**Before the**

Federal Communications Commission

**Washington, DC 20554**

|  |  |  |
| --- | --- | --- |
| In the Matter of Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems | )  )  )  )  ) | PS Docket 17-239 |

Comments of the

Telecommunications Industry Association

The Telecommunications Industry Association (“TIA”)[[1]](#footnote-1) hereby submits comments to the Federal Communications Commission (“Commission”) in the above-captioned proceeding.[[2]](#footnote-2) TIA thanks the Commission for seeking comment on this issue in its Notice of Inquiry (“NOI”) and appreciates the opportunity to contribute its perspective to the discussion of Enterprise Communication Systems (“ECS”) and 911 services. In this comment, TIA wishes to emphasize the diversity of the ECS marketplace and the degree to which users decide the specifics of their ECS solutions, and also requests the Commission clarify its jurisdictional determination with respect to VoIP services.

# The Diverse ECS User Marketplace

The NOI did not attempt to define ECS, other than to state that in concept, ECS is a descendant of Multiline Telephone Services (“MLTS”). MLTS was a term utilized to describe physical network attributes that delivered to a business the opportunity to use multiple lines.[[3]](#footnote-3) ECS could be a complex on-premises system (typically for larger enterprises), a Private Branch Exchange (“PBX”) system for smaller enterprises, or a Centrex system for enterprises that wanted the local telephone company to maintain the company exchange for them. The Commission is quite correct that the descendants of MLTS now represent a wide array of technologies and technical capabilities, making the issue of enterprise connectivity to the emergency calling system an intricate and complex issue.[[4]](#footnote-4)

The diversity of enterprise users and system architectures in the ECS marketplace cannot be overstated. ECS solutions exist in organizations spanning the spectrum of small, medium, and large; and can make use of legacy circuit-based equipment, Voice-over-Internet-Protocol (“VoIP”), web-based applications, or various combinations thereof. ECS handsets can each be supported by their own phone number, or be assigned extensions inside a single phone number. They can be softphones on a laptop, or applications on a mobile phone. In the optimal scenario, enterprises determine the prefix number necessary to reach an outgoing line, whether the system will make use of Private Switch/Automatic Location Information (“PS/ALI”), to what location equipment is registered in the ALI database, and the granularity with which individual handsets’ locations are specified. However, this scenario is not always reality. Over the top (“OTT”) VoIP, Virtual Private Network (“VPN”), and cloud or hosted technologies may not have technical capabilities analogous to the “traditional” multiline telephone services of the past, rendering a “one size fits all” approach to emergency calling requirements impracticable.

Even in ECS offerings where equipment is sold to an enterprise, there are complexities in how that equipment is installed and operated. In many cases, equipment manufacturers market only the equipment, via national or regional distribution channels. Distributors in these channels then sell to local or regional integrators, which themselves may integrate a third-party service solution. VoIP ECS may be used for internal or external extensions to either an IP phone or a software client.[[5]](#footnote-5) These internal extensions may be located inside the enterprise network firewall, or may use a VPN connection to a remote worker. Additionally, applications-based ECS using VoIP is also available, typically utilizing an employee’s smartphone and running on Wi-Fi.

Generalizing the use of IP versus circuit-based solutions in the ECS marketplace is difficult without considering the varying size and complexity of the different enterprises making use of ECS equipment. However, industry reports indicate that premise communications systems make up 60% of total ECS installations, while hosted systems make up the remainder.[[6]](#footnote-6) The use of IP-based ECS equipment is increasing, however. Reports show growth in the market for hosted ECS services and slight decline in the premise-based market.[[7]](#footnote-7) As discussed previously, however, this varies widely depending on the size and configuration of a given enterprise. Speaking broadly, small businesses are more likely to make use of circuit-based solutions due to simplicity, cost-effectiveness, and the availability of circuit power during a power outage.

