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

In the Matter of	)	
	)	
Structure and Practices	)	
of the Video Relay Service	)	
Program	)	CG Docket No. 10-51
	)	
Comments of CSDVRS, LLC	)	
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COMMENTS OF CSDVRS, LLC

CSDVRS, LLC ("CSDVRS"), through its undersigned counsel, hereby offers its comments to the Public Notice issued by the Federal Communications Commission ("FCC" or "Commission") on February 17, 2011[1] concerning an inquiry into the emerging technologies in the Video Relay Service ("VRS") industry. CSDVRS lauds the Commission's recognition of technological developments affecting the industry, and welcomes an open dialog in implementing new rules and standards that reflect the roles of these emerging technologies.

Comments

The criteria being utilized to determine a commercially available off-the-shelf product is a hardware device or software program that can run on a hardware device that can support two-way interactive video communications. CSDVRS did not evaluate all of the technical details required to interoperate should one or more of these different

[1] *See, Consumer and Governmental Affairs Bureau Seeks Comment on Application of New and Emerging Technologies for Video Relay Service Use*, Public Notice, CG Docket 10-51, DA 11-317A1, (February 17, 2011).

technologies be chosen to support VRS use. However, the current off-the-shelf technologies that have been evaluated by CSDVRS include:

- Purpose Built Video Telephones from Polycom, Tandberg (Cisco), Lifesize, and Creative Labs;
- Desktop High Definition Video Conferencing Systems;
- Apple iChat;
- AOL IM;
- Google Talk;
- Mobile Telephones with front-facing cameras;
- Tablet computers with front-facing cameras;
- Personal Computers equipped with a camera and software; and
- Google TV from Logitech.

The Commission has inquired into what specific features or functions of off-the-shelf equipment, services, and software are needed to effectively use VRS. CSDVRS would first assume that "effectively use VRS" means that a relay conversation can be understood and processed between a deaf and hearing person in a normal home/office environment or public place with sufficient lighting to allow for accurate interpretation of American sign language between the deaf or hard-of-hearing user and the interpreter. From a function and feature standpoint, CSDVRS submits that there are three components that always factor in the question presented: (1) hardware capabilities (HARDWARE); (2) software enabling those capabilities (SOFTWARE); and (3) network capabilities (NETWORK). All three of these components *must* be effectively

implemented to ensure a clear and effective communicating experience for deaf and hard-of-hearing consumers.

In general, minimum accepted Network, Hardware and Software performance requirements for a seamless video call between two deaf/hard-of-hearing people or a deaf/hard-of-hearing person to an interpreter require the following:

- (Network) Network bandwidth: minimum of 256KB;
- (Hardware/Software) Encode/Decode/Display Frames per second: 15;
- (Network) Packet Delay (latency): A typical rule of thumb for latency is < 300 millisecond round trip between endpoints; and
- (Hardware) Camera Sensitivity: cameras must be able to handle a range of light between 50 and 500 lux (home living room / office building environment).

From a software perspective, whether it is embedded to the purpose built device or an application that downloads on a Personal Computer or Mobile device such as a smart phone, or a tablet PC, the following general capabilities *must* be present in order to provide a connection:

- the provisioning of a communication channel;
- the encoding and decoding of the video captured by the hardware;
- the implementation of an error correction mechanism to increase the quality of the video should there be a loss of information or packets due to network congestion or other processing anomaly; and
- the setting of any attributes that control the picture quality based upon the performance of that communication channel.

In order to effectuate the communication between products from multiple vendors this software *must* adopt common mechanisms to create a conduit for these to communicate across multiple networks. These mechanisms must include methods to traverse firewalls that are used to secure access between public and private networks. In regard to the products that CSDVRS has tested (see above), these devices utilize the following International Telecommunications Union - Telecommunications (ITU-T) or Internet Engineering Task Force (IETF) standards in the following areas:

- Network Communication Protocols: H.323 (w/Gatekeeper), SIP, XMPP (Jingle), and OSCAR;
- Video Compression Protocols: H.263 and H.264;
- Audio Compression Protocols: G.711, G.724, G.722, and G.723;
- Handshaking Protocols for Video/Audio: RTP and RTCP;
- Firewall Traversal Protocols: H.460, H.461, STUN, ICE, and TURN;
- Numbering Plan : E.164; and
- Device Interface Protocols: HTTP, FTP, and XCAP.

