



**Universal Mobile Telecommunications System (UMTS);  
LTE;  
Web Real-Time Communications (WebRTC)  
access to the IP Multimedia (IM) Core Network (CN)  
subsystem (IMS);  
Stage 3;  
Protocol specification  
(3GPP TS 24.371 version 14.5.0 Release 14)**



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Keywords

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***ETSI***

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## Contents

Intellectual Property Rights .....	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	6
1    Scope .....	7
2    References .....	7
3    Definitions and abbreviations.....	9
3.1    Definitions .....	9
3.2    Abbreviations .....	10
4    Overview of WebRTC access to IMS .....	10
4.1    General .....	10
5    Functional entities .....	11
5.1    General .....	11
5.2    WIC (WebRTC IMS Client) .....	11
5.3    WWSF (WebRTC Web Server Function) .....	11
5.4    WAF (WebRTC Authorisation Function) .....	11
5.5    eP-CSCF (P-CSCF enhanced for WebRTC) .....	11
5.6    eIMS-AGW (IMS Access Gateway enhanced for WebRTC) .....	11
5A    Data transport .....	12
5A.1    General .....	12
5A.2    UE .....	12
5A.3    WWSF (WebRTC Web Server Function) .....	12
5A.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	12
5B    Data framing and securing .....	12
5B.1    General .....	12
5B.2    UE .....	13
5B.3    WWSF (WebRTC Web Server Function) .....	13
5B.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	13
5C    Data formats .....	13
5C.1    General .....	13
5C.2    UE .....	13
5C.3    WWSF (WebRTC Web Server Function) .....	14
5C.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	14
5D    Connection management .....	14
5D.1    General .....	14
5D.2    UE .....	14
5D.3    WWSF (WebRTC Web Server Function) .....	14
5D.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	15
5E    Presentation and control .....	15
5E.1    General .....	15
5E.2    UE .....	15
5E.3    WWSF (WebRTC Web Server Function) .....	15
5E.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	15
5F    Local system support functions .....	15
5F.1    General .....	15
5F.2    UE .....	15
5F.3    WWSF (WebRTC Web Server Function) .....	16
5F.4    eP-CSCF (P-CSCF enhanced for WebRTC) .....	16
6    Registration and authentication .....	16

6.1	General .....	16
6.2	WIC (WebRTC IMS Client) .....	17
6.2.1	WIC registration of individual Public User Identity using IMS authentication .....	17
6.2.1.1	General .....	17
6.2.1.2	W2 using SIP Digest credentials .....	17
6.2.1.3	W2 using IMS-AKA .....	17
6.2.2	WIC registration of individual public user identity based on web authentication .....	17
6.2.3	WIC registration of individual public user identity from a pool of public user identities .....	18
6.3	WWSF (WebRTC Web Server Function) and WAF (WebRTC Authorisation Function) .....	18
6.3.1	WIC registration of individual public user identity using web credentials .....	18
6.3.2	WIC registration of individual public user identity from a pool of public user identities .....	18
6.4	eP-CSCF (P-CSCF enhanced for WebRTC) .....	18
6.4.1	WIC registration of individual Public User Identity using IMS authentication .....	18
6.4.1.1	Determination of IMS authentication mechanism .....	18
6.4.1.2	W2 using SIP Digest credentials .....	18
6.4.1.3	W2 using IMS-AKA .....	19
6.4.2	WIC registration of individual public user identity using web credentials .....	20
6.4.3	WIC registration of individual public user identity from a pool of public user identities .....	20
6A	Deregistration .....	21
6A.1	General .....	21
6A.2	WIC (WebRTC IMS Client) .....	21
6A.3	eP-CSCF (P-CSCF enhanced for WebRTC) .....	21
7	Call origination and termination .....	21
7.1	General .....	21
7.2	WIC (WebRTC IMS Client) .....	22
7.2.1	General .....	22
7.2.2	WIC originating call .....	22
7.2.3	WIC terminating call .....	22
7.2.4	WIC emergency call .....	23
7.3	WWSF (WebRTC Web Server Function) .....	23
7.4	eP-CSCF (P-CSCF enhanced for WebRTC) .....	23
7.4.1	General .....	23
7.4.2	WIC originating call .....	24
7.4.3	WIC terminating call .....	25
7.4.4	WIC emergency call .....	25
7.4.5	Media optimization procedure .....	26
7.4.5.1	WIC originating call .....	26
7.4.5.2	WIC terminating call .....	28
8	Data channel open and close .....	30
8.1	General .....	30
8.2	WIC (WebRTC IMS Client) .....	31
8.2.1	General .....	31
8.2.2	WIC originating call .....	31
8.2.3	WIC terminating call .....	31
8.3	WWSF (WebRTC Web Server Function) .....	32
8.4	eP-CSCF (P-CSCF enhanced for WebRTC) .....	32
8.4.1	General .....	32
8.4.2	WIC originating call .....	32
8.4.3	WIC terminating call .....	33
9	Call modification .....	33
10	IP multimedia application support in the IM CN subsystem using webRTC .....	34
10.1	General .....	34
10.2	Access to MMTEL and supplementary services using webRTC .....	34
10.2.1	General .....	34
10.2.2	WIC (WebRTC IMS Client) .....	34
10.2.2.1	SIP based protocol used by the WIC .....	34
10.2.2.2	non-SIP based protocol used by the WIC .....	34
10.2.3	WWSF (WebRTC Web Server Function) .....	34
10.2.4	eP-CSCF (P-CSCF enhanced for WebRTC) .....	34

