

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications)	PS Docket No. 11-153
)	
Framework for Next Generation 911 Deployment)	PS Docket No. 10-255
)	
IP-Enabled Services)	WC Docket No. 04-36
)	
Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities)	CG Docket No. 03-123
)	
Implementation of Sections 716 and 717 of the Communications Act of 1934, et al)	CG Docket No. 10-213
)	

PETITION FOR RULEMAKING

AT&T Services, Inc.

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AT&T Services, Inc., on behalf of its subsidiaries (collectively, “AT&T”), pursuant to Federal Communications Commission (“Commission”) Rule Section 1.401, respectfully submits this Petition for Rulemaking (“Petition”) to update the Commission’s accessibility rules.

I. INTRODUCTION

AT&T invites the Commission to open a docket to explore a change to Commission rules requiring support for text telephone (“TTY”) technology, including Sections 20.18(c) and 64.603, that would allow real-time text (“RTT”)¹ communications to replace TTY as the technology of choice for persons who are deaf, hearing impaired, or speech impaired to access

¹ For purposes of this Petition, AT&T’s reference to RTT means the standard Internet Engineering Task Force (IETF) Request for Comments (RFC) 4103, Real-time Transport Protocol Payload for Text Conversation (2005) and its successor protocol as determined by a telecommunications industry setting body such as IETF and the Alliance for Telecommunications Industry Solutions (“ATIS”).

newly deployed voice communications. Transforming the TTY rules will change the status quo for persons with these disabilities and set the stage for service providers, for the first time, to offer real-time, accessible voice services. A rule change would relieve equipment manufacturers and service providers from legacy TTY requirements when deploying new IP-based voice devices and services, encourage the deployment of broadband technology and accessible IP-based devices and voice services, and present the promise of reduced financial pressure on the Interstate Telecommunications Relay Service (“TRS”) Fund. RTT would enhance the accessibility options available to persons who are hearing and/or speech impaired without sacrificing existing accessibility solutions on legacy networks, like TTY. This Petition represents a true win-win and proposes the regulatory changes needed to bring these promises to fruition.

The communications sector is in the midst of a transformation—from legacy TDM to IP-based voice networks and services. The deployment of Voice over Internet Protocol (“VoIP”) services has been underway for more than a decade and is now offered by countless service providers. In 2014, the Commission opened a docket to set the ground rules for the transition to IP-based networks from legacy TDM networks.² However, AT&T and other wireless carriers are already rapidly deploying VoIP services, including Wi-Fi Calling and Voice over Long-Term Evolution (“VoLTE”). Verizon has announced its intention to transition to a VoLTE-only network by early next year.³ T-Mobile⁴ and Sprint⁵ have deployed and are widely advertising

² *Technology Transitions*, AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition, Order, Report and Order, FCC 14-5, GN Docket No. 13-5, GN Docket No. 12-353, 29 FCC Rcd 1433 (2014) (“Technology Transition Order”).

³ Communications Daily, *Verizon Moving to VoLTE Everywhere, but Traditional Network Important to IoT, CFO Says* (May 20, 2015).

Wi-Fi calling across their networks. And AT&T hopes to begin offering its own Wi-Fi calling service later in 2015.⁶

The Commission has long recognized that significant technology transitions require regulatory flexibility to ensure that new technologies are not stifled by old regulations. Indeed, Commissioner Michael Copps articulated just this sentiment more than a decade ago in the context of the proliferation of VoIP services:

It's incumbent on us to identify good policy going forward and not just shoehorn VoIP into statutory terms or regulatory pigeon-holes without adequate justification. It's no slam-dunk that the old rules even apply. But we do need to discuss the consequences of the proliferation of VoIP services on our important statutory objectives—universal service, homeland security, 911 services, *accessibility by people with disabilities*, and encouraging the build-out of advanced telecommunications services. We need to craft a space in which this technology succeeds because of its inherent ability, not due to regulatory arbitrage or exception.⁷

As VoIP service becomes the preferred platform for voice communications, regulatory relief from TTY requirements is a necessary first step that will allow for the emergence of new IP-based accessibility solutions for persons with disabilities.

TTY—a legacy assistive technology developed 50 years ago—is obsolete, and accordingly, regulatory obligations to support the technology on next generation IP platforms are anachronistic. As the Commission acknowledged more than four years ago, “[t]he disabilities

⁴ T-Mobile, *Now Every Wi-Fi Connection Works Like a T-Mobile Tower*, <http://www.t-mobile.com/offer/wifi-calling-wifi-extenders.html> (last visited May 22, 2015).

