

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

<b>In the Matter of</b>	)	
	)	
<b>Wireless E911 Location Accuracy Requirements</b>	)	<b>PS Docket No. 07-114</b>
	)	
<b>Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems</b>	)	<b>CC Docket No. 94-102</b>
	)	
<b>Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling</b>	)	
	)	
<b>911 Requirements for IP-Enabled Service Providers</b>	)	<b>WC Docket No. 05-196</b>
	)	

**COMMENTS OF INTRADO INC.**

Intrado Inc. (Intrado)<sup>1</sup> submits these comments in response to the Federal Communications Commission’s (Commission) Notice of Proposed Rulemaking (NPRM) released on June 1, 2007 on seeking comment on its tentative conclusions and proposals set forth in Section III B of the above captioned proceeding. Specifically, Intrado’s comments pertain to the Commission’s request for information related to Single Location Accuracy Standard; Location Technologies; Accuracy Standard; Compliance Timeframes; Compliance Testing; and Interconnected VoIP Services.

Intrado addresses these issues by building upon the contents of its white paper entitled “Auto Location Services” filed *ex parte* on November 16, 2006 in Docket 05-196. Intrado has urged the Commission, reiterated and expanded in these comments, to promulgate rules that: (1) take the lead in setting out the ultimate policy goal for caller location information; (2) establish clear expectations of all stakeholders; (3) require a phased-in approach thus allowing carriers and providers to comply over time; (4) are technology and device agnostic, which compels an abandonment of old regulatory categorizations in favor of “indoor” and “outdoor” use cases; and (5) enable first

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<sup>1</sup>For over a quarter of a century, Intrado has pioneered improvements to the 911 network, helping to enhance the quality of emergency response in the United States. Intrado helps telecommunications service providers and public safety agencies save lives by transforming emergency communications services.

responders, to the extent possible in each phase, to precisely know “which door to kick in” to render emergency assistance.

At the most fundamental level, the purpose of America's emergency 911 system is to promptly and automatically<sup>2</sup> allow a 911 caller to speak directly with a public safety official and, most relevant in this docket (particularly where a caller is unable to speak), to provide first responders with a precise and meaningful location of the 911 caller; thus, allowing timely assistance to be rendered, regardless of the type of communications technology or device employed. To that end, Intrado strongly believes that it should be the written policy of the United States government, specifically this Commission, that all communications or other providers that enable user connectivity with the public switched telephone network (PSTN), coupled with a caller’s reasonable expectation that a 911 call will connect with a public safety official, should, relative to the particular provider’s role in a 911 call and within the limits of what is technically feasible, ensure that the kind of meaningful location information described above is delivered to the proper responding agency.

In support of our viewpoint about callers’ “reasonable expectation” that they will reach a public safety answering point (PSAP) when dialing 911, we offer the following in support of our viewpoint: Recent consumer market research commissioned by Intrado, and conducted by Frost and Sullivan, identified that 40% of those surveyed under the age of 35 indicated that a cell phone was their primary phone, and respondents were confident that their cell location could be pinpointed on a map. In addition, nearly 80% of the respondents’ believed that it was important or extremely important, that their cell location could be pinpointed on a map.<sup>3</sup> Also, the research revealed that the general public has strong confidence in 911, and in emergency situations assumes that “911 knows where I am.” It is with that expectation, exacerbated by the trend to replace traditional wireline phones (that typically are associated with fixed street addresses) with mobile or nomadic phones (that are not currently capable of such “meaningful” location capability) that sound planning and technical requirements should be established to ensure that the next generation of location technologies meet the needs of not only the public, but that it also provides public safety first responders with precise location information.

Therefore, it is our belief that the requirements spelled out in this docket should take into account not just the impacted service providers but also the needs and capabilities of public safety agencies; and those requirements should contemplate a pragmatic, systematic (i.e., phased-in and realistic) deployment schedule. In order for the United States to move effectively into the next generation of location services, and to avoid unintended, broader economic impacts, all interested parties must know with clarity what

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<sup>2</sup> Intrado encourages the Commission to promulgate rules requiring service providers to offer emergency services through the use of automatic, "non-manual" location technology(ies), irrespective of the type of technology deployed by the provider or the device used by customer.

