

**Source:** TSG SA WG2  
**Title:** CRs on 23.141  
**Agenda Item:** 7.2.3

The following Change Request (CR) has been approved by TSG SA WG2 and is requested to be approved by TSG SA plenary #25.

Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

S2 doc #	Title	Spec	CR #	cat	Versi on in	Rel	WI	S2 meeting	Clauses affected
<a href="#">S2-042802</a>	Reference architecture update	23.141	070	F	6.6.0	6	PRESN C	S2 #41	2, 4.2, 4.3.1, 4.3.4, 4.3.14 (new), 4.3.15 (new), 4.3.16 (new), 5.2.1, 5.2.1.1, 5.3.3, 5.3.4, 5.4.2, A2.3.1, A2.3.4

## CHANGE REQUEST

23.141 CR 070 rev - Current version: 6.6.0

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the symbols.

Proposed change affects:  UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	Reference architecture update		
<b>Source:</b>	SA2 (Nokia)		
<b>Work item code:</b>	PRESNC	<b>Date:</b>	17/08/2004
<b>Category:</b>	<b>F</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b>	<b>Rel-6</b> Use <u>one</u> of the following releases: <b>Ph2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6) <b>Rel-7</b> (Release 7)

**Reason for change:** Currently the Peu reference point connects directly to the Presence Server which is correct for the data manipulation purposes (Ut). However, the SIP specific messages should traverse via Presentity Presence Proxy (CSCFs). The change corrects this and also helps the mapping of the architecture with the stage 3 specifications.

Also, there is a need to clarify the role of presence lists (and related server) in the presence architecture. Currently, a reference point for managing presence lists is currently missing from figures describing the architecture.

**Summary of change:** The Peu reference point is divided into two separate reference points: Peu and Pep. With the new Pep reference point the PUA is connected to the Presentity Presence Proxy while the Peu connects the PUA directly to the Presence Server. Because of the new reference point there was a need for renaming the Pw reference point between the Presentity Presence Proxy and Presence Server to be Pwp. The related changes are also reflected to other figures and specification texts.

Presence List Server is added to the reference architecture figure as one of the functional entities, and the corresponding changes are reflected in the specification texts. A new reference point (Pet) is defined for managing presence lists. The Pw reference point is utilized also between the Watcher Presence Proxy and Presence List Server.

**Consequences if not approved:** The architecture figure does not clearly describe the functional entities (Presentity Presence Proxy) and functionalities needed by the PUA for the SIP Publish.

It would remain unclear how the Presence List Server fits into the generic presence architecture.

**Clauses affected:** ⓘ 2, 4.2, 4.3.1, 4.3.4, 4.3.14 (new), 4.3.15 (new), 4.3.16 (new), 5.2.1, 5.2.1.1, 5.3.3, 5.3.4, 5.4.2, A2.3.1, A2.3.4

**Other specs affected:** ⓘ

Y	N
ⓘ	X
	X
	X

Other core specifications ⓘ  
Test specifications  
O&M Specifications

**Other comments:** ⓘ

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- 1) Fill out the above form. The symbols above marked ⓘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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\*\*\* FIRST CHANGES \*\*\*

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## 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 22.141: "Presence service; Stage 1".
- [3] Common Presence and Instant Messaging (CPIM) Presence Information Data Format, Internet Draft <http://www.ietf.org/internet-drafts/draft-ietf-impp-cpim-pidf-05.txt>, May 2002

**Editor's note:** The above document is not yet published as an RFC, where possible the reference should be converted to an RFC prior to approval of this document.

- [4] Session Initiation Protocol (SIP) Extensions for Presence, Internet-Draft <http://www.ietf.org/internet-drafts/draft-ietf-simple-presence-07.txt>, May 2002

**Editor's note:** The above document is not yet published as an RFC, where possible the reference should be converted to an RFC prior to approval of this document.

- [5] 3GPP TS 33.203: "3G security; Access security for IP-based services".
- [6] 3GPP TS 32.200: "Telecommunication management; Charging management; Charging principles".
- [7] 3GPP TS 32.225: "Telecommunication management; Charging management; Charging data description for the IP Multimedia Subsystem (IMS)".
- [8] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".
- [9] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".
- [10] 3GPP TS 23.218: "IP Multimedia (IM) session handling; IM call model; Stage 2".
- [11] IETF RFC 3265: "Session Initiation Protocol (SIP) Event Notification"

- [12] [A Session Initiation Protocol \(SIP\) Event Notification Extension for Resource Lists](http://search.ietf.org/internet-drafts/draft-ietf-simple-event-list-05.txt), Internet-Draft, <http://search.ietf.org/internet-drafts/draft-ietf-simple-event-list-05.txt>, ~~June 2003~~ ~~August 2004~~ ~~presencelist-package-00.txt~~

**Editor's note:** The above document is not yet published as an RFC, where possible the reference should be converted to an RFC prior to approval of this document.

