Networks and Technologies for Telecommunications (RTT) – 9 CFU

• Teacher(s):
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• Semester: 2
• Exam mode: project and oral discussion
• Pre-requisites: Network management and Configuration (GCR)
• Area: Engineering, Group A (9 CFU)
Syllabus

• Network Management and Services (30 hours) – B. Martini
  • What is Network Management and how it works in IP and transport networks
  • Management protocols (i.e., SNMP, NETCONF, CMIP)
  • Data modeling and data syntax languages (i.e., SMI, GDMO)

• Lab of Network Software (25 hours) – A. Giorgetti
  • Introduction to network and protocol modeling
  • Network and protocols modeling with OPNET
  • Network and protocols simulation with OPNET

• FPGAs for Communications Networks Prototyping (20 hours) - L. Valcarenghi
  • What is an FPGA and what can be used for in communications networks
  • FPGA design flows: schematic-based design flow, HDL-based design flow, modular and incremental design
  • Design Tools: simulation, synthesis, verification
• Advanced management solutions for Cloud Data Centers (SDN, NFV)
• Service composition and orchestration in 5G networks

• Design and Evaluation of Transport Networks for 5G Mobile Radio System
• Implementation of evolved NodeB (eNB) functional splits in Open Air Interface (OAI) and FPGA-based 5G terrestrial radio access networks
• Federation of a 5G network testbed

• Control plane for optical transport networks (SDN, GMPLS/PCE)
• Design and simulation of data centre networks