Universal Mobile Telecommunications System (UMTS);
LTE;
5G;
IMS Multimedia telephony communication service and supplementary services;
Stage 3
(3GPP TS 24.173 version 14.3.0 Release 14)
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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.

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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).

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# Contents

Intellectual Property Rights............................................................................................................. 2
Foreword.................................................................................................................................................. 2
Modal verbs terminology......................................................................................................................... 2
Foreword.................................................................................................................................................. 5

1  Scope .................................................................................................................................................. 6
2  References .......................................................................................................................................... 6
3  Definitions, symbols and abbreviations .............................................................................................. 8
3.1  Definitions ....................................................................................................................................... 8
3.2  Abbreviations ................................................................................................................................ 8
4  Overview of multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem ........................................................................ 8
4.1  General .......................................................................................................................................... 8
4.1A  Roles ............................................................................................................................................. 8
4.1A.1  Multimedia telephony participant ............................................................................................. 8
4.1A.2  Multimedia telephony application server ................................................................................. 9
4.2  Overview of basic communication part ........................................................................................... 9
4.3  Overview of supplementary services part ....................................................................................... 9
5  Basic Communication .......................................................................................................................... 10
5.1  IMS communication service identifier ........................................................................................... 10
5.2  Session control procedures ............................................................................................................ 10
5.3  Interworking ................................................................................................................................. 10
5.4  Call progress indications ................................................................................................................ 11
6  Supplementary services and enhancements ....................................................................................... 11
6.1  High level requirements ................................................................................................................ 11
6.2  Originating Identification Presentation (OIP) .................................................................................. 11
6.3  Originating Identification Restriction (OIR) ................................................................................... 11
6.4  Terminating Identification Presentation (TIP) ............................................................................... 11
6.5  Terminating Identification Restriction (TIR) ............................................................................... 11
6.6  Communication Diversion (CDIV) ............................................................................................... 11
6.7  Communication Hold (HOLD) ..................................................................................................... 11
6.8  Communication Barring (CB) ........................................................................................................ 11
6.9  Message Waiting Indication (MWI) .............................................................................................. 11
6.10  Conference (CONF) .................................................................................................................. 11
6.11  Explicit Communication Transfer (ECT) ..................................................................................... 11
6.12  XCAP over Ut interface for Manipulating NGN Services ............................................................. 11
6.13  Advice Of Charge (AOC) ........................................................................................................... 11
6.14  Closed User Groups (CUG) ........................................................................................................ 12
6.15  Three-Party (3PTY) ..................................................................................................................... 12
6.16  Flexible Alerting (FA) ................................................................................................................ 12
6.17  Communication Waiting (CW) .................................................................................................. 12
6.18  Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR) ................................................................................................................ 12
6.19  Customized Alerting Tones (CAT) ............................................................................................ 12
6.20  Customized Ringing Signal (CRS) .............................................................................................. 12
6.21  Personal Network Management (PNM) ...................................................................................... 12
6.22  Unstructured Supplementary Service Data (USSD) ................................................................. 12

Annex A (informative): Void .................................................................................................................. 13
Annex B (informative): Void .................................................................................................................. 13
Annex C (informative): Void .................................................................................................................. 13
Annex D (informative): Void .................................................................................................................................13
Annex E (informative): Void .................................................................................................................................13
Annex F (informative): Void .................................................................................................................................13
Annex G (informative): Void .................................................................................................................................13
Annex H (informative): Void .................................................................................................................................13
Annex I (informative): Void .................................................................................................................................13
Annex J (normative): IP-Connectivity Access Network specific concepts when using EPS to access IM CN subsystem .................................................................................................................................14
Annex K (normative): IP-Connectivity Access Network specific concepts when using GPRS to access IM CN subsystem .................................................................................................................................20
Annex L (normative): Timers .................................................................................................................................23
Annex M(informative): Change history ..................................................................................................................24

History ......................................................................................................................................................................27
Foreword

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Version x.y.z

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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 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".
[6] 3GPP TS 24.607: "Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".
[7] 3GPP TS 24.608: "Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".
[9] 3GPP TS 24.611: "Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".
[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".
3GPP TS 24.247: "Messaging using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".

[15] Void


[20] 3GPP TS 24.238: "Session Initiation Protocol (SIP) based user configuration; stage 3".


[22] ETSI TS 181 005: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Service and Capability Requirements".