⁵ Press Release, Sprint Delivers Expanded Connectivity with Free Wi-Fi Calling to Millions of iPhone Customers, <http://newsroom.sprint.com/news-releases/sprint-delivers-expanded-connectivity-with-free-wi-fi-calling-to-millions-of-iphone-customers.htm> (April 8, 2015).

⁶ CNET, *AT&T plans to offer Wi-Fi calling in 2015* (Sept. 12, 2014), available at <http://www.cnet.com/news/at-t-plans-to-offer-wi-fi-calling-in-2015/>.

⁷ Michael J. Copps, Commissioner, Opening Remarks at Voice Over Internet Protocol Forum, Washington, D.C. (Dec. 1, 2003) (emphasis added).

community considers TTY an antiquated technology with technical and functional limitations.”⁸ Thus, it is no surprise that TTY has been largely abandoned by persons with disabilities and surpassed by emerging solutions.⁹ Equally important, and as explained more fully below, TTY is challenging to support with new VoIP technologies, especially wireless VoIP networks. Despite these drawbacks, TTY has remained an assistive technology that must be supported under Commission rules because of the lack of a viable alternative accessibility solution. AT&T’s proposal would resolve this dilemma.

To solve the problem as to the lack of an alternative solution, AT&T is developing and will deploy RTT, which will provide superior functionality to TTY and deliver enhanced, interoperable disability access. RTT will allow service providers to offer fully accessible IP-based services that seamlessly integrate voice and text, obviating the need for external assistive devices and potentially reducing reliance on relay services. AT&T’s RTT offering will also include an interworking gateway that makes RTT backward compatible with TTY, allowing AT&T RTT users to communicate with TTY users, including public safety answering points (“PSAPs”). AT&T hopes that its introduction of RTT will revolutionize disability access, providing IP-based voice services that offer significant benefits to the hearing loss community, the public at large, and the Interstate TRS Fund. AT&T has a proven track record of innovating to better serve consumers with disabilities. AT&T’s pledge to deliver RTT is a continuation of

⁸ *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment*, Notice of Proposed Rulemaking, FCC 11-134, PS Docket Nos. 11-153, 10-255, 26 FCC Rcd 13615, 13624 ¶ 26 (2011).

⁹ *Id.* at 13629-30 ¶ 36.

this tradition and evidence of its intention to provide universal access to communications contemplated in the Commission's Technology Transition Order.¹⁰

To solve the problem of mandated TTY support under existing Commission rules, AT&T requests that the Commission initiate a rulemaking to modify its accessibility rules. Commission rule Sections 6.3(b), 7.3(b), 14.21(d), 20.18(c), and 64.603 refer expressly to TTY. Modifying these, and any other Commission rules requiring the provision of TTY, to recognize RTT as equivalent to and a replacement for TTY would encourage the deployment of IP-based voice services, and spur manufacturers and service providers, free from anachronistic TTY requirements, to develop RTT and potentially other innovative accessibility solutions.

II. DISCUSSION

A. RTT is Equivalent to and a Replacement for TTY.

RTT is the generally accepted accessibility solution to replace TTY for voice services that are rapidly moving to the VoIP platform. While TTY has served disabled consumers well, it was designed for a circuit-switched network environment. It was never intended to operate, and does not operate well, over IP networks that are replacing the public switched telephone network. By contrast, RTT is a native IP technology designed for today's packet-switched network environment. Moving forward, RTT offers the most robust accessibility solution and superior functionality for consumers.

Therefore, the Commission should initiate a rulemaking proceeding to update its rules to recognize RTT as a regulatory equivalent to and replacement for TTY for newly deployed IP-based voice services. Specifically, the Commission should determine that providing RTT functionality meets the accessibility requirements in Commission rule Section 20.18(c) for 911

¹⁰ Technology Transition Order, 29 FCC Rcd at 1450-51 ¶¶50-53.

calling and Section 64.603 for 711 calling, as well as any other regulatory or statutory accessibility obligations, provided that the implementation is interoperable with (1) TTY (TIA-825A/ITU v.18 standard) until TTY is sunset, and (2) RTT with other VoIP networks. RTT that is interoperable (i.e. backwards compatible) with TTY and interoperable with SIP-based networks will allow for the implementation of enhanced accessibility technology without sacrificing existing accessibility solutions as carriers and customers transition to RTT.

