Training | Operation | Consulting | Documentation

Course Details

UMTS Networks Introduction

Date

06.–07.02.2013

Time

09:00–16:00

Place

Munich

Price (excl. VAT)

1020.00 EUR

Number

NW1230

Additional Information

- Keywords: *UMTS, GSM, GPRS, EDGE, UMTS, Schnittstellen, Protokolle, Prozeduren*
- Language: German, English
- Download course description

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This course offers an overview of the development and functionality of the UMTS mobile-data service. The focus of this course is to provide an understanding of the data transfer system and the network configuration within the area of UMTS. The tasks of the different network elements, the complex transmission via the air interface (CDMA), the various possible transfer mode technologies in radio and core network systems, as well as the implementation of the interfaces will be presented.

Target Group / Requirements

This course is addressed to all technical personnel as well as to participants from sales departments, general and project management who require an understanding in more depth of UMTS. Basic knowledge of GSM and GPRS network systems are a prerequisite for this course.

Course Content

Development of the UMTS standard

- GSM, HSCSD, GPRS, EDGE and UMTS and their respective pros and cons
- The third generation (standardisation concept for UMTS)

UMTS network

- Difference between a circuit and a packet switched network
- Description of ATM and of ATM adaptation Layer 2 and 5
- UMTS network architecture with a description of the tasks of all network elements
- UMTS interfaces, their use and their implementations

UMTS interfaces and protocols

- UMTS procedures and the necessary protocols:
  - RRC connection set-up with RRC and attach with MM/GMM and MAP
  - Connection set-up with CM, RRC, RANAP and ISUP and circuit switched data transfer over the reserved physical resources
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- Activation of a PDP context with SM, RRC, RANAP and GTP and packet switched data transfer with IP, PDCP and GTP

- Physical implementation in the UMTS network:
  - The interfaces Uu and Iub (segmentation of the data with RLC, mapping between the logical and the transport channels with MAC, introduction into CDMA with the channelization and the scrambling codes)
  - The interface Iu(Cs) and E for the transfer of the circuit switched data
  - The interfaces Iu(Ps), Gn, Gp, Gi for the transfer of the packet switched data and their possible implementations (IP over Ethernet, Frame Relay or ATM)

- UMTS signaling:
  - Mobility management (location/ routing areas, common MM with the Gs interface, 3 different MM states)
  - Session management (2 different SM states)
  - Domain Name server and its use for PDP context activation, inter SGSN routing area update and UMTS roaming
  - The other interfaces in the core network (C, D, E, F, G, Gc, Gd, Gf, Gr, Gs)

- Overview of the UMTS protocol planes (transmission and signaling planes)

UMTS procedures

- RRC connection set-up and release
- Security procedures: authentication and ciphering
- MM/GMM procedures: cell update, routing area updates (intra SGSN, inter SGSN, combined location area / routing area updates), attach / detach
- CM procedures: mobile originating and terminating call
- SM procedures: PDP context activation / deactivation

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