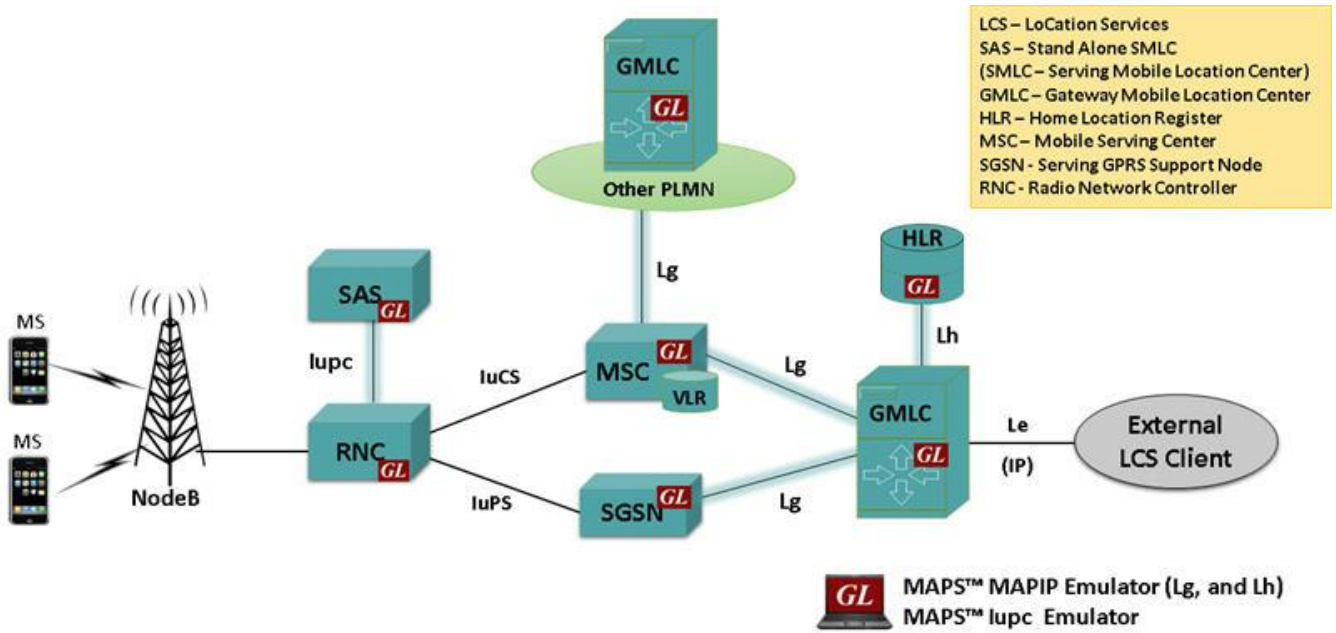
Simulation of Location Based Services in UMTS Network



As depicted in the main diagram above, some of the important interfaces participating in the location request and response in the UMTS network are:

- Lg interface - The MSC/VLR and SGSN is accessible to the GMLC via the Lg interface
- Lh interface - The HLR is accessible to the GMLC via the Lh interface
- IuPC interface – The SAS is accessible to the RNC via the IuPC interface

Location estimation in UMTS network uses Positioning Calculation Application Part (PCAP) protocol over IuPC interface between RNC and the Standalone SMLC (SAS). Following are the functions of IuPC interface.

- Management of Position Calculation Functions
- Management of SAS Centric Position Functions
- Management of Information Exchange Functions

The standard positioning methods used in UMTS network are:

- Cell coverage based positioning methods (network based)
- OTDOA positioning method (network based)
- A-GNSS based positioning methods (handset based)
- UTDOA positioning method (network based)

