

ETSI TS 122 173 V14.3.0 (2017-05)



**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
IP Multimedia Core Network Subsystem (IMS)
Multimedia Telephony Service and supplementary services;
Stage 1
(3GPP TS 22.173 version 14.3.0 Release 14)**



Reference

RTS/TSGS-0122173ve30

Keywords

GSM,LTE,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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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 2017.

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.

oneM2M logo is protected for the benefit of its Members

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.....	9
1 Scope	10
2 References	10
3 Definitions, symbols and abbreviations	11
3.1 Definitions	11
3.2 Symbols.....	11
3.3 Abbreviations	11
4 Service description	12
4.1 General Service characteristics.....	12
4.2 Default media handling capabilities of IMS Multimedia Telephony service	12
4.3 Association of Services to Time/Date	13
4.4 Additional timing information.....	13
4.5 White / blacklist	13
5 Service Requirements.....	13
6 Quality of Service.....	13
7 Interworking requirements	13
7.1 Interworking with CS domain	13
7.2 Interworking with external networks.....	13
7.3 Media Aspects on Interworking	13
8 Supplementary Services	14
8.1 General	14
8.2 Supplementary Services applicable to IMS Multimedia Telephony	14
8.2.1 Originating Identification Presentation (OIP).....	14
8.2.1.1 Definition	14
8.2.1.2 Service interactions with other IMS supplementary services.....	15
8.2.1.2.1 Identification services.....	15
8.2.1.2.2 Diversion services	15
8.2.1.2.3 Communication Waiting (CW)	15
8.2.1.3 Interoperability with PSTN/ISDN and mobileCS Networks.....	16
8.2.2 Originating Identification Restriction (OIR).....	16
8.2.2.1 Definition	16
8.2.2.2 Service interactions with other IMS supplementary services.....	16
8.2.2.2.1 Identification services.....	16
8.2.2.2.2 Diversion services	16
8.2.2.2.3 Explicit Communication Transfer (ECT)	16
8.2.2.3 Interoperability with PSTN/ISDN and mobile CS Networks.....	17
8.2.3 Terminating Identification Presentation (TIP).....	17
8.2.3.1 Definition	17
8.2.3.2 Service interactions with other IMS supplementary services.....	17
8.2.3.2.1 Identification services.....	17
8.2.3.2.2 Diversion services	17
8.2.3.3 Interoperability with PSTN/ISDN and mobile CS Networks.....	17
8.2.4 Terminating Identification Restriction (TIR).....	17
8.2.4.1 Definition	17
8.2.4.2 Service interactions with other IMS Multimedia Telephony services.....	18
8.2.4.2.1 Identification services.....	18
8.2.4.3 Interoperability with PSTN/ISDN and mobile CS Networks.....	18
8.2.5 Malicious Communication IDentification (MCID)	18

8.2.5.1	Definition	18
8.2.5.2	Service interactions with other IMS supplementary services.....	18
8.2.5.2.1	Diversion Services.....	18
8.2.5.2.2	Explicit Communication Transfer (ECT)	18
8.2.5.2.3	CONFerence (CONF).....	19
8.2.5.2.4	Three-Party (3PTY).....	19
8.2.5.3	Interoperability with PSTN/ISDN Networks	19
8.2.6	Anonymous Communication Rejection (ACR)	19
8.2.6.1	Definition	19
8.2.6.2	Service interactions with other IMS supplementary services.....	19
8.2.6.2.1	Identification Services	19
8.2.6.2.2	Diversion Services.....	20
8.2.6.2.3	Communication Waiting (CW)	20
8.2.6.2.4	Completion of Communications to Busy Subscriber (CCBS).....	20
8.2.6.3	Interoperability with PSTN/ISDN.....	21
8.2.7	Communication DIVersion (CDIV)	21
8.2.7.1	Definition	21
8.2.7.2	Void.....	23
8.2.7.3	Service interactions with other IMS supplementary services.....	23
8.2.7.3.1	Identification services.....	23
8.2.7.3.2	Malicious Communication IDentification (MCID)	24
8.2.7.3.3	Anonymous Communication Rejection (ACR).....	24
8.2.7.3.4	Diversion services	24
8.2.7.3.5	Communication Waiting (CW)	26
8.2.7.3.6	Communication Barring (CB)	27
8.2.7.3.7	Completion of Communications to Busy Subscriber (CCBS).....	27
8.2.7.3.8	Advice Of Charge (AOC).....	27
8.2.7.4	Interoperability with PSTN/ISDN and CS mobile networks.....	27
8.2.8	Communication Waiting (CW).....	28
8.2.8.1	Definition	28
8.2.8.2	Service interactions with other IMS supplementary services.....	28
8.2.8.2.1	Anonymous Communication Rejection (ACR).....	28
8.2.8.2.2	Diversion services	28
8.2.8.2.3	Completion of Communications to Busy Subscriber (CCBS).....	28
8.2.8.3	Interoperability with PSTN/ISDN.....	28
8.2.9	Communication HOLD (HOLD).....	28
8.2.9.1	Definition	28
8.2.9.2	Service interactions with other IMS supplementary services.....	29
8.2.9.2.1	CONFerence (CONF).....	29
8.2.9.2.2	Three-Party (3PTY).....	29
8.2.9.3	Interoperability with PSTN/ISDN and CS mobile networks	29
8.2.10	Communication Barring (CB).....	29
8.2.10.1	Definition	29
8.2.10.2	Service interactions with other IMS supplementary services.....	30
8.2.10.2.1	Diversion services	30
8.2.10.3	Interoperability with PSTN/ISDN and CS mobile networks.....	31
8.2.11	Completion of Communications to Busy Subscriber (CCBS)	31
8.2.11.1	Definition	31
8.2.11.2	Service interactions with other IMS supplementary services.....	32
8.2.11.2.1	Identification services.....	32
8.2.11.2.2	Anonymous Communication Rejection (ACR).....	32
8.2.11.2.3	Communication DIVersion (CDIV)	32
8.2.11.2.4	Communication Waiting (CW)	32
8.2.11.2.5	Communication HOLD (HOLD).....	32
8.2.11.2.6	Communication Barring (CB)	33
8.2.11.2.7	Completion of Communications to Busy Subscriber (CCBS).....	33
8.2.11.2.8	Advice Of Charge services (AOC).....	33
8.2.11.3	Interoperability with PSTN/ISDN.....	33
8.2.12	Message Waiting Indication (MWI)	33
8.2.12.1	Definition	33
8.2.12.2	Service interactions with other services	33
8.2.12.2.1	Diversion services	33

