Routing – An Introduction to Management of Routers and Internet Routing Protocols

Welcome to participate in our Ph. D. course on some aspects of IP network routing.

The course will give the students an introduction to router configuration, management and trouble-shooting. It will also cover some aspects of network design. The major part of the course consists of hands-on exercises in a router lab. These exercises will be supported by theoretical lectures.

The exercises will give the students a first(?) encounter with the unicast routing protocols RIP, OSPF and BGP, as well as Cisco IOS and its CLI. The exercises are preferably performed in groups of two students. Each exercise can be divided into a number of elements. First the students must study the theoretical background for the exercise. These studies are the foundation for the planning of the realization of the exercise. The plan and outline shall then be presented and discussed with the teacher. Then the practical exercise in the lab will take place. After having accomplished each assignment a written report covering concludes each individual exercise.

The course will give 4.5 credits. If an optional fifth exercise is fulfilled an extra 1.5 credits will be given, meaning a total of 6.0 credits. No grades are given. The course is aimed towards Ph D students, but any person with interest in the field is welcome.

Lectures

1. Unicast routing and unicast routing protocols
2. The router and Cisco IOS
3. Presentation of some existing networks

Exercises

1. An introduction to Cisco IOS (configuration, management, trouble-shooting tools)
2. Distance Vector routing protocol - RIP
3. Link State routing protocol - OSPF
4. Exterior Gateway protocol - BGP
5. Comparison of two routing protocols convergence (optionally)

Schedule

The exact scheduling of the lectures will be made together with the students.

The students schedule the exercises individually. The practical exercises can be performed from any computer connected to the Internet.