

# Packet Tracking Visualisation Demo

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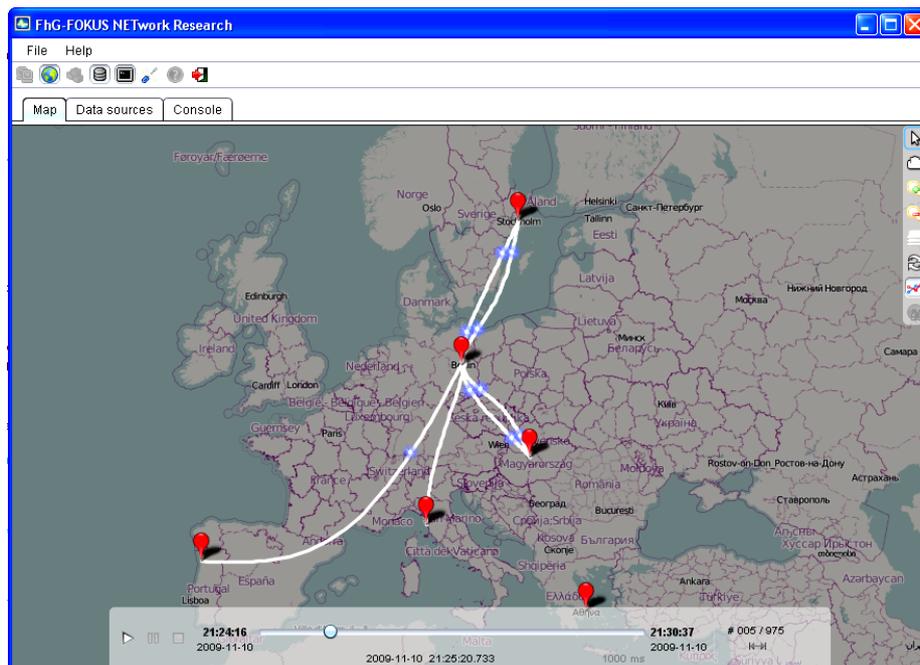
## 1 Abstract

Today's Internet infrastructure has become more and more complex and many of the things that are happening in the network are invisible to the user and often even to researchers. Although network measurements can provide clue information about the network state, we believe that only a proper visualization thereof can shed some light on its complexity.

Based on this motivation we setup a packet tracking infrastructure that is able to passively track single packets throughout the network. Our architecture also allows us to conduct fine grained hop-by-hop measurements for packet delay, loss and actual used bandwidth. In our architecture we applied efficient algorithms to reduce the measurement traffic based on hash-based packet selection which allows coordinated sampling of the same packets at different measurement points, which export the measurement results in IPFIX/PSAMP compliant format.

The visualization is written in Java; it supports animations and it is based on Openstreet Map and various other open source projects. Observed packet tracks are aggregated in user-defined intervals and displayed as animated light dots where each dot represents multiple packets. For showing the paths we used cubic splines so that the path from point A to B does not cover paths from point A to B to C, i.e. one can follow the packets from ingress to egress.

Our prototype implementation was deployed on PlanetLab Europe (see an example visualization below). We are currently working on porting the architecture to other testbeds and wireless meshes. The focus is to offer packet tracking as a service for the research community.



**The authors:** Christian Henke currently works at the Technical University Berlin where he is preparing a PhD topic in the field of passive multipoint measurements. Tacio Santos has a Bachelor in Electrical Engineering from CEFET-PR, Brazil. He is studying Master of Computer Science at Freie University in Berlin and researches at Fraunhofer FOKUS in the area of network measurements. Dr.-Ing. Tanja Zseby is head of the Competence Center Network Research (CCNET) at Fraunhofer FOKUS. Dr. Zseby leads various national and international research projects in the area of Future Internet research.

At the PAM 2010 conference we would like to present a poster which explains the packet tracking architecture, the used algorithms (hash-based packet selection) and used standards (IPFIX/PSAMP) and we will show a demo of the visualization tool.