<sup>3</sup> 2007 – Frost & Sullivan, commissioned by Intrado, conducted nationwide research with 2580 participants via telephone and web surveys specific to consumer attitudes and knowledge of 9-1-1.

is expected of them both in terms of the development of appropriate technologies and solutions and in terms of the date(s) by which requirements for deploying them will be mandated. Anything short of that kind of clarity risks having a shortage of willing infrastructure participants, and a high likelihood of ill-placed and/or ill-timed investment in the 911 infrastructure. In addition, providing that kind of clarity will directly bear on the future efficacy of the 911 infrastructure and ensure that our nation's citizens will continue to receive the level of emergency services that that they have come to expect..

Appropriately, this NPRM presents an opportunity to draw attention to CC Docket No. 94-102 which includes provisions for 911 services related to Multi-line Telephone Services Systems (MLTS).<sup>4</sup> After a decade, appropriate regulation of this telecommunication's service, widely used within the business and campus environments (as highlighted in the recent Virginia Tech tragedy), has not advanced at a pace commensurate with wireline, wireless or VoIP or in a way that otherwise ensures that users behind a MLTS/PBX system are afforded automatic location of their emergency call. The current NPRM should be applied to this critical service, and Intrado requests that the Commission give equal consideration to regulation of this service when advancing the requirements of 911 and automatic location.

Finally, it is important for the Commission to review all comments before finalizing any proposed rules, and the Commission should consider convening subject matter experts that can quickly and clearly assist the Commission with defining the next generation of location accuracy performance requirements for Enhanced 911 services.

## DISCUSSION

### Section III B. Other Wireless E911 and VoIP 911 Accuracy Issues

#### *9. Single Location Accuracy Standard.*

Intrado agrees with the Commission that much has changed since the establishment of the current location accuracy requirements. In many areas of the country, PSAPs self-report that wireless E911 calls represent the growing majority of calls received at their facilities. According to National Emergency Number Association (NENA), more than half of E911 calls are wireless in nature<sup>5</sup>. We need not look too far into the future to understand that emerging technologies such as VoIP, WiMAX and VoWLAN will further add to the complexity of the nation's telecommunications and emergency services fabric.

These dynamics of technology advancements and consumer behavior will become a growing focal point on the ability of the system to generate adequate location information that enables an appropriate public safety response to an emergency call. Throughout this

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<sup>4</sup> *Scope of Enhanced 911 Requirements*, CC Docket No. 94-102, IB Docket No. 99-67; FCC 03-290, Order and Notice of Proposed Rulemaking, (rel February 11, 2004).

<sup>5</sup> See [www.nena.org](http://www.nena.org)

proceeding, we should not lose sight of the fact that our ultimate shared goal is to enable public safety to respond as quickly and efficiently as possible, directing those precious emergency resources as close to the location of the caller as fast paced technology advancements will allow.

Although among the most sophisticated and well known emergency response systems in the world, the U.S. E911 network has reached a crossroads; and the time is right to embark on the development of the next phase of location accuracy capabilities. Amid the complexity of technology, it would seem prudent that the Commission adopt a relatively simple and straightforward location accuracy standard that is held to all existing and anticipated future technologies. Intrado agrees with the Commission's tentative conclusion that such an approach is best accomplished through the establishment of a single location accuracy standard. This will enable all affected parties to understand with clarity the desired end state and move forward collaboratively in the investment and development of necessary solutions.

Intrado believes that the adoption of a single location accuracy standard should be agnostic to technology, regardless of whether that technology takes the form of a protocol, an access network or the end user's device. While an agnostic approach to location determination will drive "best of breed" solutions, Intrado cautions that specific standards should still apply to the actual delivery of location information once that data enters the 911 infrastructure; and we all should remain vigilant about the benefits derived from *de facto* and other standards that have served us well.<sup>6</sup> Given the kind of interoperability among public safety agencies that is so desperately sought, those agencies would benefit greatly if they are not forced to deal with processing different delivery formats of location data.

