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## ACCESSIBLE REAL TIME CONVERSATIONAL SERVICES

### Summary of overviews, specifications and standards

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This is an overview of specifications related to accessible real time conversation, including Total Conversation and Text Telephony. The reader must be aware of that the work in the standards groups move on, and new versions of the referenced specifications may take effect. For implementation, only the versions retrieved directly from the standard bodies shall be used and verifying that the version is valid. Some overviews and presentations are also included.

The list has the ambition to serve as a convenient starting point for finding information relevant to the area.

- For 3GPP, the specifications can be found in the "Document area" under [www.3gpp.org](http://www.3gpp.org)
- For ITU-T, the recommendations can be found under <http://www.itu.int/ITU-T/publications/recs.html> .
- For IETF, the specifications can be found under [www.ietf.org](http://www.ietf.org)
- For ETSI, the specifications can be found under [www.etsi.org](http://www.etsi.org)
- Most 3GPP specifications related to text telephony and total conversation are accepted as ETSI technical specifications and are listed under 3GPP and ETSI below.

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## Overviews, articles, regulations, policy statements

<i>Document</i>	<i>Full name</i>	<i>Explanation</i>	<i>Type</i>
COCOM 04-08	INCOM Report	Report on eAccessibility to EU regulatory group COCOM	Priority action requirements
<a href="#">ITU-T Web pages on Accessibility</a>	ITU-T SG 16 Work on Accessibility	Summary of work in ITU-T Multimedia group and related	Web site
<a href="#">Accessibility presentation in IMTC-NGN workshop</a>	Accessibility in New Emerging Networks and Services	Presentation made for joint ITU-T / IMTC workshop 2006	PDF of Powerpoint
<a href="#">Text over IP</a>	Text over IP	Explanations and links in Wikipedia	Wiki information

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## Standards and specifications

### IETF accessibility specific documents

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">IETF RFC 4102</a>	Registration of text/red	MIME registration of text with redundancy	MIME registration	Approved
<a href="#">IETF RFC 4103</a>	RTP Payload for Text Conversation.	RTP Payload for T.140 text conversation. MIME Registered as "text/t140", used in H.323 and SIP and 3GPP	Transport	Approved replaces RFC 2793
<a href="#">IETF RFC 5194</a>	Framework of requirements for real-time text conversation using SIP	Requirements and implementation guidelines for real-time text in the SIP environment	Requirements	Approved june 2008
<a href="#">IETF RFC 3351</a>	User Requirements for the Session Initiation Protocol (SIP) in Support of Deaf, Hard of Hearing and Speech-impaired Individuals	Handles transcoding and other value added services invoked through SIP.	Requirements	Approved
<a href="#">IETF RFC 4351</a>	RTP Payload for Text Conversation interleaved in an audio stream	RTP Payload for text, intended for transit gateways where number of ports may be an issue.	Transport	Approved.
<a href="#">draft-hellstrom-textpreview</a>	Presentation of Text Conversation in realtime and en-bloc form	Presentation of real-time text conversations	Presentation procedures	Draft
<a href="#">draft-hellstrom-textgwy</a>	Real-time text interworking between PSTN and IP networks	Interworking procedures between PSTN textphones and SIP with real-time text	Call control and media handling	Draft
<a href="#">draft-hellstrom-text-turntaking</a>	Registration of the Real-time-text Media Feature Tag	Registration of a capability for real-time text.	SIP Session level capability	Draft
<a href="#">draft-hellstrom-simple-text-transmission</a>	Coding and transmission of text in real-time and en-bloc mode based on MSRP	Procedures for using the IM protocol MSRP for real-time text	Transport protocol details	Draft
<a href="#">draft-hellstrom-text-conference</a>	Text media handling in RTP based real-time and message conferences	Procedures for multi-party sessions with RTP based real-time text	RTP session details	Draft

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## IETF General documents of specific interest for accessibility

