OMA and Location Based Services

Location Based Services: Maximizing Revenue and Engaging the Consumer

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Agenda

- Overview of the Open Mobile Alliance
- Current Specifications from OMA LOC
- OMA LOC Pipeline
- Summary

OMA - Vision and Background

» Vision

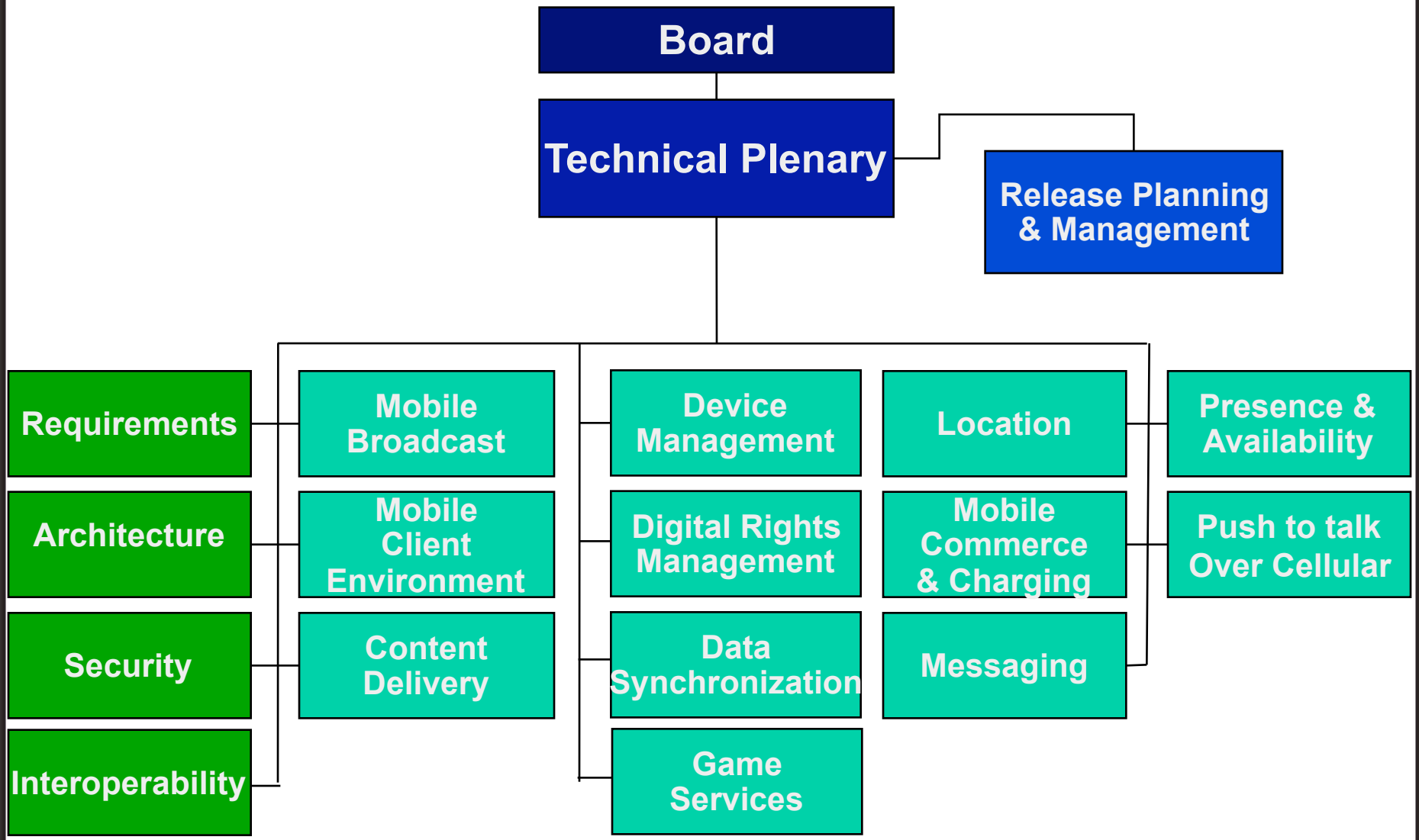
- » No matter what device I have
- » No matter what service I want
- » No matter what carrier or network I am using
- » I can communicate, access and exchange information