1. TTY is a legacy technology with significant challenges and shortcomings.

Although TTY has enabled the transmission of messages by individuals with hearing and speech disabilities for decades, it has several disadvantages. Fundamentally, TTY is an assistive technology, not an accessible form of voice service. Individuals using TTY type messages onto an external TTY keyboard, which are encoded to Baudot tones, transmitted over a communications network, and decoded by a TTY receiver on the other end. But, TTY is slow and requires dedicated network resources, a separate assistive device, and significant network bandwidth. TTY is also half-duplex, preventing interactive, conversational communications; when one TTY user is transmitting, the other TTY user must wait. In this way, the exchange is more akin to communication over a walkie-talkie than conversational communication over a telephone.

In addition to these inherent flaws, there are serious technical hurdles to the successful provision of TTY over IP communications platforms.¹¹ TTY (Baudot) character strings use 1400

¹¹ Over the years, as communications moved from wireline to wireless, and from analog wireless to digital wireless, the telecommunications industry has extended support for TTY through a series of patches and workarounds. However, this industry practice finally has reached a dead-end with the implementation of IP networks. TTY suffers from too many incompatibilities with IP networks to be effectively and efficiently implemented as an accessibility solution for these networks.

and 1800 Hz tones, which can appear as an echo or unvarying noise when transmitted over IP networks because of the echo cancellation techniques designed to improve the quality of IP-based communications. Those TTY tones are also subject to packet loss, where packets of data sent over the IP network do not reach the receiving party. TTY is much more sensitive to packet loss than simple voice services. Although compression coder/decoders (“codecs”), such as G.711, and quality of service techniques allow some VoIP networks, such as AT&T U-verse, to support TTY, they are bandwidth intensive and therefore not conducive to use with bandwidth-efficient wireless networks. Further, some bandwidth-management algorithms use compression techniques that are optimized for voice communications, but can distort TTY tones. When one of these impairments affects either the Baudot start bit or stop bit, synchronization is lost between the sending and receiving TTY devices and the transmission is totally garbled until synchronization is re-established. Suffice it to say, when a TTY communication fails, it fails badly.

2. Other TRS offerings do not make voice service inherently accessible and are resource intensive.

As the Commission has acknowledged in the 911 accessibility context, “relay services have distinct limitations and are not an acceptable substitute for direct text access”¹² Like TTY, other forms of TRS, such as IP captioned telephone service (“CTS”) or IP Relay service, use an operator to relay conversations between third parties and persons who are deaf, hearing impaired, or speech-impaired. However, the use of a relay operator inherently has flaws. Relay callers can experience delays connecting to, and relaying information through, the relay operator.

¹² *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment, Policy Statement and Second Further Notice of Proposed Rulemaking, FCC 14-6, PS Docket Nos. 11-153, 10-255, 29 FCC Rcd 1547, 1562 ¶ 37 (2014).*

Communications are subject to mistakes during the relay process. Finally, sharing messages with the relay operator negates privacy for each party to the call. Although TRS operators are prohibited from divulging the contents of a relay call, the very presence of the operator on a call where potentially personal or intimate matters are discussed can be discomfoting and chill the conversation.

In addition to these well-known limitations, TRS is resource-intensive and relies on a fund that is insufficient to support the continued spiraling cost of the services. For the upcoming 2015-2016 fiscal year, the Interstate TRS Fund administrator, Rolka Loubé Associates LLC, projects a Fund revenue requirement of over \$1 Billion.¹³ The 2015-2016 proposed funding for IP CTS alone is nearly \$364 Million, representing potential reimbursement for 202,651,451 minutes, a significant increase compared to projections of 130,883,347 minutes for the previous year.¹⁴ These increases in the Interstate TRS Fund are not sustainable. Expeditious action on this Petition would not only benefit current relay users by giving them an alternate platform on which to communicate, but also could relieve some of the financial pressure on the Interstate TRS Fund. Given the Commission's concerns about the ability of the Fund to support TRS costs,¹⁵ this Petition provides a roadmap for a partial solution.

¹³ *Payment Formulas and Funding Requirement For The Interstate Telecommunications Relay Services Fund For The 2015-16 Fund Year*, Public Notice, DA 15-612, CG Docket No. 03-123 CG Docket No. 10-51, at 4 (released May 20, 2015).

¹⁴ *Id.* at 5.