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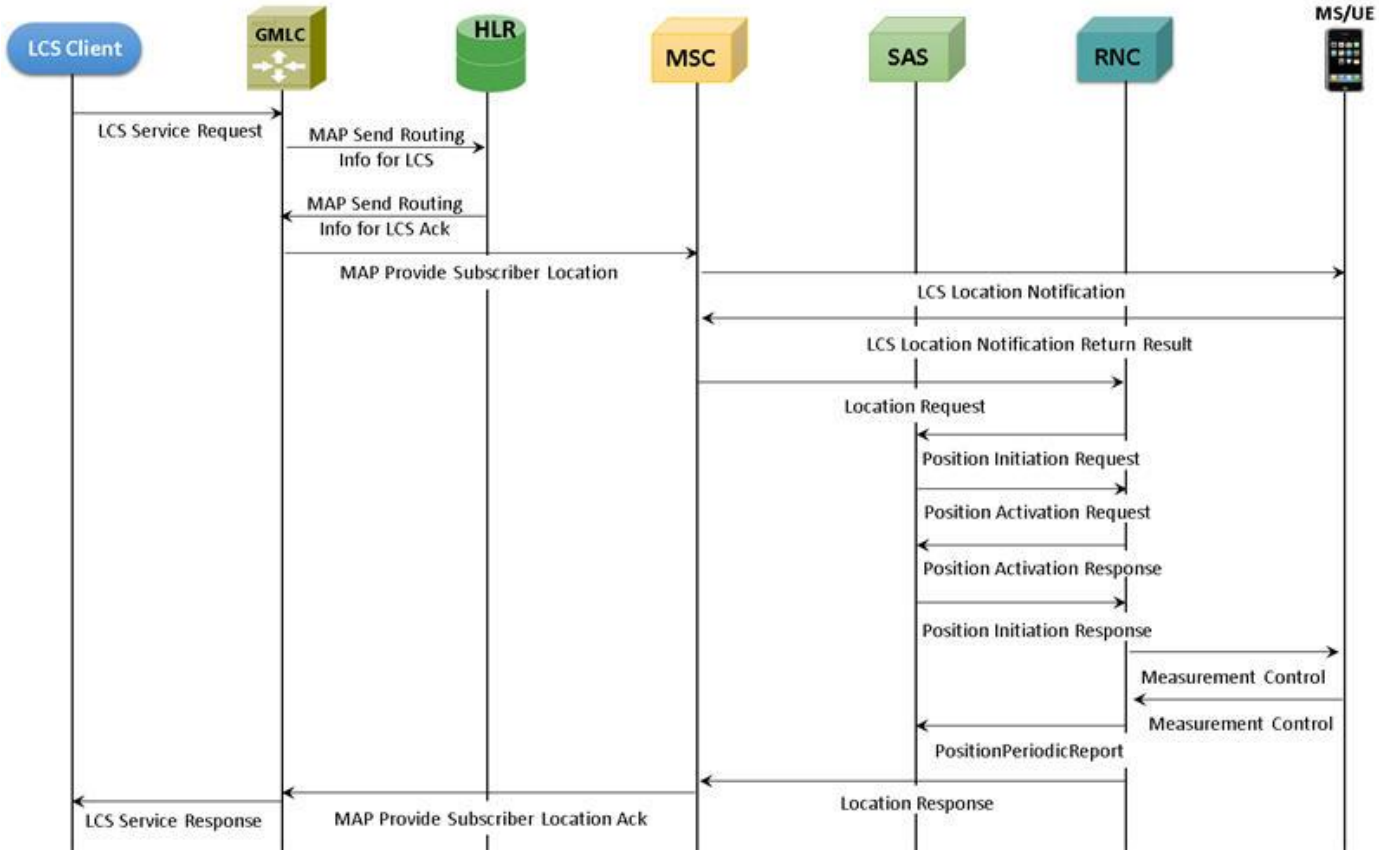
LCS Procedures in UMTS

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 UMTS network, GL's MAPS™ MAP IP signalling emulator is enhanced to simulate Lg, and Lh interfaces using MAP 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™ IuPC interface emulator supports PCAP signaling procedure over UMTS IuPC interface between RNC and SAS.

