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1. **Scope**

The Resource List Server XDMS (RLS XDMS) specific data formats and XCAP application usages are described in this specification.
2. References

2.1 Normative References


Note: IETF Draft work in progress


Note: IETF Draft work in progress


2.2 Informative References

[PRES_MO] “OMA Management Object for SIMPLE Presence”, Version 1.0.1, Open Mobile Alliance™, OMA-TS-Presence_SIMPLE_MO-V1_0_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

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Unique ID</td>
<td>A unique identifier that differentiates XCAP resources accessed by one application from XCAP resources accessed by another. (Source: [XCAP])</td>
</tr>
<tr>
<td>Global Document</td>
<td>A document placed under the XCAP global tree that applies to all users of that application usage.</td>
</tr>
<tr>
<td>Global Tree</td>
<td>A URL that represents the parent for all global documents for a particular application usage within a particular XCAP root. (Source: [XCAP])</td>
</tr>
<tr>
<td>XCAP Application Usage</td>
<td>Detailed information on the interaction of an application with an XCAP server. (Source: [XCAP])</td>
</tr>
<tr>
<td>XCAP Client</td>
<td>An HTTP client that understands how to follow the naming and validation constraints defined in [XCAP]. (Source: [XCAP])</td>
</tr>
<tr>
<td>XCAP Server</td>
<td>An HTTP server that understands how to follow the naming and validation constraints defined in [XCAP]. (Source: [XCAP])</td>
</tr>
</tbody>
</table>

3.3 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUID</td>
<td>Application Unique ID</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hyper Text Transfer Protocol</td>
</tr>
<tr>
<td>IETF</td>
<td>Internet Engineering Task Force</td>
</tr>
<tr>
<td>OMA</td>
<td>Open Mobile Alliance</td>
</tr>
<tr>
<td>RLS</td>
<td>Resource List Server</td>
</tr>
<tr>
<td>SIP</td>
<td>Session Initiation Protocol</td>
</tr>
<tr>
<td>URI</td>
<td>Uniform Resource Identifier</td>
</tr>
<tr>
<td>XCAP</td>
<td>XML Configuration Access Protocol</td>
</tr>
<tr>
<td>XDM</td>
<td>XML Document Management</td>
</tr>
<tr>
<td>XDMS</td>
<td>XML Document Management Server</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
</tr>
</tbody>
</table>
4. Introduction

The RLS XDMS is the repository for XML documents that define services which are associated with a list of resources. An example of such a service document is a Presence List, which is used by a RLS (see [PRES_Spec]) to subscribe, on behalf of a watcher, to the presence status of a list of presentities.

The protocol used to access and manipulate such documents is based on the XML Configuration Access Protocol (XCAP), and described in [XDM_Spec].

This specification provides the XCAP application usage for one type of RLS-specific XML document, the Presence List.
5. RLS XDM Application Usages

5.1 Presence List

5.1.1 Structure

The Presence List document SHALL conform to the structure of the “rls-services” document described in [XCAP_List] section 4.1, with the following clarifications:

a. Each <service> element SHALL include the <packages> element.

b. Each <packages> element SHALL specify at least the presence event package as defined in [RFC3856].

5.1.2 Application Unique ID

The application unique ID (AUID) of a Presence List document SHALL be “rls-services” within the IETF tree, as specified in [XCAP_List] section 4.4.1.

5.1.3 Default Namespace

The default namespace SHALL conform to the default namespace “urn:ietf:params:xml:ns:rls-services” for the “rls-services” document described in [XCAP_List] section 4.4.4.

5.1.4 XML Schema

A Presence List document SHALL conform to the XML schema described in [XCAP_List] section 4.2.

5.1.5 MIME Type

The MIME type of a Presence List document SHALL be “application/rls-services+xml”, as specified in [XCAP_List] section 4.4.2.

5.1.6 Validation constraints

In addition to the XML schema, the validation constraints on a Presence List document SHALL conform to those described in [XCAP_List] section 4.4.5, with the following clarifications:

Each <service> element SHALL include the <packages> element with a <package> child element with value “presence”. If the Presence List document does not conform to this constraint, the RLS XDMS SHALL respond with an HTTP “409 Conflict” response as described in [XCAP]. The error condition SHALL be described by the <constraint-failure> error element. If included, the “phrase” attribute SHOULD be set to “Presence event package required”.

