Presence IMS Feature Successful Subscription (IMS Presence Subscription, Publication and Notification)								
Watcher UE	Watcher IMS Network		Presentity IMS Network				Presentity UE	**EventStudio System Designer 4.0**
Watcher User Equipment	Watcher Presence Proxy		Presence Server	Presentity Presence Proxy			Presence User Agent	
Watcher	Watcher P-CSCF	Watcher S-CSCF	PS	Presentity I-CSCF	Presentity S-CSCF	Presentity P-CSCF	Presentity PUA	16-Mar-08 08:41 (Page 1)

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.

The following sequence diagram describes the presence subscription and notification flow. The entities involves in the interactions are:

Presentity: The entity that provides presence information to a presence service.

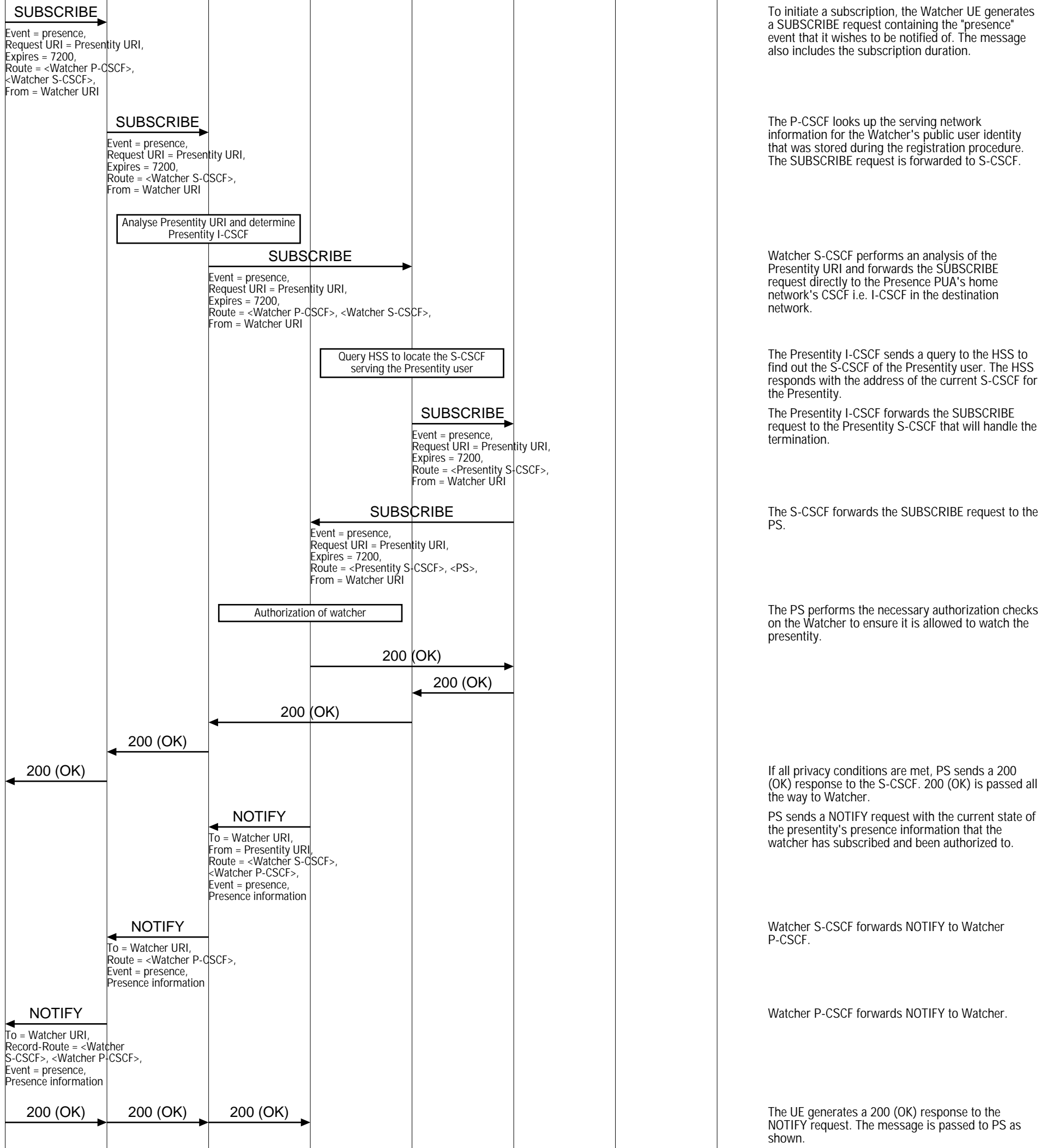Watcher: The entity that requests presence information about presentity.

Presence User Agent (PUA): The entity that assembles and provides presence information to Presence Server.

