Presence SIMPLE Architecture

Candidate Version 2.0 – 17 Sep 2009

Open Mobile Alliance

OMA-AD-Presence_SIMPLE-V2_0-20090917-C

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Contents

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Figures

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1. Scope (Informative)

This document defines the architecture for the OMA Presence SIMPLE 2.0 enabler (Presence Enabler), which includes a general network-agnostic model for presence using the IETF SIMPLE specifications and aligned with 3GPP and 3GPP2 Presence Service framework.

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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

Chargeable Event	Use definition from [Dict].
Content Server	The functional entity that is capable of managing MIME objects for presence, allowing the Presence Sources or the PS to store MIME objects, and support retrieval of those objects by the PS or Watchers as required for content indirection.
Notifier	Use definition from [RFC3265].
Permanent Presence State	Static or semi-static Presence Information pertaining to a Presentity that is stored in the Presence XDMS and used by the PS as an input to composition policy.
Presence Information	Use definition from [PRS_RD].
Presence Information Element	Use definition from [PRS_RD].
Presence List	A pre-defined list of Presentities stored in the RLS XDMS which enables a Watcher to subscribe to Presence Information of multiple Presentities using a single subscription.
Presence Publication Rules	Rules consisting of Publication Authorization Rules and Publication Content Rules.
Presence Service	Use definition from [PRS_RD].
Presence Source	Use definition from [PRS_RD].
Presence Subscription Rules	Rules consisting of Subscription Authorization Rules and Subscription Content Rules.
Presentity	Use definition from [PRS_RD].
Publication Authorization Rules	Rules that determine which identities are allowed to publish Presence Information on behalf of a Presentity.
Publication Content Rules	Rules that determine a subset of a Presentity’s Presence Information an authorized identity is allowed to publish.
Request-contained Presence List	An adhoc list of Presentities included in the body of a presence subscription, which enables a Watcher to subscribe to the Presence Information of multiple Presentities using a single subscription.
Request-contained Resource List	An adhoc list of resources included in the body of a subscription, which enables a Subscriber to subscribe to a list of resources using a single subscription.
Request-contained Watcher Information List	An adhoc list of Presentities included in the body of a Watcher Information subscription, which enables a Watcher Information Subscriber to subscribe to the Watcher Information of multiple Presentities using a single subscription.
Resource List	A pre-defined list of resources stored in the RLS XDMS which enables a Subscriber to subscribe to a list of resources using a single subscription.
Resource List Server	A functional entity that accepts and manages subscriptions to Resource Lists and Request-contained Resource Lists. In the context of the Presence Enabler, the RLS accepts and manages subscriptions to Presence Lists and Request-contained Presence Lists.
Subscriber	Use definition from [RFC3265].

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Subscription Authorization Rules	Rules that determine which Watchers are allowed to subscribe for Presence Information of a Presentity.
Subscription Content Rules	Rules that determine the subset of a Presentity's Presence Information an authorized Watcher is allowed to receive.
URI List	A collection of URIs put together for convenience.
Watcher	Use definition from [PRS_RD].
Watcher Information	Use definition from [PRS_RD].
Watcher Information Subscriber	Use definition from [PRS_RD].

3.3 Abbreviations

3GPP	3rd Generation Partnership Project
3GPP2	3rd Generation Partnership Project 2
AD	Architecture Document
DM	Device Management
GAA	Generic Authentication Architecture
HLR	Home Location Register
HSA	Home Subscription Agent
HTTP	Hyper Text Transfer Protocol
IETF	Internet Engineering Task Force
IMS	IP Multimedia Subsystem
IP	Internet Protocol
MIME	Multipurpose Internet Mail Extension
MMD	MultiMedia Domain
MSC	Mobile Switching Centre
OMA	Open Mobile Alliance
PIDF	Presence Information Data Format
PoC	Push-to-talk over Cellular
PRS	Presence SIMPLE
PS	Presence Server
RD	Requirement Document
RLS	Resource List Server
SIMPLE	SIP for Instant Messaging and Presence Leveraging Extensions
SIP	Session Initiation Protocol
UE	User Equipment
URI	Uniform Resource Identifier
XCAP	XML Configuration Access Protocol
XDM	XML Document Management
XDMC	XDM Client

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XDMS	XDM Server
XML	eXtensible Markup Language

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4. Introduction (Informative)

The OMA Presence SIMPLE (PRS) enabler is a service that manages the collection and controlled dissemination of Presence Information. Multiple standards fora are working on presence. This section describes the OMA PRS enabler and how it relates to similar work of other industry/standards fora.

The IETF has defined protocols and formats for presence (see [RFC3265], [RFC3856], [RFC3857], [RFC3863], [RFC3903], [RFC4662], etc.). The work of OMA and other fora leverages these standards.

3GPP and 3GPP2 have defined a Presence Service framework (see [3GPP-TS_23.141] and [3GPP2-X.S0027-001]). This framework provides a presence reference architecture for both the "network layer" and "application layer", meaning that 3GPP and 3GPP2 specifications (see [3GPP-TS_24.141] and [3GPP2-X.S0027-003]) define end-to-end Presence Information flows. The term "network layer" refers to the communication that is required between the Presence Service functional elements (e.g. PS) and various network elements as they are defined in the network architectures of 3GPP and 3GPP2 (e.g. MSC, HLR). The term "application layer" refers to the communication that is required between the various Presence Service elements (e.g. PS and Presence Source), which includes the "application layer" functional entities. OMA PRS is aligned with 3GPP and 3GPP2 Presence Service framework while it fulfils OMA-specific requirements.

Additionally, there are Presence Services that exist or can be envisaged that do not leverage core network infrastructure as defined by 3GPP and 3GPP2. However, those Presence Services are still relevant and thus supported by this architecture.

4.1 Version 1.1

The OMA PRS 1.1 enabler defines a Presence Service framework consisting of the following functional entities:

- a Presence Source, which publishes Presence Information to be available to interested parties (Watchers);
- a Watcher, which subscribes to receive published Presence Information made available by Presence Sources;
- a Watcher Information Subscriber, which subscribes to receive information about Watchers;
- a Presence Server, which receives Presence Information from Presence Sources, makes Presence Information available to Watchers and Watcher Information available to Watcher Information Subscribers; and
- a Resource List Server, which provides Watchers with an efficient method of subscribing for Presence Information of multiple Presentities.

The OMA PRS 1.1 enabler makes use of various data repositories in the network that store information related to Presentities and Watchers, specifically:

- The Presence XDMS for storage of documents related to a Presentity, such as Presence Subscription Rules;
- The Shared XDMS for storing URI Lists which may be referenced from other documents;
- The RLS XDMS for storing Presence Lists; and
- The Content Server for storing MIME objects.

