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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
LTE;
IMS Multimedia telephony service and
supplementary services;
Stage 3
(3GPP TS 24.173 version 7.9.0 Release 7)**



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Foreword

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- 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 multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.173 [2].

Multimedia telephony and supplementary services allow users to establish communications between them and enrich that by enabling supplementary services.

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 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".
- [3] 3GPP TS 24.404: "TISPAN; PSTN/ISDN simulation services: Communication Diversion (CDIV); Protocol specification".
- [4] 3GPP TS 24.405: "TISPAN; PSTN/ISDN simulation services: Conference (CONF); Protocol specification".
- [5] 3GPP TS 24.406: "TISPAN; PSTN/ISDN simulation services; Message Waiting Indication (MWD); Protocol specification".
- [6] 3GPP TS 24.407: "TISPAN; PSTN/ISDN simulation services; Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR); Protocol specification".
- [7] 3GPP TS 24.408: "PSTN/ISDN simulation services Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR); Protocol specification".
- [8] 3GPP TS 24.410: "TISPAN; NGN Signalling Control Protocol; Communication HOLD (HOLD) PSTN/ISDN simulation services; Protocol specification".
- [9] 3GPP TS 24.411: "TISPAN; PSTN/ISDN simulation services: Anonymous Communication Rejection (ACR) and Communication Barring (CB); Protocol specification".
- [10] 3GPP TS 24.429: "TISPAN; PSTN/ISDN simulation services: Explicit Communication Transfer (ECT); Protocol specification".
- [11] 3GPP TS 24.423: "TISPAN; PSTN/ISDN simulation services; Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating NGN PSTN/ISDN Simulation Services".
- [12] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia telephony; Media handling and interaction".
- [13] 3GPP TS 24.229: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

- [14] 3GPP TS 24.247: "Messaging using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".
- [15] ETSI ES 283 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); "IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3".
- [16] IETF RFC 3841 (August 2004): "Caller Preferences for the Session Initiation Protocol (SIP)".

Modifications to the references in the 3GPP TSs.

The references as found throughout the clause 2 of References found throughout 3GPP TSs [3], [4], [5], [6], [7], [8], [9], [10] and [11] should be replaced as shown below.

Replace references as shown in table 1 below:

Table 1: 3GPP reference replacement

Reference in ETSI TSs	Modified reference
3GPP TS 24.403: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3".	3GPP TS 24.229: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
3GPP TS 23.406: 'Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Stage 2 description'.	3GPP TS 23.228: 'IP Multimedia Subsystem (IMS); Stage 2'.
3GPP TS 29.427: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Interworking SIP-ISUP for TISPAN-IMS"	3GPP TS 29.163: 'Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks'

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 21.905 [1] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CS	Circuit Switched
CN	Core Network
ICSI	IMS Communication Service Identifier
IP	Internet Protocol
IM	IP Multimedia
MMTEL	Multimedia Telephony

4 Overview of multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem

4.1 General

In accordance with the service definition and requirements in 3GPP TS 22.173 [2], the IMS multimedia telephony communication service specified herein allows multimedia conversational communication between two or more end points. An end point is typically located in a UE, but can also be located in a network entity.

As for traditional circuit-switched telephony, the protocols for the IMS multimedia Telephony communication service allow a user to connect to any other user, regardless of operator and access technology.

The IMS multimedia Telephony communication service consists of two principal parts: a basic communication part, and an optional supplementary services part.

4.1A Roles

4.1A.1 Multimedia telephony participant

A UE shall implement the role of a multimedia telephony participant.

4.1A.2 Multimedia telephony application server

An application server shall implement the role of a multimedia telephony application server. Various application server usages are called out by references to the various supplementary services.

