Computer Communications and Networks (COMN) 2016/17, Semester 2

Assignment Part 1 Results Sheet

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Question 1 – Number of retransmissions and throughput with different retransmission timeout values with stop-and-wait protocol.

Retransmission timeout (ms)	Number of re-transmissions	Throughput (Kilobytes per second)
5	2893	87
10	1009	87
15	108	79
20	102	79
25	107	73
30	58	79
40	91	67
50	100	62
75	89	54
100	106	43

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 table above one can clearly see a strong correlation between the retransmission timeout (ms), the total number of re-transmissions and the throughput (Kbps). Explicitly, when we start increasing the retransmission timeout our number of re-transmission decreases drastically, but as soon as the timeout becomes quite large (40) the number of re-transmissions grows back again – even though it seems to establish at an average of 100. At the same time, the Throughput keeps decreasing from values starting at 87 until it reaches 43 Kbps.

The optimal timeout value seems to be 30ms because it has the lowest number of retransmissions 2893-58 = 2835 re-transmissions less than the highest throughput and a throughput which comes second in the table above with 8Kbps less than the highest, reaching 79Kbps.