

This document contains the written answers to Requirement 2 of Assignment 3 (CSC361)

The following is for the set of 5 trace files labeled 'group1':

All five trace files had 3 probes per ttl, for $1 \leq \text{ttl} \leq 17$

However, trace1 and trace5 contained 1 probe with a ttl = 18

The sequence of routers is essentially the same from 1 - 11 hops away. After 11 hops the sequence of routers is different from one file to another. Although it is different, the routers at x hop distance have very similar IP's, differing by only a couple digits. This suggests that the routers were within the same network. The reason for the sequence of routers to be slightly different in these files even though the source and destination is the same has a lot to do with the state of the network itself. Depending on traffic load and congestions, some routers may be too busy to handle request (and other routers who have the same knowledge can instead do what's needed) two times in a row. This could easily result in consecutive trace-route calls resulting in different sequences of intermediate routers.

The following is for the set of 5 trace files labeled 'group2':

All five trace files had 3 probes per ttl for ttls from 1 to 9 (9 being the one that reached the destination).

The sequence of routers for all 5 files was the same. Find the comparison table below

TTL	Avg RTT T1	Avg RTT T2	Avg RTT T3	Avg RTT T4	Avg RTT T5
1	3.3	2.67	7.87	3.43	1.77
2	15.83	17.1	11.83	13.23	16.17
3	18.87	20.1	22.6	21.67	21.57
4	22.87	19.47	19.47	19.7	18.57
5	26.53	21.57	20.33	35.77	20.7
6	24.3	20.03	21.83	22.67	43.5
7	18.4	51.67	22.77	18.37	26.9
8	23.03	108.77	20.57	24.57	25.63

I believe the hop at TTL = 5 is likely to incur the maximum delay. At first I was tempted to say TTL-8 due to the high average overall. But after closer examination it seems that the overall average of all 5 files is high only because of the outlier case of trace2, which takes 108.77ms. Where TTL-5 has a consistently high avg RTT for all 5 files. If the rtt of 108.77 (or something similar) occurred for another trace file, I would be forced to choose the hop at TTL-8 to be the maximum time incurring one, but since that is not the case, I will not speculate.