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



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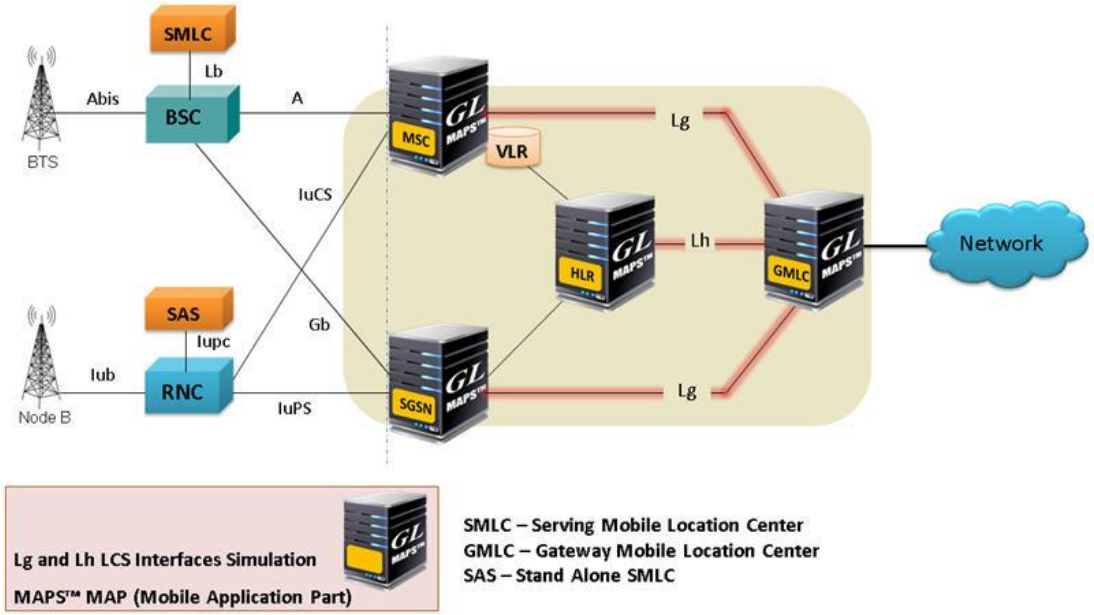
MAPS™ LCS Test Suite for UMTS

Lg, Lh Interfaces

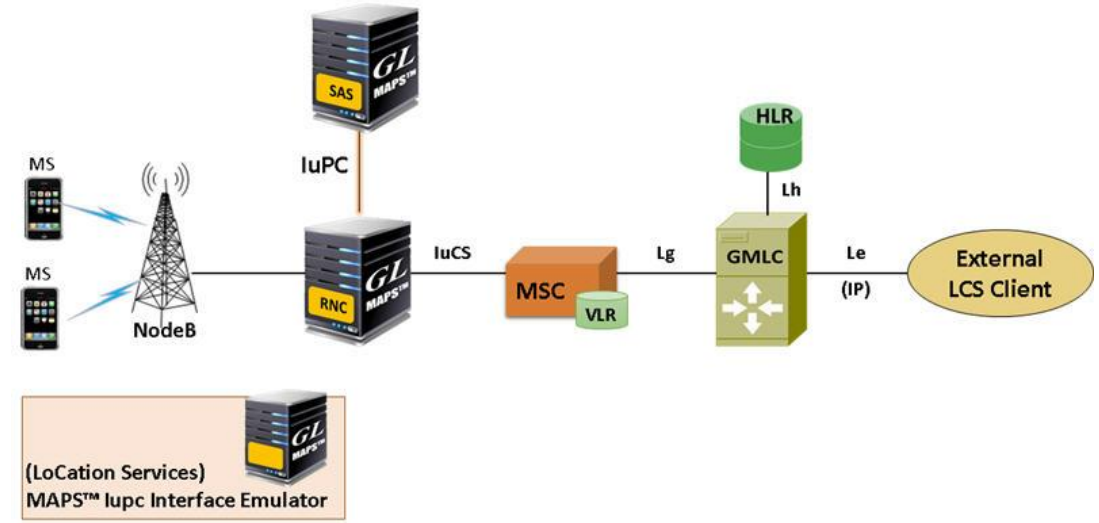
MAPS™ MAP IP supports testing LCS functionality between SGSN/MSC and GMLC network elements within UMTS network. The Lg, Lh Interface enable LCS in the GPRS/UMTS to provide support for specialized mobile location services for operators, subscribers, and third party service providers. Both LCS server and LCS client simulation are supported Lg, Lh Interface



IuPC Interface

MAPS™ IuPC supports simulation of location service operation using PCAP (Positioning Calculation Application Part) protocol between the Radio Network Controller (RNC) and the Standalone SMLC (SAS) and the associated signaling procedures as per 3GPP TS 25.305 specification within UMTS network.

MAPS™ IuPC Emulator simulates Positioning Calculation Service, SAS Centric Position Service, and Information Exchange Service PCAP functions.



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