The value of the “uri” attribute proposed by the XDM Client in the <service> element (i.e. the Service URI):

- SHALL be a valid SIP URI.
- SHALL conform to the syntax specified by the Service URI Template (see [PRES_MO]), which is stored in the RLS XDMS and provisioned to the XDM Client.
- SHALL NOT violate the “uniqueness constraint” defined in [XCAP_List] section 4.4.5.

If the Service URI does not conform to the local policy or the constraints described above, the RLS XDMS SHALL respond with an HTTP “409 Conflict” response as described in [XCAP]. The error condition SHALL be described by the <uniqueness-failure> error element. The RLS XDMS SHALL include at least one <alt-value> element in the <uniqueness-failure> error element.
NOTE 1: The syntax of the `<alt-value>` element is according to the syntax stored in the RLS XDMS and provisioned to the XDM Client, but may also be a different syntax according to local XDMS policy and not yet provisioned to the XDM Client.

If the XDM Client repeats the XCAP request, it SHOULD use a “uri” attribute chosen from one of the values received in the `<alt-value>` elements.

5.1.7 Data Semantics

The data semantics of a Presence List document SHALL conform to those described in [XCAP_List] section 4.1.

5.1.8 Naming conventions

The naming conventions of a Presence List document SHALL conform to those described in [XCAP_List] section 4.4.7.

The document containing the Presence Lists for a particular user SHALL be named “index”.

NOTE: Any document in the user’s tree without the name “index” will not be accessible by the RLS service.

5.1.9 Global documents

In addition to the Presence List documents that exist in the XCAP user tree, this application usage defines a single global index document, as described in [XCAP_List] section 4.4.8.

5.1.10 Resource interdependencies

The RLS XDMS SHALL conform to the resource interdependencies described in [XCAP_List] section 4.4.8.

5.1.11 Authorization policies

The authorization policies SHALL conform to those described in [XDM_Spec] section 6.4.3.

The RLS XDMS SHALL check that the identity of the requesting XDMC has been granted access rights to perform requested operations on the global index document

By default, the primary principal of a document in the users tree has permission to perform retrieve operations as defined in [XDM_Spec] section 6.1.1.2 to fetch that part of the global index document that has the same content as the document in the users tree.

6. Subscribing to Changes in the XML Documents

The RLS XDMS SHALL support subscriptions to changes in the XML documents as defined by the procedures in section 6.2.2.1 step 2 to step 6, and 6.2.2.2 of [XDM_Spec].
Appendix A. Static Conformance Requirements

The SCR’s defined in the following tables include SCR for:

- RLS XDM Application Usages

Each SCR table identifies a list of supported features as:

Item: Identifier for a feature.

Function: Short description of the feature.

Reference: Section(s) of this specification with more details on the feature.

Status: Whether support for the feature is mandatory or optional. MUST use “M” for mandatory support and “O” for optional support in this column.

Requirement: This column identifies other features required by this feature. If no other features are required, this column is left empty.

This section describes the dependency grammar notation to be used in the Requirement column of the SCR and CCR tables using ABNF [RFC2234].

\[
\text{TerminalExpression} = \text{ScrReference} / \text{NOT TerminalExpression} / \text{TerminalExpression LogicalOperator} \text{TerminalExpression} / "(" \text{TerminalExpression} ")"
\]

\[
\text{ScrReference} = \text{ScrItem} / \text{ScrGroup}
\]

\[
\text{ScrItem} = \text{SpecScrName} "–" \text{GroupType} "–" \text{DeviceType} "–" \text{NumericId} / \text{SpecScrName} "–" \text{DeviceType} "–" \text{NumericId}
\]

\[
\text{ScrGroup} = \text{SpecScrName} ":" \text{FeatureType} / \text{SpecScrName} "–" \text{GroupType} "–" \text{DeviceType} "–"
\text{FeatureType}
\]

\[
\text{SpecScrName} = 1*\text{Character};
\]

