UMTS CORE NETWORK SIGNALLING PROTOCOLS

Course Description
The technology convergence under the name ‘NGN, Next Generation Network’ is currently deployed in both fixed and mobile networks. In UMTS mobile core networks, the concept is referred to as ‘Layered Core Network’ or ‘Split Architecture’. The implementation is based on a so called ‘Softswitch’ principle, which means that control and traffic functions within a UMTS Core Network are implemented in physically separate systems, so called servers and media gateways. The logical interfaces between these systems support new standardized signaling protocols, like BICC and MGCP.

The course provides knowledge of the UMTS Core Network and the protocols necessary for implementing it. The focus of this course lies on the signaling protocols that render separations of control and traffic functions. It gives a detailed picture of the most important UMTS Core Network signaling protocols as specified by 3GPP Release 4 and Release 5.

Let your staff learn from the experts that have already seen and solved the problems your staff is facing today.

Content
• The concept of NGN in the UMTS core network
• Definition of horizontally and vertically integrated core networks
• Overview of the signaling protocols in UMTS core and their purpose
• The deployment of SDH, ATM, SS7 and IP in UMTS Core
• Overview of the SS7 network and Link Layer
• Overview of the Connection Control Part (SCCP), Message Transfer Part (MTP) TCAP
• Overview of call set up using ISUP and MAP
• Transport signaling in horizontally integrated networks: AAL2 and Q.2630
• Control signaling in layered Core Networks
• Bearer Independent Call Control, the BICC model and its functions
• The SIGTRAN model and its functions
• Overview of IP Signaling transport: SIGTAN User Adaptation Layers, M2UA, M3UA
• SCCP User Adaptation, SUA
• Gateway Control Protocol, GCP and its implementation H.248/Megaco
• The SIP model and how it is used by UMTS Core Network
• SIP/SS7/H.323 signaling Interworking
• A number of signaling traffic cases
COURSE OBJECTIVES
After the course, the participants should be able to:

• Understand and describe the UMTS Core Network architectures, parts and protocols
• Understand and describe the existing SS7 networks in UMTS
• Draw traffic case scenarios on ISUP and MAP signaling
• Understand and describe the benefits of SIGTRAN
• Understand how SCCP User Adaptation is performed
• List several differences between MTP-3B packets and MTP3.
• Explain the purpose and the meaning of the ATM Adaptation Layer 2 (AAL2)
• Describe the role and functionality of BICC in the control layer
• List Gateway Control Protocol (GCP) functionality and commands
• Draw traffic case scenarios based on BICC and MGCP signaling
• Explain the SIP role in UMTS IP Multimedia services
• Explain the functionality and purpose of the GPRS Tunneling Protocols GTP-C and GTP-U

Target audience
This course is developed for personnel that need to gain understanding of the signaling protocols in UMTS Core Networks as implemented in UMTS mobile networks.

Pre-requisites
The participants should be familiar with UMTS network architectures and SS7 signalling.

Course length
3 days

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