Exploring VoLTE: Signaling and Operations

LTE_130d | On-Demand | LTE and VoLTE | Express
Course Duration: 1.5 hours

Long Term Evolution (LTE) use the IP Multimedia Subsystem (IMS) to implement and deliver Voice over LTE (VoLTE) services to mobile subscribers. IMS network elements communicate with each other and with the mobile device using well-defined protocols and procedures to execute the required operations. This self-paced eLearning course describes each of the key VoLTE operations in turn, starting with the mobile's initial registration with the IMS network, followed by the steps needed to initiate and receive VoLTE calls, and continuing with the challenges associated with interworking with non-VoLTE networks. The course also looks at the special requirements for emergency calls, discusses how supplementary services are supported, and describes air interface enhancements designed to improve over-the-air performance for VoLTE traffic.

Intended Audience

This course is intended for a technical audience looking for an in-depth understanding of the important signaling sequences and detailed operations used in a typical VoLTE network.

Objectives

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

- Describe the steps involved with registering with the IMS network
- Explain how VoLTE devices initiate and receive calls with each other
- Discuss the methods used to interwork with non-VoLTE networks
- Explain how supplementary services are implemented in VoLTE
- Describe the special requirements and operations needed for emergency calls
- Describe the air interface optimizations defined to improve VoLTE performance

Course Prerequisites

Exploring VoLTE: Architecture and Interfaces

Outline

1. VoLTE Registration
1.1 P-CSCF and I-CSCF discovery
1.2 S-CSCF selection
1.3 Registration signaling
1.4 De-registration signaling

2. VoLTE Call Origination
2.1 Origination signaling
2.2 Originating services and TAS
2.3 Called party routing
2.4 Preconditions

3. VoLTE Call Termination
3.1 Termination signaling
3.2 Terminating services and TAS
3.3 SDP negotiation and alerting
3.4 Dedicated bearer setup

4. VoLTE Interworking
4.1 VoLTE-to-PSTN/3G signaling
4.2 PSTN/3G-to-VoLTE signaling

5. Supplementary Services
5.1 Telephony Application Server (TAS)
5.2 Voicemail and MWI
5.3 SMS and messaging

6. Emergency Calling
6.1 Emergency numbers and sos APN
6.2 E-CSCF selection and routing

7. Air Interface Enhancements
7.1 Semi-Persistent Scheduling (SPS)
7.2 TTI bundling
7.3 RoHC

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