

Understanding Long Term Evolution (LTE)

Covers: Network Evolution, Key aspects of an LTE network & transmission

Overview

This course takes the participant through the transition of a UMTS network to an LTE network. It highlights the main additions and modifications as the LTE network evolves. The participant will learn the key roles of the new network elements and how these elements are connected together via the transmission system. The basic concepts of what makes LTE system different to a 3G network are also highlighted.

You will be able to

- Explain the LTE roadmap
- Compare LTE and HSPA+
- Understand the operation of the LTE air interface
- Identify the LTE network components
- Describe the LTE connection life cycle
- Explain how voice is supported in LTE

Who can benefit

Technical managers, consultants, engineers and communications professionals who need to understand more detail regarding the LTE network.

Pre requisite knowledge

Participants should have a basic understanding of cellular communications.

Outline

Introduction

- What is 3GPP Long Term Evolution?
- The IMT Advanced process
- LTE system capabilities
- Spectrum & licencing
- LTE licencing

Network Evolution

- 3GSM Family of Technologies
- Evolution from UMTS R99 to HSPA+
- UMTS Release 8-12
- LTE System Architecture
- Evolution to LTE-Advanced

LTE Air Interface

- Multiplexing techniques
- Basic principles of OFDMA
- Uplink & downlink: OFDMA & SC-FDMA
- Adaptive Modulation & coding
- Radio frame structure
- Radio Resource Management
- The radio protocol architecture
- LTE radio channels

The Enhanced UTRAN (EUTRAN)

- E-UTRAN system architecture and terminology
- The Enhanced Node B
- E-UTRAN Interfaces

- The bearer model
- The control plane
- The transmission network
 - Issues & transmission requirements for LTE
 - Metro Ethernet transmission
 - MPLS-based transmission

The Enhanced Packet Core (EPC)

- Rationale for all-IP
- IPv6 in LTE
- Core network principles of operation
- Core network components
- QoS architecture
- Network security
- The IP Multimedia Subsystem

LTE Connection Life Cycle

- Initial network connection
- Registration & security procedures
- IP related procedures
- Connection establishment
- Handover & mobility management
- Intersystem handover to/from UMTS & GSM

Voice in LTE Networks:

- Principles of Voice over IP
- Voice in LTE:
 - Circuit switched fallback (CS-FB)
 - Voice over LTE (VoLTE) & SRVCC
 - VoLGA
 - Solution comparison
- Support for SMS in LTE

LTE Service Architecture

- The LTE Service Model
- Triple & quad play
- LTE devices
- Presence services
- Location Based Services
- Mobile TV & Video services

Practical scenarios, review questions & section summaries throughout

DURATION 3 days
MAXIMUM CLASS SIZE 12