Enterprises typically connect to the local telephone exchange, and because of state regulation, the local exchange service enables connectivity to the PSAP. From there, the pathway tends to become far more complex. Three issues in emergency calling constitute the hallmarks of today’s E911 and tomorrow’s Next Generation 911 (“NG911”) system: location, routing to the correct PSAP, and call back number.[[8]](#footnote-8) While many ECS offerings provide a caller’s call-back phone number to the PSAP, not all are configured to do so. In some cases, the call back number is the enterprise’s main phone number. Location information tends to be obtained and delivered in systems that more closely resemble traditional MLTS, where handsets were hard-wired to a location. In today’s plug-and-play environment, however, nomadic handsets, softphones, and applications make location services a challenge. Vendors offer some solutions for determining location within an enterprise for IP phones, but offerings such as cloud solutions, application-based ECS, and VPNs remain a technical challenge. These are not new problems or unique to enterprise—the Commission is very familiar with the issues surrounding location for interconnected VoIP providers.[[9]](#footnote-9) Challenges with routing naturally accompany these location challenges, as well.

In addition to location, routing, and call back number, concerns regarding dialing patterns also exist. Most ECS solutions, when configured properly, will route the caller to a Public Safety Answering Point (“PSAP”) after the numbers “9-1-1” are dialed. Many also allow a caller to dial both “9-1-1” and “9-9-1-1”. While certain ECS equipment can be configured to dial 911 directly without a prefix, some businesses do not prefer this setting, as it increases the chance of “fat finger” errors when users attempt to make a long-distance call (dialing “9” for an outgoing line, then “1” for the country code). As the NOI notes, Congress is poised to resolve the dialing pattern issue, with both the Senate and House passing slightly different versions of a bill that directs installer to configure ECS with “9-1-1.”[[10]](#footnote-10) The bill allows other emergency dialing patterns to be configured as well, as long as “9-1-1” is available. Once this bill is signed into law, TIA expects that the Commission will take steps to implement it.

Most of the work on generating location focuses on traditional MLTS architectures, with some effort to bring those up to date when a VoIP protocol is in use. TIA has developed standards to enable enhanced location accuracy for MLTSs. TIA-689-A, for example, addresses dialing, routing, local notification, and network interface technical specifications associated with outgoing 911 calls from MLTS stations.[[11]](#footnote-11) TIA has also developed TSB-146: Telecommunications IP Telephony Infrastructures IP Telephony Support for Emergency Calling Service.[[12]](#footnote-12) NENA has also developed several standards to assist owners of MLTSs to understand the issues related to identifying the locations of system users during emergency.[[13]](#footnote-13) And for some ECS, solutions allow the enterprise to create defined zones (e.g. “Building *x*,” “Floor *y*,” “Room *z”*) within an address, allowing for more effective emergency response.[[14]](#footnote-14) However, with the growing diversity of ECS, location remains the largest challenge. Application-based (e.g., OTT) VoIP does not access the mobile phone’s Global Positioning System (“GPS”) to determine location. VPN tunnels can tell you where the tunnel connects to the enterprise location, but not where is the caller connects to the VPN. And cloud-based ECS are increasingly challenged by nomadic devices and softphones in the enterprise.

# Accessibility

TIA believes that enterprise systems are not generally capable of supporting real-time-text (“RTT”) but can support text telephony (“TTY”). Equivalent facilitation of accessibility requirements can also be provided by IT platforms (e.g. computers or mobile devices) and do not require RTT to be supported by ECS handsets, which may lack a functional keyboard or display. The FCC’s Disability Advisory Committee (“DAC”) recommended that the FCC host a roundtable discussion with appropriate stakeholders to address questions including: (i) the functional user needs for RTT; (ii) the technical limitations on the technology; and (iii) what common assistive technology should be used when conducting testing of operating systems.[[15]](#footnote-15) TIA has participated in the DAC and would participate in further discussion regarding ECS accessibility requirements.

