

911 texting moves to real world
By William Jackson GCN
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The move to bring text messaging into the nation's 911 emergency call systems has speeded up in the last year, with several statewide text-to-911 pilot programs, agreements by major carriers to make 911 texting a reality nationwide by 2014 and proposed rules from the Federal Communications Commission that would require all carriers and service providers to enable text services.

In many of the nation's public service answering points (PSAPs) the majority of 911 calls already are being made from mobile phones, requiring updates in an emergency call scheme that was designed for tethered telephones in the legacy wire line system. For many cellular users, texting has become as common as voice calling, if not more so, putting pressure on 911 systems to further adapt to this new reality.

Moving text onto 911 systems also would provide benefits for the 40 million speech and hearing impaired, who now must use special equipment to communicate with 911 answering points via non-voice messages.

"We propose to require all wireless carriers and providers of 'interconnected' text messaging applications to support the ability of consumers to send text messages to 911 in all areas throughout the nation where 911 Public Safety Answering Points are also prepared to receive the texts," the FCC wrote in a notice of proposed rulemaking released in December 2012.

The proposed FCC rules are based on an agreement reached in December between major wireless carriers and public safety organizations to begin providing text-to-911 service nationwide. The most commonly used protocol for texting today is Short Message Service (SMS), and the carriers will use SMS-based text in their initial deployments.

As the FCC proposal notes, enabling text-to-911 is a two-sided effort. Local PSAPs, which are run by state and local governments, must have the ability to receive text messages delivered by carriers.

A number of states have begun putting programs and infrastructure in place to enable this service for local jurisdictions.

In December, Vermont launched its second statewide text-to-911 pilot, which will let Sprint Wireless customers text emergency messages. The Sprint pilot follows a similar one with Verizon that began in April and has since become a permanent service, said David Tucker, executive director of the state's Enhanced 911 Board.

Although the number of emergency texts in the first pilot was very small, "we had a couple of successful interventions from people texting us," Tucker said. "It was on the strength of this that we decided to keep the system in place," and follow it with a second pilot with another carrier.

In Tennessee, an Emergency Service Intranet is being built on a statewide fiber optic Multiprotocol Label Switching IP network, which will provide Next Generation 911 as a state-run service to local PSAPs.

“It is a major leap in a different direction,” said Thomas Ginter, vice president of product management at TeleCommunications Systems (TCS), which will manage Tennessee’s 911 network. “The state builds it and the state operates it.”

The statewide system became necessary not only to accommodate new technologies, but also because the old system of multiple local exchange carriers and county jurisdictions was becoming unwieldy.

“The old infrastructure had a lot of moving parts and a lot of parties involved,” said Lynn Questell, executive director of the Tennessee Emergency Communications Board. “It has become more difficult when there is an outage to find out what the problem is.” The new system will be monitored and managed 24 hours a day, 365 days a year.

The infrastructure is being put in place now and an initial text-to-911 pilot with AT&T and selected PSAPs is expected to begin in 2013, Questell said.

Texting is only one element of the FCC’s Next Generation 911 system that eventually would also accommodate images, video and other types of data. But it is the most urgent element because many customers already assume that 911 texting is available and it is heavily relied upon by those with hearing or speech disabilities.

In December, the nation’s four largest wireless carriers, AT&T, Verizon, Sprint and T-Mobile, signed an agreement with the Association of Public-Safety Communications Officials and the National Emergency Number Association, to accelerate deployment of text-to-911 capabilities. The carriers, who account for about 90 percent of the nation’s wireless consumers, are to have the capability available nationwide by May 15, 2014.

Because the ability for PSAPs to receive such messages will not be universal, the carriers also will provide automatic bounce-back error messages for 911 texts that do not go through, advising the sender to make a voice call to 911 instead. This will be enabled nationwide by June 30, 2013.

FCC Chairman Julius Genachowski praised the agreement, and less than a week later the commission released its notice of proposed rulemaking that would expand the requirements to all carriers and text service providers. The notice seeks feedback on the feasibility of carriers meeting the deadlines.

Carriers will be building on the experience in delivering text-to-911 gained from programs such as those in Tennessee and Vermont.