4.2 Version 2.0

The OMA PRS 2.0 enabler extends the OMA Presence Service framework with the following functional entity:

- a Home Subscription Agent, which controls the Watcher's Presence Service use in the Watcher's home domain.

The OMA PRS 2.0 enabler makes use of an additional data repository in the network called the Presence Content XDMS for storing media files related to Presence Information, and extends the Presence XDMS to store the Presentity's Presence Publication Rules and Permanent Presence State.

The Shared XDMS in OMA PRS 1.1 is renamed the Shared List XDMS in OMA PRS 2.0, in alignment with OMA XDM 2.0.

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5. Architectural Model

5.1 Dependencies

5.1.1 Collaboration with Service Enablers

The Presence Enabler provides a variety of services that can be invoked from other enablers. Those enablers can assume one or more of the following roles:

- Presence Source: publishes Presence Information to the Presence Enabler;
- Watcher: subscribes to retrieve Presence Information from the Presence Enabler;
- Watcher Information Subscriber: subscribes to retrieve Watcher Information from the Presence Enabler; and
- XDMC: manages XML documents stored in the Presence XDMS, RLS XDMS and Presence Content XDMS.

5.1.2 Collaboration with Device Management

The Device Management Enabler can be utilized to configure terminals with relevant data. The Presence Service uses the DM-1 reference point to configure the terminal, using mechanisms specified in [DM_Bootstrap] and [DM_ERELD].

5.1.3 Collaboration with XDM Enabler

The Presence Enabler defines three XDMSs – Presence XDMS, RLS XDMS and Presence Content XDMS. The XML documents stored in these three XDMSs can be accessed using procedures defined in the XDM Enabler.

The PS has a co-located XDMC in order to interact with the Presence XDMS and the Shared List XDMS. The RLS has a co-located XDMC in order to interact with the RLS XDMS and the Shared List XDMS.

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5.2 Architectural Diagram

The following figure illustrates the OMA Presence architecture.

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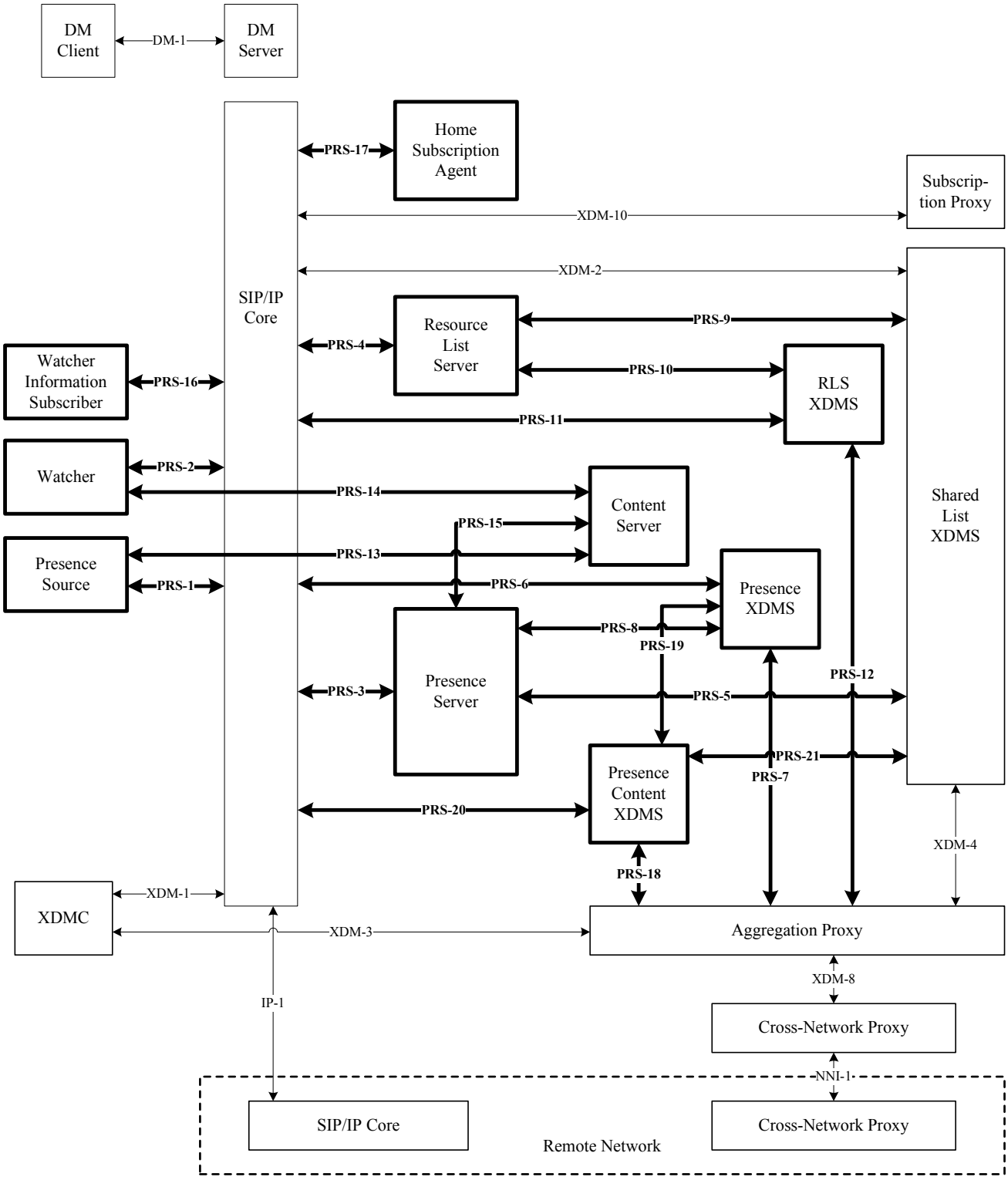

NOTE: Bold boxes identify Presence SIMPLE functional entities that are defined by this document.
Bold arrows identify Presence SIMPLE reference points that are defined by this document.

Figure 1: Presence SIMPLE Architecture

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The access network used by the Presence architecture may include any radio or other access as well as the other nodes required to support IP connectivity and IP mobility.

5.3 Functional Components and Reference Points

5.3.1 Presence Functional Entities

This section describes the entities specified as part of the Presence Enabler.

