Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of

Technology Transitions

GN Docket No. 13-5

Submitted by
Disability Coalition for Technology Transition

I. Introduction & Background

On August 7, 2015 the Federal Communications Commission (“Commission”) released a Report and Order, Order on Reconsideration and Further Notice of Proposed Rulemaking in relation to our nation’s transition to an all-Internet Protocol (IP) network. As the FCC noted, “Communications networks are rapidly transitioning away from the historic provision of time-division multiplexed (TDM) services running on copper to new, all-Internet Protocol (IP) multimedia networks using copper, co-axial cable, wireless, and fiber as physical infrastructure… actions today further the technology transitions underway in our Nation’s fixed communications networks that offer the prospect of innovative and improved services to consumers and businesses alike…In the Technology Transitions Order, we emphasized the importance of speeding market-driven technological transitions and innovations while preserving the core statutory values as codified by Congress: competition, consumer protection, universal service, and public safety.” (GN Docket No. 13-5, Para. 1)
The Commission further points out [in their] “proposals in the Notice, we adopt clear “rules of the road” to ensure that all consumers will enjoy the benefits of two distinct but related kinds of technology transitions: (1) changes in network facilities, and in particular, retirement of copper facilities; and (2) changes that involve the discontinuance, impairment, or reduction of legacy services, irrespective of the network facility used to deliver those services. (GN Docket No. 13-5, Para. 4)

Submission by the Disability Coalition for Technology Transition is being made with the intent of addressing some of the needs and concerns of those with disabilities in relation to transition to IP. These comments address the questions posed by the Commission in their Proposed Rulemaking pertaining to our subject expertise, and questions that are being brought forward by us for the Commissions’ further consideration. Consumer protection is paramount to a transition that does not leave anyone behind. We are already receiving concerns from consumers who have the proper phone line in their home to support their legacy, analog equipment such as TTYs and analog Captioned Telephones, yet due to the IP transition already taking place across America the network their text transmissions travel over are resulting in their experiencing garbling, dropped packets, audio issues, and data connection stability issues as a result of the IP lines within the network. This calls for solutions and diligence in order to be certain these consumers with disabilities can communicate successfully using their equipment without interruption.

II. What Equipment and Services must be compatible in any technical transition?

In any technical transition, making all equipment compatible with the new technology poses significant challenges. To the extent that it is possible, compatibility should be maintained, and where compatibility is technically not possible, or not cost-effective, functionally equivalent replacement equipment should be provided to people with disabilities in a manner that is affordable to them. Similar considerations apply to services. Where functionally equivalent replacements are being considered, backward compatibility between old and new equipment/services should be maintained during the transition period, so that people who are unable to upgrade immediately are not cut off (see for example Section VI (1) on RTT-TTY gateways).
The following equipment, including but not limited to, should be compatible or should have functionally equivalent replacements in place:

- landline phones, including amplified phones and captioned telephones
- mobile phones
- TTYs
- augmentative and alternative communication devices (“AAC devices”)
- signaling devices
- medical alert devices
- cable boxes/wireless hubs/routers
- TV set-top boxes
- caption encoders
- fax machines and printers
- home security systems
- devices that connect to the Internet of Things (“IoT”)\(^1\) and any related software/mobile apps

In any technical transition, the following services, including but not limited to, should be compatible or have functionally equivalent replacements:

- traditional relay services and captioned telephone services for individuals who have up until now relied on an analog product which operates using an analog line.
- remote translation services
- telephone-based audio reading services (e.g. NFB (National Federation of the Blind) Newsline, etc.)
- telemedicine
- services related to the Internet of Things (IoT) and any related software/mobile apps

\(^1\) The internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. See D. Miorandi, S. Sicari, F. De Pellegrini, Imrich Chlamtac, Internet of things: Vision, applications, and research challenges, September 2012, ScienceDirect, http://www.sciencedirect.com/science/article/pii/S1570870512000674 (last visited October 14, 2015).
Some individuals with disabilities cannot afford Internet access, nor is there a reliable means of Internet access available in their area. This access gap becomes prominent as we move to a connected economy where technology is increasingly leveraged to solve communication problems. Apps designed to provide new or improved ways of communicating – including apps focused on emergency communications or notifications – continue to become more widely utilized. An access gap limits participation in the connected economy. Care and diligence must be taken to ensure that people of all abilities have the opportunity to participate to the maximum degree. Access to basic utilities as well as 9-1-1 must be a consideration as the IP Transition moves forward.