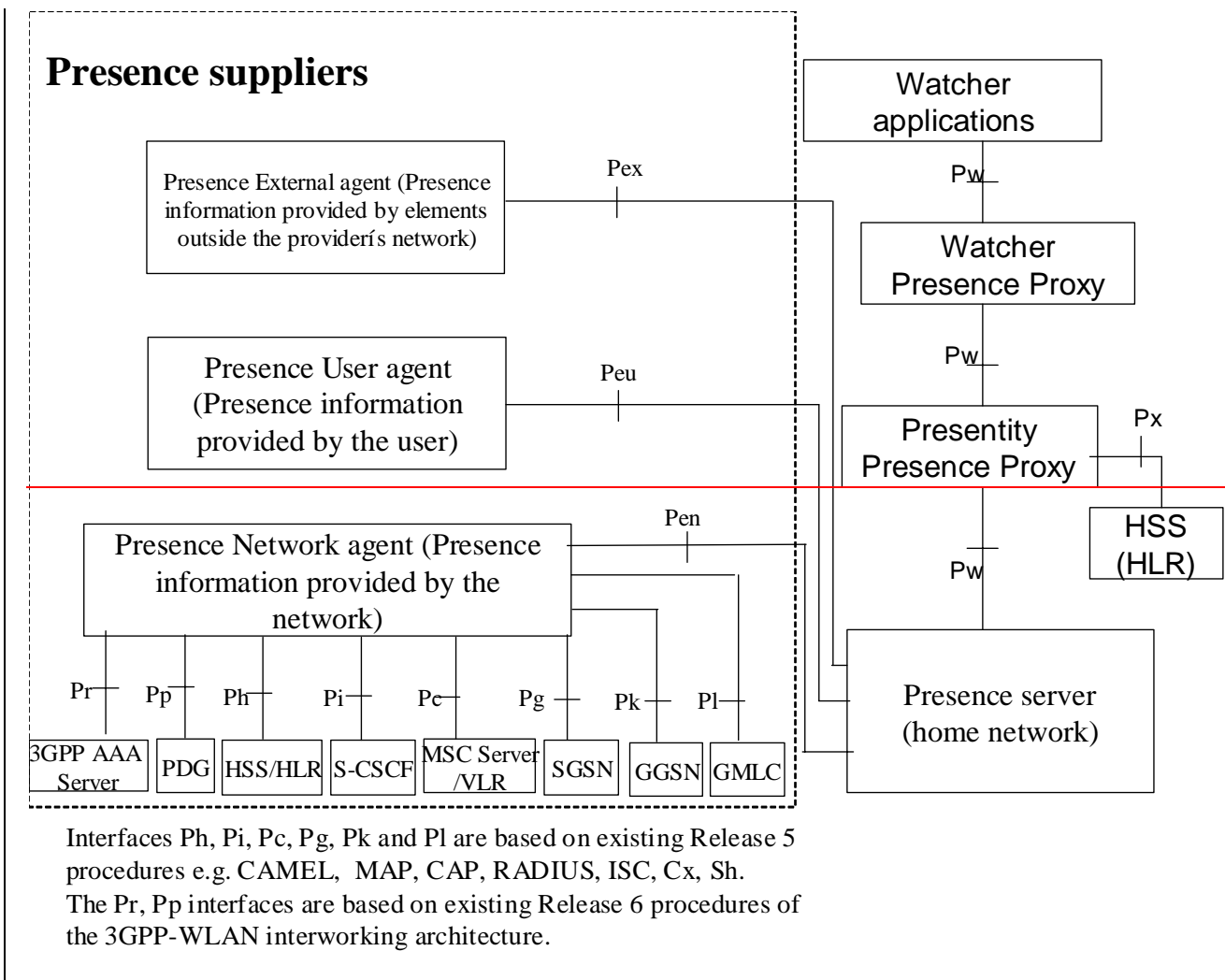
- [13] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based services and Packet Data Networks (PDN)".
- [14] 3GPP TS 23.271: "Location Services (LCS); Functional description; Stage 2".

- [15] 3GPP TS 23.127: "Virtual Home Environment (VHE) / Open Service Access (OSA); Stage 2".
- [16] IETF RFC 2778: "A Model for Presence and Instant Messaging".
- [17] IETF RFC 2779: "Instant Messaging / Presence Protocol Requirements".
- [18] 3GPP TS 23.002: "Network architecture".
- [19] 3GPP TS 23.234: "3GPP system to Wireless Local Area Network (WLAN) interworking; System description".
- [20] LIF TS 101: "Mobile Location Protocol Specification"(Location Interoperability Forum 2001) [Available at <http://www.openmobilealliance.org>].

## 4.2 Reference Architecture Model

The generic reference architectural model for providing presence service is depicted in Figure 4.2-1 below. The details of the elements in the figure (eg agents, proxies) are provided in clause 5.

The mapping of the Presence Service functional elements and reference points to the functional elements and reference points in the 3GPP Network Architecture 3GPP TS 23.002 [18] is defined in clauses 4.3 and clause 5.



