ETSI TS 123 334 V15.4.0 (2024-04)

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
IP Multimedia Subsystem (IMS)
Application Level Gateway (IMS-ALG)
- IMS Access Gateway (IMS-AGW) interface:
Procedures descriptions
(3GPP TS 23.334 version 15.4.0 Release 15)**

Reference
RTS/TSGC-0423334vf40

Keywords
GSM,LTE,UMTS

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Contents

Foreword

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

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In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

Annex G of 3GPP TS 23.228 [2] gives out an IMS Application Level Gateway (IMS-ALG) and IMS Access Media Gateway (IMS-AGW) based reference model to support NAPT-PT, gate control and traffic policing between IP-CAN and IMS domain.

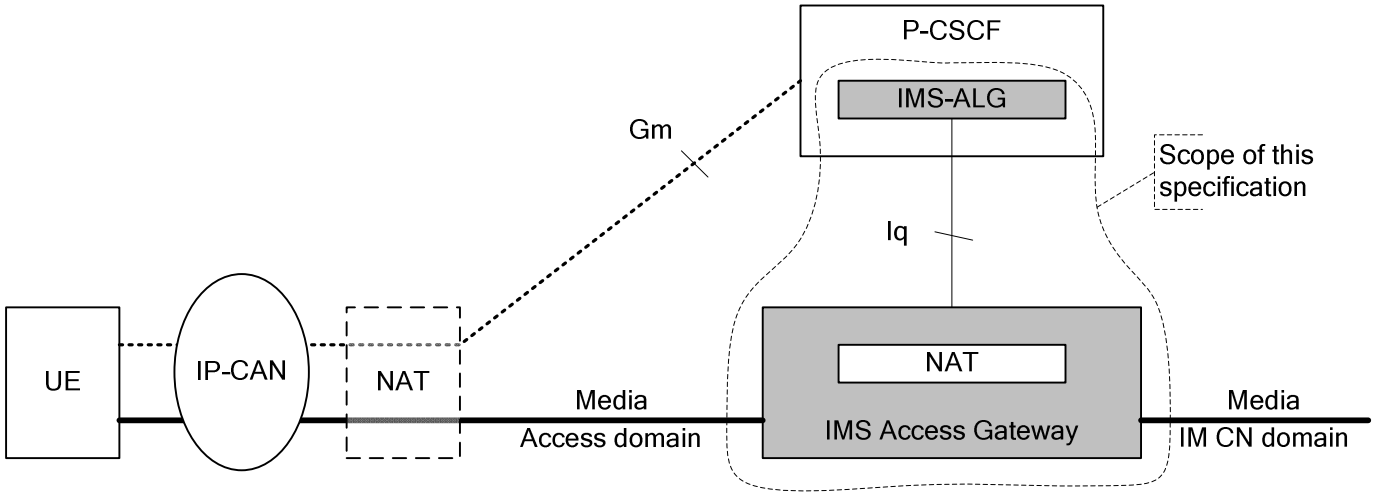

Figure 1.1: Scope of the specification

Figure 1.1 illustrates the reference model for Iq:

- the dashed line represents the IP signalling-path with SIP (at Gm) as call/session control protocol between the UE and the P-CSCF (IMS-ALG);
- the bold, horizontal line represents the IP media-path (also known as (IP) bearer-path or (IP) data-path; the notion 'media' is used as generic term for "IP application data"); and
- the vertical line represents the Iq control-path with H.248 as gateway/policy control protocol between the IMS-ALG and the IMS-AGW (H.248 messages are transported over IP).

The Iq reference point is between the P-CSCF (IMS-ALG) and the IMS-AGW. It conveys the necessary information that is needed to allocate, modify and release (IP) transport addresses.

The present document defines the stage 2 description for the Iq reference point. The stage 2 shall cover the information flow between the P-CSCF (IMS-ALG) and IMS-AGW. The protocol used over the Iq interface is the gateway control protocol according ITU-T Recommendation H.248 (which is specified for Iq by an H.248 profile according 3GPP TS 29.334 [3]).

