5G Core Network Overview

5G_103d | On-Demand | 5G Core | Express
Course Duration: 1 hour

5G promises to enable a wide variety of new wireless communications services and capabilities, ranging from high-speed, high-capacity broadband access to extremely reliable low-latency communications to machine-type communications on a massive scale. To deliver on these promises, everything about the wireless network must change, including the devices, the radio interface, the radio access network (RAN), and the core network. This course focuses on the principles of the 5G core network, its connectivity to the radio network and interworking with the 4G EPC. Topics such as Service-Based Architecture (SBA), PDU Session Establishment, Network Slicing and Multi-Access Edge Computing (MEC) as they relate to 5G are described.

Intended Audience

This course is designed for a broad audience of wireless network engineers. This includes those in network planning, engineering, operations, troubleshooting and support groups.

Objectives

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

- List the key principles behind the evolving 5G core network
- Sketch the 5G core network, its connectivity to the radio network and interworking with the 4G EPC
- Describe the purpose behind Service-Based Architecture (SBA)
- Describe the QoS framework of 5G and compare it with 4G
- Step through the network operations of registration and PDU session establishment
- Describe network slicing and how it is used in 5G
- Describe MEC and how it can be used in 5G

Course Prerequisites

No Prerequisites

Outline

1. Principles of the 5G Core Network
1.1 Control and User Plane separation
1.2 Modularization
1.3 Virtualization
1.4 Service-based Architecture
1.5 Network Slicing

2. 5G Core Network Architecture
2.1 Key network functions and their roles
2.2 Network connectivity
2.3 Interworking with 4G EPC

3. Service-Based Architecture
3.1 Network interfaces and services
3.2 Network Exposure Function
3.3 Protocols

4. Multi-Access Edge Computing (MEC)
4.1 Defining MEC
4.2 Need for MEC
4.3 MEC in action in 5G network

5. Network Slicing
5.1 Defining network slicing
5.2 Need for network slicing
5.3 Network Slice Selection Function
5.4 Network slicing in action

6. Network Operation: Registration of UE
6.1 Authentication
6.2 Security framework
6.3 UE states

7. QoS Framework in 5G
7.1 QoS flow
7.2 Roles of 5QI and QFI
7.3 QoS mapping with 4G

8. PDU Session Establishment
8.1 Components of PDU session
8.2 IP and Ethernet addressing

Putting It All Together

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