

CSC361 Assignment 3

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These are taken from the files group1-trace1.pcap, group1-trace2.pcap, group1-trace3.pcap, group1-trace4.pcap, and group1-trace5.pcap

1. The amount of probes for each TTL level is the same for every level and each trace which is 3 per level.

2/3. The intermediate routers for the most part are the same for all five traces for the first 11 hops. There starts to have slight deviations around the 12th or 13th hop where all probes are not necessarily going to the same intermediate router. For some, they go to three different routers and for others there is a repeated router or two. My guess for why they go to different routers is based on network topology and updated routing tables or rebalancing with different RTT values between probes. Additionally, for a couple of the traces, it will extend up to 18 hops. My guess as to why is that it is also based on networking topology and updated routing table values.

4.

Shared

router 1: 142.104.68.167

router 2: 142.104.68.1

router 3: 192.168.9.5

router 4: 192.168.10.1

router 5: 192.168.8.6

router 6: 142.104.252.37

router 7: 142.104.252.246

router 8: 207.23.244.242

router 9: 206.12.3.17

router 10: 199.212.24.64

router 11: 206.81.80.17

group1-trace1.pcap

router 12: 72.14.237.123, 74.125.37.91

router 13: 209.85.249.153, 209.85.249.155, 209.85.250.121

router 14: 8.8.8.8

router 15: 8.8.8.8

router 16: 8.8.8.8

router 17: 8.8.8.8

router 18: 8.8.8.8

group1-trace2.pcap

router 12: 72.14.237.123, 74.125.37.91

router 13: 209.85.246.219, 209.85.249.109, 209.85.250.57

router 14: 8.8.8.8

router 15: 8.8.8.8

router 16: 8.8.8.8

router 17: 8.8.8.8

group1-trace3.pcap

router 12: 72.14.237.123, 74.125.37.91

router 13: 209.85.245.65, 209.85.247.63, 209.85.249.155

router 14: 8.8.8.8

router 15: 8.8.8.8

router 16: 8.8.8.8

router 17: 8.8.8.8

group1-trace4.pcap

router 12: 72.14.237.123, 74.125.37.91

router 13: 209.85.245.65, 209.85.246.219, 209.85.250.123

router 14: 8.8.8.8

router 15: 8.8.8.8

router 16: 8.8.8.8

router 17: 8.8.8.8

group1-trace5.pcap

router 12: 72.14.237.123

router 13: 209.85.247.61, 209.85.249.153, 209.85.250.59

router 14: 8.8.8.8

router 15: 8.8.8.8

router 16: 8.8.8.8

router 17: 8.8.8.8

router 18: 8.8.8.8

TTL	avg RTT trace 1	ms in	avg RTT trace 2	ms in	avg RTT trace 3	ms in	avg RTT trace 4	ms in	avg RTT trace 5	ms in
1	11.4		11.4		11.7		11.2		11.3	
2	16.9		15.9		15.7		15.7		16.7	
3	16.0		15.5		16.3		15.4		17.5	
4	17.6		17.7		17.2		16.7		18.2	
5	18.4		16.9		17.9		17.4		19.0	
6	11.9		11.6		12.1		11.5		11.9	
7	13.5		13.4		14.4		13.6		13.5	
8	14.1		50.2		15.2		14.0		18.5	
9	18.2		16.8		18.1		16.9		16.7	
10	16.9		17.6		18.9		18.2		18.0	

From my observations, it looks like the hop that is most likely to incur a maximum delay, in terms of change in RTT per hop is the hop from 1TTL to 2TTL. What is also an interesting observation is that after router 5, the RTT goes down drastically and when looking at the intermediate routers, the 6th, 7th, and 8th, routers are in the same subnetwork as the 1st and 2nd routers. One can also say that the hops at 3,4, and 5TTL occur a sizeable delay as well.