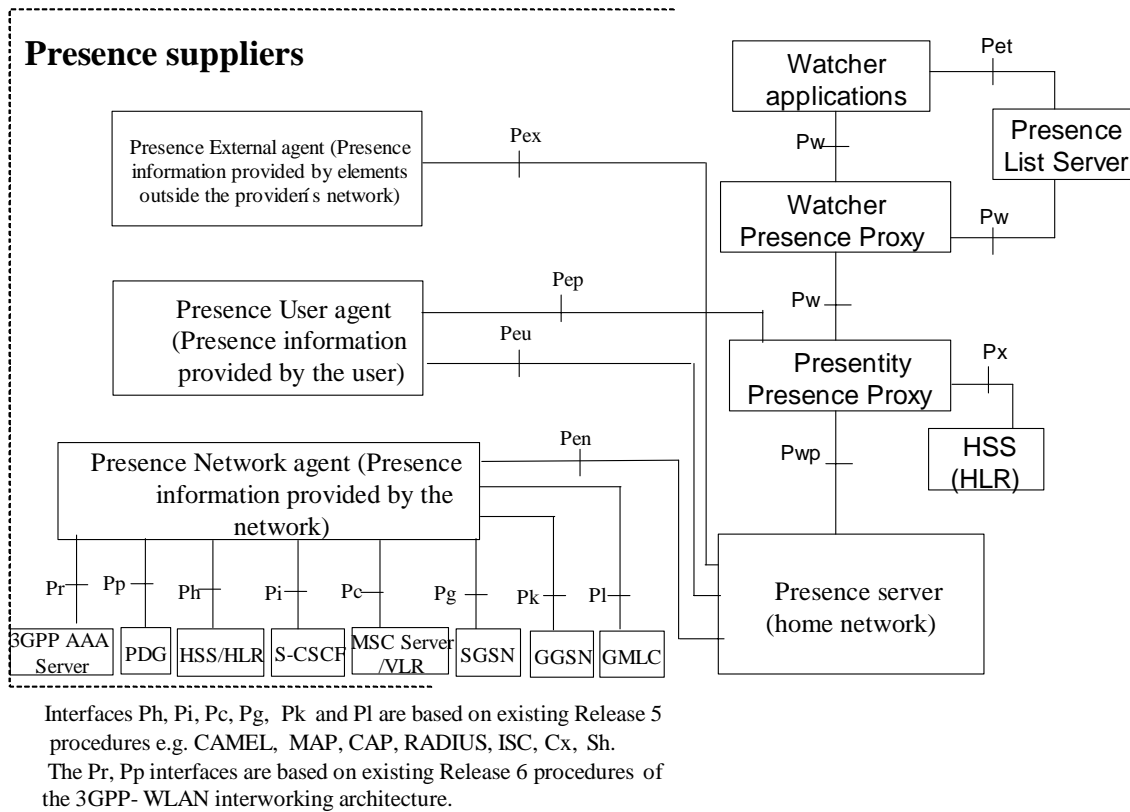


Figure 4.2-1: Reference architecture to support a presence service

\*\*\*\*\* Next change \*\*\*\*\*

### 4.3 Reference points

#### 4.3.1 Reference point Presence User Agent ñ Presence Server (Peu)

This reference point shall allow the Presence User Agent to manage subscription authorization policies.

~~This reference point shall allow a presentity's presence information to be supplied to the Presence Server. [3] provides guidelines for such an interface. The transport on this reference point shall not impose any limitations on the size of the presence information.~~

~~Peu shall provide mechanisms for the Presence User Agent to manage subscription authorisation policies.~~

~~Peu shall provide mechanisms for the Presence User Agent to obtain information on watcher subscriptions to the Presentities Presence Information.~~

~~Peu shall provide mechanisms for the Presence User Agent to supply or update only a certain subset of the presentity's presence information to the Presence Server. It shall also be possible for the Presence User Agent to supply the complete presence document over Peu.~~

~~Peu shall support SIP based communications for publishing presence information, however, in order to provide all the functionalities required on this reference point, a combination of multiple protocols may be used.~~

IPv6 shall be supported for all functionalities required from a Presence User Agent that supports the Peu reference point. An IPv6 capable 3GPP UE shall use IPv6 when accessing Peu.

This reference point uses capabilities defined for the Ut reference point as defined in 3GPP TS 23.002 [18].

\*\*\*\*\* Next change \*\*\*\*\*

#### 4.3.4 Reference point Watcher applications ñ [Presentity Presence Proxy-Server](#) (Pw)

This reference point shall allow a Watcher application to request and obtain presence information. [3] provides guidelines for such an interface.

The transport shall not impose any limitations to the size of the presence information.

In order to provide all the functionalities required on this interface, a combination of multiple protocols may be used.

This reference point shall support both presence monitoring and fetching modes. In the fetching mode, it shall be possible for the watcher to once request all or only a subset of a presentity's presence information (e.g. one or more tuples). The subset of the presence information is defined by the filter that is carried in the presence information subscription.

In the monitoring mode, it shall be possible for the watcher to request monitoring of all or a subset of a presentity's presence information (i.e. one or more tuples) . Watcher shall be able to explicitly indicate the capability to process partial updates. The subset of the presence information is defined by the filter that is carried in the presence information subscription. It shall be possible for the watcher to request the presence server to filter out information when the watcher is equal to the publishing Presence User Agent.

It shall be possible for the notifications containing the presentity's presence information to contain only information as defined by filters. It shall be possible for the notifications containing the presentity's presence information to contain only the modified tuples, i.e. only those tuples which have changed since the last notification.

[This reference point may allow a Watcher application to use presence lists in presence information subscriptions, and the Watcher Presence Proxy to interface to a server that provides the functionality of Presence List Server.](#)

IPv6 shall be supported for all functionalities required from a Watcher application that supports the Pw reference point. An IPv6 capable 3GPP UE shall use IPv6 when accessing Pw.

\*\*\*\*\* Next change \*\*\*\*\*

#### [4.3.14 Reference point Presence User Agent ñ Presentity Presence Proxy \(Pep\)](#)

[This reference point shall allow a presentity's presence information to be supplied to the Presence Server. \[3\] provides guidelines for such an interface. The transport on this reference point shall not impose any limitations on the size of the presence information.](#)

[Pep shall provide mechanisms for the Presence User Agent to obtain information on watcher subscriptions to the presentity's presence information.](#)

[Pep shall provide mechanisms for the Presence User Agent to supply or update only a certain subset of the presentity's presence information to the Presence Server. It shall also be possible for the Presence User Agent to supply the complete presence document over Pep.](#)

[Pep shall support SIP-based communications for publishing presence information.](#)

[IPv6 shall be supported for all functionalities required from a Presence User Agent that supports the Pep reference point. An IPv6 capable 3GPP UE shall use IPv6 when accessing Pep.](#)

#### [4.3.15 Reference point Presentity Presence Proxy ñ Presence Server \(Pwp\)](#)

[This reference point shall allow all the functionalities provided by the Pw and Pep reference points.](#)

