VoLTE Performance Optimization Training

VoLTE Performance Optimization Training is a 2-day course covering VoLTE Performance Optimization including Analyzing Signaling Protocols, VoIP Client Options, Radio Network Optimization, EPC Optimization, Voice Quality Optimization and UE Power Consumption Optimization.

Learning Objectives

Upon completion of completing of VoLTE Performance Optimization Training course, the attendees will be able to:

- Describe and illustrate the VoLTE network architecture
- Describe options, steps and procedures in VoLTE performance optimization
- List various VoLTE optimization techniques including analyzing signaling protocols, enhance VoIP client features, optimizing RAN, LTE EPC, enhancing voice quality and improve UE power utilization
- Understand Voice Call Continuity (VCC) features when applied
- Describe VoLTE call dedicated bearer setup
- Analyze SIP messages and SDP parameters
- Analyze and troubleshoot VoLTE operational scenarios and parameters for VoLTE registration, call setup and release
- List features and functions for VoLTE to VoLTE and VoLTE to PSTN calls
- Walk through steps in VoLTE Emergency Calls

Course Agenda

Motivations for VoLTE

- Enhance voice quality
- Wideband codec extended coverage
- Improve spectral efficiency
- Faster call setup time
- Simultaneous voice and LTE data
- Evolution from voice to rich next
- IMS services

VoLTE Optimization Process and Steps

- VoLTE Performance Optimizations options
- QoS requirements for VoLTE
- Simple VoLTE Capacity Planning Math
- LTE Capacity Planning and Dimensioning

- Role of E-UTRAN
- VoLTE Radio Access Network Deployment
- Role of LTE EPC and IMS (IP Multimedia Subsystem)
- End user quality optimization
- Terminal power consumption optimization
- Radio network optimization
- VoIP over LTE
- Quality of Service (QoS) capability in the radio network
- Voice packet prioritization
- Native VoLTE client
- Non-native VoLTE clients
- Third party applications
- The LTE User Equipment Perspective
- Dedicated Bearers
- Scheduling
- Header Compression
- Discontinuous Reception
- Transmission Time Interval (TTI) Bundling

LTE RAN Optimization for VoLTE

- VoLTE key performance indicators
- Radio network are setup success rate
- Handover success rate
- Call completion success rate
- VoLTE network optimization parameter
- Optimization and feature activation
- Header compression
- TTI (Transmission Time Interval) bundling and QoS
- IP user throughput
- Session Initiation Protocol (SIP) applications
- Adaptive Multirate Wideband (AMR WB) codec
- Mean Opinion Score MOS
- Enhanced Full rate Narrowband (EFR NB) codec
- Measured throughput of different VoIP codecs
- VoLTE Downlink performance in the weak signal
- VoLTE uplink performance in the weak signal
- TTI bundling

- Uplink Block Error Rate (BLER)
- Reliable control channel transmission
- VoLTE call setup success rate
- Single Radio Voice Call Continuity (SRVCC)
- Enhanced SRVCC (eSRVCC)
- Probability of VoLTE call using SRVCC

VoLTE Capacity Planning

- Subscriber modeling
- Modeling Financial Districts
- Modeling City Centrals and Downtown
- Modeling Airports
- Modeling College Campuses
- Modeling Government HQs
- VoLTE capacity planning calcuations (predictions)
- Header compression
- Header size (byte)
- Original header size
- Downlink header size
- Uplink header size

Voice Quality Optimization in VoLTE

- Voice codec sampling rate
- AMR Narrowband (NB) codecs
- AMR-NB or AMR-WB
- Super wideband (SWB) and full band (FB) codecs
- Speech quality with MOS
- Latency
- Absolute category rating (ACR)
- Listening-only tests
- Perceptual Objective Listening Quality Assessment (POLQA, or ITU-T P.863)
- Voice quality with different loadings
- Mouth-to-ear delay with different loadings
- VoLTE call setup time
- Call setup time measurements

VoLTE Enabled UE Power Consumption Optimization

- VoLTE radio optimization

- Discontinuous Reception (DRX)
- UE’s implementation of the voice client
- UE power optimization solutions
- Discontinuous reception (DRX) during VoLTE call

VoLTE (Voice over Long Term Evolution) Performance Validation and Testing

- VoLTE Performance Optimization Test Plans
- VoLTE Testing and Validation Requirements
- VoLTE Test Configuration
- VoLTE Setup Tests
- VoLTE Voice-only Calls Tests
- Measuring QoS and MOS
- VoLTE SMS
- IP Video Quality