- » The Open Mobile Alliance is an international organization, developing open, market driven interoperable specifications for global adoption of data services
- » Created in June 2002 by leading mobile operators, device and network suppliers, information technology companies, content and service providers
- » 380 Global Members developing open, market driven interoperable specifications for global adoption - representation from across the widening mobile value chain
- » 42 Formal Cooperation Agreements avoiding fragmentation and duplication
- » 39 Enablers published and over 100 active work items

OMA - Deliverables

- Principal Forum for support of interoperable data services across multiple domains
  - Creating specifications driving adoption of multimedia and data services
- Published specifications only part of OMA story
  - Development is market driven with members observing industry demand
  - Use cases identify market requirements
  - OMA facilitates market adoption through member-driven specifications
- Convergence
  - Not just mobile: applicable to fixed AND mobile networks
  - In 2005 OMA expanded its mandate to include : "…*other present and future wireline and wireless network standards supporting the Internet Protocol family*"
  - OMA enables enhanced seamless and integrated services
- Interoperability test programme
  - Product testing for conformance in trusted zone key differentiation point for OMA
  - Verifies specification interoperability
  - Communicates value to market
  - Test Specs, TestFests (25 to date), 1300+ implementations tested, Test Reports
  - Facilitates certification outside OMA

OMA - Current Evolved Organization



Highlights of OMA Service Enablers

- **Over 20 Candidate and Approved Enablers Published in the Last 20 Months**
  - **Candidate Enabler Releases**
    - OMA Push to talk over cellular V2_0
    - OMA Secure User Plane Location V2_0
    - OMA Mobile Location Service V1_2
    - OMA Secure Removable Media V1_0
    - OMA Instant Messaging - SIMPLE V1_0
    - OMA Presence V2_0
    - OMA XML Document Management V2_0
    - OMA Mobile Broadcast V1_0
    - OMA Download V2_0
  - **Approved Enabler Releases**
    - OMA Email Notification V1_0
    - OMA vObject V1_0
    - OMA Charging V1_0
    - OMA Client Side Content Screening Framework V1_0
    - OMA Secure User Plane Location V1_0
    - OMA Online Certificate Status Protocol Mobile Profile V1_0
    - OMA Standard Transcoding Interface V1_0
    - OMA Smart Card Web Server V1_0
    - OMA Presence SIMPLE V1_0
- A ***Candidate Enabler Release (CER)*** delivers an approved set of open technical specifications that can be implemented in products and solutions, and then tested for interoperability.
- An ***Approved Enabler Release (AER)*** represents Candidate Enabler Releases that have gone through the Interoperability Program (IOP) of OMA. The IOP tests interoperability between different member company's implementations – either within the OMA or through other means.

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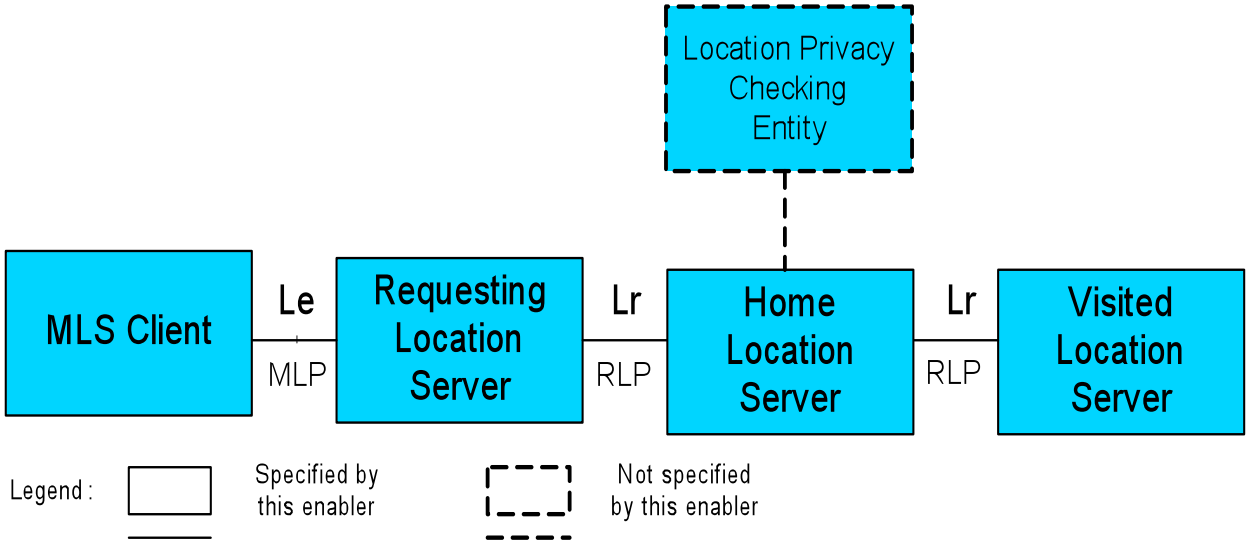
OMA Mobile Location Service (MLS)