#### [4.3.16 Reference point Watcher Applications ñ Presence List Server \(Pet\)](#)

[This reference point shall allow a Watcher application to manage presence list information in the Presence List Server.](#)

[This reference point uses capabilities defined for the Ut reference point as defined in 3GPP TS 23.228 \[9\].](#)

\*\*\*\*\* Next change \*\*\*\*\*

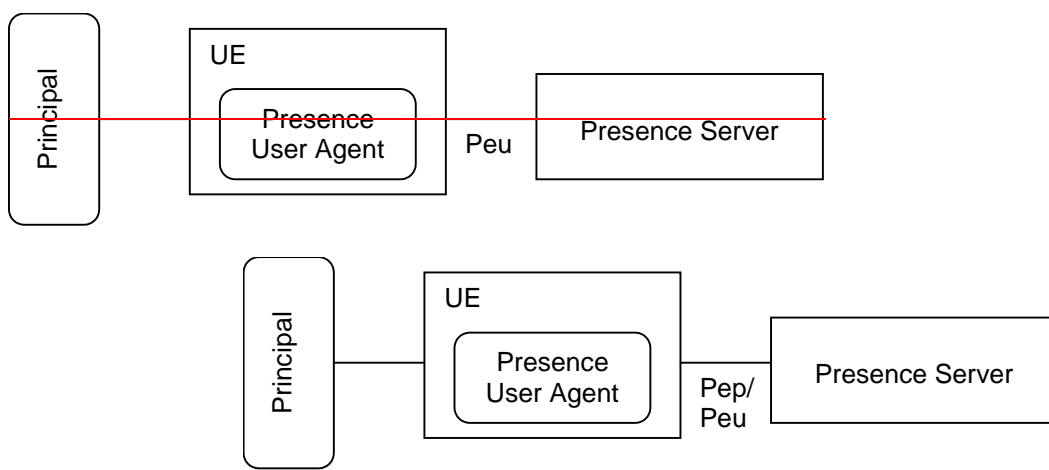
### 5.2.1 Presence User Agent

The Presence User Agent element shall provide the following functionality:

- The Presence User Agent shall collect Presence information associated with a Presentity representing a Principal.
- The Presence User Agent shall assemble the Presence information in the format defined for the [Peu and Pep](#) reference points.
- The Presence User Agent shall send the Presence information to the Presence Server element [either via the Presentity Presence Proxy](#) over the [Pep](#) reference point [or over the Peu reference point](#).
- The Presence User Agent shall be capable of managing the subscription authorisation policies.
- The Presence User Agent shall handle any necessary interworking required to support terminals that do not support the [Peu and Pep](#) reference points.
- Presence User Agent shall uniquely identify itself (among the Presence User Agents of the presentity) when publishing presence information.

From a conceptual view, the Presence User Agent (PUA) element resides between the presence server and the user's equipment as illustrated in the reference architecture in figure 4.2-1. In reality, a Presence User Agent may be located in the user's terminal or within a network entity.

Where the PUA is located in UE, the UE shall support the [Pep and Peu](#) reference points to the Presence Server as illustrated in Figure 5.2.1-1 below.



**Figure 5.2.1-1. UE based Presence User Agent**

Where the PUA is located within the network, the particular network entity shall support the [Pep and Peu](#) reference points to the presence server as illustrated in Figure 5.2.1-2. -In this case, additional functionality may be required to provide routing between UE and the Presence User Agent, and, for the Presence User Agent to register the user within the Presence network.

In this case, the interface between the terminal and the Presence User agent is outside of the scope of the present document.



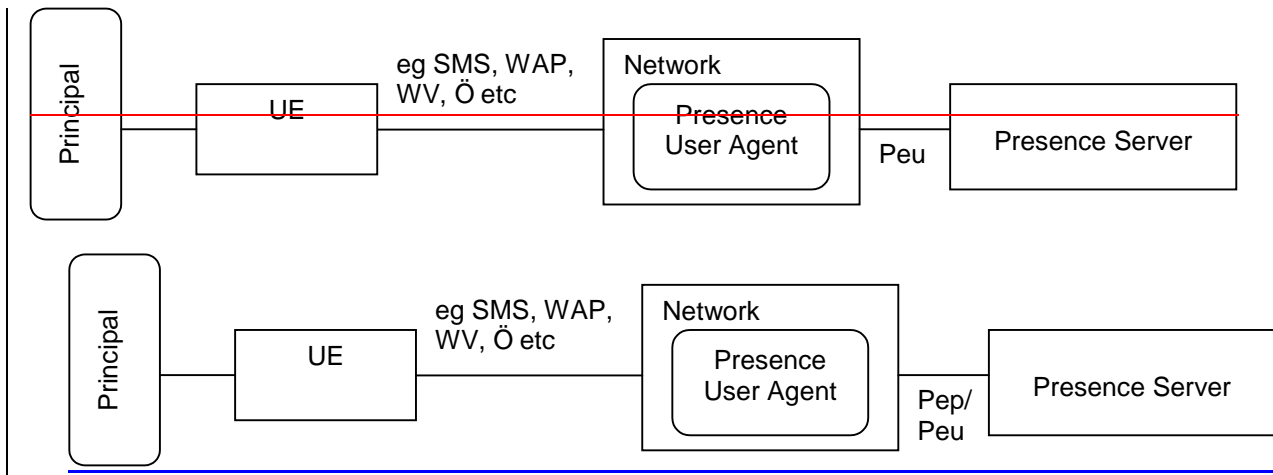


Figure 5.2.1-2. Network based Presence User Agent

### 5.2.1.1 Relationship of Presence User Agent with IMS entities

When the Presence User Agent is located in an IMS UE the  $Pep$  reference point is implemented using the Gm, Mw and ISC reference points as defined in 3GPP TS 23.002 [14].