<i>Specification</i>	<i>Title</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">IETF RFC 2833</a>	RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals	Encoding and transport of tones over IP	Transport	Approved, obsoleted by RFC 4733
<a href="#">IETF RFC 4566</a>	Session Description Protocol	Contains "text" as an allowable media type in multimedia calls.	Call control	Approved
<a href="#">IETF RFC 2198</a>	Redundancy for RTP payloads	Used in RFC4103 for reliability of text traffic	Transport	Approved
<a href="#">IETF RFC 2805</a>	Media Gateway Control Protocol Architecture and Requirements	Contains text gateway requirements	Procedure requirements	Approved
<a href="#">IETF RFC 3840</a>	Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)	Can be useful for preference and capability indication for service invocation	Call control	Approved
<a href="#">IETF RFC 3841</a>	Caller Preferences for the Session Initiation Protocol	Can be useful for preference and capability indication for service invocation	Call control	Approved
<a href="#">IETF RFC 4733</a>	Definition of events for telephony tones	Text transport in RFC 4103 mentioned	Transport	Approved, obsoletes RFC 2833
<a href="#">IETF RFC 4734</a>	Definition of Events For Modem, FAX, and Text Telephony Signals	Text telephone signals expanded, refers to transport of text in RFC 4103	Transport	Approved
<a href="#">IETF RFC 4504</a>	SIP Telephony Device Requirements and Configuration	Text requirements included, referring to RFC 4103	Device requirements	Approved
<a href="#">IETF RFC 4117</a>	Transcoding Services Invocation in the Session Initiation Protocol (SIP) Using Third Party Call Control (3pcc)	Most examples valid for text relay service and text gateway invocation	Call Control procedures	Approved
<a href="#">IETF RFC 4597</a>	Conference scenarios	Real-time text included referring to RFC 4103	Service description	Approved
<a href="#">draft-ietf-sipping-transc-conf</a>	The session Initiation Protocol Conference bridge transcoding model	Mentioned that it can be used for invocation of relay services	Procedure specification	Approved, to be published
<a href="#">IETF RFC 5012</a>	Requirements for Emergency Context Resolution with Internet Technologies	Requirements for emergency services in IP, including real time text, referencing RFC 4103.	Service requirements	Approved
<a href="#">draft-ietf-ecrit-phonebcp</a>	Best Current Practices for Communications Services in support of Emergency Calling	Refers to real-time text for emergency calls. Refers to RFC 4103	Service and terminal requirements	Draft
<a href="#">draft-ietf-ecrit-framework</a>	Framework for Emergency Calling in Internet Multimedia	Structure for emergency services in IP. Refers to RFC 4103 for text	Service requirements	Draft
<a href="#">draft-ietf-avt-app-rtp-keepalive-02</a>	Application Mechanism for maintaining alive the Network Address Translator (NAT) mappings associated to RTP flows.	Methods for keep-alive through NAT-routers. RFC4103 referenced.	Transport mechanism	Draft

## ITU Accessibility specific documents

<i>Document</i>	<i>Title</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">ITU-T Rec. V.18</a>	Operational and Interworking Requirements for DCE:s Operating in the Text Telephone Mode	Includes automatic interworking with most legacy text telephones.	Modem transport	Approved
<a href="#">ITU-T Rec. V.151</a>	Procedures for end-to-end connection of analogue PSTN text telephones over an IP network utilizing text relay	Text Telephony transit through IP.	Gateway	Approved
<a href="#">ITU-T Rec. F.703</a>	Multimedia conversational services	Defines Text Telephony and Total Conversation services	Service description	Approved
<a href="#">ITU-T Rec. H.224</a>	A real time control protocol for simplex applications using the H.221 LSD/HSD/HLP channel.	Addition of client id=2 for T.140 text transport	Transport	Approved
<a href="#">ITU-T Rec. H.323 Annex G</a>	Text Conversation and Text SET.	Defines T.140 text inclusion in H.323 IP Multimedia	Call control	Approved
<a href="#">ITU-T Rec.T.134</a>	Text Chat Application Entity	Application for text conversation in the T.120 data conferencing concept.	Transport	Approved
<a href="#">ITU-T Rec. T.140</a>	Protocol for multimedia application text conversation.	Text conversation protocol for multimedia application. With amendment 1 (2000).	Presentation level	Approved
<a href="#">ITU-T Rec.T.140 - Addendum</a>	Marking of missing characters	Replacement for characters missing after transmission	Presentation	Approved
<a href="#">ITU-T H Series Supplement 1</a>	Video Quality for sign language and lip reading	Quality characteristics of video transmission of importance for sign language and lip-reading use.	Requirement	Approved
<a href="#">ITU-T Rec. H.248.2v2</a>	Packages for fax, text and call discrimination	Text telephony to text over IP gateway. Approved revision.	Gateway	Approved
<a href="#">ITU-T FSTP.TACL</a>	Technical paper: Accessibility checklist	General accessibility checklist for standardisers.	Guideline	Approved
<a href="#">ITU-T F.790</a>	Telecommunications Accessibility Guidelines for Older Persons and Persons with Disabilities	General accessibility guidelines	Guideline	Approved
<a href="#">ITU-T H.324 Annex L</a>	Updated draft for H.324 Annex on text conversation	Addition or real-time text to the H.324 multimedia environment more reliable than earlier method	Transport	Approved

