Assignment 5

Networks Lab – CS3210

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1 INTRODUCTION

This lab assignment required us to take previous week's lab assignment and test its robustness by dropping packets with a certain probability. I chose to implement this middle server (that drops packets) within both the client and the server itself, since a general purpose middle server would drop any and all packets (this include the `open` and `cd` commands passed from the client to the server) passing either way. Thus, I could ensure that the packet drops happen only where they matter, namely during the sending of data from the server to the client, and during the sending of `ACKs` from the client to the server.

I chose **p** to be the probability of dropping a packet from the client (to the server), and **q** as the probability of dropping a packer from the server (to the client). These values are passed as command line arguments to the `client` and `server` binaries respectively.

2 TEST CONDITIONS

The experiment was carried out with a sliding window size of **16**, and the file transfer was tested with a file of about **7 MB** in size of **mp3** format. The time was recorded in **seconds** using the **time** command line tool (For the purpose of this experiment, the client automatically terminates when it receives the entire file).

3 OBSERVATIONS

p \q	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	8.824	9.152	9.623	9.712	9.924	10.030	11.205	13.013	14.351	15.723
0.1	9.253	9.473	9.600	9.765	10.123	10.693	12.512	13.372	14.934	16.173
0.2	9.352	9.112	9.313	9.347	10.376	11.176	12.123	13.967	14.827	16.846
0.3	9.041	9.632	9.723	9.671	10.762	12.791	12.761	13.812	15.516	17.338
0.4	9.037	9.997	10.227	10.442	10.737	12.776	12.513	14.811	15.932	17.732
0.5	10.445	10.321	10.573	10.563	10.923	27.812	28.891	15.213	16.935	17.648
0.6	10.761	10.743	11.173	10.691	11.763	14.971	15.763	16.768	17.832	18.473
0.7	12.379	12.711	12.455	11.611	12.678	15.762	15.613	17.267	18.783	18.936
0.8	12.381	12.756	12.977	12.973	13.839	15.862	16.193	17.823	103.723	116.452
0.9	13.744	13.871	14.306	13.936	14.936	17.112	17.276	18.676	170.916	501.237

4 INFERENCES

- As the values of p and q increase, the time taken for the file to get transferred increases, due to a rise in the failure of packets reaching the other side, thereby leading to retransmission of the same packets again and again.

- Some values do not show this rise, probably because of the randomness of the experiment (anomalies).

- When both p and q rise above 0.7, the transmission time rises sharply. Until these values, the rise is only gradual. This is because as the values of p and q get closer to 1, the transmission time gets closer to infinity.