Technical Specification Group Services and System Aspects *TSGS#12(01)0265*
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Abstract of document:

This TS identifies the requirements for the support of the presence service for users, devices and services being managed by the wireless network. The presence service will enable the creation of new wireless-enhanced rich multimedia services along the lines of those currently available in the internet world such as "chat", instant messaging, multimedia messaging, e-mail, advanced push services, handling of individual media in a multimedia session etc.

Additionally, the presence service may also be exploited by CS and PS services.

The presence service provides the information engine to support these new services, but not the new services themselves.

TS 22.141 identifies requirements for:-

- Home environment
- User requirements
- General, management and notifications
- Roaming
- Privacy
- Security
- Charging

Changes since last presentation to TSG-SA Meeting #11:

None (WID presented at TSG-SA#11)

Outstanding Issues:

TSG-SA1 also understands that when TSG-SA#11 approved the Presence Service WID (in SP-010064), a couple of comments were made, and they are answered as follows:-

- *visibility of the caller is a larger issue, as there is no guarantee that there is a physical user.*

TSG-SA1 has identified the requirements for the Presence Service to enable different types of entities to be supported. These may include traditional telecommunications entities such as users, devices and services, but can also support abstract entities such as content (e.g. the current score of a live football match, or the length of a traffic queue on a motorway etc.).

- *the issue is wider than just a simple supplementary service*

TSG-SA1 has identified the requirements for the Presence Service to not only enable applications to support enhanced supplementary services, but to also provide potential support to services in PS domain and the new IMS multimedia services.

Contentious Issues:

None

TSG-SA WG 1 (Services) meeting #12 **TSG S1 (01) 0478**
Helsinki, Finland, 7-11 May 2001 **Agenda Item: 4 & 8**

3GPP TS 22.141 V2.0.0 (2001-05)

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

This specification defines the requirements for the support of the presence service, which results in presence status and information on a user's devices, services and services components being managed by the wireless network. Together, these devices, services and services components are termed presentity (presence entity). This TS makes extensive use of internet terminology to ensure alignment with the presence service description and behaviour in internet recommendations RFC 2778 [3], RFC 2779 [4] and A Common Profile for Instant Messaging [5].

The presence service provides access to presence status information to be made available to other users or services. Exploitation of this service will enable the creation of wireless-enhanced rich multimedia services along the lines of those currently present in the internet world.

Presence is an attribute related to, but quite different from mobility information, and provides a service to be exploited by other services. The presence service will enable other multimedia services to exploit this key enabler to support other advanced multimedia services and communications. Examples of such multimedia services that could potentially exploit the presence service include "chat", instant messaging, multimedia messaging, e-mail, advanced push services, handling of individual media in a multimedia session etc.

A presence-enabled service as observed by the user is a service in which the user can control his presence status to other users and services, and also be able to explicitly identify specifically which other users and services to which he provides presence status. Combined with the capability of other users' control of their own presence status, virtually infinite combinations of users and services interacting at different levels can be created.

The exploitation of the presence service is already available in the internet world, although unfortunately with different non interoperable mechanisms. This specification identifies the requirements for support of a wireless-enhanced version of the presence service through the support of wireless attributes (e.g. services, media components of a multimedia service, location information) in an interoperable manner both within the wireless network, and with external networks.

1 Scope

This TS defines the stage one description for the presence service. Stage one is the set of requirements which shall be supported to enable the exploitation of the presence service, seen primarily from the users' and home environments' points of view.

This TS includes information applicable to the home environment, device and network manufacturers which are sufficient to provide complete support of the presence service.

Additional functionalities not documented in this TS are considered outside the scope of this TS. Such additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the requirements of the presence service defined in this specification.

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 TS 21.905: 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications.

