

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

Implementing Kari's Law and Section 506 of RAY BAUM'S Act)	PS Docket. No. 18-261
)	
Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems)	PS Docket No. 17-239
)	

To: The Commission

**Comments of
CISCO SYSTEMS, INC.**

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EXECUTIVE SUMMARY

Cisco supports the Commission's goal of enhancing access to 911 via multi-line telephone systems ("MLTS") in this proceeding. Over the past five decades, industry has worked with federal, state, and local authorities to ensure consumers can effectively access 911 as technology evolves. Access to 911 via MLTS is no exception, although enabling such access is a far more complex endeavor given the complexity of the MLTS ecosystem.

The Commission can and should move to quickly implement the direct dialing and notification requirements of Kari's Law Act of 2017 ("Kari's Law"). In implementing Kari's Law, however, Cisco notes that ambiguities in the Commission's proposed rules regarding the interpretation of the definition of "multi-line telephone system" and the requirement for manufacturers to "pre-configure" MLTS could impose unnecessary and technically infeasible burdens on the entities that are required to comply with the statute.

Accordingly, the Commission should implement the pre-configuration requirement of Kari's Law to reflect the reality that for some MLTS the ability to direct dial 911 "out of the box" is not technically possible. Rather, the 911 direct dialing pattern can be "pre-configured" in that the dialing pattern is available to the MLTS installer, but the ability of a MLTS to support an emergency call using a specific dialing pattern must be configured by the MLTS installer at the time that connectivity to the public switched telephone network is initially established. In addition, the Commission should clarify that the definition of MLTS does not cover internal communications systems. Finally, the Commission should ensure that MLTS managers or operators have sufficient flexibility to implement the notification requirement of Kari's Law consistent with Congressional intent.

As the Commission explores dispatchable location requirements for MLTS pursuant to its authority under RAY BAUM'S Act, it must fully account for service variations and end-user expectations in the MLTS ecosystem. The ability to generate a dispatchable location is not uniform over MLTS, with dispatchable location more supportable from on-premises fixed or "hardwired" MLTS stations (such as desk phones), more challenging for on-premises mobile clients (such as softphones), and even more difficult, if not impossible, for off-premises softphones using public Internet or Virtual Private Network connections. If the Commission imposes overly-granular dispatchable location requirements that cut across these technologies, there is a real risk that new and innovative MLTS deployments will be suppressed and enterprise customers will be saddled with unreasonable or unnecessary costs.

Cisco therefore encourages the Commission to consider a phased approach to the issue of dispatchable location whereby the Commission would, as a first step, require MLTS managers to provide the street address of the caller's location for *on-premises* MLTS stations following a minimum transition period of two years. For situations involving remote employees utilizing *off-premises* MLTS stations or mobile clients, the Commission should collect additional information on 911 usage patterns and technological solutions before it establishes a formal dispatchable location requirement. To complete this regulatory framework, the Commission should continue to explore with industry whether other location capabilities can be integrated into MLTS, such as the location association associated with Wi-Fi access points, Bluetooth beacons and other location sources.

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I. INTRODUCTION AND SUMMARY.

Cisco Systems, Inc. (“Cisco”) welcomes the opportunity to respond to the Commission’s Notice of Proposed Rulemaking (“*NPRM*”) in the above-captioned proceedings.¹ Cisco is a San Jose, California based company offering IP-based products, solutions and services to enterprise customers throughout the U.S. and the world, both directly and through partner channels. As relevant to this proceeding, Cisco offers a range of IP-based multi-line telephone systems (“*MLTS*”).

Cisco supports the Commission’s goal to “ensure that members of the public can successfully dial 911 to request emergency services and that Public Safety Answering Points (“*PSAPs*”) can quickly and accurately locate every 911 caller, regardless of the type of service that is used to make the call.”² The *NPRM* builds on prior FCC efforts consistent with this

¹ *Implementing Kari’s Law and Section 506 of RAY BAUM’S ACT*, Notice of Proposed Rulemaking, FCC 18-132 (rel. Sept. 26, 2018) (“*NPRM*”).

² *Id.* ¶ 1.

objective and implements Congress’s important directives in the Kari’s Law Act of 2017 (“Kari’s Law”)³ and RAY BAUM’S Act.⁴

A call to 911 is one of the most important calls that a person will ever make. Callers should be able to place a 911 with confidence that it will go through, be answered by the appropriate local PSAP, and provide sufficient information to enable an effective emergency response. For the past fifty years, communications service providers, equipment manufacturers of consumer and public safety products, the public safety community, and government have worked together to ensure consumers can effectively access 911 as technology evolves. Access to 911 via MLTS is no exception, although enabling such access is a far more complex endeavor given the complexity and number of players involved in the MLTS ecosystem.

