



Federal Communications Commission
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Small Entity Compliance Guide

Transition from TTY to Real-Time Text Technology

FCC 16-169

CG Docket No. 16-145

GN Docket No. 15-178

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the new rules adopted in the above-referenced FCC rulemaking docket(s). This Guide is not intended to replace the rules and, therefore, final authority rests solely with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide may, perhaps, not apply in a particular situation based upon the circumstances, and the FCC retains the discretion to adopt approaches on a case-by-case basis that may differ from this Guide, where appropriate. Any decisions regarding a particular small entity will be based on the statute and regulations.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation; the FCC will consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or to clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

1-888-CALL-FCC (1-888-225-5322) TTY: 1-888-TELL-FCC (1-888-835-5322)

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I. BACKGROUND INFORMATION

Since the 1970s, text telephone (TTY) technology was the only means for people with disabilities to send and receive text communications over the public switched telephone network (PSTN).¹ The Commission's rules have required providers and device manufacturers of telecommunications services and advanced communication services (ACS), including interconnected voice over Internet Protocol (VoIP) providers to support TTY technology.² These requirements include the following:

- Covered service providers must be capable of transmitting 911 calls from individuals who are deaf, hard of hearing, or have speech disabilities, through means other than mobile radio handsets, such as TTY technology.³
- Covered service providers and equipment manufacturers must support TTY connectability and TTY signal compatibility.⁴
- Covered service providers must offer their customers access to PSTN-based telecommunications relay services (TRS), including access through 711 abbreviated dialing via a voice telephone or TTY.⁵

However, changes to communications networks, particularly ongoing technology transitions from circuit switched to Internet Protocol (IP)-based networks and from copper to wireless and fiber infrastructure, have affected the quality and utility of TTY technology. These changes present significant challenges to effective communication, including susceptibility to packet loss, compression techniques that distort TTY tones, and echo or other noises that result from the transmission of the Baudot character string. Further, TTY technology is only half-duplex, has a limited character set, and often requires a separate assistive device. These limitations have resulted in a steady decline in TTY use in favor of other forms of text communications.

On December 16, 2016, the Commission adopted a Report and Order amending its rules to allow IP-based wireless service providers and manufacturers to support real-time text (RTT) on IP-based wireless networks and equipment. RTT messages are immediately conveyed to and received by recipients as the messages are composed, as compared to all other text-based messaging services, which require parties to press a key to transmit messages. RTT allows text to be sent at the same time as voice communications, permitting a more conversation-friendly service. In addition, by not requiring users to hit "send," 911 call center personnel will be able to receive incomplete messages from people who are in danger. Because RTT is an IP technology designed for the packet-switched network environment, users will be able to make RTT calls using the built-in functionality of numerous off-the-shelf devices. RTT includes the following features: full duplex operation, seamless integration of voice and text, a full international character set, and latency functionally equivalent to real-time voice communications. Such features will greatly improve the availability, efficiency

¹ *Transition from TTY to Real-Time Text Technology; Petition for Rulemaking to Update the Commission's Rules for Access to Support the Transition from TTY to Real-Time Text Technology, and Petition for Waiver of Rules Requiring Support of TTY Technology*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 13568, 13569, para. 2 (2016) (*RTT Order*).

² *RTT Order*, 31 FCC Rcd at 13569, para. 2.

³ 47 CFR § 20.18(c).

⁴ 47 U.S.C. §§ 255, 617; 47 CFR §§ 6.5, 7.5, 14.20, 14.21(d); *see also* 47 CFR §§ 6.3(b), 7.3(b).

⁵ *See* 47 CFR §§ 64.603, 64.604(a)(3)(v), 64.601(b). The Commission adopted 711 dialing access and required common carriers and interconnected VoIP service providers to support 711 dialing so that TRS users could initiate a relay call by TTY or voice, anywhere in the United States, without having to remember and dial different 7- and 10-digit toll-free numbers when traveling from state to state. *See* 47 CFR §§ 64.601(a)(1).

and reliability of text-based communications sent over IP-based networks. IP-based wireless service providers and manufacturers that support RTT in compliance with the Commission's rules will be relieved of their TTY support requirements on all wireless networks and equipment.

