Advanced LTE/SAE Certification for Professionals

4G LTE technology is being deployed worldwide with LTE taking lead now over rival 4G standards. Many commercial LTE networks are already in-service worldwide and more are planned to go live soon. **3GPP LTE (Long Term Evolution)** Project was launched to improve the UMTS mobile phone standard to cope with future technology evolutions. Goals include improving spectral efficiency, lowering costs, improving services, making use of new spectrum and reframed spectrum opportunities, and better integration with other open standards.

Course Description

This course in LTE/SAE Technology offers unique course structure which provides in-depth understanding of evolution path of 3GPP LTE technology. This course provides a detailed explanation of the LTE/SAE based on 3GPP R8 specifications including evolved packet system architecture, protocols, nodes & signaling

Who Should Attend

Individuals interested in understanding how 4G LTE technology is being leveraged to enhance end-user experience in a wireless network and how LTE network would be deployed should attend this course. Those who already have a working knowledge of UMTS; or telecom professionals who currently serve in sales, systems engineering, architecture, design, test, support, or operations roles will find this course to be especially beneficial.

Course Objectives

Upon completion of this course, the participants are expected to have a good understanding of LTE/SAE technology as detailed below.

- LTE Fundamentals
- LTE Air Interface, MIMO, OFDMA, SC-FDMA
- E-UTRAN Nodes, Protocols & Interfaces
- EPC Nodes, Protocols & Interfaces
- LTE Security & QoS
- LTE Signaling Procedures & Scenarios
- Voice Options for LTE
- R9/R10 LTE Evolutions

Course Prerequisite

Although this certification course requires no previous knowledge or understanding of LTE telephony, a basic understanding of GSM, UMTS technologies would be beneficial.

Delivery Media

- Instructor Led Classroom or On-line Training Sessions (**5 Days**)
- Student Quizzes

Contact

Email: support@ngnguru.com
Web: http://ngnguru.com
Mails : NGNGuru Solutions Pvt. Ltd.
D-37, Acharya Niketan,
Mayur Phase -1,
New Delhi 110091
Call: USA - 1-(888) 567-4988; India - +91-9540002181, +91-9540002191

PROGRAM OUTLINE

Lesson 1: LTE Overview

- Evolution
- Need of LTE
- High Level Requirements
- High level architecture for the evolved system
- LTE Nodes
- Functional Architecture E-UTRAN EPC
- LTE Interfaces

Lesson 2:Evolved UTRAN

- EUTRAN Architecture
- eNode B
- Radio Interface User Plane
- Radio Interface Control Plane
- OFDMA Concept
- Single Carrier FDMA
- MIMO in LTE
- Precoding
- Transmission Modes
- Beamforming
- Reference Signals
- Frame Structure
- Resource Grid
- Physical channels
- Channel Mapping
- Transport Channels
- Medium Access Control (MAC)
- Radio Link Control (RLC)
- Packet Data Convergence Protocol (PDCP)
- Radio Resource Control (RRC)
- X2 Interface
- X2AP Protocol

Lesson 3:Evolved Packet Core

- Mobility Management Entity (MME)
- Serving Gateway (S-GW)
- PDN Gateway (P-GW)
- Policy & Charging Resource Function (PCRF)
- S1 Interface
- S1AP Protocol
- NAS Protocol for EPS
- NAS Procedures
- EPC Control Planes
- EPC User Planes
- EPS Identities
- EPS Management States

Lesson 4: Security, PCC & QoS

- Security Principles
- Key Derivation Functions
- EPS AKA
- PCC Overview
- EPS Bearer QoS

Lesson 5: LTE Signaling & Procedures

- LTE Initial Access
- Random Access Procedure
- Initial Context Setup Procedure
- Attach Procedure
- Detach Procedure
- Service Request
- Dedicated Bearer Activation
- S1/X2 Based Handover
- E-UTRAN to UTRAN Handover

Lesson 6: LTE Concepts

- Intra/Inter Frequency Measurements
- Inter-RAT Measurements
- Self-Organizing Networks (SON)
- Automatic Neighbor Relation
- Network Sharing

Lesson 7: Voice Over LTE

- Voice over IMS
- SRVCC
- CS Fallback
- VoLGA

Lesson 9: Beyond R8 LTE

- LTE Release 9 Evolutions
- LTE-Advanced Introduction