Nokia Serving Mobile Location Center

Location-based applications are the next major class of value-added services that mobile network operators can offer their subscribers. The Nokia Serving Mobile Location Center (SMLC) is essential for success in this market.

Nokia Serving Mobile Location Center (SMLC) is part of the Nokia mPosition Solution for mobile location services. It estimates the position of any mobile handset utilizing various available location methods. Position information is transferred via the Nokia intelligent Mobile Location Gateway (iGMLC) to location-based service (LBS) applications, allowing operators to offer value-added services to their subscribers. These services can include localized yellow pages, weather and traffic updates, as well as city guides and tourist information. Both second and third generation (2G and 3G) GSM networks are supported.

Various Location Methods

Estimates of mobile handset position coordinate can be based on a combination of the following in a 2nd generation GSM network:

Cell ID and antenna parameters are mandatory for omni-directional or sectorized serving cells.

Timing Advance helps estimate distance of the mobile handset in concetric circles or arcs from the serving cell antenna site.

Signal Strength (Rx) helps determine distance of the mobile handset from up to 6 neighboring cell sites, and gives more accurate position estimate in most cases.

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Estimates of mobile handset position coordinate can be based on the following in a 3rd generation (WCDMA) network:

Service Area Identity for a single cell, multi-cell, or approximated multi-cell area.

Supported Confidence Regions

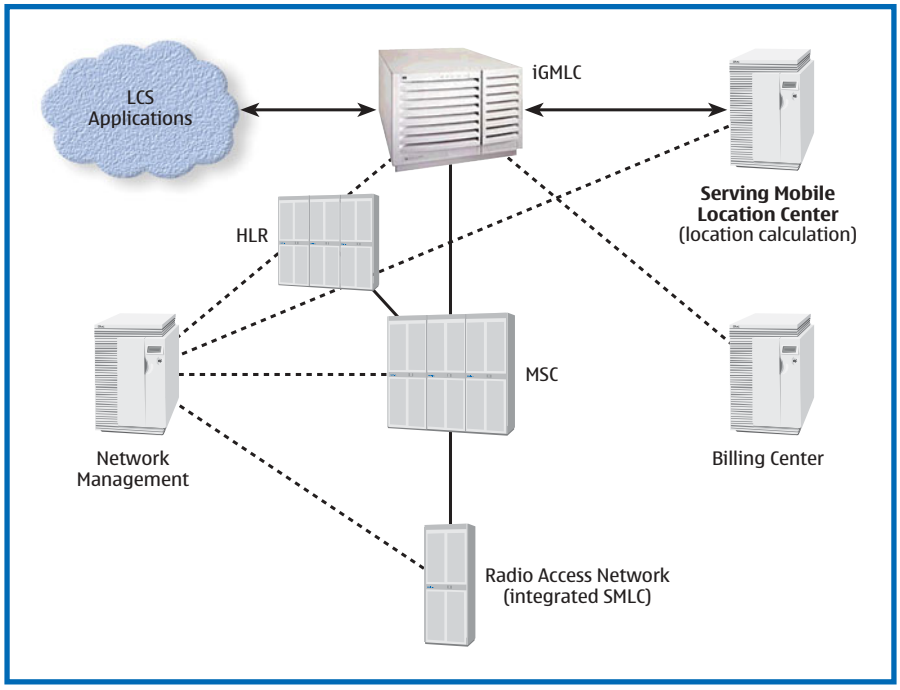
SMLC also provides the region or shape in which the mobile handset is estimated to be located. This is referred to as a confidence region or uncertainty area for the position coordinate calculated by SMLC.

The following shape is supported for 2G networks:
- Uncertainty Arc

The following shapes are supported for 3G networks:
- Ellipsoid Point
- Uncertainty Arc
- Uncertainty Ellipse
- Uncertainty Polygon

The shapes listed above can be converted by Nokia iGMLC to the following shapes specified by 3GPP and LIF MLP:
- Ellipsoid Point
- Ellipsoid Arc
- Polygon (future release)

Note that a smaller confidence region or uncertainty area indicates a higher degree of "confidence" that the estimated position coordinate is actually the location of the mobile handset.



Main Benefits of SMLC

- Allows for a variety of location methods to be utilized
- Returns position coordinate and confidence region to iGMLC so either one can be given to LBS applications
- Supports both 2G and 3G networks simultaneously
- Allows for regular updates of Radio Network Data using SMLC NetImport Utility.

Key Component of Nokia's mPosition Solution

SMLC is a key component of Nokia's mPosition Solution, a suite of end-to-end positioning methods, middleware, and applications for location-based solutions. SMLC can be easily integrated into the operator's service platform; scaled to accommodate a growing user base and upgraded to meet the accuracy needs of more enhanced systems.

Technical Specifications

Hardware

SunFire 280R Server with
- 2 x 750MHz UltraSPARC-III processors, 8MB E-Cache
- 4 x 512MB RAM
- 2 x 36GB Hard Disk Drive
- 10/100 Base-T Fast Ethernet Card

Optional 20GB DDS-4 tape drive
Optional workstation
Optional 24-inch x 72-inch rack

Software

Sun Solaris 8
Oracle Enterprise Edition 8i
AdventNet SNMP library

Network

GSM

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