



Openwave® Location Manager Commercial Edition for GSM/UMTS Operators

Enabling the Location-Based Service (LBS) Business

Openwave Location Manager Commercial Edition (LMCE) is a high-availability, location-based service (LBS) infrastructure and middleware solution designed to assist with position determination and the management of subscriber location.

LMCE delivers a layer of coordination above the standard Gateway Mobile Locating Center (GMLC) and includes A-GPS SUPL Locating Platform (SLP) elements, thus allowing operators to match the most appropriate location technique to the accuracy needs of each location information request. This flexibility is important for LBS applications whose revenue potential is highly varied—for example, weather widgets and vehicle tracking—as well as devices with significantly different capabilities, such as voice-only feature phones and A-GPS-capable smartphones.

With more than 100 million location transactions served every month and the world's first commercial deployment of user plane A-GPS technology, Openwave Location Manager Commercial Edition (LMCE) has helped carriers innovate and lead the LBS market since 2002. Mobile operators can deploy the LMCE with confidence knowing that the LMCE will support their business goals.

Operator Benefits

Lower Total Cost of Ownership: The integration of the LBS application interface, privacy policy management, Cell/Sector ID, and A-GPS reduces complexity and operation costs.

Optimized Performance: LMCE selects from the available techniques to satisfy a location request, based on required accuracy and handset capability. For

example, Cell ID would be used for weather widgets, while A-GPS would be used for navigation. If an A-GPS device is unreachable—for example, when a user is in a parking garage—the LMCE will “failover” and provide Cell/Sector ID location.

Investment Protection: LMCE can introduce A-GPS in an environment with legacy location infrastructure. A-GPS requests are served by the LMCE SLP, while basic to intermediate accuracy control plane requests can be forwarded to a legacy GMLC/SMC.

Technology Evolution: LMCE assists operators migrating from CDMA to UMTS/LTE by simultaneously supporting the CDMA Mobile Positioning Center (MPC) and GSM/UMTS Gateway Mobile Locating Center.

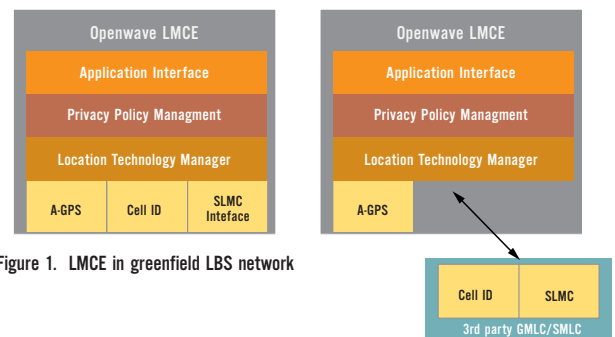


Figure 1. LMCE in greenfield LBS network

Figure 2. LMCE A-GPS in legacy LBS network

Subscriber Benefits

Security: All applications and subscribers are authenticated and authorized.

Privacy Control: LMCE offers the ability for subscribers to self-provision access privileges for applications requesting their position. Users can specify temporal filters that only allow applications to obtain



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position information during a specified time period, a capability that prevents undesired intrusion.

Broad Ecosystem Support: LMCE uses a standard OpenLS and Mobile Locating Platform, ensuring support of a broad range of applications.

Features

Location Methods and Gateway Capability

- Cell/Sector ID via MAP-ATI interface
- A-GPS network assistance as specified in SUPL 1.0
- Lg/Lh Interface to Serving Mobile Locating Center (SMLC) for Timing Advance (TA), Network Measurement Reports (NMR), and Angle of Arrival (AOA) methods
- GMLC and A-GPS SUPL Locating Platform (SLP) 1.0 functionality

Location Technology Management

- Selects positioning method (for example, A-GPS or Cell ID) to best support application accuracy requirements within handset capability constraints
- Provides Cell ID failover (supplies Cell/Sector location information if A-GPS request fails)
- Simplifies A-GPS introduction: basic and intermediate accuracy requests forwarded to legacy GMLC/SMLC
- Stores the latitude, longitude, age, and uncertainty of the last-known location in the Location Cache for subsequent use
- Directs CDMA location requests to legacy Mobile Positioning Center (MPC) for CDMA to UMTS/LTE migration

Application Interface & Privacy Policy Enforcement

- OMA standard Mobile Location Protocol (MLP) and OpenLS support
- Openwave Advanced Application Interface (AAI)
- Authentication of LBS location requests
- Authorization of applications and subscribers
- Notification and approval of location requests via WAP/SMS
- Access controlled by subscriber on a per-application basis using WAP portal
- Temporal filters: subscriber-controlled limits as to time of a day an application may locate handset (for example, during an employee shift)
- Identity protection using aliases: MSISDN/MIN is replaced by an alias in WAP and SMS communications

Accounting and LBS Usage Analytics

- Location-generated request for a Location Transaction Detailed Record (LTDR) to support billing
- LBS usage analytics reporting available with purchase of Openwave Mobile Business Intelligence (MBI) solution



2100 Seaport Boulevard
Redwood City, California 94063 U.S.A.
Corporate +1 650 480 8000
Europe +44 2890 416 200
Asia +81 3 5909 6100
<http://www.openwave.com>

About Openwave

Openwave Systems Inc. (Nasdaq: OPWV) is one of the world's leading innovators of software applications and infrastructure designed to enable revenue-generating, personalized services, including mobile analytics, content adaptation, mobile and broadband advertising, and a suite of unified messaging solutions.

As the communications industry intersects with the Internet, Openwave software enables service providers to converge services, in an effort to increase the value of their networks by accelerating time to market and reducing the cost and complexity associated with new service deployment. Openwave's unique product portfolio provides a complete range of mobile internet service management, messaging, and location based solutions. Openwave is a global company with a blue chip customer base spanning North America, Latin America, Australia and New Zealand, Asia, Africa, Europe, and the Middle East. Openwave is headquartered in Redwood City, California. For more information please visit www.openwave.com.

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