5G Roaming: Architecture, Protocols, and Signalling Flows – 1 day

CONTENTS

This comprehensive course is designed for system architects aiming to master the intricacies of global 5G roaming. The course delves into architecture details, signaling flows, border functionalities, security aspects, and troubleshooting common roaming issues. It also covers the roles of IPX carriers in facilitating seamless interconnectivity between 5G core networks.

TARGET AUDIENCE

- Telecom System Architects
- Core Network Engineers
- IT Professionals involved in Mobile Networking
- Security Specialists

PREREQUISITES

Understanding of 4G and 5G architectures, IP networking, and telecom security.

COURSE OBJECTIVES

By the end of this course, participants will be able to:

- Recognize the roaming architecture in 5G.
- Describe the difference between local breakout vs home routed.
- Recognize the protocols used in 5G roaming.
- Recall call flows for roaming scenarios.
- Identify security, fraud prevention, and regulatory aspects in 5G roaming.
- Understand the role of IPX in PLMN interconnexion
- Troubleshoot and communicate with a roaming partner.

5G Roaming Architecture Overview

- Introduction to 5G Roaming
    - 5G Architecture Overview (Quick Recap)
        - 5G Core (5GC) and its components (AMF, SMF, UPF, UDM, etc.)
        - Standalone (SA) vs Non-Standalone (NSA) modes
    - Key Roaming Architectures in 5G
        - Home Routing (HR) and Local Breakout (LBO) Explained - Overview of both architectures
        - Comparison of HR and LBO

Secure Edge Protection Proxy (SEPP)

- SEPP Role in Roaming
    - PLMN Interconnexion with SEPP
    - SEPP Call flows
- N32 interface
    - N32 Protocol Stack
    - N32 Procedures
- Security functions in SEPP
- SEPP Implementation Scenarios

IPX Provider Network

- IPX Network Architecture Overview
- IPX Services
- Security Requirement for IPX
- QoS Requirement for IPX

Home Routed Roaming implementation

- User Plane requirement
- QoS Implementation
- Call Flow for HO Scenario

5GC Interworking and Co-Existence with E-UTRAN and EPC

- Interworking Scenarios
- Co-Existence Scenarios

Security in PLMN Interconnection

- Increased Authentication Home Control
- Traffic Priority Scheme

Data Analytics

- Roaming architecture for Data Analytics
- NWDAF Services