



Network Visualization for the Routing Project

Group project proposal

The purpose of this group project is to learn about network monitoring, data analysis, and visualization, by working with the routing project of the communication networks course. Our tools for the routing project allow us to create interesting internet topologies, and the project provides great opportunity to visualize data, based on the concrete project tasks.

This project can be separated into three stages: Preparation, Analysis, and Presentation.

Preparation Familiarize yourself with our tools to set up the topology, and how to access routers to configure them, and to collect monitoring data. Furthermore, learn how to send probes into the created network for active monitoring. Finally, learn about popular data analysis software for python (Pandas) and how to process and evaluate your collected data.

Analysis After everything is set up, we can define concrete visualisation goals based on the routing project structure and tasks: What information do we want to visualize, and how? The skills acquired in the first stage will allow you to solve these tasks, however, you will have to solve additional challenges, e.g. “How many probes do I need to send to get reliable results?” or “How often do I need to collect data to update the visualization?”. We can work on as many goals as the available time allows. Possible goals are:

- Connectivity/Routes inside the AS.
- Load Balancing in the AS.
- Latency in the AS.
- Connectivity/Routes between ASes.
- Distributed BGP advertisements.
- Packets Drops.

Presentation Finally, we wish to make the data as accessible as possible. For this, learn how to set up a webserver to display your visualization. Additionally, if our progress allows it, learn how to present data interactively using javascript (using the D3 framework).

At the end of your project, you are expected to hand in a written report describing your work, and to give a 15 minute presentation (5 minutes per person).

Requirements (may vary depending on your project)

- Fundamentals of communication networks.
- Some experience with command line tools and Python.

Contact

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