5.3.1.1 Presence Server

The PS is an entity that accepts, stores and distributes Presence Information. The PS supports the following:

- Authorizes publications from Presence Sources representing the Presentity or another Presentity;
- Accepts and stores Presence Information published by Presence Sources according to [RFC3903];
- Composes Presence Information from Presence Sources and Permanent Presence Information from the Presence XDMS;
- Authorizes Watchers' subscriptions and distributes Presence Information according to [RFC3265] and [RFC3856];
- Authorizes Watcher Information Subscribers' subscriptions and distributes Watcher Information according to [RFC3265], [RFC3857], and other extensions;
- Triggers the conveyance of Presence Information from Presence Sources;
- Regulates the distribution of Presence Information and Watcher Information in the manner as requested by Watchers and Watcher Information Subscribers;
- Stores or retrieves MIME objects to/from the Content Server;
- Subscribes to changes to documents stored in the Shared List XDMS and Presence XDMS;
- Fetches documents from the Shared List XDMS and the Presence XDMS;
- Controls simultaneous subscriptions per Presentity; and
- Compresses/decompresses the SIP notification message bodies.

5.3.1.2 Presence Source

The Presence Source is an entity that provides Presence Information to a Presence Service. The Presence Source can be located in a user's terminal or within a network entity. The Presence Source supports the following:

- Publishes Presence Information on behalf of the Presentity according to [RFC3903];
- Monitors extended Watcher Information via a Watcher Information Subscriber for optimized publication decision;
- Publishes Presence Information on behalf of the Presentity based on a trigger from the Presence Server;
- Stores MIME objects to the Content Server;
- Stores MIME objects in the Presence Content XDMS;
- Compresses/decompresses the presence-related SIP messages when the Presence Source resides in the terminal;
- Publishes Presence Information on behalf of another Presentity;
- Fetches the XML document with the Publication Content Rules Presence Source View from the Presence XDMS; and

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- Manages Permanent Presence Information according to [RFC4827] via an XDMC.

5.3.1.3 Watcher

A Watcher is an entity that requests Presence Information about a Presentity or multiple Presentities from the Presence Service. The Watcher can be located in a user's terminal or within a network entity. The Watcher supports the following:

- Subscribes to a Presentity's Presence Information according to [RFC3265], [RFC3856], and [IETF-SubNotEtag];
- Subscribes to multiple Presentities' Presence Information according to [RFC3265], [IETF-SubNotEtag], [RFC4662], and [RFC5367];
- Retrieves MIME objects from the Content Server;
- Retrieves MIME objects from the Presence Content XDMS;
- Requests the PS, RLS or HSA to regulate the distribution of Presence Information;
- Processes Presence Information; and
- Compresses/decompresses the presence-related SIP messages when the Watcher resides in the terminal.

5.3.1.4 Home Subscription Agent (HSA)

The HSA is a functional entity that controls the Subscriber's service use in the Subscriber's home domain. The HSA may be re-used by Services that make use of the SIP event notification mechanism defined in [RFC3265].

The HSA supports the following functions:

- Authorizes the Subscriber's service use in the Subscriber's home domain;
- Limits the number of subscriptions for the Subscriber; and
- Requests the Notifier to regulate the notification traffic based on the Subscriber's preferences.

5.3.1.4.1 Home Subscription Agent in the context of the Presence Enabler

In the Presence Enabler the HSA controls the Watcher's Presence Service use in the Watcher's home domain.

The HSA supports the following functions:

- Authorizes the Watcher's Presence Service use in the Watcher's home domain;
- Limits the number of subscriptions for the Watcher; and
- Requests the PS or RLS to regulate the presence-related notification traffic based on the Watcher's preferences.

5.3.1.5 Watcher Information Subscriber

A Watcher Information Subscriber is an entity that requests Watcher Information about a Presentity from the Presence Service. The Watcher Information Subscriber can be located in a user's terminal or within a network entity. The Watcher Information Subscriber supports the following:

- Subscribes to Watcher Information according to [RFC3265], [RFC3857], [IETF-SubNotEtag] and other extensions;
- Subscribes to multiple Presentities' Watcher Information according to [RFC3265], [IETF-SubNotEtag] and [RFC5367];
- Subscribes to Watcher Information based on a trigger from the PS;

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- Requests the PS to regulate the distribution of Watcher Information; and
- Compresses/decompresses the presence-related SIP messages when the Watcher Information Subscriber resides in the terminal.

5.3.1.6 Resource List Server (RLS)

The RLS is a functional entity that accepts and manages subscriptions to Lists and Request-contained Resource Lists, which enables a Subscriber to subscribe to a list of resources using a single subscription transaction. The RLS may be re-used by Services that make use of the SIP event notification mechanism defined in [RFC3265] and the SIP event notification extension for resource lists defined in [RFC4662]. The RLS supports the following:

- Authorizes Subscribers' subscriptions and distributes the resource state of the list of resources according to [RFC3265], [RFC4662], [RFC5367] and [IETF-SubNotEtag];
- Performs back-end subscriptions on behalf of the Subscriber according to [RFC3265], [RFC4662] and [IETF-SubNotEtag];
- Regulates the distribution of the resource state of the list of resources in the manner as requested by Subscribers;
- Propagates the Subscriber's request to regulate the distribution of the resource state in the back-end subscriptions;
- Subscribes to changes to documents stored in the Shared List XDMS and RLS XDMS; and
- Fetches documents from the Shared List XDMS and RLS XDMS.

5.3.1.6.1 Resource List Server in the context of the Presence Enabler

In the Presence Enabler the RLS is the functional entity that accepts and manages subscriptions to:

- Presence Lists and Request-contained Presence Lists, which enables a Watcher to subscribe to the Presence Information of multiple Presentities using a single subscription transaction; and
- Request-contained Watcher Information Lists, which enables a Watcher Information Subscriber to subscribe to the Watcher Information of multiple Presentities using a single subscription transaction.

The RLS supports the following:

- Authorizes Watchers' subscriptions and distributes Presence Information according to [RFC3265], [RFC3856], [RFC4662], [RFC5367] and [IETF-SubNotEtag];
- Accepts Watcher Information Subscribers' subscriptions and distributes Watcher Information according to [RFC3265], [RFC3857], [RFC5367] and [IETF-SubNotEtag];
- Performs back-end subscriptions on behalf of the Watcher according to [RFC3265], [RFC3856], [RFC4662] and [IETF-SubNotEtag];
- Performs back-end subscriptions on behalf of the Watcher Information Subscriber according to [RFC3265], [RFC3857], [RFC4662] and [IETF-SubNotEtag];
- Regulates the distribution of Presence Information in the manner as requested by Watchers;
- Regulates the distribution of Watcher Information in the manner as requested by Watcher Information Subscribers;
- Propagates the Watcher's request to regulate the distribution of Presence Information in the back-end subscriptions;
- Propagates the Watcher Information Subscriber's request to regulate the distribution of Watcher Information in the back-end subscriptions;

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- Subscribes to changes to documents stored in the Shared List XDMS and RLS XDMS; and
- Fetches documents from the Shared List XDMS and RLS XDMS.