¹⁵ See e.g., *Structure and Practices of the Video Relay Service Program*, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-54, CG Docket No. 10-51, 26 FCC Rcd 5545, 5546 ¶ 1 (2011) (recognizing that fraud is one of the threats to the long-term sustainability of the Fund); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Order, DA 08-303, CG Docket 03-1234, 23 FCC Rcd 1680, 1682 ¶¶ 5-7, (2008) (recognizing that “the present Fund size may be inadequate to compensate providers for the remainder of [that year].”).

3. RTT will provide enhanced disability access without the flaws or limitations of legacy solutions.

Deployment of RTT will yield numerous benefits for accessibility and network management. RTT is a true accessibility solution, enabling the transmission of text within a voice call whereby users can communicate using text only or text and voice simultaneously.¹⁶ RTT allows for direct user-to-user conversations without the need for an intermediary relay operator and those conversations would experience fewer delays and technical issues than is typical for TTY. Also unlike TTY, RTT conversations would be full-duplex, allowing both parties to communicate simultaneously, including real-time editing of text, e.g. backspacing and retyping. RTT also enables enhanced features, such as a full set of characters, including those used in foreign languages.

In addition, RTT is less-expensive and easier for consumers to use, excepting deaf-blind users, typically requiring no external assistive device. Instead, RTT will allow consumers to conduct conversations using the functionality native to their mobile devices, or with a standard Bluetooth keyboard. RTT can be expected to diminish the need for relay services, and, accordingly, relieve the current demands on the Interstate TRS Fund. Finally, RTT is less resource-intensive than TTY because it uses low-bandwidth transmissions, a particularly beneficial attribute when used on bandwidth efficient wireless networks.

Backwards compatibility is a key feature to RTT's suitability as a long-term replacement for TTY—particularly given the current technological landscape and the need for features such as 911 calling to resource-constrained PSAPs. Using an RTT-TTY interworking gateway that

¹⁶ On a TTY call, the use of simultaneous voice and text is called Voice Carry Over (VCO) and Hearing Carry Over (HCO).

AT&T is building into its network, individuals using RTT will be able to communicate with TTY users and all PSAPs, without any added costs to the TTY user or the PSAP.

Furthermore, RTT is widely recognized as the future of interoperable, accessible, text-based communications. Numerous standards setting bodies—including entities within the federal government and the Commission itself—have singled out RTT as the optimal solution and advocated for regulatory changes that would permit the use of RTT to achieve accessibility for persons with disabilities. Emphasizing the technological superiority of and consumer demand for RTT solutions, the Commission’s Emergency Access Advisory Committee (“EAAC”) has recommended that the Commission “remove the requirement for TTY . . . support for new IP-based consumer devices that implement IP-based text communications that include, at a minimum, real time text.”¹⁷ Similarly, in its Information Communication Technology (ICT) Standards and Guidelines Notice of Proposed Rulemaking, the U.S. Access Board proposes requiring that “ICT support RTT functionality whenever such ICT also provides real-time, two-way voice communication,” finding that “technology has greatly advanced” since the existing guidelines were published, and “[t]his proposed revision will update the standards to reflect changes in telecommunications technology.”¹⁸ Industry standards setting bodies—including the

¹⁷ Emergency Access Advisory Committee (EAAC) Report on TTY Transition, 4-5, 7, 26 (2013), available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-319386A1.pdf. The EAAC defines RTT as “Text transmitted instantly while it is being typed or created. The recipient can immediately read the sender's text as it is written, without waiting.” *Id.* at 6.

¹⁸ *Information and Communication Technology (ICT) Standards and Guidelines*, Notice of Proposed Rulemaking, 80 FR 10880, 10900 (2015).

National Emergency Number Association, GSMA, and 3GPP—likewise have touted the technological and accessibility benefits of RTT as a next-generation solution to replace TTY.¹⁹

B. The Commission Should Revise its Rules to Recognize RTT as an Acceptable Accessibility Solution.

In light of the superiority of RTT as an accessible, text-based communications solution, the Commission should institute a rulemaking that enables VoIP providers and device manufacturers to support RTT in place of TTY to satisfy all relevant regulatory requirements. In particular, the Commission should determine that RTT is an acceptable mechanism to comply with two specific regulations: (1) Rule Section 20.18(c),²⁰ which requires commercial mobile radio service (CMRS) providers to transmit 911 calls through means other than the mobile radio handset, e.g. TTY, the only current means to meet this requirement; and (2) Rule Section 64.603,²¹ which requires common carriers, including VoIP providers,²² to support toll-free