\[
\text{GroupType} = 1*\text{Character};
\]

\[
\text{DeviceType} = "C" / "S"; \text{C} – \text{client}, \text{S} – \text{server}
\]

\[
\text{NumericId} = \text{Number} \text{Number} \text{Number}
\]

\[
\text{LogicalOperator} = "\text{AND}" / "\text{OR}"; \text{AND} \text{has higher precedence than OR and OR is inclusive}
\]

\[
\text{FeatureType} = "\text{MCF}" / "\text{OCF}" / "\text{MSF}" / "\text{OSF}"; \text{See Section A.1.6}
\]

\[
\text{Character} = %x41-5A ; \text{A-Z}
\]

\[
\text{Number} = %x30-39 ; 0-9
\]

### A.1 RLS XDM Server Application Usages

<table>
<thead>
<tr>
<th>Item</th>
<th>Function</th>
<th>Reference</th>
<th>Status</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLS_XDM-AU-S-001</td>
<td>Presence list structure</td>
<td>5.1.1</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-002</td>
<td>Application Unique ID in presence list</td>
<td>5.1.2</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-003</td>
<td>XML schema of presence list</td>
<td>5.1.4</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-004</td>
<td>MIME type of presence list</td>
<td>5.1.5</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Function</td>
<td>Reference</td>
<td>Status</td>
<td>Requirement</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>RLS_XDM-AU-S-005</td>
<td>Validation constraints, in addition to the XML schema</td>
<td>5.1.6</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-006</td>
<td>RLS XDMS validates that the Service URI conforms to the additional constraints of local policy.</td>
<td>5.1.6</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-007</td>
<td>Data semantics of presence list</td>
<td>5.1.7</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-008</td>
<td>Naming conventions for presence list</td>
<td>5.1.8</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-S-009</td>
<td>RLS conforms to resource interdependencies</td>
<td>5.1.10</td>
<td>M</td>
<td></td>
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<tr>
<td>RLS_XDM-AU-S-010</td>
<td>Authorization policies</td>
<td>5.1.11</td>
<td>M</td>
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</tbody>
</table>

**A.2 RLS XDM Client Application Usages**

<table>
<thead>
<tr>
<th>Item</th>
<th>Function</th>
<th>Reference</th>
<th>Status</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLS_XDM-AU-C-001</td>
<td>Presence list structure</td>
<td>5.1.1</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-002</td>
<td>Application Unique ID in presence list</td>
<td>5.1.2</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-003</td>
<td>XML schema of presence list</td>
<td>5.1.4</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-004</td>
<td>MIME type of presence list</td>
<td>5.1.5</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-005</td>
<td>Validation constraints, in addition to the XML schema</td>
<td>5.1.6</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-006</td>
<td>Data semantics of presence list</td>
<td>5.1.7</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-AU-C-007</td>
<td>Naming conventions for presence list</td>
<td>5.1.8</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Function</td>
<td>Reference</td>
<td>Status</td>
<td>Requirement</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>RLS_XDM-CAU-C-001</td>
<td>XDM Client handling of HTTP “409 Conflict” response from the RLS XDMS</td>
<td>5.1.6</td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>

### A.3 Subscribing to changes in the XML documents

<table>
<thead>
<tr>
<th>Item</th>
<th>Function</th>
<th>Reference</th>
<th>Status</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLS_XDM-SU-S-001</td>
<td>Generating a NOTIFY request</td>
<td>[XDM_Spec] 6.2.2.2</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-SU-S-002</td>
<td>Support Initial Subscription when SUBSCRIBE message received</td>
<td>[XDM_Spec] 6.2.2.1</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>RLS_XDM-SU-S-003</td>
<td>“Not Implemented” Error Handling or SUBSCRIBE request Handling</td>
<td>[XDM_Spec] 6.2.2.1</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B. Examples

B.1 Manipulating Presence Lists

B.1.1 Obtaining Presence Lists

Figure B.1 describes how an XDM client obtains Presence Lists.