- MLS (Mobile Location Service) is a continuation of work begun in LIF (Location Interoperability Forum)
- MLS was initially based on a commitment to deliver Technical Specifications for four of the reference points defined in 3GPP TS 23.271
- In 2004, OMA released MLP (Mobile Location Protocol) v3.1 as the first OMA Location Enabler
  - MLP is one of the parts of MLS
- Although MLS is primarily based on 3GPP specifications, there is no explicit restrictions to use it in other contexts
- Later, MLS 1.1 was extended to support OMA SUPL (Secure User Plane for Location) 1.0 enabler.
- MLS 1.2 supports OMA SUPL 2.0, 3GPP Rel 7 LCS , 3GPP2 MAP LBS and civil address types

OMA MLS v1.2 Architecture

- MLS architecture is defined by reference points and flows as specified in 3GPP TS 23.271.
- The reference points are labelled Le and Lr, in 3GPP TS 23.271
  - Le is instantiated by MLP (Mobile Location Protocol).
  - Lr is instantiated by RLP (Roaming Location Protocol).
- Reference point to Location Privacy Checking Entity not specified in MLS V1.2



OMA MLS v1.2 Enabler Capabilities

» **MLP Services**

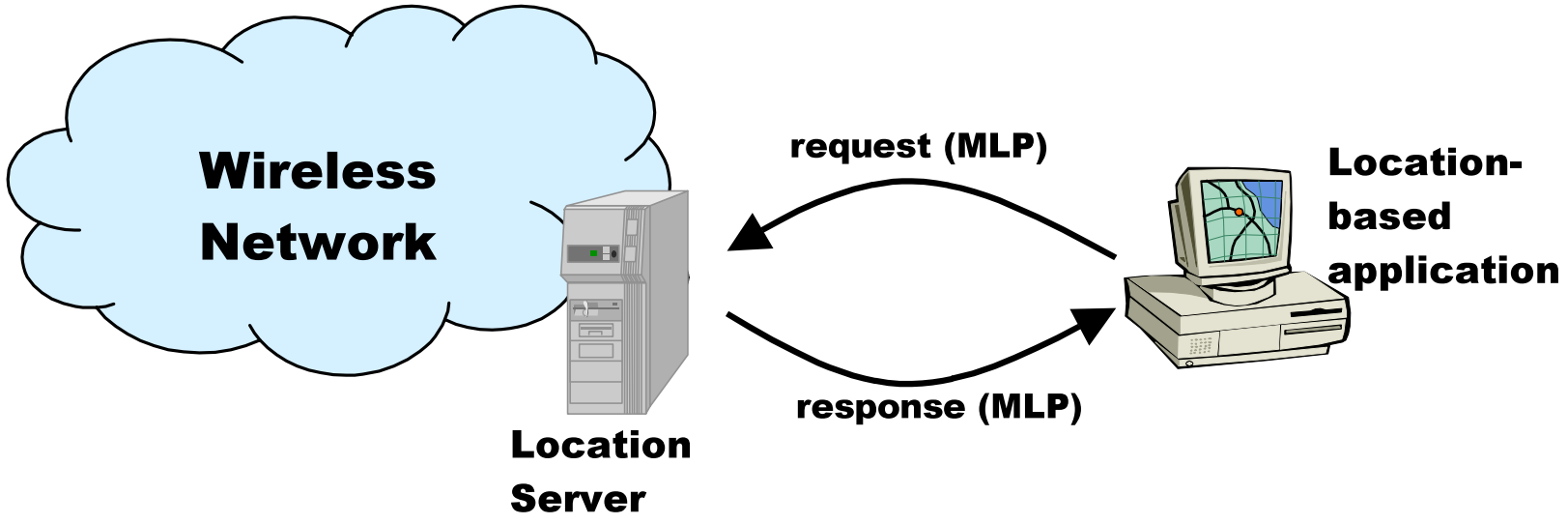
- **Standard Location Immediate Service (Request, Answer, Report)**
  - Application asking network for location of one or several subscribers
- **Standard Location Reporting Service (Report)**
  - Asked by a terminal, the network reports location to an application
- **Emergency Location Immediate Service (Request, Answer)**
  - An entity like emergency call center asks for location of a subscriber
- **Emergency Location Reporting Service (Report)**
  - Upon initiation of an emergency call, network positions caller and reports location
- **Triggered Location Reporting Service (Request, Answer, Report, Stop Request, Stop Answer)**
  - Period location retrieval (e.g. tracking applications)
  - Area triggers (e.g. network reporting location when subscriber enters an area)