5.3.1.7 Presence XML Document Management Server (Presence XDMS)

The Presence XDMS is an XDMS defined in [XDM_AD] that supports the following functions:

- Manages XML documents (e.g. Presence Subscription Rules, Permanent Presence State) which are specific to the use of a PS;
- Enables subscriptions to changes to documents stored in the Presence XDMS; and
- Notifies subscribers of changes to the documents stored in the Presence XDMS.

5.3.1.8 Resource List Server XML Document Management Server (RLS XDMS)

The RLS XDMS is an XDMS defined in [XDM_AD] that supports the following functions:

- Manages XML documents (e.g. Presence Lists), which are specific to the use of a RLS;
- Enables subscriptions to changes to documents stored in the RLS XDMS; and
- Notifies subscribers of changes to the documents stored in the RLS XDMS.

5.3.1.9 Content Server

The Content Server is the functional entity that is capable of managing MIME objects for presence, allowing the Presence Sources or the PS to store MIME objects, and support retrieval of those objects by the Presence Server or the Watchers as required for content indirection according to [RFC4483].

The Content Server relies on external authentication and authorization done for the Presence Sources and Watchers. When realized with 3GPP IMS or 3GPP2 MMD networks, GAA or GBA as specified in [3GPP-TS_33.222]) and [3GPP2-S.S0114], respectively can be used for that purpose.

The authentication and authorization done by the Content Server for the PS is outside the scope of this document.

NOTE: Any usage of the Content Server for tasks not related to presence content indirection is outside the scope of this document.

5.3.1.10 Presence Content XML Document Management Server (Presence Content XDMS)

The Presence Content XDMS is the functional entity that is capable of managing media files for the Presence Service. The Presence Source can store a media file in the Presence Content XDMS and include a static URI pointing to that media file as part of Presence Information. The Watcher can use the URI to obtain the media file using XDMC procedures.

The Presence Content XDMS is an XDMS defined in [XDM_AD] that supports the following functions:

- Manages XML documents containing media files (e.g. icons) referenced from Presence Information as URI values in appropriate Presence Information Elements (e.g. <status-icon> element);
- Enables subscriptions to changes to documents stored in the Presence Content XDMS;
- Notifies subscribers of changes to the documents stored in the Presence Content XDMS; and
- Performs authorization of access to media files based on the Presence Subscription Rules.

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5.3.2 External Entities Providing Services to Presence

This section describes the entities specified by other OMA enablers or external organizations.

5.3.2.1 SIP/IP Core

The SIP/IP Core is a network of servers, such as proxies and/or registrars that perform a variety of services in support of the Presence Service, such as routing, authentication, compression, etc. The specific features offered by different types of SIP/IP Core will depend on the particulars of those networks.

When the Presence Service is realized using 3GPP IMS or 3GPP2 MMD networks, the presence functional entities will utilize the capabilities as specified in [3GPP-TS_23.228] and [3GPP2-X.S0013-002], respectively. In such cases the SIP/IP Core performs the following additional functions in support of the Presence Service:

- Routes the SIP signalling between the presence functional entities;
- Provides discovery and address resolution services;
- Supports SIP compression/decompression;
- Performs authentication and authorization of the presence functional entities;
- Maintains the registration state; and
- Provides charging information.

5.3.2.2 Shared List XML Document Management Server (Shared List XDMS)

The functionality of the Shared List XDMS is described in [XDM_AD].

5.3.2.3 Subscription Proxy

The functionality of the Subscription Proxy is described in [XDM_AD].

5.3.2.4 XML Document Management Client (XDMC)

The XDMC is defined in [XDM_AD] and supports the following functions:

- Manages XML documents (e.g., Presence Subscription Rules and Permanent Presence State); and
- Subscribes to changes to documents stored in any XDMS.

5.3.2.5 Aggregation Proxy

The functionality of the Aggregation Proxy is described in [XDM_AD].

5.3.2.6 Cross-Network Proxy

The functionality of the Cross-Network Proxy is described in [XDM_AD].

5.3.2.7 Device Management Server

The Device Management Server supports the following functions that are needed in support of the Presence Service:

- Initializes and updates all the configuration parameters necessary for the presence functional entities within the terminals (e.g. Watcher, Presence Source, etc.).

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5.3.2.8 Device Management Client

The Device Management Client performs the following functions that are needed in support of the Presence Service:

- Receives the initial configuration parameters and the updated parameters needed for Presence Service sent by the Device Management Server.

5.3.3 Description of the Reference Points

The Reference Points named as PRS are in scope of this Architecture.

5.3.3.1 Reference Point PRS-1: Presence Source – SIP/IP Core

The PRS-1 reference point supports the communication between the Presence Source and the SIP/IP Core. The protocol for the PRS-1 reference point is SIP and the traffic is routed to (and from) the PS via the SIP/IP Core.

The PRS-1 reference point provides the following functions:

- Publishing Presence Information from Presence Sources to the PS;
- Regulating the publication of Presence Information;
- Triggering of the conveyance of Presence Information from Presence Sources; and
- Compressing/decompressing SIP messages when the Presence Source resides in the terminal.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the PRS-1 reference point conforms with the following reference points: Pep, Pex, Pen depending on the instantiation of the Presence Source (e.g. PUA, PNA, PEA) as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.2 Reference Point PRS-2: Watcher – SIP/IP Core

The PRS-2 reference point supports the communication between the Watcher and the SIP/IP Core. The protocol for the PRS-2 reference point is SIP and the traffic is routed to (and from) the PS, RLS, or HSA via the SIP/IP Core.

The PRS-2 reference point provides the following functions:

- Subscribing to a single Presentity's Presence Information and receiving notifications;
- Subscribing to Presence Information and receiving notifications for Presence Lists and Request-contained Presence Lists;
- Compressing/decompressing SIP messages when the Watcher resides in the terminal; and
- Requesting the PS, RLS or HSA to regulate the distribution of Presence Information according to Watcher preferences.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the PRS-2 reference point conforms with the Pw reference point as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.3 Reference Point PRS-3: SIP/IP Core – Presence Server

The PRS-3 reference point supports the communication between the SIP/IP Core and the PS. The protocol for the PRS-3 reference point is SIP.

