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VoLTE Basics

Unlike previous 3GPP wireless technologies, LTE has no Circuit Switched (CS) bearer to support voice, so carrying voice over LTE requires a migration to a Voice over IP (VoIP) solution. Until this migration occurs, LTE-capable handsets need to revert to 2G or 3G for voice calls, which can reduce quality or even suspend Packed Switched (PS) services.

The GSMA's IP Multimedia Subsystem (IMS) Profile for Voice and SMS document, commonly referenced as Voice over LTE (VoLTE), defines the mandatory set of features that the mobile device and network are required to implement in order to guarantee an interoperable, high quality IMS-based telephony service over LTE.

The course focuses on VoLTE services, underpaying IMS architecture, basic procedures and their impact on existing operator infrastructure.

The intermediate solutions like CSFB and SMSoSGs are also explained as they can be used concurrently with VoLTE to support roaming subscribers and emergency calls as long as the operator is not ready to move those service to VoLTE.

Target audience

The course is intended for those who want to extend their knowledge about mobile network with basic aspects of VoLTE services, functionality and architecture. The detailed description of technical solutions is not included in the course.

Training contents

- **Introduction**
  (standardisation: 3GPP – MMTel, SR-VCC, SCFB and SMSoSGs and GSMA - VoLTE),
- **LTE overview**
  (network structure, attach procedure, default and dedicated bearer, PCRF usage, QoS parameters, efficient handling of VoIP in E-UTRAN – SPS, DRX, DTX, fast re-transmissions, AMR-NB and AMR-WB speech coder, fast signalling, service continuity),
- **IMS overview**
  (basic architecture components, addressing and routing principles, registration procedures, IPX, security, number portability, international roaming),
- **Call setup and release**
  (mobile-to-mobile end-to-end VoLTE call, interworking with CS system for VoLTE originating and terminating calls, Terminating - Access Domain Selection T-ADS, emergency calls),
- **Supplementary services**
  (MMTel supplementary services, VoLTE supplementary services, synchronization of supplementary service setting between VoLTE and CS system, SMS, examples of supplementary service procedures),
- **SR-VCC**
  (voice call continuity service handover from LTE to 2G/3G CS network, additional network components and upgrades required to support SR-VCC),

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- **CSFB and SMSoSGs**
  (handling of traditional CS services in LTE without VoLTE, CSFB and SMSoSGs as the intermediate solution for roaming subscribers and emergency calls),
- **Integration with RCS 5 services**
  (overview of RCS 5 services, chat – SMS interworking, presence service, multidevice environment).

Prerequisites

The participants should be familiar with basic aspects of mobile network architecture and services.

Training method

Lecture

Duration

1 day

Level

Basic