III. What accessible formats must be used to ensure people with disabilities are notified of any technology transition?

Different accessible formats for notification of any technology transitions should include, but not be limited to:

- large print text
- apps or videos that provide information in American Sign Language (ASL), captions and audio description
- emails to consumers (opt-in)
- printed material
- Braille—with both ‘tethered’ and ‘untethered’ operation
- informational posters in disability service centers
- and ASL direct access lines
- Formats using multiple foreign languages should also be considered

IV. What groups/entities should be notified, in addition to individual consumers, in any technical transition?

IP transition notifications should be sent to federal government agencies that traditionally serve disability populations, such as the United States Access Board, Department of Justice, National
Council on Disability; local, state, and federal telecommunications regulatory boards; as well all major consumer advocacy groups representing interests of those with disabilities and/or seniors, including, but not limited to:

- American Association of the Deaf-Blind (AADB)
- AARP (formerly the American Association of Retired Persons)
- American Council of the Blind (ACB)
- Association of Late-Deafened Adults, Inc. (ALDA)
- Educational institutions (CSUN, Gallaudet, RIT/NTID, state schools for the deaf, blind, speech disabled, as well as others)
- Hearing Loss Association of America (HLAA)
- National Association of the Deaf (NAD)
- National Black Deaf Advocates (NDBA)
- National Deaf-Blind Equipment Distribution Program FCC-certified entities
- National Federation of the Blind (NFB)
- Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)
- State Equipment Distribution Programs (EDPs)
- State Relay Administrators
- Other consumer grassroots organizations

Any collaboration with these organizations must not replace multiple direct contacts directly to consumers over a reasonable period of time. Our recommendation is to begin initial individual contact six months prior to the final transition.

Technology must continue to work for people who use legacy technologies (e.g. TTYs, analog captioned telephones) who have not yet transitioned to newer technologies and services for varied reasons, including: cost limitations; availability; and comfort levels. Definitions of adaptive and assistive technology must be fluid to encompass invariable technological changes over time. For example, Section 508 of the Rehabilitation Act and Title IV of the ADA both currently contain outdated reference to legacy technology. There must be language provision
that allows the policies and regulations to adapt and transition as mainstream and assistive
technology change, in order to stay relevant and effective for people with disabilities.

V. Service for Individuals with Disabilities - Paragraph #222

As the Commission wisely noted, “the importance of ensuring that consumers with disabilities
can utilize assistive technologies over communications networks is indisputable. There are
several possible areas of impact of the transition on people with disabilities, such as (1)
degradation of voice service quality that may compromise the ability of users who are hard of
hearing to engage in a telephone conversation, and (2) incompatibility of remote transmission
technologies over IP-based networks used for the provision of captioning on television or
Internet-based video programming. As we noted above, one purpose of adopting criteria for
evaluating the adequacy of substitute services is to ensure consumer protection.” (Para. 222)

The Commission tentatively concluded that one criterion in any adequate substitute test adopted
should be that the carrier demonstrates that its replacement service or the alternative services
available from other providers allow at least the same accessibility, usability, and compatibility
with assistive technologies as the service being discontinued. The Commission seeks comment
on this tentative conclusion, as well as possible alternatives.

A. The alternate service provision principles stated above comes from Section 255 of the
Telecommunications Act. This alternate provision would work if there is assurance the
alternate service is as affordable as the phone line the consumer was using with their
legacy equipment. As an example, if the consumer was using a standard analog line to
access the telephone network with their TTY or Captioned Telephone, the consumer
should not be required to have to pay for both a "phone line and Internet service" to
access the solution if their solution now only requires the cost of one service – the phone
line. The terms “adequate” and “adequacy” are ambiguous; any replacement service
should say “equal to” in reference to functional equivalency and usability. Additionally,
a consumer transitioning from a TTY to VRS should not be prevented from doing so due
to the unaffordability of Internet service in comparison to a phone line. People with
disabilities should have the exact same experience as non-disabled users. However, their
need for specialized equipment should not end up costing them more for a working ‘dial
tone’ than others would have to pay for equivalent service access.

B. To the extent that people with disabilities must transition to new equipment, the
Commission seeks comment on what is needed to reduce the burden of obtaining
such equipment, particularly for those who do not qualify for existing state and
federal equipment distribution programs and for those who are replacing devices
not covered by equipment distribution programs (such as individuals with medical
devices that are incompatible with IP service). Paragraph #222

To avoid accessibility barriers, Internet access needs to be as affordable as phone lines. There is
currently an open proceeding for the Lifeline Program to address the need for affordability,
where comments were due on August 31, 2015:
recommend the Commission review the Lifeline Program proceeding, as it may yield some
usable approaches applicable to those with disabilities’ access to equipment and services.