[24] 3GPP TS 24.642: "Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".


[26] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[27] 3GPP TS 24.183: "IP Multimedia Subsystem (IMS) Customized Ringing Signal (CRS); Protocol specification".

[28] IETF RFC 3362 (August 2002): "Real-time Facsimile (T.38) - image/t38 MIME Sub-type Registration".

[29] 3GPP TS 24.259: "Personal Network Management (PNM); Stage 3".

[30] 3GPP TS 24.390: "Unstructured Supplementary Service Data (USSD) using IP Multimedia (IM) Core Network (CN) subsystem IMS; Stage 3".

[31] IETF RFC 6809 (November 2012): "Mechanism to Indicate Support of Features and Capabilities in the Session Initiation Protocol (SIP)".

[32] 3GPP TS 24.167: "3GPP IMS Management Object (MO); Stage 3".

[33] 3GPP TS 23.221: "Architectural requirements".

[34] Void.


[36] 3GPP TS 24.275: "Management Object (MO) for basic communication part of IMS multimedia telephony (MMTEL) communication service".

[37] 3GPP TS 22.011: "Service accessibility".

[38] 3GPP TS 31.102: "Characteristics of the Universal Subscriber Identity Module (USIM) application".
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.

**MMTEL voice**: a multimedia telephony communication session as described in subclause 5.2 with only audio or only real-time text or only both audio and real-time text.

**MMTEL video**: a multimedia telephony communication session as described in subclause 5.2 with video.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.011 [37] apply:

- **3GPP PS data off**
- **3GPP PS data off exempt service**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.229 [13] apply:

- **3GPP PS data off status**

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
- **PS** Packet Switched
- **UDP** User Datagram Protocol
- **UDPTL** UDP Transport Layer

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 endpoints. 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, see subclause 4.3. It is an implementation decision on how to allocate the functionality to one or more application servers.

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], media capabilities include RTP-based transfer of voice, real-time video, real-time text and data, and UDPTL-based transfer of fax (IETF RFC 3362 [28]), as well as TCP/MSRP-based transfer of text, arbitrary files and sharing of media files with predefined formats.

To ensure interoperability, media handling (including codecs and formats) is fully specified for RTP-based and MSRP-based transfer in:

- 3GPP TS 26.114 [12] for 3GPP systems;
- 3GPP2 C.S0055-A [21] for 3GPP2 systems; and
- ETSI TS 181 005 [22] (codecs) and 3GPP TS 26.114 [12] (formats and other media handling) for fixed-broadband accesses.

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-way transfer between endpoints. 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 endpoints, and between endpoints 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 by the user should:

- take place over the Ut interface using XCAP as enabling protocol as described in 3GPP TS 24.623 [11]; or
- use SIP-based user configuration as described in 3GPP TS 24.238 [20];

NOTE: Other possibilities for user configuration, such as web-based provisioning or pre-provisioning by the operator are outside the scope of the present document, but are not precluded.

The "SS_domain_setting" leaf in 3GPP TS 24.167 [32] provides a mechanism to:

a) instruct the UE to only use the PS domain for SS setting control;
b) instruct the UE to only use the CS domain for SS setting control; or
c) instruct the UE to use the PS domain for SS setting control when the PS domain is being used by the UE for voice services, and to use the CS domain for SS setting control when the CS domain is being used by the UE for voice services.

If one of the restrictions described in the bullets a) or c) applies, then the "PS_domain_IMS_SS_control_preference" leaf in 3GPP TS 24.167 [32] provides a mechanism to:

- restrict the UE to use the Ut interface with XCAP as enabling protocol as described in 3GPP TS 24.623 [11]; or
- restrict the UE to use SIP-based user configuration as described in 3GPP TS 24.238 [20].
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" header field parameter 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" header field parameter 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 1: How the user indicates other feature parameters and the feature parameter values is outside of the scope of this document.

d) The multimedia telephony application server shall include the "+g.3gpp.icsi-ref" header field parameter equal to the ICSI value defined in subclause 5.1 in a Feature-Caps header field in requests sent to the terminating user and in 1xx or 2xx responses to requests from the originating user as described in 3GPP TS 24.229 [13] and IETF RFC 6809 [31].

e) The multimedia telephony participant may use the presence of a "+g.3gpp.icsi-ref" header field parameter equal to the ICSI value defined in subclause 5.1 in a Feature-Caps header field in requests and responses as described in IETF RFC 6809 [31] to determine that a multimedia telephony application server is participating in the session and multimedia telephony is the IMS communication service supported for use in the dialog.

