Presence Access Layer Architecture

Candidate Version 1.0 – 26 Jan 2010

Open Mobile Alliance

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1. Scope (Informative)

This document provides the architecture for the Presence Access Layer (PAL) Enabler of OMA.

The PAL Enabler provides a series of interfaces for accessing and making use of presence information on behalf of one or more interested individuals or entities. Access to presence information on behalf of an observer is based on a contextually aware perspective or view. The presence view/perspective is resolved by the PAL Enabler relative to a presence capable application or service and potentially other factors including a requestor identity.

The scope of the PAL architecture document is intended to facilitate the development of specifications for establishing a presence view/perspective, and interfaces relevant to the access and use of presence information. Further, the architecture supports possible reuse by other enablers in order to provide simple and efficient access to presence information.

2. References

2.1 Normative References

[CBUS_AD] " Condition Based URIs Selection Architecture", Version 1.0, Open Mobile Alliance™, OMA-AD-CBUS-V1_0,
URL:http://www.openmobilealliance.org/

[OSE] "OMA Service Environment", Open Mobile Alliance™,
URL:http://www.openmobilealliance.org/

[PAL_RD] "Presence Access Layer Requirements", Open Mobile Alliance™, OMA-RD-PAL-V1_0,
URL:http://www.openmobilealliance.org/

[PEEM_AD] "Policy Evaluation, Enforcement and Management Architecture", Open Mobile Alliance™, OMA-AD-Policy_Evaluation_Enforcement_Management-V1_0,
URL:http://www.openmobilealliance.org/

[PRS_AD] "Presence SIMPLE Architecture", Version 2.0, Open Mobile Alliance™, OMA-AD-Presence_ SIMPLE-V2_0,
URL:http://www.openmobilealliance.org/

[PRS_RD] "Presence SIMPLE Requirements", Version 2.0, Open Mobile Alliance™, OMA-RD-Presence_SIMPLE-V2_0,
URL:http://www.openmobilealliance.org/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997,
URL:http://www.ietf.org/rfc/rfc2119.txt

[XDM_AD] "XML Document Management Architecture",Version 2.0, Open Mobile Alliance™, OMA-AD-XDM-V2_0,
URL:http://www.openmobilealliance.org/

2.2 Informative References

[OMADICT] "Dictionary for OMA Specifications", Version 2.7, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7,
URL:http://www.openmobilealliance.org/

[PRS_IG] "Implementation Guidelines for OMA Presence SIMPLE v1.1", Open Mobile Alliance™, OMA-WP-PRS_1_1_Implementation_Guidelines,
URL:http://www.openmobilealliance.org/

[SEC_CF] "OMA Application Layer Security Common Functions", Version 1.0, Open Mobile Alliance™, OMA-ERP-SEC_CF_V1_0,

URL:http://www.openmobilealliance.org/

[XDM_AD] "XML Document Management Architecture", Version 2.1, Open Mobile Alliance™, OMA-AD-XDM-V2_1,
URL:http://www.openmobilealliance.org/

[XDM_RD] "XML Document Management Requirements", Version 2.1, Open Mobile Alliance™, OMA-RD-XDM-V2_1,
URL:http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Class of Service	A mechanism for identifying a collection or grouping of services, priorities, and/or privileges, which is shared amongst one or more Users.
Component	Use definition from [OMADICT].
Enabler	Use definition from [OMADICT].
Functional Component	Use definition from [OMADICT].
Home Subscription Agent	An entity as described in [PRS_AD] section “*Home Subscription Agent*”.
Interfaces	Use definition from [OMADICT].
Logical Observer	Use definition from [OMADICT].
Notification	Use definition from [PRS_RD].
PAL Administrator	Use definition from [PAL_RD].
PAL Client	Use definition from [PAL_RD].
PAL Initialization	A PAL Service request used to establish a Presence Context.
PAL Profile	Use definition from [PAL_RD].
PAL Service	Use definition from [PAL_RD].
PAL Subscription	Use definition from [PAL_RD].
Presence Aspect	Use definition from [PAL_RD].
Presence Aware Service	Use definition from [PAL_RD].
Presence Context	Use definition from [PAL_RD].
Presence Information	Use definition from [PRS_RD].
Presence Information Element	Use definition from [PRS_RD].
Presence Service	Use definition from [PRS_RD].
Presence Trigger	Use definition from [PAL_RD].
Presentity	Use definition from [PRS_RD].
Reference Point	Use definition from [OMADICT].
Resource List Server	Use definition from [PRS_AD].
User	Use definition from [OMADICT].
Watcher	Use definition from [PRS_RD].
Watcher Information	Use definition from [PRS_RD].
Watcher Information Subscriber	Use definition from [PRS_RD].
XDM Agent	An XDM entity as described in [XDM_AD], section “*XDM Functional Entities, XDM Agent*”.