In order to maintain a focus on the over-riding goal of fast and accurate emergency response, and to apply the concept of a single location accuracy standard to real world situations, Intrado recommends that the Commission's ruling should consider two predominant uses cases that are based on the 911 caller's environment: 1) Indoor and 2) Outdoor. While there are potentially hundreds of different ways to categorize a user's environment, this straight-forward method of classification, as a regulatory structure, provides the greatest utility for public safety. While both environments will leverage the same location accuracy standard, an Indoor use case will primarily depend upon a "dispatchable" address as the primary data element delivered to a PSAP. This requirement builds on the notion that a specific address (accompanied by coordinate data) is still one of the most effective methods of locating a caller. Intrado recognizes that certain mobile technologies may not currently have the ability to discern whether an end user's device is located indoors, but with a phased development approach and the use of

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<sup>6</sup> In addition, while the Commission's federal goal of pre-emption related to certain new technologies, there is much to be said about state regulators' value in assuring such things as the efficacy of 911 networks operating in their states. Thus, great care should be taken to not inadvertently sweep away states' rights while advancing a broader federal purpose. State and local public safety agencies, and their "cousins" in state government, the state utility commissions, should not, through this or any other federal proceeding, be hindered in their authority to regulate those aspects of 911 that have traditionally fallen within their purview.

alternative addressing schemes, the desired end state is achievable. An Outdoor use case will primarily depend upon the location coordinates of the end user's communication device and related uncertainty value as the primary data element delivered to meet the standard. This provides the best available information to direct emergency responders to the 911 caller.

#### ***10. Bifurcated Accuracy Standards.***

Having agreed with the Commission's tentative conclusion to adopt a single location accuracy standard, again, such a standard should be technology agnostic and thus provide a clear goal with which all current and emerging technology providers can adhere.

Intrado acknowledges that there are significant obstacles in place today for certain technology providers to adhere to such a standard within a short period of time. Therefore, Intrado urges the Commission to adopt achievable milestones that ensure progress is made towards this end state but that do not carry unreasonable burdens. As carriers work towards achieving this single location accuracy standard, they should not be unduly penalized if they can demonstrate that they are working in good faith with public safety and making best efforts towards achieving the accuracy standards.

#### ***11. Location Technologies.***

Intrado believes Location Determination Technology (LDT) include specific technologies that can be utilized to determine: (a) the location of a communication device that is in use by an end-user; and (b) potentially, the location of Access Points that connect the communication device to the service provider network. There are a variety of technology approaches to location determination that are either currently developed or in development. Intrado knows of no single technology that can achieve the Commission's stated intent in the NPRM. Each technology's approach has its own strengths and weaknesses and generally aligns to different use case environments. While the achievement of the desired goal for precise location will, in part, depend upon the full maturation of these various location technologies, Intrado believes that each can play a role in supporting a migration path to that end goal.

Specific considerations around LDT that must be contemplated in establishing this migration path include:

- LDT may initially require end user interaction to verify their location.<sup>7</sup>
- Carriers should support the end user's ability to verify their location information before placing a 911 call.<sup>8</sup>

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<sup>7</sup> A device's location capability may initially be limited and unable to provide location automatically. For instance, GPS may not be able to receive a signal inside the sub-basement of a dwelling and the end user would need to manually and interactively assist in their location.

<sup>8</sup> Existing technologies do not convey E911 capability of the end user's device to the end user until the time of the 911 call.

- The LDT’s ability to integrate with the end user or other network access devices, depending on the specific LDT approach, may require software and/or hardware based integration efforts.
- The LDT’s ability to provide ubiquitous network coverage for end-user or other network access devices, depending on the LDT, unique infrastructure deployments, may be required to support acceptable location determination coverage.
- Regarding the ability for a Z coordinates (altitude) to be determined in accordance with the proposed guidelines: altitude should be provided as above ground level of the location from the Z coordinate to be usable to first responders. While technologies exist today to attain a Z coordinate above mean sea level, the conversion to “above ground level” and the integration into LDT and supporting infrastructure (e.g. GIS) solutions must still be addressed.
- Regarding PSAP capabilities to receive associated data elements : existing Automatic Location Information (ALI) limitations and migration to more dynamic display capabilities must be taken into account
- Consideration must be given to the public safety community’s ability to accept and translate/display a Z coordinate to achieve an Acceptable Location for Indoor Use.
- Consideration must be given to the ability of a service provider’s network to automatically discover the addition or movement of an Access Point serving a communication device within the service provider’s network. For some LDT approaches, an understanding of the location of the Access Point is a critical component to enable precise location determination.
- Consideration must be given to the service provider’s ability to leverage LDT information and translate to an Acceptable Location for Indoor Usage.

