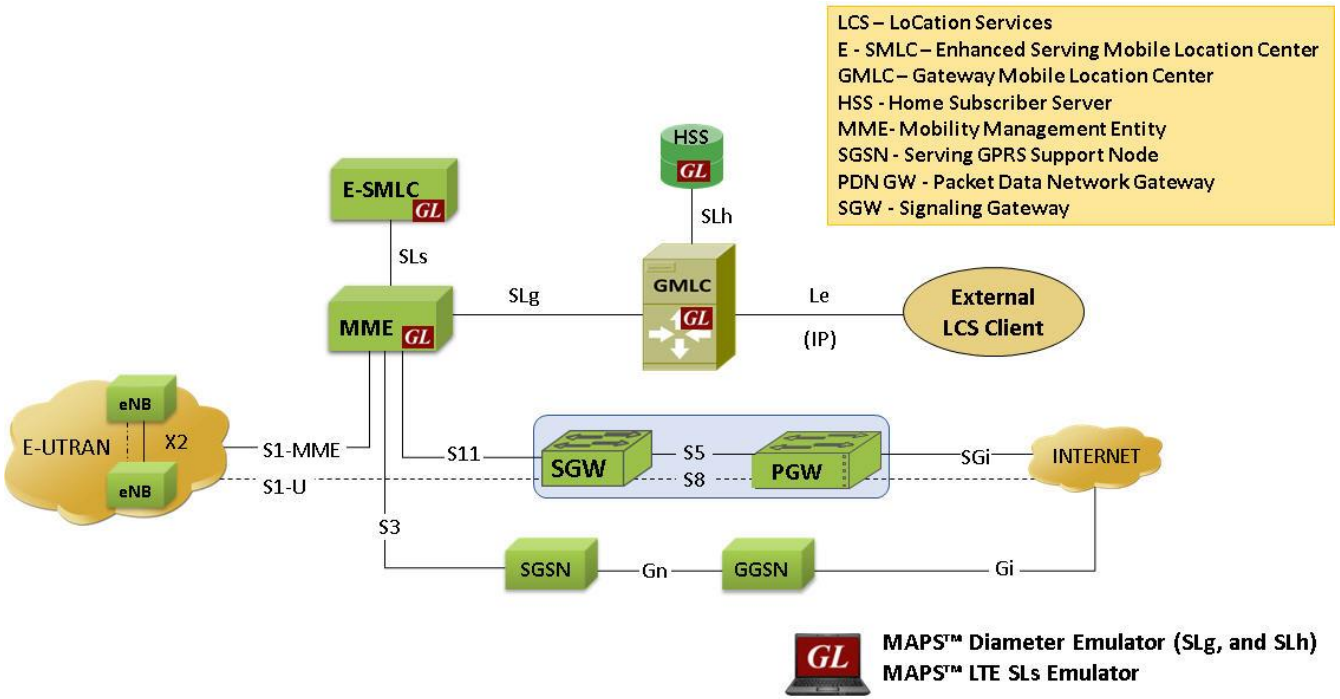
Simulation of Location Based Services in LTE Network



As depicted in the diagram above, some of the important interfaces participating in the location request and response in LTE network are summarized below:

- SLs interface - MME is accessible to the E-SMLC via the SLs interface using LCS-AP protocol
- SLg interface - MME is accessible to the GMLC via the SLg interface using Diameter protocol
- SLh interface - HSS is accessible to the GMLC via the SLh interface using Diameter protocol

The standard positioning methods used in LTE network are:

- Enhanced Cell-ID (network based, handset assisted)
- OTDOA positioning method (network based, handset assisted)
- UTDOA positioning method (network based)
- A-GNSS based positioning methods (handset based, network-assisted)

