Week 1: Introduction

1. Motivation
2. Background: Internet infrastructure and traffic
3. Types of measurements
4. Measurement platforms
   A. **Overview**
   B. PlanetLab Europe
5. Sound measurement practices
6. Ethical issues

Measurement platforms

- **Introduction**
  - ✓ Problem: lack of vantage points
  - ✓ Problem: firewalls
  - ✓ Solution: measurement platforms
- Example platforms
  - Measurement Lab (M-Lab)
  -
  - Looking Glass
  - Oregon Route Views and RIPE RIS

Measurement Lab (M-Lab)



http://www.measurementlab.net/

- Nearly 100 servers hosting tools anyone can use
  - E.g., Test your home internet service bandwidth
- Open methods
- Results (anonymized) publicly available for study
- Aims to be seen as fair, rigorous, shape public policy

RIPE Atlas

RIPE NCC
RIPE NETWORK COORDINATION CENTRE

https://atlas.ripe.net/



- Crowdsourcing approach
  - Host a USB-powered dongle
    - ✓ Nearly 10,000 dongles today
  - Run your own measurements
  - Background measurements
    - ✓ Pings, traceroutes

Looking Glass

http://mrlg.op-sec.us/

- Multi-Router Looking Glass (MRLG) software
  - Written by John Frazier (2000)
  - Query BGP information
  - Launch traceroutes, pings
- No overarching organizer
  - Software run on thousands of routers worldwide
  - You can query many of them
  - Various lists, e.g., Packet Clearing House front end



http://lg.pch.net/

Oregon Route View, RIPE RIS



- Peer with BGP routers
  - Get BGP updates
  - Make data freely available
- U Oregon Route Views http://www.routeviews.org/
  - Nearly 500 sessions
  - Routers in over 200 ASes
- RIPE Routing Information Service
  https://www.ripe.net/analyse/internet-measurements/routing-information-service-ris
  - 30-40 sessions

Week 1: Introduction

1. Motivation
2. Background: Internet infrastructure and traffic
3. Types of measurements
4. Measurement platforms
   A. **Overview**
   B. PlanetLab Europe
5. Sound measurement practices
6. Ethical issues

Picture credits:

- Slide 3: logo of Measurement Lab http://www.measurementlab.net/
- Slide 4:
  - logo of RIPE NCC https://atlas.ripe.net/
  - photo of RIPE Atlas probe V3 https://atlas.ripe.net/docs/probe-v3/
- Slide 5:
  - logo of the Packet Clearing House https://www.pch.net/
- Slide 6:
  - logo of the Oregon Route Views http://www.routeviews.org/