

Bachelor's Thesis

# Development of an East/West API for SD-RAN control communication

Software-Defined Radio Access Network (SD-RAN) is receiving a lot of attention in 5G networks, since it offers means for a more flexible and programmable mobile network architecture.

The heart of the SD-RAN architecture are the so called SD-RAN controllers. Currently, initial prototypes have been developed and used in commercial and academic testbeds. However, most of the solutions only contain a single SD-RAN controller. Nonetheless, a single controller becomes also a single point of failure for a system, not only due to potential controller failures but also due to a high load induced from the devices in the data plane.

To this end a multi-controller control plane often becomes a reasonable choice. However, a multi-controller control plane renders the communication among the controllers more challenging, since they need to often exchange control information with each other to keep an up to date network state. Unfortunately, currently there is no protocol available for such a communication.

The aim of this work is the development and implementation of an East/West API for SD-RAN controller communication according to 5G standardization. The protocol should enable the exchange of information among the SD-RAN controllers regarding UEs, BSs, wireless channel state and allow for control plane migration among controllers.

## Prerequisites

- Experience with programming languages Python/C++.
- Experience with socket programming.
- Knowledge about SDN is a must.
- Knowledge about 4G/5G networks is a plus.

## Advisors

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