

Corso di FormazioneCode: **KLA-EPCN**Duration: **3 days**Level: **■■■**

Evolved Packed Core Network

OBJECTIVES

Acquiring the skills needed for understanding and managing the LTE Evolved Packet Core (EPC) Network. The course analyzes in deep the LTE Evolved Packet Core (EPC) structure, protocols, procedures, services and its interworking with the LTE access network and others 3GPP and non-3GPP technologies.

PREREQUISITES

Good knowledge of UMTS architecture and protocols and basic knowledge of LTE Access Network.

WHO SHOULD ATTEND

Technical staff and Engineers involved in developing and managing next generation Mobile Core networks.

CONTENTS**Overview: Evolved UMTS and EPS**

- UMTS Evolution from HSPA Rel.6 to Rel.8 and beyond
- Evolved Packet System (EPS): LTE and System Architecture Evolution (SAE) general Architectures
- Evolved UTRAN (E-UTRA)
- Evolved Packet Core (EPC)
- IP Multimedia Subsystem (IMS) architecture and functions
- LTE Channelization, Capacity and resource allocation
- LTE/EPC services and performance.
- LTE/EPC Protocol stack
- PDN connectivity services
- Multicasting over LTE
- Non-3GPP access interworking

Evolved Packet Core (EPC) architecture

- EPC network functions
- EPC network elements (MME, S-GW, P-GW)
- Mobility management
- 3GPP nodes interworking
- Evolved User plane and control plane
- Network Identities (users, terminals, nodes, bearers)
- USIM, UICC and ISIM
- Service Bearers
- Service Data Flows (SDF) and Traffic Flow Templates (TFTs)
- QoS management by QoS Class Identifier (QCI)
- Priority Allocation/Retention (ARP)
- User Security in EPS

IP Multimedia Subsystem (IMS)

- IMS nodes (P-CSCF, ICSCF e S-CSCF)
- Session Initiation Protocol (SIP)
- IMS Core Network entities
- Home Subscriber Server (HSS)
- IP Multimedia services and Application Servers (AS)
- IMS Registration and authentication
- IMS Identities creation and management
- User Security in IMS
- IMS (IMS connection establishment)

Protocols

- The EPS/IMS full-IP architecture
- Real-time Transport and Control Protocol (RTP/RTCP)
- Real-time Streaming Protocol (RTSP)
- Stream Control Transmission Protocol (SCTP)
- Diffserv and Diffserv Services Code Point (DSCP)
- AAA, mobile IP and interworking 3GPP by Diameter
- GTP and GTPv2 tunneling
- S1 Application Protocol (S1AP)
- X2 Application Protocol (X2AP)

Life in EPS networks

- Network Attachment
- Broadcast of System Information
- Initial Access, Cell Selection and reselection
- Registration/De-registration
- Communication Sessions
- Terminal States
- Session Setup
- Data Transmission
- Mobility in IDLE Mode
- Cell Reselection Principles
- Terminal Location Management
- Tracking Area Update (TAU)
- Mobility in ACTIVE Mode
- Intra-E-UTRAN Mobility with and without X2 Support
- Intra-E-UTRAN Mobility with EPC Node Relocation
- Mobility between 2G/3G Packet and E-UTRAN
- EPS Connection Management (ECM)
- EPS bearer contexts
- Service request procedures (UE-initiated e Network-initiated)

Services

- Service Architecture and the Role of OMA
- Push-to-talk Over Cellular
- PoC Protocol Suite
- Charging Aspects
- Presence
- Broadcast and Multicast
- MBMS Security
- The MBMS Service Steps
- Voice and Multimedia Telephony
- Circuit and Packet Voice Support
- Supplementary Services
- Multimedia Services in EPS Systems