IP Multimedia Subsystem (IMS) provides a framework and building blocks for building advanced telecom services. One such service is network wide publication and subscription of presence information. Users can subscribe to presence information for their contacts. If the contact accepts their request, the subscriber will be registered for presence notification. Whenever the friend publishes presence information, the IMS presence framework will notify the subscribed users.

IMS presence information communication can put a lot of load on the network. One way to reduce this load is to predefine the list of friends and family. When you subscribe to the "friends and family" list, a Resource List Server (RLS) in the IMS subscribes to the individual subscribers (presentities) on your behalf. Once the RLS completes the registrations, it collates the individual presence status into a single NOTIFY message.

To initiate a subscription to the RLS, the UE generates a SUBSCRIBE request indicating support for "eventlist", together with an indication of the length of time this periodic subscription should last.

The P-CSCF looks up the serving network information for the Watcher’s public user identity that was stored during the registration procedure. The SUBSCRIBE request is forwarded to S-CSCF.

Watcher S-CSCF performs an analysis of the Resource List SIP URI and forwards the SUBSCRIBE request directly to the Resource List’s Application Server.

The Presence Server (PS) performs the necessary authorization checks on the Watcher to ensure it is allowed to watch the Resource List.

If all privacy conditions are met, PS sends a 200 (OK) response to the I-CSCF. 200 (OK) is passed all the way to Watcher.
Presence feature subscribing to Resource List (IMS Presence Subscription to a Resource List)

<table>
<thead>
<tr>
<th>Watcher UE</th>
<th>Watcher IMS Network</th>
<th>Presentity IMS Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watcher User Equipment</td>
<td>Watcher Visited Network</td>
<td>Presentity1 Home Network</td>
</tr>
<tr>
<td>Watcher</td>
<td>Watcher Home Network</td>
<td>Presentity2 Home Network</td>
</tr>
<tr>
<td>Presentity1 I-CSCF</td>
<td>Presentity1 S-CSCF</td>
<td>Presentity2 S-CSCF</td>
</tr>
<tr>
<td>Presentity1 I-CSCF</td>
<td>Presentity1 S-CSCF</td>
<td>Presentity2 S-CSCF</td>
</tr>
<tr>
<td>Presentity1 Resource List Server</td>
<td>Presentity1 I-CSCF</td>
<td>Presentity2 Home Network</td>
</tr>
</tbody>
</table>

### NOTIFY
- **Subscription State:**
  - **To:** Watcher URI
  - **From:** Resource List SIP URI
  - **Route:** <Watcher S-CSCF>, <Watcher P-CSCF>

### NOTIFY
- **Subscription State:**
  - **To:** Watcher URI
  - **From:** Resource List SIP URI
  - **Route:** <Watcher P-CSCF>

### NOTIFY
- **Subscription State:**
  - **To:** Watcher URI
  - **From:** Resource List SIP URI

**RLS generates a NOTIFY request including the subscription state as a result of the SUBSCRIBE request. The NOTIFY gets routed to the watching subscriber via the S-CSCF and P-CSCF.**

### Analyze Presentity URI and determine Presentity I-CSCF

**Subscribe to the presence information of all the users on the resource list.**

- **SUBSCRIBE**
  - **Event:** presence
  - **Request URI:** Presentity1 URI
  - **Expires:** 7200
  - **Route:** <Presentity1 S-CSCF>, <PS1>
  - **From:** Watcher URI

**200 (OK)**

### Analyze Presentity URI and determine Presentity I-CSCF

**SUBSCRIBE**
- **Event:** presence
- **Request URI:** Presentity1 URI
- **Expires:** 7200
- **Route:** <Presentity1 S-CSCF>, <PS1>
- **From:** Watcher URI

**200 (OK)**

**Authorization of watcher**

**The S-CSCF forwards the SUBSCRIBE request to the PS.**

The PS performs the necessary authorization checks on the Watcher to ensure it is allowed to watch the presentity.
### Presence feature subscribing to Resource List (IMS Presence Subscription to a Resource List)

