Chair of Network Architectures and Services
Department of Informatics
Technical University of Munich

Thesis B.Sc. Thesis M.Sc. IDP

Chaos Control — Let SONiC Run At Full Speed

Motivation

Working towards the separation of concerns which software-defined networking recommends, P4 [1] is a domain-specific programming language targeted at networking hardware, with a target-independent design in mind. SONiC is a Linux-based operating system targeted, among others, at P4-programmable switches [2]. Switches and other networking devices deployed in testbeds at the Chair of Network Architectures and Services are managed with the software pos [3] and can boot any compatible operating systems images.

P4 and SONiC share an application domain

Goal of this thesis is to implement and evaluate pos-bootable SONiC images specifically for P4-programmable high-performance ASIC targets. An evaluation should consider differences to other more universal operating systems as well as their impact on the target behavior.

Your Task

- Familiarize yourself with P4 language and SONiC operating system
- Deploy SONiC images supporting the pos methodology
- Investigate and evaluate the achievable performance
- Model and summarize findings in particular compared to other operating systems

[1] P4 — Language Consortium
[2] SONiC — Software for Open Networking in the Cloud
[3] The pos Framework: A Methodology and Toolchain for Reproducible Network Experiments

Applicants should have previous hands-on experience with the topics involved.

Contact

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