As LDT evolves and functionality becomes more readily available, service providers and equipment manufacturers will play an active and important role in driving adoption and integration of communication devices, customer premise equipment or physical Access Point(s) within the service provider’s network. To that end, the Commission should ensure that, in its consideration of a migration and integration path, all stakeholders are in lock-step with each other in meeting deployment timelines. For example, service providers should not be unduly burdened with requirements to enhance their LDTs while technology providers have no requirement to meet the Commission’s timelines. In addition, PSAPs should not be unduly burdened with requirements to support display and interpretation of new LDT data elements and technologies prior to service providers ensuring delivery capabilities exist. This complex integration requires coordinated planning, driven by clear mandates, without which progress may not be made as quickly as the Commission and the public expect,<sup>9</sup> with consideration given to manufacturing

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<sup>9</sup> Much has been said about how mandates should not be instituted, particularly where technology is unavailable at the time the mandate is issued, without knowing much more about the particulars of the technological solution. Absent the mandate in CC Docket No. 94-102, it is arguable whether wireless carriers would have implemented Phase I and Phase II kinds of technologies on their own; and in fact, ten years later, having not fully met the current requirements, it may be somewhat disingenuous to make such an argument. And absent the Commission’s desire to solve VoIP E911 issues that surfaced in 2005, and in

lead time required for technology integration, and thoughtful consideration by all stakeholders.

## 12. *Accuracy Standard.-*

As the use of end devices and associated technologies becomes more indistinguishable as between fixed and mobile environments, there is an increasing and urgent need to determine an approach that provides first responders with the most appropriate information to locate the end-user trying to reach emergency assistance. To that end, Intrado believes that, whenever possible a, “dispatchable” street address is the most suitable location information to enable rapid and efficient emergency response. When an address can correspond to a location, address information is preferred over geographic coordinates.<sup>10</sup>

In order to deliver the appropriate, “dispatchable” address, Intrado suggests an evolutionary path that includes several periods: the first, approximately 2 years, which then would overlap with milestones lasting 7+ years. In the near term (2 years), addresses are based on relating frequently visited addresses of the caller (“address of importance” or “frequently visited addresses”) to the caller’s determined location requiring the following action:

1. Carriers to determine geographic coordinates (X,Y) for the caller’s end device, based on technology neutral accuracy requirements.
2. Callers/users input and/or carriers capture the appropriate addresses of importance.
3. The 911 Service Provider must deliver the addresses of importance, geographic coordinates, and uncertainty information to the PSAPs.
4. The PSAPs must be able to display and differentiate these addresses of importance from static addresses (i.e., wireline LEC ALI records) and cell site addresses.

In the longer term (7+ years inclusive of the near term), addresses should be based on relating the end device location to hyper accurate mapping address systems, in addition to providing the address(es) of importance. This requires:

1. Carriers to determine more accurate geographic coordinates than today’s standards, including Z, of the end device.
2. The 911 Service Provider must be able to deliver these more accurate geographic coordinates, including Z, to the PSAP.
3. PSAPs will be responsible for getting hyper accurate base maps.<sup>11</sup>

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the face of arguments that the window allowed for deployment was unreasonably short (which proved to not be the case), it is also arguable that VoIP providers would have achieved the initial levels of 911 service they have. In both instances, technology was not readily available or even well understood.

<sup>10</sup> The ability to take geographic coordinates and determine an appropriate dispatch-able address from map data alone requires that the X/Y/Z provided has an uncertainty small enough to uniquely identify a single address and the base maps are accurate enough to uniquely define the boundaries of the properly, building envelope, elevations, etc.

<sup>11</sup> Hyper accurate base maps may include such things as addresses associate with building envelopes or footprints, interior apartment maps, property boundaries, ground elevations, individual floor elevations, etc.

4. PSAPs must be able to display the geographic coordinates, including Z, on the hyper accurate base maps and process the data to determine a dispatch-able address.

