Public Safety as Mission Critical Communication in 5G Overview

CONTENTS

This course examines the public safety services specified by 3GPP as key applications within the Mission Critical use case for 5G networks.

It begins by detailing the stringent Quality of Service requirements of critical communication services, followed by an analysis of 5G Standalone (SA) network capabilities designed to meet these demands. The 3GPP Mission Critical system architecture is introduced, along with the specific 5G SA features — in both the access and core domains — that enable low-latency, high-priority communication for fast-response verticals.

TARGET AUDIENCE

This course is intended for technical professionals involved in the design, deployment, or operation of mission critical and public safety communication systems for the law enforcement agencies, police forces, defence organisations, and contingency or disaster response agencies.

PREREQUISITES

Participants are expected to have a technical background. Basic knowledge of the Standalone 5G system architecture will enable them to fully benefit from this course.

Introduction to Critical Communication and Public Safety Services

- Examples of critical communication applications
- Critical communication service requirements
- Public Safety Services as an application within the critical communication services family
- Public Safety systems currently in use

Mission Critical/Public Safety in 3GPP

- Timeline of the 3GPP specifications for Mission Critical/Public Safety (MC/PS)
- Basic 3GPP definitions for the Mission Critical service components
- Suitability of the 3GPP 4G and 5G for MC/PS
- 3GPP features for MC/PS support introduction

Architecture for Mission Critical Services in 3GPP

- Client-Server communication over 3GPP networks for MC/PS
- UE support: MC Services Client
- MC Server: Common Services Core and MCX Server
- MC Control:
    - Identity management
    - Group management
    - Configuration management
    - Key management
    - Location management
- MCX Registration Procedure
- Definition of MCX Services: MCPTT (Push-To-Talk), MCVideo, MCData

Mission Critical Push-To-Talk (MCPTT) service

- MCPTT definition
- MCPTT vs. legacy Telephony Service
- MCPTT Call types
- MCPTT Architecture
- MCPTT group call establishment
- Floor Control for MCPTT group calls

Mission Critical Video (MCVideo) service

- MCVideo Definition
- MCVideo Architecture
- MCVideo Group Call Establishment

Mission Critical Data (MCData) service

- MCData Definition
- MCData Architecture

Radio Support for MCX in 5G

- New Radio access
  - 5QI settings for MCX
  - NR features to support Low Latency
  - NR features to support High Throughput
  - NR features to support High Reliability
- WiFi access
  - Multi-Access PDU Sessions for WiFi Offload
  - Access Traffic Steering, Switching and Splitting
- Satellite access coverage options

Network Support for MCX in 5G

- 5G features for MCX support
  - Network Slicing
  - Edge Computing
  - Multicast Broadcast Services (MBS)
  - Private Networks

MCX Enablers in 3GPP

- IMS Control for MCX
- Proximity Services (ProSe)