Editor's note: remove hyperlink information in [1]

[2] 3GPP TS 22.121: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects Service Aspects; The Virtual Home Environment"

[3] RFC 2778 "A Model for Presence and Instant Messaging"; http://www.ietf.org/rfc.html

[4] RFC 2779 "Instant Messaging / Presence Protocol Requirement"; http://www.ietf.org/rfc.html

[5] A Common Profile for Instant Messaging; http://www.ietf.org/internet-drafts/draft-ietf-impp-cpim-01.txt

2.1 Acknowledgement

3 Definitions, symbols and abbreviations

3.1 Definitions

availability: ffs

fetcher: a form of watcher that has asked the presence service for the presence information of one or more presentities, but is not requesting a notification from the presence service of (future) changes in a presentity's presence information.

identity: ffs

poller: a fetcher that requests presence information on a regular basis.

possessor: The possessor of a particular piece of presence information is the entity that generated the information. Examples are:

- if the device itself can provide presence information, then the device or the owner of the device is the possessor of the presence information.
- if presence information is determined using network resources, e.g. an MSC/VLR , then the home enivornment is the possessor of the presence information.

presence information: consists of an arbitrary number of elements, each of them containing a minimum number of attributes (e.g. status, identity) and other optional attributes

presence service: the capability to support management of presence information between watchers and presentities, in order to enables applications and services to make use of presence information

presentity (presence entity): any uniquely identifiable entity that is capable of providing presence information to presence service. Examples of presentities are devices, services etc.

principle: human, program, or collection of humans and/or programs that chooses to appear to the presence services as a single actor, distinct from all other principles.

status: ffs

subscribed-watcher: a subscribed-watcher is a type of watcher, which requests notification from the presence service of (future) changes in a presentity's presence information.

watcher: requests presence information about a presentity, or watcher information about a watcher, from the presence service. Special types of watcher are fetcher, poller, and subscribed-watcher.

watcher information: information about watchers that have received or may receive presence information about a particular presentity within a particular recent span of time.

Editor's note: the watcher information definition is to be further refined…

3.2 Abbreviations

For the purposes of this document the following abbreviations apply:

IETF	Internet Engineering Task Force
LAN	Local Area Network
VHE	Virtual Home Environment

