SS7/MAP and Diameter Interception in EPC

SYNOPSIS

- **Hands-On Seminar**
  Introduction to SS7, MAP Scenarios
  and 4G Packet Core Interception Scenarios.
- Focus on S6a Diameter and GTPv2-C (GTP-C) Protocols.
- Focus on interconnect routing and discovering network elements.

DURATION

- 2 Days

PREREQUISITES

- SS7/MAP seminar or equivalent knowledge.

TARGET AUDIENCE

- Technical managers, system and solution architects, system designers, software engineers, technical support personnel.
- Field engineers, Network planer, Test planers and tester.
- Field engineers, troubleshooters, RAN Optimization and O&M.

COURSE TARGETS

- Students would get an overview on IP based SS7 and MAP (optionally on CAP) Protocols, Roaming Aspects and End-to-End Service Scenarios.
- Hands on knowledge on GTPv2-C and S6a Diameter.
- Discuss Diameter Routing and DNS discovery queries.
- Discuss Core Active Interception Scenario in comparison to SS7/MAP flows.
- Discuss Hands-On examples on all learned protocols
  with focus on Identity Mapping, Security Vectors & Keys, UE Location, and spying Network Topology.

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1. **Packet Core Evolution 3G to 4G**

    a. Architecture Evolution from 3G to 5G
    b. PS-Core Protocols and Security context (SS7/MAP, GTP-C)
    c. EPC Protocols and Security context (Diameter, GTPv2-C)
    d. PDN Connectivity/Bearer Setup & Mobility Active Scenarios

2. **SS7 based PS-Core Protocols**

    a. SS7 Protocol Stack and Adaptation Layers (focus on sigtran)
    b. SCTP Protocol
    c. **TCAP Protocol hands-on**
    d. **MAP Protocol hands-on**
    e. MAP Active Interception Scenarios and advanced procedures
    f. CAP Protocol & CAMEL Scenarios

3. **EPC Active Interception Scenarios**

    a. PS and EPC Architecture migration
    b. HSS Scenarios and Packet Core Subscriber Profile
    c. EPC Protocols – GTPv2-C
    d. DNS and ENUM introduction
    e. DNS Queries for Core Node Discovery & Selection
    f. Base Diameter and 3GPP protocol enhancements
    g. **S6a Diameter Protocol hands-on**
    h. **SLg and SLh Diameter**
    i. Diameter Routing (DRA) and Session Binding
    j. S6a Diameter Active Interception Scenarios

IMS Diameter Protocols Introduction

4. **IMS/VoLTE Diameter based Interception - Overview**
    a. IMS Architecture and Protocols overview
    b. IMS Registration and Security Contexts
    c. **Cx/Dx/Sh Diameter Hands-On**