Data Elements:

There is a new “series” of data elements that will need to be generated by the carrier in the next generation of 911 offerings, delivered by the 911 service provider and displayed by the PSAP so that the full context of the data can be understood by the first responder, i.e. the first responder will know “which door to kick” in to render aid. These data elements include:

- Call back number or the equivalent based on the applicable technology
- End-user’s name
- Service Provider
- An Address and its accuracy level
  - A dispatch-able address defined as “Acceptable Location for Indoor Usage” which is an address derived from X,Y,Z and hyper accurate base maps.
  - An Address of Importance<sup>12</sup> may also be delivered for known or frequented areas (home office, school, etc.). This may include the address of the serving access point where the device is attached to the serving network (i.e. cell site or IP access point physical address). This is the address verified against the X,Y,Z provided as the device’s location.
- X,Y,Z, and Uncertainty<sup>13</sup>

Accuracy Standard:

The ultimate standard is a combination of: (a) meeting minimum, accurate address delivery requirements; and (b) accurate X,Y,Z requirements. Reaching this ultimate standard should follow an evolutionary path, as mentioned above working towards

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<sup>12</sup> These “addresses of importance” are locations such as the users home, school, office, etc. For these addresses, the user’s emergency calls should be located and reported with a higher level of dispatchable precision than other emergency calls they may place outdoors or in other locations. This higher level of dispatchable precision should provide the users associated dispatchable address from which they most likely placed the emergency call so that the first responders know which door to enter to render the needed assistance. Because of the inherent combined inaccuracies of today’s X/Y technologies and associated reverse geocoding technologies, standard reverse geocoding techniques are not adequate. For example, the X/Y of an emergency call placed from a user’s multi-story apartment building may only be precise enough to locate which building the emergency call was placed from, by associating the user’s home address with the X/Y and calling device, the first responder could also be given the apartment number and floor within the building. With the associating of “addresses of importance” to users emergency calls, we are able to augment the accuracy of location technologies in areas people are most likely to make critical emergency calls thereby providing more precise location information to the first responders.

<sup>13</sup> Not to be confused with an Acceptable Location For Indoor Usage; but rather for use as secondary location information if an acceptable address is not available, it may be appropriate to use x, y, z coordinates and an uncertainty value of the location coordinates which provide an equivalent level of precision to the acceptable address. From a policy perspective, anything less than an Acceptable Location For Indoor Use should be considered insufficient.

increasing accurate X,Y,Z requirements. Intrado believes that it is appropriate to start at today's handset-based wireless standard of 50m for 67% of the time and 150m for 95% of the time, with the eventual goal being 25m for 67% of the time and 75m for 95% of the time. While this may not be technically feasible today, we believe establishing an ultimate goal will foster innovation and technical development. The standard should also include the eventual phasing in of the "Z" coordinate.<sup>14</sup>

We encourage the Commission to seek guidance from industry and standards bodies as to how to arrive at a statistically meaningful and accurate determination of location accuracy.

### *13. Compliance Timeframes.*

It is Intrado's belief that the location accuracy and acceptable address guidelines as defined above will only be achieved as technology evolves and market dependencies are addressed in a unified and coordinated effort. Additionally, Intrado believes it is realistic to address short term solutions while encouraging stakeholders to move rapidly towards the desired end goal of a technology agnostic standard for location accuracy. Intrado believes that it is vital for the Commission to quickly and clearly define compliance requirements of the desired end-state to support investment and development of appropriate technologies and solutions. All interested parties must know with clarity what is expected of them by way of technical location performance as well as the date(s) by which those requirements will be mandated.

The ultimate standard of a dispatch-able address must be acceptable to emergency responders and must provide a level of precision that includes apartment, suite, floor or room number as appropriate.

To this end, Intrado offers the following table of data elements, their corresponding responsible parties and the associated timelines as a guideline. For these recommendations to be successful, each party must play an active role in enabling the penetration of new technology into the public safety space:

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<sup>14</sup> The ability for a Z coordinates (altitude) to be determined in accordance with the proposed guidelines. Altitude should be provided as above ground level of the location from the Z coordinate to be usable to first responders. While technologies exist today to attain a Z coordinate above mean sea level, the conversion to "above ground level" and the integration into LDT and supporting infrastructure (e.g. GIS) solutions must still be addressed.