NOTE 2: ICSI values with subclass identifiers are considered equal to the value defined in subclause 5.1 when determining that the multimedia telephony application server is participating in the session.

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.
5.4 Call progress indications
The UE shall support the UE procedures specified in 3GPP TS 24.628 [35].

6 Supplementary services and enhancements

6.1 High level requirements

6.2 Originating Identification Presentation (OIP)
The OIP service is specified in 3GPP TS 24.607 [6].

6.3 Originating Identification Restriction (OIR)
The OIR service is specified in 3GPP TS 24.607 [6].

6.4 Terminating Identification Presentation (TIP)
The TIP service is specified in 3GPP TS 24.608 [7].

6.5 Terminating Identification Restriction (TIR)
The TIR service is specified in 3GPP TS 24.608 [7].

6.6 Communication Diversion (CDIV)
The CDIV service is specified in 3GPP TS 24.604 [3].

6.7 Communication Hold (HOLD)
The HOLD service is specified in 3GPP TS 24.610 [8].

6.8 Communication Barring (CB)
The CB service is specified in 3GPP TS 24.611 [9].

6.9 Message Waiting Indication (MWI)
The MWI service is specified in 3GPP TS 24.606 [5].

6.10 Conference (CONF)
The CONF service is specified in 3GPP TS 24.605 [4].

6.11 Explicit Communication Transfer (ECT)
The ECT service is specified in 3GPP TS 24.629 [10].

6.12 XCAP over Ut interface for Manipulating NGN Services

6.13 Advice Of Charge (AOC)
The AOC service is specified in 3GPP TS 24.647 [17].
6.14 Closed User Groups (CUG)
The CUG service is specified in 3GPP TS 24.654 [18].

6.15 Three-Party (3PTY)
The 3PTY service is specified in 3GPP TS 24.605 [4].

NOTE: 3PTY can be seen as a special case of CONF and most of service interactions for CONF apply also to 3PTY.

6.16 Flexible Alerting (FA)
The FA service is specified in 3GPP TS 24.239 [19].

NOTE: 3GPP TS 22.173 also contains a Reverse charging service, but no stage 3 work has been done for that in this release.

6.17 Communication Waiting (CW)
The CW service is specified in 3GPP TS 24.615 [23].

6.18 Completion of Communications to Busy Subscriber (CCBS)
Completion of Communications by No Reply (CCNR)
The Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR) service is specified in 3GPP TS 24.642 [24].

6.19 Customized Alerting Tones (CAT)
The CAT service is specified in 3GPP TS 24.182 [25].

6.20 Customized Ringing Signal (CRS)
The CRS service is specified in 3GPP TS 24.183 [27].

6.21 Personal Network Management (PNM)
The PNM service is specified in 3GPP TS 24.259 [29].

6.22 Unstructured Supplementary Service Data (USSD)
USSD using IMS is specified in 3GPP TS 24.390 [30].

NOTE: Usage of USSD using IMS is subject to policy specified in 3GPP TS 23.221 [33].
Annex A (informative): Void


Annex C (informative): Void

Annex D (informative): Void

Annex E (informative): Void

Annex F (informative): Void

Annex G (informative): Void

Annex H (informative): Void
Annex I (informative):
Void

Annex J (normative):
IP-Connectivity Access Network specific concepts when using EPS to access IM CN subsystem

J.1 Scope

The present annex defines IP-CAN specific requirements for a multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem, where the IP-CAN is Evolved Packet System (EPS).

J.2 EPS aspects when connected to the IM CN subsystem

J.2.1 Procedures at the UE

J.2.1.1 Service Specific Access Control

The following information is provided by lower layer:

- BarringFactorForMMTEL-Voice: barring rate for MMTEL voice;
- BarringTimeForMMTEL-Voice: barring timer for MMTEL voice;
- BarringFactorForMMTEL-Video: barring rate for MMTEL video; and
- BarringTimeForMMTEL-Video: barring timer for MMTEL video.

