5G Networks and Services

5G_204x | Expert-Led Live | 5G Core | Expert
Course Duration: 2 days

This course takes an in-depth look at the end-to-end 5G network (5GC, NG-RAN, and transport) and related operations including NSA and SA deployment scenarios. It provides key features and functionalities of the 5G NR, split architecture of NG-RAN, transport network options, 5G core network architecture based on SBA, and comparison with 4G EPC. Complementary technologies of network slicing, MEC as well as automation and orchestration are covered. It gives an overview of 5G operations through the life of a 5G device. Finally, 5G deployment scenarios of NSA and SA are captured.

Intended Audience

This technical course is intended for planning, design, engineering and operations personnel who need to get an understanding of the 5G core and radio network architecture and operations.

Objectives

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

- Sketch 5G core (5GC) network architecture and identify network functions
- Sketch 5G RAN architecture and split architecture of gNB
- Describe various interfaces and related protocols of 5G end-to-end network
- Step through the life of a 5G device to understand key operations of 5G
- Identify technologies such as network slicing, edge computing, virtualization and orchestration
- Summarize the deployment status of 5G

Course Prerequisites

Welcome to 5G

Outline

1. 5G in a Nutshell
1.1 5G Services and performance goals
1.2 End-to-end 5G network architecture
1.3 Deployment options

2. 5G RAN Architecture
2.1 RAN evolution for 5G
2.2 5G RAN architecture, interfaces, and protocols
2.3 Cloud and Open RAN

3. 5G Core Network Architecture
3.1 Core network architecture
3.2 Network functions and interfaces
3.3 PDU sessions
3.4 QoS in 5G
3.5 Edge computing support
3.6 Service-Based Architecture (SBA)
3.7 Security framework in 5G
3.8 LTE and 5G Interworking

4. Life of a UE in 5G
4.1 Power up operation
4.2 Registration
4.3 IP connectivity
4.4 QoS in 5G
4.5 Data transfer
4.6 Mobility
4.7 Security in 5G

5. Supporting Technologies
5.1 Cloud and virtualization
5.2 Automation and orchestration
5.3 Network slicing
5.4 Multi-access Edge Computing (MEC)

6. 5G Deployments
6.1 4G to 5G migration
6.2 NSA Option 3x Connectivity
6.3 Split bearer options
6.4 NSA call flows

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