Vendor:	.il SPLOTY	System:	lte
Level:	**Advanced**	Duration:	**4 days**
Course Title:			
EPC/LTE Signalling			

Description:

This training contains detailed description of all protocols and interfaces used in the EPC – Core Network part of EPS/LTE™ system. Every protocol is described together with exemplary signalling procedures to enhance understanding its functionalities. During the training students have also opportunity to analyse protocol traces from real-life networks. Practical exercises are designed to give attendees additional confidence when working with protocols in live networks.

Target audience:

Experienced network engineers, support engineers, protocol stack developers and testers, as well as anyone with network experience who needs deep technical knowledge of EPC.

Contents:

Introduction

EPS Architecture, EPS interfaces and protocols, identity numbers, MME in pool and GUTI, tunnelling, EPS bearers – bearer establishment and QoS parameters,

Traffic Cases

EPS Mobility Management (EMM) and EPS Connection Management (ECM) states, attach and TA update, service request, S1 release, bearer activation, intra-LTE and inter-system handovers, Idle state Signalling Reduction (ISR), SR-VCC PS to CS handover, CSFB, SMS over SGs, Roaming Retry,

Security

HSS/AuC and USIM functionality, authentication and key agreement, key hierarchy, ciphering and integrity protection, KSN and local authentication, re-keying and key change, inter-RAT mobility,

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LTE™ is a Trade Mark of ETSI.

NAS EPS Mobility Management (EMM)

signalling connection establishment, routing of initial NAS messages, signalling connection release, GUTI reallocation, authentication, security mode control, identification, information procedure, attach, detach, TA update, service request, extended service request, paging, SMS,

NAS EPS Session Management (ESM)

default and dedicated bearer activation, IP address allocation, bearer modification, bearer deactivation, UE requested PDN connectivity/disconnect, UE requested bearer resource allocation/modification, information request procedure,

Stream Control Transmission Protocol (SCTP)

SCTP vs TCP, multihoming, SCTP packet format, chunk types, SCTP association establishment, acknowledgements and retransmission, stream concept,

GPRS Tunnelling Protocol – User Plane (GTP-U)

GTP-U based interfaces, protocol stack, tunnels, GTP-U messages,

S1-MME interface

S1 interface functions, protocol stack, E-RAB setup, modification and release procedures, UE S1AP IDs, downlink and uplink NAS transport, UE context setup, modification and release procedures, handovers and transparent container IEs, tunnel setup (direct and indirect forwarding), S1 setup, eNB and MME configuration updates,

Diameter Base Protocol

Diameter Base Protocol functionality, Diameter components, transactions and sessions, Diameter agents (Relay, Proxy, Redirect, Translation) and their usage examples, Diameter command structure, Diameter based routing, vendor and application IDs,

S6a and S13 interfaces

interface locations, Update Location procedure and related parameters, Cancel Location, Purge UE, Insert Subscriber Data, Terminating Access Domain Selection, Delete Subscriber Data, Authentication Information Retrieval, ME Identity Check,

GTPv2-C interfaces

GTPv2-C based interfaces, C-plane and U-plane tunnels, tunnel establishment sequences during initial attach, TA Update, Service Request, S1 release and Bearer Activation procedures,

CSFB and SMS

SGs interface location and protocol stack, Location Update, IMSI Detach, Paging, Service Request/Abort procedures over SGs, HSS/MME/VLR failure related procedures, MO/MT CSFB calls,

Sv interface

Sv interface position, SR-VCC registration, SRVCC from E-UTRAN to UTRAN/GERAN.

Prerequisites:

General knowledge of EPS/LTE system architecture and functionality is required. Knowledge about GSM/UMTS GPRS services is very useful.

Completion of *EPS/LTE System Overview* course (or equivalent) is highly recommended.

Training method:

Lectures and practical exercises.