3.3 Abbreviations

3GPP	Third Generation Partnership Project
AD	Architecture Document
CBUS	Condition Based URIs Selection
HSA	Home Subscription Agent
IM	Instant Messaging
IMS	IP Multimedia Subsystem
IP	Internet Protocol
NGSI	Next Generation Service Interfaces
OMA	Open Mobile Alliance
PAL	Presence Access Layer
PDE	OMA Presence SIMPLE Data Extensions
PEEM	Policy Evaluation, Enforcement and Management
PRS	Presence SIMPLE
PS	Presence Server
PV	PEEM/Policy Evaluation
RD	Requirements Document
RLS	Resource List Server
SIMPLE	SIP for Instant Messaging and Presence Leveraging Extensions
SIP	Session Initiation Protocol
URI	Uniform Resource Identifier
XDM	XML Document Management
XDMC	XML Document Management Client
XDMS	XML Document Management Server
XML	eXtensible Markup Language

4. Introduction (Informative)

Presence capable services provide service environments with the opportunity to expose enhanced and highly personalised services on behalf of their subscribers. The specification of the Presence Access Layer (PAL) is driven by the requirement to reduce the complexity associated with the access and use of presence information on behalf of presence capable services. Further, by specifying common rules for consolidating and presenting presence information for interested observers, PAL reduces complexity, and provides efficient, consistent presence indications.

This architecture document describes the Functional Components, and Interfaces of the OMA Presence Access Layer (PAL) Enabler. The PAL architecture re-uses OMA Presence SIMPLE [PRS_AD], OMA XML Document Management [XDM_AD], OMA Policy Evaluation, Enforcement and Management [PEEM_AD] and OMA Condition Based URIs Selection Enablers [CBUS_AD] in order to fulfill the requirements defined in the [PAL_RD].

The purpose of the PAL architecture is to provide a common callable interface for presence capable applications or services to retrieve or be notified of corresponding presence information (e.g. PoC Enabler, IM Enabler or NGSI Enabler can retrieve the presence information via PAL Enabler). Presence information is provided by the PAL Enabler via abstractions known as Presence Aspects and/or Presence Triggers. Additionally, the PAL architecture provides a mechanism through which a PAL Service resolves and establishes Presence Context on behalf of a PAL Client. Collectively, these mechanisms provide presence aware applications or services with a simpler and efficient means with which to incorporate presence awareness, as well as to make adoption by mobile clients quick and easy. Further, PAL Clients achieve minimal coupling to the underlying structure and format of Presence Information Elements, particularly as those elements evolve and change.

4.1 Version 1.0

The PAL Enabler provides the following functions:

- Accepts and authorizes PAL Service requests;
- Resolves Presence Context on behalf of PAL Clients based on a Presence Aware Service or Class of Service;
- Interacts with other Enablers to retrieve and consolidate required information (e.g. Presence SIMPLE, XML Document Management);
- Maintains and upholds the privacy and security of information requested and mediated by the PAL Service;
- Provides appropriate PAL Service responses in the form of Presence Aspects and/or Presence Triggers; and,
- Manages and provisions the PAL Service on behalf of Service Providers.

5. Architectural Model

The PAL Architecture Document conforms to [OSE].

5.1 Dependencies

The PAL Enabler has the following dependencies:

- OMA Presence SIMPLE Enabler; and,
- OMA XML Document Management Enabler.

The PAL Enabler has the following optional dependencies:

- OMA Condition Based URIs Selection Enabler; and,
- OMA Policy Evaluation, Enforcement and Management Enabler.

5.1.1 OMA Presence SIMPLE Enabler

The PAL Enabler makes use of the following Interfaces from OMA SIMPLE Presence:

- PRS-3i Interface is exposed by the Presence Server and SHALL be used by the PAL Server as detailed in [PRS_AD] "*Description of the Interfaces, PRS-3i Interface"*; and,
- PRS-4i Interface is exposed by the Resource List Server and SHALL be used by the PAL Server as detailed in [PRS_AD] "*Description of the Interfaces, PRS-4i Interface*".

5.1.2 OMA XML Document Management Enabler

The PAL Enabler makes use of the following Interfaces from OMA XML Document Management:

- XDM-4i Interface is exposed by the PAL XDMS and SHALL be used by the PAL Server as described in [XDM_AD] "*Description of Interfaces, XDM Interfaces*"; and,
- XDM-6i Interface is exposed by the PAL XDMS and SHALL be used by the PAL Server as described in [XDM_AD] "*Description of Interfaces, XDM Interfaces*".

5.1.3 OMA Condition Based URIs Selection Enabler

The PAL Enabler may optionally make use of the following Interface from the OMA CBUS Enabler:

- CBUS-1.2i Interface is exposed by the CBUS Server and MAY be used by the PAL Server as described in [CBUS_AD] "*Description of Interfaces, CBUS-1.2i Interface*".

5.1.4 OMA Policy Evaluation, Enforcement and Management Enabler

The PAL Enabler may optionally make use of the following interface from the OMA PEEM Enabler to evaluate policy:

- PEM-1 Interface is exposed by the PV logical component, and MAY be used by the PAL Server as described in [PEEM_AD] "*PEM-1 (PEEM specified callable interface)*".

NOTE: Policy, once evaluated via the PEM-1 interface, is applied by a PAL Server as described in section 5.3.2.

5.2 Architectural Diagram

Figure 1 illustrates the OMA PAL architecture including interfaces applicable to the PAL Enabler.

