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April 23, 2013

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

Re: Notice of Oral Ex Parte Presentation
WT Docket No. 10-90

Dear Ms. Dortch:

On April 19, 2013, Jack Unger, technical consultant for the Wireless Internet Service Providers Association (“WISPA”), Stephen Coran and Scott Pippin, both representing WISPA, and Matthew Hardeman of IPiFony Systems, Inc. (“IPiFony”), met via teleconference with Commission personnel to discuss certain issues in the above-referenced matter. Attending the meeting on behalf of the Commission were Carol Matthey, Alexander Minard, Amy Bender, Ryan Yates and Alec MacDonnell of the Wireline Competition Bureau (“Bureau”). The group convened in order to discuss issues related to the provision of Voice over Internet Protocol (“VoIP”) service by wireless Internet service providers (“WISPs”).

In advance of the meeting, Mr. Minard provided a list of questions that the Bureau wished to discuss. Those questions were:

1. How does WISP-based VoIP compare to the functionality and quality of traditional circuit-switched voice, to carrier-grade VoIP provided by cable and telephone companies, and to mobile voice?
2. What is the typical performance (data rate/bandwidth, latency, jitter, packet loss, etc.) for delivering VoIP over a WISP?
3. Does IPiFony contract to meet specific performance levels with the WISPs it works with?



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4. What VoIP protocol suite does IPiFony and other VoIP providers use – that a WISP would contract with?
5. How is the VoIP service provisioned?
6. Is the IPiFony solution an on-site facilities-based one or a more cloud based remote location?
7. How is E911 handled?
8. How is CALEA handled?
9. How is local number portability handled?
10. What type of redundancy and reliability is built into the IPiFony solutions? Backup servers? Fail-over? Hot fail-over? Are existing calls lost?

Mr. Coran introduced Mr. Hardeman and noted that Mr. Hardeman was very knowledgeable about WISP-related VoIP provisioning and networking. Mr. Hardeman stated that he is the Chief Technology Officer at IPiFony, a company that provides voice soft switch solutions and support, enabling broadband providers to enter the voice services market. Mr. Hardeman explained that IPiFony works with all types of broadband providers, including WISPs, cable operators and telephone companies, and that through these experiences, IPiFony has learned much about the capabilities of WISPs and other technologies to provide voice service.

In response to the first question, regarding a comparison of the functionality and quality of WISP-provided VoIP service to other types of voice service, Mr. Hardeman said that when properly deployed, the quality of voice service provided over fixed wireless broadband is indistinguishable from circuit-switched voice or VoIP service provided by cable and telephone companies. He noted that all of these services offer superior voice quality to mobile voice services. Regarding the technology that allows VoIP to function, Mr. Hardeman said that VoIP technology is practically the same across all platforms, and that customer premises equipment is practically identical as well. In sum, Mr. Hardeman stated that the end-user experience for fixed broadband VoIP service is the same as for VoIP service provided across other broadband platforms, assuming proper deployment and tuning of the network.

In response to follow-up questions from Bureau staff, Mr. Hardeman said that he drew his conclusions based on personal experience and Mean Opinion Scores (“MOS”). Ms. Matthey asked Mr. Hardeman to clarify what he meant when he said that, “when properly configured,” WISP-provided VoIP service compared favorably to other voice services. Mr. Hardeman responded that for any broadband network to provide high-quality voice service, it needs to be appropriately tuned. He said that this is not unique to WISPs, and that broadband networks



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based on other service delivery technologies need tuning to deliver optimum voice service as well. Mr. Hardeman noted that such tuning is part of the services that IPiFony provides its customers.¹

In response to the second and fourth questions regarding the typical performance metrics and protocol suites for VoIP service across WISP networks, Mr. Hardeman said that the metrics for WISPs are quite similar to VoIP service across other broadband platforms. He said that the amount of bandwidth used in providing voice across a WISP network is the same as for other broadband services. Regarding CODECs, Mr. Hardeman said that IPiFony recommends G711 μ , with no further compression. He said that he has seen other CODECs used, primarily as experiments, but that other CODEC use is not widespread among WISPs. Regarding protocol suites, Mr. Hardeman stated that nearly the entire VoIP world, irrespective of network technology, uses Session Initiation Protocol (“SIP”). WISPs are no exception – they employ SIP.

In response to follow-up questions from Bureau staff, Mr. Hardeman said that, for all broadband network technologies, less-than-ideal traffic management can result in concerns with latency, jitter, and packet loss. He emphasized that the correct way to address and prevent these concerns is through proper network configuration and tuning. He noted that WISPs generally have latency of 50 ms or less, one-way, between the core switch and subscribers, and very low packet loss.

Regarding the process for provisioning voice service to WISP customers (question 5), Mr. Hardeman said that the process generally follows the same steps as for VoIP service provided by other types of broadband providers. Mr. Hardeman and Mr. Unger explained that setting up new broadband service usually takes around two days (including voice service), and that if an existing broadband customer wants to add voice service, that can be accomplished by a professional installer, or in some instances, directly by a customer.

In response to question 6, whether IPiFony’s solutions are on-site facilities-based or cloud-based, Mr. Hardeman stated that IPiFony’s solutions are all facilities-based.

Regarding questions 7 and 8 -- E911 and CALEA implementation by WISPs -- Mr. Hardeman explained that IPiFony works with a 911 call routing service called 911Enable, a service of Connexon Telecom, which provides E911 routing with triple redundancies, and that WISPs activate 911 service by establishing an address location record and transmitting that to Connexon’s 911Enable service, all within the IPiFony platform’s administration tools. According to Mr. Hardeman, CALEA compliance is identical for WISPs as for VoIP service provided across other facilities based platforms, and generally involves attaching a device which

¹ This response effectively answered question number 3.



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provides the probe and mediation functions to the soft switch hardware, often by contracting with a CALEA trusted third party.

In response to question 9, regarding number portability, Mr. Hardeman stated that WISPs generally acquire their phone numbers through partnership with large wholesale facilities-based carriers, such as Level 3. In some additional instances, WISPs may connect to the PSTN as a CLEC with SS7 interconnection. In such instances, WISPs would receive numbers via the NANPA/National Pooling organizations. Number porting is accomplished in the same manner as for VoIP service provided across other platforms, either by utilizing the porting services of a partnering interconnected facilities-based carrier, or via direct access to the NPAC.

Regarding question 10, the redundancies and reliability of IPiFony's solutions, Mr. Hardeman stated that IPiFony requires that every deployment have sufficient redundancies. He noted that failures of the platform hardware are rare in any event, but that redundant hardware is utilized to provide further resilience. He also noted that IPiFony's customers had implemented VoIP service both with and without location redundancies. Additionally, he noted that his field experience has shown that non-WISPs also deploy with and without location redundancies.

In response to follow-up questions from Bureau staff, Mr. Hardeman stated that the majority of IPiFony's software is proprietary, and employs readily available hardware.

This letter is being filed electronically in the referenced docket pursuant to Section 1.1206 of the Commission's Rules.

Respectfully submitted,

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Counsel to WISPA

cc: Carol Matthey
Alex Minard
Amy Bender
Ryan Yates
Alec MacDonnell
Jack Unger
Matt Hardeman