Home Subscription Agent (HSA) Specification

Approved Version 1.0 – 10 Jul 2012

Open Mobile Alliance

OMA-TS-Presence_SIMPLE_HSA-V1_0-20120710-A

Contents

1. Scope

This document provides the specification for the Home Subscription Agent (HSA) in the OMA Presence SIMPLE 2.0 Enabler.

2. References

2.1 Normative References

[3GPP2-X.S0027-001] 3GPP2 X.S0027-001 "Presence Service; Architecture and functional description", URL: http://www.3gpp2.org/Public_html/specs/index.cfm

[3GPP-TS_23.141] 3GPP TS 23.141 "Presence Service; Architecture and functional description", URL: http://www.3gpp.org/ftp/Specs/archive/23_series/23.141/

[IETF-EventThrottle] IETF draft-niemi-sipping-event-throttle-07 "Session Initiation Protocol (SIP) Event Notification Extension for Notification Throttling", A. Niemi et al., Oct 22, 2008, URL: http://www.ietf.org/internet-drafts/draft-niemi-sipping-event-throttle-07.txt

Note: IETF Draft work in progress

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

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

[RFC3265] IETF RFC 3265 "Session Initiation Protocol (SIP)-Specific Event Notification", A. B. Roach, Jun 2002, URL: http://www.ietf.org/rfc/rfc3265.txt

[RFC4661] IETF RFC 4661 "An Extensible Markup Language (XML) Based Format for Event Notification Filtering", H. Khartabil et al., Sep 2006, URL: http://www.ietf.org/rfc/rfc4661.txt

[RFC4662] IETF RFC 4662 "A Session Initiation Protocol (SIP) Event Notification Extension for Resource Lists", A. B. Roach et al., Aug 2006, URL: http://www.ietf.org/rfc/rfc4662.txt

[RFC5367] IETF RFC 5367 "Subscriptions to Request-Contained Resource Lists in the Session Initiation Protocol (SIP)", G. Camarillo et al., Oct 2008, URL: http://www.ietf.org/rfc/rfc5367.txt

[RFC5839] IETF RFC 5839 "An Extension to Session Initiation Protocol (SIP) Events for Conditional Event Notification", A. Niemi, May, 2010, URL: http://www.ietf.org/rfc/rfc5839.txt

3GPP/3GPP2

IETF

OMA

2.2 Informative References

Void.

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

Notifier	Use definition from [PRS_AD].
Presence Information	Use definition from [PRS_AD].
Presence Information Element	Use definition from [PRS_AD].
Subscriber	Use definition from [PRS_AD].
Subscription Service	A service that makes use of the SIP event notification mechanism as defined in [RFC3265].

3.3 Abbreviations

AD	Architecture Document
HSA	Home Subscription Agent
IETF	Internet Engineering Task Force
IMS	IP Multimedia Subsystem
IP	Internet Protocol
MIME	Multipurpose Internet Mail Extensions
MMD	Multimedia Domain
OMA	Open Mobile Alliance
PRS	Presence SIMPLE
RD	Requirement Document
RFC	Request For Comments
SIMPLE	SIP for Instant Messaging and Presence Leveraging Extensions
SIP	Session Initiation Protocol
UE	User Equipment
XML	eXtensible Markup Language

4. Introduction

This document provides the specification for the Home Subscription Agent (HSA) in the OMA Presence SIMPLE 2.0 Enabler.

4.1 Version 1.0

The OMA Presence SIMPLE 2.0 enabler separates the functions for entity that controls the Subscriber's service use in the Subscriber's home domain into a specification of its own to simplify reuse by other enablers. The functions included in this specification are:

- Subscription service authorization;
- Limiting the number of subscriptions; and
- Regulation of event notifications.

5. Functional Description of the Home Subscription Agent

The HSA is an entity that controls the Subscriber's access to the Subscription Service and optimizes the notification traffic based on the Subscriber's preferences or local policy.

5.1 Subscription Service Authorization

Upon receiving the SUBSCRIBE request from a Subscriber, the HSA:

1) SHALL, if a local policy for Subscription Service authorization exists, check whether the Subscriber is authorized to use the Subscription Service per the local policy and generate a 403 (Forbidden) response to the Subscriber if authorization fails;
2) SHALL, if limiting the number of subscriptions is supported, perform the procedures of section 5.2;
3) SHALL, if event notification suppression is supported, perform the procedures of section 5.3; and
4) SHALL, if event notification suppression is not supported, forward the received SUBSCRIBE request to the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP IMS or 3GPP2 MMD networks, the above functionalities of the HSA MAY be implemented in the P-CSCF and/or S-CSCF as defined in [3GPP-TS_23.141] and [3GPP2-X.S0027-001] respectively.

NOTE: The method how the SUBSCRIBE request is routed to the HSA depends on the underlying SIP/IP Core and is out of scope of this specification.