## ITU general documents of accessibility interest

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">ITU-T Recommendation H.248.21</a>	Controlled multimedia conferences	Includes text	Conference control protocol	Approved
<a href="#">ITU-T Rec. F.700</a>	Framework Recommendation for multimedia services, Annex A.3.	Multimedia Framework, including real time text	Service description	Approved
<a href="#">ITU-T Rec.V.250</a>	Serial asynchronous automatic dialling and control	Contains modem control for V.18	Call control	Approved
<a href="#">ITU-T Recommendation V.8</a>	Procedures for starting sessions of data transmission over the public switched telephone network	Contains call function = text telephony	Call control	Approved
<a href="#">ITU-T Recommendation V.8 bis</a>	Procedures for the identification and selection of common modes of operation between Data Circuit-terminating Equipments (DCEs) and between Data Terminal Equipments (DTEs) over the public switched telephone network	Contains procedures for starting simultaneous voice and text in V.18.	Call control	Approved
<a href="#">ITU-T V.150.1</a>	Modem transit over IP	International Recommendation for transport of Modem over IP	Gateway	Approved
<a href="#">ITU-T Rec.V.152</a>	Procedures for supporting Voice Band Data over IP networks	Usable for text telephony transit through IP networks	Gateway	Approved
<a href="#">ITU-T Rec.H.324</a>	Terminal for low bit-rate multimedia communication	Addition of data channel for T.140 text	Multimedia system	Approved
<a href="#">ITU-T Rec. V.61</a>	Analog simultaneous voice and data (permits Voice carry over with ASCII modems)	Possible to use under V.18	Modem transport	Approved
<a href="#">ITU-T Rec.H.320</a>	ISDN visual telephone systems and terminal equipment.	Text conversation added	Multimedia system	Approved
<a href="#">ITU-T Rec. H.245</a>	Control Protocol for Multimedia Communication	Multimedia Control protocol, includes setup of text channels	Call control	Approved
<a href="#">ITU-T Y.1541</a>	Network performance objectives for IP-based services		Requirement	Approved
<a href="#">ITU-T Y.2000-series Supplement 1</a>	Scope for next generation network, R1	Real time text and services for people with disabilities included	Requirements	Approved
<a href="#">ITU-T Y.2201</a>	Requirements for next generation networks, R1	Accessibility features and services included	Service Requirements	Approved

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">ITU-T F.724</a>	IP Videophone service description	Real time text included	Service description	Approved
<a href="#">ITU-T F.733</a>	Multimedia conference services	Real time text included	Service description	Approved
<a href="#">ITU-T F.742</a>	Service description and requirements for distance learning services	Real time text included	Service description	Approved
<a href="#">ITU-T J.161</a>	Audio and Video codec requirements and usage for the provision of bidirectional services over cable television networks using cable modems	Cable TV network IP communication. Text telephony and IP real-time text included	Technical requirements	Approved June 2007
<a href="#">ITU-T Y.2211</a>	IMS based real-time conversational multimedia services over NGN	Real time text included	Requirements specification	Approved October 2007
<a href="#">ITU-T Y.NGN-et-tech</a>	Next Generation Networks - Emergency Telecommunications – Technical Considerations	Real time text included	Functional specification	Draft

### ETSI and 3GPP Accessibility specific documents

<i>Standard</i>	<i>Full name</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
<a href="#">ETSI ETR 333</a>	Text Telephony, User Requirements And Recommendations	Describes user needs for text conversation and guidelines for standardisation	Requirement	Approved.
<a href="#">ETSI TR 101 806</a>	Guidelines for Telecommunication Relay Services for text and video	Guidelines for Telecommunication Relay Services for text and video	Requirement	Approved
<a href="#">ETSI TS 122 226</a> <a href="#">3GPP TS 22.226</a>	Global Text Telephony Service Stage 1	Global Text and Total conversation (GTT) service description	Service	Approved
<a href="#">ETSI TS 123 226</a> <a href="#">3GPP TS 23.226</a>	Global Text Telephony Architecture Stage 2	GTT Specific description of network architecture for text conversation and especially CTM text telephony	Architecture	Approved
<a href="#">ETSI TS 126 226</a> <a href="#">3GPP TS 26.226</a>	CTM Modem, General description	Robust and error tolerant modem for text telephony specified for mobile networks.	Modem transport	Approved
<a href="#">ETSI TS 126 235</a> <a href="#">3GPP TS 26.235</a>	Packet Switched Conversational Multimedia , default codecs	Includes text conversation using T.140 in RTP as RFC 4103.	Profile	Approved
<a href="#">ETSI TS 126 236</a> <a href="#">3GPP TS 26.236</a>	Packet switched conversational multimedia, transport.	Includes text conversation transport RFC 4103	Profile	Approved
<a href="#">ETSI EG 202 320</a>	Duplex Universal Speech and Text Communication	Guide for text as a mainstream call component	Requirements and implementation framework	Approved
<a href="#">ETSI TS 102 511</a>	AT Commands for Assistive Mobile Device Interfaces	External interface for assistive devices	External interface specification	Draft
ETSI ES 202 975	Harmonised Relay Services	Service description for relay services	Service definition	Draft