Data Element	Responsibility	First Milestone <sup>15</sup> (2 Years)	Second Milestone (5 Years)	Full Deployment (100%)
Call back number or the equivalent based on the applicable technology	Carrier	100%	100%	NA
End-user's name <sup>16</sup>	Carrier	30%	100%	NA
Service provider name or NENA ID	Carrier	100%	100%	NA
Dispatchable Address: Address of Importance <sup>17</sup>	Carrier	40%	65%	
Type of Location	Carrier	100%	100%	NA
Dispatchable Address: Dynamically Defined <sup>18</sup>	PSAP	NA	70%	100% in 7 Years
Type of Address <sup>19</sup>	Carrier	100%	100%	NA
Wireless Base-station Address <sup>20</sup>	Carrier	100%	100%	NA
X, Y and Uncertainty <sup>21</sup>	Carrier	70%	95%	NA

<sup>15</sup> Percentage criteria are specific to the number of calls that are delivered to a PSAP capable of Wireless Phase II. For example, if 1000 911 calls are made and 200 are delivered to a Phase I PSAP and the remaining 800 are delivered to a Phase II PSAP, then 80% of the calls must deliver the respective Data Element.

<sup>16</sup> Specific to devices that have a registered account. It must be incumbent on the service provider to capture each unique name that is associated with each end device for that account. The user name is useful to the first responder to help identify the emergency caller if other location information is not available.

<sup>17</sup> The "Address of importance" dispatchable address is a concept that matches: (a) customer-provided address frequently used in connection with customer devices, such as the address of an access point, their home, office etc.; with (b) the X/Y/Z reported by the device. This address of importance requires that the carrier provide a means for collecting, validating and storing this information; the 911 service provider be able to pass this information; and the PSAP be able to display this information. As an interim step, these addresses of importance cover many of the locations from which a user may place a 911 call, but will not ultimately cover 100% of locations; dynamically defined addresses will complement address of importance data elements to provide comprehensive coverage to approach 100% of calls.

<sup>18</sup> The dynamically defined dispatchable address uses hyper accurate base maps that may include property boundaries, building envelopes, floor elevations, etc. to be able to dynamically define a dispatchable address for an accurate X/Y/Z provided by a carrier. This requires that carriers provide an accurate X/Y including the Z or altitude component and that hyper accurate base maps are provided by the PSAP. It also requires that the 911 service providers be able to pass this information and that the PSAPs have the hyper accurate base maps to display the information.

<sup>19</sup> When multiple types of address are delivered to a PSAP, the PSAP needs to know what type of address they are receiving and what the relevance that address has. The address may be a fixed line address, an address of importance, a dynamically defined address, or address of last resort (such as a cell site address or pre-provisioned address). The PSAP needs to know what type of address it is to be able to respond accordingly.

<sup>20</sup> Base station address or address of last resort is a useful piece of information if the carrier was unable to determine an exact X/Y/Z. It can be used to route the call to the proper PSAP and provide a rough geographic area of the caller.

<b>Data Element</b>	<b>Responsibility</b>	<b>First Milestone (2 Years)</b>	<b>Second Milestone (5 Years)</b>	<b>Full Deployment (100%)</b>
X,Y and Z (Altitude) and Uncertainty <sup>22</sup>	Carrier	5%	80%	NA

It should be noted that, without the cooperation of the 911 Service Provider to provide a means to pass the new data elements and the ability of the PSAP to display these new data elements, these new data elements will not make it to the first responder and thus be of no value. Intrado urges the Commission to include in its mandate a clear obligation on the part of the 911 service provider to comply with relevant requirements. Intrado further urges the Commission to draw upon its experience in CC Docket No. 94-102 relative to the readiness of the PSAPs, or lack thereof, and the legitimate reasons service providers may be unable to comply.

#### **14. Compliance Testing.**

Intrado supports establishing a testing methodology to verify compliance with the aforementioned location accuracy recommendations. Testing guidelines should reflect typical use cases (Indoor/Outdoor), define a quantifiable level of success or failure against the standard and provide clear guidelines of what is required to meet that level of success.

This high-level methodology and/or approach should consider the following elements:

- Technology agnostic
- Address Indoor/Outdoor Use Cases
- Reflect “real-world” 911 calling behaviors and usage
- Include a statistically relevant sample of test data points
- Test data must be based on empirical data

Testing is an important and appropriate exercise to demonstrate compliance with adopted standards and to provide a mechanism for continuous improvement of the entire 911 system. Intrado supports the need of public safety for reporting metrics of location accuracy performance. However, Intrado urges the Commission to maintain as its primary focus and subsequent involvement the development of better location determination technologies that can more quickly and more effectively support the desired end state for system performance. This may require that advancements employed to improve legacy infrastructure become secondary to investments in next generation infrastructure. In any case, testing requirements should be as streamlined as possible to

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<sup>21</sup> For a location to be useful, the quality of the location must be known. The radius of uncertainty for a good location could be as small as 5 meters or (for a bad location such as a cell site) 20 miles.

