LTE RAN Capacity Planning Certification Workshop
Instructor Led | Duration: 3 Days | Course Number: LTE_408

LTE (Long Term Evolution) uses the Evolved Universal Terrestrial Radio Access Network (E-UTRAN) architecture, a distributed and unified IP-based access network, to efficiently deliver Internet services to wireless subscribers. This course defines a practical approach to LTE RAN capacity planning, using field data to assess the capacity demand on the LTE RAN, forecast future requirements, identify potential capacity bottlenecks, and determine optimal capacity solutions. Throughout the workshop, students apply the knowledge gained in hands-on exercises, using simulated network data and key performance indicators (KPIs) to estimate subscriber activity, market trends, and platform performance; this approach gives the students practical experience in estimating LTE demand and applying the capacity planning process in a “real world” environment.

Intended Audience
This course is designed for RAN and system engineers involved in capacity planning, design, deployment and operation of LTE networks.

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

• Answer the “top 10” questions about LTE RAN capacity
• Explain the required inputs and expected outputs of each step in the capacity planning process
• Define the counters and KPIs available to assess RAN capacity
• Identify the key symptoms of capacity-related issues in the RAN
• Forecast future requirements based on current demand
• Estimate the impact of new LTE service offerings such as Voice over LTE (VoLTE) and video
• Compare forecasted demand with current RAN capabilities to identify possible bottlenecks
• Evaluate potential RAN capacity enhancements to determine the most appropriate solution for capacity concerns

Required Equipment
• PC laptop

Suggested Prerequisites
• LTE Technology Overview (Instructor Led)
• LTE RAN Signaling and Operations Certification (Instructor Led)

Course Outline
1. LTE RAN Capacity Planning
   1.1. “Top 10” capacity questions
   1.2. Capacity planning process
   1.3. E-UTRAN architecture
   1.4. Capacity limitations
   1.5. Market definition
   1.6. Capacity planning exercises
2. RAN Capacity Measurement
   2.1. Capacity counters and KPIs
   2.2. Measuring demand
   2.3. Estimating demand
   2.4. Resource utilization
   2.5. Detecting capacity issues
   2.6. Capacity measurement exercises
3. RAN Capacity Forecasting
   3.1. Forecasting approaches
   3.2. Changes to demand
   3.3. Service impacts (VoLTE, video, etc.)
   3.4. Resource implications
   3.5. Effective bandwidth estimation
   3.6. Capacity forecasting exercises
4. RAN Capacity Analysis
   4.1. Capacity constraints (bandwidth, licensing, resources, etc.)
   4.2. Estimating air interface bandwidth
   4.3. Current capacity vs. forecasts
   4.4. Identifying potential bottlenecks
   4.5. Sensitivity analysis
   4.6. Capacity analysis exercises
5. RAN Capacity Solutions
   5.1. Air interface solutions (channel bandwidth, aggregation, etc.)
   5.2. RAN solutions (cell splitting, small cells, etc.)
   5.3. Network solutions (load balancing, admission control, etc.)
   5.4. Services and capacity trade-offs (e.g. voice vs. data users)
   5.5. Estimating costs vs. benefits
   5.6. Capacity solutions exercises