The Gm, Mw, and ISC reference points allow a presentity's presence information to be supplied to the Presence Server. These reference points also allow for the Presence User Agent to obtain information on watcher subscriptions to the Presentities Presence Information.

The  $Peu$  reference point is implemented using the Ut reference point as defined in 3GPP TS 23.002 [18]. The Ut reference point provides mechanisms for the Presence User Agent to manage subscription authorisation policies.

\*\*\*\*\* Next change \*\*\*\*\*

### 5.3.3 Presentity Presence Proxy

The Presentity Presence Proxy shall provide the following functionality:

- Determination of the identity of the presence server associated with a particular presentity;
- Authentication of Watcher Presence Proxy;
- Authentication of the Presence user Agent;
- Generation of accounting information for updates to presence information.

~~Editor's Note: The Presentity and or the Watcher Presence Proxies may also be responsible for providing network configuration hiding. This is for further study.~~

### 5.3.4 Relationship of Presence Proxies with IMS entities

The functionalities of the Watcher Presence Proxy are then taken care of by the P-CSCF and the S-CSCF:

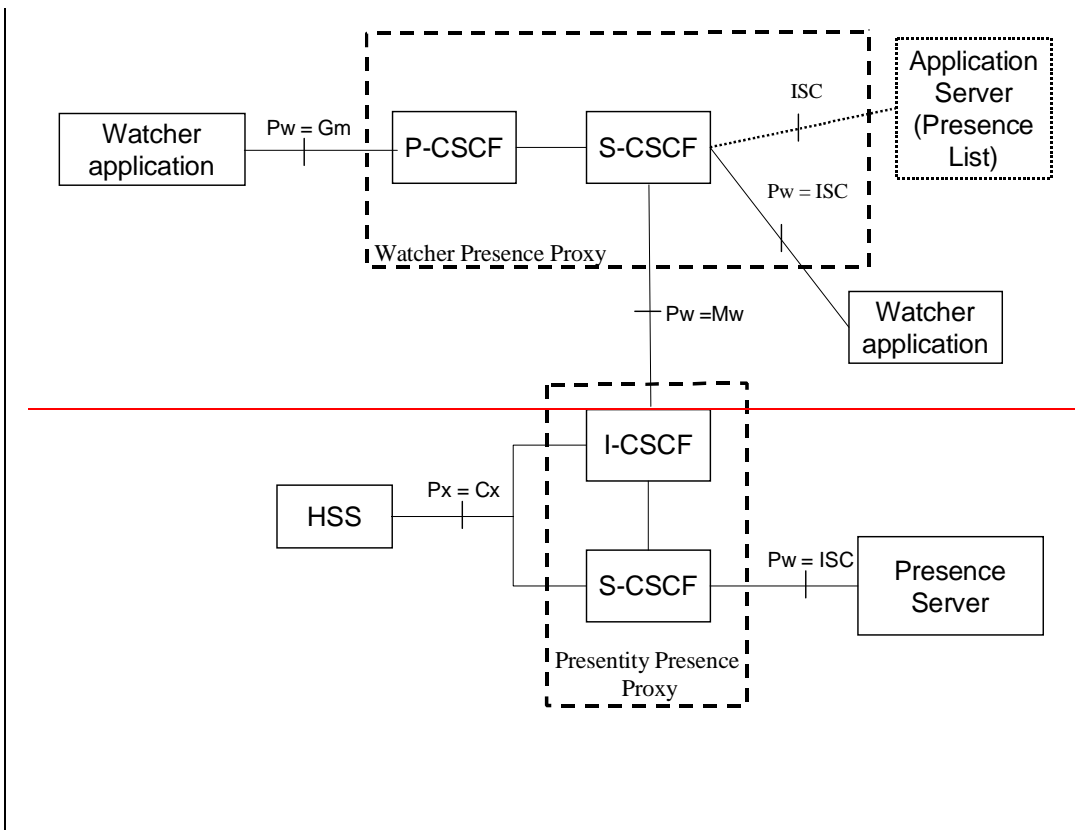
- The S-CSCF is responsible for authentication according to procedures described in 3GPP TS 33.203 [5].
- The charging and accounting procedures are conducted as per procedures defined by 3GPP TS 32.200 [6], 3GPP TS 32.225 [7].
- The security mechanisms between the Watcher and the Presentity Presence proxy are defined by 3GPP TS 33.210 [8].