Upon request from a user to establish a multimedia telephony communication session as described in subclause 5.2, the UE shall:

1) if the multimedia telephony communication session to be established is an emergency session, then skip the rest of steps below and continue with session establishment as described in subclause 5.2;

2) retrieve SSAC related information mentioned above from lower layers;

NOTE 1: The values of SSAC related information retrieved from lower layers can depend on whether the UE has an Access Class with a value in the range 11..15 or not. Determination of the values of the SSAC related information is described in subclause 5.3.3.10 of 3GPP TS 36.331 [26].

3) if video is offered in the multimedia telephony communication session:

   A) if back-off timer Tx is running, reject the multimedia telephony communication session establishment and skip the rest of steps below; or

   B) else, then:

      I) draw a new random number "rand1" that is uniformly distributed in the range $0 \leq \text{rand1} < 1$; and

      II) if the random number "rand1" is lower than BarringFactorForMMTEL-Video, then skip the rest of steps below and continue with session establishment as described in subclause 5.2;

NOTE 2: If the BarringFactorForMMTEL-Video is set to 1, the session is exempted from barring.

III) else, then;
i) draw a new random number "rand2" that is uniformly distributed in the range $0 \leq \text{rand2} < 1$; and

ii) start back-off timer $T_x$ with the timer value calculated using the formula:

$$T_x = (0.7 + 0.6 \times \text{rand2}) \times \text{BarringTimeForMMTEL-Video};$$

and

iii) reject the multimedia telephony communication session establishment and skip the rest of steps below;

4) if audio is offered in the multimedia telephony communication session:

A) if back-off timer $T_y$ is running, reject the multimedia telephony communication session establishment and skip the rest of steps below; or

B) else, then;

I) draw a new random number "rand3" that is uniformly distributed in the range $0 \leq \text{rand3} < 1$; and

II) if the random number "rand3" is lower than $\text{BarringFactorForMMTEL-Voice}$, then skip the rest of steps below and continue with session establishment as described in subclause 5.2;

NOTE 3: If the $\text{BarringFactorForMMTEL-Voice}$ is set to 1, the session is exempted from barring.

III) else, then;

i) draw a new random number "rand4" that is uniformly distributed in the range $0 \leq \text{rand4} < 1$; and

ii) start timer $T_y$ with the timer value calculated using the formula:

$$T_y = (0.7 + 0.6 \times \text{rand4}) \times \text{BarringTimeForMMTEL-Voice};$$

and

iii) reject the multimedia telephony communication session establishment;

NOTE 4: If the multimedia telephony communication implementation and the access stratum protocol implementation are located in separate physical entities, it is expected that the interconnecting protocol supports the transfer of information elements needed for the service specific access control enforcement.

J.2.1.2 Smart Congestion Mitigation

The following information is provided to the non-access stratum:

- MO-MMTEL-voice-started;
- MO-MMTEL-voice-ended.
- MO-MMTEL-video-started; and
- MO-MMTEL-video-ended;

Upon request from a user to establish an originating multimedia telephony communication session as described in subclause 5.2, and if the session establishment is continued after performing the Service Specific Access Control as specified in subclause J.2.1.1:

1) if only audio or only real-time text or only both audio and real-time text (see subclause 4.2 for 3GPP systems) are offered in the multimedia telephony communication session, and no other originating multimedia telephony communication session initiated with offering only audio or only real-time text or only both audio and real-time text exists, the UE sends the MO-MMTEL-voice-started indication to the non-access stratum and continue with session establishment as described in subclause 5.2;

2) if video is offered in the multimedia telephony communication session, and no other originating multimedia telephony communication session initiated with offering video exists, the UE sends the MO-MMTEL-video-started indication to the non-access stratum and continue with session establishment as described in subclause 5.2.
When an originating multimedia telephony communication session ends (i.e. a response to a BYE or a failure response to the initial INVITE request is transferred), the originating multimedia telephony communication session was initiated with offering only audio or only real-time text or only both audio and real-time text (i.e. in the SDP offer in the initial INVITE request), and no other originating multimedia telephony communication session initiated with offering only audio or only real-time text or only both audio and real-time text exists, the UE sends the MO-MMTEL-voice-ended to the non-access stratum.

When an originating multimedia telephony communication session ends (i.e. a response to a BYE or a failure response to the initial INVITE request is transferred), the originating multimedia telephony communication session was initiated with offering video (i.e. in the SDP offer in the initial INVITE request), and no other originating multimedia telephony communication session initiated with offering video exists, the UE sends the MO-MMTEL-video-ended indication to the non-access stratum.