## TIA Recommendations with Respect ECS 911

TIA urges the Commission to consider the complexity of the ECS marketplace and the diverse needs of its users before acting to add regulations. Organizations, especially small businesses and nonprofits, stand to be harmed when onerous regulations are placed on already-expensive office technology. The Commission should be careful to impose burdensome regulations that would eliminate the robust choices enjoyed by enterprises of all types in today’s marketplace. TIA recommends that, upon adoption of Kari’s Law, the Commission mandate the implementation requirements set by the law as written. TIA also urges the Commission to continue to study the nature of 911 in the ECS setting. Location information is highly dependent on the specifics of individual ECSs, and in many ways is technically limited by existing technology. No single stakeholder acting by itself can resolve what to date have been technically unresolvable issues. TIA recommends the Commission assign to its Technological Advisory Committee (“TAC”) or convene a multi-stakeholder group to determine what cross industry actions are needed to resolve location requirements for various types of ECS. TIA also recommends that, the Commission assign the DAC Technology Transitions Subcommittee (“TTS”) to discuss requirements to support RTT by ECS, and that the Commission continue to allow ECS to support connections to legacy PSAPs via TTY in the meantime.

# The Commission’s Classification of VoIP Services

Finally, TIA notes that the regulatory classification of (and thus jurisdiction over) VoIP systems is not fully settled. The Commission has “thus far declined to resolve that issue,” relying instead on case-by-case determinations that a particular issue evidences communications that are inherently interstate and subject to FCC authority.[[16]](#footnote-16) To the extent the Commission is considering regulation beyond the bounds of Kari’s Law, the Commission’s legal authority for doing so will need to be addressed. Enterprise emergency calling requirements have, to date, been a matter of state regulation, and emergency calls from an enterprise to a PSAP continue to be intrastate. That said, the opportunities for the Commission to show leadership, as detailed in the recommendations above, are significant.

# Conclusion

TIA applauds the Commission for its leadership in pursuing flexible, market-friendly regulations and recognizing the diversity in the ECS marketplace. TIA thanks the Commission for this opportunity to comment in this docket, and looks forward to helping find innovative, cost-effective ways to better ensure the safety of those who use any method of telecommunications in an emergency.