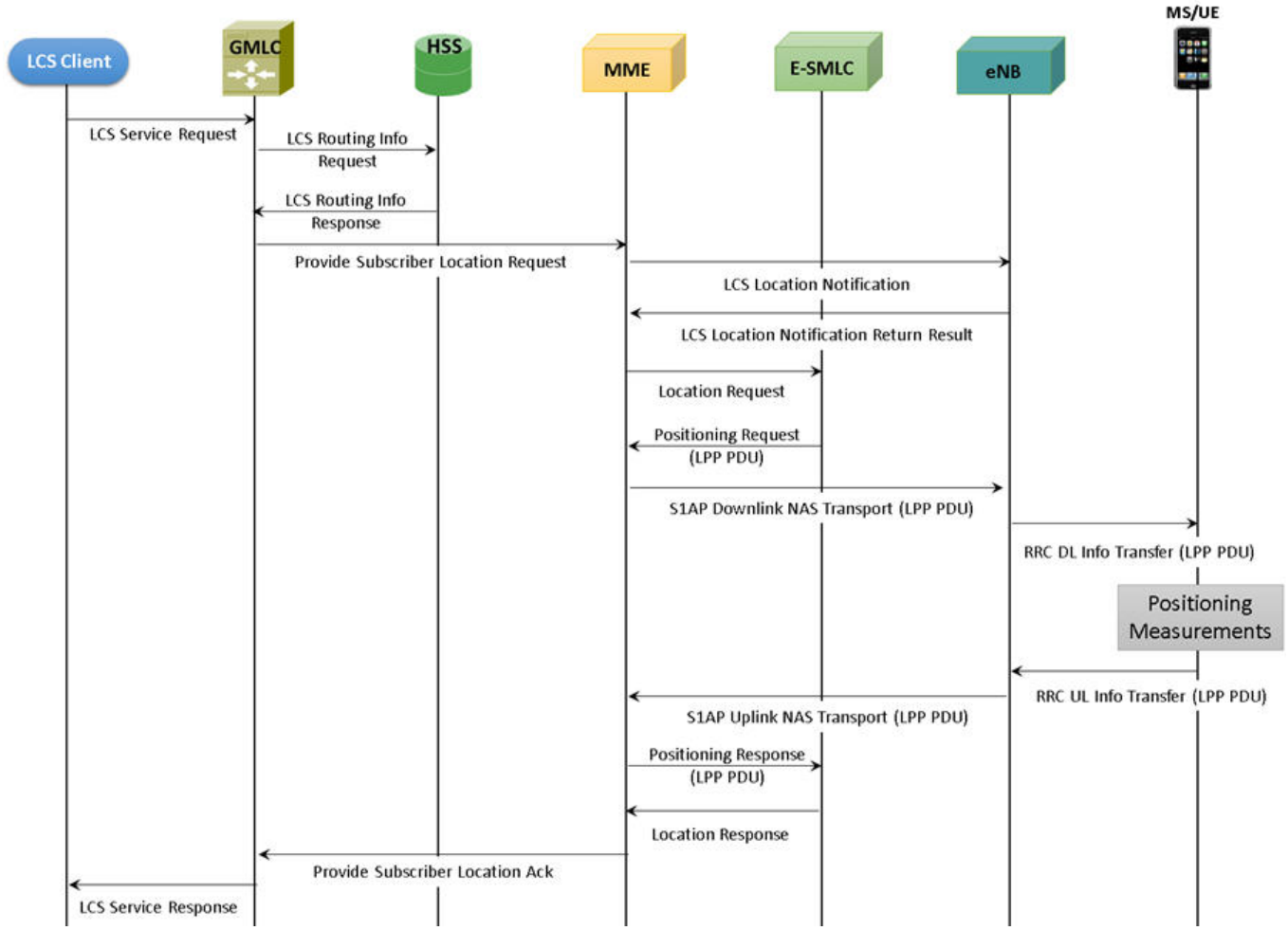
GL Communications

LCS Procedures in LTE

GL's MAPS™ LCS test suite comprises of multiple products working in tandem to support simulation of end-to-end location based services in GSM, UMTS, and LTE networks. Specifically, to support location services in LTE network, GL's MAPS™ Diameter signalling emulator is enhanced to simulate SLg, and SLh interfaces using Diameter protocol for estimating the position of mobile devices (mobile phones, wireless personnel, digital assistants and so on) independent of underlying network technology.

Further, the MAPS™ SLs interface emulator supports Location Service Request procedure over LTE SLs interface between MME and E-SMLC using LCS-AP signalling protocol.

Typical call flow simulation of location based service messages by MAPS™ is as shown in the figure.