The PRS-3 reference point provides the following functions:

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- Publishing Presence Information;
- Subscribing to a single Presentity's Presence Information and receiving notifications pertaining to the Presentity;
- Subscribing to Watcher Information and receiving notifications;
- Subscribing to changes to documents stored in the Shared List XDMS or Presence XDMS and receiving notifications;
- Regulating publications of Presence Information;
- Compressing/decompressing of SIP notification message bodies;
- Triggering the conveyance of Presence Information from Presence Sources;
- Triggering the subscription to Watcher Information from the Presence Server to the Watcher Information Subscriber;
- Regulating notifications of Presence Information as requested by Watchers; and
- Regulating notifications of Watcher Information as requested by Watcher Information Subscribers.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the PRS-3 reference point conforms with the Pwp reference point as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.4 Reference Point PRS-4: SIP/IP Core – Resource List Server

The PRS-4 reference point supports the communication between the SIP/IP Core and the RLS. The protocol for the PRS-4 reference point is SIP.

The PRS-4 reference point provides the following functions:

- Receiving a subscription and sending aggregated notifications for a Resource List and Request-contained Resource List;
- Subscribing to resource state changes and receiving notifications for each resources in a Resource List and Request-contained Resource List;
- Regulating the aggregated notifications of a Resource List and Request-contained Resource List as requested by Subscribers;
- Subscribing to changes to documents stored in the Shared List XDMS or RLS XDMS and receiving notifications;
- Compressing of SIP notification message bodies; and
- Propagating the Subscriber's request to regulate the distribution of the resource state in the back-end subscriptions;

In the context of the Presence Enabler, the PRS-4 reference point provides the following functions:

- Receiving a subscription and sending aggregated notifications for a Presence List and Request-contained Presence List;
- Receiving a subscription and sending aggregated notifications for a Request-contained Watcher Information List;
- Subscribing to Presence Information and receiving notifications for each Presentity in a Presence List and Request-contained Presence List;

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- Subscribing to Watcher Information and receiving notifications for each Presentity in a Request-contained Watcher Information List;
- Regulating the aggregated notifications of a Presence List and Request-contained Presence List, as requested by Watchers;
- Regulating the aggregated notifications of a Request-contained Watcher Information List, as requested by Watcher Information Subscribers;
- Subscribing to changes to documents stored in the Shared List XDMS or RLS XDMS and receiving notifications;
- Compressing of SIP notification message bodies;
- Propagating the Watcher's request to regulate the distribution of Presence Information in the back-end subscriptions; and
- Propagating the Watcher Information Subscriber's request to regulate the distribution of Watcher Information in the back-end subscriptions.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the PRS-4 reference point conforms with the Pwp reference point as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.5 Reference Point PRS-5: Presence Server – Shared List XDMS

The PRS-5 reference point supports the communication between the Shared List XDMS and the PS. The protocol for the PRS-5 reference point is XCAP.

The PRS-5 reference point provides the following function:

- Transferring URI Lists to the PS.

5.3.3.6 Reference Point PRS-6: Presence XDMS – SIP/IP Core

The PRS-6 reference point supports the communication between the Presence XDMS and the SIP/IP Core. The protocol for the PRS-6 reference point is SIP.

The PRS-6 reference point provides the following function:

- Subscribing to the modification of presence-specific XML documents, and receiving notifications.

5.3.3.7 Reference Point PRS-7: Aggregation Proxy – Presence XDMS

The PRS-7 reference point is between the Aggregation Proxy and the Presence XDMS. The protocol for the PRS-7 reference point is XCAP.

The PRS-7 reference point provides the following function:

- Managing presence-specific XML documents (e.g. create, modify, retrieve, delete).

5.3.3.8 Reference Point PRS-8: Presence Server – Presence XDMS

The PRS-8 reference point is between the PS and the Presence XDMS. The protocol for the PRS-8 reference point is XCAP.

The PRS-8 reference point provides the following function:

- Transferring presence-specific XML documents (e.g. Presence Subscription Rules, Permanent Presence State) from the Presence XDMS to the PS.

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5.3.3.9 Reference Point PRS-9: Resource List Server – Shared List XDMS

The PRS-9 reference point supports the communication between the Shared List XDMS and the RLS. The protocol for the PRS-9 reference point is XCAP.

The PRS-9 reference point provides the following function:

- Transferring URI Lists to the RLS.

5.3.3.10 Reference Point PRS-10: Resource List Server – RLS XDMS

The PRS-10 reference point supports the communication between the RLS XDMS and the RLS. The protocol for the PRS-10 reference point is XCAP.

The PRS-10 reference point provides the following function:

- Transferring RLS-specific XML documents (e.g. Presence Lists) from the RLS XDMS to the RLS.

5.3.3.11 Reference Point PRS-11: RLS XDMS – SIP/IP Core

The PRS-11 reference point supports the communication between the RLS XDMS and the SIP/IP Core. The protocol for the PRS-11 reference point is SIP.

The PRS-11 reference point provides the following functions:

- Subscribing to the modification of RLS-specific XML documents, and receiving notifications.

5.3.3.12 Reference Point PRS-12: Aggregation Proxy – RLS XDMS

The PRS-12 reference point is between the Aggregation Proxy and the RLS XDMS. The protocol for the PRS-12 reference point is XCAP.

The PRS-12 reference point provides the following functions:

- Managing RLS-specific XML documents (e.g. create, modify, retrieve, delete).

5.3.3.13 Reference Point PRS-13: Presence Source – Content Server

The PRS-13 reference point is between the Presence Source and the Content Server. The protocol for the PRS-13 reference point is HTTP.

The PRS-13 reference point provides the following function:

- Storing of MIME objects related to presence publications in the Content Server.

NOTE: The Presence Source is responsible to correlate the presence publication with the MIME objects it has stored on the Content Server.

5.3.3.14 Reference Point PRS-14: Watcher – Content Server

The PRS-14 reference point is between the Watcher and the Content Server. The protocol for the PRS-14 reference point is HTTP.

The PRS-14 reference point provides the following function:

- Retrieving of MIME objects related to presence notifications from the Content Server.

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5.3.3.15 Reference Point PRS-15: Presence Server – Content Server

The PRS-15 reference point is between the PS and the Content Server. The protocol for the PRS-15 reference point is HTTP.

The PRS-15 reference point provides the following functions:

- Retrieving of MIME objects related to presence publications from the Content Server; and
- Storing of MIME objects related to presence notifications in the Content Server.

5.3.3.16 Reference Point PRS-16: Watcher Information Subscriber – SIP/IP Core

The PRS-16 reference point is between the Watcher Information Subscriber and the SIP/IP Core. The protocol for the PRS-16 reference point is SIP.