Respectfully submitted,

TELECOMMUNICATIONS INDUSTRY

ASSOCIATION

\_\_/s/ Dan Henry\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dan Henry

Telecommunications Industry Association

1320 North Courthouse Road, Suite 200

Arlington, VA 22201

November 15, 2017

1. TIA represents companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on policy issues affecting the ICT industry and forges consensus on industry standards. *See* www.tiaonline.org. [↑](#footnote-ref-1)
2. Federal Communications Commission, Notice of Inquiry, *Concerning 911 Access, Routing, and Location in Enterprise Communications Systems*, FCC 17-125, PS Docket 17-239 (adopted Sept. 26, 2017) (“NOI”). [↑](#footnote-ref-2)
3. MLTS is defined by the Next Generation 9-1-1 Advancement Act of 2012, implemented as part of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96 (2012), as “a system comprised of common control units, telephone sets, control hardware and software and adjunct systems, including network and premises based systems, such as Centrex and VoIP, as well as PBX, Hybrid, and Key Telephone Systems (as classified by the Commission under part 68 of title 47, Code of Federal Regulations), and includes systems owned or leased by government agencies and non-profit entities, as well as for profit businesses.” 47 USC 1471. [↑](#footnote-ref-3)
4. *See generally* 911 ECS NOI, fn. 2. [↑](#footnote-ref-4)
5. VoIP phones require the presence of electrical power and a connection to the Internet to function. In contrast, circuit-based systems are powered by their phone lines and require only a connection to the Public Switched Telephone Network (“PSTN”) to function. This is of importance during natural disasters, where the PSTN-based network may survive when the power grid fails, but VoIP can be used only so long as backup power is available. [↑](#footnote-ref-5)
6. “Unified Communications Market Worth $143.49 Billion By 2024,” Grand View Research, <http://www.grandviewresearch.com/press-release/global-unified-communication> (last accessed Nov. 15, 2017). [↑](#footnote-ref-6)
7. “Taking the Pulse of the Enterprise Communications Platforms & Endpoints Market,” Frost & Sullivan, <http://digitaltransformation.frost.com/expert-insights/viewpoints/taking-pulse-enterprise-communications-platforms-endpoints-market/> (last accessed Nov. 15, 2017). [↑](#footnote-ref-7)
8. *See generally* National Emergency Numbers Association, “Baseline NG9-1-1 Description,” <https://www.nena.org/?NG911_Baseline>, (last accessed Nov. 15, 2017) [↑](#footnote-ref-8)
9. *See generally* Federal Communications Commission, Legal and Regulatory Framework for Next Generation 911 Services, Report to Congress and Recommendations, Feb. 22, 2013, <https://ecfsapi.fcc.gov/file/7022125743.pdf>, Sec. 3.1.1.3, (“As with wireless E911 service, the mobile nature of interconnected VoIP service presents challenges to routing the 911 call and locating the caller. Because a VoIP user may place an emergency call from outside his or her home area, the caller’s permanent telephone number cannot be used for routing. Thus, VoIP providers must use similar methods to wireless carriers to route the call to the appropriate PSAP and provide the PSAP with a call-back number for the end user. However, the difficulties in determining the geographic location of callers are even more acute with VoIP service.”). [↑](#footnote-ref-9)
10. NOI at 7. [↑](#footnote-ref-10)
11. TIA-689-A addresses technical issues associated with MLTS support of Enhanced 911 Emergency Calling Service. It specifically addresses dialing, routing, local notification, and network interface technical specifications associated with outgoing 911 calls from MLTS stations. It does not address technical issues associated with incoming 911 calls to MLTS equipment that may be used in a PSAP. This standard also does not address the unique considerations that apply to multiple extensions that pick-up on a single line. Nor does it address the unique considerations that apply to 911 calls made by persons with hearing or speech disabilities, which require the use of text telephones. *See* Comments of TIA, PS Docket No. 10-255, July 5, 2012, at 13 (https://ecfsapi.fcc.gov/file/7021983490.pdf). [↑](#footnote-ref-11)
12. TSB-146 “covers issues associated with support of ECS from IP Telephony terminals connected to an Enterprise Network (EN). It describes new network architecture elements needed to support ECS, and the functionality of those new elements, in North America.” It addresses “ECS calls placed from fixed, mobile, remote dial-in, or wireless access VoIP terminals,” and “illustrates similar access scenarios for ECS calls placed directly through an ISP.” TIA TSB-146 Rev. A, TIA Standards Store, November 2012, <https://global.ihs.com/doc_detail.cfm?&csf=TIA&item_s_key=00409203&item_key_date=870131&input_doc_number=TSB-146&input_doc_title>= (last accessed Nov, 15, 2017). [↑](#footnote-ref-12)
13. *See* NENA 06-750, NENA Technical Requirements Document on Model Legislation E9-1-1 for Multi-Line Telephone Systems; and NENA 06-502 MLTS 9-1-1 Caller Location & Reporting, available at: <http://www.nena.org/?page=MLTS_PBX> [↑](#footnote-ref-13)
14. <http://www.redskye911.com/about-e911> [↑](#footnote-ref-14)
15. Federal Communications Commission Disability Advisory Committee, Recommendation of the FCC Disability Advisory Committee, RTT Implementations with Refreshable Braille Displays, Adopted Oct. 16, 2017, https://ecfsapi.fcc.gov/file/101746304781/DAC%20Adopted%20Recommendation%20on%20RTT%20for%20Refreshable%20Braille%20Displays%202017.10.16.pdf. [↑](#footnote-ref-15)
16. See Brief of the Federal Communications Commission as Amicus Curiae in Support of Plaintiffs-Appellees, Charter Advanced Services v. Nancy Lange et al, Case No 15-cv-3935 (DC Minn), filed Oct. 27, 2017. [↑](#footnote-ref-16)