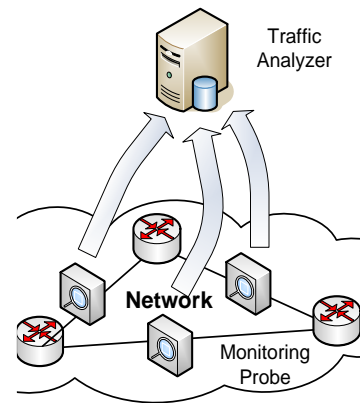# Thesis
(B.Sc. or M.Sc.)

Open Flow for QoS-Monitoring

Motivation

OpenFlow is widely deployed in data centers, but gains only little attention in wide area networks. This may be due to some limitations and risks that came along with a central controller as used in OpenFlow-based Software defined Networking. Nevertheless OpenFlow is supported by a rapidly growing number of devices. Besides the opportunity to control the data plane using computationally expensive strategies it also provides noninvasive benefits, like a standardized interface for requesting device information. It may also be used to mirror all packets belonging to a specific flow for monitoring purposes.

This thesis is placed in 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.

Your Task

The goal of this Thesis is to evaluate the applicability of OpenFlow for monitoring the performance of flows. This should be done by implementing a prototype within an experimental network. Currently capacity limitations on the monitoring links lead to unmonitored packets that prevent the monitor from tracking specific flows entirely. This should be mitigated by sampling the packets, limiting the monitor to a few links at a time without saturating the link completely. A network controller has to decide which flows to monitor.

This thesis contains the following tasks:

- A suitable strategies for flow selection has to be developed.
- This strategy has to be implemented using OpenFlow to direct the data-flow. Feedback from the QoS-Monitor needs to be used.

The student gains insight into a 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, OpenFlow and some programming skills

Keywords

OpenFlow, QoS, Monitoring

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