4 Presence models

4.1 Roles in the presence service

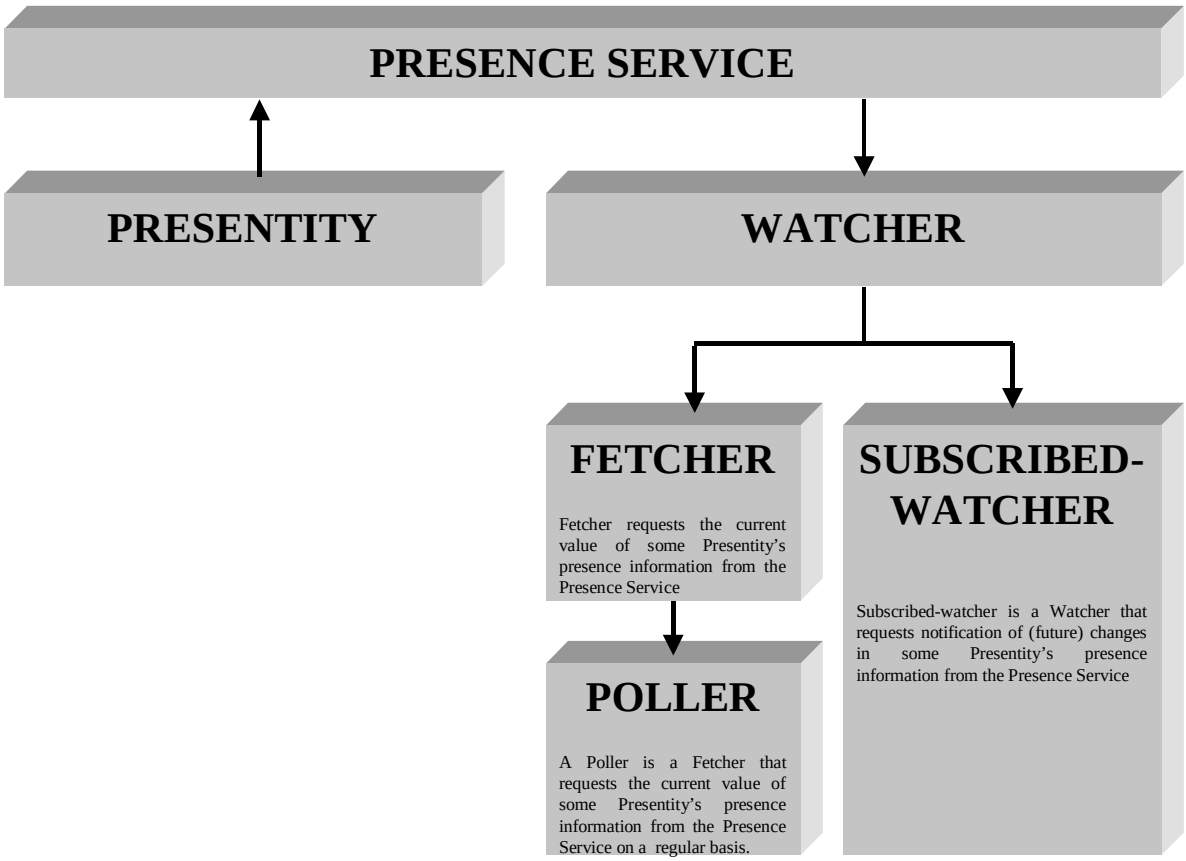

Figure 1: Presence service model

The presence service may be considered to support three main roles, as depicted in figure 1"Presence service model".

For the purposes of this TS, the following roles are identified to support the presence service:-

Presence information

The presence information is a set of elements for the data relating to presence entities which is stored, accessed and distributed on request, and includes functionalities to support presence information (e.g. ability to consolidate, disseminate, secure, authentication etc.).

Suppliers of presence information

This role represents those entities that supply presence information (i.e. provide data to be stored in the presence information. The term presentity (presence entity) is used to identify the suppliers of presence information.

Requesters of presence information

This role represents those entities which request (and subsequently receive) presence information of a presentity. The presence information may also maintain data on requesters of presence information, which may also be potentially distributed (on request) to requesters of presence information. The term watchers is used to identify the requesters of presence information.

The requesters of presence information may be subdivided further into 2 further roles:-

Information Requesters

This role represents those entities which simply requests the current data of a presentity in the presence information. The term "fetchers" is used to identify the receivers of this type of presence information of a presentity. Presence information of a presentity may also be requested on a regular or periodic basis, and are referred to as pollers.

Notification Requesters

This role represents those entities which request notifications on (future) changes in presence information of a presentity. The term subscribed-watchers is used to identify the receivers of this type of presence information.

4.2 Presence information

A logical model of the presence information consists of an arbitrary number of elements. Each such element may contain information as:-

- status

  which may consist of values such as open, closed, online, offline, busy, away, do not disturb etc.

- communications address

  which may consist of a communication means (e.g. service type(s), media type(s), multimedia/instant messaging service etc.) and a contact address (e.g. E.164, URI, instant inbox address etc.).

- other presence information

  which may consist of rules regarding how presence information is to be handled (e.g. distributed to watcher x, and not to watcher y), location co-ordinates, device content limitations (e.g. maximum size of media content allowed etc.)

The above list of element contents is neither exhaustive nor complete.

4.3 Informative models

The above models of the presence service and presence information are not definitive, and no implementation model or architecture is implied or required by them, and are solely provided to describe the functions and roles that shall be provided by the presence service.

5 High level requirements

5.1 Home Environment requirements

The presence service shall provide the ability for the home environment to manage the availability of users' devices, services and service media, even when roaming. The home environment shall be able to be both the supplier of presence information (i.e. presentities), as well as the requesters of presence information (i.e. watchers).

The home environment requirements for the support of the presence service are defined in 5.3 General requirements, and the applicable requirements in 5.4 Management requirements and 5.5 Notification and acknowledgement requirements.

5.2 User requirements

The presence service shall provide the ability for users to manage the availability of their devices, services and service media, even when roaming. Users shall be able to be both the suppliers of presence information (i.e. presentities), as well as the requesters of presence information (i.e. watchers).

The user requirements for the support of the presence service are defined in 5.3 General requirements, and the applicable requirements in 5.4 Management requirements and 5.5 Notification and acknowledgement requirements.

5.3 General requirements

The following general requirements for the presence service shall be supported:-

a) Presence information

Presence information for presentities shall be maintained in a standardised format to enable interoperability.