8.2.12.3	Interoperability with PSTN/ISDN and CS mobile networks.....	34
8.2.13	CONFerence (CONF).....	34
8.2.13.1	Definition.....	34
8.2.13.2	Service interactions with other IMS supplementary services.....	34
8.2.13.2.1	Diversion services.....	34
8.2.13.2.2	CONFerence (CONF).....	34
8.2.13.2.3	Advice Of Charge services (AOC).....	34
8.2.13.2.4	Originating Identification Restriction (OIR).....	34
8.2.13.2.5	Terminating Identification Restriction (TIR).....	35
8.2.13.2.6	Three-Party (3PTY).....	35
8.2.13.3	Interoperability with PSTN/ISDN and CS Mobile networks.....	35
8.2.14	Advice Of Charge (AOC).....	35
8.2.14.1	Definition.....	35
8.2.14.2	Service interactions with other IMS supplementary services.....	35
8.2.14.2.1	Diversion services.....	35
8.2.14.2.2	Completion of Communications to Busy Subscriber (CCBS).....	35
8.2.14.2.3	CONFerence (CONF).....	36
8.2.14.3	Interoperability with PSTN/ISDN.....	36
8.2.15	Explicit Communication Transfer (ECT).....	36
8.2.15.1	Definition.....	36
8.2.15.2	Service interactions with other IMS supplementary services.....	37
8.2.15.2.1	Identification services.....	37
8.2.15.2.1.2	Originating Identification Presentation (OIP).....	37
8.2.15.2.2	Communication Barring (CB).....	37
8.2.15.2.3	CONFerence (CONF).....	37
8.2.15.2.4	Advice Of Charge (AOC).....	37
8.2.15.2.5	Explicit Communication Transfer (ECT).....	38
8.2.15.3	Interoperability with PSTN/ISDN and CS mobile networks.....	38
8.2.16	Reverse charging.....	38
8.2.16.1	Definition.....	38
8.2.16.2	Service interactions with other IMS supplementary services.....	38
8.2.16.3	Interoperability with PSTN/ISDN.....	38
8.2.17	Closed User Group (CUG).....	38
8.2.17.1	Definition.....	38
8.2.17.2	Service interactions with other IMS supplementary services.....	39
8.2.17.2.1	Diversion services.....	39
8.2.17.2.1.1	Communication Forwarding Unconditional (CFU).....	39
8.2.17.2.1.2	Communication Forwarding Busy (CFB).....	39
8.2.17.2.1.3	Call Forwarding No Reply (CFNR).....	39
8.2.17.2.1.4	Communication Forwarding on Not Logged-in (CFNL).....	39
8.2.17.2.1.5	Communication Forwarding on Subscriber Not Reachable (CFNRc).....	39
8.2.17.2.1.6	Communication Deflection (CD).....	39
8.2.17.2.2	Explicit Communication Transfer (ECT).....	40
8.2.17.2.3	Three-Party (3PTY).....	40
8.2.17.2.4	CONFerence (CONF).....	40
8.2.17.3	Interoperability with PSTN/ISDN.....	40
8.2.18	Three-Party (3PTY).....	40
8.2.18.1	Definition.....	40
8.2.18.2	Service interactions with other IMS supplementary services.....	40
8.2.18.2.1	Terminating Identification Presentation (OIR).....	40
8.2.18.2.2	Terminating Identification Restriction (TIR).....	40
8.2.18.2.3	Three-Party (3PTY).....	41
8.2.18.2.4	CONFerence (CONF).....	41
8.2.18.3	Interoperability with PSTN/ISDN.....	41
8.2.19	Flexible Alerting (FA).....	41
8.2.19.1	Definition.....	41
8.2.19.2	Service interactions with other IMS supplementary services.....	41
8.2.19.2.1	Identification services.....	41
8.2.19.2.2	Diversion services.....	42
8.2.20	Personal Network Management (PNM).....	42
8.2.20.1	Definition.....	42
8.2.20.2	Service interactions with other IMS supplementary services.....	42

