



**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
Presence service using the IP Multimedia (IM)
Core Network (CN) subsystem;
Stage 3
(3GPP TS 24.141 version 13.0.0 Release 13)**



Reference

RTS/TSGC-0124141vd00

Keywords

LTE, GSM, UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2016.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	6
1 Scope	7
2 References	7
3 Definitions and abbreviations.....	9
3.1 Definitions	9
3.2 Abbreviations	10
4 Presence service overview.....	11
5 SIP related procedures.....	11
5.1 Introduction	11
5.2 Functional entities	11
5.2.1 User Equipment (UE)	11
5.2.2 Application Server (AS)	11
5.3 Roles.....	11
5.3.1 Presence User Agent (PUA)	11
5.3.1.1 General	11
5.3.1.2 Publication of presence information.....	12
5.3.1.3 Mapping of presence attributes	12
5.3.1.4 Storing presence attributes by multipart/related or content indirection.....	13
5.3.1.5 Subscription for the watcher information event template package	13
5.3.1.6 Subscription for notification of state changes in XML document.....	14
5.3.2 Watcher.....	14
5.3.2.1 General	14
5.3.2.2 Subscription for presence information state changes and notification acceptance.....	14
5.3.2.3 Subscription for presence information state changes of presentity collections	14
5.3.2.4 Subscription for the watcher information event template package	15
5.3.2.5 Subscription for notification of state changes in XML document.....	15
5.3.3 Presence Server (PS).....	15
5.3.3.1 General	15
5.3.3.2 Subscription acceptance to presence information and notification of state changes	15
5.3.3.3 Publication acceptance of presence information	15
5.3.3.4 Subscription acceptance to watcher information and notification of state changes	16
5.3.3.5 Subscription acceptance and notification of state changes in XML document	16
5.3.4 Resource List Server (RLS).....	16
5.3.4.1 General	16
5.3.4.2 Subscription acceptance to resource lists and notification of state changes.....	17
5.3.4.3 Subscription to presence information.....	17
5.3.4.4 Subscription acceptance and notification of state changes in XML document	17
5.3.5 Presence Network Agent (PNA).....	17
5.3.5.1 General	17
5.3.5.2 Subscription to reg event package.....	17
5.3.5.3 Publication of network presence information.....	18
6 Protocol for data manipulation at the Ut reference point	18
6.1 Introduction	18
6.2 Functional entities	18
6.2.1 User Equipment (UE)	18
6.2.2 Application Server (AS)	18
6.2.3 Authentication proxy	19
6.3 Roles.....	19

6.3.1	XCAP client.....	19
6.3.1.1	Introduction.....	19
6.3.1.2	Manipulating a resource list.....	19
6.3.1.3	Manipulating the subscription authorization policy.....	19
6.3.1.4	Publishing hard state presence information.....	20
6.3.2	XCAP server.....	20
6.3.2.1	Introduction.....	20
6.3.2.2	Resource list manipulation acceptance.....	20
6.3.2.3	Subscription authorization policy manipulation acceptance.....	20
6.3.2.4	Publication acceptance of hard state presence information.....	20
7	Presence information model of the 3GPP subscriber.....	21
7.1	General.....	21
7.2	XML schema definitions.....	21
7.3	XML schema descriptions.....	21
Annex A (informative): Example signalling flows of presence service operation.....		22
A.1	Scope of signalling flows.....	22
A.2	Introduction.....	22
A.2.1	General.....	22
A.2.2	Key required to interpret signalling flows.....	22
A.3	Signalling flows demonstrating how watchers subscribe to presence event notification.....	23
A.3.1	Introduction.....	23
A.3.2	Watcher and presentity in different networks, UE in home network.....	24
A.3.2.1	Successful subscription.....	24
A.3.3	Watcher subscribing to resource list, UE in visited network.....	33
A.3.3.1	Watcher subscribing to his own resource list, UE in visited network - Successful subscription.....	33
A.3.3.2	Watcher subscribing to a resource list, UE in visited network - successful subscription.....	44
A.3.4	RLS subscribing to presentities in different network.....	57
A.3.4.1	Successful subscription.....	57
A.3.5	Network based watcher subscribing on behalf of IMS watcher to IMS presentities.....	65
A.3.6	Watcher subscribing to state changes in XML document, UE in visited network.....	73
A.3.6.1	Watcher subscribing to changes made via XCAP in his resource list, UE in visited network - Successful subscription.....	73
A.4	Signalling flows demonstrating how presentities update presence information.....	82
A.4.1	Introduction.....	82
A.4.2	Initial publication or modification of presence information by UE.....	82
A.4.2.1	Successful publication.....	82
A.4.3	Refreshing of presence information by UE.....	87
A.4.3.1	Successful refresh.....	87
A.5	PS notifying watcher of updates to presence information.....	90
A.5.1	Introduction.....	90
A.5.2	Watcher and presentity in the different networks, UE in the home network.....	90
A.5.2.1	Successful notification.....	90
A.5.3	Notification to resource list in a different network and notification to watcher in the visited network.....	93
A.5.3.1	Successful notification.....	93
A.6	PUA subscribing to his own watcher list and receiving notification of new watcher subscriptions.....	99
A.6.1	Introduction.....	99
A.6.2	PUA subscribing to watcher list and receiving a notification of an already pending watcher subscription followed by a notification of a subscription from a new watcher not already in the watcher list.....	100
A.7	PNA subscription for the reg-event package.....	114
A.8	Example signalling flows of HTTP based presence service operation.....	118
A.8.1	Introduction.....	118
A.8.2	Signalling flows demonstrating how XCAP clients manipulate resource lists.....	119
A.8.3	Signalling flows demonstrating how XCAP clients manipulate presence authorization policy.....	122
A.8.4	Storing external content (successful operation).....	125

Annex B (informative): **Change history**130
History133

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.

1 Scope

The present document provides the protocol details for the presence service within the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and SIP Events as defined in 3GPP TS 24.229 [9].

Where possible the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP and SIP Events, either directly, or as modified by 3GPP TS 24.229 [9].

Requirements for manipulation of presence data are defined by use of a protocol at the Ut reference point based on XML Configuration Access Protocol (XCAP) (RFC 4825 [33]).

The present document is applicable to Application Servers (ASs) and User Equipment (UE) providing presence functionality.

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] 3GPP TS 23.002: "Network architecture".
- [4] 3GPP TS 23.141: "Presence service; Architecture and functional description; Stage 2".
- [5] 3GPP TS 23.218: "IP Multimedia (IM) session handling; IM call model; Stage 2".
- [6] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".
- [7] 3GPP TS 24.109: "Bootstrapping interface (Ub) and Network application function interface (Ua); Protocol details".
- [8] 3GPP TS 24.228 Release 5: "Signalling flows for the IP multimedia call control based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
- [9] 3GPP TS 24.229: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
- [10] 3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents".
- [11] 3GPP TS 33.222: "Generic Authentication Architecture (GAA); Access to network application functions using Hypertext Transfer Protocol over Transport Layer Security (HTTPS)".
- [12] IETF RFC 2664 (1999): "FYI on Questions and Answers - Answers to Commonly asked New Internet User Questions".
- [13] Void.
- [14] IETF RFC 2387 (August 1998): "The MIME Multipart/Related Content-type".