Topology based geolocation

NETMET Lab Exercises 12

Introduction

During the last lab, we saw the technique of multilateration in order to roughly geolocate IP addresses. But as we saw, this technique is quite imprecise and often only allows us to narrow down to a big area the size of a country.

But what if we use the topology information gathered ? After all, traceroute gives the path from the source to the destination, so if we are able to use the information about routers along the way, we could be more precise about the area of the final location. In this lab we will see how to do such a thing.

This lab is primarily here to show you one of the actual state-of-the-art technique(s) in order to help you for your mini-project.

Study the research paper

Do an effective reading of this paper (https://homes.cs.washington.edu/~tom/support/geoloc.pdf) and then answer the following questions.

- Mention and briefly explain the prior works of this paper about IP geolocation
- Explain what is " Shortest Ping" and " Speed of Internet Geolocation"
- Explain the challenges of the "Topology Based geolocation"
- Explain the overall technique (read closely the section 4)
- Cite a limitation of this technique and how the author propose to overcome it

Manually explore the technique

In this paragraph you will explore the technique by conducting manual measurements with EdgeNet nodes.

Use 3 of these vantage points in order to locate where the server hosting the website https://www.cam.ac.uk/ is. You can also try other end-host IP addresses to see more cases.

Other state-of-the-art references

- Towards Street-Level Client-Independent IP Geolocation
- Reduce, Reuse, Recycle: Repurposing Existing Measurements to Identify Stale Traceroutes (Annexe A)