![Diagram](image)

**Figure B.1- XDM Client obtains Presence Lists**

The details of the flows are as follows:

1) The user “sip:ronald.underwood@example.com” wants to obtain the document describing his Presence Lists. For this purpose the XDMC sends an HTTP GET request to the Aggregation Proxy.

```
GET /rls-services/users/sip:ronald.underwood@example.com/index/ HTTP/1.1
Host: xcap.example.com
...
```

2) Based on the AUID the Aggregation Proxy forwards the request to RLS XDMS.

3) After the RLS XDMS has performed the necessary authorisation checks on the request originator, the RLS XDMS sends an HTTP “200 OK” response including the requested document in the body.

```
HTTP/1.1 200 OK
Etag: "etuk8"
...
Content-Type: application/rls-services+xml

<?xml version="1.0" encoding="UTF-8"?>
<rls-services xmlns="urn:ietf:params:xml:ns:rls-services"
xmlns:rl="urn:ietf:params:xml:ns:resource-lists">
<service uri="sip:mysociety@example.com">
<resource-list>http://xcap.example.com/resource-lists/users/sip:
ronald.underwood@example.com/~~
/resource-lists/list%5b@name=%22spew%22%5d</resource-list>
<packages>
<package>presence</package>
</packages>
</service>
<service uri="sip:friends@example.com">
<list name="friends">
<r1:entry uri="sip:hermione.blossom@example.com"/>
<r1:entry uri="tel:5678;phone-context=+43012349999"/>
</list>
<packages>
<package>presence</package>
</packages>
</service>
</rls-services>
```

NOTE: the `<resource-list>` field represents a pointer to an external list located on the Shared XDMS enabler.
4) The Aggregation Proxy routes the response to the XDM Client.

B.1.2 Service URI negotiation

Figure B.2 describes how the RLS XDMS can negotiate a Service URI.

The details of the flows are as follows:

1) The user “sip:ronald.underwood@example.com” wants to create a Service URI “sip:wrongname@example.com”. For this purpose the XDNC sends an HTTP PUT request to the Aggregation Proxy.

```xml
PUT /rls-services/users/sip:ronald.underwood@example.com/index/~/rls-services/service HTTP/1.1
Host: xcap.example.com
Content-Type: application/xcap-el+xml
Content-Length: (...)

<service uri="sip:wrongname@example.com">
  <list name="family">
    <rl:entry uri="sip:vernon.keel@example.com"/>
  </list>
  <packages>
    <package>presence</package>
  </packages>
</service>
```

2) Based on the AUID the Aggregation Proxy forwards the request to RLS XDMS.

3) The RLS XDMS detects that the Service URI does not conform to the local policy. The RLS XDMS generates a valid Service URI “sip:correctname@example.com” and sends an HTTP “409 Conflict” response including the generated URI.

```xml
HTTP/1.1 409 Conflict
...
Content-Type: application/xcap-error+xml

<?xml version="1.0" encoding="UTF-8"?><xcap-error xmlns="urn:ietf:params:xml:ns:xcap-error"><uniqueness-failure><exists field="service/uri"><alt-value>sip:correctname@example.com</alt-value></exists></uniqueness-failure></xcap-error>
```
4) The Aggregation Proxy routes the response to the XDM Client.

5) The XDM Client repeats the XCAP request (sent in step 1) using the received Service URI.

   PUT /rls-services/users/sip:ronald.underwood@example.com/index/~/rls-services/service HTTP/1.1
   Host: xcap.example.com
   ...
   Content-Type: application/xcap-el+xml
   Content-Length: (...)

   <service uri="sip:correctname@example.com">
     <list name="family">
       <rl:entry uri="sip:vernon.keel@example.com"/>
     </list>
     <packages>
       <package>presence</package>
     </packages>
   </service>

6) Based on the AUID the Aggregation Proxy forwards the request to RLS XDMS.

7) The RLS XDMS creates the requested Presence List document and sends an HTTP “201 Created” response.

   HTTP/1.1 201 Created
   Etag: "etu65"
   ...
   Content-Length: 0

8) The Aggregation Proxy routes the response to the XDM Client.
# Appendix C. Change History (Informative)

## C.1 Approved Version History

<table>
<thead>
<tr>
<th>Reference</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
</table>