

LTE-Advanced (R10) for Engineers

Instructor Led | Duration: 1 Day | Course Number: LTE_308

LTE

To meet the rapidly growing IP data traffic, 3GPP is working on the evolution of LTE called LTE-Advanced. LTE-Advanced is introduced in Release 10 of 3GPP. LTE-Advanced is designed to meet or exceed the requirements of IMT-Advanced such as the support for the peak data rate of 1 Gbps and support for wider bandwidths up to 100 MHz. The LTE-Advanced system will be backward compatible with LTE and will enable service providers to provide enhanced user experience while minimizing the cost of ownership. This course provides an overview of LTE-Advanced features, describing the key requirements and proposed solutions such as carrier aggregation, enhanced advanced antenna techniques for the DL and the UL, relays, and coordinated multipoint (CoMP) transmission and reception. In summary, this course provides a comprehensive high level view of LTE-Advanced (R10).

Intended Audience

This course provides a comprehensive high level view of LTE-Advanced based on 3GPP Release 10. It is intended for those involved in engineering functions such as planning, product management, design and deployment as well as those who need to understand LTE-Advanced and its place in the 4G wireless landscape.

Learning Objectives

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

- Discuss the motivating factors for LTE-Advanced
- List the requirements and performance targets for IMT-Advanced and LTE-Advanced
- Specify and describe the key features of LTE-Advanced
- Provide examples of areas where basic LTE operations have been enhanced in LTE-Advanced
- Identify the enhancements required in an LTE network to migrate to LTE-Advanced
- Give examples of deployment scenarios for LTE-Advanced deployment

Suggested Prerequisites

- LTE Overview (eLearning)
- Mastering LTE (Instructor Led)

Course Outline

1. Overview of LTE-Advanced

- 1.1. Evolution path to 4G
- 1.2. Requirements and performance targets of IMT-Advanced and LTE-Advanced
- 1.3. Summary of LTE-Advanced features

2. EPS Network Architecture

- 2.1. Release 8 architecture (E-UTRAN, EPC, and Home eNodeBs)
- 2.2. Relays and enhanced Home eNodeBs in Release 10

3. Air Interface Enhancements

- 3.1. Carrier aggregation
- 3.2. Enhanced multiple antenna techniques for DL and UL
- 3.3. Coordinated multipoint transmission and reception
- 3.4. Latency reduction mechanisms

4. Life of an LTE-Advanced UE

- 4.1. System acquisition
- 4.2. EPS attach and bearer setup
- 4.3. Data transmission in DL and UL
- 4.4. Cell reselection and handover
- 4.5. DRX in connected and idle modes

5. Deployment Considerations

- 5.1. LTE to LTE-Advanced migration
- 5.2. Overlay considerations
- 5.3. Interworking of LTE-Advanced with other RATs