NOTE 1: If the UE supports other 3GPP specific mechanisms for communicating with the non-access stratum protocol implementation, e.g. DHCP discovery via PCO, then the UE is expected to support the transfer of information elements needed for the smart congestion mitigation enforcement.

NOTE 2: Adding or removing media during the multimedia telephony communication session has no impact on the information relating to smart congestion mitigation.

J.2.1.3 MMTEL request timeouts

If the UE supports timer RequestTimeout, then upon a request from a user to establish an originating multimedia telephony communication session as described in subclause 5.2, the UE shall start timer RequestTimeout when sending an initial INVITE request.

The UE may support being configured for the RequestTimeout timer with the operator's IMS multimedia telephony communication service policy as specified in 3GPP TS 24.275 [36].
J.3 Application usage of SIP

J.3.1 Procedures at the UE

J.3.1.1 3GPP PS data off

J.3.1.1.1 General

The UE may support the 3GPP PS data off.

If the UE supports the 3GPP PS data off:

a) the UE can be configured with:

1) an indication whether the MMTEL voice is a 3GPP PS data off exempt service; and

2) an indication whether the MMTEL video is a 3GPP PS data off exempt service; and

b) the UE may support being configured with the indication whether the MMTEL voice is a 3GPP PS data off exempt service using one or more of the following methods:

1) the EF3GPPPSDATAOFF described in 3GPP TS 31.102 [38]; and

2) the MMTEL_voice_exempt node of 3GPP TS 24.275 [36].

If the UE is configured with both the MMTEL_voice_exempt node of 3GPP TS 24.275 [36] and the EF3GPPPSDATAOFF described in 3GPP TS 31.102 [38], then the EF3GPPPSDATAOFF shall take precedence; and

c) the UE may support being configured with the indication whether the MMTEL video is a 3GPP PS data off exempt service using one or more of the following methods:

1) the EF3GPPPSDATAOFF described in 3GPP TS 31.102 [38]; and

2) the MMTEL_video_exempt node of 3GPP TS 24.275 [36].

If the UE is configured with both the MMTEL_video_exempt node of 3GPP TS 24.275 [36] and the EF3GPPPSDATAOFF described in 3GPP TS 31.102 [38], then the EF3GPPPSDATAOFF shall take precedence.

J.3.1.1.2 Enforcement

If the 3GPP PS data off status is "active":

a) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE’s contact address containing an IP address associated with an EPS IP-CAN bearer, with media streams:

1) other than only audio;

2) other than only real-time text;

3) other than only audio and real-time text; and

4) not including video;

NOTE 1: When the 3GPP PS data off status is "active", an MMTEL session which is not MMTEL voice and which is not MMTEL video (e.g. MMTEL session with only fax) is released.

b) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE’s contact address containing an IP address associated with an EPS IP-CAN bearer, and with:

1) an SDP offer; or

2) an SDP answer;
with media streams:

1) other than only audio;
2) other than only real-time text;
3) other than only audio and real-time text; and
4) not including video;

NOTE 2: When the 3GPP PS data off status is "active", an MMTEL session which is not MMTEL voice and which is not MMTEL video (e.g. MMTEL session with only fax) cannot be initiated.

c) if the UE is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service:

1) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE's contact address containing an IP address associated with an EPS IP-CAN bearer, with only audio, only real-time text or only audio and real-time text; and

2) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE's contact address containing an IP address associated with an EPS IP-CAN bearer and with:
   A) an SDP offer; or
   B) an SDP answer;

   with only audio, only real-time text or only audio and real-time text;

d) if the UE is not configured with indication that MMTEL video is a 3GPP PS data off exempt service:

1) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE's contact address containing an IP address associated with an EPS IP-CAN bearer, and with video;

2) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE's contact address containing an IP address associated with an EPS IP-CAN bearer and with:
   A) an SDP offer; or
   B) an SDP answer;

   with video; and

e) if the UE is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service and the UE is not configured with indication that MMTEL video is a 3GPP PS data off exempt service:

1) the UE shall de-register the binding of a UE's contact address containing an IP address associated with an EPS IP-CAN bearer from IM CN subsystem according to 3GPP TS 24.229 [13];

2) the UE shall re-register the binding of a UE's contact address containing an IP address associated with an EPS IP-CAN bearer with IM CN subsystem with a Contact header field without the g.3gpp.icci-ref media feature tag; or

3) the UE shall re-register the binding of a UE's contact address containing an IP address associated with an EPS IP-CAN bearer with IM CN subsystem with a Contact header field with the g.3gpp.icci-ref media feature tag not including the urn:urn-7:3gpp-service.ims.icci.mmtel ICSI according to 3GPP TS 24.229 [13].