OMA Mobile Location Protocol (MLP)

- OMA MLP is a request/response based protocol
- Each MLP request/response is expressed as an XML document
- MLP is defined by a set of DTDs
- Different underlying transports are possible - though only HTTP mapping is provided today
- MLP messages carry all information elements needed for authentication, authorization, terminal to be located, subscriber privacy check, QoS, …

OMA MLP Overview

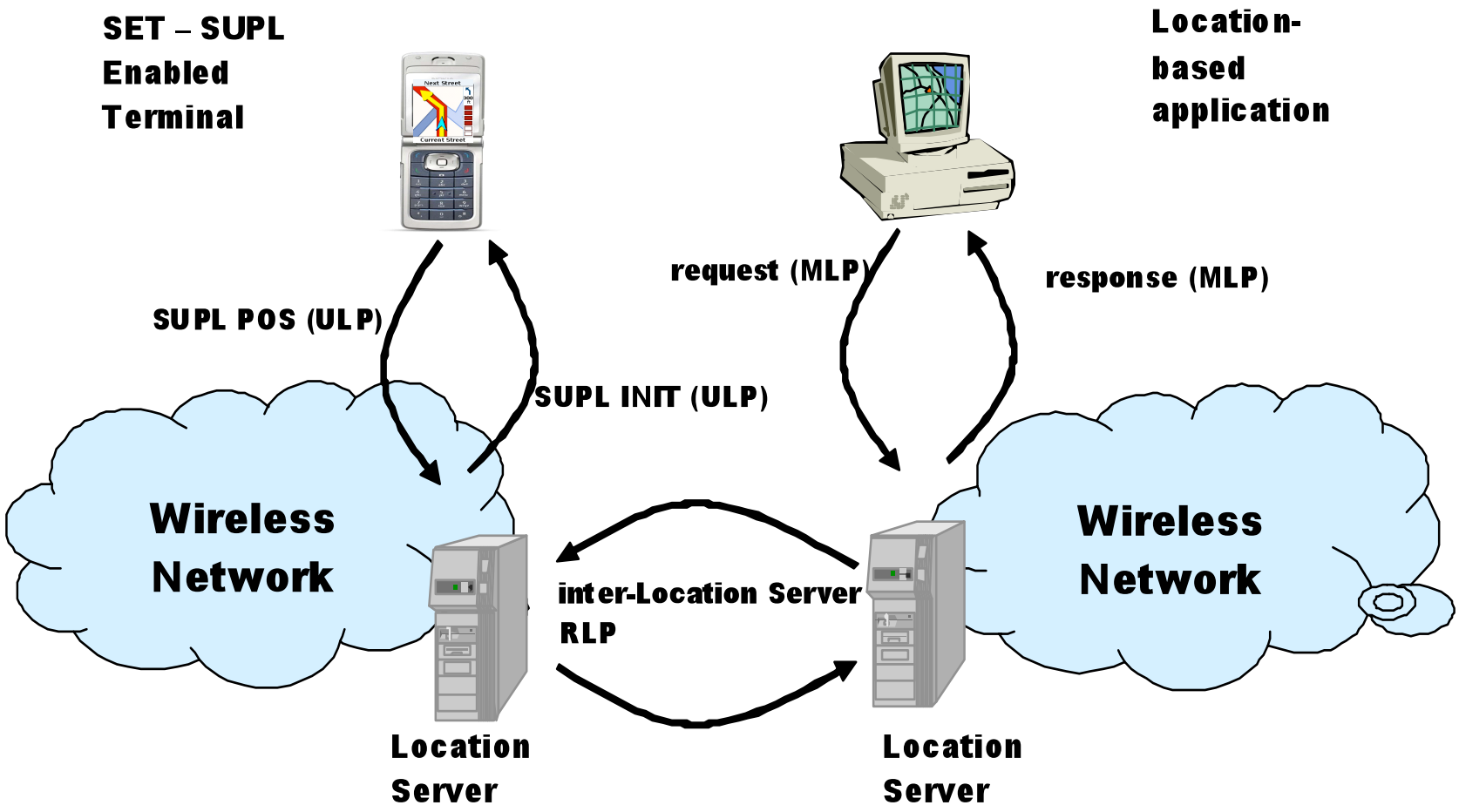
» MLP (Mobile Location Protocol) is an application-level protocol for getting the position of mobile stations independent of underlying network technology and defines an interface between Location Server and a Location Services Client