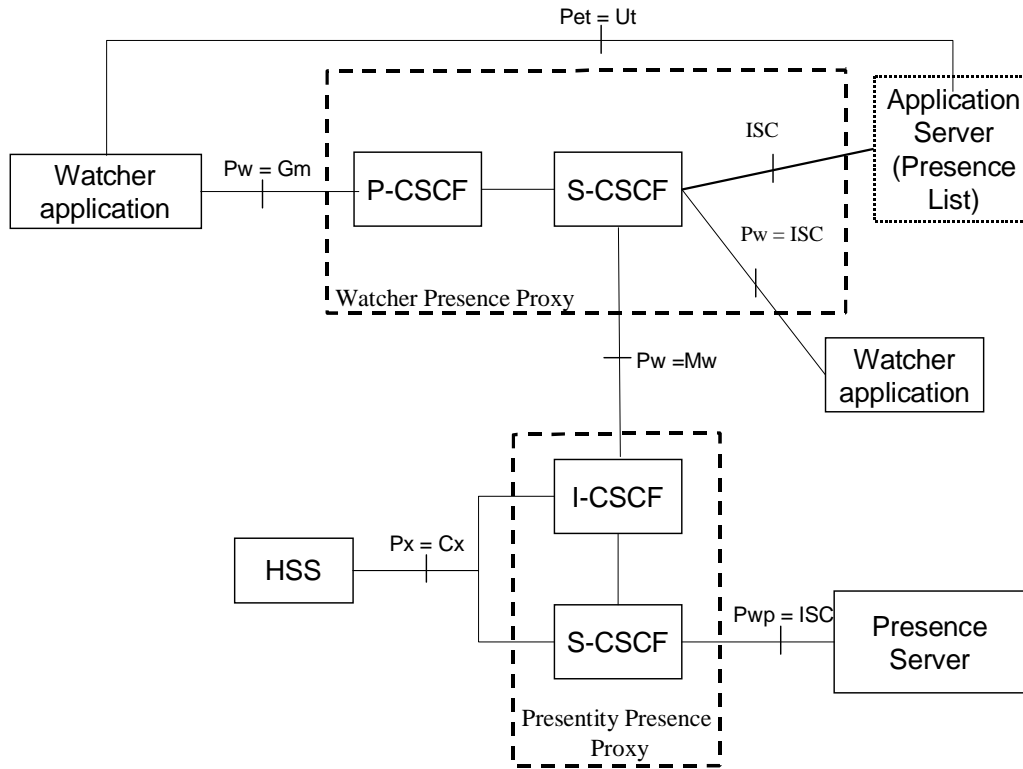
The functionality of the Presentity Presence Proxy is taken care of by the P-CSCF, I-CSCF and the S-CSCF as defined in 3GPP TS 23.228 [9].

The procedures for locating, routing to and accessing the Presence Server of the presentity are defined in 3GPP TS 23.228 [9] and 3GPP 23.218 [10]. These procedures also take care of routing and accessing the Presence Server of a presentity that is associated with an unregistered UE.

The functionality of the Watcher Presence Proxy and the Presentity Presence Proxy are allocated to the functional element CSCF as defined in 3GPP TS 23.002 [18].

Figure 5.3.4-1 below presents the mapping of the Watcher and Presentity Presence Proxy functionalities to IMS network elements when located within the IMS along with the Watcher application. This mapping is based on and restricted to reusing the existing IMS architecture mechanisms and can be clearly seen in the detailed information flows show in annex A.





**Figure 5.3.4-1: Both the Watcher application and the Presence Server located within IMS**

~~NOTE 1: In order to apply optimizations for wireless environment, such as those proposed in IETF draft ietf-simple-presencelist package [12], the Watcher Presence Proxy functionality may interface to an Application Server that provides the functionality of the Presence List Server and optionally additional functions. Figure 5.3.4-1 presents such an Application Server as a dotted box.~~

NOTE-2: The standard IMS (SIP) routing mechanisms define whether a certain CSCF is indeed included in the path of a SUBSCRIBE or NOTIFY transaction.

As described in IETF draft-ietf-simple-presence [4], the Watcher Application sends a SIP SUBSCRIBE to Event: presence addressed to the presentity's SIP URL to subscribe or fetch presentity's presence information. This SUBSCRIBE transaction will be routed and handled by the IMS infrastructure according to standard IMS routing and ISC procedures defined in 3GPP TS 23.228 [9] and 3GPP TS 23.218 [10].

The Presentity's S-CSCF is not mandated to insert itself into the Record-Route header of the initial SUBSCRIBE request, in case the S-CSCF does not execute any functions for the subsequent requests and responses of the dialog.

The presence document will be provided from the Presence Server to the Watcher Application using SIP NOTIFY along the dialogue setup by SUBSCRIBE either within the NOTIFY payload, or via a URL provided in the NOTIFY. The means to fetch the content can be seen as part of the Pw interface.

\*\*\*\*\* Next change \*\*\*\*\*

## 5.4.2 Watcher application in an IMS UE

The Watcher application can be located within a UE registered in the IMS network, it is registered to a S-CSCF via a P-CSCF according to standard IMS procedures as specified in 3GPP TS 23.228 [9].

Watcher application shall be able to handle full and partial notifications. The capability to process partial notifications shall be indicated to the presence server when making a presence subscription.

[The Pet reference point is implemented using the Ut reference point.](#)

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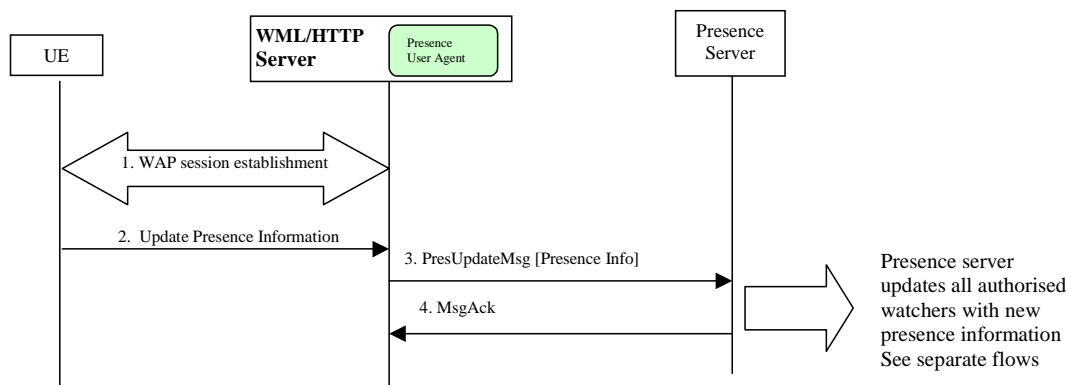
\*\*\* NEXT CHANGES \*\*\*

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## A.2.3 Flows demonstrating how presentities update Presence Information

### A.2.3.1 Updating presence information by terminals without support of the Pe<sub>pu</sub> reference point

For the case of terminals that do not support the Pe<sub>pu</sub> reference point presence information can be provided alternative mechanisms such as SMS, WAP etc. The Presence User Agent provides the necessary interworking with the presence server. As previously indicated, the PUA may be located with network entities such as a WAP WML/HTTP server or SMS-C, however this is an implementation issue and outside of the scope of technical report. This particular example is illustrative and shows the case where a user updates presence information through a WAP browser, where the Presence User Agent is located inside the WAP WML/HTTP server and is illustrated in figure A.2.3.1-1 below. It is acknowledged that other possibilities exist.