The standardised presence information format:

i) shall be able to interwork with Internet presence information formats

ii) shall enable it to be extended to represent additional information, without undermining the standardised format (e.g. customise the status dependent on location, time of day, devices etc.). It shall be possible to personalise the presence information of a presentity on a per requester basis.)

iii) shall include a means to uniquely identify the presentity

iv) shall define a standardised presence schema suitable for different services (e.g. instant messaging), with a minimum set of status values needed for interoperability within 3GPP (e.g. open, closed, online, offline, busy, away, do not disturb etc.)

v) shall include a means to relate contact information for the presentity's principal (if applicable), such as email address, telephone number, postal address etc., or a link to that information

b) Forward compatible presence service

Presence service shall leverage current and evolving presence technology by re-using existing standards as far as possible and proposing extensions (as necessary) to existing standards.

c) Interoperability with external presence services

External networks (e.g. those in other PLMN's, the Internet, LANs etc.) currently support several different forms of presence service. The presence service shall enable the wireless network to present a consistent and interoperable support of presence, such that the wireless presence capability users can interwork with one or more other external presence services. The presence service shall be able to interoperably exchange presence information with the Internet.

d) Consistent and interoperable presence service

Regardless of the service using presence information, the presence service shall be supported in a consistent and interoperable manner between the UE and the network

e) Transport independence

It shall be possible to use the presence service independent of the bearer or transport mechanism. Restrictions may apply due to the nature of the underlying transport mechanism (e.g. a CS terminal may not be capable to supply the same presence information as a terminal attached to the IM CN Subsystem)

f) Presence service quality of service

Presence service shall be available in near-real time (i.e. it is no good being advised on the presence of a device, after the status has changed again).

Editor's note: need to qualify what is meant by "near real time"

g) Devices, services and services media components

Presence service shall enable the support of presentity presence information for individual presentities (e.g. a devices, services and services media components) on a per requester basis.

h) Advanced wireless presence capabilities

Within the wireless environment the presence service shall be able to enable and exploit the special characteristics of the mobile environment, in order to support features and services over and above those found in the internet world.

i) Home Environment control of the presence service

It shall be possible to allow the home environment to support a user both in the home environment and in a visited network

j) Privacy of presence information

The privacy of presentities data in the presence information shall be ensured.

k) Policy management

It shall be possible for the home environment to support a presence policy management.

l) Legal interception

It shall be possible for the home environment to authorise access to the presence information without the knowledge or permission of the presentity that is being observed (e.g. for law enforcement purposes).

5.4 Management requirements

The following high level presence service requirements shall be supported:-

a) Presence configuration by the home environment

The presence service shall enable the home environment to configure the presence information for individual presentities.

b) Access to the presence service

The presentity shall have the ability to accept or reject a request for presence information on a per watcher basis, with the option:-

i) once only per watcher (e.g. set up a profile for known watcher, groups of watchers, anonymous subscriptions, etc.),

ii) for each presence information request (e.g. for watchers that are unknown or not set up in the current profile).

c) Subscribing to the presence service

d) Supplying data to, and requesting data from, the presence information

The presence service shall enable the secure reading of data from the presence information for individual presentities. It shall be possible to request the current value of presence information data on demand or on a periodic basis, or to be notified of subsequent changes in presence information data.

It shall be possible for a subscribed-watcher to establish a subscription to a presentity's presence information, and:-

i) it shall be possible to inform the presentity of subscription requests

ii) it shall be possible to report existing subscriptions to the presentity (on request or periodically)

iii) the subscribed-watcher shall be able to determine the status of his subscription to that presentity's presence information, at any time.

iv) the presentity shall be able to cancel the subscribed-watcher's subscription at any time

v) it shall be possible for the presentity to request the subscriber address

vi) it shall be possible for the subscriber to request the presentity address

vii) it shall be possible for the subscriber and/or presentity to withhold their identity

viii) if the subscribed-watcher so chooses, the subscribed-watcher's subscription to a presentity's presence information shall not be revealed to others.