¹⁹ See, e.g., Comments of The National Emergency Number Association at 14, *Facilitating the Deployment of Text-to-911 and other Next Generation 911 Applications*, PS Docket Nos. 10-255 and 11-153 (2011) (explaining that “no single solution offers the robustness, functionality and cost effectiveness of SIP/RTT based text,” and that RTT “will further enhance the conversational nature of calls, allowing for faster, more accurate communication between telecommunicators and callers, and will better emulate the flow of TTY conversations to which many deaf or hard of hearing users are accustomed.”); 3rd Generation Partnership Project, Technical Specification Group Services and System Aspects; Global Text Telephony (GTT); Stage 2 (Release12), 3GPP TS 23.226 V12.0.0 at Section 5.1 (2014); (endorsing use of RFC 4103); GSM Association, Official Document, “IMS Profile for Voice and SMS” PRD IR.92 at Annex B (Discussing the need for GTT/TTY to use RTT pursuant to 3GPP TS 26.114, which in turn references IETF RFC 4103).

²⁰ 47 C.F.R. § 20.18(c).

²¹ 47 C.F.R. § 64.603.

²² See *IP-Enabled Services, et al*, Report and Order, FCC 07-110, WC Docket No. 04-36, WT Docket No. 96-198, CG Docket No. 03-123, CC Docket No. 92-10522, 22 FCC Rcd 11275, 11296 ¶ 42 (2007).

dialing to all relay services, including TTY, via the “711” dialing code.²³ More broadly, the Commission should modify all TTY specific rules, such as the compatibility requirements under the Commission’s rules implementing Sections 255 and 716 of the Communications Act.²⁴

Although TTY is falling out of use and eventually will be replaced altogether by RTT, to properly phase-out TTY and preserve expected service levels for persons with disabilities, the Commission should establish RTT as an alternative to TTY in the short-term. This will allow service providers and device manufacturers sufficient flexibility to implement the accessibility solutions that make the most sense for a particular service, thereby enabling carriers to offer optimized accessibility solutions (e.g., either TTY or RTT) across all services to the benefit of consumers with hearing and speech disabilities. Importantly, RTT would enhance the accessibility solutions available to persons with hearing and/or speech impairments without sacrificing existing accessibility solutions, such as TTY. RTT and TTY can coexist for the immediate future, with TTY being supported over legacy networks and technologies while new technologies shift to RTT. And the interoperability requirements recommended above would eliminate concerns that the two technologies are incompatible and do not facilitate communications between RTT and TTY users.

²³ *IP-Enabled Services, et al*, Order, DA 07-4178, WC Docket No. 04-36, WT Docket No. 96-198, CG Docket No. 03-123, CC Docket No. 92-105, 22 FCC Rcd 18319, 18320 ¶ 1 (2007) (“Among the requirements extended to interconnected VoIP providers is the obligation to offer 711 abbreviated dialing access to traditional relay services via a voice telephone or a text telephone (TTY)”). The ability of carriers to use RTT to satisfy § 64.603 would not impact individuals’ ability to call 711 to access TRS, as carriers would continue to support non-TTY calling to relay centers via 711 dialing. However, to remove any regulatory uncertainty, the Commission should make clear that RTT functionality would satisfy the 711 obligations to the same extent as TTY.

²⁴ 47 U.S.C. §§ 255, 617. *See* 47 C.F.R. §§ 6.3(b), 7.3(b), 14.21(d).

Adapting the Commission's accessibility requirements to allow for the use of RTT will have enormous public interest benefits. Using RTT technology, a person who is deaf or has a hearing or speech impairment, for the first time ever in the U.S., will have the ability to participate in a real-time, intermediary-free conversation with anyone else, without the need for a peripheral device, while still being able to communicate with parties using legacy accessibility solutions. Allowing the use of RTT to satisfy Commission legacy accessibility requirements will also facilitate more reliable access and features for persons with disabilities, more efficient use of carrier network resources, and reduced demand for TRS services.

III. CONCLUSION

The ongoing transition to an all-IP network presents consumers with a wide range of exciting and innovative new products and services. AT&T believes that the deployment of RTT will one day be seen as a watershed moment in improving communications accessibility for persons who are deaf or are hearing and/or speech-impaired. To facilitate this leap forward, the Commission should initiate a rulemaking proceeding to expressly recognize RTT as equivalent to and a replacement for TTY.

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