OMA Roaming Location Protocol (RLP)

- RLP (Roaming Location Protocol) facilitates locating a roaming subscriber
- RLP also applies to cases where there is a “roaming application”
  - In technical terms: the target or the service is not connected to the home network
  - Requesting Location Server (where the application is)
  - Home Location Server (where the subscriber is registered including privacy settings)
  - Visited Location Server (where the subscriber currently is)
- RLP uses the same technology as MLP
  - Messages are very similar.
- SUPL builds on RLP
- RLP builds on MLP

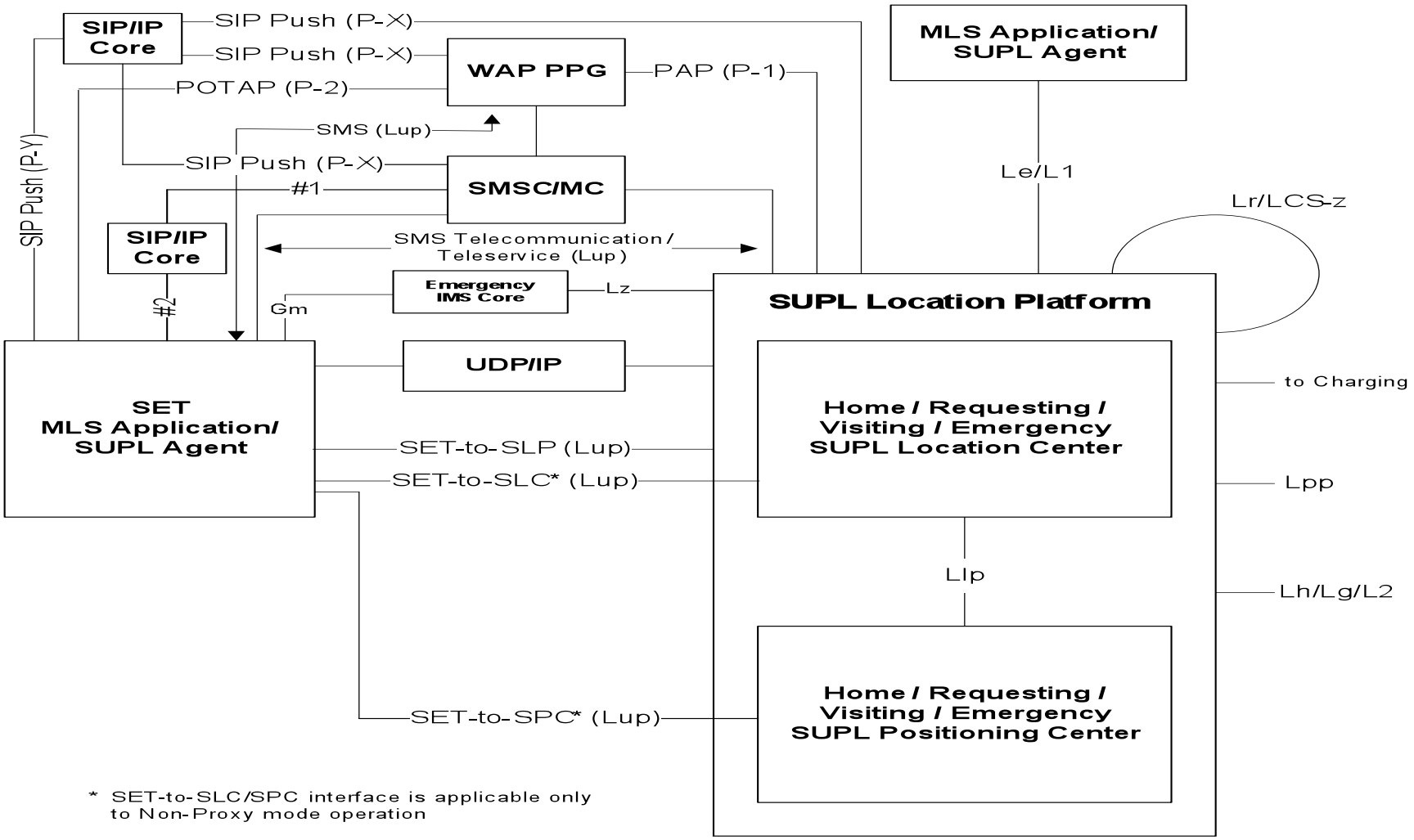
OMA RLP Overview



OMA Secure User Plane Location (SUPL v2.0)

- The SUPL v2.0 work item adds new functionality, and is based on experience with SUPL v1.0, enhancing the existing functionality while maintaining the SUPL v1.0 requirements
- The new functionality includes triggered services (e.g. periodic and change of area), and alternative air interfaces - In addition SUPL v2.0 addresses emergency services and support for Galileo
- While the SUPL v1.0 work item was restricted to facilitate the location process of a specific SET, SUPL v2.0 introduces:
  - Set initiated location request of a target terminal
  - Set initiated positioning with location Transfer to a third party
- SUPL v1.0 currently utilizes a number of bearer and transport technologies - SUPL v2.0 adapted the architecture to facilitate other air interface technologies (interworking WLAN, UMB, WiMAX, and LTE).
- SUPL v2.0 enhanced existing functionality, including but not limited to positioning methods, privacy, and security
- These enhancements provide a secure and efficient enabler to a wide scenario of location enabled services

OMA SUPL v2.0 Architecture



OMA SUPL v2.0 Overview

- Network Initiated
  - When the SUPL collaboration is initiated by the network, the SET will provide the system with applicable measurements to facilitate the process of determining the SET's location
- Terminal Initiated
  - When SUPL collaboration is initiated by a SET, the network will provide the system with the assistance data to facilitate the process of determining the SET's location

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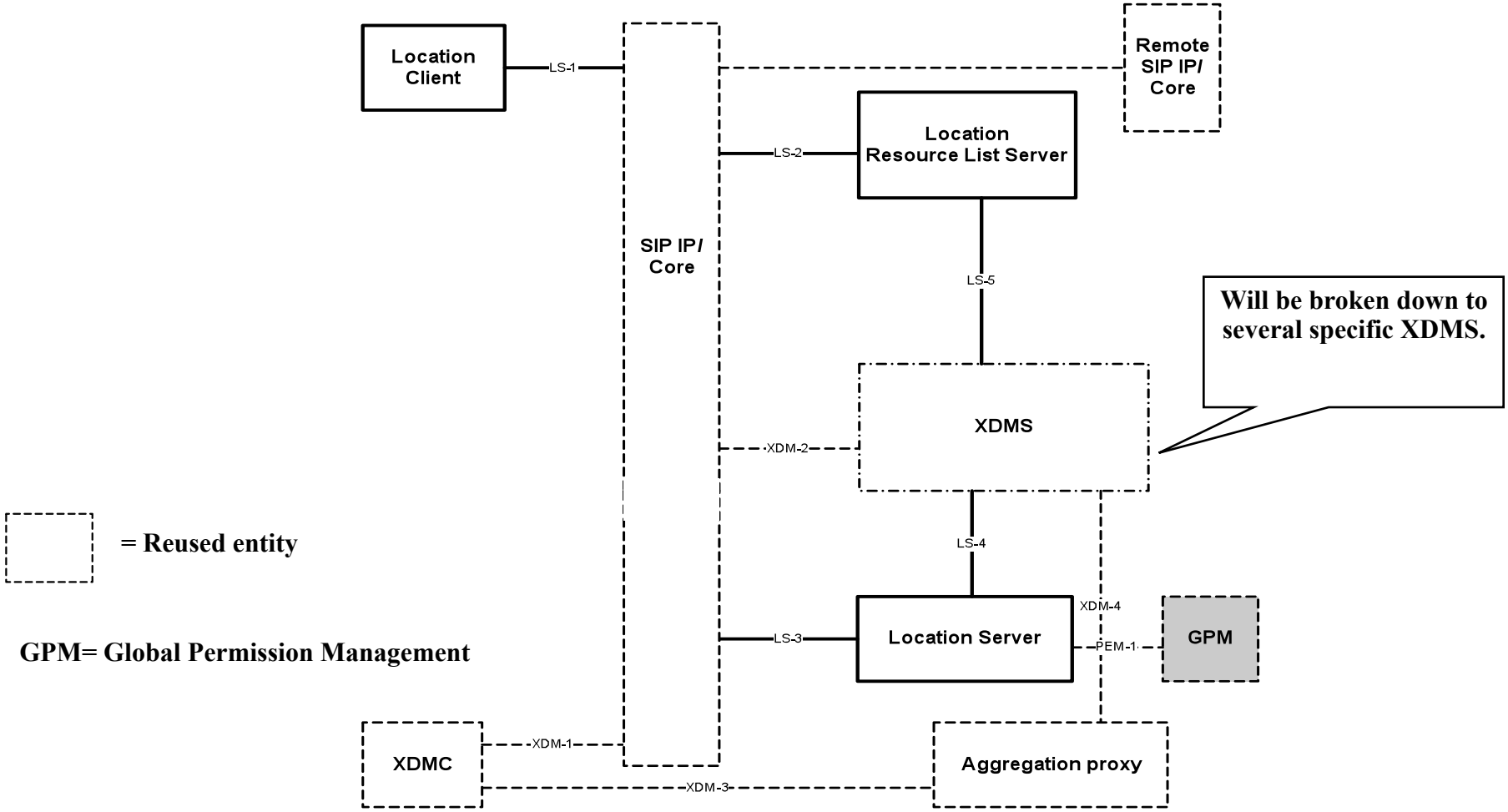
OMA LOCSIP v1.0