**Watcher UE** | **Watcher IMS Network** | **Presentity IMS Networks**
--- | --- | ---
Watcher User Equipment | Watcher Visited Network | Presentity1 Home Network | Presentity2 Home Network | EventStudio System Designer 4.0
Watcher P-CSCF | Watcher S-CSCF | Resource List Server | Presentity1 I-CSCF | Presentity1 S-CSCF | Presence Server 1 | Presentity2 I-CSCF | Presentity2 S-CSCF | Presence Server 2

The PS1 detects that Presentity1’s UE has been switched off which modifies its presence state information.

<table>
<thead>
<tr>
<th>NOTIFY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>To = Home RLS, From = Presentity1 URI, Route = &lt;Watcher S-CSCF&gt;, Event = presence, Presence information</td>
<td>To = Home RLS, Record-Route = &lt;Watcher S-CSCF&gt;, Event = presence, Presence information</td>
<td></td>
</tr>
<tr>
<td>200 (OK)</td>
<td>200 (OK)</td>
<td></td>
</tr>
</tbody>
</table>

PS sends a NOTIFY request with the current state of the presentity’s presence information that the watcher has subscribed and been authorized to.

The Watcher S-CSCF forwards NOTIFY to Home RLS.

The Home RLS generates a 200 (OK) response to the NOTIFY request. The message is passed to PS as shown.

<table>
<thead>
<tr>
<th>SUBSCRIBE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Event = presence, Request URI = Presentity2 URI, Expires = 7200, Route = &lt;Watcher S-CSCF&gt;, From = Home RLS, Analyze Presentity URI and determine Presentity I-CSCF</td>
<td>Event = presence, Request URI = Presentity2 URI, Expires = 7200, Route = &lt;Home RLS&gt;, &lt;Watcher S-CSCF&gt;, From = Watcher URI</td>
<td>Event = presence, Request URI = Presentity2 URI, Expires = 7200, Route = &lt;Presentity2 S-CSCF&gt;, &lt;PS2&gt;, From = Watcher URI, Authorization of watcher</td>
</tr>
<tr>
<td>200 (OK)</td>
<td>200 (OK)</td>
<td>200 (OK)</td>
</tr>
</tbody>
</table>

The Resource List Server initiates a subscription request to the second user in the Resource List.

The PS performs the necessary authorization checks on the Watcher to ensure it is allowed to watch the presentity.

If all privacy conditions are met, PS sends a 200 (OK) response to the S-CSCF. 200 (OK) is passed all the way to Watcher.
**Presence feature subscribing to Resource List (IMS Presence Subscription to a Resource List)**

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<td>Resource List Server</td>
</tr>
<tr>
<td></td>
<td>Watcher S-CSCF</td>
<td>Presentity1 Home Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presentity1 S-CSCF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presence Server 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presentity2 Home Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presentity2 S-CSCF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presence Server 2</td>
</tr>
</tbody>
</table>

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To = Home RLS,
From = Presentity2 URI,
Route = <Watcher S-CSCF>,
Event = presence
Presence information

**NOTIFY**

The presence server for the second user generates a NOTIFY request to update the subscription status.

The Home RLS generates a 200 (OK) response to the NOTIFY request. The message is passed to PS as shown.

---

To = Watcher URI,
From = Resource List SIP URI,
Event = presence
Presence information

**NOTIFY**

Collate the subscription responses and notify the Watcher UE

The Home RLS copies the body of the incoming NOTIFY request(s) into the body of the outgoing NOTIFY request to Watcher.

---

To = Watcher URI,
From = Resource List SIP URI,
Event = presence
Presence information

**NOTIFY**

200 (OK)

Update the presence information for all users in the NOTIFY message.

200 (OK) 200 (OK) 200 (OK)

The Watcher acknowledges the NOTIFY request with a 200 (OK) to the P-CSCF. The 200 (OK) is passed to RLS.