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

In the Matter of	)	
	)	
Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission's Rules	)	GN Docket No. 11-117
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196
	)	

COMMENTS OF
THE ALLIANCE FOR TELECOMMUNICATIONS INDUSTRY SOLUTIONS

The Alliance for Telecommunications Industry Solutions (ATIS), on behalf of its Wireless Technologies and Systems Committee (WTSC), Emergency Services Interconnection Forum (ESIF), Packet Technologies and Systems Committee (PTSC), and Next Generation Interconnection Interoperability Forum (NGIIF), hereby submits these Comments in response to the Federal Communications Commission's (Commission) *Notice of Proposed Rulemaking* (*NPRM*) in the above referenced dockets. ATIS notes that the communications industry considers the provision of location information in emergency situations its highest priority and is actively working on developing solutions for both existing and future technologies. As explained more fully below, ATIS: (1) supports the Commission's efforts to allow interconnected VoIP service providers to develop technologically efficient, cost-effective solutions for providing reliable and accurate location information for emergency services; (2) urges the Commission look to the industry's work on indoor location accuracy testing, including ATIS Standards pertaining to this issue; (3) believes that further investigation of the usefulness

of Wi-Fi positioning is warranted but that additional time will be necessary to adequately integrate Wi-Fi positioning with existing location methods; and (4) notes that, while requiring network access devices of fixed broadband Internet access service providers to deliver ubiquitous location information would be burdensome, the industry has made progress on this issue.

I. Introduction

ATIS is a global standards development and technical planning organization that leads, develops and promotes worldwide technical and operations standards for information, entertainment and communications technologies. More than 200 companies actively participate in ATIS' committees and forums, which develop standards, specifications, best practices, and guidelines essential to communications networks' operation and continued evolution.

The ATIS WTSC is comprised of leading technologists who lead industry technical work on wireless issues, including NG9-1-1. ATIS WTSC develops standards and technical reports related to 2G, 3G, and 4G wireless services and systems for advancing NG9-1-1communications services. The ATIS WTSC coordinates and develops standards and technical reports primarily relevant to wireless/mobile telecommunications networks in the U.S. and reviews and prepares contributions on such matters for submission to the appropriate U.S. preparatory body for consideration as ITU contributions or for submission to other domestic and regional standards organizations.

ATIS' ESIF serves as the primary forum for the telecommunications industry, public safety and other stakeholders to identify and resolve recognized technical and operational interconnection issues related to the delivery of E9-1-1 services. ESIF liaises with standards and government organizations to apprise them of its deliberations and decisions. ESIF also works

closely with the National Emergency Number Association (NENA), which currently manages the technical evolution of the 9-1-1 system and emergency communications process.

The ATIS PTSC develops and recommends standards and technical reports related to services, architectures, and signaling, including emergency services and Emergency Telecommunications Service (ETS). The PTSC also coordinates and develops standards and technical reports relevant to telecommunications networks in the U.S., reviews and prepares contributions on such matters for submission to U.S. ITU-T and U.S. ITU-R Study Groups or other standards organizations and reviews for acceptability or per contra the positions of other countries in related standards development and takes or recommends appropriate actions.

The ATIS NGIIF provides an open forum to encourage the discussion and resolution of industry-wide issues associated with telecommunications network interconnection and interoperability, and the exchange of information concerning relevant topics, such as network architecture, management, testing and operations, and facilities. This input addresses, and is used to develop, operational procedures associated with these emerging technologies as well as next-generation network interconnection and interoperability issues that involve architecture, disaster preparedness, installation, maintenance, management, reliability, routing, security, and testing between network operators.

II. Comments

While ATIS' comments below focus on specific issues raised by the Commission in its *NPRM*, ATIS believes that it is important to understand that the communications industry recognizes the needs and benefits of providing accurate location information in emergency situations and that the industry is actively working on developing appropriate solutions. Many

ATIS committees are working to ensure that networks, and the devices that link end users to the networks, are capable of providing accurate location information to emergency responders. This work involves the close cooperation of the relevant stakeholders, including access providers (wireless and wireline), equipment manufacturers (infrastructure and handset), 9-1-1 service providers, public safety representatives, and PSAP customer premises equipment providers. The communications industry recognizes its obligations to support the needs of consumers and the public safety community, and considers the provision of location information in emergency situations its highest priority.

