

**Before The
Federal Communications Commission
Washington, DC 20554**

In the Matter of

**911 Call Forwarding Requirement for
Non-Service-Initialized Phones**

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PS Docket No. 08-51

**INITIAL COMMENTS OF
TELECOMMUNICATION SYSTEMS, INC.
CONCERNING FCC CONSIDERATION
OF 911 FOR NON-SERVICE-INITIALIZED PHONES**

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Initial Comments Of TeleCommunication Systems, Inc.

TeleCommunication Systems, Inc. (“TCS”) hereby submits its initial comments in response to the Notice of Proposed Rule Making (“Notice”) released by the Federal Communications Commission (“Commission” or “FCC”) dated April 1, 2015¹. The Notice seeks comment on whether the FCC should sunset or modify its rulemaking associated with Non-Service-Initialized (NSI) wireless phones.

In 1997, TCS pioneered the approach being used today to manage call routing and location delivery of wireless 911 calls. TCS now delivers location information for almost half of all wireless 911 calls in the United States and provides location-based call routing for the vast majority of these calls. This effort ensures that the wireless 911 call is delivered to the appropriate Public Safety Answering Point (PSAP) that has been identified by local public safety jurisdictions, based upon the location of the 911 infrastructure that supports the origination of the wireless 911 call. As a result of this responsibility, TCS handles the call routing and location delivery of a large number of NSI wireless 911 calls. TCS provides comments to this notice based upon the experience of handling many millions of NSI wireless 911 calls over the past decade.

Tens of millions of all wireless 911 calls delivered to PSAPs come from NSI wireless phones and many millions of these NSI wireless 911 calls are believed to be true emergency calls. However, it appears that millions of NSI wireless 911 calls, based upon the repetitive nature of calls from the same number, are likely to be “unwanted” and

¹ Notice of Proposed Rulemaking, *In the Matter 911 Call-Forwarding Requirements for Non-Service-Initialized Phones*, PS Docket No. 08-51, FCC 15-43 (released April 1, 2015).

result in higher costs and inefficient use of emergency response resources. Therefore, looking for a solution to these inefficiencies has merit.

Technical solutions exist that would allow for the efficient nationwide discontinuation of all NSI wireless 911 calls. Implementation of these solutions would require consumer education and the replacement of existing NSI wireless phones to handle the many millions of “legitimate” calls for emergency response that come from NSI wireless phones today. Should the FCC decide that NSI wireless 911 calls should continue because of their legitimate use, technical solutions also exist that would allow PSAPs to request the blocking of individual NSI wireless phones. This approach would result in cost savings to the PSAPs and require no changes to the current carrier NSI infrastructure.

FCC Seeks Information of Existence and Extent of the NSI Problem

In 2008, the FCC received petitions from nine public safety entities and one software development firm² suggesting that a large number of “fraudulent” 911 calls were being placed by NSI wireless phones. These petitioners posed the question whether the problems created and costs associated with these fraudulent 911 calls exceed the benefits provided by NSI wireless phones.

² Tennessee Emergency Communications Board, the National Association of State 9-1-1 Administrators (NASNA), the Michigan State 9-1-1 Office, the New Jersey State 9-1-1 Commission, the Snohomish County Enhanced 9-1-1 Office, NENA, APCO, the State of Montana 911 Program, the Washington State E911 Program, and Openwave Systems, Inc. *Ibid.*, footnote 26.

Of the many tens of millions of 911 calls placed annually, TCS estimates that more than 27 million, representing almost 20 percent³ of all wireless 911 calls, come from NSI wireless phones. We apply to this data a definition that more than 10 calls from the same NSI wireless phone constitutes “unwanted” calls. By “unwanted”, we mean that the NSI wireless 911 calls were not requesting emergency assistance; and thus “unwanted” would cover both intentional and unintentional (abuse and misuse) of an NSI wireless phone. Because the average consumer calls 911 once every 18 to 24 months, it seems reasonable to assume that 10 calls within a twelve month period from the same phone describes a user placing unwanted calls. Using this definition, TCS estimates that approximately 35 percent⁴ of all NSI wireless 911 calls would be considered unwanted. Perhaps more disturbing, using this same criteria, TCS estimates that a very small number⁵ of NSI wireless phones generated these unwanted calls.