The PRS-16 reference point provides the following functions:

- Subscribing to Watcher Information and receiving notifications;
- Subscribing to Watcher Information and receiving notifications for Request-contained Watcher Information Lists;
- Triggering the subscription to Watcher Information from the Presence Server to the Watcher Information Subscriber;
- Compressing/decompressing SIP messages when the Watcher Information Subscriber resides in the terminal; and
- Requesting the PS or RLS to regulate the distribution of Watcher Information according to Watcher Information Subscriber preferences.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the PRS-16 reference point conforms with the Pep reference point as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.17 Reference Point PRS-17: SIP/IP Core – Home Subscription Agent

The PRS-17 reference point supports the communication between the SIP/IP Core and the HSA. The protocol for the PRS-17 reference point is SIP.

The PRS-17 reference point provides the following functions:

- Receiving subscriptions to resource state changes and sending notifications;
- Authorizing and controlling the Subscriber's service use in the Subscriber's home domain;
- Sending back-end subscriptions on behalf of the Subscriber and receiving notifications;
- Receiving Subscriber's preferences on the regulation of the notification traffic; and
- Requesting the Notifier to regulate the notification traffic based on Subscriber's preferences.

In the context of the Presence Enabler, the PRS-17 reference point provides the following functions:

- Receiving subscriptions to Presence Information and sending notifications;
- Authorizing and controlling the Watcher's access to the Presence Service;
- Sending back-end subscriptions on behalf of the Watcher and receiving notifications;
- Receiving Watcher's preferences on the regulation of the notification traffic; and

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- Requesting the PS to regulate the notification traffic based on Watcher's preferences.

5.3.3.18 Reference Point PRS-18: Aggregation Proxy – Presence Content XDMS

The PRS-18 reference point is between the Aggregation Proxy and the Presence Content XDMS. The protocol for the PRS-18 reference point is XCAP.

The PRS-18 reference point provides the following function:

- Managing Presence Content specific XML documents (e.g. create, modify, retrieve, delete).

5.3.3.19 Reference Point PRS-19: Presence Content XDMS – Presence XDMS

The PRS-19 reference point is between the Presence Content XDMS and the Presence XDMS. The protocol for the PRS-19 reference point is XCAP.

The PRS-19 reference point provides the following function:

- Transferring Presence Content specific XML documents (e.g. Presence Subscription Rules) from the Presence XDMS to the Presence Content XDMS.

5.3.3.20 Reference Point PRS-20: Presence Content XDMS – SIP/IP Core

The PRS-20 reference point supports the communication between the Presence Content XDMS and the SIP/IP Core. The protocol for the PRS-20 reference point is SIP.

The PRS-20 reference point provides the following functions:

- Subscribing to the modification of Presence Content specific XML documents, and receiving notifications.

5.3.3.21 Reference Point PRS-21: Presence Content XDMS – Shared List XDMS

The PRS-21 reference point supports the communication between the Presence Content XDMS and the Shared List XDMS. The protocol for the PRS-21 reference point is XCAP.

The PRS-21 reference point provides the following function:

- Transferring URI Lists to the Presence Content XDMS.

5.3.3.22 Reference Point XDM-1: XDM Client – SIP/IP Core

The XDM-1 reference point is described in [XDM_AD].

5.3.3.23 Reference Point XDM-2: Shared List XDMS – SIP/IP Core

The XDM-2 reference point is described in [XDM_AD].

5.3.3.24 Reference Point XDM-3: XDM Client – Aggregation Proxy

The XDM-3 reference point is described in [XDM_AD].

5.3.3.25 Reference Point XDM-10: Subscription Proxy – SIP/IP Core

The XDM-10 reference point is described in [XDM_AD].

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5.3.3.26 Reference Point XDM-4: Aggregation Proxy – Shared List XDMS

The XDM-4 reference point is described in [XDM_AD].

5.3.3.27 Reference Point XDM-8: Aggregation Proxy – Cross-Network Proxy

The XDM-8 reference point is described in [XDM_AD].

5.3.3.28 Reference Point NNI-1: Cross-Network Proxy – Cross-Network Proxy of remote network

The NNI-1 reference point is described in [XDM_AD].

5.3.3.29 Reference Point IP-1: SIP/IP Core – SIP/IP Core of remote network

The IP-1 reference point supports the communication between the SIP/IP Core and the SIP/IP Core of the remote network. The protocol for the IP-1 reference point is SIP.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the IP-1 reference point conforms with the Pw reference point as specified in [3GPP-TS_23.141] and [3GPP2-X.S0027-001].

5.3.3.30 Reference Point DM-1: DM Client – DM Server

The DM-1 reference point is described in [DM_Bootstrap] and [DM_ERELD]. The Presence Enabler defines the presence configuration object(s).

5.3.4 Presence Information Format

The Presence Service uses the Presence Information Data Format (PIDF) as specified in [RFC3863] and its extensions as the base format through which Presence Information is represented.

The format and the semantics of the Presence Information are specified in [PDE_DDS].

5.3.5 Presence Subscription Rules

The following sections describe Presence Subscription Rules that Presentities can define to control the dissemination of their Presence Information. Presence Subscription Rules consist of Subscription Authorization Rules and Subscription Content Rules.

5.3.5.1 Subscription Authorization Rules

Subscription Authorization Rules determine how incoming subscriptions are handled.

Subscription Authorization Rules define which Watchers are allowed to subscribe to the Presence Information of a Presentity. The Subscription Authorization Rules may include lists that can be stored in the Presence XDMS or the Shared List XDMS.

The Subscription Authorization Rules support the following actions:

- Accept;
- Reject;
- Polite block; and

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- Deferred decision.

The document containing the Subscription Authorization Rules is stored in the Presence XDMS.

5.3.5.2 Subscription Content Rules

The Subscription Content Rules determine which Presence Information is disseminated to Watchers that have been accepted by Subscription Authorization Rules. A Presentity can define Subscription Content Rules that apply to one or more Watchers.

The document containing the Subscription Authorization Rules also includes the Subscription Content Rules.

5.3.6 Presence Publication Rules

The following sections describe Presence Publication Rules that Presentities can define to control the publication of their Presence Information.

5.3.6.1 Publication Authorization Rules

Publication Authorization Rules determine how publications are handled.

Publication Authorization Rules determine which identities are allowed to publish the Presence Information. They may include lists that can be stored in the Presence XDMS or the Shared List XDMS.

The Publication Authorization Rules support the following actions:

- Block; and
- Allow.

The document containing the Publication Authorization Rules is stored in the Presence XDMS.

