



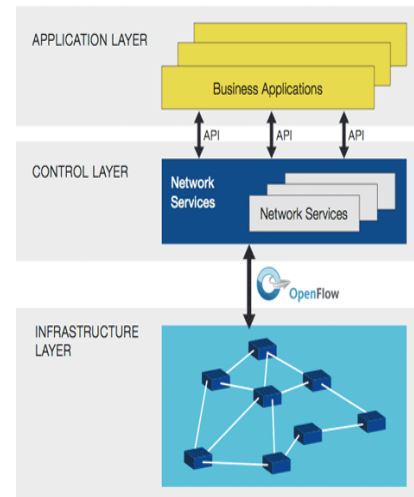
## A Case Study of Software Defined Networking (SDN) in Company Networks

### Motivation

Software defined networking (SDN) is an emerging design concept for computer networks that allows a logically centralized software program to control the behaviour of an entire network in contrast to conventional networks by separating control and data plane. OpenFlow is such a key protocol for SDN that manages network equipment as shown in figure on the right.

With introducing SDN in the productive networks we will be able to reduce operational, maintenance cost of managing network elements together with increase in flexibility and introduction of new services.

Due to its newness deployments in productive networks are quite simple. SDN concepts still need maturation and best practice for tackling of various problems have to be found. E.g. the implementation of policies such as an endpoint policies that deals with access control and routing policy that deals with traffic paths is still not solved in a satisfying way. The “one big switch abstraction” is a concept that allows defining of rules for the network without caring of the physical switches.



### Task

The goal of this thesis is the migration of selected functionality of our chair network into an SDN. Tasks can be divided into following timeline.

- The first phase includes the task to analyze use cases for the services and components of the network.
- Using Mininet adequate parts of the network topology have to be emulated to allow for development and testing of services like routing, DHCP, and access control.
- Concepts have to be surveyed and suitable selections have to be made in order to come up with a blueprint.
- In phase 2 of the thesis our network topology will be migrated into an OpenFlow environment and implementation is carried out within the testbed.
- Phase 3 would include implementation results, its interpretation, and discussions regarding how to apply SDN for network management and finding solution to different limitations involved in SDN.

### Requirements

### Keywords

SDN, Open Flow, Mininet, Python, Ryu, Routing