Abuse versus simple misuse (e.g., a child playing with an old phone and dialing 911 accidentally) cannot be determined from this type of analysis. However, it is reasonable to assume that these calls were not requests for emergency assistance and thus served to distract emergency response and resulted in unnecessary increases in cost to the PSAPs so affected.

It is important to note that there is useful location information that comes from NSI wireless 911 calls. Most carriers can and do generate a Phase II location fix for NSI wireless 911 calls. However, because the phone has not been initialized, it is not possible

³ Based upon the data capture of all 911 calls routed by TCS from May 2014 to May 2015, TCS identified 19.3% of all wireless 911 calls had Automatic Number Identifiers (ANIs) in which “911” was the identified area code, indicating that an NSI wireless call routing scenario had been used.

⁴ Based upon capture of all 911 calls routed by TCS from May 1, 2015, to May 27, 2015, in which 319,518, or 35.4%, of 901,885 NSI calls were placed from the same number more than 10 times.

⁵ Based upon capture of all 911 calls routed by TCS from May 1, 2015, to May 27, 2015, in which 323,057 distinct NSI phone numbers were identified, with 14,447 of them, or 4.5%, having placed 10 or more calls.

for the PSAP to place a callback to an NSI wireless phone suspected of unwanted use. This limitation greatly curtails the ability of PSAPs to discourage unwanted 911 call use because they are generally unable to communicate with a caller as effectively as in situations where both an enhanced 911 location and callback number are provided.

Because PSAPs typically have trunk and line limits associated with their call-processing facility, these limitations can be exploited by Telephony Denial of Service (TDOS) attacks. NSI wireless phones could be used in a coordinated effort to shut down 911 service in any particular locale. However, this is also true for wireline, service-initialized wireless, and VoIP phones, which could be used to place calls that exceed the number of call takers available. TDOS attacks make it difficult for a PSAP to continue normal operations. Because it is more difficult to curb abuse with regard to the use of NSI wireless phones, it will be more difficult to discourage TDOS attacks that use NSI wireless phones.

Applicability of Sunsetting FCC NSI Rules

Based upon calculations that more than 27 million wireless 911 calls come from NSI wireless phones and about 35 percent of these are considered unwanted, there are well over 18 million “legitimate” 911 calls placed each year from NSI wireless phones. It can be argued that this statistic indicates that NSI wireless phones have provided a useful benefit to society at large. However, the relatively large percentage of unwanted 911 calls from NSI wireless phones does suggest that some change in NSI wireless 911 call use is warranted.

If, to address this problem, the FCC decides to sunset the NSI rules and further requires the wireless carriers to cease the routing of NSI wireless 911 calls to PSAPs, TCS recommends the implementation of a nationwide approach. Providing a clear and targeted “will not work” date to the public allows for a better public outreach campaign so that NSI wireless phones can be replaced with service-initialized phones in that timeframe. Six months is an aggressive timeline for a nationwide implementation, and a longer timeline might be beneficial to this consumer education and outreach as well. A 12-month timeline would allow proper coordination of system upgrades and public outreach. However, the technical effort needed to upgrade systems in the manner suggested could be implemented in the six-month time frame that the FCC suggests if the harm caused by NSI wireless phones is indeed grave.

TCS implements and provides Code Division Multiple Access (CDMA) Mobile Positioning Centers (MPCs) and Global Standard for Mobile Communication (GSM) and Long Term Evolution (LTE) Gateway Mobile Location Centers (GMLCs) to many Commercial Mobile Radio Service (CMRS) providers. These routing and location platforms currently handle the routing of wireless 911 calls. From the MPC and GMLC perspective, these systems are capable of recognizing NSI wireless 911 calls and can be used to provide specialized routing of these calls. Though the 911 system relies on hundreds of switches to initiate wireless 911 calls, these calls rely on relatively few of these routing and location platforms. TCS anticipates that the quickest and most cost-effective mechanism to disable NSI wireless 911 calls is to have MPCs and GMLCs disable the routing of these calls to PSAPs. The FCC could provide recommendations or the CMRS providers could themselves determine how they would like the MPCs and

GMLCs to do this, such as redirecting NSI wireless 911 calls to voice announcements or providing special ring tones. These approaches can also educate consumers to try alternate methods to reach emergency responders.