Cisco has supported the Commission’s prior efforts to improve access to 911 via wireless networks and Voice over Internet Protocol (“VoIP”) connections and supports the current inquiry into enhancing access to 911 via MLTS. As the Commission contemplates rules in this proceeding, Cisco urges the Commission to acknowledge and develop such rules with an appreciation of (1) the wide variety of MLTS technologies and system capabilities⁵, (2) the numerous stakeholders involved in enabling access to 911 via MLTS,⁶ (3) the many different scenarios in which an end-user may have access to and use a MLTS, (4) the significantly

³ Kari’s Law Act of 2017, Pub. L. No. 115-127, 132 Stat. 326 (2018) (codified at 47 U.S.C. § 623) (“Kari’s Law”).

⁴ Section 506 of the Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018, Pub. L. No. 115-141, 132 Stat. 348, 1095 (2018) (codified at 47 U.S.C. § 615 note) (“RAY BAUM’S Act”).

⁵ *See e.g.*, Comments of Cisco Systems, Inc., PS Docket No. 17-239, at 2-3 (filed Nov. 15, 2017) (“Cisco ECS NOI Comments”); Comments of West Safety Services, PS Docket No. 17-239, at 7 (filed Nov. 15, 2017); Comments of Ad Hoc Telecommunications User Committee, PS Docket No. 17-239, at 4 (filed Nov. 15, 2017).

⁶ *See e.g.*, Cisco ECS NOI Comments at 9-14.

different expectations that an end-user may have depending on the type of system and setting where the MLTS is being used, and (5) the very real costs associated with overly prescriptive rules.

With these considerations in mind, the Commission can and should move to quickly implement the direct dialing and notification requirements of Kari's Law. The direct dialing issue has been clearly addressed by Congress, and Cisco shares the Commission's goal to minimize the likelihood of tragic incidents that gave name to Kari's Law. In implementing Kari's Law, however, Cisco notes that ambiguities in the Commission's proposed rules regarding the interpretation of the definition of "multi-line telephone system" and the requirement for manufacturers to "pre-configure" MLTS could impose unnecessary and technically infeasible burdens on the entities that are required to comply with the statute. Cisco urges the Commission to implement the pre-configuration requirement of Kari's Law to reflect the reality that for some MLTS, the availability of the "911" direct dialing pattern can be "pre-configured" in that the dialing pattern is available to the MLTS installer, but the ability of an MLTS to support an emergency call using a specific dialing pattern must be configured by the MLTS installer at the time PSTN connectivity is initially established. Second, the Commission should clarify that the definition of MLTS does not cover internal communications systems. Finally, the Commission should ensure that MLTS managers or operators have sufficient flexibility to implement the notification requirement of Kari's Law consistent with Congressional intent. Additional information, such as a blanket requirement for dispatchable location, imposes an undue burden on enterprises at this time. In the text below, Cisco has some suggestions for how the Commission might begin to work toward location capability. By modifying its proposal along the lines suggested above, the Commission can move very quickly to implement Kari's Law.

Given the diversity and complexity of the MLTS marketplace, and based on its extensive experience serving enterprise customers, Cisco cautions the Commission against taking actions in this proceeding without fully accounting for service variations and end-user expectations in the MLTS ecosystem. While Cisco generally supports the objective of providing a “dispatchable location” for 911 calls, these requirements should only be imposed when it is technically feasible, cost-effective, consistent with consumer expectations, and achievable within a reasonable timeframe. At a high level, generating a dispatchable location is not uniform over MLTS, with dispatchable location more supportable from on-premises fixed or “hardwired” MLTS stations (such as desk phones), more challenging for on-premises mobile clients (such as softphones), and even more difficult, if not impossible, for off-premises softphones using public Internet or Virtual Private Network (“VPN”) connections. If the Commission broadly interprets the definition of MLTS as it has proposed and imposes overly-granular dispatchable location requirements that cut across these technologies, there is a real risk that new and innovative MLTS deployments will be suppressed and enterprise customers will be saddled with unreasonable or unnecessary costs.

For these reasons, Cisco encourages the Commission to consider a phased approach to the issue of dispatchable location whereby the Commission would, as a first step, establish a reasonable baseline requirement for *on-premises* MLTS solutions. Under this framework, MLTS managers would be required to provide the street address of the caller’s location while having the flexibility to provide additional information that they determine is sufficient for their enterprise. While Cisco generally appreciates the technical ability to provide a manual registration process for *remote* MLTS stations and mobile clients in the short term, the Commission should collect additional information on 911 usage patterns and technological solutions before it establishes a

formal dispatchable location requirement for scenarios involving off-site employees. Finally, as a long-term goal, the Commission should continue to explore with industry whether other location capabilities can be integrated into MLTS, such as the location association associated with Wi-Fi access points, Bluetooth beacons and other location sources. Future MLTS, using location data generated from its network, could at some point justify more granular dispatchable location requirements. The National Emergency Address Database (“NEAD”) may be a potential source of such information in the future for some enterprises depending upon the outcome of pending standards work, but at this time it is not designed for, or available to, enterprise MLTS systems for this purpose.

