



# LTE Overview

LTE\_102d | On-Demand | LTE and VoLTE | ⚙️

Course Duration: 3.5 hours

Long Term Evolution (LTE) is one of the choices for next generation broadband wireless networks and is defined by the 3GPP standards as an evolution to a variety of 3G wireless networks such as UMTS and 1xEV-DO. Its high data rates enable advanced multimedia applications. This on-demand course offers a quick and concise overview of LTE networks and the OFDM-based air interface. The LTE network architecture, network interfaces and protocols, air interface and mobility aspects are covered to provide an end-to-end view of the network.

## Intended Audience

This course is an end-to-end overview of LTE networks, and is targeted for a broad audience. This includes those in design, test, sales, marketing, system engineering and deployment groups.

## Objectives

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

- Describe the state of wireless networks and trends for next generation wireless networks
- Sketch the System Architecture Evolution (SAE) for LTE and its interfaces
- Describe OFDM concepts and how it is used in LTE
- Define the key features of the LTE air interface
- Walk through the mobile device operations from power-up to service setup
- Explain how uplink and downlink traffic are handled in LTE networks
- Walk through a high level service flow setup on an end-to-end basis
- Explain deployment scenarios of LTE networks

## Course Prerequisites

No Prerequisites

## Outline

1. Setting the Stage
  - 1.1 Introduction to LTE
2. LTE Network Architecture
  - 2.1 Evolved Packet Core (EPC)
  - 2.2 E-UTRAN - eNodeB
  - 2.3 Network interfaces and protocol stacks
3. LTE Air Interface
  - 3.1 OFDM/OFDMA radio concepts
  - 3.2 SC-FDMA radio concepts
  - 3.3 Radio transmission frame structures
  - 3.4 Transport to physical channel mapping
4. LTE UE Operations
  - 4.1 System acquisition
  - 4.2 Idle mode operations
  - 4.3 Initial access procedures
  - 4.4 QoS
  - 4.5 Registration and traffic
5. LTE Traffic Handling
  - 5.1 Downlink traffic handling
  - 5.2 Uplink traffic handling
6. LTE Mobility
  - 6.1 Idle mode mobility
  - 6.2 Active mode mobility / handover
7. Deployment
  - 7.1 Typical LTE evolutionary path
8. Summary
  - 8.1 Put It All Together
  - 8.2 Assess the knowledge of the participant based on the objectives of the course