Shannon Stork
EECS 325
Project 2 writeup

Main project

I did a bit of research on how to match ICMP responses to probes, and I found several options. The ones I implemented were the following:

- Checking whether the destination on the IPv4 packet matches the actual destination
- Checking whether the source IP on the ICMP packet matches the destination

Here are a few others I found:

- Checking whether the destination IP on the ICMP packet matches the local IP address
- Checking if the data returned in the ICMP message matches the data that was sent out

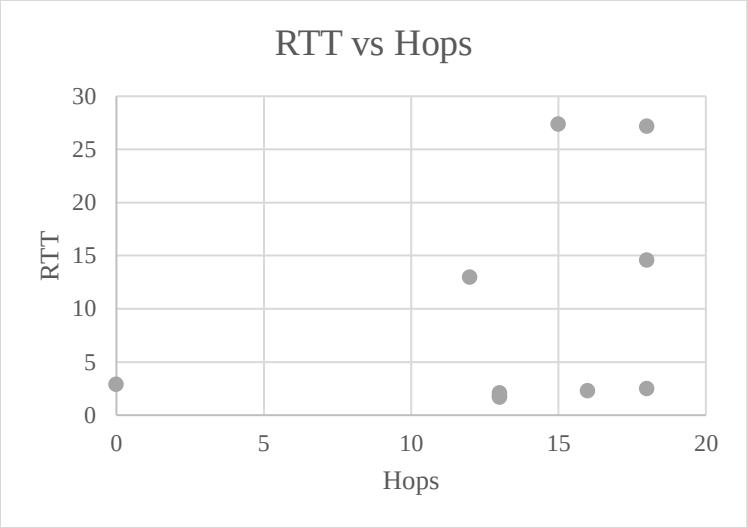
Here are a few reasons that you might not be able to probe an arbitrary host:

- You are behind a firewall.
- The host is behind a firewall.
- The host is down.
- There is too much congestion on the network.
- The probe is lost.
- The probe is corrupted.

Since the original 10 alexa sites did not respond, I substituted other sites. Here are the sites I probed:

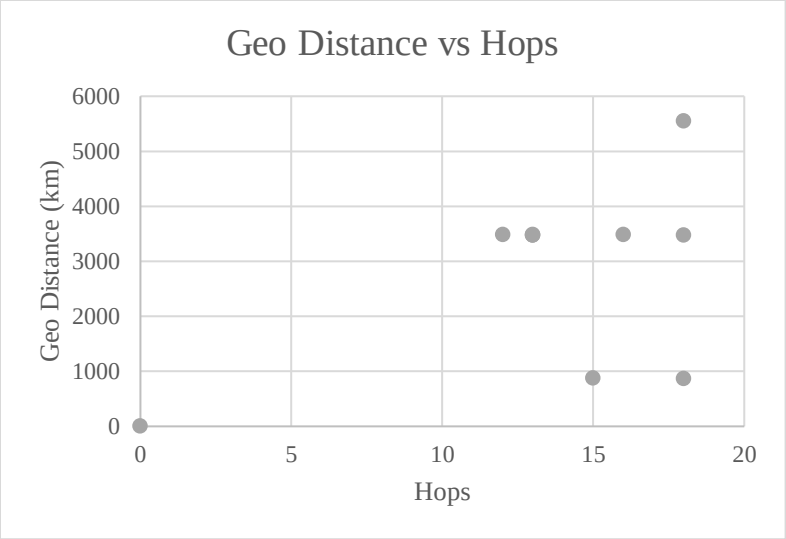
- Google.com
- Youtube.com
- Facebook.com
- Twitter.com
- Google.co.in
- Case.edu
- Wordpress.com
- Target.com
- Wiki.com
- Github.com

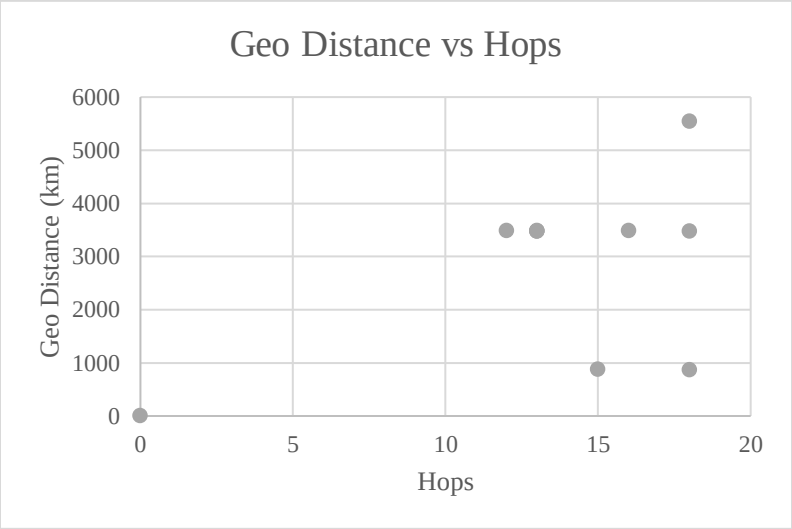
Here is the scatterplot of the data I collected:



Extra Credit

Note: When I used my compute() method to get the latitude and longitude of the VM using the VM's IP, it was not in the geoip2 database, so I hard coded the local coordinates in line 29. I use the compute() method on all of the remote hosts, and it works perfectly. The coordinates I used belong to CWRU, so there might actually be a bit less error this way since IP address location isn't exact.





Correlations:
Correlation between Hops and RTT:
0.348584986
Correlation between Hops and Geo Distance:
0.511137919
Correlation between RTT and Geo Distance:
-0.370256805