II. CISCO’S ROLE IN THE MLTS MARKETPLACE.

Cisco offers a range of IP-based MLTS solutions that are implicated by the proposed rules in this proceeding. Cisco’s Unified Communications Manager (“Call Manager”),⁷ which is a physical or virtual component of many of Cisco’s MLTS offerings, is the core call-control application of Cisco’s collaboration portfolio. Call Manager provides a reliable and scalable enterprise user experience across thousands of desktop and mobile devices, ranging from simple telephone calls to full video meeting experiences. Call Manager, along with the BroadCloud platform (described below), are the key engines that enable access to the public switched

⁷ See Cisco, Cisco Unified Communications Manager (CallManager), <https://www.cisco.com/c/en/us/products/unified-communications/unified-communications-manager-callmanager/index.html> (last visited Dec. 10, 2018).

telephone network (“PSTN”) and drive Cisco MLTS solutions.⁸ As these platforms support PSTN connectivity, they are necessary to enable access to 911.⁹

Cisco Emergency Responder is a solution that is offered to customers as an enhancement to the existing basic 911 functionality offered by Call Manager.¹⁰ The solution enables MLTS operators and managers to ensure that, for registered endpoints (*e.g.*, desk phones or Wi-Fi phones),¹¹ a properly configured Call Manager will send calls to the appropriate PSAP for the caller’s location, and that the PSAP can identify the caller’s location and return the call if necessary. In addition, the solution can track and update equipment moves and changes.

Cisco Webex, which is the leading online collaboration service for enterprises, allows users to share information and collaborate on work product through the integration of audio, video, and computing capabilities.¹² WebEx enables users to participate in collaboration sessions using a traditional desktop telephone and a computer, a computer and VoIP, or a mobile device. Webex also offers integration with software such as Cisco Jabber and integration with instant messenger programs. An enterprise can purchase a Webex product for use within the enterprise only, or Webex can be configured to support (through other Cisco-based platforms such as Call Manager) calls to and from the PSTN, including 911 calls.

⁸ To be clear, the enterprise must also provide a gateway device that physically interconnects to the PSTN.

⁹ Various MLTS can also be provisioned without access to PSTN to enable communications within the enterprise. In Cisco’s view, the absence of PSTN connectivity means that 911 connectivity is impossible.

¹⁰ See Cisco, Cisco Emergency Responder, <https://www.cisco.com/c/en/us/products/unified-communications/emergency-responder/index.html> (last visited Dec. 10, 2018).

¹¹ Wi-Fi phones are Wi-Fi only, enterprise devices available as an MLTS endpoint. The reference to Wi-Fi phones does not include smartphones with Wi-Fi capability purchased on the open market or through a service provider.

¹² See, Cisco, Cisco Webex Calling, <https://www.webex.com/products/calling/index.html> (last visited Dec. 10, 2018).

Finally, in February 2018 Cisco completed its acquisition of BroadSoft, a global leader in cloud-based solutions that also offers MLTS products.¹³ BroadSoft's offerings include on-premises and cloud-based capabilities (via the BroadCloud service platform) for pre-approved telecommunications service providers, as well as a local gateway capability where an enterprise can order PSTN service from the local service provider.

As relevant to this proceeding, all of the service offerings described above can be configured to support direct 911 dialing and a notification that a 911 call has been placed to an appropriate point of contact. As described below in Sections III and IV, however, the provision of a call back number and location information can be challenging in some enterprise environments.

III. IMPLEMENTATION OF KARI'S LAW.

The public safety benefits that will flow from the Commission's implementation of the direct dialing and notification requirements of Kari's Law are clear. As discussed below, however, questions will remain regarding the scope of these mandates unless the Commission provides clarity to its proposed definitions. In addition, the Commission's rules for notifications should reflect both Congressional intent and the technological reality of the MLTS marketplace.

A. Definitions Adopted, and Interpretations of Such Definitions, Must Reflect Technological Reality.

"Multi-line telephone system." As the Commission observes in the *NPRM*, Kari's Law and RAY BAUM'S Act both define the term "multi-line telephone system" 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

¹³ See BroadSoft, BroadSoft Business Platforms, <https://www.broadsoft.com/products/platforms> (last visited Dec. 10, 2018).

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 governmental agencies and non-profit entities, as well as for profit businesses.”¹⁴ The Commission proposes to broadly interpret the statutory definition “to include the full range of networked communications systems that serve enterprises, including circuit-switched and IP-based enterprise systems, as well as cloud-based IP technology and over-the-top applications.”¹⁵ The Commission asks whether there are other ways in which it can clarify the definition of MLTS.¹⁶

With one cautionary caveat, Cisco supports the definition as it is identical to the statutorily adopted definition in both Kari’s Law and RAY BAUM’S Act. As a practical matter, Cisco agrees that the Commission’s broad interpretation of the definition to include “cloud-based IP technology and over-the-top applications” is consistent with trends on the marketplace away from traditional PBX solutions and towards solutions geared toward a mobile workforce. In fact, Cisco does not manufacture or sell any traditional PBX products. With that said, Cisco also notes that the terms “cloud-based IP technology and over-the-top applications” are not found in the statutory definition.¹⁷ Similarly, the statutory definition also includes a reference to “premises based systems” but does not include a reference to “off-premises” systems. While Cisco agrees with the Commission’s broad description of the MLTS marketplace, we note these definitional issues to urge the Commission to tread cautiously when considering dispatchable location requirements on systems that may be beyond the reach of what Congress envisioned.