8.2.21	Customized Alerting Tone (CAT)	42
8.2.21.1	Definition	42
8.2.21.2	Service interactions with other IMS supplementary services.....	42
8.2.21.2.1	Identification services.....	42
8.2.21.2.2	Diversion services	43
8.2.21.2.3	Communication Waiting (CW)	43
8.2.21.2.4	Explicit Communication Transfer (ECT)	43
8.2.22	Customized Ringing Signal (CRS)	43
8.2.22.1	Definition	43
8.2.22.2	Service interactions with other IMS supplementary services.....	43
8.2.22.2.1	Identification services.....	43
8.2.22.2.2	Diversion services	43
8.2.22.2.3	Communication Waiting (CW)	44
8.2.22.2.4	Explicit Communication Transfer (ECT).....	44
8.2.23	Completion of Communications on No Reply (CCNR)	44
8.2.23.1	Definition	44
8.2.23.2	Service interactions with other IMS supplementary services.....	44
8.2.23.2.1	Identification services.....	44
8.2.23.2.1.1	Originating Identification Presentation (OIP).....	44
8.2.23.2.1.2	Originating Identification Restriction (OIR).....	44
8.2.23.2.1.3	Terminating Identification Presentation (TIP).....	45
8.2.23.2.1.4	Terminating Identification Restriction (TIR).....	45
8.2.23.2.2	Advice Of Charge services (AOC).....	45
8.2.23.2.3	Communication Waiting (CW)	45
8.2.23.2.4	Communication HOLD (HOLD).....	45
8.2.23.2.5	Explicit Communication Transfer (ECT)	45
8.2.23.2.6	Closed User Group (CUG)	45
8.2.23.2.7	Completion of communications services.....	45
8.2.23.2.7.1	Completion of Communications to Busy Subscriber (CCBS)	45
8.2.23.2.7.2	Completion of Communications on No Reply (CCNR)	46
8.2.23.2.8	CONFerence (CONF).....	46
8.2.23.2.9	Communication DIVersion (CDIV)	46
8.2.23.2.9.1	General.....	46
8.2.23.2.9.2	Communication Forwarding Unconditional (CFU)	46
8.2.23.2.9.3	Communication Forwarding Busy (CFB).....	46
8.2.23.2.9.4	Communication Forwarding No Reply (CFNR).....	47
8.2.23.2.9.5	Communication Forwarding on Not Logged in (CFNL)	47
8.2.23.2.9.6	Communication Deflection (CD).....	47
8.2.23.2.10	Malicious Communication IDentification (MCID)	47
8.2.23.2.11	Anonymous Communication Rejection and Communication Barring (ACR/CB).....	47
8.2.23.2.12	Message Waiting Indication (MWI).....	47
8.2.23.2.13	Flexible Alerting (FA).....	47
8.2.23.2.14	Customized Alerting Tones (CAT)	48
8.2.23.3	Interoperability with PSTN/ISDN.....	48
8.2A	Supplementary Services applicable to IMS Multimedia Telephony without equivalent in non-IMS networks	48
8.2A.1	Completion of Communications on Not Logged-in (CCNL)	48
8.2A.1.1	Definition	48
8.2A.1.2	Service interactions with other IMS supplementary services.....	48
8.2A.1.2.1	Identification services.....	48
8.2A.1.2.1.1	Originating Identification Presentation (OIP).....	48
8.2A.1.2.1.2	Originating Identification Restriction (OIR).....	48
8.2A.1.2.1.3	Terminating Identification Presentation (TIP).....	49
8.2A.1.2.1.4	Terminating Identification Restriction (TIR).....	49
8.2A.1.2.2	Advice Of Charge services (AOC).....	49
8.2A.1.2.3	Communication Waiting (CW)	49
8.2A.1.2.4	Communication HOLD (HOLD).....	49
8.2A.1.2.5	E2Aplicit Communication Transfer (ECT)	49
8.2A.1.2.6	Closed User Group (CUG)	49
8.2A.1.2.7	Completion of communications services (CC).....	49
8.2A.1.2.8	CONFerence (CONF).....	50
8.2A.1.2.9	Communication DIVersion (CDIV)	50