One means by which to reduce the financial burden of Internet access would be to make
equipment available through state Equipment Distribution Programs (EDP) using a broader
range for qualification. For non-qualifiers of state EDP, equipment could be offered at a
discounted rate.

Other questions that come to mind when considering equipment include:

1) Currently, there is the Commission’s Part 68 standard for residential equipment
manufacturers and service providers to follow. Does the Commission plan to establish a new
standard under IP service that would mimic the kind of standards in Part 68?

2) What will the IP line in a residential/office setting include? A number of current IP solutions
exist for those with disabilities: Video Relay Service (VRS) and IP Relay (vital to deaf-blind
users) are two examples. Some individuals cannot afford Internet access. This has prevented
these individuals from migrating to IP based technology. In addition, Internet-based Captioned Telephones for residential and office use currently require both a phone line and Internet service.

As the IP technology requires transition away from legacy TTYs and analog Captioned Telephone Service (CTS), this requires the consumer to be able to afford Internet access and in some instances a phone line to transition to the IP solutions. This needed transition off the public switched telephone network (PSTN) becomes an affordability issue for some individuals with disabilities, both in terms of the cost of Internet access, in addition to the cost of a phone line (where applicable), as well as the cost of devices needed to access the Internet. Ideally, new Lifeline Program initiatives will address the need for affordability of Internet access, and service providers will not require extra equipment to access their services. But, if special equipment is required, it should be the responsibility of the telephone service provider to provide the equipment to provide their services and at no extra costs to the consumer as it states in the ADA.

C. Should the Commission require carriers seeking to discontinue existing services in such contexts to include in their section 214 applications information regarding the availability of IP-enabled devices that can also be distributed to selected and qualifying recipients under applicable state and federal programs? One commenter noted its “understanding that technology transitions can be made to properly function with legacy assistive technology devices (e.g., TTY terminals) through appropriate network software modifications, and/or through the general availability of IP-enabled devices that can also be distributed to selected and qualifying recipients under applicable state and federal programs.” Is this correct?

Carriers seeking to discontinue existing services must be required to include information in their application of viable alternatives when accessibility will be compromised, specifically in relation to disability access regulations and the user’s end experience. Stating that a certain capability exists does not by itself demonstrate whether such capability functions will be effectively provided as intended. We strongly urge that demonstrations be provided to Commission staff and to the community with respect to “appropriate network software modifications”. All affected parties need the opportunity to evaluate and provide input on the real-life usability of such modifications. With respect to IP-enabled devices, not all states have state distribution
programs. Further, what is the plan of action for the states where a program does not currently exist? Perhaps a federal program similar in dimension as the TV converter box initiative when TVs transitioned to digital could be implemented. Ultimately, if special equipment is required, service providers should provide such equipment at no extra cost to the consumer.

VI. Service for Individuals with Disabilities - Paragraph #223

The Commission noted that as TDM networks are discontinued in favor of IP-based networks, there is an opportunity to implement IP-based real time text to replace TTY text services, as the key functionalities of both services are similar.

(1) The Commission seeks comment on whether they should require the implementation of real time text over IP networks and whether they should set an end date for the termination of TTY text services.

Real-Time Text provides several advantages over TTY communication. To avoid a gap in access, it is important to undergo thorough testing to fully understand the limitations of using RTT through a gateway vis-à-vis through native support with IP-ready public safety answering points (PSAPs), and any rulemaking proceeding should ensures that TTY users are able to continue communicating with other TTYs including at PSAPs until such time when they switch and start using RTT. Using gateways to make it possible for RTT and TTY to communicate with one another would ease the transition through interoperability.

Additional questions for the Commission’s consideration: What are the implications regarding ADA requirements for TTYs in hotels, hospitals, and public pay phones as well as 911? Will the Department of Justice (DOJ) correspondingly advise the nation that these requirements are no longer necessary when TTYs are phased out? How will these facilities meet the current ADA telephone accommodations requirements? Will the DOJ need to submit proposed rule changes and if so, what is the timeline? Will the DOJ need to issue final rules with timelines that correspond? Will the ADA Title IV regulations need to be modified to reflect the discontinuance of TRS as a regular form of TTY relay?
While the younger generation of deaf and hard of hearing individuals may or may not use legacy TTYs, they are still used by the previous generations as well as federal, state, and local municipalities. A new system which mimics the legacy TTY service (so that people can transition to RTT over a reasonable period of time) would be ideal. There will be little or no training required of existing TTY users, and as such, this sort of transition could be seamless and transparent. A consumer who doesn’t use a computer may struggle with new technology. The same is true for employees who may be required to use computers for communication with the deaf and hard of hearing community. Although RTT is essential, it should be implemented in a fashion that ensures that individuals are not “left in the dark” throughout the process.