5.3.6.2 Publication Content Rules

The Publication Content Rules determine a subset of Presence Information an authorized identity is allowed to publish. A Presentity can define Publication Content Rules that apply to one or more identities.

The document containing the Publication Authorization Rules also includes the Publication Content Rules.

5.3.7 Charging

Appropriate charging mechanisms may need to be provided by the underlying network or other suitable entities in order to support the charging requirements described in [PRS_RD]. One such mechanism is through the OMA Charging Enabler, described in the following section.

Description of how charging is performed is beyond the scope of the present specification.

5.3.7.1 Support of Charging through the OMA Charging Enabler

The OMA Charging Enabler (see [CHG_AD]) coordinates charging data triggers and flow from OMA enablers into an underlying charging infrastructure, supporting online and offline charging. Presence entities that may optionally report Chargeable Events are:

- PS;
- RLS;

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- Presence XDMS;
- Presence Content XDMS;
- RLS XDMS;
- Content Server; and
- HSA.

The above entities act as Charging Enabler Users as defined in [CHG_AD], and figure 2 shows the reference points between these entities and the Charging Enabler. Two reference points are currently supported by the Charging Enabler, CH-1 for offline charging and CH-2 for online charging. These are described in [CHG_AD].

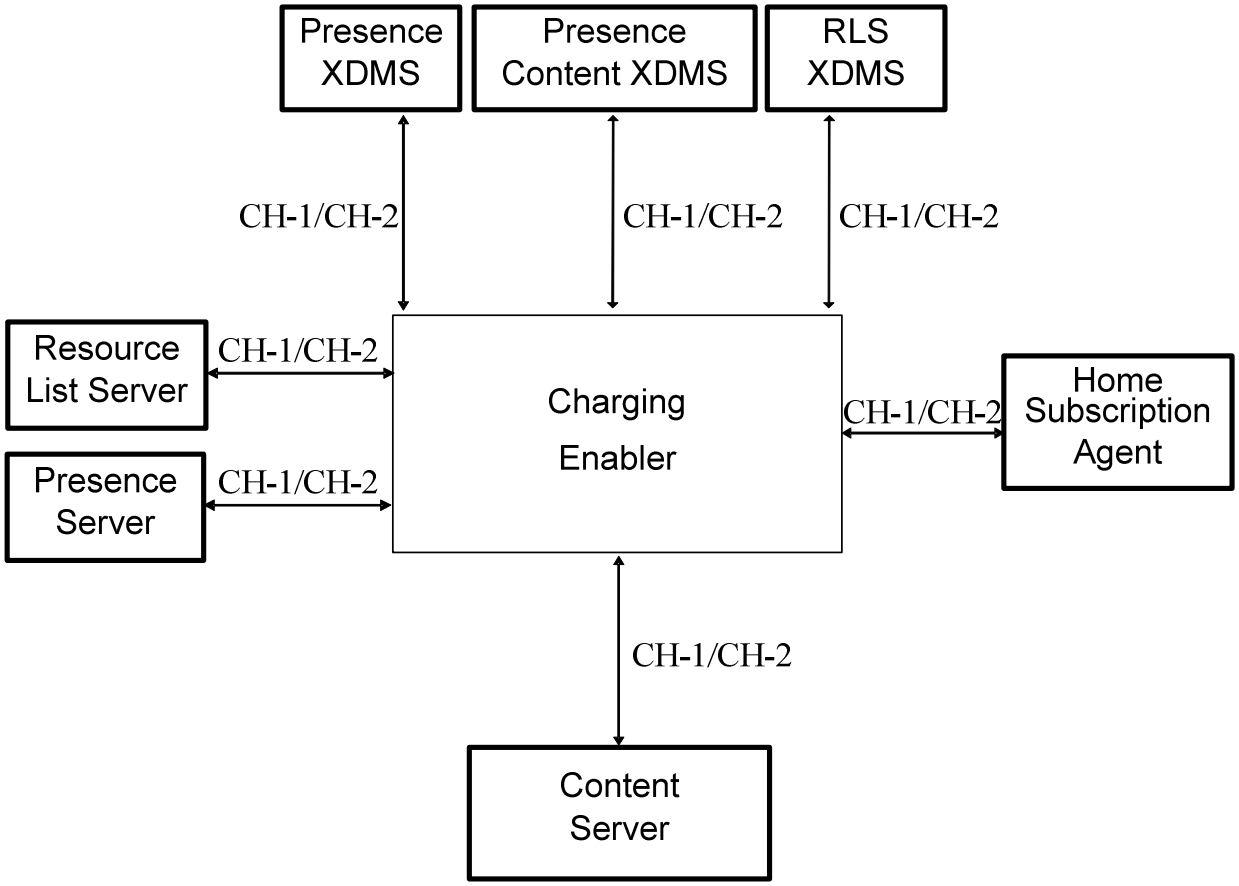

Figure 2: Support of charging through the OMA Charging Enabler

Elements shown in bold are defined in this architecture document. The remaining elements are external to this specification.

5.3.8 Registration

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, a UE that supports the XDMC, Watcher Information Subscriber, Presence Source, or Watcher functionality uses the registration mechanisms as specified in [3GPP-TS_23.228] and [3GPP2-X.S0013-002].

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5.3.9 Presence Service Provisioning

The Presence Service provider can set up the Presence Service configurations remotely in the terminal device by using the device management mechanism specified in [PRO_AD]. The updates of the Presence Service configurations are remotely performed in the terminal device by using [DM_Bootstrap] and [DM_ERELD].

A terminal device containing the Watcher, Watcher Information Subscriber or Presence Source functional entities, compliant with [PRO_UA] is able to receive the contents sent by the service provider. The exact syntax and definition of parameters needed for the Presence Enabler are specified in [PRO_CONT], while the specific semantics are defined in the Presence Enabler. The bootstrap mechanism defined in [PRO_SEC], [DM_Bootstrap], and [DM_ERELD] is used to enhance the security of the provisioning.

5.4 Security Considerations

This section describes the mechanisms required for the secure operation of a Presence Service.

5.4.1 SIP Signaling Security

Mutual authentication can be performed, prior to any service interaction, between:

- a PS and a Presence Source;
- a PS and a Watcher;
- a PS and a Watcher Information Subscriber; or
- an RLS and a Watcher.

For an IMS realization, the PS and RLS rely on the security mechanisms provided by the SIP/IP Core, for securing the service environments e.g. authentication of the service usage.

5.4.2 XDM Security

The XDM security is specified in [XDM_AD] "*Security Considerations*".

