

VoLTE Essentials

Instructor Led | Duration: 1 Day | Course Number: LTE_116

4G LTE

LTE is defined as an all-IP network without any circuit-switched network elements; as a consequence, LTE subscribers must receive their voice services through voice over IP (VoIP). VoLTE (Voice over LTE) is based on the IMS (IP Multimedia Subsystem) framework and Session Initiation Protocol (SIP), and is the preferred solution for delivering voice in LTE networks. Wireless service providers around the globe have agreed to deploy VoLTE in order to ensure a smooth migration of voice services and seamless interoperability among the VoLTE equipment vendors and operators. This course provides a high-level end-to-end understanding of the VoLTE/IMS core network architecture, an overview of voice and video services, and a description of key VoLTE call scenarios, along with a discussion of important VoLTE deployment considerations.

Intended Audience

This course is intended for individuals who need a high-level overview of the LTE and IMS VoLTE networks, end-to-end signaling and traffic flows, and VoLTE operational scenarios.

Learning Objectives

After completing this course, the participant will be able to:

- Sketch the LTE and IMS architectures for VoLTE and describe the functions supported by each VoLTE network component
- Describe the key operations needed to establish and maintain VoLTE sessions, including:
 - IMS registration
 - Call establishment
 - Dedicated bearer setup
 - QoS management
- Illustrate the end-to-end signaling and traffic paths for VoLTE
- Explain how VoLTE calls interwork with the PSTN and 3G networks
- Identify the key considerations for deploying VoLTE and monitoring monitoring VoLTE operations

Suggested Prerequisites

- [LTE_112] VoLTE Overview (eLearning)

Course Outline

1. LTE-IMS VoLTE Overview

- 1.1. What is VoLTE?
- 1.2. Role of LTE and IMS for VoLTE
- 1.3. Voice and video features in LTE
- 1.4. Network enhancements for VoLTE
- 1.5. State of VoLTE deployment

2. LTE-IMS Network Architecture

- 2.1. IMS network architecture
- 2.2. Key IMS entities and protocols
- 2.3. Role of DRA/SLF

3. Registration in VoLTE

- 3.1. Life of an LTE IMS UE
- 3.2. IMS registration
- 3.3. Default bearer connectivity to IMS

4. VoLTE Call Setup

- 4.1. End-to-end VoLTE-to-VoLTE call setup
- 4.2. Roles of ENUM and TAS
- 4.3. Dedicated bearer setup
- 4.4. End-to-end signaling and traffic paths

5. VoLTE to PSTN/3G Calls

- 5.1. Interworking considerations
- 5.2. Role of MGCF and MGW
- 5.3. SR-VCC and eSR-VCC
- 5.4. End-to-end signaling and traffic paths

6. VoLTE Deployment

- 6.1. Device and network changes
- 6.2. Role of RCS
- 6.3. VoLTE KPIs
- 6.4. VoLTE coverage requirements
- 6.5. Voice quality considerations