Universität Stuttgart

INSTITUT FÜR
KOMMUNIKATIONSNETZE
UND RECHNERSYSTEME
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Master thesis No. 1007

Quantification of the Availability Compliance in Shared Path Protected Networks

Methods
Simulation
Reliability analysis

Topics
Communication networks

Background

Communication networks are a cornerstone of our modern society. Global enterprises, governments and stock exchanges but also every single smart phone user rely on them. It is therefore of the utmost importance that network failures are avoided as effectively as possible. To this end, today's transport networks typically protect connections by backup paths. This redundancy helps to increase the network availability greatly. However, protection does not come for free and various approaches of different cost and efficacy exist, for example dedicated or shared path protection. For a network operator it is crucial to be able to determine the impact of his deployed protection on the network availability and on top of that his chances that the availability requirements of his customers are met. For that reason, the IKR is currently investigating approaches to estimate whether network connections will comply with customer requirements or violate them.

Problem Description

In this project you will develop analytical approaches for the calculation of the availability compliance in shared path protected networks. This includes the following steps:

- Literature research on shared path protection and availability measures
- Selection of a suitable protection mechanism
- Development of approaches for the calculation of the availability compliance
- Verification of the developed approaches by means of simulation

Acquired Knowledge and Skills

In this project you will gain insight into state-of-the-art concepts for communication networks, in particular protection mechanisms for transport networks. You will learn to derive a problem specific analytical solution from existing literature. Further, you will learn how to simulate complex systems and interpret the simulation results.

Requirements
Communication Networks Architecture and Design
Kommunikationsnetze I
Programming Experience

Desirable knowledge
Performance Modelling and Simulation

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