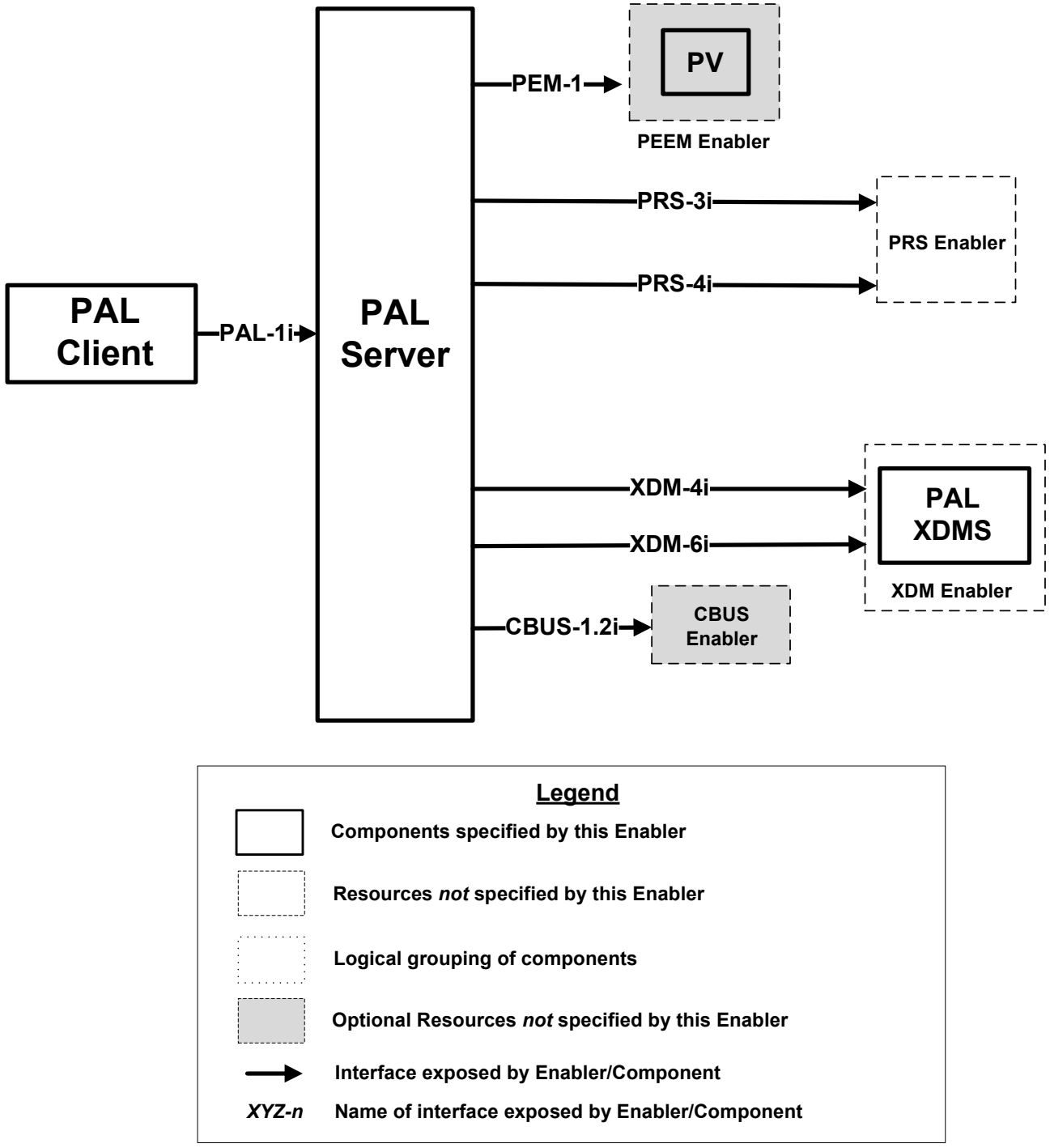

Figure 1: PAL Architecture Diagram

5.3 PAL Functional Components and Interfaces

This section describes PAL Functional Components and Interfaces identified in Figure 1.

The PAL Enabler exposes the following interface:

- PAL-1i.

5.3.1 PAL Client

The PAL Client provides access to various features of a PAL Server, as detailed in section 5.3.2.

The PAL Client SHALL support the following functions:

- Requests to receive Presence Context;
- Requests to receive Presence Aspects relative to a specified Presence Context ;
- Requests to suspend or resume delivery of Presence Aspect notifications associated with a Presence Context; and,
- Receives a pre-defined action as a result of a detected value change corresponding to a Presence Trigger.

5.3.2 PAL Server

The PAL Server SHALL support the following functions:

- Authorizes requesting PAL Clients;
- Evaluates and applies policy to support the consolidation of Presence Information by a PAL Server, on behalf of a PAL Client;
- Establishes and reports Presence Context based on Presence Aware Services, on behalf of PAL Clients;
- Subscribes to receive Presence Information as a Watcher or Watcher Information Subscriber;
- Functions as an HSA in the context of the PAL Enabler;
- Manipulates (i.e. retrieves, forwards, and/or shares) PAL Profiles as an XDM Agent;
- Subscribes to receive notification of changes to PAL Profiles, as an XDM Agent;
- Provides views of Presence Information utilizing Presence Aspects for PAL Clients, based on interoperable rules associated with an applicable Presence Context;
- Monitors, and detects Presence Aspect value changes associated with an applicable Presence Context, and executes predefined actions corresponding to a Presence Trigger; and,
- Accepts requests for suspending or resuming the delivery of Presence Aspects associated with a Presence Context (i.e. suspending or resuming notifications corresponding to Presence Triggers applicable to a given Presence Context).