As documented in the Notice, in 2002 the Commission required NSI wireless handsets donated through carrier-sponsored programs, as well as newly manufactured “911-only” devices, to be programmed with the number 123-456-7890 as the “telephone number” in order to alert PSAPs that callback features were unavailable. Such numbering would allow any NSI wireless 911 call to be identified. However, for NSI wireless 911 calls, carriers now send the PSAP an Automatic Number Identification (ANI) that uses “911” as an area code and the last seven digits of an equipment serial number to complete the number. Because NSI wireless 911 calls still use distinctive ANI numbering techniques, the location platforms that aid with wireless 911 call routing can identify NSI wireless 911 calls and provide special call-handling/call-routing instructions that would redirect these calls away from PSAPs. Such capabilities would distinguish NSI wireless 911 calls from wireless 911 calls placed on service-initialized phones.

There are various call scenarios in which a “service-capable” phone could generate a wireless 911 call that looks like it is originating from an NSI wireless phone (see the next section). We define a “service-capable” phone as one which, under non-911 call scenarios, can be service-initialized. Disabling all NSI wireless 911 calls would essentially block such calls as well and is why a reasonable period of time must be provided to allow the replacement of NSI wireless phones with appropriate alternatives.

The recommended nationwide approach would allow wireless carriers to provide new phones that no longer have the ability to place an NSI wireless 911 call so that, over

time, all NSI wireless 911 phone calls would disappear. Wireless carriers could also decommission their NSI-specific switching functions and authentication systems over time as they are replaced by 4G/5G systems and technologies. Thus, though the redirection and disabling of NSI wireless 911 calls would be at a national level, the dismantling of the NSI systems could occur at a slower pace with much smaller carrier impact.

TCS believes that leaving each carrier to its independent discretion as to when and how it would disable NSI functionality would have a greater potential for consumer confusion. However, TCS would work with wireless carriers and the standards industry to adopt such an approach if the FCC deemed such an approach to be better than the nationwide disabling of all NSI wireless phones from all carriers.

Handling Call Scenarios That Appear to Be from NSI Phones

As documented in Telecommunications Industry Association (TIA) JSTD-036-C, Annex C: “There are several situations in which a mobile station does not have a valid callback number. Examples of these situations include but are not limited to: NSI mobiles, a mobile phone whose subscription has expired, mobile phones that fail authentication, mobile phones without a subscriber identity module inserted, mobile phones from certain other countries, mobile phones from a wireless carrier that does not have a roaming agreement with the current serving wireless carrier, mobile phones donated to charitable organizations with the sole purpose of 9-1-1 access, and other mobile stations referred to as ‘9-1-1 only’ devices.”

From a routing and location platform perspective, NSI wireless 911 calls cannot be distinguished from wireless calls that come from service-capable phones operating in these unusual scenarios unless additional information is presented. Should the FCC decide to implement a nationwide disabling of 911 calls for NSI phones, TCS would with wireless carriers and standards bodies to explore these scenarios and identify implementation mechanisms. But efforts to address these specific scenarios will be more costly and less efficient than adopting a nationwide NSI wireless 911 call handling approach or a NSI wireless 911 call blocking approach described in the next section.

Alternate Approaches to Handling NSI 911 Calls

TCS estimates that a significant number, well over 18 million annually, of NSI wireless 911 calls are legitimate (using the definition above). TCS has evaluated the potential to use call blocking as an alternative to disabling NSI nationwide. It would be possible to implement such a procedure, allowing individual treatment of specific NSI wireless phones. Because each phone can be uniquely identified, it would be possible for a standardized industry solution to be developed that would block NSI wireless phones with specific ESNs.