- LOCSIP v1.0 is a supplement to Location exposure in the SIP -domain and is available with the Presence Enabler
- Location is different from other Presence attributes:
  - Geo-locations have close to indefinite numbers of states.
  - Accurate location info is expensive in terms of latency & resources
  - Requirements on accuracy & response not constant
- Location is requested when immediately needed or with spatial /temporal filter criteria (area trigger / periodic)
- Privacy/security requirements are more stringent
- Extending the Presence Enabler with LOCSIP requirement is not seen as an efficient solution from specification or deployment point of view

OMA LOCSIP v1.0 Architecture



OMA LOCSIP v1.0 Use Cases

- Immediate Location Delivery
  - This use case shows how a location client in an VoIP SIP Application server requests location information of a user and uses location to give e.g. advice of charging to call originator.
- Periodic Location Delivery
  - This use case shows how a location client in a Presence SIP Application server subscribes to periodic notification of location information group defined by a Presence user.
- Area Trigger Location Delivery
  - This use case shows how a Location client in a PoC Server subscribes to be notified on when a target that is member of an group moves inside or outside a geographical area.

Next SUPL Version Requirements

- LOC Group debating the merits of the following items:
  - Location Support for LTE
    - Enhanced Cell-ID, Transferring 3GPP functionality
  - Improved Location for IP Emergency Calls
    - Improved Use Cases to cover more scenarios, maintaining Location Support after call is released
  - Triggered Location Enhancements
    - Compression and Expansion of data, Enable precise route tracing
  - SET to SET Location
    - SET obtaining location, triggered by relative position
  - High Accuracy Location (Requires New Protocol)
    - Will require new signalling protocol

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Summary

- OMA LOC Group is very active in current and new feature development
- Good adoption of existing MLS and SUPL Enablers in the Market
- Many new requirements coming forward for Location Enhancements
  - Most new applications have some location element to them
- New satellite systems (such as Galileo) will help generate even more interest in Location Based Services
- **OMA is THE Forum for the Development and Standardization of Location Based Services**

More Information

- OMA Communications Contact
  - Bobby Fraher, External Communications Manager
    bfraher@omaorg.org
- Interested in joining the OMA
  - http://www.openmobilealliance.org/Membership/default.aspx
- Full list of OMA Enablers
  - http://www.openmobilealliance.org/Technical/releaseprogram.aspx
- List of upcoming OMA Plenary Meetings and OMA TestFests
  - http://www.openmobilealliance.org/Meetings/
  - http://www.openmobilealliance.org/TestFests/overview.aspx

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