

Greg Rogers
Deputy General Counsel
Cary, NC 27513
(919) 439-5399
grogers@bandwidth.com

August 30, 2012

Filed Via ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, PS Docket No. 11-153; E911 Requirements for IP-Enabled Service Providers, WC Docket No. 05-196; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102; Framework for Next Generation 911 Deployment, PS Docket No. 10-255

Dear Ms. Dortch:

In support of the efforts of the Federal Communications Commission (“Commission”) to advance emergency calling solutions and support for an ever-changing communications marketplace, please find attached a paper from Mr. Ray Paddock on behalf of inetwork, a division of Bandwidth.com, Inc. (“Bandwidth”), that attempts to clarify Bandwidth’s proposal for the adoption of a clearinghouse service that will more readily enable the successful implementation of the delivery of emergency text messages to emergency call centers throughout the country.

This ex parte notification is being filed electronically with your office pursuant to Section 1.1206 of the Commission’s Rules, 47 C.F.R. § 1.1206. Should there be any questions or concerns regarding this submission, please do not hesitate to contact the undersigned directly.

Sincerely,

_____/s/_____
Greg Rogers

cc: David Furth
Henning Schulzrinne
Patrick Donovan
Dave Siehl
Richard Hovey
Aaron Garza
Jerry Stanshine
Cheryl King

Attachment

Bandwidth's Text to 9-1-1 Clearinghouse Solution Concept

August 30, 2012

Ray Paddock, Vice President, inetwork a Division of Bandwidth.com, Inc.

In response to discussions with Federal Communications Commission ("Commission") staff most recently on August 9, 2012, Bandwidth.com, Inc. ("Bandwidth") provides the following additional detail concerning its proposed solutions for supporting Text-to-911 routing as part of the Commission's on-going efforts to expand effective emergency service capabilities for communications end-users. There are two fundamental components to Bandwidth's proposal: 1) the text to 9-1-1 clearinghouse which accepts, processes, and determines routing to the appropriate PSAP; and 2) text delivery mechanisms that transport and deliver the text message to a point specified by the PSAP. In previous filings, Bandwidth.com has acknowledged the need for both components; however, Bandwidth.com has advocated the FCC contract for the clearinghouse and place the selection of delivery mechanism and provision of such with the States. Cost estimates and other aspects of Bandwidth's filings have aligned with this division of responsibility

Solution Component 1: Text to 9-1-1 Clearinghouse

In prior filings in the Commission's Text-to-911 proceeding, Bandwidth has attempted to describe how a national clearinghouse provider such as Bandwidth could support Text-to-911 in a variety of different ways according to the needs of carriers and PSAPs alike. Bandwidth's clearinghouse is a critical component to an overall solution and it includes a number of distinct services, which are described herein.

Bandwidth's clearinghouse would provide a single interface for the wireless carrier to deliver text messages destined for any PSAP in the country. Additionally, it would be capable of providing a single interface to individual wireless carriers to enter initial and updated subscriber location information. End-user location information would then be utilized within Bandwidth's clearinghouse to determine the routing of text messages. Further, the location information would be used to determine the preferred delivery method to use among several text delivery options broadly available to PSAPs and the industry.

The Bandwidth clearinghouse would determine and then route messages to the appropriate PSAP. Routing to the appropriate PSAP would be accomplished by using the subscriber's location and applying it to the approved PSAP jurisdictional polygons. Once the destination PSAP is determined, Bandwidth's clearinghouse would determine which of the text delivery mechanisms the target PSAP has chosen. With this information, the clearinghouse hands messages to the appropriate text delivery mechanism. If the message cannot be delivered to the target PSAP, Bandwidth would expect the delivery mechanism to signal Bandwidth's clearinghouse to apply alternate routing rules to divert the call to next best available PSAP. If for any reason the initial routing decision cannot be made, Bandwidth's clearinghouse could divert the message to a default option specified by the wireless carrier. To provide the functionality



outlined, Bandwidth would need to gather and process a significant amount of data that must be continually updated. For example, requisite data would include the jurisdictional polygons for all 6500 PSAPs, text diversion rules for each of the PSAPs, and the text delivery mechanism and related information.

It should also be noted that Bandwidth's clearinghouse component would adhere to the NENA NG9-1-1 standard to deliver the clearinghouse functionality. Specifically, Bandwidth would use an Emergency Services Routing Proxy for processing the text message, an Emergency Call Routing Function to determine approved routing and delivery mechanism for the text message, and a Location Information Server to host current subscriber location information. Because interfaces defined in NENA standard 08-003 will be used, interoperability with state NG9-1-1 systems, other vendor implementations that have implemented the standards, and other approved standards-based systems will be ensured.

When NG9-1-1 is deployed throughout the country, all NG9-1-1 PSAPs will have the ability to accept text messages directly from carriers. Until that day however, we have to recognize that PSAPs have unique capabilities and limitations that make the selection of a single text delivery technology impossible. To address this reality Bandwidth's working assumption is that there will ultimately be three distinct approved text delivery technologies/mechanisms. Operating expectations are that the wireless carriers will have to provide all three of the approved mechanisms and that PSAPs will "opt in" to one of the three. In previous filings, Bandwidth.com advocated for placing the selection and deployment of one of the mechanisms in the hands of the states.

1. *Text Delivery Mechanism 1: Text to TTY*

The Americans with Disabilities Act requires all PSAPs to support Text to TTY communications for the deaf and hard of hearing community. The Text to TTY methodology converts a text message to analog tones using Baudot encoding which emulates a TTY/TDD device. The Baudot analog tones can be delivered over the existing 9-1-1 network and can be received and used by existing PSAP call handling systems. The Americans with Disabilities Act also requires PSAPS to conduct periodic texting to ensuring dispatchers are trained to identify a "silent call" and respond accordingly.

