Optimizing the LTE Radio Network – 3 days

CONTENTS

Current state of mature LTE networks requires a comprehensive approach to network performance monitoring and control. The increased traffic will expose network weakness and demand for optimal configuration. This brand new course focus on practical aspects of LTE radio network optimization. LTE radio functionality and signalling message flows are briefly explained to highlight the use of KPIs and performance reports to optimize the LTE radio network. By discussing real practical troubleshooting use-cases scenarios, participants are guided through the best practices to find and solve possible problems. Different UE-Based parameters typical values are presented as defined in 3GPP together with some recommended values for eNB parameters. This course also includes hands-on exercises to improve knowledge retention.

PREREQUISITES

Solid background of LTE/EPS concepts, architecture, terminology and E-UTRAN implementation is required prior to this course. It's recommend to have attended before courses such as: LTE Air Interface, Planning, Signalling, KPIs and Troubleshooting. It's also good to be experienced using DT post-processing and performance monitoring tools. Previous experience of GSM/UMTS radio optimization is useful but not essential.

WHO SHOULD ATTEND

This advanced technical course is better suited for telecom professionals working on LTE radio network performance, planning and optimization. System integrators and solution managers can also benefit of getting in touch of common problems found in real networks and ways to minimize/solve them.

LTE Radio Functionality

- Key RRM features description
- PSS and SSS sync signals and network synchronization procedure
- Resource Elements (RE) and Resource Blocks (RB)
- Signalling message flows and counter pegging
- Cell selection/re-selection and random access
- Intra/Inter frequency handover (via X2 and S1)
- IRAT handover
- Measurement reports (events)
- DL/UL Adaptive Modulation and Coding (AMC)
- UL Power Control
- LTE MIMO techniques and mode switching
- SON and ICIC

LTE Performance

- Common performance, mobility, accessibility and capacity counters
- KPI formulas: CSSR, HO SSR, …
- UE Radio measurements: RSRP, RSRQ, RSSI, RS SINR, CQI, RI and PMI
- Service Bearers and QoS
- LTE static and mobile network surveys (drive-tests) planning
- KPI and measurement reports examples
- Methodology assessment for performance monitoring
- Cell Health Reports
- Network usage and capacity reports

LTE RAN Parameter Tuning

- PCI planning and tuning
- PRACH Configuration
- Intra LTE and IRAT Cell Selection/Re-selection
- Intra-LTE mobility control: UE measurements configuration and neighbour individual offsets
- Network performance control: CSI reporting configuration, fractional UL power control, UL Sounding RS configuration
- Radio Link Timeout (RLT) timers tuning
- PUCCH dimensioning: code sequences and UL interference

LTE Troubleshooting Use Cases

- Common performance, mobility, accessibility and capacity troubleshooting use cases analysis
- Methodology assessment for problem identification and solving
- Low HO success rate and missing neighbours
- RACH performance issues and phantom preambles
- Low throughput (user and/or cell)
- High network latency
- GBR bearer performance issues: blocking, throughput and latency
- High resource block and TTI usage
- Common optimization pitfalls
- Examples and exercises

LTE SON Optimization

- Interference scenarios in LTE
- Intra LTE Inter-Freq. cell selection/ re-selection
- ANR: measurement configuration and mobility control
- X2 messages and performance
- eICIC features
- HetNet performance control

Voice in LTE Radio

- CS Fallback (CSFB) parameters
- Single Radio Voice Call Continuity (SRVCC) to WCDMA and GSM
- LTE PS IRAT Handover tuning
- VoLTE