Phone Accessibility

By Jay Wyant

Think back 10 years ago. How did you make phone calls then?

Voice communications have changed so much in the last decade. In the mid 1990s, I built a simple website explaining the features and benefits of an approach called two-line voice carry-over, or 2LVCO for short. It combined a dial-up modem connection with a landline phone that enabled the user to set up a three-way conference call supported by a relay communication assistant. This technology was a big deal because for the first time, people who were deaf or hard of hearing could make phone calls using their own voice. Then a company called Ultratec introduced captioned telephones, or CapTel, which provided a much simpler user experience – pick up the land-based phone and dial, reading captions directly on the phone.

But what if you were not at home? Internet-based relay services changed that. Internet (or IP) relay, online captioned telephone (online CapTel) and video relay services (VRS) combined to offer a wide range of service options and resources. The latter two support VCO; users could choose to have the relay operator call their phone and connect their voice directly to the other party just like the original 2LVCO system. Users could even choose to turn off the relay announcement (in which the relay service alerts the other party of the relay’s involvement in the call), making phone calls even more seamless and transparent.

With the increase in mobile technology and the now widespread use of smartphones and tablets, people who are deaf or hard of hearing are as mobile as their peers with typical hearing. However, since all voice calls using IP relay, CapTel or VRS require the use of two devices – a computer with online access and a telephone, smartphone/tablet users were still tethered to the desktop.

Table 1. Types of relay services

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<tbody>
<tr>
<td>IP Relay</td>
<td>Text</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Captioned Telephone</td>
<td>Text</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Video Relay</td>
<td>Sign/Speechreading</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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</table>
Going Mobile

The challenge with today’s mass migration from landlines to smartphones is that until recently, unless users want to carry around two phones, VCO was not an option. However, captioned telephone and VRS providers have begun rolling out VCO support for these devices. Support for iPhone/iTouch users came first, but recently Android versions have been coming on strong. However, few Blackberry versions are available and the quickly disappearing Sidekick has been limited primarily to IP relay options. Tablets are also becoming popular platforms, particularly the iPad and some Android tablets.

Before going into detail about the types of services and providers available to smartphone and tablet users, you should be aware of two key underlying issues: 10-digit numbering and network access.

10-Digit Numbering

One of the most significant changes in relay services has been the transition to 10-digit numbering. Relay users previously could switch between providers, particularly if one provider was slow in connecting. Then the Federal Communications Commission (FCC) mandated that as of Nov. 12, 2009, users had to sign in with a unique 10-digit telephone number to access most relay services, primarily to enable 911 call support and because it was easier for state relay services to provide accurate billing records to the FCC, which compensates states from a special fund. This also deters inappropriate relay users, particularly scammers and crank callers. The mandate means that before you can even try out a relay provider’s mobile app, you must sign up for a 10-digit number. (When you create an account with a relay service provider, they will assign you a number. If you already have a number with a different provider, you can choose to transfer – or “port” – the number to the new provider.) Even if the same company owns different services, such as an IP relay and a VRS service, a separate number is required for each service.

At least one VRS provider’s website states that to sign up for their service, you must designate it as the “default” provider. This is not true. However, if you want to receive relay calls on your mobile phone, then you will have to select a default method and provider so that your contacts know what number to use and so that your phone knows what to do with the inbound call.

The one exception to the 10-digit requirement is captioned telephone service – these providers have “interim” status with the FCC, allowing you to receive captioned telephone service from some providers without a 10-digit number, although this may change in the near future.

Network Access

While smartphones differ from standard cellular phones in a variety of ways, such as larger screens and more memory, the core difference is their support of data services, such as web and application connectivity. There are three ways network providers offer access to data services: 3G, 4G and Wi-Fi.

The advantage of 3G and 4G data is that you can use it anywhere you have phone access (although 4G service is currently more limited to larger urban areas). Wi-Fi service requires that you be in range of a “hotspot,” such as your home’s wireless network or a coffee shop.

4G is valuable because it’s faster — which matters if you’re using VRS and because it supports running both data, such as a relay app, and voice at the same time. (A few 3G networks also enable this.) As 4G becomes more widespread, more sophisticated apps and services will become available. However, until this happens, relay providers must assume that users may not have 4G access, so most relay apps run on either 3G or Wi-Fi.

Why is this important? To access a relay app (typically through data services) and to speak on a smartphone at the same time, the service provider must provide access for both data and voice services simultaneously. Some providers do this by routing your voice over the data network. Others require you to connect to the data service via Wi-Fi, which then allows you to use the voice service at the same time. However, this means you can only use a relay service in range of a hotspot.