II. KEY DEFINITIONS

Authorized end user device: a handset or other end user device that is authorized by the provider of a covered service for use with that service and is able to send, receive, and display text.⁶

CMRS provider: a Commercial Mobile Radio Services (CMRS) provider, excluding mobile satellite service (MSS) operators, that (1) offers real-time, two way switched voice service that is interconnected with the public switched network; and (2) utilizes an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls. This definition includes entities that offer voice service to consumers by purchasing airtime or capacity at wholesale rates from CMRS licensees.⁷

Covered service: a service that meets the Commission's accessibility requirements by supporting RTT to ensure access to telecommunications services, telecommunications equipment and customer premises equipment; voicemail and interactive menu services and equipment; advanced communications services and equipment; 911 services, or telecommunication relay services.⁸

RFC 4103: a standard for RTT Transport Protocol for Text Conversation, set by a telecommunications industry standards setting body, the Internet Engineering Task Force (IETF).⁹ Link to this standard: <https://www.ietf.org/rfc/rfc4103.txt> (2005).

RFC 4103-conforming service or user device: a covered service or authorized end user device that enables initiation, sending, transmission, reception, and display of RTT communications in conformity with RFC 4013.¹⁰

RFC 4103-TTY gateway: a gateway that is able to reliably and accurately transcode communications between RFC 4103-conforming services and devices and circuit-switched networks that supports communications between TTYs.¹¹

RTT communications: text communications that are transmitted over Internet Protocol (IP) networks immediately as they are created, e.g., on a character-by-character basis.¹²

Support RTT communications: to enable users to initiate, send, transmit, receive, and display RTT communications in accordance with the applicable provisions of parts 6, 7, 14, 20, and 67 of the Commission's rules.¹³

⁶ 47 CFR § 67.1(a).

⁷ 47 CFR § 67.1(b); *see also* 47 CFR § 20.18(a).

⁸ 47 CFR § 67.1(c).

⁹ 47 CFR § 67.1(d). RFC 4103 has been incorporated by reference in the rules. *See* 47 CFR § 67.3.

¹⁰ 47 CFR § 67.1(e).

¹¹ 47 CFR § 67.1(f).

¹² 47 CFR § 67.1(g).

¹³ 47 CFR § 67.1(h).

TTY technology: Text telephone (TTY) technology is the transmission of coded signals through a wire or radio communication system.¹⁴

III. COVERED ENTITIES AND OBLIGATIONS

The new rules permit IP-based wireless providers and manufacturers to support RTT in lieu of supporting TTY technology.¹⁵ Covered entities that support RTT in compliance with the Commission's rules will be relieved of their TTY support requirements on all wireless networks and equipment, including services and devices used for legacy non-IP facilities.¹⁶

IP-based wireless providers. The new rules cover entities that are involved in the provision of IP-based wireless voice communication service to the extent that their services are subject to existing TTY technology support requirements under the Commission's rules.¹⁷ These include entities subject to rule Parts 6 (telecommunications services and equipment and customer premises equipment), 7 (voicemail and interactive menu services and equipment), 14 (advanced communications services and equipment), 20 (CMRS), and 64 (telecommunication relay services).¹⁸ CMRS and wireless interconnected VoIP service providers that support RTT are required to ensure that consumers are enabled to transmit to and receive voice calls from Public Safety Answering Points (PSAPs, otherwise known as 911 call centers), TRS call centers, and other PSTN destinations that can be reached through the North American Numbering Plan (NANP) telephone numbers.¹⁹ Providers must meet these obligations except to the extent that it is not achievable or readily achievable, as applicable, for a particular manufacturer to support RTT on that carrier's network.²⁰ Providers are not required to retrofit "in-service" devices, but must meet accessibility obligations as natural opportunities occur."²¹

Manufacturers of end user equipment. Manufacturers of end user equipment for use with CMRS and wireless interconnected VoIP services are permitted to support RTT communications in lieu of TTY communications "if readily achievable" or "unless not achievable," as applicable.²² Such manufacturers are not required to add RTT capability by recalling or retrofitting end user devices already in service or manufactured prior to the compliance deadlines.²³ However, they must meet accessibility obligations as natural opportunities occur.²⁴ To help consumers who use IP-based voice services, covered entities are encouraged to "push out" downloadable RTT applications or upgrades to operating systems to the extent practicable.²⁵

¹⁴ 47 CFR § 64.6401(a)(33).

¹⁵ *RTT Order*, 31 FCC Rcd at 13576, para. 11.

¹⁶ *RTT Order*, 31 FCC Rcd at 13582-83, 13604, paras. 22-23, 71.

¹⁷ *RTT Order*, 31 FCC Rcd at 13576-77, para. 12.