“We wanted to get some real-world experience with SMS-text-to-911,” said Vermont’s Enhanced 911 Board director Tucker.

The programs benefited from the state’s relatively small size and population.

“The 911 system in Vermont is statewide,” Tucker said. “We take 911 voice calls in eight different locations around the state.” Unlike most other states, where each call is routed to the appropriate jurisdiction, emergency calls in Vermont are not location-dependent. “Every call could be answered anywhere in the state.”

Text messages from anywhere in the state are routed to the answering point in Williston, a town outside of Burlington in the western part of the state. The actual routing is done through the emergency communications company Intrado, based in Colorado, which operates the 911 infrastructure for the program. The participating carriers deliver the 911 text to Intrado, along with location information. In most states, any call or text would be routed to the PSAP based on the location of its origin, but any 911 text originating inside Vermont will be routed to the Williston PSAP. The operator taking the message can then relay needed information to local dispatchers.

“It had a very limited impact on the PSAP,” said Tucker. Some additional software was required at the answering site to bring the SMS text onto the same monitors that are used for TDD (Telecommunications Device for the Deaf) messages, also known as TTY (teletypewriter).

The situation in Tennessee is a little different, with about 140 answering points that will have to upgrade to accept text messages. But the move to NG911 has been in the works for several years, and the state has been putting aside money since 2005 for the upgrades and now has about \$25 million available for the purchase of PSAP controllers compatible with the NENA i3 specifications for NG911 communications.

The state’s Emergency Communications Board began planning for NG911 in 2004 and did a feasibility study in 2005, “looking at all of the options,” Questell said. The best option turned out to be the fiber IP infrastructure being built by the state to link libraries, health providers and police departments using the federal National Crime Information Center network. The emergency communications board drew up a set of requirements for reliability and security needed to support a 911 system and the network contract was modified to incorporate these requirements.

AT&T built out the network, and TCS is providing the 911 components. TCS also will manage the new 911 system under a separate contract.

The principal 911 components consist of:

- A Legacy Network Gateway (LNG) through which telecom carriers will connect with the state IP network.
- An Emergency Services Routing Proxy (ESRP) that will use location information from incoming 911 calls to determine routing to the appropriate PSAP.
- An Emergency Communications Routing Function (ECRF) that will use caller location to determine the appropriate PSAP.

In the legacy 911 system, location information is primarily static address data stored in an Automatic Location Information (ALI) database. The ECRF will incorporate all types of geographic location data, including GPS and triangulation data generated by the carriers for mobile devices, which will be used to determine the proper answering point for the call, and which will be forwarded with calls and text messages.

Redundant gateways are located in control centers in Knoxville and Nashville. Carriers are being brought onto the system in phases, focusing on new technology first and leaving the legacies for last, said Questell.

“We’re doing the wireless and VOIP first, and leaving the wireline infrastructure in place, so we can revert to it in case of emergency,” she said. In 2014 the wireline services will be moved to the new infrastructure, along with the ALI database, which will be integrated into a single intelligent geolocation system.

AT&T and TCS are building network links to PSAPs as they are ready. The first answering centers to move onto the system are volunteers; others will come online as they are able to upgrade to i3 capable equipment needed to bring in the IP NG911 services.

The first generation of NG911 services, which will be SMS text messages, can be displayed on current TDD equipment in PSAPs. But upgrading the terminals will allow more flexibility, displaying the texts in their native format rather than the caps-only display used for TDD.

Because of aggressive outreach by the Emergency Communications Board, acceptance of the new state service model for 911 has been good, Questell said.

“Any uncertainty in a PSAP is a bad thing,” she said. But the message has been going out for years now and the advantages of the new technology are evident enough that “we’ve had a great deal of enthusiasm.”

Still, “we are going to move cautiously,” bringing the new services onboard, she said. One thing that is likely to smooth the adoption of text-to-911 and other next generation services is the presence of a state board overseeing the project and the creation of a statewide service rather than islands of technology in separate jurisdictions.

“We think in the long run this uniform 911 will provide more benefits,” Questell said.

NEXT: Text-to-911 is a worthwhile capability, but it can’t replace phone calls.

About the Author

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