<sup>22</sup> To be able to relate geo coordinates to hyper accurate base maps, the altitude component or Z must also be known. Technology is available today, such as barometric sensors that can be used to determine height above mean seal level (MSL); and, along with hyper accurate base maps, height above the ground or floor level can be determined. There are many challenges to implementing and deploying altitude, and there may also be other technologies that can help.

validate the desired performance and should not be onerous or drive misallocation of limited financial resources.

While the majority of existing industry standards and guidelines are focused on testing against the Commission's current requirements for location accuracy, the bodies responsible for such standards have built an impressive knowledge base to guide testing implementation. Where appropriate, the Commission should look to both new and existing industry bodies to define testing guidelines and methodologies that best demonstrate compliance with the adopted accuracy standard.

### **15. *Schedule for Testing.***

Intrado agrees with the Commission's tentative conclusion to create an appropriate schedule for such testing.

In order to identify and define specific testing methodology, guidelines and schedules, Intrado recommends that the Commission convene the appropriate industry experts and stakeholders following the adoption of final rules for location accuracy. This order of events will facilitate the process of identifying what requires testing and verification.

As guiding principles, Intrado believes that testing guidelines and the associated schedule should reflect both the end-to-end functional capability and the accuracy performance of the supporting network, i.e., testing reports should clearly identify to appropriate stakeholders the performance of the supporting network as it relates to the compliance standard. Reporting of test results should be based on a reasonable schedule that captures typical operating conditions of the supporting network and should not be overly onerous to the service provider to produce or maintain. Changes to a typical operating condition should trigger validation testing to ensure that performance is consistent with compliance standards following the change.

### **18. *Interconnected VoIP Services.***

Because Intrado believes the "technology agnostic" approach to location accuracy is appropriate, it follows that we believe all communications service providers, and to the extent the Commission determines these rules should apply to other providers of technology providers or manufacturers that enable or facilitate interconnection to the PSTN<sup>23</sup>, regardless of how they derive location or the method by which they provide voice services, should be held to the same accuracy standard.

Intrado believes any action taken by the Commission should be inclusive of all future technologies and applications that may be utilized by an end user to communicate their need for emergency services. For no other reason, it is sensible to institute a regulatory environment where the Commission does not have to treat each technology individually and as requiring a separate regulatory scheme, which creates the distinct possibility of

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<sup>23</sup> Consideration should be given to applications where a customer has a reasonable expectation of reaching a PSAP such as one typing out a text message and launching it as an emergency call to 911.

disparate treatments. Intrado does not presume that the Commission, the public safety community, nor the telecommunications industry can foresee future communication technologies that may not exist today. However, Intrado believes any requirements the Commission mandates should be written in a manner that embraces a broader set of communication mechanisms and not be restricted to the traditional/existing telephony devices and technologies.

The Commission can look to existing technologies that are seeing widespread adoption, e.g. personal communication devices, which, to date, do not offer customers an E911 function or which do not yet convey an end users location automatically such as SMS and Instant Messaging. These are some examples of non-telephony technologies that are seeing a dramatic increase in end user adoption and a generation of users that come to rely on these vehicles as a primary means of communication.

In addition, public safety agencies and emergency responders are provided with inadequate location information of the caller who dials 911 from a Multi-Line Telephone System (MLTS, a/k/a private branch exchange or PBX). The rapid migration to IP-based technology and commensurate rapid use of IP in the MLTS market is further complicating this challenge. The inherent capabilities of IP now enable MLTS users to extend their telecommunications platforms beyond the office premise, allowing individuals to use such devices as soft phones to access voice communications in a more mobile environment. .

While technology solutions currently exist to address E911 calling in a MLTS environment, “Enterprise” adoption has been slow and generally limited to those states where legislation is in place. Available solutions incorporate the dynamic location requirements of IP-based systems, leveraging capabilities already developed for the residential VoIP service provider market.