A. The Provision of Automatic Location Information

In the *NPRM*, the Commission seeks comment regarding the provision of automatic location information (ALI) for interconnected VoIP calls to 9-1-1. The Commission acknowledges that provision of ALI in the interconnected VoIP context is especially challenging given the lack of available solutions and the increasing prevalence of "over-the-top" VoIP service, where the over-the-top provider is different from the provider of the underlying Internet connectivity.[1] The Commission seeks comment on whether it should adopt general location accuracy governing procedures that: (1) could be applied to interconnected VoIP service providers and over-the-top VoIP service providers; and (2) would afford these providers the flexibility to develop efficient and cost-effective solutions.[2]

As ATIS has said previously, it supports the Commission's interest in ensuring that E9-1-1 Phase II is applied to newer technologies such as interconnected VoIP. ATIS notes, however, that there is currently no single technical solution for providing ALI for interconnected VoIP calls to 9-1-1. ATIS therefore supports the Commission's efforts to allow interconnected

[1] *NPRM* at ¶71.
[2] *NPRM* at ¶72.

VoIP service providers and over-the-top VoIP service providers to develop technologically efficient and cost-effective solutions for providing reliable and accurate location information for emergency services.

ATIS does not believe that the application of location accuracy should be dependent on the nature of the voice service, (i.e., whether the technology is packet- or circuit-switched) but rather to the way in which a device physically attaches to the serving access network. Mobile wireless accuracy requirements should apply to all emergency calls originating on a mobile wireless network regardless of whether they are packet- (VoIP) or circuit-switched (traditional) calls. Similarly, for fixed wireline calls, ATIS believes that location accuracy should be equal to or better than what is provided through locations stored in ALI databases today.[3]

ATIS urges the Commission to allow the industry time to develop a solution or solutions that would be suitable for all types of wireline and wireless broadband access network and over-the-top VoIP providers. ATIS is committed to working alongside other industry groups, including the Open Mobile Alliance (OMA), the Internet Engineering Task Force (IETF), the Third Generation Partnership Project (3GPP) and the Third Generation Partnership Project 2 (3GPP2), on solution(s) that would serve the interests of the U.S. telecommunications industry and achieve the objectives set forth by the Commission.

B. Indoor Accuracy Testing

The Commission also seeks comment on indoor location accuracy testing. While the Commission notes that recent industry reports have indicated that indoor wireless calls have increased over the past few years, it also acknowledges that further work in this area is necessary. [4]

[3] ATIS believes that nomadic service use cases require further study.
[4] *NPRM* at ¶84, ¶86 (citing J.D. Power and Associates report, *Overall Wireless Call Quality Momentum Halts Due*

ATIS notes that there are significant technical and practical issues related to indoor testing that warrant a cautious approach by the Commission to this issue. Unlike outdoor testing that can be accomplished by drive testing, there is no similar way to conduct large scale indoor testing. Additionally, indoor testing would require service providers to gain access to indoor locations on private property – gaining such access in a sufficient number of locations to permit large scale testing could be difficult, if not impossible.

ATIS therefore suggests that the Commission look to the industry's work on this issue. *Approaches to Wireless E9-1-1 Indoor Location Performance Testing* (ATIS-0500013), an ATIS Standard developed by ESIF and published in February 2010, presents guidelines for assessing the performance of wireless location technologies.[5] This industry standard recommends the testing of representative samples of indoor environments. It further recommends that the sampling be driven by the classes of buildings in the test area and that the sample ensures a scattering of buildings across the test area to guard against clustering and undetected biases based on ease of access, ease of ground truth generation, or difficulty of getting a location fix. ATIS urges the Commission to consider this work in its evaluation of this issue and also notes that ATIS plans to be an active participant in the Communications Security, Reliability and Interoperability Council's (CSRIC) work on this matter.