5.3.3 PAL XDMS

The PAL XDMS conforms to the specification for enabler specific XDMSs provided in [XDM_AD], section "*Enabler Specific XDMS*". The PAL XDMS manages and supports the following XDM Documents:

- PAL Profile XDM documents.

The PAL XDMS supports the following functions:

- Document Management as described in [XDM_AD], section "*Document Management*";
- History and Restore as described in [XDM_AD], section "*History and Restore*";
- Subscription and Notification of XDM Resource Changes as described in [XDM_AD], section "*Subscription and Notification of XDM Resource Changes*";
- Access Permissions as described in [XDM_AD], section "*Access Permissions*";
- Search as described in [XDM_AD], section "*Search*";
- Share by Reference as described in [XDM_AD], section "*Share by Reference*"; and
- Forwarding as described in [XDM_AD], section "*Forwarding*".

5.3.4 PAL-1i Interface

The PAL-1i Interface SHALL establish and resolve a Presence Context on behalf of authorized PAL Clients. The PAL Server processes a PAL Initialization request based on information provided by a corresponding PAL Client (e.g. a service identifier), and returns either a unique identifier associated with the resolved Presence Context, or an error response.

The PAL-1i Interface SHALL provide consolidated views of presence in the form of Presence Aspect value(s) on behalf of authorized PAL Clients. The PAL Server processes a Presence Aspect request based on information provided by a corresponding PAL Client (i.e. a Presence Context identifier, along with one or more Presence Aspects to be evaluated), and returns to the requestor; either Presence Aspect values corresponding to Presentities of interest, or an error response.

The PAL-1i Interface SHALL provide the result of a Presence Trigger action corresponding with a given Presence Context to authorized PAL Clients. The PAL Server issues notifications with detected Presence Aspect value changes to interested PAL Clients.

The PAL-1i Interface SHALL permit a PAL Client to request suspension (or resumption) of the delivery of Presence Aspect notifications corresponding to Presence Triggers for a given Presence Context. The PAL Server processes a suspend/resume request based on information provided by a corresponding PAL Client (i.e. a Presence Context identifier, and parameter information relating to the suspend/resume operation), and applies or ignores the requested operation based on the current state of the Presence Context (e.g. a request to suspend notifications is ignored if the specified Presence Context state is already suspended). An appropriate suspend/resume response is returned to the PAL Client.

5.3.5 PAL Enabler Reference Points

The following sub-section provides details of PAL Enabler specific Reference Points. Descriptions of Reference Points reused from other Enablers are not within the scope of this architecture document, and are therefore omitted.

5.3.5.1 Reference Point PAL-1: PAL Client – PAL Server

The PAL-1 Reference Point supports communication between the PAL Client and PAL Server.

The PAL-1 Reference Point consists of the PAL-1i Interface.

5.3.6 PAL deployment - 3GPP IMS network

Figure 2, below, illustrates the PAL Enabler deployed within a 3GPP IMS network:

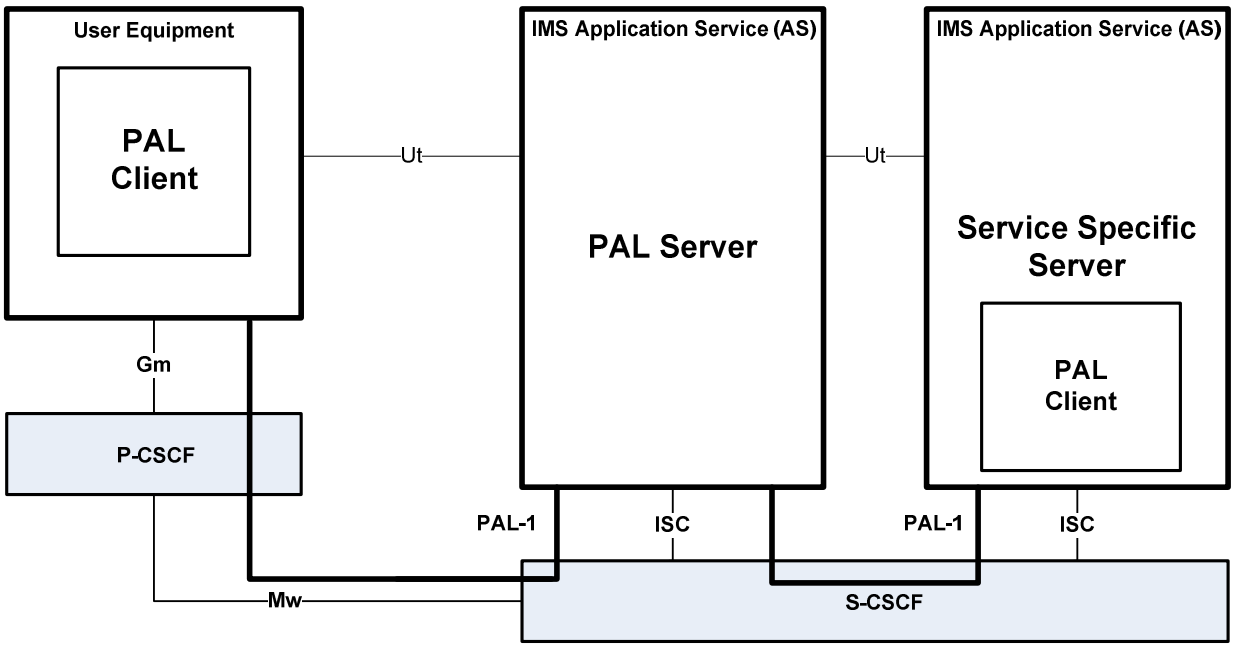

Figure 2: PAL Deployment – 3GPP IMS Network

The PAL Enabler deployed within an IMS network segment utilizes the following IMS Reference Points as defined in [3GPP-TS_23.002] section "*IM Subsystem Reference Points*" and [3GPP-TS_24.229].

The following table provides a mapping of 3GPP IMS Reference Points to OMA PAL Enabler Reference Points:

IMS Reference Point	OMA PAL Enabler Reference Point
Ut	PAL-1 (e.g. UE based PAL Clients supporting HTTP protocol bindings)
Gm	PAL-1 (e.g. UE based PAL Clients supporting SIP protocol bindings)
ISC	PAL-1 (e.g. UE/Service Specific Server based PAL Clients supporting SIP protocol bindings)

5.4 Security Considerations

The primary purpose of the PAL Enabler is to provide a mechanism for Presence Aware Services to retrieve or be notified of relevant Presence Information in the form of Presence Aspects. Since Presence Information is typically time sensitive, the punctual delivery of Presence Aspects and Triggers is imperative for presence. An important security consideration in the PAL Enabler, therefore, is the ability to prevent denial-of-service attacks which may slow down or completely disrupt the delivery of Presence Information in the form of Presence Aspects. One way to do this is to ensure that only authorized entities may issue PAL requests.

Another key security consideration is to protect the confidentiality and integrity of Presence Aspects delivered to Presence Aware Services. In a typical usage scenario, Presence Information in the form of Presence Aspects and Triggers is sent from PAL Server to PAL Clients. This information must be transmitted in a way that preserves the integrity of the contents and protects its confidentiality.

Security mechanisms that may be employed to prevent denial-of-service attacks and preserve integrity and confidentiality of Presence Aspects may include:

- Authentication of PAL Clients

- Authentication of the PAL Server
- Authorization of PAL Clients
- Message integrity protection
- Message confidentiality protection

Suitable authentication, message integrity and confidentiality protection mechanisms may be used as specified in [SEC_CF].

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-AD-PAL-V1_0	15 Feb 2009	n/a	AD skeleton based on OMA-Template-ArchDoc-20090101-I
	29 Jun 2009	All	Incorporated CRs: OMA-PAG-PAL-2009-0033-CR_PAL_V1_0_AD_Scope OMA-PAG-PAL-2009-0045R01-CR_PAL_V1_0_AD_Introduction OMA-PAG-PAL-2009-0046R02-CR_PAL_V1_0_NormativeRefs OMA-PAG-PAL-2009-0048R02-CR_PAL_V1_0_PAL_ArchModel
	21 Jul 2009	2.1, 2.2, 5.1, 5.2	Incorporated CRs: OMA-PAG-PAL-2009-0054-CR_PAL_V1_0_AD_Addl_NormativeRefs OMA-PAG-PAL-2009-0055R01-CR_PAL_V1_0_AD_PAL_Dependencies OMA-PAG-PAL-2009-0056-CR_PAL_V1_0_AD_FixArchModel
	04 Aug 2009	3.1, 3,2, 5.3 App B.	Incorporated CRs: OMA-PAG-PAL-2009-0044R02-CR_PAL_V1_0_AD_Defs_And_Abbrevs OMA-PAG-PAL-2009-0047R04-CR_PAL_V1_0_AD_PAL_FuncComponents OMA-PAG-PAL-2009-0049R03-CR_PAL_V1_0_AD_PAL_AppB_Flow1
	10 Sep 2009	1, 2.1, 2.2, 3.2, 4, 4.1, 5.3, App B.	Incorporated CRs: OMA-PAG-PAL-2009-0058R02-CR_PAL_V1_0_AD_PAL_AppB_Flow2 OMA-PAG-PAL-2009-0060-CR_PAL_V1_0_AD_Fixes OMA-PAG-PAL-2009-0061R01-CR_PAL_V1_0_AD_ComponentFixes OMA-PAG-PAL-2009-0064R01-CR_CR_PAL_V1_0_AD_PAL_AppB_Flow3
	21Sep 2009	2, 3, 4, App A and App B.	Incorporated CRs: Applied missing changes from OMA-PAG-PAL-2009-0060-CR_PAL_V1_0_AD_Fixes OMA-PAG-PAL-2009-0065-CR_PAL_V1_0_AD_PAL_AppB_Flow3_Fix Editorial clean-up by DSO of sections 2 and 3 and App A.
	11 Nov 2009	All	Incorporated CRs (PAL V1.0 ADRR): OMA-PAG-PAL-2009-0072R01, OMA-PAG-PAL-2009-0073, OMA-PAG-PAL-2009-0074, OMA-PAG-PAL-2009-0075R01, OMA-PAG-PAL-2009-0076R01, OMA-PAG-PAL-2009-0077R01, OMA-PAG-PAL-2009-0081
	25 Nov 2009	All	Incorporated CRs (PAL V1.0 ADRR): OMA-PAG-PAL-2009-0070R04, OMA-PAG-PAL-2009-0079R02, OMA-PAG-PAL-2009-0083R02, OMA-PAG-PAL-2009-0084R01,
	10 Dec 2009	5.1.4, 5.3.2, 2.1, 2.2	Incorporated CR: OMA-PAG-PAL-2009-0097R01 Editorial formatting of references in 2.1 and 2.2