4.2 Overview of basic communication part

The basic communication part of an IMS multimedia telephony communication service session is realised by a single SIP session. It utilises media capabilities and flexibility provided by the SIP protocol and the 3GPP IMS specifications. In accordance with the service definition in 3GPP TS 22.173 [2], the media capabilities includes RTP-based transfer of voice, real-time video and text, as well as TCP/MSRP-based transfer of text, arbitrary files and sharing of media files with predefined formats. To ensure interoperability, media codecs and formats are fully specified for RTP-based and MSRP-based transfer in 3GPP TS 26.114 [12]. The service is highly dynamic in terms of media component usage: the protocols allow a communication session to start with one or more media components, and components can then be added and/or removed during the communication session. The protocols allow both one-way and two ways transfer between end points. Full duplex speech, and speech combined with other media components, are typical media cases but the protocols do not mandate the use of speech in all sessions.

4.3 Overview of supplementary services part

The supplementary services part of the IMS multimedia telephony communication service consists of a number of specified supplementary services. These are fully standardized to ensure interoperability between multiple end points, and between end points and network control entities. The behaviour of supplementary services is similar to supplementary services specified for CS speech (TS 11). Supplementary services uses SIP as enabling protocol. Configuration of supplementary services can take place over the Ut interface and can use XCAP as enabling protocol.

5 Basic Communication

5.1 IMS communication service identifier

URN used to define the ICSI for the IMS Multimedia Telephony Communication Service: urn:urn-7:3gpp-service.ims.icsi.mmtel. The URN is registered at <http://www.3gpp.com/Uniform-Resource-Name-URN-list.html>.

Summary of the URN: This URN indicates that the device supports the IMS Multimedia Telephony Communication Service.

The URN is intended primarily for use in the following applications, protocols, services, or negotiation mechanisms:

This URN is most useful in a communications application, for describing the capabilities of a device, such as a phone or PDA.

Examples of typical use: Indicating that a mobile phone can support the IMS Multimedia Telephony Communication Service.

Related standards or documents:

3GPP TS 24.173: "IMS Multimedia Telephony Communication Service and Supplementary Services, stage 3"

5.2 Session control procedures

The IMS multimedia telephony communication service can support different types of media, including media types listed in 3GPP TS 22.173 [2]. The session control procedures for the different media types shall be in accordance with 3GPP TS 24.229 [13] and 3GPP TS 24.247 [14], with the following additions:

- a) Multimedia telephony is an IMS communication service and the P-Preferred-Service and P-Asserted-Service headers shall be treated as described in 3GPP TS 24.229 [13]. The coding of the ICSI value in the P-Preferred-Service and P-Asserted-Service headers shall be according to subclause 5.1.
- b) The multimedia telephony participant shall include the g.3gpp. icsi-ref feature tag equal to the ICSI value defined in subclause 5.1 in the Contact header field in initial requests and responses as described in 3GPP TS 24.229 [13].
- c) The multimedia telephony participant shall include an Accept-Contact header field containing the g.3gpp. icsi-ref feature tag containing the ICSI value defined in subclause 5.1 in initial requests. If the user requests capabilities other than multimedia telephony, the Accept-Contact header field may contain other feature parameters and feature parameter values, and other Accept-Contact header fields may be added to express user preferences as per IETF RFC 3841 [16].

NOTE: How the user indicates other feature parameters and feature parameter values is outside of the scope of this document.

5.3 Interworking

The multimedia telephony participant could receive initial requests that do not contain the ICSI value defined in subclause 5.1 in the Accept-Contact header but still invoke the IMS multimedia telephony communication service application.

6 Supplementary Services

6.1 High level requirements

6.2 Originating Identification Presentation (OIP)

The OIP service is specified in 3GPP TS 24.407 [6].

6.3 Originating Identification Restriction (OIR)

The OIR service is specified in 3GPP TS 24.407 [6].

6.4 Terminating Identification Presentation (TIP)

The TIP service is specified in 3GPP TS 24.408 [7].

6.5 Terminating Identification Restriction (TIR)

The TIR service is specified in 3GPP TS 24.408 [7].

6.6 Communication Diversion (CDIV)

The CDIV service is specified in 3GPP TS 24.404 [3].

6.7 Communication Hold (HOLD)

The HOLD service is specified in 3GPP TS 24.410 [8].

6.8 Communication Barring (CB)

The CB service is specified in 3GPP TS 24.411 [9].