C. Wi-Fi Positioning

In the *NPRM*, the Commission discusses the use of Wi-Fi positioning as a replacement for other location technologies.[6] The Commission correctly notes that it would not expect Wi-Fi positioning to replace other location technologies, such as A-GPS or triangulation-based

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to Shift in Wireless Call and Data Usage Pattern (Mar 3, 2011)).

[5] *Approaches to Wireless E9-1-1 Indoor Location Performance Testing* (ATIS-0500013) is publically available from the ATIS Document Center at http://www.atis.org/docstore/default.aspx.

[6] *NPRM* at ¶93.

techniques, but seeks information as to whether it could complement these technologies, particularly in indoor or urban canyon settings where alternative location technologies may not work reliably.

ATIS believes that further investigation of the usefulness of Wi-Fi positioning is warranted, but notes that additional time will be necessary to adequately integrate Wi-Fi positioning with other location methods already is use (e.g., GPS, A-GPS, Enhanced Cell ID, and Uplink Time Difference of Arrival (U-TDOA)). ATIS also notes that there is significant industry work underway regarding this issue. For example, specifications have been developed by the OMA and IETF that allow potentially accurate location of devices based on known locations of nearby Wi-Fi access points. Some of these solutions have already been integrated with other commonly used positioning methods at a protocol level, making potential deployment reasonably feasible in principle. ATIS is also aware of a number of proprietary location solutions from certain vendors that rely on pre-positioning of Wi-Fi access points, storing the resulting locations in a database and providing the locations by proprietary means to network location servers and devices whose locations may be needed.

These standards and proprietary solutions are at varying stages of deployment throughout the industry and will likely require several more years to fully realize. ATIS therefore urges the Commission to allow the industry to continue its current development and deployment efforts. Once Wi-Fi-based location solutions have become more ubiquitous, ATIS believes that it would be appropriate for the Commission reexamine this issue.

D. Broadband Network Access Device Location Information

Another issue on which the Commission seeks comment is whether fixed broadband Internet access service providers could provision their network access devices to be capable of

providing location information to network hosts that attach to these network access devices.[7] Recognizing that it may be highly inefficient and burdensome for manufacturers to make individual arrangements with every broadband provider to deliver location information using network access devices, the Commission seeks input regarding whether network access devices could provide location information using one or more recognized industry standards.[8]

ATIS agrees with the Commission that requiring network access devices of fixed broadband Internet access service providers to provide ubiquitous location information would currently be unduly burdensome. However, ATIS notes that there is industry work that has been completed or is underway pertaining to this issue. For example, the *Flexible LDF-AMF (Location Determination Function – Access Measurement Function) Protocol (FLAP)* Standard (ATIS-0500015) prescribes a uniform framework for obtaining parameters required for location determination from any kind of access network.[9] Other relevant industry work includes: (1) OMA Secure User Plane Location (SUPL) 3.0, which defines a location solution that may be applicable to fixed broadband Internet access and most wireless access networks; (2) OMA LTE Positioning Protocol extensions (LPPe), which defines a positioning protocol that supports applicable position methods; (3) IETF's *HTTP-Enabled Location Delivery (HELD)* (IETF RFC 5985), and *Discovering the Local Location Information Server (LIS)* (IETF RFC 5986), which define the Internet location service; and (4) National Emergency Number Association (NENA)'s *Recommended Method(s) for Location Determination to Support IP-Based Emergency Services - Technical Information Document (TID)* (08-505), which describes how to apply this technology

[7] *NPRM* at ¶94.
[8] *Id.*
[9] *Flexible LDF-AMF (Location Determination Function – Access Measurement Function) Protocol (FLAP)* (ATIS-0500015) is publically available from the ATIS Document Center at http://www.atis.org/docstore/default.aspx.

to a range of network environments. ATIS urges the Commission not to disrupt the existing industry work on this issue.

III. Conclusion

ATIS appreciates the opportunity to provide its input to the *NPRM* and urges the Commission to consider the recommendations above.

Respectfully submitted,
Alliance for Telecommunications Industry Solutions

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