



Exploring LTE: Architecture and Interfaces

Long Term Evolution (LTE) is explicitly designed to deliver high-speed, high quality services to mobile subscribers. In order to achieve this, the LTE network architecture introduces a number of new network nodes and interfaces to implement the necessary functionality and manage the exchange of packets between mobile devices and external packet data networks. This on-demand class discusses the overarching goals of LTE networks and then defines the unique network functions needed to achieve those goals.

Intended Audience

This course is intended for a technical audience looking for a detailed understanding of the important nodes, functions, and interfaces found in a typical LTE network.

Objectives

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

- Discuss the rationale behind the 4G LTE network architecture
- Describe the critical network functions required in every LTE network
- Describe nodes and functions typically found in large commercial wireless networks
- Identify the key interfaces between LTE nodes and the protocols carried over each interface
- Define EPS bearers and describe their role in supporting user services
- Explain the structure and functions of the LTE air interface

What You Can Expect

- Self-Paced Duration: 1 HOUR

Outline

1. What is LTE?

- 1.1 4G LTE
- 1.2 Packet data networks

2. LTE Network Nodes and Functions

- 2.1 E-UTRAN and EPC
- 2.2 eNodeB
- 2.3 MME
- 2.4 HSS
- 2.5 S-GW
- 2.6 P-GW

3. Other Network Functions

- 3.1 PCC
- 3.2 DNS
- 3.3 DRA
- 3.4 NAT/PAT
- 3.5 Firewalls
- 3.6 MSP
- 3.7 OSS

4. LTE Network Interfaces and Protocols

- 4.1 Internet Protocol (IP)
- 4.2 S1-MME and S1-U
- 4.3 S6a
- 4.4 S11
- 4.5 S5
- 4.6 X2

5. EPC Bearers

- 5.1 Default bearers
- 5.2 Dedicated bearers

6. LTE Air Interface

- 6.1 LTE-Uu protocol stack
- 6.2 OFDMA and SC-FDMA
- 6.3 OFDM and Cyclic Prefix
- 6.4 Air interface physical layer
- 6.5 Air interface physical channels
- 6.6 Reference signals
- 6.7 MIMO and diversity
- 6.8 Basic traffic operations