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Class: CSCE 463

**Homework 4 Report**

Longest path trace:

Tracerouting to 120.138.69.70...

1. <no DNS entry> (10.202.106.1) 0.045 ms (1)

2. net-10-3-11-129.net.tamu.edu (10.3.11.129) 0.174 ms (1)

3. net-165-91-128-9.net.tamu.edu (165.91.128.9) 0.252 ms (1)

4. goodbye-tamu.net.tamu.edu (165.91.128.2) 0.987 ms (1)

5. farewell-tamu.net.tamu.edu (165.91.128.3) 0.602 ms (1)

6. hstn-lvl3-core-ge-5-0-0-2015.tx-bb.net (192.12.10.117) 10.129 ms (1)

7. <no DNS entry> (192.124.227.61) 10.511 ms (1)

8. 67-132.154-153.qwest.net (67.132.154.153) 14.116 ms (1)

9. los-brdr-01.inet.qwest.net (67.14.102.30) 709.100 ms (2)

10. 63-235-40-74.dia.static.qwest.net (63.235.40.74) 56.884 ms (1)

11. <no DNS entry> (203.208.151.221) 241.972 ms (1)

12. <no DNS entry> (203.208.182.125) 275.560 ms (1)

13. <no DNS entry> (203.208.158.61) 244.830 ms (1)

14. <no DNS entry> (203.208.158.2) 250.881 ms (1)

15. <no DNS entry> (203.208.182.225) 242.613 ms (1)

16. \*

17. \*

18. vdc.vn (123.29.13.6) 271.320 ms (1)

19. \*

20. rtr-118-102-0-14.ptr.vng.vn (118.102.0.14) 257.085 ms (1)

21. rtr-118-102-0-10.ptr.vng.vn (118.102.0.10) 277.423 ms (1)

22. ptr.vng.vn (120.138.69.70) 274.954 ms (1)

Finished tracerouting with 22 hops, 30 probes

Total execution time: 3309 ms

There are no destinations which can be reached beyond 30 hops. The total number of found routers IPs is 219.

My packet loss is comparatively higher than single-destination traces performed manually.

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Code | Frequency | Reason |
| 3 | 0 | 2 | Destination network unreachable |
| 1 | 5 | Destination host unreachable |
| 2 | 9 | Destination protocol unreachable |
| 3 | 281 | Destination port unreachable |

1. The way I would implement batch-mode and avoid hitting the same routers is to store the router IPs in a hash table. I can construct the topology of the internet by storing router IPs in a graph with edges linked with other routers. When the same router is hit, I can easily detect it using the hash table, and using the graph, we can transmit packet to alternative routers.