



Thesis (B.Sc. or M.Sc.)

Measuring the performance of network flows

Motivation

This thesis is placed in the context of the *Safe and Secure European Routing (SASER)* project. The goal of this project is to deal with challenges in high speed networks. One of these challenges is identifying flows with inadequate performance and taking appropriate actions to improve them. But what can be considered as inadequate performance?

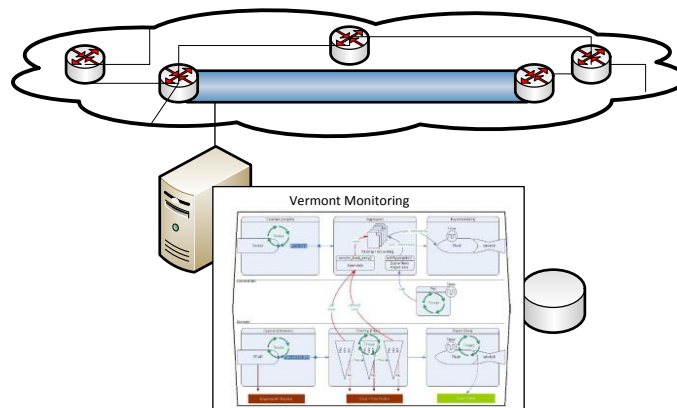


Related work studies have shown how Quality of (user-) Experience (QoE) is connected to measurable performance indicators such as throughput, packet drop rates, latency, jitter, or out-of-order delivery rate. Different types of traffic, like VoIP and video-streaming, have different network performance requirements to achieve the same QoE level.

For TCP flows, many performance indicators can be measured by observing TCP-specific behavior on a local (as opposed to distributed) measurement system. Measuring the performance of UDP flows is much harder – usually this requires an analysis of protocol-specific headers or distributed measurements.

Your Task

Your task is to develop a system that collects performance indicators of network flows based on a local measurement system. The system should capture traffic and extract flows, determine the type of traffic (e.g. VoIP), and attach performance indicators that can be measured. The system can be created by extending the existing Vermont monitoring tool (developed at the chair) or, alternatively, it can be implemented from scratch.



Your work on this thesis will also give insights into a huge scientific project with a subsidy amount of ~80 Mio € and 64 partners from industry, universities and research institutes, spread across 5 countries (Germany, France, UK, Denmark and Finland). Continuation or preliminary **work as HiWi** is possible, same as the placement into **other contexts (IDP, Diploma-Thesis, etc.)**.

Requirements

Basic knowledge of Routing, Linux, Network protocols and some programming skills

Keywords

QoE Monitoring, Vermont