To summarize, in order to allow for multiple communications protocols to be utilized by different devices, then either all devices and software must adopt all of the available communications standards or a mechanism (gateway) must be installed that will enable translation between the different communication protocols. In addition, the networks that are used for transport must also support the same firewall protocols in order to enable two-way packet-based communications. For the devices to be controlled by multiple providers, all devices and software must adopt the same set of device interface protocols

as well as agree on the naming conventions and command syntax that will control each of the devices.

In regard to VRS, these off-the-shelf technologies only address the video side of the relay call. The platforms that VRS providers use must not only support these video calls in a manner that allows a caller to reach the first available interpreter, that interpreter must also be attached to the PSTN. Currently, most of the available off the shelf technology being used in VRS only supports H.323, SIP and the PSTN. For other technologies to be deployed, gateways would either need to be added or developed for the existing networks to support interoperability. Unfortunately, the lack of overall adoption of consumer based video communications has caused multiple standards to be deployed, proprietary methods to be implemented, and in general multiple silos of users with no common capability to connect. For example, Skype video users can only call Skype video users, Yahoo Video Chat can only talk to Yahoo Video Chat, etc. AOL and Apple entered into an agreement that allows for both AOL and Apple users to interact, but there is no extended interoperability. Connectivity between different silos of users seldom happens without some economic benefit being shared by both parties. Until there is sufficient consumer demand and an economic benefit for the developers of the technology and service providers or a mandate from the FCC, these networks will remain separate and will not interoperate in a uniform, consistent or reliable manner.

Due to the usage of names and/or user ID's of Skype, AOL IM, Yahoo IM, and other video chat software, they are not currently equipped to support 10-digit dialing which is a mandate to provide functional equivalence to the PSTN network as utilized by the hearing population. However, these software programs operate the same regardless if

a hearing or deaf/hard-of-hearing person use them. It should also be noted that most of these types of software programs utilize a proprietary method to establish communication, contain error correction, and employ a firewall traversal method that is more akin to standard web browsing than traditional video communications.

To summarize, should the Commission wish to increase the abundance of off-the-shelf products capable of supporting video relay service, in addition to answering the questions posed by this request, a separate proceeding should be created so that the challenges of changing from a standard of circuit switched technology to packet-based networks can be implemented (much in the same way that the nation recently converted from analog television to digital television). By doing so, the weight of the entire telecommunication user community can address these interoperational issues.

CSDVRS would further note that the current rules require VRS providers who deliver purpose built videophones to ensure that those videophones interoperate with all VRS providers and their videophones. In addition, these devices must support the functional equivalence mandate of 10-digit dialing and e911 service capabilities that are found in voice over internet protocol services today. Much in the same way that the PSTN is used to connect disparate silos of mobile telephones, H.323, as implemented by Sorenson Communications, has become the method to connect disparate silos of VRS provided purpose built telephones. This has become the current de facto standard without any mandating of a specific ITU protocol for communication or interoperability. As such, the implementation was left for Sorenson to decide, and this has caused many off the shelf H.323 devices to not interoperate in conformity with Commission rules.

Technologies such as Facetime and "Cloud" based video conferencing technologies (Adobe, Instant Messaging Systems, etc.) have become utilized for video relay service (Convo Anywhere and IW Relay Cloud), yet they have no facility to provide interoperability with other providers or existing purpose built video telephones that have already been deployed. Yet in the current regulatory regime, development of a gateway is not only non-compensable, it is not mandatory.

It must also be noted that none of the existing off-the-shelf technologies automatically supports E911. These are functions of the network and *not* the device except for the indication that the user is indicating an emergency call needs to be placed by "dialing" 911. Current cell-phone technologies all have a mandate to have a real-time location capability (GPS) implemented by 2013 that can then be used to assist in connecting a caller to the correct PSAP. This same capability could be used in the provisioning of video relay service when these devices are being used assuming the hardware and software developer provided an access mechanism to this capability. To this end, bears mentioning that in order to effectuate a system of capable off-the-shelf devices, CSDVRS would also note that specific features for VRS in its present form must recognize the existing installed base of videophones as well as the software and networks that allow these videophones to work in the home, office and government agencies.