Watcher Presence Proxy: The network entity that identifies the target network for a presentity and resolves its address.
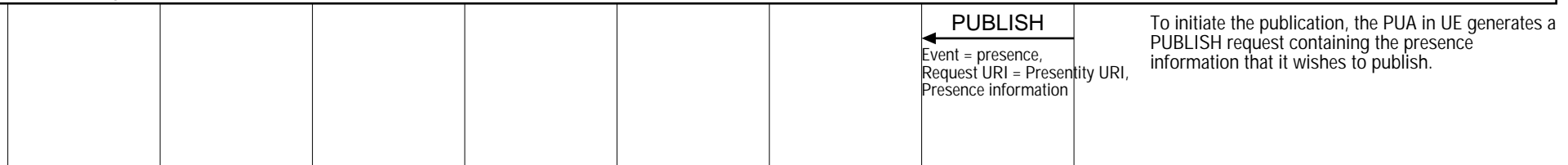
Presentity Presence Proxy: The network entity that identifies the Presence Server assigned to a presentity.

Presence Server: The network entity that manages presence information uploaded by PUAs and handles presence subscription requests.

Register for Presence Information

SUBSCRIBE
Event = presence,
Request URI = Presentity URI,
Expires = 7200,
Route = <Watcher P-CSCF>,
<Watcher S-CSCF>,
From = Watcher URI

> To initiate a subscription, the Watcher UE generates a SUBSCRIBE request containing the "presence" event that it wishes to be notified of. The message also includes the subscription duration.

SUBSCRIBE
Event = presence,
Request URI = Presentity URI,
Expires = 7200,
Route = <Watcher S-CSCF>,
From = Watcher URI

> 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.

Analyse Presentity URI and determine Presentity I-CSCF

SUBSCRIBE
Event = presence,
Request URI = Presentity URI,
Expires = 7200,
Route = <Watcher P-CSCF>, <Watcher S-CSCF>,
From = Watcher URI

> Watcher S-CSCF performs an analysis of the Presentity URI and forwards the SUBSCRIBE request directly to the Presence PUA's home network's CSCF i.e. I-CSCF in the destination network.

Query HSS to locate the S-CSCF serving the Presentity user

> The Presentity I-CSCF sends a query to the HSS to find out the S-CSCF of the Presentity user. The HSS responds with the address of the current S-CSCF for the Presentity.

SUBSCRIBE
Event = presence,
Request URI = Presentity URI,
Expires = 7200,
Route = <Presentity S-CSCF>,
From = Watcher URI

> The Presentity I-CSCF forwards the SUBSCRIBE request to the Presentity S-CSCF that will handle the termination.

SUBSCRIBE
Event = presence,
Request URI = Presentity URI,
Expires = 7200,
Route = <Presentity S-CSCF>, <PS>,
From = Watcher URI

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

Authorization of watcher

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

200 (OK)

200 (OK)

200 (OK)

200 (OK)

200 (OK)

> 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.

NOTIFY
To = Watcher URI,
From = Presentity URI,
Route = <Watcher S-CSCF>,
<Watcher P-CSCF>,
Event = presence,
Presence information

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

NOTIFY
To = Watcher URI,
Route = <Watcher P-CSCF>,
Event = presence,
Presence information

> Watcher S-CSCF forwards NOTIFY to Watcher P-CSCF.

NOTIFY
To = Watcher URI,
Record-Route = <Watcher S-CSCF>, <Watcher P-CSCF>,
Event = presence,
Presence information

> Watcher P-CSCF forwards NOTIFY to Watcher.

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

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

Presence State Changes for the Watched User

PUBLISH
Event = presence,
Request URI = Presentity URI,
Presence information

> To initiate the publication, the PUA in UE generates a PUBLISH request containing the presence information that it wishes to publish.

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Watcher User Equipment	Watcher Presence Proxy		Presence Server	Presentity Presence Proxy				Presence User Agent	
Watcher	Watcher P-CSCF	Watcher S-CSCF	PS	Presentity I-CSCF	Presentity S-CSCF	Presentity P-CSCF		Presentity PUA	16-Mar-08 08:41 (Page 2)

PUBLISH (Presentity P-CSCF → Presentity S-CSCF)
Event = presence,
Request URI = Presentity URI,
Presence information,
Route = <Presentity S-CSCF>

Presentity P-CSCF looks up the serving network information for the public user identity that was stored during the registration procedure. The PUBLISH request is forwarded to the Presentity S-CSCF. A Route header is inserted into PUBLISH request.

PUBLISH (Presentity S-CSCF → PS)
Event = presence,
Request URI = Presentity URI,
Presence information,
Route = <PS>, <Presentity S-CSCF>

The Presentity S-CSCF forwards the PUBLISH request to the PS.

Authorization of publisher

The PS performs the necessary authorization checks to ensure that it is allowed to publish the presentity's presence information.

200 (OK) (PS → Presentity S-CSCF → Presentity P-CSCF → Presentity PUA)

When all privacy conditions are met, PS generates 200 (OK) response towards Presentity PUA.

NOTIFY (PS → Watcher S-CSCF → Watcher P-CSCF → Watcher)

To = Watcher URI, Record-Route = <Watcher S-CSCF>, <Watcher P-CSCF>, Event = presence, Presence information

To = Watcher URI, Route = <Watcher P-CSCF>, Event = presence, Presence information

To = Watcher URI, From = Presentity URI, Route = <Watcher S-CSCF>, <Watcher P-CSCF>, Event = presence, Presence information

200 (OK) (Watcher → Watcher P-CSCF → Watcher S-CSCF → PS)

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