NOTE 3: Which of the bullets 1), 2), and 3) the UE performs is influenced by other 3GPP PS data off exempt services.
J.3.2 Procedures at the multimedia telephony application server

J.3.2.1 3GPP PS data off

If the multimedia telephony application server supports the 3GPP PS data off, the multimedia telephony application server shall support obtaining registration state information from a received third-party SIP REGISTER request including information contained in the body of the third-party SIP REGISTER request as specified in 3GPP TS 24.229 [13], of the served UE.

If a received registration state information of the served UE indicates a Contact header field with the g.3gpp.ps-data-off media feature tag with the "active" value:

a) the multimedia telephony application server shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2 with:

1) an SDP offer; or
2) an SDP answer;

containing media streams:

1) other than only audio;
2) other than only real-time text;
3) other than only audio and real-time text; and
4) not including video;

towards a contact address (or via a registration flow) of the served UE such that the contact address (or the registration flow) was registered or re-registered by a SIP REGISTER request with a P-Access-Network-Info header field with "3GPP-GERAN", "3GPP-UTRAN" or "3GPP-E-UTRAN" access class, and with the "network-provided" header field parameter;

b) if the multimedia telephony application server is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service for the served UE, the multimedia telephony application server shall not send according to 3GPP TS 24.229 [13] a SIP message related to the IMS multimedia telephony communication service with:

1) an SDP offer; or
2) an SDP answer;

containing media streams:

1) with only audio;
2) with only real-time text; or
3) with only audio and real-time text;

towards a contact address (or via a registration flow) of the served UE such that the contact address (or the registration flow) was registered or re-registered by a SIP REGISTER request with a P-Access-Network-Info header field with "3GPP-GERAN", "3GPP-UTRAN" or "3GPP-E-UTRAN" access class, and with the "network-provided" header field parameter; and

c) if the multimedia telephony application server is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service for the served UE, the multimedia telephony application server shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, with:

1) an SDP offer; or
2) an SDP answer;

containing media streams with video towards a contact address (or via a registration flow) of the served UE such that the contact address (or the registration flow) was registered or re-registered by a SIP REGISTER request
with a P-Access-Network-Info header field with "3GPP-GERAN","3GPP-UTRAN" or "3GPP-E-UTRAN" access class, and with the "network-provided" header field parameter.

Annex K (normative):
IP-Connectivity Access Network specific concepts when using GPRS to access IM CN subsystem

K.1 Scope

The UE may support the present annex.

The present annex defines IP-CAN specific requirements for a multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem, where the IP-CAN is General Packet Radio Service (GPRS).

K.2 GPRS (Iu mode only) aspects when connected to the IM CN subsystem

K.2.1 Procedures at the UE

K.2.1.1 General

The UE may support any of the procedures of subclause K.2.1.

K.2.1.2 Application specific Congestion control for Data Communication (ACDC) procedure

The following information is provided to the non-access stratum:

- MO-MMTEL-voice-started;
- MO-MMTEL-voice-ended.
- MO-MMTEL-video-started; and
- MO-MMTEL-video-ended;

Upon request from a user to establish an originating multimedia telephony communication session as described in subclause 5.2:

1) if only audio or only real-time text or only both audio and real-time text (see subclause 4.2 for 3GPP systems) are offered in the multimedia telephony communication session, and no other originating multimedia telephony communication session initiated with offering only audio or only real-time text or only both audio and real-time text exists, the UE sends the MO-MMTEL-voice-started indication to the non-access stratum and continue with session establishment as described in subclause 5.2;

2) if video is offered in the multimedia telephony communication session, and no other originating multimedia telephony communication session initiated with offering video exists, the UE sends the MO-MMTEL-video-started indication to the non-access stratum and continue with session establishment as described in subclause 5.2.