5.2 Limiting the Number of Subscriptions

The HSA MAY have a local policy to limit the maximum number of simultaneous subscriptions for a Subscriber. If the HSA determines to reject an initial subscription due to the current number of active subscriptions initiated by the Subscriber being equal to or greater than the maximum, the HSA SHALL send a 480 (Maximum number of subscriptions exceeded) response. The response MAY include the Retry-After header field (e.g. based on the expiry of active subscriptions initiated by the Subscriber) in order to suggest to the Subscriber not to retry the subscription prior to the Retry-After time.

5.3 Handling of Event Notification Suppression

The HSA MAY support event notification suppression. If supported, the HSA:

- SHALL support the handling of event notification suppression conditions. These conditions MAY be based on a local policy, or supplied by the event notification suppression filters set by the Subscriber as described in Appendix C.1, or the combination of local policy and the event notification suppression filters; and
- SHALL support direct event notification suppression to suppress notifications at the Notifier.

5.3.1 Handling of event notification suppression conditions

Upon successful authorization of the SUBSCRIBE request from a Subscriber, the HSA:

1) SHALL check whether the body contains a valid 'application/vnd.oma.suppnot+xml' content as described in Appendix C.1 or whether there is any other event notification suppression conditions set by the local policy. In case of invalid content and no local policy the HSA SHALL forward the SUBSCRIBE request targeted to the Notifier;
2) SHALL, in case of a valid 'application/vnd.oma.suppnot+xml' content or event notification suppression conditions by local policy, terminate the SUBSCRIBE request, install the subscription and send a 202 (Accepted) response to the Subscriber as described in [RFC3265]. The HSA SHALL also extract the event notification suppression filters from the 'application/vnd.oma.suppnot+xml' content;
3) SHALL generate a back-end subscription request targeted to the Notifier according to the subscriber procedures described in [RFC3265], [RFC4662] or [RFC5367], depending on the incoming subscription. The HSA SHALL

preserve all headers and payloads except the 'application/vnd.oma.suppnot+xml' content from the received SUBSCRIBE request into the back-end SUBSCRIBE request;

4) SHALL generate a presence subscription request to the Subscriber's Presence Information according to the procedures described in section [PRS_Spec] *"Subscription to Presence Information"*; and

5) SHALL, upon receiving a response for the back-end subscription from the Notifier, send a NOTIFY request to the Subscriber containing a Subscription-State header with the value of 'active'.

During the Subscriber's subscription lifetime, the HSA:

1) SHALL evaluate the presence-based event notification suppression filters against the Subscriber's Presence Information; and

2) SHALL, if a match is found, request the Notifier to suppress the notifications according to the procedures described in section 5.3.2.

5.3.2 Direct Event Notification Suppression

Direct event notification suppression is a mechanism that enables the HSA to request the Notifier to suppress event notifications while keeping the corresponding event subscription state active.

Direct event notification suppression can be requested using one of the following options:

- If the HSA supports conditional event notification procedures as described in [RFC5839], the HSA SHALL issue a SUBSCRIBE request to refresh the subscription and include a wildcarded Suppress-If-Match header field using the special "*" entity-tag value as described in [RFC5839] "*Generating SUBSCRIBE Requests*"; or
- If the HSA supports event notification throttling procedures as described in [IETF-EventThrottle], the HSA SHALL issue a SUBSCRIBE request to refresh the subscription and include a throttle parameter set to the remaining subscription expiration value as described in [IETF-EventThrottle] "*Selecting the Throttle Interval*".

If the HSA supports both of the above options, the HSA SHALL indicate the presence notification suppression request using the conditional event notification procedure.

Appendix A. Change History (Informative)

A.1 Approved Version 1.0 History

Reference	Date	Description
OMA-TS-Presence_SIMPLE_HSA-V1_0-20120710-A	10 Jul 2012	Status changed to Approved by TP: OMA-TP-2012-0268-INP_Presence_SIMPLE_V2_0_ERP_for_Final_Approval

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [SCRRULES].

The SCR's defined in the following table include SCR for the HSA.

The following tags are used in the Function column to identify the release of the Presence SIMPLE enabler that the requirement was introduced:

- PRSv2.0 – Requirement was introduced in Presence SIMPLE 2.0.

B.1 Home Subscription Agent

Item	Function	Reference	Requirement
PRS-HSA-S-001-O	Subscription Service authorization (PRSv2.0)	5.1	
PRS-HSA-S-002-O	Limiting number of subscriptions (PRSv2.0)	5.2	
PRS-HSA-S-003-O	Handling of event notification suppression (PRSv2.0)	5.3	
PRS-HSA-S-004-O	Handling of event notification suppression conditions (PRSv2.0)	5.3.15.3	PRS-HSA-S-003-O
PRS-HSA-S-005-O	Direct event notification suppression (PRSv2.0)	5.3.2	PRS-HSA-S-003-O

Appendix C. Common Content Types (Normative)

The common content types for this specification are described in this Appendix.

C.1 Presence-based Event Notification Suppression Filter

The presence-based event notification suppression filter specifies the conditions when the Subscriber wishes not to receive event notifications based on its Presence Information. A condition is evaluated by comparing the values of the condition with the Subscriber's Presence Information. If they match, the condition evaluates to true.

