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Core Network Dimensioning & QoS

Engineering & Technology Solutions
Course Outline

**Day 1**

**IP basics**
- Architecture of fixed IP networks
- The IP packet
- IP addressing
- Routing
- Router and switches
- MPLS
- Traffic Engineering

**Day 2**

**QoS in the mobile IP (basics)**
- RTP and RTCP
- Traffic regulation
- Admission control
- Scheduling
- Resource provisioning
- IP Integrated services, RSVP
- IP Differentiated services
- QoS and Traffic Engineering in MPLS

**Mobile backhauling**
- 2G, 2.5 G, 3G and HSOPA-HSUPA backhauling
- Quality parameters of mobile backhauling
- IP-based RANs, mobile IP/MPLS convergence
- Ethernet as a transport technology
- Ethernet-based access networks and backhauling
- Migration to Ethernet-based transport, the hybrid TDM/Ethernet transport network
- The circuit emulation technology

**Day 3**

**Circuit emulation (pseudowire)**
- Introduction to pseudowire
- MPLS-based pseudowires
- The pseudowire standards:
  - IETF (SATop (Structure Agnostic TDM over Packet), TDMoIP (TDM over IP), CESoPSN (Circuit Emulation Service over Packet Switched Network))
  - ITU-T (Y.1413 (TDM-MPLS network interworking); Y.1453 (TDM-IP interworking))
  - IP/MPLS Forum: (IA 4.0.4.1 (IA Implementation Agreement), IA 8.0.0)
  - Metro Ethernet Forum (MEF): MEF 8

**Day 4**

**QoS in the mobile IP (dimensioning)**
- Dimensioning pseudowire services
- Operative traffic models for dimensioning
- Calculus and design of delay
- Designing resource provisioning and admission control

Course Overview

Today most operators are interested in providing all services over a converged IP backbone. They also see big benefits in shifting to next-generation network (NGN) technology. The dimensioning of both core network and backhauling for the transport of QoS-aware multimedia applications has a strategic importance, but it is challenging. The main objective of this course is to provide practical methods to size core network and backhauling links and nodes, in order to achieve the required QoS objectives in end-to-end network paths. From this course, participants can learn how to apply in practice the most recent advances in network calculus to size their networks and assure QoS. The course will also give a perspective on the mobile backhauling architecture and technology.

Key Benefit

After attending this course, participants will be aware of the critical issues related to dimensioning core network and backhauling links for QoS-oriented services. Network planners will be able to employ methods to predict the performance of network segments and to deploy the correct amount of resources, given the quality constraints of multimedia services and applications. The course will provide the latest achievements in the most advanced network calculus techniques, from a practical and methodological standpoint.

Pre Requisites

Degree in Telecommunications. Basic knowledge of IP networking multimedia services.

Who Should Attend?

Network engineers, network architects, from core network. The course is particularly intended for engineers who are responsible for network planning, performance and optimisation.