



Bachelor thesis No. 980

Design and Implementation of an ONOS Network Reconfiguration Application



Methods

Programming in Java
Prototype implementation

Topics

Multi-layer networks
Communication networks
Network control

Background

Novel and higher-quality Internet services fuel an exponential growth of traffic in Internet service providers' transport networks. This leads to a significant increase in resource demand with large variations over time thus requiring more efficient and dynamic operation of future networks. The Software-Defined Networking (SDN) paradigm enables an efficient and dynamic operation of communication networks. Therefore, a current research topic at the IKR explores methods for the reconfiguration of multi-layer transport networks using the SDN paradigm.

Task

In this task, you will design and implement an application for the SDN controller ONOS (<https://onosproject.org/>). This application will allow the reconfiguration of the ONOS-controlled network using algorithms developed at the IKR. The application consists of two main components: a graphical user interface to parameterize the reconfiguration algorithms and a back-end that is responsible for the execution of the reconfiguration algorithms and the corresponding path setup. In the end, you will evaluate the developed application using test scenarios.

Acquired Knowledge and Skills

You will acquire a detailed understanding of software-defined networking and its application. You will gain insight into multi-layer networks and network reconfiguration. In addition, you will gain experience in using an extensive, modular, object-oriented software framework.

Requirements

Programming Experience in Java

Desirable knowledge

Kommunikationsnetze I

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