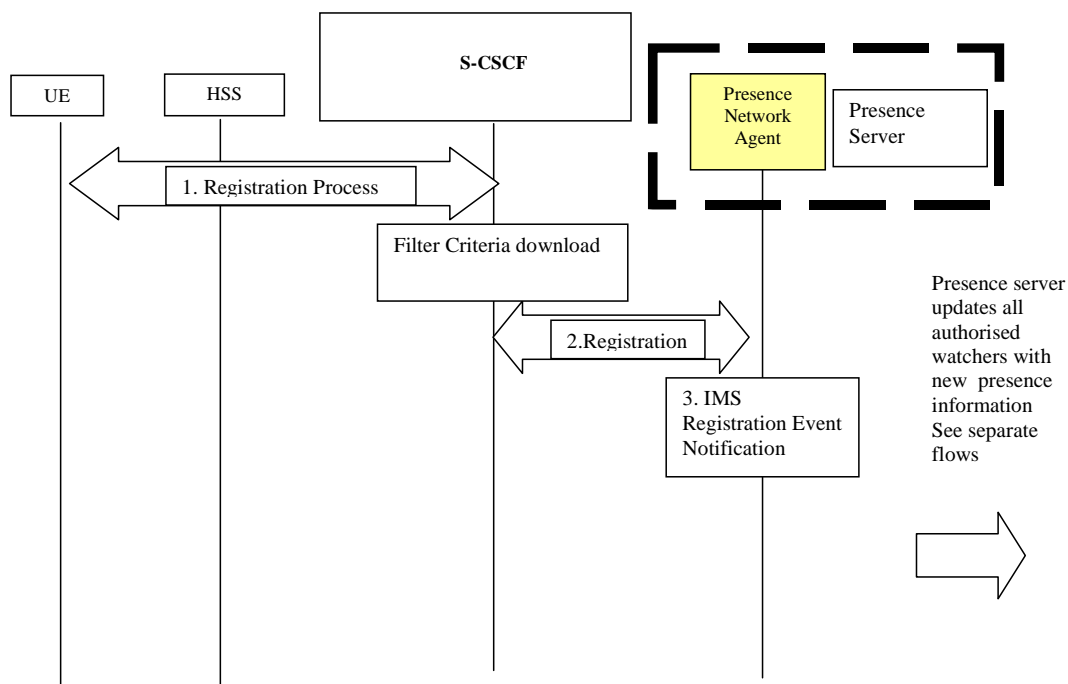


**Figure A.2.3.1-1: Updating presence information via WAP WML/HTTP server**

1. The user opens a WAP session by requesting a WAP URL that is dedicated to updates of presence information.
2. Using a WAP browser, the user modifies aspects of user presence information.
3. The WML/HTML server, which in this example hosts the Presence User Agent (although the PUA may be a separate entity, in which case the interface to the PUA will be proprietary), sends a PresUpdateMsg to the Presence Server. Additional functionality may be required to locate the presence server associated by the presentity. In this particular example, it is assumed that the PUA is configured with the appropriate address of the presence server.
4. The Presence Server acknowledges the PresUpdateMag with a MsgAck to the WAP WML/HTTP server.

### A.2.3.2 IMS Registration Notification process to the Presence Server within IMS

The following flow describes how the presence server is notified of an IMS registration event by the network elements.