¹⁸ *RTT Order*, 31 FCC Rcd at 13576-77, para. 12.

¹⁹ *RTT Order*, 31 FCC Rcd at 13576-77, para. 12.

²⁰ *RTT Order*, 31 FCC Rcd at 13602, paras. 66-67.

²¹ *RTT Order*, 31 FCC Rcd at 13602-03, para. 70.

²² *RTT Order*, 31 FCC Rcd at 13581, para. 19. The standard for achievability depends on whether the equipment falls under Part 6, 7, or 14 of the Commission's rules. There is no achievability standard for Parts 20 and 64.

²³ *RTT Order*, 31 FCC Rcd at 13581-82, para. 20.

²⁴ *RTT Order*, 31 FCC Rcd at 13603-04, para. 70.

²⁵ *RTT Order*, 31 FCC Rcd at 13581-82, 13603-04, paras. 20, 70.

IV. RTT MINIMAL FUNCTIONALITIES

In order to meet the objectives of sections 225, 255, and 716 of the Communications Act, services and equipment that support RTT need to be as accessible, usable, and effective for people with disabilities as voice-based services over IP-networks. To achieve this goal, RTT communications must be interoperable, backward compatible with TTY technology, and capable of supporting certain basic features and capabilities that are routinely available to users of wireless voice services. Accordingly, covered entities who opt to support RTT in lieu of continuing to support TTY must meet the following minimal functionalities in their provision of RTT, except as otherwise indicated.

Interoperability. Any service or device that enables the initiation, transmission, reception, and display of RTT communications must be interoperable over IP-based wireless networks, which can be met by adherence to RFC 4103 or its successor protocol.²⁶ RFC 4103 can be replaced by an updated standard as long as it supports end-to-end RTT communications and performance requirements.²⁷

Backward Compatibility with TTY Technology. To ensure that RTT users and TTY users can continue to communicate directly with one another until TTYs are phased out,²⁸ covered services and equipment must be backward compatible with TTYs. Covered entities are given the flexibility to implement solutions to resolve RTT-TTY incompatibility issues. The Commission will allow the use of ITU-T Recommendation V.18 as a safe harbor for transliterating RTT to TTY characters.²⁹

Support for 911 Communications. Covered services and equipment must enable the caller to transmit and receive RTT communications to and from any 911 PSAP in the United States.³⁰ Covered entities are encouraged to work with PSAPs to provide support for 911 communication through the manner specified by the PSAP.³¹ RTT must be delivered without RTT-TTY conversion to PSAPs that are able to receive RTT.³² If requested by a PSAP, a covered entity must begin delivering RTT communications in an RTT format within six months after such request is made.³³ Calls made via RTT are subject to the same location information requirements as calls made via TTY.³⁴ A covered entity may seek a waiver of the location information requirements if it is not technically feasible for the entity to support the requirement via RTT provided through a downloadable application. Such requests should be supported with evidence documenting the lack of technical feasibility.³⁵ Covered entities are also encouraged to inform state and local 911 authorities of their timetables for transitioning from TTY to RTT.³⁶

²⁶ 47 CFR § 67.2(a).

²⁷ *RTT Order*, 31 FCC Rcd at 13586, paras. 30-31.

²⁸ The sunset date set for the TTY obligation will be addressed in a future proceeding. *RTT Order*, 31 FCC Rcd at 13590-91, paras. 40-41.

²⁹ *RTT Order*, 31 FCC Rcd at 13589-990, paras. 37-39.

³⁰ 47 CFR § 67.2(c)(2).

³¹ *RTT Order*, 31 FCC Rcd at 13592, para. 44.

³² *RTT Order*, 31 FCC Rcd at 13591-92, para. 43.

³³ *RTT Order*, 31 FCC Rcd at 13592-92, para. 45.

³⁴ *RTT Order*, 31 FCC Rcd at 13595, para. 50.

³⁵ *RTT Order*, 31 FCC Rcd at 13595, para. 50.

³⁶ *RTT Order*, 31 FCC Rcd at 13594, para. 48.

