

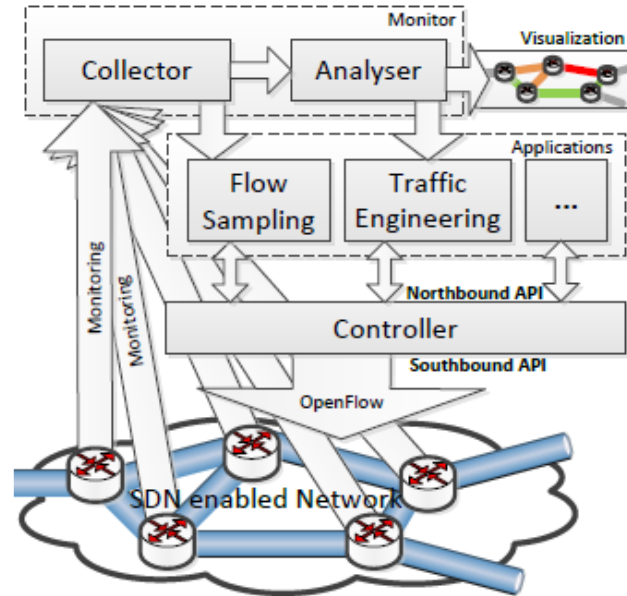
Thesis

(B.Sc. or M.Sc.)

Monitoring in SDNs

Motivation

OpenFlow is supported by a rapidly growing number of network devices and starting to be deployed in data centers. For wide area networks however only little attention has been given to this evolving technology. But OpenFlow also gives the opportunity to solve open problems in the field of network monitoring (for QoS, security, and other analyses): Besides the control of the data plane using computationally expensive strategies, OpenFlow also provides noninvasive benefits, like a standardized interface for requesting device information. Furthermore it can also be used to mirror all packets based on certain criteria (e.g. same flow) for monitoring purposes.



Your Task

Currently capacity limitations on the monitoring links lead to lost packets on the switch that prevent the monitor from drawing conclusions because of missing packets. This should be mitigated by sampling, limiting the monitored subset of traffic to a sensible amount thus avoiding unintended monitoring drops. A network controller has to decide which traffic (flows) to monitor.

This thesis contains the following tasks:

- Transfer a testing setup for OpenFlow based sampling from the network emulator Mininet to a real hardware testbed.
- Evaluated and adapt the existing concept based on real testbed measurements

You will gain insight into the *Safe and Secure European Routing (SASER)* 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.)**. Concrete work packages depend on the type of thesis – if you are interested come in and discuss the topic and work packages in more detail.

Requirements

Knowledge about Linux and programming skills (specifically Python)
Experiences with SDN and OpenFlow are helpful

Keywords

SDN, OpenFlow, Monitoring, Sampling, Measurements, QoS

