

Packet switching and processing architectures (6 CFU)



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- Semester: Second
- Exam mode: Oral colloquium + Project
- Pre-requisites: Basic Networking, Random processes
- Area: GR-a (Networking)

Syllabus



- Objectives

The course presents the main network switching architectures, with particular focus on packet switching architectures. After a brief introduction to the notions of circuit and packet switching, the course will focus on the main schemes of packet switching together with their performance and possible issues. The course will also present the OpenFlow platform to run experimental switching solutions. Then, the course will deal with packet processing and will show the main lookup and classification algorithms currently in use. Finally, the course addresses the topic of traffic measurements by introducing advanced probabilistic and deterministic data structures for high performance monitoring applications and pattern matching

- Topics

- Basics on switching paradigms
- Switching fabrics
- Packet switching architectures (IQ, OQ, CIOQ, ...)
- Packet Processing (Lookup, classification, ...)
- The OpenFlow Switching Platform
- Traffic Measurements/Monitoring (probabilistic data structures for high speed traffic monitoring)

Thesis available



- Stateful processing acceleration of OpenFlow switches
- High—speed network measurements