To implement this mechanism/methodology, the text message is delivered to a gateway that converts the text to Baudot tones. After conversion, the "call" is then routed to the appropriate PSAP over the existing 9-1-1 network facilities. Text messages delivered as TTY from all carriers will look identical to the PSAP irrespective of which carrier's end-user initiated the message.

Within this structure, Bandwidth assumes that the wireless carrier's responsibilities include the delivery of the call to the appropriate selective router. The wireless carrier's responsibility also includes making initial and updated subscriber location information available for the entire "call" duration.

2. *Text Delivery Mechanism 2: Text to Internet Server*

The Text to Internet Server mechanism is more nascent than Text to TTY but it has been demonstrated in a number of field trials. If the destination PSAP has opted in to this text delivery mechanism, Bandwidth's clearinghouse delivers the text to a server which supports this delivery method for that PSAP. The server would then notify the PSAP that a text message has arrived. The dispatcher



can then initiate a session with the server to exchange text messages with the subscriber. The server maintains a linkage between the subscriber and the dispatcher. In addition the server provides the initial subscriber location information and obtains updated location information from the clearinghouse upon request.

Several field trials have demonstrated the effectiveness of a simple web browser to retrieve text messages from the server. Other trials have demonstrated a more sophisticated, integrated linkage between the server and the call handling equipment. At present, no single Pre-NG9-1-1 standard exists for either the browser access or integration with call handling systems. Text messages from each wireless carrier delivered through an Internet server could look different to the PSAP. While Bandwidth is not aware of work being done to address this issue, with cooperation among the vendors, a common interface for the delivery of text messages to a single server selected by the PSAP could be established as a way of delivering text messages from all carriers.

In the Text to Internet Service scenario, Bandwidth assumes that the wireless carrier's responsibility ends with delivery of the text to the server and notification to the PSAP. From that point, the PSAP would determine how to manage the text message. The wireless carrier's responsibility also includes making initial and updated subscriber location information available for the entire duration of the session.

3. *Delivery Mechanism 3: Text to NG9-1-1*

Bandwidth believes that Text to NG9-1-1 is the most desirable long-term option for all stakeholders. Text to NG9-1-1 creates a unified interface to both the carriers and the PSAPs, is extremely cost effective, treats text natively rather than in a foreign format, and fully integrates subscriber location into the session flow. While some states and counties have begun the migration to NG9-1-1, unfortunately, at the current pace of deployment, it will be a long time before NG9-1-1 is widely deployed.

Jurisdictions that do embrace Next Gen should not have to wait to get text messages bound for their PSAPs delivered via NG9-1-1. To this end, Bandwidth's clearinghouse can determine the NG9-1-1 selection made by these states or PSAPs and deliver the message directly to the NG9-1-1 system.

In the Text to NG9-1-1 scenario, Bandwidth assumes that the wireless carrier's responsibility ends with delivery of the text to the appropriate NG9-1-1 Emergency Services Routing Proxy (ESRP). The PSAP will determine how it wishes to manage the text message. The wireless carrier's responsibility also includes making initial and updated subscriber location information available for the entire duration of the session via a Location Information Server (LIS).

Common capabilities of all text delivery mechanisms: Each text delivery mechanism will have several common characteristics:

1. Each text delivery mechanism will interact with Bandwidth's clearinghouse using a reliable protocol that includes delivery confirmation. This communication will allow the clearinghouse to determine if and when the text message was delivered. If the text message is undeliverable, Bandwidth will attempt to divert the text message using predetermine routing rules. If routing rules are not available or are exhausted, the clearinghouse will send a reply text message to the



subscriber informing them that their text message was not delivered. If the target PSAP has not yet opted in to accept text messages, the subscriber will get an immediate text reply indicating this.

2. A PSAP will have the ability to change the text delivery mechanism selected at any time. Information pertaining to the interface point must be supplied when a change in delivery mechanism is made.

Special situation # 1: It is expected that the wireless carriers will be required to deliver text messages in accordance with the PSAP requested delivery option as outlined above. However, some states, counties, or regions may select, or have already selected, delivery options based on their unique circumstances. If a 9-1-1 jurisdiction has already established a mechanism for the delivery of text messages to 9-1-1 and implemented the necessary technology, the commission could relax the obligation and allow the carriers to deliver the text message to a designated interface point. Bandwidth's clearinghouse can adapt to this special situation.

Special situation # 2: Many texting applications are available from "Over The Top" (OTT) providers. Some of these are offered free of charge to end-users which can drive adoption rates higher. Some service offerings may be hosted on mobile devices with only Wi-Fi network capabilities. The rationale supporting the implementation of an obligation on the wireless carriers to support Text-to-911 delivery could potentially apply to these OTT applications as well. While acknowledging some unique challenges exist, Bandwidth believes the commission should also promote the adoption of text to 9-1-1 for OTT applications if it moves ahead with regulatory mandates for wireless carriers.

Pricing Estimates: Bandwidth is prepared to provide the clearinghouse and all three delivery mechanisms described above to facilitate the successful implementation of text-to-911 mandates. However, Bandwidth's recommendation that the Commission arranges for the establishment of a single clearinghouse and allow the states to choose the text delivery mechanism remains the same as in previous filings. Assuming that the Commission contracted for the clearinghouse service described above, the recurring cost would be roughly \$1.3 million per year pursuant to a 3-year term contract. Should the Commission implement text-to-911 mandates that does not contemplate the Commission as the single source consumer of a proposed clearinghouse, the commercial terms for the functionality described herein could be substantially altered under a different model.