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 23.228: "IP Multimedia Subsystem (IMS), stage 2".

[3] 3GPP TS 29.334: "IMS Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW) Iq interface, stage 3".

[4] IETF RFC 2663: "IP Network Address Translator (NAT) Terminology and Considerations".

[5] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".

[6] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth".

[7] IETF RFC 3605: "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)".

[8] 3GPP TS 23.205: "Bearer independent circuit-switched core network; Stage 2".

[9] ITU-T Recommendation H.248.1 (05/2002): "Gateway Control Protocol: Version 2" including the Corrigendum1 for Version 2 (03/04).

[10] IETF RFC 2216: "Network Element Service Template".

[11] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP".

[12] 3GPP TS 33.328: "IMS Media Plane Security".

[13] IETF RFC 4568: "Session Description Protocol (SDP) Security Descriptions for Media Streams".

[14] IETF RFC 3711: "The Secure Real-time Transport Protocol (SRTP)".

[15] IETF RFC 5124: "Extended Secure RTP Profile for Real-time Transport Control Protocol (RTCP)-Based Feedback (RTP/SAVPF)".

[16] IETF RFC 3168: "The Addition of Explicit Congestion Notification (ECN) to IP".

[17] IETF RFC 6679: "Explicit Congestion Notification (ECN) for RTP over UDP".

[18] 3GPP TS 23.237: "IP Multimedia subsystem (IMS) Service Continuity; Stage 2".

[19] 3GPP TS 24.237: "IP Multimedia subsystem (IMS) Service Continuity; Stage 3".

[20] 3GPP TS 29.162: "Interworking between the IM CN subsystem and IP networks".

[21] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[22] 3GPP TS 22.153: "Multimedia Priority Service".

[23] IETF RFC 5285: "A General Mechanism for RTP Header Extensions".

[24] IETF RFC 6236: "Negotiation of Generic Image Attributes in the Session Description Protocol (SDP)".

[25] IETF RFC 4975: "The Message Session Relay Protocol (MSRP)".

[26] IETF RFC 6714: "Connection Establishment for Media Anchoring (CEMA) for the Message Session Relay Protocol (MSRP)".

[27] IETF RFC 4583: "Session Description Protocol (SDP) Format for Binary Floor Control Protocol (BFCP) Streams".

[28] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[29] IETF RFC 793: "Transmission Control Protocol – DARPA Internet Program – Protocol Specification".

[30] IETF RFC 4145: "TCP-Based Media Transport in the Session Description Protocol (SDP)".

[31] IETF RFC 4582: "The Binary Floor Control Protocol (BFCP)".

[32] IETF RFC 6347: "Datagram Transport Layer Security Version 1.2".

[33] IETF RFC 7345: "UDP Transport Layer (UDPTL) over Datagram Transport Layer Security (DTLS)".

[34] Void

[35] GSM Association RCC.07: "Rich Communication Suite 5.1 Advanced Communications Services and Client Specification, Version 2.0, 03 May 2013".

[36] GSM Association RCC.07: "Rich Communication Suite 5.1 Advanced Communications Services and Client Specification, Version 3.0, 25 September 2013".

[37] Void

[38] ITU-T Recommendation H.248.84 (07/2012): "Gateway control protocol: NAT-traversal for peer-to-peer services".

[39] IETF RFC 5245: "Interactive Connectivity Establishment (ICE): A Protocol for Network Address Translator (NAT) Traversal for Offer/Answer Protocols".

[40] IETF RFC 5389: "Session Traversal Utilities for NAT (STUN)".

[41] IETF RFC 5766: "Traversal Using Relays around NAT (TURN): Relay Extensions to Session Traversal Utilities for NAT (STUN)".

[42] IETF RFC 5763: "Framework for Establishing a Secure Real-time Transport Protocol (SRTP) Security Context Using Datagram Transport Layer Security (DTLS)".

[43] IETF RFC 5764: "Datagram Transport Layer Security (DTLS) Extension to Establish Keys for the Secure Real-time Transport Protocol (SRTP)".

