

VoLTE Protocols and Signaling Training

VoLTE Protocols and Signaling Training is a technical level VoLTE covering VoLTE operation, protocols, VoLTE/SIP call flows, signaling and the SIP signaling messages in the IMS architecture including VoLTE registration, VoLTE to VoLTE calls, VoLTE to 3GPP 2G/3G network calls, VoLTE to non-3GPP calls, and Interworking with the PSTN, and emergency service calls.

Learn about: Architecture and protocols of Voice over LTE (VoLTE), IP-Multimedia Subsystem (IMS) Architecture and Protocols, VoLTE call setup and release, dedicated bearer setup, VoLTE interworking, Voice Call Continuity (VCC), Emergency Calls and Location based Services.

Learning Objectives

Upon completion of completing of VoLTE Protocols and Signaling Training course, the attendees will be able to:

- Illustrate VoLTE features and network architecture
- Explain the detailed of VoLTE call setup and related protocols and signaling
- Describe the roles of IP-Multimedia Subsystem (IMS) protocols and signaling in VoLTE
- Illustrate the VoLTE initialization, attach and call operation details
- Describe the steps in Voice over LTE (VoLTE) Originating Call
- Summarize VoLTE Attach and Default Bearer Setup Messaging
- Describe VoLTE QoS and security features and implementation options
- Summarize traffic operations for UL and DL
- Describe operation, protocols and signaling steps in SMS over IMS
- Describe VoLTE security and protection features including Authentication, Integrity and Encryption

Course Agenda

Overview of VoLTE

- Introduction and Overview
- Definition of Terms
- 3GPP and GSMA VoLTE References
- What is Voice over LTE (VoLTE)?

LTE and IMS Network Architecture

- Evolved Universal Terrestrial Access Network (E-UTRAN)
- VoLTE Service Description and Implementation
- Evolved Packet Core (EPC)
- IP Multimedia Architecture (IMS)

- IMS Architecture and Components
- Application Layer
- Control Layer
- Access and Transport Layer
- Proxy CSCF (P-CSCF)
- Interrogating CSCF (I-CSCF)
- Serving CSCF (S-CSCF)

VoLTE Architecture

- VoLTE Architecture
- VoLTE Functional Node Description
- VoLTE Interface Description
- VoLTE UE (User Equipment)

VoLTE and IMS Procedures and Protocols

- VoLTE and IMS Procedures
- Protocols
- IMS Procedures applied to VoLTE
- LTE UE Perspective
- VoLTE Client
- VoLTE User Identities
- ISIM
- Real-time Transport Protocol (RTP)
- RTP Control Protocol (RTCP)
- Session Initiation Protocol (SIP)
- SIP Headers
- SIP Codes
- SIP requests and methods
- Session Description Protocol (SDP)
- SIP Responses

LTE-EPC Network Architecture and Protocols

- PDN Connectivity
- NAS Signaling
- Bearer Setup
- Authentication and Authorization
- Bearer Setup and EPS Attach
- VoLTE PDN Connection

- Default Bearer Setup
- PCRF and VoLTE service policy

VoLTE Call Setup Procedures

- Sample SIP Call Flows
- VoLTE Calls
- VoLTE to VoLTE
- VoLTE to PSTN
- PSTN to VoLTE
- SMS
- Registration Call setup
- VoLTE Registration
- VoLTE call initiation signaling
- IMS registration
- SIP signaling with P-CSCF
- Voice Codec Options
- Voice Call Continuity (VCC)
- VCC call setup
- SRVCC/eSRVCC network architecture
- LTE bearer registration and resource request
- P-CSCF discovery and IMS emergency registration
- Establish emergency session
- P-CSCF Discovery
- SIP Registration
- Event Subscription
- VoLTE Emergency Call Support
- Emergency session call flows

IMS Security applied to VoLTE

- IMS Security
- LTE Security
- Security association between the User Agent (UA) and P-CSCF
- Security association between the ISIM and the HSS