Document Identifier	Date	Sections	Description
Candidate Version OMA-AD-PAL-V1_0	26 Jan 2010	n/a	Status changed to Candidate by TP: TP ref# OMA-TP-2009-0569-INP_PAL_V1.0_AD_for_Candidate_Approval

Appendix B. Flows (informative)

The following subsections describe high-level logical information flows between Functional Components of the PAL architecture. These flows illustrate how Functional Components within the PAL architecture support various features and requirements of the PAL Enabler.

B.1 PAL Presence Context Establishment

The PAL Client for User Alice makes use of specific Presence Information in the form of Presence Aspects, for a Presence Aware Service (e.g. the MIMO IM Service). Presence Aspects are provided to a PAL Client relative to a given Presence Context. Presence Context includes interoperable Presence Aspects, rules, policy values, and may contain Presence Triggers. Presence Context specifies a presence environment and is required in order for a PAL Client to make use of Presence Information. A Presence Context is resolved by the PAL Server based on a Presence Aware Service or Class of Service as outlined in Figure 3 below:

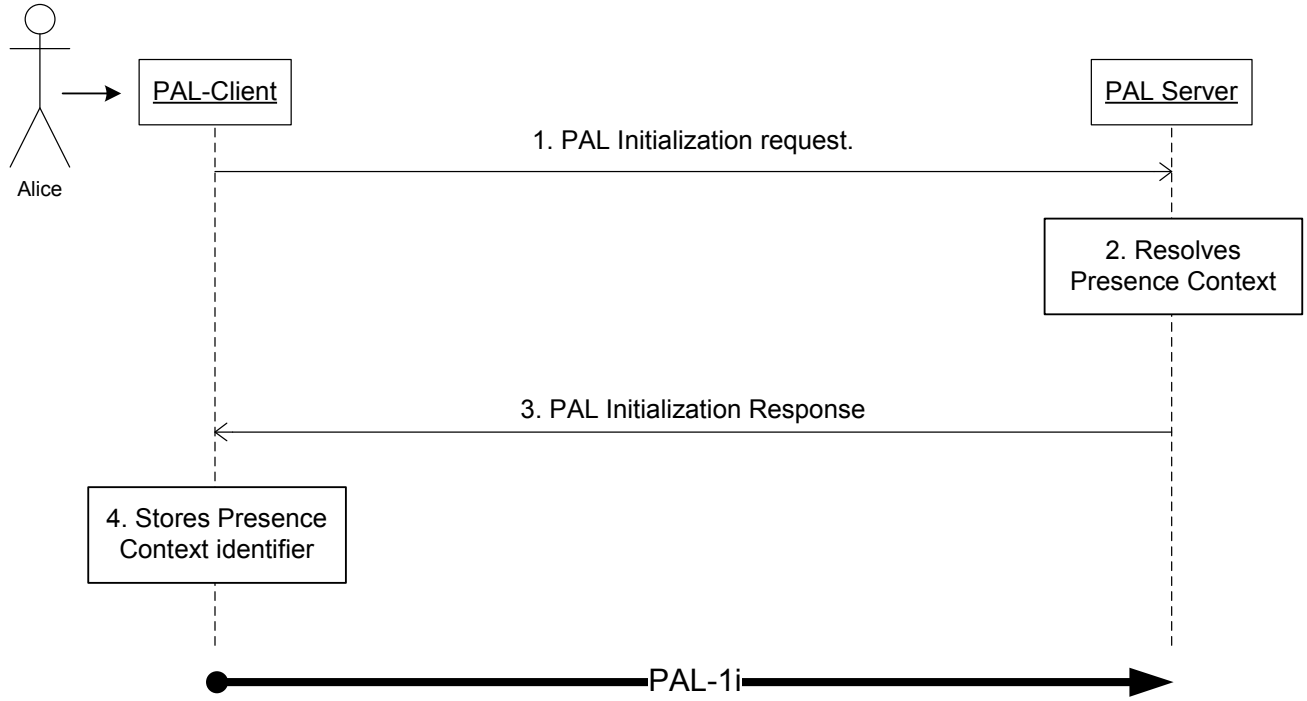

Figure 3: Establishing Presence Context based on a presence aware service

1. A PAL Client that wishes to receive Presence Aspects, issues a PAL Initialization request to the PAL Server with the following information:
    a. A service identifier corresponding to a Presence Aware Service or Class of Service
    b. The public user identity of the corresponding PAL Client (e.g. a SIP URI corresponding with user Alice)
    c. An optional resource URI corresponding to the Presentity (e.g. a SIP URI)
2. Upon receipt of a PAL Initialization request, the PAL Server authorizes the request and resolves an appropriate PAL Presence Context based on a service identifier and optionally watcher-id and/or resource URI.
3. Once a Presence Context has been established, the PAL Server returns a PAL initialization response to the PAL Client, including a unique Presence Context identifier, and optional meta-data (e.g. a baseline Presence Aspect value).