C.1.1 MIME Type

The MIME type for the presence-based event notification suppression filter SHALL be "application/vnd.oma.suppnot+xml".

C.1.2 XML Schema

The presence-based event notification suppression filter SHALL conform to the XML schema described in [XSD_suppNot].

C.1.3 Structure and Data Semantics

The presence-based event notification suppression filter SHALL conform to the structure and semantics as described in this subclause.

The root element <suppnot-filter-set>:

a) MAY include any other attributes for the purposes of extensibility;

b) MAY include a <ns-bindings> element that contains the namespace bindings according to [RFC4661] "*The <ns-bindings> Element*";

c) SHALL include zero or more <suppnot-filter> elements that contain the conditions for event notification suppression.

The <ns-bindings> element:

a) SHALL include one or more <ns-binding> elements, each of which SHALL contain the binding between the prefix and the namespace in a "prefix" attribute and a "namespace" attribute, respectively. This is used to express the XPATH formed Presence Information Elements or Presence Information Element attributes under <presattrib> elements.

The <suppnot-filter> element:

a) SHALL include a "id" attribute that contains the unique identification for the filter;

b) MAY include any other attribute for the purposes of extensibility;

c) MAY include one or more <presattrib> elements that contain the Presence Information Elements or Presence Information Element attributes that decide the suppression of the notifications;

d) MAY include any other elements from other namespaces for the purposes of extensibility.

The <presattrib> element:

a) MAY include any other attribute for the purposes of extensibility;

b) MAY include one or more <suppress-if-match> elements, each of which contains the XPATH expression according to [RFC4661] "*Syntax for Referencing XML Items and Making Logical Expressions*", that identifies the Presence Information Elements or Presence Information Element attributes to be matched;

c) MAY include any other elements from other namespaces for the purposes of extensibility.

The <suppress-if-match> element:

a) MAY include a "type" attribute that contains the expression type of the Presence Information Elements or Presence Information Element attributes in a <suppress-if-match> element. The default value is "xpath" in case of the absence of this attribute;

b) MAY include any other attribute for the purposes of extensibility.

C.1.4 Evaluation

The evaluation of the presence-based event notification suppression filter is achieved as following:

- The empty <suppnot-filter-set> element SHALL remove any existing filters set in the HSA;
- The evaluation of each <suppnot-filter> element under the root element <suppnot-filter-set> SHALL be logically ORed;
- The evaluation of each <presattrib> child element under a <suppnot-filter> element SHALL be logically ANDed;
- The evaluation of each <suppress-if-match> child element under a <presattrib> element SHALL be logically ANDed;
- The evaluation of a <suppress-if-match> element SHALL be TRUE if the corresponding expression in the content results in identification of one or more elements in the Watcher's Presence Information;
- The evaluation of an empty <suppress-if-match> element SHALL be FALSE.

C.1.5 Examples (Informative)

The following is an example of the presence-based event notification suppression filter.

```
<?xml version="1.0" encoding="UTF-8"?>
<suppnot-filter-set xmlns="urn:oma:xml:prs:pidf:oma-suppnotfilter"
   xmlns:sf="urn:ietf:params:xml:ns:simple-filter">

  <ns-bindings>
   <sf:ns-binding prefix="pdm" urn="urn:ietf:params:xml:ns:pidf:data-model"/>
   <sf:ns-binding prefix="rpid" urn="urn:ietf:params:xml:ns:pidf:rpid"/>
   <sf:ns-binding prefix="op" urn="urn:oma:xml:prs:pidf:oma-pres"/>
   <sf:ns-binding prefix="pde" urn="urn:oma:xml:pde:pidf:ext"/>
  </ns-bindings>

  <!-- Condition1: Event Notification will be suppressed if the Subscriber's device is
   participating in PoC session -->
  <suppnot-filter id="45i0s">
   <presattrib>
      <suppress-if-match>//pdm:tuple[*/op:service-id="org.openmobilealliance:PoC-session" and
   pdm:deviceID="urn:uuid:d27459b7-8213-4395-aa77-ed859a3e5b3a"]/op:session-
   participation[op:basic="open"]</suppress-if-match>
   </presattrib>
  </suppnot-filter>

  <!--Condition2: Event Notification will be suppressed if the Subscriber's presence is 'away' -->
  <suppnot-filter id="fe23de">
   <presattrib>
      <suppress-if-match>//pdm:person/rpid:activities/rpid:away</suppress-if-match>
   </presattrib>
  </suppnot-filter>

  <!-- Condition3: Event Notification will be suppressed if the Subscriber's device is under
   roaming -->
  <suppnot-filter id="we34is">
   <presattrib>
      <suppress-if-match>//pdm:device[pdm:deviceID="urn:uuid:d27459b7-8213-4395-aa77-ed859a3e5b3a"
   and op:network-availability/op:network/pde:visited]</suppress-if-match>
   </presattrib>
  </suppnot-filter>

</suppnot-filter-set>
```