8.2A.1.2.9.1	General.....	50
8.2A.1.2.9.2	Communication Forwarding Unconditional (CFU)	50
8.2A.1.2.9.3	Communication Forwarding Busy (CFB).....	50
8.2A.1.2.9.4	Communication Forwarding No Reply (CFNR).....	50
8.2A.1.2.9.5	Communication Forwarding on Not Logged in (CFNL)	51
8.2A.1.2.9.6	Communication Deflection (CD).....	51
8.2A.1.2.10	Malicious Communication IDentification (MCID)	51
8.2A.1.2.11	Anonymous Communication Rejection and Communication Barring (ACR/CB).....	51
8.2A.1.2.12	Message Waiting Indication (MWI).....	51
8.2A.1.2.13	Fl2Aible Alerting (FA)	51
8.2A.1.2.14	Customized Alerting Tones (CAT)	51
8.2A.1.3	Interoperability with PSTN/ISDN.....	51
8.3	Concepts associated with IMS supplementary services	52
8.3.1	Administration of supplementary services.....	52
8.3.2	Unstructured SS data operations.....	52
8.3.3	Network Announcement and Tones Insertion	52
8.4	Use of authorization option in relation to IMS supplementary services.....	52
8.4.1	Definition.....	52
8.4.2	Description.....	52
8.4.3	Management - normal procedures and successful outcome	52
8.4.3.1	Provision of authorization	52
8.4.3.2	Withdrawal of authorization.....	53
8.4.3.3	Authentication requirements	53
9	IMS Multimedia Telephony with Enhanced Voice.....	54
Annex A (informative): General terminal guidelines.....		55
A.1	Service state indication.....	55
A.2	Supervisory tones	55
Annex B (informative): Service interactions table		56
Annex C (normative): IMS Multimedia Telephony supplementary services applicable to the fixed access		60
Annex D (normative): IMS Multimedia Telephony supplementary services applicable to the mobile 3GPP access		62
Annex Da (normative): Network determined user busy.....		63
Annex Db (informative): services classification applicable to Inter IMS Network-to-Network Interface (II-NNI).		64
Db.1	High Priority Category	64
Db.2	Medium Priority Category.....	64
Db.3	Low Priority Category.....	65
Annex Dc (normative): Enterprise IP-PBX Supplementary Services to support 3GPP Voice Interworking		66
Dc.1	General	66
Dc.2	Individual Line Services.....	66
Dc.2.1	Introduction.....	66
Dc.2.2	Call Transfer (Unattended, Attended & Early Attended)	66
Dc.2.3	Multi-party Ad-hoc Conference with Rosters.....	66
Dc.2.4	Call Forwarding	67
Dc.2.5	Single Number Reach (SNR).....	67
Dc.2.6	Do Not Disturb (DND)	67
Dc.2.7	Immediate Divert (to messaging system).....	68
Dc.2.8	Shared-line Features (remote-in-use, call-Barge)	68
Dc.2.9	Callback	68
Dc.2.10	Connected Name and Number Display.....	68
Dc.2.11	Call Whisper	68

Dc.3 Group Line Services69

Dc.3.1 Introduction.....69

Dc.3.2 Enterprise Music On Hold69

Dc.3.3 Call Park69

Dc.3.4 Call Pickup/Group Pickup69

Annex E (informative): Bibliography references70

Annex F (informative): Change history72

History74

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 define the IMS Multimedia Telephony service and the minimum set of capabilities required to secure multi-vendor and multi-operator inter-operability for Multimedia Telephony and related 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] Void
- [3] Void
- [4] 3GPP TS 22.228: "IP multimedia (IM) CN subsystem, stage 1"
- [5] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [6] 3GPP TS 22.041: "Operator Determined Barring (ODB)"
- [7] 3GPP TS 24.173: " IMS Multimedia Telephony Communication Service and Supplementary Services; Stage 3"
- [8] 3GPP TS 22.101: "Service principles".
- [9] 3GPP TS 22.182: "Customized Alerting Tones (CAT) Requirements; Stage 1".
- [10] 3GPP TS 22.183: "Customized Ringing Signal (CRS) Requirements; Stage 1".
- [11] ITU-T Recommendation F.703: "Multimedia Conversational Services".
- [12] 3GPP TS 22.090 : "Unstructured Supplementary Service Data (USSD); Stage 1".
- [13] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".
- [14] 3GPP TS 22.030 : " Man-Machine Interface (MMI) of the User Equipment (UE)".