(2) The Commission seeks comment on the appropriate length of a transition period during which both TTY text services and IP-based real time text would be available.

The implementation of RTT should be accompanied by a gradual cut-off for TTY support timed to coincide with the cessation of PSTNs, much as there was a coordinated cut-off period for UHF and VHF analog television transmissions in June 2009.

An additional consideration is needed to provide sufficient time for government offices and businesses to budget for and eventually replace their TTYs with RTT technology. A minimum of 24 months or more may be necessary; any transition schedule should be mindful of the need to train staff to use the replacement technology.

With networks throughout the country already changing, individuals with analog lines and products in their homes now are already experiencing disconnections, garbling, audio issues, etc. due to their call traveling through networks already converted to VoIP. Specific provisions should be made available for legacy TTY users as TTY may be their primary mode of communication. It is likely legacy TTY users have not been exposed to or kept pace with evolving technology and could therefore be challenged by change to their device/service.
(3) The Commission asks commenters to describe what IP-based real time text service would look like, including applicable standards, and to explain how it will be implemented.

RTT may be a good opportunity for users; however, there is a concern regarding reliability of RTT. What happens, for whatever reason, when the Internet is unavailable, either at the ISP end or at the residential or business end, with power outages or modem or router malfunctions? Unlike copper lines which function during a power outage, the Internet does not. Can individuals rely on RTT during an emergency 100% of the time? Will backup batteries be made available with compatible devices? Many people with disabilities are not mobile and could be isolated so it’s imperative that their devices work in all conditions.

(4) In response to the Notice, some commenters assert that accessibility is currently the subject of an industry-wide proceeding and thus should not be addressed “ad hoc” in this proceeding. The Commission tentatively concludes, however, that they should adopt a standard regarding compatibility with assistive technologies for purposes of evaluating discontinuance applications. The Commission seeks comment on this tentative conclusion.

Currently there is a standard for residential equipment (Part 68). Does the FCC intend to establish a new standard under IP service that would mimic the kind of standards in Part 68? Or, is it no longer necessary to follow those Public Switch Telephone Network Standards in the IP environment we are moving to? It is noted by the Commission that the proposed rules are an addition to Part 68, how will that work?

What will the IP line include? IP solutions for those with disabilities use the Internet, such as VRS, IP Relay (vital to deaf-blind users) and IP CTS as three examples. As the industry transitions away from TTYs and CTS that use analog phone lines only, this will require the consumer to be able to afford a broadband capable line to transition to the IP solutions. They will seemingly no longer have a choice. This potentially becomes an affordability issue for some individuals with disabilities. Will the transition require inclusion of broadband on the IP line, or will it be like today that you buy the service you want (phone and TV vs phone and Internet, vs phone, TV and Internet)? There must be an industry-wide standard regarding accessibility to these type services. Additionally, the Commission needs to establish an ad hoc committee made
of individuals with disabilities as they are users of the equipment and technology and will think of things that the industry and service providers will. A two pronged approach would be ideal.

(5) The Commission seeks comment on the appropriate timelines for issuing notices that existing services will be discontinued, and that new services may not be compatible with certain equipment. The Commission further seeks comment on the means of issuing such notices to ensure effective communication to the full community of people with disabilities. We recommend Notices go out at least six months before implementation with an interim “Reminder” 60 days prior to transition, and a “Final Reminder” 30 days prior to transition.

VII. Service for Individuals with Disabilities - Paragraph 224

Although the Commission acknowledges the possible impact that the transition to IP networks may have on people with disabilities, the Commission also recognizes an opportunity to implement high definition voice (HD voice) service over IP networks. HD voice would be especially beneficial for particular consumers who are hard of hearing to be able to better understand conversations over the telephone, thereby improving accessibility of the network to such consumers and potentially reducing their reliance on intermediary relay services such as captioned telephone service (CTS) and IP captioned telephone service (IP CTS) in favor of mainstream forms of communication.

(1) The Commission proposes to require providers of IP networks to include HD voice as a feature for users with disabilities and seeks comment on our proposal.

HD voice may benefit all consumers including those who are hard of hearing who may experience better voice quality and reduced expenditures of mental effort on their IP communications. Beyond a better subjective sound quality experience, HD voice also has been shown to significantly improve speech understanding among people who are deaf or hard of hearing and listen on the phone. Although highly dependent on the individual and the nature of the hearing loss, as well as speech patterns of the conversation partner, there are situations when the availability of HD voice may make the difference between needing captions or not. However,
many IP-CTS users will indeed still need captions. For instance, if a person has poor speech discrimination during face-to-face communications, HD voice is not going to help them understand speech well enough to forego the use of captions during voice only telecommunications. HD voice interoperability also is an ongoing concern. While industry standards for encoding HD voice exist (e.g. G. 722.2), such calls have not yet been made interoperable across carrier networks. To realize the full accessibility potential, the FCC should address standards and requirements for HD voice, starting with the VCXC Petition for Notice of Inquiry on the Migration to HD Voice, filed in 2014.