Editor's note: do we really need this requirement?

e) User availability and mobility

The presence service shall take into account changes in the availability of users (e.g. the user is out of contact or not reachable, despite having activated his presence) or his mobility (e.g. wherever he may be in his home environment or in a visited network).

f) Location information

The presence service shall be capable of integrating location information and provide notifications based on changes in location as requested by a watcher

5.5 Notification and acknowledgement requirements

The following notification and acknowledgement presence service requirements shall be supported:-

a) Uniqueness of identity

The presence service shall uniquely identify the presentity in notifications and acknowledgements.

b) Presence data modification and monitoring requests

The presence service shall be able to support the acknowledgement of any requests to monitor a presentity's presence information (i.e. from requesters of presence information)

If a subscribed-watcher establishes a subscription to a presentity's presence information:-

i) it shall be possible for the subscribed-watcher to be provided with a means of verifying the accurate receipt of the presence information that the presentity chooses to disclose to the subscribed-watcher

ii) the presentity shall inform the subscribed-watcher if the presentity refuses the subscribed-watcher's subscription.

iii) the subscribed-watcher shall be able to cancel his subscription to a presentity's presence information at any time

iv) an unauthorized third party subscribed-watcher shall not be able to cancel the subscribed-watcher's subscription to a presentity's presence information

v) if the subscribed-watcher's subscription to presentity's presence information is cancelled, the presence service shall inform the subscribed-watcher of the cancellation

6 User environment

The presence service shall support the ability to create, update, interrogate, manage and delete presentity presence information for a user as part of the user profile within the scope of the user's Virtual Home Environment (cf. [2]).

7 Support of other services

The user shall be able to use both the presence service and other services at the same time (e.g. supplementary services or IP multimedia services).

8 Presence service and service continuity

The presence service shall continue be supported if the environment into which the user has moved supports presence service. If the user moves into an environment that cannot support the presence service, then the user's presentity presence information may be treated as being unavailable from a presence perspective until he moves back into an environment that can support the presence service.

9 Roaming Requirements

The presence service shall be supported both in the home environment as well as in visited networks, subject to the capabilities of the visited network.

10 Identification of entities

The presence service shall be capable of uniquely identifying a presentity in an interoperable, consistent and unique manner within the wireless network. The presence service shall be able to interoperably exchange presence information with the Internet.

11 Privacy

Specific local, national, and regional privacy regulations shall be complied with.

The privacy aspect of presence information and the need for authorisation before providing presence information shall be configurable by the user (i.e. presentity).

It shall be possible for the user (i.e. presentity) to define different user groups with different levels of authorisation, e.g. the details of presence information may depend on target user groups (e.g. family, friends, colleagues etc.).

Any services using the presence information shall ensure privacy agreement before releasing presence information. The presence service does not address deployment specific issues (e.g. where agreements are stored or how they are negotiated). It only gives requirements for privacy management.

The following privacy requirements shall be supported:-

- principal privacy: a principal shall, at any time, be able to control to whom, for how long and what (all or part of) presence information is provided
- subscriber privacy: a subscriber (i.e. user) shall, at any time, be able to control to whom, for how long and what (all or part of) presence information is provided
- network operator privacy: an operator shall, at any time, be able to override subscriber and principal privacy preferences if required to do so by local regulations.
- possessor privacy: the possessor of the presence information should, at any time, be able to control to whom, for how long and what (all or part of) presence information is provided, depending on local regulations.

The privacy requirements for the presence service shall be elaborated by TSG-SA3.

12 Security

The use and access to the presence service shall be supported in a secure manner. It shall only be possible for the presence information to be modified by the user or the home environment as identified in clause 5 "High Level Requirements". The privacy of the presence information shall be ensured.

The integrity of the presence service and presence information shall be ensured by the home environment. The presence capability shall support measures to detect and prevent attempts to maliciously use or abuse the services.

The security requirements for the presence service shall be elaborated by TSG-SA3.

Editor's note: this clause requires to be reviewed, and further contributions are awaited

13 Charging

The presence service shall be able to support various charging mechanisms. The following charging characteristics shall be considered:-

- charging for a user's registration as a presentity
- charging for each subscription to presence information for a user
- charging for presence information retrieval for users
- charging for presence information notifications received for users
- charging for presence information usage when in a visited network

The above list is not exhaustive.