Therefore, Intrado encourages the Commission to promulgate rules that take into account the burgeoning impact of IP-based technology in an MLTS environment, particularly as it relates to E911 support in a nomadic or mobile use setting. This will ensure a more consistent treatment of E911 across all market segments and appropriately set end-user expectations that E911 is universally available.

In addition, Intrado supports the Commission’s conclusion that “autonomous registration<sup>24</sup>” and the removal of the VoIP caller from the equation of location determination should be required whenever feasible. While the industry has addressed the immediate challenge of the location and routing of a VoIP caller who has “self-provisioned” their current location with their VoIP Service Provider (VSP)<sup>25</sup>, the solution is not acceptable in the long term. VoIP callers may not know their current address, may

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<sup>24</sup> *IP-Enabled Services; E911 Requirements for IP Enable Service Providers*, WC Docket No. 04-36; WC Docket No. 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245 (2005).

<sup>25</sup> *Ibid.*

not have a postal valid address, may forget to register after a move, or may enter a false address in order to bypass the registration process.

As Intrado has previously detailed, there are a number of obstacles to achieving ubiquitous and accurate automatic location for 911 calls. Of particular note is the role played by the broadband access provider in the determination of the end users location. There has been a proliferation of what has become to be known as “Bring Your Own Broadband” VoIP providers. In this scenario, the VoIP Service Provider merely provides dial tone to their subscriber over a broadband connection. It is incumbent on the end user to provide his or her own broadband connection over which the VoIP service is provided. This dichotomy between data connection and data service exasperates the problem of automatically locating the end user accurately and instead relies on geo-positioning and the translation of that geo-coordinate to an address.

Intrado believes that if these separate entities can work in unison, the ability to automatically locate an end user and provide public safety with a dispatchable address is greatly increased. Therefore, Intrado encourages the Commission to provide a thoughtful and measured approach whereby all service providers can prepare for the advances in technology occurring in today’s environment and support the requirements necessary for autonomous registration.

## **CONCLUSION**

Intrado requests that the Commission take into consideration the technical, environmental and operational challenges associated with achieving ubiquitous location accuracy nationwide. Intrado also respectfully suggests that the Commission not penalize those companies that are working in good faith with Public Safety and are making best efforts to achieve the location accuracy requirements that meet the needs of emergency service responders.

In addition, Intrado seeks the Commission’s vision and leadership to set in place new 911 strategic initiatives that enable continued improvements, along with planning and deployment of enhanced location technologies that support public expectations and meet the needs of public safety responders for accurate, timely and efficient emergency response. It is Intrado’s belief that the location accuracy and acceptable address guidelines as defined above will only be achieved as technology evolves and market dependencies are addressed in a unified and coordinated effort. Intrado believes it is realistic to address short term solutions while encouraging stakeholders to move rapidly towards the desired end goal of a technology agnostic standard for location accuracy.

Therefore, Intrado requests:

That the Commission expressly state as its policy: All communications or other providers that enable user connectivity with the public switched telephone network (PSTN), coupled with a caller’s reasonable expectation that a 911 call

will connect with a public safety official, should, relative to the particular provider's role in a 911 call and within the limits of what is technically feasible, ensure that the kind of meaningful location information described above is delivered to the proper responding agency;

That, in furtherance of this ultimate goal, that the Commission set out clear and reasonable milestones as suggested herein in an effort to make steady, measured, realistic progress toward that ultimate goal;

That a technology-agnostic, single accuracy standard be established with appropriate testing and reporting metrics as described herein and that the Commission's rules require adherence to pertinent industry standards;

That the Commission convene industry stakeholders to support the Commission's inquiry, findings and conclusions;

That caller location issues associated with dialing 911 from a MLTS/PBX be fully considered and integrated into this NPRM;

That the Commission ultimately require "autonomous registration" whereby the onus is not on a VoIP caller to register the service address; all the while acknowledging that the end user or VoIP caller may need to participate in location registration through interim stages; and

That, before promulgating its final rules in this critical public safety docket, the Commission consider a full record and all comments.

Intrado would like to commend the Commission for its continuing commitment to protect the lives and property of our nation's citizens. Intrado is prepared, and looks forward to working with the Commission and others to ensure that federal policy relative to E911 call routing and caller location information meets the needs of the public safety community and its mission to quickly and, with a meaningful location, effectively respond to emergency calls for assistance.

Respectfully Submitted,

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