Capability to Initiate and Receive Calls Using RTT. Covered services and equipment must enable the caller to initiate and receive calls to and from the same telephone numbers for which voice calls can be initiated and received.³⁷

Simultaneous Voice and Text. Covered services and equipment must enable the caller to send and receive text and voice simultaneously in both directions on the same call using a single device.³⁸

Accessible Indicators. In order to alert callers to incoming calls and audio activity on an RTT call, device manufacturers and service providers are encouraged to incorporate accessible indicators in their RTT implementation.³⁹

Latency and Error Rate of Text Transmittal. Text characters should be transmitted in a manner that is functionally equivalent to the real-time nature of voice telephone communications by appearing on the receiving device at roughly the same time it is created on the sending device.⁴⁰ The Commission recommends that industry and consumer stakeholders work together to determine appropriate latency and error rate parameters.⁴¹

Device Functionality. The Commission strongly encourages: (1) RTT to be pre-installed and accessed through a default function on covered devices to expedite effective RTT implementation; and (2) collaboration among industry and consumer stakeholders to reach agreement on the appropriate features and technical aspects of RTT implementation.⁴²

Calling Features. No calling features are mandated at this time but are strongly encouraged.⁴³ For instance, certain calling features that are commonly available to voice telephone users, including the ability to transfer calls, enable multi-party teleconferencing, and utilize automated attendant, interactive voice response systems, and caller identification features, are necessary to ensure that RTT is as accessible, usable, and effective for people with disabilities as wireless voice communications service is for people without disabilities.⁴⁴ Further, the ability for the caller to control text settings, such as font size and color, may help accommodate people who are visually impaired.⁴⁵

V. TIMELINE

Service Providers. The Commission waives from the TTY support obligations expire on December 31, 2017, or upon the effective date of rules providing for alternative IP-based wireless accessibility solutions, whichever is earlier.⁴⁶ To the extent that a service provider prefers to support RTT access in lieu of TTY technology and does not wish to seek an extension of its current waiver, it can meet the following compliance timelines, which will supersede the December 31, 2017 deadline:

³⁷ 47 CFR § 67.2(c)(1).

³⁸ 47 CFR § 67.2(c)(3).

³⁹ *RTT Order*, 31 FCC Rcd at 13596-97, para. 54.

⁴⁰ *RTT Order*, 31 FCC Rcd at 13598, paras. 56-57.

⁴¹ *RTT Order*, 31 FCC Rcd at 13598, para. 57.

⁴² *RTT Order*, 31 FCC Rcd at 13600, para. 62.

⁴³ *RTT Order*, 31 FCC Rcd at 13601, para. 64.

⁴⁴ *RTT Order*, 31 FCC Rcd at 13600, para. 63.

⁴⁵ *RTT Order*, 31 FCC Rcd at 13600, para. 63.

⁴⁶ *See generally RTT Order*, 31 FCC Rcd at 13602-03, paras. 66-68.

- By December 31, 2017, each Tier I service provider (a CMRS provider offering nationwide services) must either (1) offer a downloadable application or plug-in that supports RTT or (2) comply with the following: (i) implement in its core network the capability to support RTT, (ii) offer at least one new handset that supports native RTT functionality, and (iii) for all authorized end user devices specified on or after that date, include in future design specifications the requirement to support RTT.
- For all other (non-Tier I) carriers opting to provide RTT support, such compliance must be achieved by June 30, 2020. A carrier must meet these obligations except to the extent that it is not achievable for a particular manufacturer to support RTT on that carrier's network.⁴⁷

By December 31, 2019, each Tier I service provider opting to support RTT in lieu of TTY technology must provide such support for all new authorized user devices activated on its networks. Non-Tier I service providers (including resellers) that opt to support RTT must do so for all new authorized user devices activated on their networks by June 30, 2021.

A carrier must meet these obligations except to the extent that it is not achievable for a particular manufacturer to support RTT on that carrier's network. A carrier may rely in good faith on a manufacturer's representations that it has complied with the accessibility obligations under the Commission's rules.⁴⁸

Manufacturers. Covered manufacturers opting to provide RTT support, in lieu of supporting TTY technology, must provide RTT functionality in handsets and other text-capable end user devices for wireless IP-based voice services, subject to the readily achievable or achievable limitation, as applicable, for all devices manufactured on or after December 31, 2018.

