CSC 573
Internet Protocols
Fall 2012

Extra Credit
Selective Repeat ARQ
Task Reports

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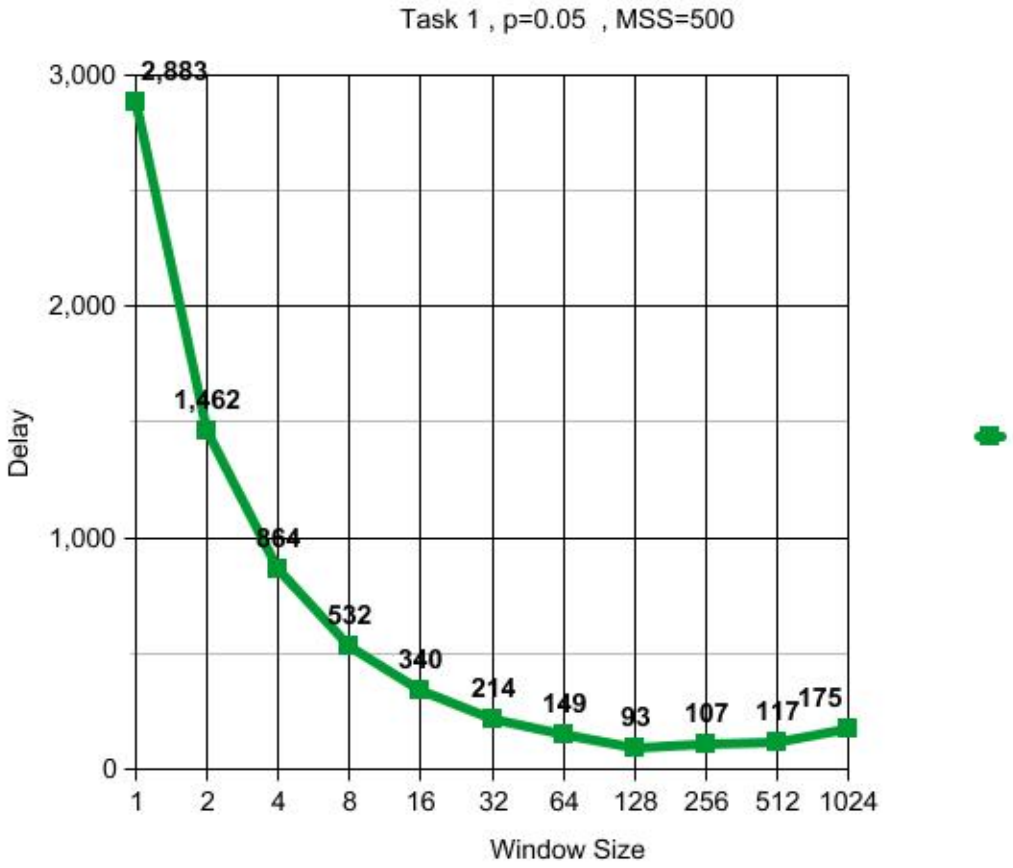
Note :These tasks were tested using a relatively smaller file

Task 1
Effect of Window Size N

N	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
1	3219	2780	2677	2765	2976	2883.4
2	1280	1140	1520	1718	1656	1462.8
4	789	856	889	997	790	864.2
8	467	561	599	483	554	532.8
16	385	336	329	339	311	340
32	227	221	201	209	212	214
64	166	162	152	140	127	149.4
128	94	98	92	96	89	93.8
256	102	104	112	108	110	107.2
512	123	127	119	102	114	117
1024	167	185	175	177	174	175.6