Annex A (informative): Example presence service use cases

Immediate Messaging Use Case

- Premise:

  User is in-and-out of coverage

  Others wish to send a message and get a response - now

- Considerations

  User's Presence provides info regarding availability (Yields measure of Probability of message delivery)

- Presence capability can be separated from IM

  Functional Separation

- Sequence

  User is out and about (having meetings or just travelling)

  Availability status gets updated as needed (User control - change to 'unavailable - in meeting', Network control - out-of-coverage / busy-in-call)

- Co-worker wants to send you a note

  Check of Presence Info lets others see if user is available (If available - provides addressing info (e.g. IM server / account ids))

- IM Server handles message deliveries

  Status updates available at any time

Location Info in Presence Use Case

- Premise:

  User is travelling per a schedule

  Others looking to find out when user will arrive

  Alternative model is to know where to go to meet user

- Considerations

  User's Presence Info could have activity indicator (e.g. 'in a meeting' or 'driving')

- System may have access to location information on user

  Issue would be the granularity/resolution

- System may have access to user's 'calendar'

  Would make a plan available

- Security/authentication aspects of disclosures

- Sequence

  User is out and about (having meetings or just travelling (Assume that user activity indication available (For example: 'unavailable - driving')

System could correlate location information with activity (Answer questions like - is user at planned meeting?, If travelling, could correlate distance with minimum transit time)

System could maintain progress on plan from calendar (System may be able to determine if user is running late or not, User could revise plan or provide annotated information)

Co-worker wants to know if you are available (System provides current activity, possible links to schedule)

- Family wants to know if user is on way home

  Activity indication of 'driving' may assist in determination

  Current location info could help determine how far from home

- Meet-me example

  Service may correlate matching info (Example where Activity Indication - 'Shopping' & Location - 'Mall', Friend with matching codes could be flagged, Could IM to determine which store or to have lunch)

  Service could manage meeting maker (May have appointment scheduled with others, Could check status to see if everybody was in right location)

Message Modality Control Use Case

- Premise:

  User has different means to communicate (voice, text…)

  User may indicate preferences

  Voice number is managed by entity monitoring status

- Considerations

  Content format adaptation available (e.g. text-to-speech (synthetic voice) or speech-to-text)

  User preferences set desired message format (May change the official communication device address)

  Related services subscribe to user status (Cell net could be watcher to provide value-add/quick routing)

- Sequence

  User is in a meeting (can't take a phone call)

  Status shows 'busy - in a meeting' (Presence status listed as 'unavailable for voice', Option for speech-to-text delivery provided if available)

  If friend can send text - does so (Works as expected)

  If friend has a voice device (Calls into user's number, Switch sees speech delivery disabled - conversion offered, Switch connects caller to speech-to-text converter, Text is sent to user, If caller stays on circuit, could engage in two-way dialog)

- Premise:

  User is travelling and changes plane

  Others looking to communicate with the user

  Service available to 'take a message'

- Considerations

  Service has access to User's state

  Service could be associated with User info (May be dependent on state or watcher identification)

Service may deliver ‘markup’ contact for reply (Ideal is to enable programmable or responsive operations)

Traveler Changing Planes Use Case

- Sequence

  User is on a plane

  User (more correctly - device) is out of coverage (Presence status listed as ‘unavailable’, Service (‘take a message’) shown as available)

  Friend wants to pass some info and sees ‘unavailable’ status (Uses ‘take a message’ to save a friendly note)

  Co-worker needs some specific info (Uses ‘take a message’ to record a ‘get back to me’ note)

- User arrives at airport

  User status changes (Availability may be provided to limited subset of watchers)

  ‘Take a Message’ Service gets update and sends a report (Provides an inbox type message)

  User may interact to read the messages (stored by service) (Messages could be selectively managed (read/forward/delete))

  Addresses in Notes are associated with status information (Effectively invokes a dynamically generated buddy list, May have been entities that were not part of regular buddy list, Very easy to ‘return the call’ with know availability information)

- User gets on next plane

  Status changes again - reverts to unavailable handling

Annex B (informative): Change history

Change history											
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	Work Item
			22.141					Produced during Presence Adhoc 18th-19th April, Seattle, Washington, USA	0.0.0	0.1.0	Presence
			22.141					Produced during S1 plenary 7th-11th May, Helsinki, Finland	0.0.0	0.2.0	Presence