¹⁴ *NPRM* ¶ 28 (footnote omitted).

¹⁵ *Id.* ¶ 29 (footnote omitted).

¹⁶ *Id.* ¶ 30.

¹⁷ 47 U.S.C. § 1471(2).

Certainly beyond the reach of what Congress intended to cover are those systems that are used only for internal employee communications and that are not designed to interconnect with the PSTN. Internal messaging, data and video conference capabilities are increasingly displacing voice communications for employee collaboration. Enabling emergency calling does not make sense for some MLTS solutions (*e.g.*, a conferencing service), and for others it may be technically impossible (*e.g.*, an internal MLTS). Accordingly, Cisco urges the Commission to clarify that the definition of MLTS refers to those communications tools, whether IP-based or circuit-switched, that are intended and utilized by the enterprise to communicate on a point-to-point basis with phone numbers *outside* the enterprise. Where a technology is specifically deployed by an enterprise to support internal communications (*i.e.*, it cannot support a call outside the enterprise), or where a tool is designed and used for conferencing services or other non-point-to-point communications, there can be no reasonable expectation on the part of employees that such internal or conferencing tools would be used to summon emergency services. The Commission should make clear that these services are not covered by any rules adopted in this proceeding.

“Pre-configured” MLTS. Kari’s Law prohibits the manufacture, import, sale, or lease of an MLTS after February 16, 2020 unless such system is “pre-configured such that, when properly installed . . . a user may directly initiate a call to 9-1-1” without dialing any additional digit, code, or prefix.¹⁸ Most notably for present purposes, the statute does not define the term “pre-configured” and there is limited legislative history interpreting this term.¹⁹ The *NPRM* proposes to define the term “pre-configured” to mean that an MLTS will “come[] equipped with

¹⁸ *Id.* § 623(a).

¹⁹ See *NPRM* ¶ 31 n.59 (stating that the “[s]ection-by-section analysis of H.R. 582 notes that the law would require MLTS to be ‘pre-configured with the default dialing pattern described in this section.’”).

a default configuration or setting that enables users to dial 911 directly . . . so long as the system is installed and operated properly.”²⁰ In turn, the Commission describes a “default configuration” as “the preexisting, ‘out of the box’ settings of a user-configurable software application, computer program, or device.”²¹

Cisco is concerned that the Commission’s proposed definition is premised upon an outdated view of the MLTS market and would, if adopted, produce a rule that cannot be implemented as a technical matter. Today, MLTS manufacturers can design systems that are capable of supporting direct 911 dialing patterns and that are shipped with software that, upon installation and configuration of the MLTS with PSTN connectivity, can enable direct 911 dialing. However, MLTS solutions of this type have no capability “out of the box” to make or complete a PSTN call, including an emergency call. In today’s market, MLTS manufacturers predominantly offer enterprise solutions over distributed systems, where the actual call control component of the solution need not be, and often is not, resident in each enterprise location where MLTS-to-PSTN calling takes place.²² PSTN connectivity, including the 911 dialing pattern, is therefore established by the installer at the direction of the enterprise, based on the unique attributes of its MLTS system, at the time PSTN connectivity is configured. Unlike legacy MLTS such as Centrex and private branch exchanges, these distributed systems are not local, unitary, plug-and-play, “out of the box” solutions.

Cisco’s Call Manager highlights the myriad issues raised by the proposed pre-configuration definition. Call Manager is a distributed, software-only application. This means that there is no defined hardware or PSTN access gateways that ship with the product. Thus, as

²⁰ *Id.* ¶ 31 (footnote omitted).

²¹ *Id.* ¶ 31 n.59.

²² In fact, call control can be resident in another state or even can be resident in another country.

applied to Call Manager, interpreting the term “pre-configured” to require a “default” to a particular dialing pattern is technically impossible. Call Manager cannot be equipped with a default dialing pattern (including the emergency number 911) because a physical gateway must be defined in the system before any call routing patterns can be added to the system. The physical gateway – which is defined on the enterprise premises at the time of configuration and is the enterprise customer’s responsibility to define in conjunction with its carrier – cannot be identified by Cisco in advance. Cisco is unable to enable direct routing in advance because the gateway type(s), model(s) and interconnect is customer-specific and determined at the time of installation.

Complicating matters further, because Call Manager is a *distributed* MLTS, it may be deployed in enterprises with more than one physical gateway. Access to the PSTN should not be pre-assigned to the first added PSTN gateway, due to the fact that routing pre-configured 911 numbers to the first gateway will most likely reach the wrong PSAP. Configuration by the MLTS installer at the time of installation is necessary to ensure that emergency calls are directed to the appropriate calling area in cases of multiple gateways. Indeed, pre-configuring 911 in Call Manager would actually increase the risk of misrouted or non-routed 911 calls, since the MLTS installer or operator must change the specific gateway previously installed by the enterprise customer to route to a connection on the PSTN.