When an originating multimedia telephony communication session ends (i.e. a response to a BYE or a failure response to the initial INVITE request is transferred), the originating multimedia telephony communication session was initiated with offering only audio or only real-time text or only both audio and real-time text (i.e. in the SDP offer in the initial INVITE request), and no other originating multimedia telephony communication session initiated with offering only audio or only real-time text or only both audio and real-time text exists, the UE sends the MO-MMTEL-voice-ended to the non-access stratum.
When an originating multimedia telephony communication session ends (i.e. a response to a BYE or a failure response to the initial INVITE request is transferred), the originating multimedia telephony communication session was initiated with offering video (i.e. in the SDP offer in the initial INVITE request), and no other originating multimedia telephony communication session initiated with offering video exists, the UE sends the MO-MMTEL-video-ended indication to the non-access stratum.

NOTE 1: If the UE supports other 3GPP specific mechanisms for communicating with the non-access stratum protocol implementation, e.g. DHCP discovery via PCO, then the UE is expected to support the transfer of information elements needed for the application specific congestion control for data communication enforcement.

NOTE 2: Adding or removing media during the multimedia telephony communication session has no impact on the information relating to application specific congestion control for data communication.

K.3 Application usage of SIP

K.3.1 Procedures at the UE

K.3.1.1 3GPP PS data off

K.3.1.1.1 General

The requirements in subclause J.3.1.1.1 apply.

K.3.1.1.2 Enforcement

If the 3GPP PS data off status is "active":

a) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE’s contact address containing an IP address associated with a GPRS IP-CAN bearer, and with media streams:

1) other than only audio;
2) other than only real-time text;
3) other than only audio and real-time text; and
4) not including video;

NOTE 1: When the 3GPP PS data off status is "active", an MMTEL session which is not MMTEL voice and which is not MMTEL video (e.g. MMTEL session with only fax) is released.

b) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE’s contact address containing an IP address associated with a GPRS IP-CAN bearer and with:

1) an SDP offer; or
2) an SDP answer;

with media streams:

1) other than only audio;
2) other than only real-time text;
3) other than only audio and real-time text; and
4) not including video;

NOTE 2: When the 3GPP PS data off status is "active", an MMTEL session which is not MMTEL voice and which is not MMTEL video (e.g. MMTEL session with only fax) cannot be initiated.
c) if the UE is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service:

1) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer, and with only audio, only real-time text or only audio and real-time text; and

2) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer and with:

A) an SDP offer; or

B) an SDP answer;

with only audio, only real-time text or only audio and real-time text;

d) if the UE is not configured with indication that MMTEL video is a 3GPP PS data off exempt service:

1) the UE shall release according to 3GPP TS 24.229 [13] any multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, established with a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer, and with video;

2) the UE shall not send according to 3GPP TS 24.229 [13] a SIP message related to a multimedia telephony communication session as described in subclause 5.2, which is not an IMS emergency call, from a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer and with:

A) an SDP offer; or

B) an SDP answer;

with video; and

e) if the UE is not configured with indication that MMTEL voice is a 3GPP PS data off exempt service and the UE is not configured with indication that MMTEL video is a 3GPP PS data off exempt service:

1) the UE shall de-register the binding of a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer from IM CN subsystem according to 3GPP TS 24.229 [13];

2) the UE shall re-register the binding of a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer with IM CN subsystem with a Contact header field without the g.3gpp.icsi-ref media feature tag; or

3) the UE shall re-register the binding of a UE's contact address containing an IP address associated with a GPRS IP-CAN bearer with IM CN subsystem with a Contact header field with the g.3gpp.icsi-ref media feature tag not including the urn:urn-7:3gpp-service.ims.icsi.mmtel ICSI according to 3GPP TS 24.229 [13].

NOTE 3: Which of the bullets 1), 2), and 3) the UE performs is influenced by other 3GPP PS data off exempt services.

K.3.2 Procedures at the multimedia telephony application server

K.3.2.1 3GPP PS data off

The requirements in subclause J.3.2.1 apply.
Annex L (normative):
Timers

Table L.1 provides a description of the timers specified in the present document.

**Table L.1: Timers**

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<th>Normal stop</th>
<th>On expiry</th>
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<td>Configurable value between 5 seconds and 15 seconds</td>
<td>On sending of an initial INVITE request</td>
<td>On receipt of any SIP response</td>
<td>UE shall abort the current session attempt. If an alternative radio access network is available, the UE shall attempt the session on the alternative radio access network.</td>
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## Change history

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