[44] 3GPP TS 24.371: "Web Real-Time Communications (WebRTC) client access to the IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[45] IETF RFC 6135: "An Alternative Connection Model for the Message Session Relay Protocol (MSRP)".

[46] OMA-TS-CPM_Conversation_Function-V2_0-20150113-C: "CPM Conversation Functions, Candidate Version 2.0 – 13 Jan 2015".

[47] IETF RFC 5746: "Transport Layer Security (TLS) Renegotiation Indication Extension".

[48] 3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".

[49] IETF RFC 7675: "Session Traversal Utilities for NAT (STUN) Usage for Consent Freshness".

[50] IETF RFC 6716: "Definition of the Opus Audio Codec".

[51] 3GPP TS 26.441: "Codec for Enhanced Voice Services (EVS); General Overview".

[52] 3GPP TS 26.445: "Codec for Enhanced Voice Services (EVS); Detailed Algorithmic Description".

[53] IETF RFC 4566: "SDP: Session Description Protocol".

[54] IETF RFC 4867: "RTP Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs".

[55] IETF RFC 4566: "SDP: Session Description Protocol".

[56] IETF RFC 7587: "RTP Payload Format for the Opus Speech and Audio Codec".

[57] IETF RFC 6544: "TCP Candidates with Interactive Connectivity Establishment (ICE)".

[58] IETF RFC 4571: "Framing Real-time Transport Protocol (RTP) and RTP Control Protocol (RTCP) Packets over Connection-Oriented Transport".

[59] IETF RFC 6947: "The Session Description Protocol (SDP) Alternate Connectivity (ALTC) Attribute".

[60] IETF RFC 5761: "Multiplexing RTP Data and Control Packets on a Single Port".

[61] IETF RFC 8831: "WebRTC Data Channels".

[62] IETF RFC 8873: "Message Session Relay Protocol (MSRP)".

[63] IETF RFC 4960: "Stream Control Transmission Protocol".

[64] IETF RFC 8841: "Session Description Protocol (SDP) Offer/Answer Procedures for Stream Control Transmission Protocol (SCTP) over Datagram Transport Layer Security (DTLS) Transport".

[65] IETF RFC 8864: "Negotiation Data Channels Using the Session Description Protocol (SDP)".

[66] IETF RFC 5939: "Session Description Protocol (SDP) Capability Negotiation".

[67] IETF RFC 6871: "Session Description Protocol (SDP) Media Capabilities Negotiation".

[68] IETF RFC 4573: "MIME Type Registration for RTP Payload Format for H.224".

[69] ITU-T Recommendation H.224 (01/2005): "A real time control protocol for simplex applications using the H.221 LSD/HSD/MLP channels".

[70] ITU-T Recommendation H.281 (11/1994): "A far end camera control protocol for videoconferences using H.224".

[71] IETF RFC 8858: "Indicating Exclusive Support of RTP and RTP Control Protocol (RTCP) Multiplexing Using the Session Description Protocol (SDP)".

[72] IETF RFC 8035: "Session Description Protocol (SDP) Offer/Answer Clarifications for RTP/RTCP Multiplexing".

[73] ITU-T Recommendation T.140 (02/98): "Text conversation presentation protocol".

[74] IETF RFC 4103: "RTP Payload for Text Conversation".

[75] IETF RFC 8865: "T.140 Real-Time Text Conversation over WebRTC Data Channels".

[76] Void.

[77] IETF RFC 4585: "Extended RTP Profile for Real-time Transport Control Protocol (RTCP)-Based Feedback (RTP/AVPF)".

[78] IETF RFC 5104: "Codec Control Messages in the RTP Audio-Visual Profile with Feedback (AVPF)".

[79] IETF RFC 7728: "RTP Stream Pause and Resume".

[80] IETF RFC 8122: "Connection-Oriented Media Transport over the Transport Layer Security (TLS) Protocol in the Session Description Protocol (SDP)".

[81] IETF RFC 8842: "Session Description Protocol (SDP) Offer/Answer Considerations for Datagram Transport Layer Security (DTLS) and Transport Layer Security (TLS)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].