Finally, Call Manager is an MLTS that is deployed on a worldwide basis. As such, different countries have different emergency calling numbers. If Cisco pre-configures any emergency number to 911 in the manner contemplated in the *NPRM*, non-U.S. based installations will have an extraneous pattern that may affect a customer’s dial plan and, in turn, the customer’s ability to reach a certain number.

For these reasons, Cisco urges the Commission to adopt a reasonable and technically feasible interpretation of the term “pre-configured.” In the context of distributed systems, the Commission should clarify that the pre-configuration requirement can be satisfied when a vendor includes software to support a direct 911 dialing pattern, which is available to the installer at the time the MLTS is configured for PSTN calling. Indeed, the FCC’s proposed definition recognizes that the ability of a system to be “pre-configured” is dependent on the system being properly installed and operated.²³ This is essential because many systems, including Call Manager, are not plug-and-play solutions that automatically enable the dialing of any number “out of the box,” let alone 911, until it is properly installed. As the Commission acknowledges, some of the things that a “person engaged in the business of installing an MLTS” must do include “establishing the dialing pattern for emergency calls, determining how calls will route to the [PSTN], and determining where the MLTS will interface with the PSTN.”²⁴ Before these tasks are performed by the MLTS installer, systems like Call Manager cannot dial 911. Cisco therefore proposes a slightly modified definition of “pre-configured” as follows:

An MLTS that comes equipped with hardware and/or software capable of establishing a setting that enables users to directly dial 911 as soon as the system is able to initiate calls to the public switched telephone network, so long as the MLTS is installed and operated properly. This does not preclude the inclusion of additional dialing patterns to reach 911. However, if the system is configured with these additional dialing patterns, they must be in addition to the direct dialing pattern.

The modified definition would require that any system would be able to be configured in a manner that would require the ability to directly dial 911 as soon as the system is able to make

²³ See *id.* ¶ 31.

²⁴ *Id.* ¶ 35 (footnote omitted).

any call to the PSTN, but also reflects the fact that some systems cannot literally be configured to dial 911 without additional steps being taken by the installer of the system.

“Manufacturing.” Cisco agrees that the meaning of the term “person engaged in the business of manufacturing, importing, selling, or leasing an MLTS” is self-evident.²⁵

Accordingly, there is no reason for the Commission to clarify this definition in its rules.

B. The Commission’s Notification Requirement Should Account for Variations in Underlying Technologies.

The Commission proposes that the notification required under Kari’s Law include the following basic information: (1) the fact that a 911 call has been made; (2) a valid callback number; and (3) the same dispatchable location information that the MLTS conveys to the PSAP with the call to 911.²⁶ All Cisco systems can be configured to enable direct dialing and we support this requirement regardless of the platform involved. Because the callback number and location information that are conveyed in a notification can vary based on the technology that is deployed in the enterprise, the Commission should ensure that this rule provides MLTS managers with sufficient flexibility to determine the contents of this notification.

Consider the provision of a callback number in the enterprise environment. Although many MLTS offerings have a specific phone number assigned to an end device, there are examples where the callback number will be an extension. For instance, Cisco’s Call Manager includes a configuration that can be used to notify on-site security personnel of an active 911 call. If the enterprise customer has purchased Cisco Emergency Responder, the number included in this notification would be the caller’s Emergency Location Identification Number (“ELIN”). If the enterprise customer has not purchased Cisco Emergency Responder and the 911 call comes

²⁵ See *id.* ¶ 34.

²⁶ See *id.* ¶ 22.

from a Direct Inward Dialing (“DID”) number, the notification will include the original calling number of the person placing the call. However, if the 911 call comes from a non-DID number, the notification will include the internal extension. In this case, the callback number can be directly reached from inside the enterprise, but not from outside the enterprise. Requiring a DID number for every user or user group would significantly increase costs for enterprises.

Affording MLTS managers the flexibility to meet this notification requirement would be consistent with recent actions taken by other 911 authorities. For example, the *NPRM* cites the notification rule that was promulgated by the Texas Commission on State Emergency Communications to implement that state’s version of Kari’s Law.²⁷ The Texas rule provides that a notification should provide the “telephone number or extension” and location information of the calling handset “where feasible.”²⁸ Similar flexibility is warranted here. Such flexibility is also consistent with Congressional intent. As a threshold matter, Kari’s Law only requires that the system “provide a notification to a central location at the facility where the system is installed or to another person or organization regardless of the location....”²⁹ The statute does not require a callback number or location with the notification. Indeed, the legislative history makes clear that Congress “seeks to balance the need for an on-site notification with the goal of not placing an undue burden on MLTS owners or operators.”³⁰ Flexibility in providing a callback number and location information is appropriate and should only be required where technically feasible without imposing undue costs on MLTS managers.

²⁷ See *id.* ¶ 20.

²⁸ See 1 Tex. Admin. Code § 251.16(b)(9).

²⁹ *Id.*; 47 U.S.C. § 623(c).