Testing Mobile Options

There are many different basic features and current capabilities of mobile device services. Your experience will vary depending on your device, service provider and even where you happen to be at the moment. Just because a particular service is not mentioned does not mean it’s not worthy of consideration.
The following systems were tested using a Samsung Nexus S Android phone and the Samsung Galaxy 10.1 Tab. This version of the Tab is Wi-Fi only and does not access services requiring either 4G or a combined 3G-Wi-Fi networks. Services that work for the Android also work for the iPhone/iTouch/iPad – the one exception is Sprint’s Wireless CapTel service, which is for Android phones only. Some Blackberry users can access Hamilton’s CapTel service.

**Captioned Telephone**

CapTel systems provide you with a live transcript of the other party on your screen with just a few seconds’ delay between the spoken word and the text on screen. Unless you’re in a very quiet environment, you will need to switch between holding the phone to your ear and looking at the text on the screen.

Three CapTel services were tested: Sprint, Hamilton and ClearCaptions (Purple Communications). The following is a brief summary of the differences between systems:

10-digit registration. Sprint’s CapTel service assigns a 10-digit number upon registration, while neither Hamilton nor ClearCaptions do so.

Set-up. Sprint runs both voice and text over the data network while Hamilton and ClearCaptions call your cell number, then switch back to the text screen once you accept the call. This means that to use the Hamilton or ClearCaptions service, you must be on a 4G network or use 3G and connect to a Wi-Fi network (AT&T iPhone users may be an exception). Sprint’s system is more flexible in allowing you to make a call over basic 3G networks without having to search for a Wi-Fi hotspot. However, many of the people I called this way heard an echo of their voices.

**Video Relay Service**

My receptive sign language skills are not proficient, so I rely on speechreading to use VRS – my preferred type of relay service because it’s closest to real time. Even with the smaller screens of the smartphone or tablet I could easily speechread interpreters, particularly after asking them to move closer to the camera. The biggest adjustment was holding the phone/tablet steady so as not to make the interpreter dizzy.

Of the three VRS providers tested (Purple, Sorenson and ZVRS), only ZVRS had a mobile version (Z4) that currently supports VCO (Purple is working on a yet to be released VCO version for their mobile offering). The Z4 service can be accessed through any of the three methods: 4G, 3G or Wi-Fi. However, when I tried using 3G without Wi-Fi the calls would often fail to go through or disconnect as the signal quality from my office tends to vary. Unfortunately, when I connected with both 3G and Wi-Fi, the other party frequently heard an echo. ZVRS customer service representatives stated they are currently working to improve the product’s echo cancellation capabilities. There was usually no echo when connecting with the Galaxy Tab on Wi-Fi only. In general, the audio can be quite loud due to the need to hold the phone/tablet in front to see the interpreter, so conversations may not be as private as a traditional call.

<table>
<thead>
<tr>
<th>Service</th>
<th>Type</th>
<th>Voice Access Requirements</th>
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<tbody>
<tr>
<td>Clear Captions</td>
<td>Text</td>
<td>4G or 3G and Wi-Fi</td>
</tr>
<tr>
<td>Hamilton CapTel</td>
<td>Text</td>
<td>4G or 3G and Wi-Fi</td>
</tr>
<tr>
<td>Sprint CapTel</td>
<td>Text</td>
<td>4G or 3G</td>
</tr>
<tr>
<td>ZVRS</td>
<td>Interpreter</td>
<td>4G or 3G and Wi-Fi or Wi-Fi</td>
</tr>
<tr>
<td>Purple</td>
<td>Interpreter</td>
<td>Mobile option not currently available</td>
</tr>
<tr>
<td>Sorenson</td>
<td>Interpreter</td>
<td>Mobile option not currently available</td>
</tr>
</tbody>
</table>
Conclusion

Mobile relay-supported voice communications are quickly becoming a viable option for people who are deaf or hard of hearing and listen and speak. There are many variations in features among applications, but four issues stand out. Users may consider these when choosing a mobile relay support method.

Access to the phone’s contact list. Some apps allow you to select contacts from your phone’s list, while others require you to create a contact file within the app’s database. A secondary issue is whether the app allows you to search for a name as opposed scrolling through the entire database.

Echo. This is a more significant issue with some apps than others. I assumed that using both 3G and Wi-Fi would eliminate the echo, but that was not the case. As the technologies mature, echo management may improve.

Wi-Fi. Systems that require Wi-Fi for quality access limit usage to hot spots so users must be selective about where they make and receive calls.

Data requirements for voice access. Currently variation exists in the type of data access necessary to enable the user to speak to the other party (see Table 2). But as technologies improve, these differences may diminish. Note that most phones do not provide a Wi-Fi-only option; Wi-Fi-only access is primarily for tablet users.

Source: Volta Voices, March/April 2012