4. The PAL Client stores the Presence Context identifier (and optional meta-data). Alice's IM Service is now able to request and make use of Presence Aspects relative to the established Presence Context.

B.2 Requesting specific presence information.

A PAL Client within Alice 's mobile device, has stored and resolved a Presence Context for a Presence Aware Service 'MyFriendlyChat' from the PAL Server running within Alice's home network domain. Alice's MyFriendlyChat application may now request and make use of specific presence information through a PAL Client. Presence Aspects provide a PAL Client with a view of presence information based on an associated Presence Context, corresponding with one or more Presentities. Figure 4 below, provides an outline of a PAL Client retrieving a Presence Aspect, given an established Presence Context:

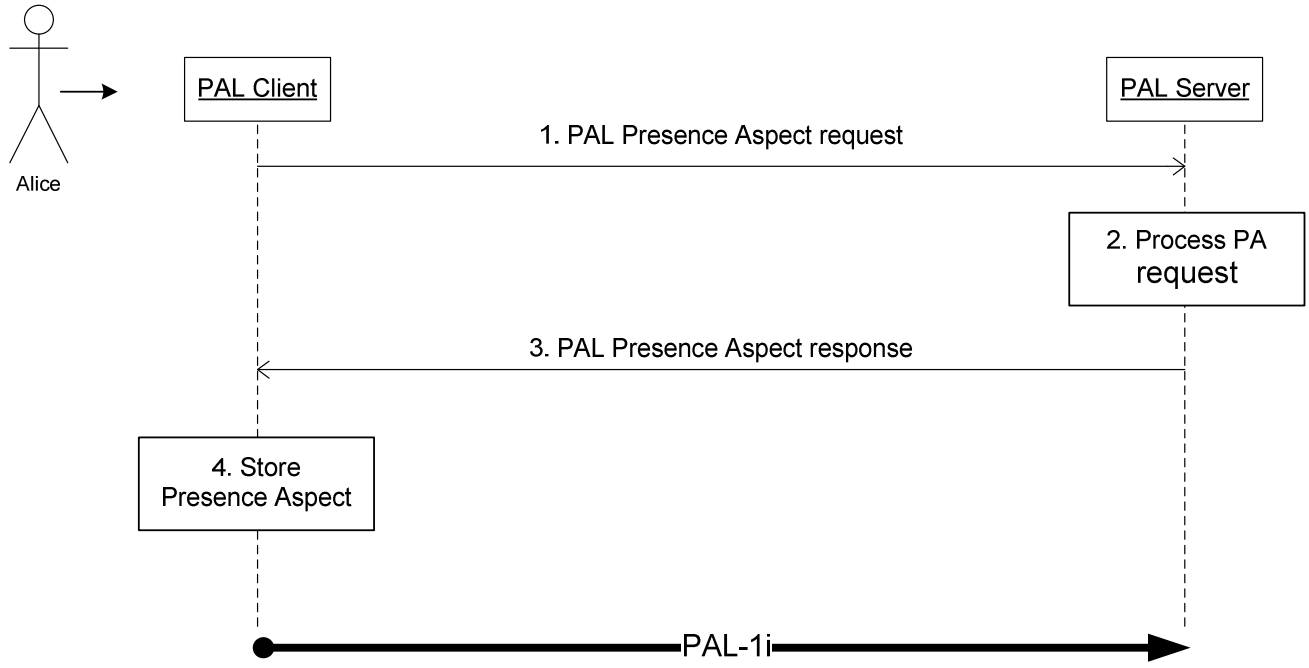

Figure 4: Requesting a Presence Aspect relative to a Presence Context

1. A PAL Client wishing to make use of Presence Aspects sends a PAL Presence Aspect request to the PAL Server with the following information:
    a. A PAL Presence Context identifier corresponding to a particular Presence Aware Service or Class of Service;
    b. A resource URI corresponding to the Presentity (e.g. a SIP URI); and,
    c. The Presence Aspect being requested (e.g. 'contactable').
2. Upon receipt of a PAL Presence Aspect request, the PAL Server authorizes the request and proceeds to evaluate and/or retrieve the requested Presence Aspect associated with the Presence Context.
3. Once a Presence Context has been computed, the PAL Server issues a PAL Presence Aspect response to the PAL Client which includes the Presence Context identifier, and the Presence Aspect value.
4. The PAL Client stores the Presence Aspect corresponding to the given Presence Context which may then be provided to a Presence Aware Service such as 'MyFriendlyChat'.