³⁰ H.R. REP. NO. 114-579 (2016).

C. The Commission Should Lead Efforts to Create a Standard Testing Protocol.

Cisco recommends that the Commission initiate efforts to establish a standard testing protocol that is employed when installers configure MLTS for 911. Given the diversity and complexity of MLTS, a significant gap in testing protocols exists today. No responsible installer would configure an MLTS and then fail to place a test call to a public network to ensure the system is working properly. Yet, no standard protocol exists to allow that same installer to make sure that the emergency call configuration can work. Cisco is aware in some cases of well-intentioned installers who call a PSAP and announce they are making a “test call.” Despite this warning, such calls often result in the PSAP dispatching emergency services anyways.

As a potential “best practice” the *NPRM* cites guidelines from the Michigan 911 Committee, which direct MLTS installers to work with their local PSAPs to test the ability to dial 911 whenever an MLTS is installed or upgraded.³¹ These guidelines are undoubtedly helpful, but a more concerted effort is needed to provide for a uniform testing environment across state boundaries. The Commission should work with state commissions and the public safety community to create a standard testing protocol that is implemented on a voluntary basis nationwide.

IV. DISPATCHABLE LOCATION UNDER RAY BAUM’S ACT.

As Cisco explained in response to the Commission’s *ECS Notice of Inquiry*, the universe of MLTS solutions includes those based on traditional local exchange telephony (*i.e.*, PBX), various IP-based offerings, new and emerging cloud-based offerings, over-the-top applications, and countless hybrids thereof.³² Usage patterns among end-users in the enterprise environment

³¹ See *NPRM* ¶ 47.

³² See Cisco ECS NOI Comments at 7-8.

also vary. In this environment, a dispatchable location requirement will only be workable if the Commission embraces the significant differences between the dispatchable location capabilities of enterprise solutions and provides MLTS managers with the flexibility they need to select the technology that best suits the on-premises and off-premises needs of their end-users. As a longer-term goal, the Commission’s framework should also leave room for the development of additional standards and deployment of new location technology solutions.

A. The Commission Should Adopt a Baseline Dispatchable Location Mandate for On-premises MLTS.

Section 506 of RAY BAUM’S Act requires the Commission to consider the feasibility of requiring dispatchable location for calls from MLTS and other technological platforms. With respect to MLTS manufacturers, the Commission has proposed rules that mirror the regulatory framework under Kari’s Law – *i.e.*, an MLTS must be “pre-configured such that, when properly installed, the dispatchable location of the caller will be conveyed to the PSAP with 911 calls.”³³ The Commission also asks whether standards exist for conveying dispatchable location information from MLTS.³⁴ At a high level, there are two related yet distinct questions that must be resolved for different types of MLTS systems: (1) can the system generate and send a location with the call to the PSAP (with a separate notification as required under Kari’s Law); and (2) how granular should the location information be. The answer to both questions will vary depending on the type of system involved.

Generating a Dispatchable Location. While Cisco recognizes the benefits of broadly interpreting the definition of MLTS for public safety purposes, the Commission must pay keen attention to the wide variation in the types of systems that are captured by that definition and the

³³ *NPRM* ¶ 54.

³⁴ *Id.* ¶ 55.

equally wide variation in the ability for different services to provide granular dispatchable location information. In Cisco's experience, enabling the generation of a dispatchable location is more supportable from *on-premises* MLTS, particularly hardwired fixed-location desk phones. It is also the case that a MLTS user, regardless of the setting, is far more likely to expect to be able to dial 911 from a device on-premises (particularly if it is a hardwired fixed-location desk phone) than on an off-premises client. If the user device in question is a desk phone, generating a dispatchable location is relatively straightforward because the hardware is wired into a port and typically does not move. The location of the device can be a "hard-configuration" established by the enterprise's chosen phone provider, established via a private switch automatic location identification ("PS ALI") service provided by the telecommunications service provider, or managed by a third party provider that provides a dynamic ALI capability (such as West Safety Services or Red Sky).

Of course, endpoints within an enterprise are increasingly nomadic as companies have moved to embrace open office designs where employees have no fixed work location and use softphones. In this scenario, assigning a "static" location is not possible because the softphone might be on-premises or off-premises at any given point in time. This is where the real complexity around generating a dispatchable location comes into play. If an employee is on-premises and utilizing a wireless device that does not have a cellular data connection, some third-party vendors have the capability to dynamically update client location at the access point ("AP") level. In the alternative, some IP-based MLTS (such as Cisco Emergency Responder) have the capability to update client location at the IP subnet level.³⁵ In addition, a large enterprise with a complete on-premises MLTS (*e.g.*, Call Manager) that includes a location solution (*e.g.*, Cisco

³⁵ Because MLTS operators map the location of on-premises network ports (wired) or access points/subnets (wireless), the MLTS operator controls the precision of the location information.

Emergency Responder) can implement dispatchable location over Session Initiation Protocol (“SIP”) trunks, through Presence Information Data Format Location Object (“PIDF-LO”).