Mechanisms for identifying such ESNs and notifying all call-routing providers would be needed. Typically, call-routing functions for PSAPs are handled by each wireless carrier, and the idea of blocking an NSI wireless phone from within a specific carrier seems straightforward. But because NSI scenarios include situations where the NSI wireless phones might be attempting a 911 call while roaming outside of the home

network provider, the various call-routing entities would have to create a way to intercommunicate the 911-call-blocked status of the phone.

As an alternative, every wireless carrier that can deliver a wireless 911 call to a PSAP could be simultaneously notified of any 911 blocking placed upon the specific NSI wireless phone. Note that this blocking technique could potentially be used for service-initialized wireless phones that are creating a nuisance as well.

It should be noted that this NSI wireless 911 call blocking approach creates certain liabilities that must be addressed. As an example, if a NSI wireless phone is blocked because of unwanted calls but then a consumer attempts to use the NSI wireless phone to make a legitimate 911 call, the legitimate wireless 911 call would be blocked. The legal liabilities that this scenario creates should be considered. Liability protection for such scenarios might best be provided by the local jurisdiction that would allow PSAPs to request NSI wireless 911 call blocking. Such an approach would also allow individual PSAPs to develop their own determination methods – a cost/benefit analysis, for example – of when to block an NSI wireless 911 call. The unwanted NSI wireless 911 call requires emergency response resources to reply to the 911 call. Thus, placing the decision of blocking/not-blocking future 911 calls from any specific NSI wireless phone might best be left to the local jurisdictions feeling the resource impact of these unwanted wireless 911 calls and could be funded by such local jurisdictions in such a way that their overall costs would still be reduced. There could, for example, be established a mechanism that would allow PSAPs to request the placement or removal of blocking of an NSI wireless 911 call from a specified phone.

This approach has greater overall cost but allows the industry to continue to benefit from the legitimate use of NSI wireless phones. And if we accept the premise that a small number of NSI wireless phones is responsible for the majority of the unwanted NSI wireless 911 calls, then implementing a call blocking procedure, managed by the PSAPs, would provide a viable solution.

Conclusion

TCS has analyzed a large number of NSI wireless 911 calls routed to PSAPs and has concluded that there are a large number of NSI wireless 911 calls placed annually (as high as 20%), that a large portion can be defined as “unwanted” (as high as 35% of the NSI wireless 911 calls) and that these “unwanted” calls come from a very small number of NSI wireless phones.

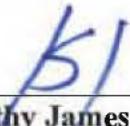
Based upon this statistical analysis, TCS concludes that there is a cost and resource impact on public safety emergency response associated with these millions of unwanted NSI wireless 911 calls. Thus, it is appropriate that the FCC examine the problem and recommend a solution.

Should the FCC wish to address this cost and resource impact at a national level by sunseting current rules and requiring all future NSI wireless 911 calls to be discontinued, solutions can be implemented to ensure that no NSI wireless 911 calls route to PSAPs. Such a program should be given at least a year to implement, primarily due to required consumer education and the need to handle the very large number of “legitimate” NSI wireless 911 calls via other methods.

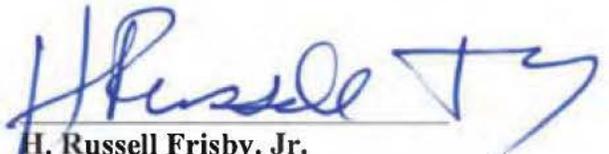
Should the FCC see the value of continuing the NSI rules, it would be possible to establish a nationwide NSI wireless 911 call blocking mechanism that each PSAP could request based upon local need and resource savings. Such a mechanism would best be funded by the local public safety jurisdictions, addressing the liability protections that might be required should NSI wireless 911 call blocking result in the blocking of a legitimate wireless 911 call. Using this approach, the deleterious effects of NSI wireless

911 calls could be mitigated while keeping the intended value of the NSI wireless program.

Respectfully submitted,



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