



# Overview of IPv6 in LTE Networks

LTE\_113d | On-Demand | LTE and VoLTE | ⚙️

Course Duration: 2 hours

Long Term Evolution (LTE) is universally accepted as the next generation broadband wireless system based on an All-IP network. Each LTE device would need at least one IP address to communicate and obtain services like web browsing, machine-to-machine communication, voice and video services, SMS, etc. As the number of IP connected nodes continue to grow, the current IPv4-NAT architecture no longer suffices and we must consider a transition to IPv6 protocol. This eLearning course explores the IPv6 protocol, its features and capabilities. It explains IPv6 address format, assignment of IPv6 address to LTE devices, dual-stack IPv4v6 addressing to facilitate smooth transition, and IPv4-IPv6 interworking. In conclusion, the student will understand the use of IPv6 addresses and IPv6 operations in LTE networks.

## Intended Audience

This course is an overview of IPv6 addressing formats and IPv6 assignment operation in LTE networks, and is targeted for a broad audience. This includes those in planning, provisioning, operations, and end-to-end service deployment groups.

## Objectives

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

- Sketch LTE-EPC network architecture and identify the role of IPv6
- Analyze the limitations of IPv4 addresses
- List the key aspects of IPv6
- Sketch the IPv6 addressing architecture and addressing formats
- Discuss different UE IP address allocation schemes in LTE
- Describe the use of dual stack IPv4/IPv6 in LTE Networks
- Describe some IPv4 and IPv6 interworking scenarios
- Explain IPv6 address assignment scenarios of LTE networks

## Course Prerequisites

No Prerequisites

## Outline

1. Setting the Stage
  - 1.1 LTE-EPC network architecture
  - 1.2 PDN connections
  - 1.3 IP address assignment in LTE
2. IPv4 in Wireless Networks
  - 2.1 IPv4 address formats
  - 2.2 Use of public and private addresses
  - 2.3 Mobility support – GTP and mobile IP
  - 2.4 Limitations of IPv4
3. IPv6 Essentials
  - 3.1 Key aspects of IPv6
  - 3.2 Ipv6 header description
  - 3.3 IPv6 addressing
4. IPv6 Assignment in LTE Networks
  - 4.1 Default bearer setup operation
  - 4.2 IPv6 address allocation
  - 4.3 Role of NAS signaling
  - 4.4 Assignment of dual-stack IPv4/IPv6 addresses
5. IPv4/IPv6 Transition Mechanisms
  - 5.1 Dual stack addressing
  - 5.2 Tunnels
  - 5.3 Translators
6. IPv6 Deployment in LTE Networks
  - 6.1 Dual-stack connectivity

6.2 IPv6 migration scenarios

6.3 Put It All Together

6.4 Assess the knowledge of the participant based on the objectives of the course