5G Voice Signaling and Operations - VoNR and EPS Fallback

5G_309 | Expert-Led Live | 5G Core | Expert
Course Duration: 2 days

This training builds on the participant's knowledge of the VoLTE using 4G Core and IMS and helps students learn voice solutions in 5G Standalone (SA) using Voice over NR (VoNR) and EPS Fallback. Participants walk through various call scenarios for IMS registration, 5G voice call using VoNR and EPS Fallback, Voice over Wi-Fi, and handover to 4G using SIP and HTTP/2 signaling. Log analysis is emphasized where logs are available.

Intended Audience

Planning, Engineering, and Operations teams involved in voice solutions in 5G - VoNR and EPS Fallback deployment.

Objectives

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

- Sketch the end-to-end signaling and traffic path for VoNR and EPS Fallback using 5G, 4G, and IMS
- Identify configuration parameters related to VoNR and EPS Fallback operations
- Walk through various call scenarios and identify SIP and HTTP/2 messages involved
- Illustrate scenarios for IMS Registration and voice setup using VoNR and EPS Fallback
- Illustrate scenarios for VoNR call transitions to VoLTE, VoWiFi, etc.
- Step through the bearer setup in 5G and 4G RAN that support the necessary QoS for voice calls

Outline

1. 5G, 4G, and IMS Networks for VoNR and EPS Fallback
1.1 5G network functions - AMF, SMF, UPF, PCF, etc.
1.2 Interactions of IMS with 5G - CSCF, HSS, TAS, etc.
1.3 End-to-end signaling and traffic paths for VoNR and EPS Fallback
1.4 VoNR and EPSFB configuration parameters
Exercise: VoNR and EPS Fallback operations

2. 5G and IMS Registration
2.1 UE registration in 5G
2.2 PDU session setup for IMS
2.3 SIP registration in IMS
2.4 Support for services like SMS
Exercise: 5G and IMS registration walk-through

3. Voice Call Setup using VoNR
3.1 VoNR requirements
3.2 RAN considerations for VoNR - Slot aggregation, RoHC
3.3 Signaling and media paths for VoNR
3.4 VoNR Originating and Terminating Domain Selection
3.5 Mobile-originated call setup
3.6 Codec selection for VoNR
3.7 Bearer setup and 5QI for QoS for VoNR calls
3.8 Mobile Terminated call setup
3.9 Role of PCF and CHF for QoS and charging
Exercise: VoNR Call Setup walk-through

4. Voice Call Setup using EPS Fallback
4.1 Voice call setup in 5G and IMS
4.2 Call redirect or handover to 4G
4.3 Call setup and bearer setup in 4G LTE
4.4 Early media setup
4.5 QoS interactions between 5G and 4G networks
4.6 Mobile terminated call setup using EPS Fallback
Exercise: EPS Fallback call walk-through

5. VoNR Interworking Scenarios
5.1 VoNR to VoLTE call transitions
5.2 VoWiFi architecure and VoWiFi call scenarios
5.3 VoNR and Non-VoNR interworking
5.4 Emergency voice call architecture and call scenarios
Exercise: VoNR interworking walk-throughs

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