

Abstract of the diploma thesis

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Computer networks are omnipresent today. The interconnection of the different networks is converging to a complex interlaced system. They are not necessarily managed at the moment; therefore this became the most important task of the work.

The development of practical experiments is used as a basis for the Network Design lectures at the HSR. The final products are mainly laboratory exercises for the students.

The thesis was developed through several steps. It started with gaining Network management experience. This was achieved with the use of HP OpenView, one example of a tool for network management. Creating a lab network environment offered the basis.

In the lab environment, the first problems were addressed through troubleshooting network faults and configuration errors. In the next step, this task was performed utilising network management tools. This exercise highlights the advantages of network management. Different aspects of network structures are subsequently analysed. Operational functions of common network devices such as routers and switches are dissected and routing protocols are compared.

Since the basic network is not operational, traffic generators were used to simulate a productive network. The network performance has been supervised, configuration management and RMON principles analysed.

A validation of the proposed network analysis method developed in a student research project from Summer 2002 has been performed. The generic troubleshooting method described has been thoroughly reviewed.