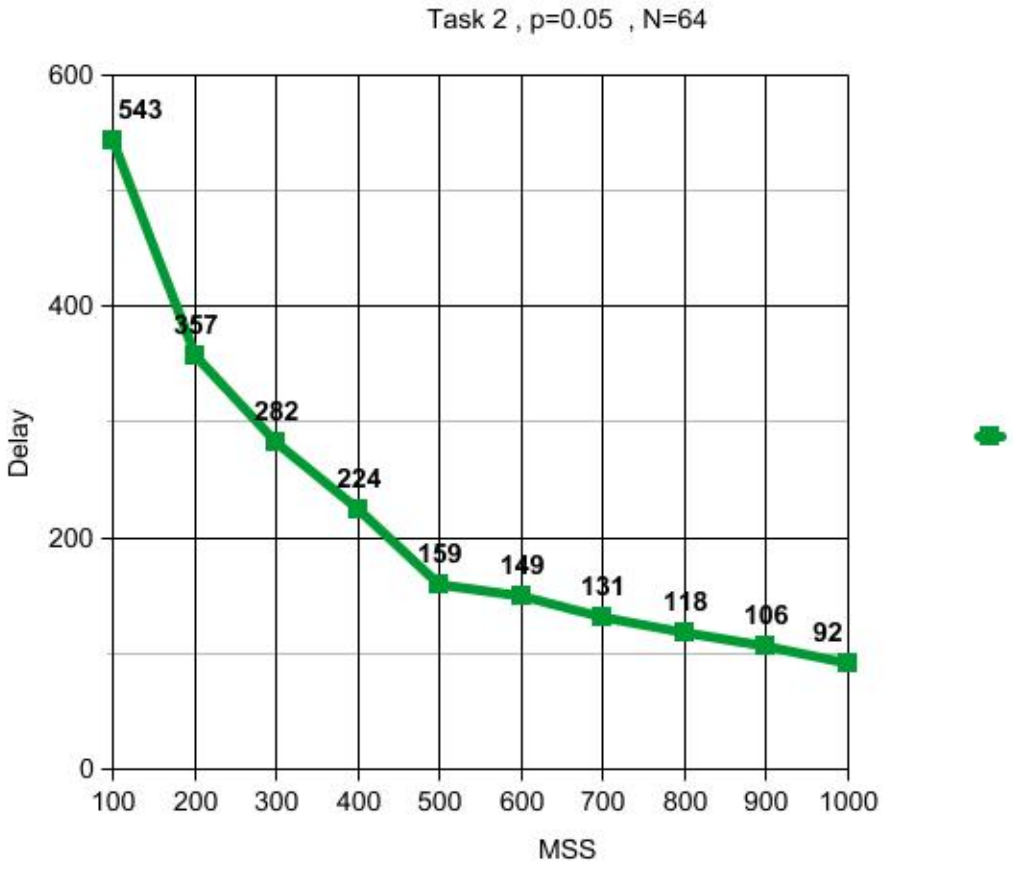
Explanation Task 1

In the graph above when the window size is increased the time taken decreases and this decrease is due to the selective repeat feature. Thus only those segments whose acknowledgements have not been received will be sent unlike the Go-Back-N, which suffered from a bad case in which there were too many retransmissions if a packet was lost and the scenario worsened if the packet was one of the initial ones in a large window.

Here it is obvious that for a small window the sender has to wait for acknowledgements to arrive before sliding his window, which leads to choking of the sender and hence greater delay. However as the window size is increased the delay decreases.

Task 2
Effect of MSS

MSS	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
100	589	561	511	553	503	543.4
200	368	397	336	361	326	357.6
300	286	291	288	281	265	282.2
400	204	217	228	226	245	224
500	168	165	170	152	144	159.8
600	146	149	153	159	141	149.6
700	122	135	129	137	133	131.2
800	112	119	121	124	116	118.4
900	101	107	110	106	107	106.2
1000	89	93	92	97	91	92.4

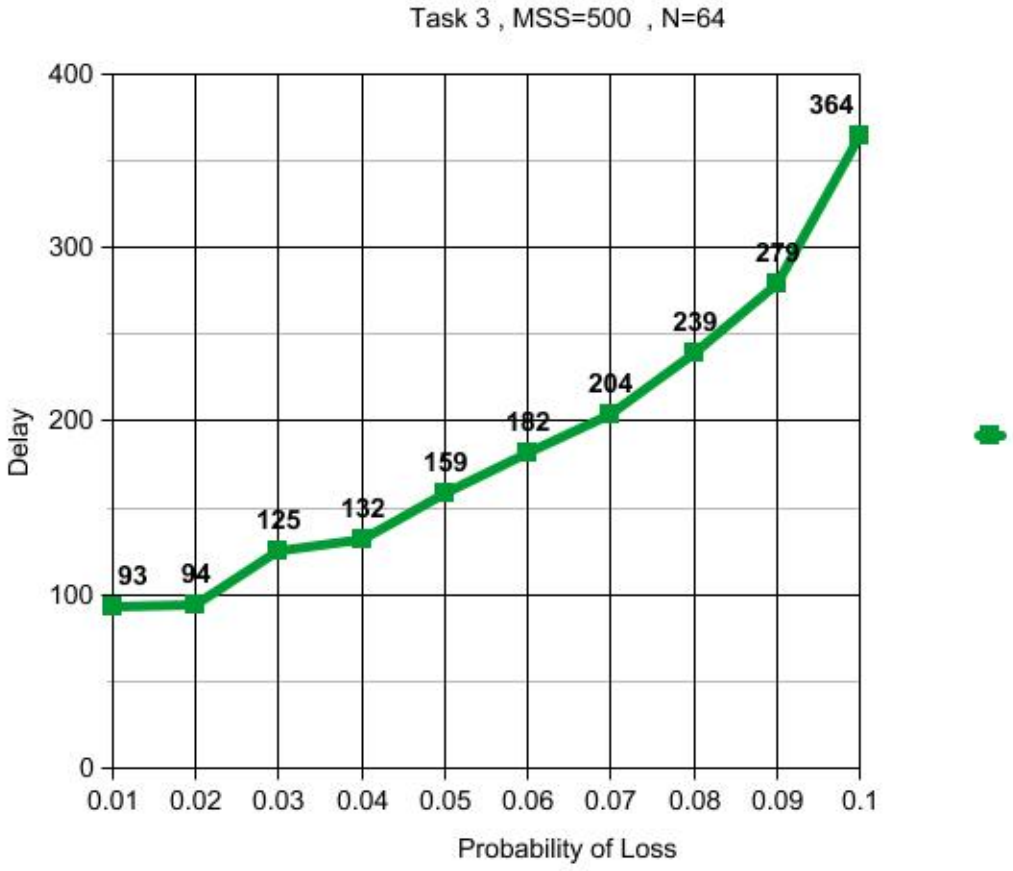


Explanation: Task 2

As the MSS is increased from 100 bytes to 1000 bytes keeping Window size and drop probability constant we see that that the delay decreases. This is because more number of bytes are transferred in every packet. Thus more the MSS less will be the number of packets required. Thus lesser packets will obviously take lesser time. (Assuming here that the bandwidth is sufficiently high).

Task3
Effect of Loss Probability

Probability	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
0.01	87	87	91	102	102	93.8
0.02	103	98	83	88	102	94.8
0.03	127	122	162	112	106	125.8
0.04	140	127	112	170	112	132.2
0.05	167	164	156	160	149	159.2
0.06	178	188	182	175	189	182.4
0.07	199	201	210	197	213	204
0.08	223	256	278	237	201	239
0.09	301	278	286	256	278	279.8
0.1	336	358	401	414	313	364.4



Explanation Task 3

As the loss probability is increased the chances of the packet getting dropped are more. As more packets are dropped they are bound to trigger re-transmissions thereby increasing the overall delay. Hence as more packets are lost it can be seen in the graph that the time taken will definitely increase.