<b>Annex A (informative):</b>	<b>Example signalling flows</b>	35
A.1	Scope of signalling flows	35
A.2	Void	35
A.3	Signalling flows for registration	35
A.3.1	Void	35
A.3.2	WIC registration of individual public user identity based on web authentication	35
A.3.3	Void	37
A.4	Void	37
A.5	Void	37
<b>Annex B (informative):</b>	<b>Change history</b>	38
History		40

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## 1 Scope

The present document provides the details for allowing Web Real-Time Communication (WebRTC) IMS Clients (WIC) to access the IP Multimedia (IM) Core Network (CN) subsystem.

The present document is applicable to WebRTC IMS client (WIC), eP-CSCF, eIMS-AGW, WebRTC Web Server Function (WWSF) and WebRTC Authorization Function (WAF).

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## 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.
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- 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] IETF RFC 7118: "The WebSocket Protocol as a Transport for the Session Initiation Protocol (SIP)".
- [3] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
- [4] 3GPP TS 23.228: " IP Multimedia Subsystem (IMS); Stage 2".
- [5] IETF RFC 5763: "Framework for Establishing a Secure Real-time Transport Protocol (SRTP) Security Context Using Datagram Transport Layer Security (DTLS)".
- [6] IETF RFC 5764: "Datagram Transport Layer Security (DTLS) Extension to Establish Keys for the Secure Real-time Transport Protocol (SRTP)".
- [7] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".
- [8] 3GPP TS 24.173: "IMS multimedia telephony communication service and supplementary services; Stage 3".
- [9] 3GPP TS 33.203: "Access security for IP based services".
- [10] RFC 6750 (October 2012): "The OAuth 2.0 Authorization Framework: Bearer Token Usage".
- [11] 3GPP TS 23.292: "IP Multimedia Subsystem (IMS) Centralized Services; Stage 2".
- [12] RFC 5009 (September 2007): "Private Header (P-Header) Extension to the Session Initiation Protocol (SIP) for Authorization of Early Media".
- [13] 3GPP TS 23.334: "IMS Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW) interface".
- [14] RFC 4145 (September 2005): "TCP-Based Media Transport in the Session Description Protocol (SDP)".
- [15] RFC 8122 (March 2017): "Connection-Oriented Media Transport over the Transport Layer Security (TLS) Protocol in the Session Description Protocol (SDP)".
- [16] draft-ietf-rtcweb-data-channel-13 (January 2015): "WebRTC Data Channels".