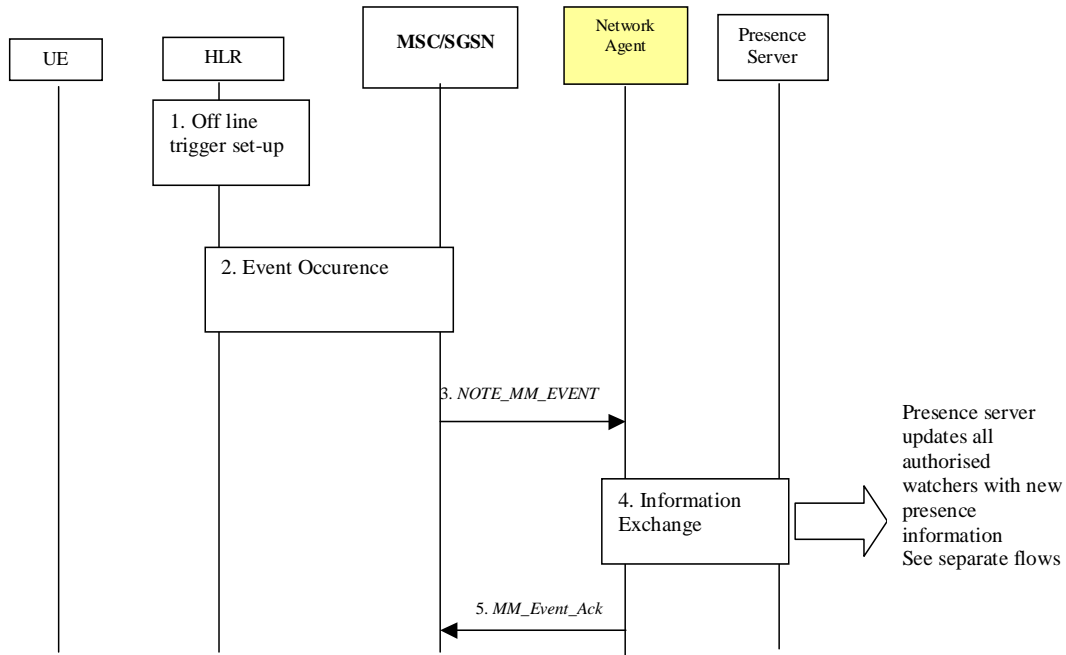


**Figure A.2.3.2-1: IMS Registration Notification procedure for the Presence Server.**

1. UE registration takes place with the S-CSCF as detailed in TS 23.228 [9]. As part of this process, the filtering criteria are downloaded to the S-CSCF from the HSS. The filter criteria contains instructions that the registration be sent to the presence network agent (eg. registration, de-registration).
2. The S-CSCF sends the registration to the Presence Network Agent via the ISC interface.
3. 3. When the Presence Network Agent receives the notification of the IMS registration event from the S-CSCF, it determines that this registration is an event that the Presence Server is interested in and informs the Presence Server.

### A.2.3.3 CS/PS Notification process of the Presence Server

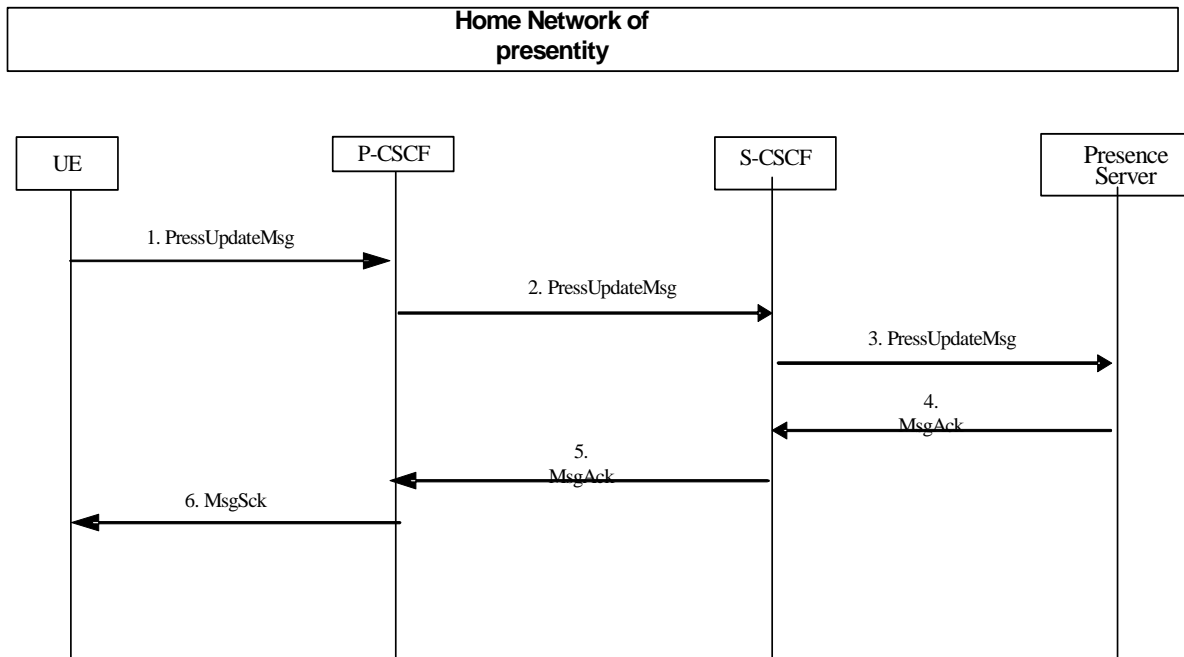
The following flow describes how the presence server is notified of an event by the network elements for a CS/PS subscriber.



**Figure A.2.3.3-1: CS/PS Notification procedure for the Presence Server.**

1. For network event to be reported on behalf of a CS/PS subscriber, the necessary triggers are armed in the MSC/SGSN. This takes place off-line and is outside the scope of this TS as to how it is achieved.
2. At the occurrence of an event between the HLR and the MSC/SGSN, (e.g UE detach) a notification message is generated.
3. A MAP notification message (NOTE\_MM\_EVENT) is sent to the Network Agent via Pc/Pg interface on the occurrence of an event, details of this are outside the scope of this flow. There may be some address resolution needed by the network agent to locate the presence server but details of this is also outside the scope of this flow..
4. The Network Agent informs the Presence Server. The Presence Server notifies all authorised watchers and sends an acknowledgement to the Network Agent.
5. Network Agent sends an MM\_Event\_Ack to the MSC/SGSN.

A.2.3.4 Updating presence information by terminals with **Pep+** interface support



**Figure A.2.3.4-1: Updating presence information via the **Pep+** interface**

1. The PUA residing in the UE generates a *PressUpdateMsg* message which contains the new presence information. The means for the PUA to compose this presence information is outside the scope of this specification.
2. P-CSCF forwards the message to the user's S-CSCF.
3. S-CSCF forwards message to the correct Presence Server based on ISC filtering rules.
4. Presence Server authorizes the presence update, and checks what information the message contains. The Presence Server then processes the updated presence information according to the client's request. The Presence Server sends a *MsgAck* response back to UE.
5. S-CSCF forwards the response back to the P-CSCF
6. P-CSCF forwards the response back to the UE.