GL Communications

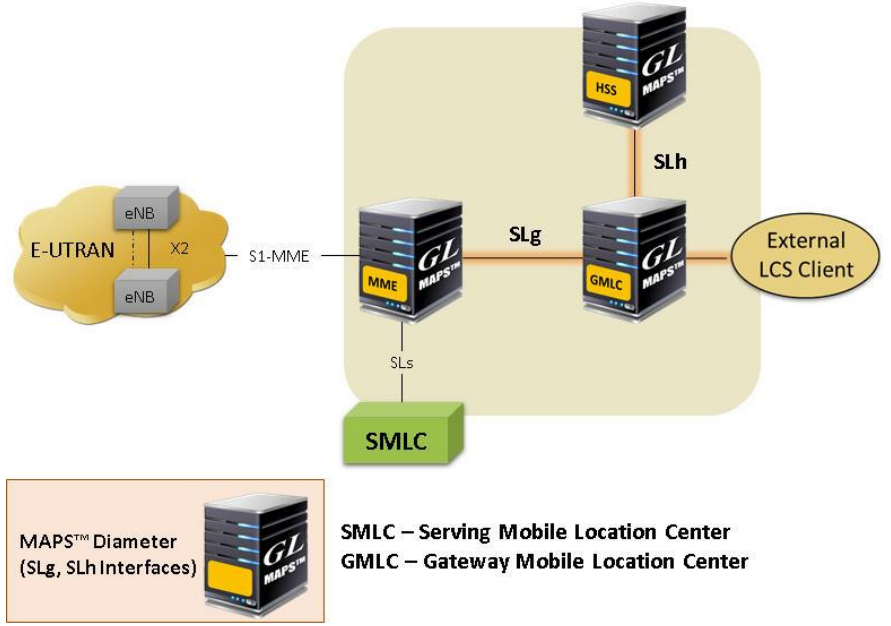
MAPS™ LCS Test Suite for LTE

SLg, SLh Interfaces

MAPS™ Diameter supports testing LCS functionality between MME and GMLC network elements within LTE network.

Both LCS server and LCS client simulation are supported for Diameter SLg (MME-GMLC), and over SLh interface (GMLC-HSS). The SLg and SLh interface application implements the following Mobile Application Services:

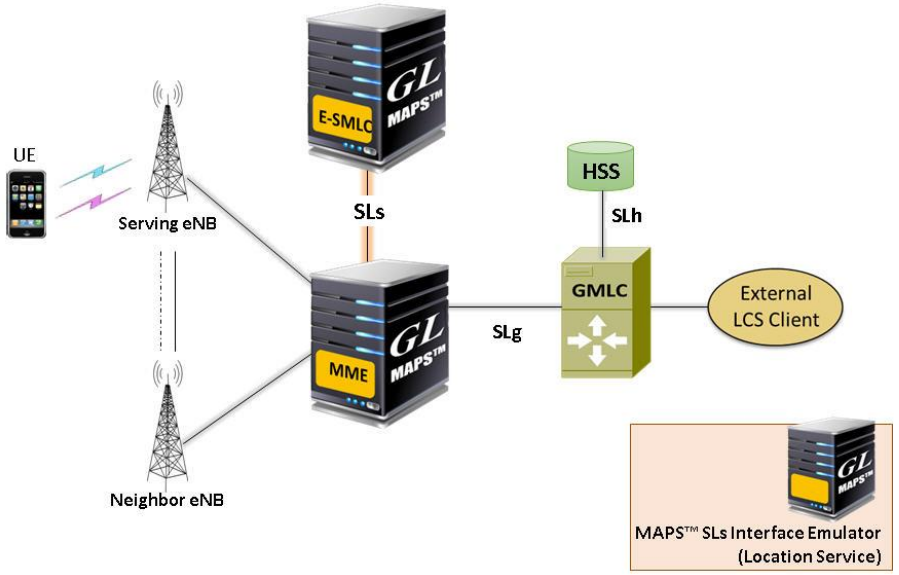
- Provide Subscriber Location
- Subscriber Location Report
- Location Routing Info



SLs Interface

MAPS™ SLs interface emulator testing LCS functionality between E-SMLC (Enhanced Serving Mobile Location Center) and MME (Mobile Management Entity) in the LTE network.

MAPS™ SLs supports LCS-AP procedures, which are divided as Location service request procedure, and Location information exchange procedure.



GL Communications