It is also important to note that, although HD voice may be able to mitigate network degradations better than currently deployed narrowband voice, speech understanding will still be highly dependent on the quality of the underlying network. If the underlying network suffers from high rates of packet loss, jitter, or excessive latency, speech understanding will be poor irrespective of whether HD voice is being employed. If HD voice is to serve as an accessibility feature, it must go hand in hand with network quality of service requirements.

(2) The Commission seeks commenters to discuss timetables for the implementation of HD voice.

For a person with hearing loss, HD voice tends to work well as long as enough time is provided to obtain new equipment. While some carriers are already offering HD voice today, it is not interoperable across carrier networks. The deadline needs to cover equipment, services, and cross-provider interoperability. Implementing a transitioning gap where it works with legacy equipment until one is able to obtain the new equipment would be valuable, as soon as feasible but no later than EOY 2017, including interoperability.

(3) Lastly, although speech recognition technologies that can accurately convert speech to text are still under development, the Commission seeks comment on the state of development of such technologies, which can also assist in the development of an all-inclusive network that will allow users to migrate away from the use of CTS and IP CTS in favor of mainstream forms of communication. In particular, the Commission asks
commenters to address the technical barriers to the development of accuracy for such technologies and the length of time that it is expected to take.

Serious concerns remain regarding the reliance on speech recognition technology. A hard of hearing person who is also blind may love speech recognition technology but a hard of hearing person with a slight speech impediment faces great frustration. Alternate ways of accessing the same information as the speech recognition technology is implemented should be made available. One should account for individuals who are hard of hearing, deaf, stroke victims, foreign accents, brain injuries, et cetera, as speech recognition may be a barrier for these groups. Speech recognition technology can often be inaccurate and frustrating. Again, alternative ways of accessing the same information should be made available. To the extent that speech recognition technology is considered, it should be subject to performance requirements that allow it to at least match or exceed the level of service provided by CTS and IP CTS.

**Other Request for Comments**

Paragraph #205: The Commission notes Commenters have not swayed them from our belief that establishing criteria for evaluating the adequacy of replacement services will benefit industry and consumers alike by providing certainty. The Commission believes that by establishing and codifying such criteria, they provide transparency and certainty in an area that has been subject to case-by-case evaluation without formal rule-based guidance. The Commission believes that it is important to ensure that key aspects of service such as connection persistence and quality, 9-1-1 service, and service for individuals with disabilities remain available. The Commission agrees with Public Knowledge that establishing clear principles that ensure the availability of key functions post-transition will likely increase public acceptance of alternative technologies, thus decreasing resistance to services based on next-generation technologies.

We agree with the Commission, and suggest that either the Commission’s Disability Advisory Committee be enlisted, or that a similarly balanced advisory committee reflecting a balance of industry and consumer organizations/consumers be enlisted to codify specific criteria.
Paragraph #208: Specifically, the Commission proposes that a carrier seeking to discontinue an existing retail service in favor of a retail service based on a newer technology must demonstrate that any substitute service offered by the carrier or alternative services available from other providers in the affected service area meet the following criteria in order for the section 214 application to be eligible for an automatic grant pursuant to section 63.71(d) of the Commission’s rules: (1) network capacity and reliability; (2) service quality; (3) device and service interoperability, including interoperability with vital third-party services (through existing or new devices); (4) service for individuals with disabilities, including compatibility with assistive technologies; (5) PSAP and 9-1-1 service; (6) cybersecurity; (7) service functionality; and (8) coverage.

We agree with the Commission and also recommend the inclusion of pricing criteria that prevents access gaps for consumers.

Conclusion/Closing Remarks

The undersigned organizations who are a part of this Disability Coalition for Technology Transition with Accessible Communications for Everyone in mind support the Commission’s effort to examine its regulatory regime to determine whether and how it may be modified to meet the needs of individuals with disabilities during and following the migration to an all IP network. We expect the Commission will take action to avoid changes that fall short of fostering continued and increased accessibility for all individuals with disabilities and ensure that stakeholders are adequately represented in both the process of regulatory change and the actual regulations that may ensue.

Thank you for this opportunity to submit comment in regards to the needs of individuals with disabilities as our nation moves forward to an all IP network.

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