENT <Include it in your report>

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