**Thesis B.Sc.**

Thesis M.Sc.

IDP

Virtualized Data Center Networks Utilizing Programmable Switches

Motivation

Complex network topologies are expensive to create and maintain. Therefore, scientists typically rely on virtualized or emulated networks for their network experiments. Emulated or virtualized networks behave differently compared to real networks. Technologies, such as single root IO virtualization, allow network performance for virtualized networks that is almost indistinguishable from the behavior of a real network.

The goal of this thesis is the creation of a framework for hybrid network experiments. This hybrid approach uses virtualized machines for all the software components but real network equipment to create network topologies. The hybrid approach should be created in a way that there is little to no difference between a network experiment using the hybrid approach compared to an approach that relies on real hardware for all its components. The network hardware itself will be realized on a programmable switch. The programmable switch offers a fully programmable packet processing pipeline that allows the creation of almost arbitrary topologies without impacting throughput or latency on the switch itself. The Chair of Network Architectures and Servicesoperates a testbed that contains VM server and programmable switches and will be used to develop the framework for the experiments.
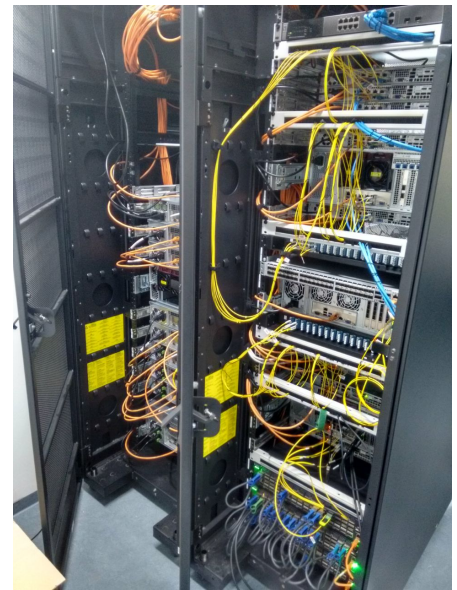
Network Testbed

Your Task

- Create a framework that uses the programmable switch to create arbitrary network topologies.

- Set up different network topologies and execute network measurements on your own topologies.

Contact

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