

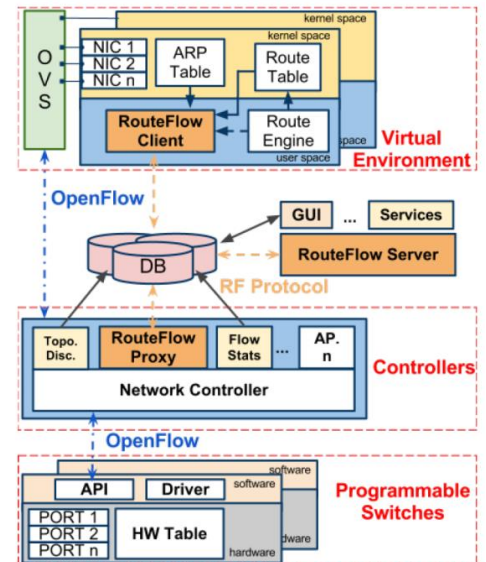


Software Defined Networking (SDN) in ISP Networks

Motivation

Software Defined Networking (SDN) promises to make computer networks more flexible, cheaper and allow better link utilization compared to conventional networks. The concept of SDN is to physically separate the two main functions of today's routers: making decisions about where traffic is sent and the actual forwarding of traffic. OpenFlow implements a protocol for the communication between these decision makers (OpenFlow controllers) and forwarders (OpenFlow switches).

While OpenFlow is already deployed in data centers, its implications when replacing routers in WANs (e.g. provider networks) are largely unexplored. One such approach to migrate existing WANs to OpenFlow is RouteFlow (see figure on the right).



Aufgabenstellung

The goal of this thesis is to implement and evaluate the deployment of OpenFlow in a specific scenario based on a real-world topology. This task consists of three work packages:

- In the first phase the student's task is to analyze ISP networks using the example of the DFN (Deutsches Forschungsnetz). Using RouteFlow, the student should migrate the DFN topology to an OpenFlow network. Furthermore, other approaches to make use of OpenFlow in ISP networks should be assessed.
- In phase 2 of the thesis the student sets up parts of the network within a testbed using RouteFlow. Suitable experiments to evaluate this setup should be described and prioritized and a subset of them has to be selected. Finally, the selected experiments should be carried out.
- Part 3 takes care of reflection of the results and its interpretation. At least these results should lead to the formulation of abstract rules or points of contact for future work by demonstrating strengths and weaknesses of the analyzed approach.

Voraussetzungen

Routing, Linux, OpenFlow

Stichworte

SDN, OpenFlow, Wide Area Networks, ISP networks