B.3 Presence Trigger Predefined Action

A PAL Client within Anthony‘s mobile device wishes to receive alerts relating to detected status changes from his daughter Josephine, who is currently away from home attending college. Anthony’s mobile device requests and stores a Presence Context for the ‘Parental Alert’ Presence Aware Service from a PAL Server running within his home network domain. As a result of this request, one or more Presence Triggers are established on behalf of Anthony for individuals of interest (e.g. his daughter Josephine) based on the resolved Presence Context. A Presence Trigger executes a predefined action as a result of a detected Presence Aspect change. Predefined actions may include sending an interested observer, such as Anthony, a notification providing details of the detected Presence Aspect change. Figure 5 below, provides an outline of a PAL Client establishing a Presence Context, and later receiving a detected change to a specified Presence Aspect value for an individual of interest based on the established Presence Context:

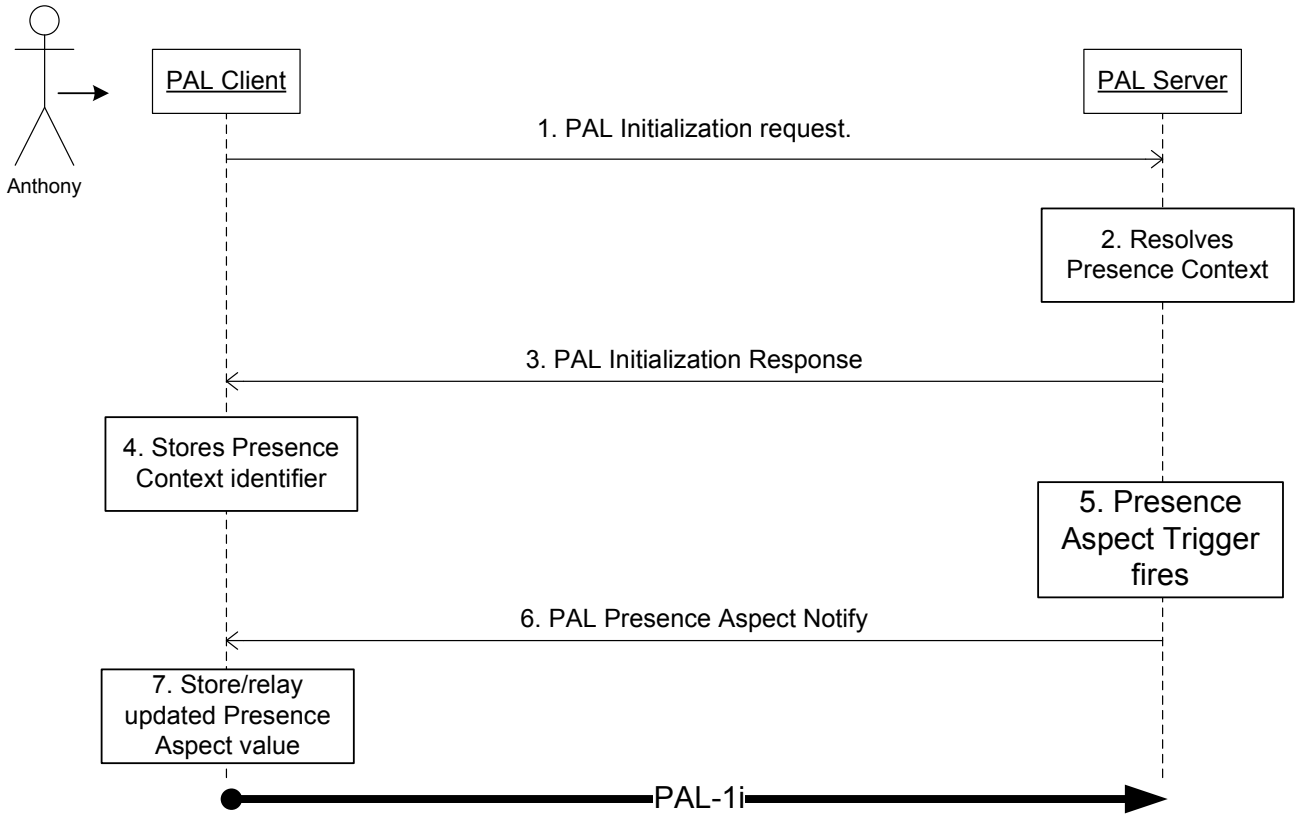

Figure 5: Receiving a Predefined Action corresponding with a Presence Trigger

For brevity, steps 1-4 are omitted. Further details on establishing a Presence Context are as described in Appendix B.1.

5. A PAL Server monitoring Presence Aspects corresponding with a given Presence Context detects a Presence Aspect change associated with a specific Presence Trigger (e.g. ‘onAvailable’) for Presentities of interest. As a result, the predefined Presence Trigger action fires.
6. This results in a notification being sent to the PAL Client. This notification may include the following information:
    a. A PAL Presence Context identifier corresponding to a particular Presence Aware Service or Class of Service;
    b. A resource URI corresponding to the Presentity (e.g. a SIP URI); and,
    c. The detected Presence Aspect value (e.g. Josephine is now considered ‘available’).

7. The PAL Client stores the detected Presence Aspect value change corresponding to the given Presence Context which may then be relayed to a Presence Aware Service such as ‘Parental Alert’.