6.9 Message Waiting Indication (MWI)

The MWI service is specified in 3GPP TS 24.406 [5].

6.10 Conference (CONF)

The CONF service is specified in 3GPP TS 24.405 [4].

6.11 Explicit Communication Transfer (ECT)

The ECT service is specified in 3GPP TS 24.429 [10].

6.12 XCAP over Ut interface for Manipulating NGN PSTN/ISDN Simulation Services

The XCAP is specified in 3GPP TS 24.423 [11].

Annex A (informative):
Void

Annex B (informative):
Void

Annex C (informative):
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Annex D (informative):
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Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
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2006-07	CT1#42-bis				The following Tdocs included are in this version of the TS: C1-061293, C1-061301, C1-061342, C1-061343, C1-061344, C1-061345, C1-061346, C1-061347, C1-061348, C1-061361 Some corrections to the formatting as well as editorial alignments also done by the rapporteur.	0.1.0	0.2.0
2006-09	CT1#43				The following Tdocs have been included in this version of the TS: C1-061464, C1-061721, C1-061722, C1-0611723 Some formatting cleanups performed in chapters: Annex E (4.5.2.6.2 and 4.7.1.1) and Annex H (4.5.2.4.1.2.3, 4.5.2.4.2.1, 4.5.2.7.2 and 4.5.2.7.3).	0.2.0	0.3.0
2006-11	CT1#44				The following Tdoc has been included in this version of the TS: C1-062452	0.3.0	0.4.0
2006-11	3GPP/TISPAN Supplementary Serv				The following Tdoc has been included in this version of the TS: SS-060052	0.4.0	0.5.0
2006-11					V 1.0.0 created by MCC	0.5.0	1.0.0
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2007-06	CT-36	CP-070430	0013	-	24.173: Alignment with TISPAN#13 approved XCAP CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0011	-	24.173: Alignment with TISPAN#13 approved OIP/OIR CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0010	-	24.173: Alignment with TISPAN#13 approved MWI CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0009	-	24.173: Alignment with TISPAN#13 approved HOLD CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0008	-	24.173: Alignment with TISPAN#13 approved ECT CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0007	-	24.173: Alignment with TISPAN#13 approved CONF CRs	7.0.0	7.1.0
2007-06	CT-36	CP-070430	0005	-	24.173: Alignment with TISPAN#13 approved CB CRs	7.0.0	7.1.0
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2007-06	CT-36	CP-070490	0012	1	Alignment with TISPAN#13 approved TIP/TIR CRs	7.0.0	7.1.0
2007-09	CT-37	CP-070668	0024	3	Service identification alignment	7.1.0	7.2.0
2007-09	CT-37	CP-070669	0025	2	24.173: Alignment with TISPAN#14 approved CDIV CRs	7.1.0	7.2.0
2007-09	CT-37	CP-070669	0026	2	24.173: Alignment with TISPAN#14 approved ECT CRs	7.1.0	7.2.0
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2007-09	CT-37	CP-070669	0028	2	24.173: Replacing CONF text with text from the published ETSI specification	7.1.0	7.2.0
2007-09	CT-37	CP-070669	0029	2	24.173: Replacing HOLD text with text from the published ETSI specification	7.1.0	7.2.0
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2007-09	CT-37	CP-070669	0033	2	24.173: Replacing XCAP text with text from the published ETSI specification	7.1.0	7.2.0
2007-09	CT-37	CP-070699	0023	7	IMS Multimedia Telephony Communication Service ICSI in Accept-Contact	7.1.0	7.2.0
2007-12	CT-38	CP-070797	0036	2	Specification of ICSI for Multimedia Telephony in Accept-Contact	7.2.0	7.3.0
2007-12	CT-38	CP-070796	0037		Use of the ICSI in the Contact Header for mmtel	7.2.0	7.3.0
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2008-06	CT-40	CP-080346	0051	-	Reference replacement table correction	7.4.0	7.5.0
2008-08	CT-41	CP-080518	0053	1	Introduction of terms "multimedia telephony participant" and "multimedia telephony application server"	7.5.0	7.6.0
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