

VoLTE RAN Performance Workshop

This workshop focuses on radio aspects of VoLTE performance by examining specific examples such as VoLTE setup analysis, Drop call analysis, voice quality analysis, and voice capacity analysis. The workshop provides practical experience in detecting, analyzing and resolving problems. The workshop emphasizes student participation via hands-on exercises allowing students to practice what they have learned. This workshop requires UE and network traces of success and failure scenarios from the customer.

Intended Audience

This workshop is primarily intended for RAN performance and optimization engineers involved in monitoring and optimizing VoLTE operations in LTE networks.

Objectives

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

- Sketch a troubleshooting plan to tackle specific VoLTE failures
- Demonstrate proficiency in VoLTE troubleshooting tasks
- Analyze VoLTE-related KPIs and identify issues in the network
- Use UE and network traces to perform root-cause analysis of specific failures
- Analyze VoLTE Setup, Drops, and voice quality performance issues
- Explain and analyze RTP and related traffic plane logs

What You Can Expect

- Expert-Led Live Duration: 21 HOUR
- Prerequisite: Exploring VoLTE: Architecture and Interfaces
- Prerequisite: Exploring VoLTE: Signaling and Operations
- Required Equipment: Laptop with access to tools used in the course

Outline

1. VoLTE Troubleshooting Overview

- 1.1 Components of VoLTE calls
- 1.2 Failure categories
- 1.3 RAN KPIs for VoLTE

Exercise: Knowledge of tools/probes/protocol

2. VoLTE Call Setup Analysis

- 2.1 Accessibility KPIs
- 2.2 Default and Dedicated bearer setup for VoLTE
- 2.3 VoLTE call setup failure signatures
- 2.4 Review call setup statistics

Exercise: Case Study: VoLTE Call Setup failure

3. VoLTE Call Drop Analysis

- 3.1 VoLTE Call Drop KPIs
- 3.2 Use of TTI Bundling
- 3.3 VoLTE call drop failure signatures
- 3.4 Review call drop statistics

Exercise: Case Study: VoLTE Drops

4. VoLTE Call Quality Analysis

- 4.1 Measuring quality: MOS, ACQ KPIs
- 4.2 RTCP Reports from UEs
- 4.3 Impact of high latency, jitter and packet loss
- 4.4 Components of the latency budget
- 4.5 Understanding audio gaps
- 4.6 Review gap count and duration statistics
- 4.7 Analyze gaps in a specific call

Exercise: Case Study: RTP Flow and Audio Gaps

5. VoLTE Capacity Analysis

- 5.1 VoLTE Capacity KPIs
- 5.2 PDCCH capacity and Semi-persistent Scheduling

Exercise: Case Study: Connected User and PDCCH Analysis