However, SIP trunks are not available in all instances. Nor, at this time, is there any standard or mechanism that allows an MLTS to directly deliver location information to an i3-capable PSAP.³⁶

In comparison to on-premises network deployments, it is even more challenging, if not impossible, to generate automatic dispatchable location for off-premises softphones using the public Internet or VPN connections. While solutions exist that allow or prompt remote employees to manually update their location when using a softphone, there is a clear trade-off between prompting such updates and user fatigue. And it is virtually impossible to validate that the caller truly is where they say they are, which can lead to misroutes. Finally, for MLTS clients that are used on devices that are also connected to CMRS wireless networks, it is Cisco’s understanding that when 911 is dialed from a MLTS client on such devices (*i.e.* a smart phone or wirelessly connected tablet), the call is typically routed via the CMRS 911 network relying on the carriers wireless 911 solution.

Granularity of Location Information. When it comes to the granularity of information required under any dispatchable location rule, RAY BAUM’S Act defines dispatchable location as “the street address of the calling party, and additional information such as room number, floor number, or similar information necessary to adequately identify the location of the calling

³⁶ See Press Release, NENA, *NENA i3 Architecture Standard Available for Public Review and Comment* (May 12, 2015), <https://www.nena.org/news/231166/NENA-i3-Architecture-Standard-Available-for-Public-Review-and-Comment-.htm> (“The i3 solution supports end-to-end IP connectivity; gateways are used to accommodate legacy wireline and wireless origination networks that are non-IP as well as legacy Public Safety Answering Points (PSAPs) that interconnect to the i3 solution architecture”).

party.”³⁷ Because the information that is necessary to “adequately identify the location of the calling party” will vary from case to case, the *NPRM* proposes that MLTS installers, managers, and operators should have the flexibility to identify situations in which street address is sufficient for first responders to find the calling party.³⁸ Cisco endorses this approach for the universe of *on-premises* MLTS solutions. Based on its experience serving enterprise customers, Cisco believes that the costs associated with mandating location information at a level of granularity beyond street address would exceed any countervailing benefits in many enterprise environments.³⁹ Given the complexity and cost associated with requiring more granular location information, it is also possible that some enterprises faced with this scenario will simply abandon the use of MLTS in favor of mobile wireless phones. On the other hand, requiring a more achievable baseline street address requirement for *on-premises* MLTS solutions does not prohibit those enterprises who are technically and financially capable of doing so from providing more granular location information.

Furthermore, any dispatchable location requirement that the Commission adopts must strike a reasonable balance between the specificity of information that is provided and the costs imposed on enterprise customers. Cisco Emergency Responder, for instance, adds roughly 10 percent to the monthly base cost of Call Manager. Above and beyond this licensing fee, much of the effort that is required to support dispatchable location lies outside the control of MLTS manufacturers and vendors and requires enterprise owners and others to be heavily involved in

³⁷ RAY BAUM’S Act, § 506(c)(2).

³⁸ See *NPRM* ¶ 58.

³⁹ In this regard, Cisco agrees with RedSky that a more granular, “square footage model” for dispatchable location is inappropriate because MLTS customers and local authorities are in the best position to identify the information that is necessary for a timely and efficient emergency response. See Comments of RedSky Technologies, Inc., PS Docket No. 18-261, at 18 (filed Oct. 9, 2018).

the deployment process. Here, too, enterprise customers must incur significant costs, including upfront capital expenditures and very high operating expenses associated with managing the infrastructure location and mapping employee locations to correlate with that infrastructure.

Finally, before requiring dispatchable location information for remote workers using MLTS, which will be technically challenging for many systems and very costly, the Commission must have a clear picture of the scope of the challenge. As the *NPRM* states, 75 percent, and even higher in many jurisdictions, of 911 calls are placed on wireless phones, which the FCC has already addressed through its wireless 911 location rules.⁴⁰ Given the growing reliance on wireless phones for 911 dialing, the Commission should have a full understanding of end-user expectations, 911 usage patterns, and potential solutions before it establishes a formal dispatchable location requirement for MLTS scenarios involving remote employees.

B. The Commission Should Further Evaluate Whether the NEAD Can Be a Long-term Solution for Dispatchable Location.

The *NPRM* seeks comment on whether the NEAD can be a useful tool for determining the dispatchable location of MLTS end users. As Cisco understands it, the NEAD collects registration data of service provider Wi-Fi access points so that mobile phone location can be cross-referenced against the registered location of a Wi-Fi access point.⁴¹ Unfortunately, however, the NEAD as currently configured does not address enterprise Wi-Fi networks or how service provider Wi-Fi can be leveraged to deliver location information associated with

⁴⁰ See *NPRM* ¶ 92. Cisco also notes that when the Commission adopted registered location requirements for interconnected VoIP services in 2005, the wireless penetration rate in the U.S. was 62% of the population. See *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Tenth Report, 20 FCC Rcd 15908, 15912 ¶ 5 (2005). Today, the wireless penetration rate stands at 120.7% of the population. See CTIA, *The State of Wireless 2018* (July 10, 2018), <https://www.ctia.org/news/the-state-of-wireless-2018>.