Compliance for In-Service Devices When Natural Opportunities Occur. Although all RTT compliance timelines are prospective only, in that they do not require covered entities to retrofit "in-service" devices, pursuant to Parts 6, 7, and 14, entities covered under sections 255 and 716 are required to meet accessibility obligations as natural opportunities occur. These include "the redesign of a product model or service, new versions of software, upgrades to existing features or functionalities, significant rebundling or unbundling of product and service packages, or any other significant modification that may require redesign."⁴⁹

VI. EDUCATION, OUTREACH, and NOTIFICATIONS

To facilitate a seamless transition from TTY technology to RTT, the Commission established guidelines for informing the public about the transition from TTY technology to RTT and the mechanics of how RTT technology will work.⁵⁰ The Commission encourages service providers and manufacturers to include in their consumer outreach and education efforts:

⁴⁷ Mobile Virtual Network Operators and other CMRS resellers are not subject to either of these initial deadlines, as they may not be able to support RTT to the extent necessary until after both Tier I and non-Tier I facilities-based CMRS providers have implemented the technology.

⁴⁸ For wireless service providers other than CMRS providers that are subject to RTT support requirements under one or more provisions of Parts 6, 7, 14, and 64, the same implementation deadlines apply to such providers as are applicable to smaller CMRS providers.

⁴⁹ See 47 CFR §§ 6.7, 7.7, 14.20; see also *RTT Order*, 31 FCC Rcd at 13603-04, para. 70.

⁵⁰ See *RTT Order*, 31 FCC Rcd at 13604-06, paras. 72-74.

- The development and dissemination of educational materials that contain information pertinent to the nature, purpose and timelines of the RTT transition;⁵¹
- Internet postings, in an accessible format, of information about the TTY to RTT transition on the websites of covered entities;
- The creation of a telephone hotline and online interactive and accessible service that can answer consumer questions about RTT;⁵² and
- Appropriate training of staff to effectively respond to consumer questions.⁵³

All consumer outreach and education should be provided in a manner that is accessible to individuals with disabilities.⁵⁴ Accessible formats include, but are not limited to, large print, Braille, videos in American Sign Language that are also captioned and video described, e-mails to consumers who have opted to receive notices in this manner, and printed materials. Service providers and manufacturers have existing obligations to keep records of their efforts to consult with people with disabilities.⁵⁵

Service providers who received waivers of their TTY support obligations continue to be subject to the notice conditions imposed in the Bureau's waiver orders until full implementation of the RTT rules. This continued obligation is necessary in order to ensure that consumers with disabilities do not expect that TTY technology will be supported by IP-based wireless services when calling 911 services, to educate consumers about the availability of RTT, including its limitations when communicating with PSAPs that have only TTY capability, and to ensure that these consumers know that alternative accessible telecommunications options exist for the purpose of calling 911 services. These notifications should be provided in formats that are fully accessible to consumers with disabilities.⁵⁶ To facilitate the transition from TTY to RTT, the Commission encourages state and local governments to prepare PSAPs for RTT by conducting RTT capability testing and call-center training in consultation with consumers, and to share the results with other jurisdictions.⁵⁷

⁵¹ Service providers and manufacturers should make such materials available in languages other than English at least to the extent the provider or manufacturer regularly uses a language other than English in its communications with its customers.

⁵² Covered entities may coordinate to provide regional or national services that can answer questions about the transition, to which their websites can provide a link.

⁵³ To the extent that telephone hotlines are utilized, these should be available during regular business hours to answer questions regarding the RTT transition.

⁵⁴ 47 CFR §§ 6.11, 7.11, 14.20(d).

⁵⁵ See 47 CFR § 14.31(a)(1); *RTT Order*, 31 FCC Rcd at 13601, para. 64.

⁵⁶ *RTT Order*, 31 FCC Rcd at 13605-06, para. 74.

⁵⁷ *RTT Order*, 31 FCC Rcd at 13594, para. 48.

INTERNET LINKS

Report and Order and Further Notice of Proposed Rulemaking (FCC 16-169)

- <https://www.fcc.gov/document/adoption-real-time-text-rtt-rules>
- Erratum: <https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/erratum>

Chairman and Commissioner Statements

- Chairman Wheeler:
<https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/wheeler-statement>
- Commissioner Clyburn:
<https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/clyburn-statement>
- Commissioner Rosenworcel:
<https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/rosenworcel-statement>
- Commissioner Pai:
<https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/pai-statement>
- Commissioner O’Rielly:
<https://www.fcc.gov/document/adoption-real-time-text-rtt-rules/orielly-statement>

Effective Date of RTT Rules and Comment Due Dates Announced

- <https://www.fcc.gov/fcc-announces-effective-date-real-time-text-rules-and-comment-due-dates-further-notice-proposed>

RTT Rules

- Electronic Code of Federal Regulations: <http://www.ecfr.gov> (Search for 47 CFR Part 67)