## ETSI and 3GPP general documents of accessibility interest

<i>Standard</i>	<i>Full name</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
ETSI TS 122 101 <a href="#">3GPP TS 22.101</a>	Service principles	Brief description of mobile text conversation	Service	Approved
ETSI TS 126 110 <a href="#">3GPP TS 26.110</a>	Circuit Switched Multimedia Telephony ( 3G.324 )	Includes text conversation using T.140 in AL1 channel	Multimedia call control	Approved
ETSI TS 124 008 <a href="#">3GPP TS 24.008</a>	Terminal indicators	CTM indicator from terminal is defined here	Call control	Approved
<a href="#">3GPP TS 26.114</a>	IMS Multimedia Telephony codec considerations	Real-time text, video and audio are included	Profile and codec details	Approved for 3GPP release 7.

## EIA/TIA Accessibility specific Documents

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
TIA/EIA 825a	A Frequency Shift Keyed Modem for use on the Public Switched Telephone Network	The standard for TTY signals, which permitted mainstream industry to design for compatibility with TTY as technologies moved to digital.	Modem transport	Approved
TIA 1001	Standards for text over IP (TIA 1001) transit gateway	U.S. effort to develop standard methods for carrying Baudot over IP networks, using voice band data and gateway approaches.	Gateway	Approved
TIA- 504-A	Telecommunications-Telephone Terminal Equipment-Magnetic Field and Acoustic Gain Requirements for Headset Telephones Intended for Use by the Hard of Hearing		Requirement	Approved
ANSI/TIA-968-A	Telecommunications - Telephone Terminal Equipment - Technical Requirements for Connection of Terminal Equipment to the Telephone Network		Requirement	Approved
TR 45 TSB-121	2.5 mm Audio Interface For Mobile Wireless Handsets - Text Telephones (TTY)	Connector standard for wireless telephones and TTYs	Physical	Approved
C.63/ANSI ANSI C.63.19	American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids	Measurements of wireless telephone emissions and hearing aid immunity, with predicted performance based on measures. (Now in use in an FCC order)	Interference	Approved
TIA IS-823	TTY/TDD Extension to TIA/EIA 136-410 Enhanced Full Rate Speech Codec		Transport	Approved
TIA -IS-840	Minimum Performance Standards for Text		Requirements	Approved

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<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
	Telephone Signal Detector and Text Telephone Signal Regenerator			
TIA TSB-121	2.5 mm Audio Interface For Mobile Wireless Handsets - Text Telephones (TTY)		Physical	Approved

**EIA/TIA General documents with accessibility interest.**

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
TIA IS-127-2	Enhanced Variable Rate Codec, Speech Service Option 3 for Wideband Spread Spectrum Digital Systems - Addendum 2		Speech codec	Approved
TIA IS-707-A-2	Data Services Options for Spread Spectrum Systems - Radio Link Protocol Type 3 - Addendum No. 2			Approved
TIA IS-733-1	High Rate Speech Service Option 17 for Wideband Spread Spectrum Communications Systems			Approved
TIA IS-789A	Electrical Specification for the Portable Phone to Vehicle Interface		Physical	Approved
TIA/EIA-688	DTE/DCE Interface For Digital Cellular Equipment		Physical	Approved
T1.209-2003	American National Standard for Operations Administration and Maintenance and Provisioning (OAM&) – Network Tones and Announcements	Provides an industry standard way for network routing messages to be conveyed in TTY in addition to voice.		Approved

**Profiling general documents with accessibility interest.**

<i>Standard</i>	<i>Full Name of Standard</i>	<i>Explanation</i>	<i>Type</i>	<i>Status</i>
DSL Forum <a href="#">TR-122v1.01</a>	Base requirements for Consumer-Oriented Analog Terminal Adapter Functionality	DSP forum ATA functionality, mentioning textphone passthrough. by V.152 and V.151	Product profiling	Approved

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