⁴¹ See *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259, 1279 ¶ 55 (2015) (“*Wireless Location Accuracy Report and Order*”).

emergency calls from MLTS. In the MLTS environment, none of the egress technologies available today (*e.g.*, FXO/T1CAS/PRI/SIP Trunks) support the sending of any identifying information to the service provider. Instead, the technologies available for access to the PSTN only support voice and communications data payloads. To be able to leverage NEAD for location services, the MLTS's connection to the PSTN or carrier must provide the Media Access Control ("MAC") address of an upstream access point or Bluetooth Low Energy ("BLE") device. At this time, there is no field available in any of the PSTN connection technologies to transmit an access point or BLE identifier such that the service provider could request location information from NEAD. Thus, even if an enterprise customer could register every single Wi-Fi access point it has, there is no mechanism by which a call from an MLTS can send an identifier to the public safety network to identify where that call is coming from.

This is not to suggest that the NEAD should be discounted as a potential, if partial, long-term solution. As Cisco has previously explained, Wi-Fi is the technology that holds the most promise for improving location capability for MLTS.⁴² The ATIS Emergency Location Task Force ("ELOC"), which was established to focus on specific aspects for improving emergency location capabilities (including the implementation of the NEAD),⁴³ is voting a standard that would allow enterprises to voluntarily submit wireless location data to an Emergency Location Service ("ELS") that is operated by manufacturers and vendors such as Cisco.⁴⁴ Under this

⁴² See Cisco ECS NOI Comments at 18-20.

⁴³ See ATIS, ESIF, http://www.atis.org/01_committ_forums/esif/subcommittees/ (last visited Dec. 10, 2018).

⁴⁴ Cisco notes that there are likely private enterprise sectors that would be quite reluctant to register information about the number of, or location of, access points within their enterprise networks with the NEAD for good and substantial reasons. The ELS is intended to address that reluctance, by ensuring that the data is held by a trusted partner with pre-existing contractual relationships to the enterprise.

standard, the NEAD could query the ELS for location information and convey that information to the appropriate PSAP. Although more integration work is needed to provide enterprise customers with the ability to easily implement this service for their facilities, the Commission should be cognizant of these efforts in charting its course in this proceeding. The ability to geolocate a caller via access point location and deliver such information directly to Next Generation 911 (“NG911”) emergency services IP networks (“ESINets”) as PSAPs transition to NG911 will be a substantial improvement over the legacy ALI database approach to 911 location. As these capabilities are developed and implemented, willing enterprises can be encouraged to take advantage of these improved capabilities.

C. Compliance Dates for any Dispatchable Location Requirements Should be Reasonable.

The Commission asks whether the compliance dates for any dispatchable location requirement should be consistent with the February 2020 compliance date for direct dialing and notification as required by Kari’s Law.⁴⁵ Cisco certainly appreciates the potential benefits of implementing Kari’s Law and any dispatchable location requirements at the same time. However, Commission action in this proceeding is likely to occur less than one year in advance of the statutory compliance date for Kari’s Law. As the Commission recognized in the wireless location accuracy proceeding, “dispatchable location cannot be achieved overnight.”⁴⁶ In the MLTS context, the impact of any dispatchable location requirements will be felt by thousands of entities that are not traditionally subject to the FCC’s jurisdiction. Accordingly, a concerted effort at the federal, state and local levels would be needed to adequately inform the public. At minimum, Cisco recommends that the effective date of any dispatchable location requirements

⁴⁵ See *NPRM* ¶ 85.

⁴⁶ *Wireless Location Accuracy Report and Order*, 30 FCC Rcd at 1283 ¶ 64.

should mirror the two-year implementation timeline that Congress provided to all stakeholders under Kari's Law. Any dispatchable location requirements established beyond that recommended by Cisco in these comments will require additional implementation time.

V. THE COMMISSION'S 911 RULES SHOULD BE CONSOLIDATED.

Cisco supports the Commission's proposal to consolidate all of its 911 rules into a single rule part and make certain conforming changes.⁴⁷ By providing a single reference point in its rules, the Commission will reduce confusion to the benefit of industry, the public safety community, and members of the public.

VI. CONCLUSION.

Cisco appreciates the opportunity to comment in this important proceeding. Cisco generally supports the Commission's proposed MLTS 911 direct dialing and notification requirements. With respect to the provision of a callback number and dispatchable location, as described above, Cisco urges the Commission to take into consideration (1) the wide variety of MLTS technologies and capabilities, (2) the numerous stakeholders involved in enabling access to 911 via MLTS, (3) the many different scenarios in which an end-user may have access to and use an MLTS, (4) the significantly different expectations that an end-user may have depending on the type of system and setting where the MLTS is being used, and (5) the very real costs associated with overly prescriptive rules. Cisco looks forward to reviewing the record filed in response to this *NPRM* and working with the Commission on these important issues.

⁴⁷ See *NPRM* ¶¶ 103-106.

Respectfully submitted,

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