**MAPS™ Long Term Evolution (LTE) – (eGTP) Interfaces**

**(S3, S4, S5, S8, S10, S11 and S16)**

**Overview**

GL’s Message Automation & Protocol Simulation (MAPS™) is designed for LTE S11, S5/S8 eGTP interfaces can simulate MME (Mobility Management Entity), SGW (Serving Gateway), and PGW (Packet Data Network Gateway) network elements. The messages exchanged between MME and SGW (S11 Interface) is same as the messages exchanged between SGW and PDN Gateway (S5/S8 Interface).

The MAPS™ LTE test tool is designed with specific test cases, as per LTE eGTP-C mobile standard as specified in 3GPP TS 29.274 Evolved GPRS Tunneling Protocol for Control Plane.

GL LTE eGTP software enables Network Equipment Providers of, MMEs, Serving GWs, PDN GWs,

- Accelerate time to market
- Simulate up to 500 Smartphones (UEs) powering up and down
- Authenticate and confirm security procedures
- QoS requests for greater or lesser bandwidth
- Temporary addressing management for mobility and security

The application gives the users the unlimited ability to edit eGTP-c messages and call control scenarios (message sequences).

GL’s MAPS™ eGTP supports user-plane packet transmission and reception with additional Mobile Traffic Core - GTP (ETH101) licenses and supports simulation of user-plane Gateway traffic in LTE and UMTS network with purchase of Mobile Traffic Core – Gateway (ETH102) licenses.

For more information on MAPS™ LTE eGTP, refer to [http://www.gl.com/maps-lte-egtp.html](http://www.gl.com/maps-lte-egtp.html).

**Main Features**

- Supports simulation of real-time LTE network using “MAPS 4G Wireless Lab Suite”.
- Simulates MME, SGW and PDN GW.
- Supports LTE Control plane.
- Generates and responds to hundreds of UE Signaling (Load testing).
- Generates and process GTP-C valid and invalid messages.
- Handles Retransmissions.
- Supports GTP Traffic (GTP User Plane Data) which includes: verification like BERT testing, HTTP traffic generation capability, GGSN can actually be connected to real IP network to simulate Gateway testing
- Provides call statistics and associated events status.
- Automation, Remote access, and Schedulers to run tests 24/7.
**Test Bed Configuration**

The testbed setup window allows users to setup the required test environment with SCTP configuration in eGTP interfaces.

**SCTP Configuration** parameters consists of source / destination IP address, port, including GTP traffic parameters to configure MAPS™ to simulate MME, SGW, PGW entities in eGTP interface. MAPS™ can then generate GTP-C (valid and invalid) messages in LTE network.

End user configuration profile used to configure MAPS™ LTE eGTP with supported node parameters.

**Pre-processing Tools**

**PROFILE EDITOR** - This feature allows loading profile to edit the values of the variables using GUI, replacing the original value of the variables in the message template. An XML file defines a set of multiple profiles with varying parameter values that allow users to configure call instances in call generation and to receive calls.

Supports Mobile Traffic parameter settings allowing simulation of offline HTTP Traffic using Mobile IP Core TCP Client Server connections. Configurations include TCP Server IP, TCP Port for HTTP and HTTP files names.

**MESSAGE EDITOR** - With message editor, users can build a template for each protocol message type. The value for each field may be changed in the message template prior to testing. The protocol fields comprises of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

**SCRIPT EDITOR** - The script editor allows the user to create / edit scripts and also import/export files that define variables for the message template parameters. The script uses pre-defined message templates to perform send and receive actions. The editor allows to run the added scripts sequentially (in-order) or randomly (any script from the list of added scripts as per the call flow requirements).
Call Generation and Call Reception
In call generation, MAPSTM is configured for the out going calls, and in call receive mode, it is configured to respond to incoming calls. Tests can be configured to run once, multiple iterations or continuously. Scripts can be set to run sequentially according to a call scenario or randomly. The test scripts may be started manually or they can be automatically triggered by incoming messages. In receive mode, MAPSTM can be automated to respond to messages using script configuration dialog, where a receive script is preset against particular message expected to arrive.

Capture Event Log
MAPSTM provides Events, Error Events, and Captured Errors log encountered during the progress of the call. The events are saved in the database which can be accessed via web interface. Protocol specific signaling events and the traffic events are logged along with the Call Trace ID, Script Name, Script ID, and the Timestamp of the occurred event.

Supported LTE eGTP Procedures
Given below is a general LTE S3, S4, S5, S8, S10, S11 and S16 interfaces signaling scenario, the messages between MME (Mobility Management Entity), SGW (Serving Gateway), and PGW (PDN Gateway) are simulated using MAPSTM application.

Incoming Call Handler Configuration
The Incoming Call Handler contains a list of message types, each with a corresponding script. At the receiving end the expected initial message is compared with this list of messages, and if a match is found, the corresponding script is executed. The answer scripts are loaded against the messages expected from the DUT.
Supported Protocols and Specifications

<table>
<thead>
<tr>
<th>Supported Protocols</th>
<th>Standard / Specification Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evolved GTP (eGTP) for EPS</td>
<td>3GPP TS 29.274 V8.0.0 (2008-12)</td>
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<tr>
<td>Evolved GTP (eGTP) for EPS</td>
<td>3GPP TS 29.274 V9.2.0 (2010-03)</td>
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Buyer's Guide

PKS142 - MAPS™ - LTE eGTP (S3, S4, S5, S8, S10, S11 and S16) Interfaces

ETH100 - Mobile Traffic - PacketCheck™

ETH101 - MobileTrafficCore - GTP

ETH102 - MobileTrafficCore - Gateway

Related Software

PKS140 - MAPS™ - LTE S1 Interface

PKS164 - MAPS™ - UMTS – Iu-PS Interface Emulation

PKS160 - MAPS™ - UMTS – Iu-CS and Iuh Interface Emulation

XX165 - T1 or E1 UMTS Protocol Analyzer

OLV165 - Offline UMTS Protocol Analyzer

LTS206 - OC-3 / STM-1 UMTS Protocol Analysis

LTS306 - OC-12 / STM-4 UMTS Protocol Analysis

PKS130 - MAPS™ - SIGTRAN (SS7 over IP)

XX120 - SS7 Analysis Software

Related Software

PKS135 - MAPS™ - ISDN SIGTRAN (ISDN over IP)

XX100 - ISDN Analyzer Software

PKV107 - LTE Protocol Analyzer

PKS120 - MAPS™ - SIP

PKS121 - MAPS™ - SIP Conformance Test Suite (Test Scripts)

PKS122 - MAPS™ - MEGACO

PKS123 - MAPS™ - MEGACO Conformance Test Suite (Test Scripts)

PKS124 - MAPS™ - MGCP and Conformance Test Suite (Test Scripts)

PKB100 - RTP Toolbox™

PKS100 - PacketGen™

PKV100 - PacketScan™ (Online and Offline)

For complete list of MAPS™ products, refer to http://www.gl.com/maps.html webpage.