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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 2.0 History

Document Identifier	Date	Section	Description
Draft Versions OMA-AD-Presence_SIMPLE-V2_0	11 Nov 2005	n/a	First version for Presence_SIMPLE 2.0 made using OMA-AD-Presence_SIMPLE-V1_0-20051006-C as a basis.
	27 Dec 2005	Figure 1 6.1.	Incorporated CRs: OMA-PAG-2005-0582 OMA-PAG-2005-0609R03
	12 Apr 2006	3.3 6.1.2.2	Incorporated CR: OMA-PAG-2006-0035
	27 Jun 2006	2.1, 4	Incorporated CR: OMA-PAG-2006-0242R02
	02 Aug 2006	2.1, 6.1.1.8	Incorporated CR: OMA-PAG-2006-0391R02
	07 Nov 2006	6.1	Incorporated CR: OMA-PAG-2006-0582
	10 Jan 2007	2.1, 3.2, 6.1	Incorporated CRs: OMA-PAG-2006-0738R03 OMA-PAG-2006-0813R01
	25 Apr 2007	6.1.3.4	Incorporated CR: OMA-PAG-2007-0164
	01 Jul 2007	1, 2.1, 4, 5.3, 5.3, 6, 6.1	Incorporated CRs: OMA-PAG-2007-0364 OMA-PAG-2007-0382R01 OMA-PAG-2007-0383R01 OMA-PAG-2007-0386R01 OMA-PAG-2007-0387 OMA-PAG-2007-0388R01 OMA-PAG-2007-0389 OMA-PAG-2007-0390 OMA-PAG-2007-0391R01 OMA-PAG-2007-0392 OMA-PAG-2007-0394R01 OMA-PAG-2007-0395 OMA-PAG-2007-0396 OMA-PAG-2007-0397R01 OMA-PAG-2007-0398R01 OMA-PAG-2007-0418R01 OMA-PAG-2007-0419R03

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Document Identifier	Date	Section	Description
			OMA-PAG-2007-0420R03 OMA-PAG-2007-0422R03 OMA-PAG-2007-0423R01 OMA-PAG-2007-0424 OMA-PAG-2007-0425 OMA-PAG-2007-0426R01 OMA-PAG-2007-0427R01 OMA-PAG-2007-0429R01 OMA-PAG-2007-0430R02 OMA-PAG-2007-0432R02 OMA-PAG-2007-0437R04
	16 Aug 2007	2.1, 2.2, 4, 4.2, 5.3, 5.4, 6, 6.1	Incorporated CRs: OMA-PAG-2007-0428R01 OMA-PAG-2007-0490R01 OMA-PAG-2007-0494 OMA-PAG-2007-0501 OMA-PAG-2007-0502R01 OMA-PAG-2007-0503R01 OMA-PAG-2007-0508 OMA-PAG-2007-0509R01 OMA-PAG-2007-0517 OMA-PAG-2007-0518 OMA-PAG-2007-0520 OMA-PAG-2007-0521R01
	04 Sep 2007	1, 3.2, 4, 5.1.3, 5.3.2.4, 5.3.2.5, 5.2,5.3,	Incorporated CRs: OMA-PAG-2007-0439 OMA-PAG-2007-0441 OMA-PAG-2007-0483R02 OMA-PAG-2007-0516R01 OMA-PAG-2007-0543 OMA-PAG-2007-0544R03 OMA-PAG-2007-0547 OMA-PAG-2007-0553 OMA-PAG-2007-0556R01 OMA-PAG-2007-0558 OMA-PAG-2007-0559 OMA-PAG-2007-0560 OMA-PAG-2007-0561 OMA-PAG-2007-0562 OMA-PAG-2007-0577
	29 Nov 2007	5	Incorporated CRs: OMA-PAG-2007-0736R03 OMA-PAG-2007-0752 OMA-PAG-2007-0755 OMA-PAG-2007-0824R01
	16 Jan 2008	5	Incorporated CR: OMA-PAG-2007-0860R01
	14 Feb 2008	5	Incorporated CR: OMA-PAG-2008-0013R02
	04 Mar 2008	All	Incorporated CRs: OMA-PAG-2008-0048R02 OMA-PAG-2008-0128R02 OMA-PAG-2008-0062R02

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Document Identifier	Date	Section	Description
	12 Mar 2008	All	Editorial cleanup based on OMA-PAG-2008-0157R01
	28 May 2008	All	Incorporated CR: OMA-PAG-2008-0338R01
	11 Jun 2008	5.3.1.11, 5.3.3.x, 5.3.6.1	Incorporated CRs: OMA-PAG-2008-0360R01 OMA-PAG-2008-0398
	02 Jul 2008	5.3.2.2 (new) 5.3.1.1	Incorporated CRs: OMA-PAG-2008-0464R01 OMA-PAG-2008-0483
	07 Aug 2008	All	Incorporated CR: OMA-PAG-2008-0463R01
	26 Aug 2008	2.1, 5.1, 5.3	Incorporated CRs: OMA-PAG-2008-0387R01 OMA-PAG-2008-0542R02 OMA-PAG-2008-0544 OMA-PAG-2008-0550 OMA-PAG-2008-0551R01
	01 Oct 2008	All	Incorporated CRs: OMA-PAG-2008-0473R04 OMA-PAG-2008-0620R01
	14 Oct 2008	5.2 5.3.3.21(new)	Incorporated CR: OMA-PAG-2008-0662
	27 Oct 2008	All	Incorporated CRs: OMA-PAG-2008-0388R01 OMA-PAG-2008-0671R01 OMA-PAG-2008-0719 OMA-PAG-2008-0734R01 OMA-PAG-2008-0735R01 OMA-PAG-2008-0736 OMA-PAG-2008-0737 OMA-PAG-2008-0738
	04 Nov 2008	All	Incorporated CRs: OMA-PAG-2008-0686R04 OMA-PAG-2008-0779
	07 Nov 2008	2.1	Editorial clean-up prior to socialization with ARC.
	13 Nov 2008	All	Incorporated CR: OMA-PAG-2008-0790
Candidate Version OMA-AD-Presence_SIMPLE-V2_0	23 Dec 2008	N/A	Status changed to Candidate by TP TP ref # OMA-TP-2008-0490- INP_Presence_SIMPLE_V2_0_ERP_for_Candidate_Approval
Draft Version OMA-AD-Presence_SIMPLE-V2_0	31 Mar 2009	All	Incorporated CR: OMA-PAG-2009-0003R03
Candidate Version OMA-AD-Presence_SIMPLE-V2_0	17 Sep 2009	N/A	Status changed to Candidate by TP TP ref # OMA-TP-2009-0438- INP_PRS_V2_0_ERP_for_Notification

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