

October 12, 2017

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

RE: Notice of *Ex Parte* Meeting
In the Matter of Accelerating Wireline Broadband Deployment by Removing
Barriers to Infrastructure Investment
WC Docket No. 17-84

Dear Ms. Dortch:

On Thursday, October 12, 2017, Christian Vogler, Director of the Gallaudet University Technology Access Program; and Gregg Vanderheiden, Professor, University of Maryland, had a phone conversation with Kevin Colwell, Vice President of Engineering, Ultratec, Inc., Terri Natoli, Deputy Division Chief, Competition Policy Division, Wireline Competition Bureau; Michele Berlove, Wireline Competition Bureau; Karen Peltz Strauss, Deputy Chief of Consumer and Governmental Affairs Bureau; Suzy Rosen Singleton, Chief, Disability Rights Office; and Susan Bahr, Disability Rights Office to discuss the above-referenced proceeding.

We discussed how TTYs and captioned telephone services are impacted by the transition from analog to IP-based telecommunications. We discussed the following specific technical and policy considerations:

Making TTYs work reliably over IP networks poses significant challenges. While testing may reveal that they *seem* to work fine within the required character error rates, there is a significant amount of variability from call to call. In our experience, some calls between the same pair of telephone numbers will exhibit severe garbling to the point that TTYs are unusable, while a new call a minute later may work.

Making TTYs and their underlying Baudot transmission protocol work reliably over IP connections requires strict guarantees from the network. Such guarantees are especially difficult or outright impossible to meet outside the core networks in the last mile to subscribers. Overall, the modes of failure are unpredictable, occur along the entire path between the endpoints, and are not all under the control of the IP telecommunications provider.

We also discussed past user experiences that have come to our attention where TTYs and analog captioned telephones suddenly failed without warning; such failures were tracked down to changes made in the IP networks along the path between the endpoints.

Analog captioned telephones are more sensitive to disruptions caused by IP-based networks than TTYs, because they transmit at higher speeds than TTYs. While TTYs use

the slow and simple two-tone Baudot protocol, captioned telephones use V.32. We discussed how IP telecommunications carriers do not guarantee that home security equipment and medical alerting equipment will continue to work; analog captioned telephones use similar technologies for data transmission and are expected to fail in similar ways on IP-based networks.

We mentioned that IP-based captioned telephones are available today as a replacement for analog captioned telephones, but stressed that IP-based captioned telephones need both a voice line and an open Internet data connection to function (although options for internet only exist). If a subscriber currently does not have Internet access, IP-based captioned telephones do not function as a drop-in replacement for analog captioned telephones.

We discussed that for voice-only subscribers with analog captioned telephones, an IP-based captioned telephone would be a viable replacement *only* if the telephone carrier allowed limited Internet access over the VoIP line for the telephone to carry out its captioning functions, similar to how cable TV services use limited Internet access to carry out their functions, even if the subscriber does not have an Internet plan.

We also emphasized that the end goal must be IP-based devices and services that function natively in all-IP telecommunications environments, rather than trying to find technical workarounds for make legacy equipment such as TTYs and analog captioned telephones work in IP environments. For TTYs, the path forward are fixed-line real-time text-capable devices, while for analog captioned telephones, the path forward are IP-based captioned telephones.

Finally, we said that what is needed is a plan to handle the transition. TTYs are not a long-term solution and are problematic on IP networks. And dedicated IP real-time text devices (for those for whom apps would be confusing) can be obtained in mass for very low cost replacing TTYs with IP text devices that provide the same simplicity but more functionality at much lower cost. However, during a period of transition, for as long as networks are a mix of VoIP and PSTN, a strictly IP-only solution is not possible; yet an analog solution (TTY) will be unreliable. So, a well thought out plan is needed that does not leave consumer without reliable communication and that minimizes the costs to industry over the long run.

Please do not hesitate to contact us if you have any questions.

Respectfully submitted

/s/

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Cc: Terri Natoli, Deputy Division Chief, Competition Policy Division, Wireline Competition Bureau; Michele Berlove, Wireline Competition Bureau; Karen Peltz Strauss, Deputy Chief of Consumer and Governmental Affairs Bureau; Suzy Rosen Singleton, Chief, Disability Rights Office; and Susan Bahr, Disability Rights Office