In regard to video quality, CSDVRS would comment that acceptable video quality issues are tied more to the network quality at the moment in time a two-way video conversation is occurring. Almost all of the cameras used in today's off the shelf video equipment exceed all minimums required for VRS use. As for pan-tilt-zoom capabilities, that is a feature that is definitely a value-added feature for convenience but not

necessarily required for effective video communication. As noted herein, experience has shown that a minimum network bandwidth throughput capability of 256KB full duplex can provide up to a 15 frames per second (fps) video image and that assuming there is not latency in the network exceeding $1/10^{th}$ of second an effective conversation can take place.

Currently, the most sweeping change in video telephony for VRS users is taking place in the smart phone / tablet segment of the mobile telephone market. With an ever growing number of models incorporating front-facing cameras and high performance semiconductors as well as faster and more robust wireless networks (i.e. 4G) gaining wider acceptance and availability, the ability for a deaf/hard-of-hearing user to make video calls from more places is increasing dramatically, including increased access to the PSTN network.

In all of these segments, the capability to comply with the Commission's existing rules regarding purpose built video telephones can be widened to encompass the software that provides video communications on these devices. CSDVRS has done this with its Z4 software program which is able to function on personal computers as well as many of the new emerging smart phones and tablets such as the Apple iPhone4, iPod Touch, and iPad2, as well as on the Samsung Epic, Galaxy S Tablet, and many other Android based smart phones with front facing cameras.

Recommendations to the Commission

CSDVRS recommends that the Commission remind VRS providers that its existing interoperability rules include software and that should a provider choose to deploy hardware or software that does not interoperate with other VRS providers, then

VRS conversations processed utilizing this hardware or software will not be compensable.[2] Accordingly, VRS calls using the interoperable Z4 from CSDVRS or P3 from Purple are compensable, however VRS calls using Cloud from IW Relay, Anywhere from Convo or the nTouch Mobile from Sorenson should not be compensable as these video conferencing methods ONLY allow calls to and from their service. If a software product is readily available to any provider such as FaceTime or Skype, we would submit that these products be eligible for compensation as any provider can easily obtain these products and adapt them in a way that meets existing rules regarding the provision of Video Relay Service. These products are not exclusive to a VRS provider. It would be a disservice to the community to deny the use of such products that are widely available and generally free or very low cost. The Commission must also modify its existing rules to ensure that the information that is placed into a consumer's contacts / videophone address book is available to the consumer should s/he port to a different provider (one method that could be adopted is the existing vCard 3.0 standard). Mandating such ownership to the consumer, rather than the provider will allow VRS customers to move that information to another provider's system or a current off-the-shelf product.

CSDVRS further submits that the Commission should institute another rulemaking proceeding to allow the entire telecommunications industry to comment on moving from the existing circuit switched network that powers the PSTN to a packet

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[2] *See, In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Declaratory Ruling and Further Notice of Proposed Rulemaking, CG Docket 03-123, FCC 06-57 (May, 3 2006)(Prohibits VRS providers from receive compensation from the TRS Fund if it blocks calls to competitors); *In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Second Report and Order and Order on Reconsideration, CG Docket 03-123, FCC 08-275 (December 19, 2008)(Required interoperability for point-to-point calling between VRS users).

based network that supports all forms of video, voice, and text messaging protocols. This packet based network could be tightly coupled with today's internet without impeding the continued open access of the internet or restraining in anyway the continued developments of technologies and services that benefit the general public. CSDVRS recommends that this action be defined, adopted and implemented within a three to five year period and that all forms of iTRS must adhere to these new requirements within that same time frame. In adopting this strategy, the Commission would be lowering the overall cost of technology for all consumers, as well as providing a stable foundation for all required stakeholders to meet the mandates of the Americans with Disabilities Act.

Respectfully Submitted,

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