

Connections

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Transitioning to Next Generation 9-1-1

Next Generation 9-1-1 (NG9-1-1) will bring changes to how 9-1-1 operates by upgrading current emergency services technology.

It will also assist in the way the Commission on State Emergency Communications (CSEC) works with and interacts with the Regional Planning Centers (RPCs). As of February 2019, CSEC began the transition to NG9-1-1 by procuring support services that will assist CSEC in guiding the RPCs toward upgrading their 9-1-1 infrastructure.

The transformation support services vendor will work with and assist CSEC in updating rules and Program Policy Statements as well as updating governance and framework. These changes will ultimately prepare CSEC in ensuring that RPCs are meeting standards for NG9-1-1 services.

“Transition to NG9-1-1 is about much more than a change of technology. It is very much about how we change our way of doing business together and that means developing our policy and governance frameworks to support the technological transformation,” CSEC Executive Director Kelli Merriweather explained. “Emergency services people will need to interconnect and inter-operate in the same way the networks, mapping and databases do.”

What is NG9-1-1?

9-1-1 systems were originally built using analog systems. PSAPs across Texas need to upgrade to a digital Internet-Protocol (IP) - based 9-1-1 system. With this updated technology, the call itself contains the caller’s location which allows faster routing to the appropriate PSAP and quicker emergency response to a more reliable and accurate caller location. 9-1-1’s reliability and success will increase with the transition and implementation of NG9-1-1.

What NG9-1-1 Means for Call-Takers

In the first phase of NG9-1-1, the call-taker will see very little difference because this transition equates to an infrastructure change on the supporting networks. The screens they view and utilize to do their jobs will ultimately remain the same. However, call-takers will see improvements in location accuracy. Areas prone to hurricanes such as East Texas are eager to make use of the new improvements in technology.



“I expect more efficient call-routing will occur with fewer transfers needed between PSAPs,” Deep East Texas Director of Regional 9-1-1 Network Van Bush stated. “That along with more accurate location information should make the time required on an individual call to be somewhat less than in the legacy environment.”

NG9-1-1 will also help manage call overload and enable call-takers to transfer calls, messages, and data between any PSAP that is interconnected to the ESInet. Today when a call is transferred between PSAPs, the caller’s location information does not always transfer, so when the PSAP that gets the transferred call answers it, they only hear the voice of the person calling for help. With NG9-1-1, transferred calls between jurisdictions will have the detailed location information so that calls get routed to the correct PSAPs.

“RTT is currently in its infancy, but it is an incredible tool that allows you to directly connect with the caller in real time.”

– Kevin Rohrer
CSEC



“RTT has the potential to become an even more important way to communicate as the technology changes and emerges.”

– Anita Pitt
BVCOG

What to Expect with Real Time Text on the Horizon

Regional Planning Commissions (RPCs) throughout the CSEC program are almost all text-to-911 capable. RPCs can now be better prepared for the newest upgrades to texting 9-1-1 which derive in the form of Real Time Texts (RTT).

What Can RTT Offer

What makes RTT unique from text-to-911 is that you can see the message as the person is typing it in real time. This text-based form of communication flows more like a normal conversation, because a person typing the message does not need to press “send” for the message to be seen by the Public Safety Answering Point (PSAP) they are texting.

“RTT is currently in its infancy, but it is an incredible tool that allows you to directly connect with the caller in real time,” CSEC Chief Technical Officer Kevin Rohrer.



“By being able to see the message as it is being typed, it creates no delay in the call-taker receiving the information they need to get emergency services to the caller in need.”

How it Works

RTT utilizes Internet Protocol (IP) technology to deliver texts to the PSAPs. The 9-1-1 industry is familiar with this type of technology because it is the same technology that is used with Voice Over IP (VOIP). RTT, a more reliable solution than text-to-911, was created initially to assist the deaf and hard of hearing community, but anyone can use it to contact 9-1-1 in an emergency.

“Texting is a very common way to communicate between family and friends and even business associates. That’s why it is so important for 9-1-1 to incorporate text capabilities as a way to communicate in today’s technology,” Brazos Valley Council of Governments (BVCOG) 9-1-1 Program Manager Anita Pitt said. “RTT has the potential to become an even more important way to communicate as the technology changes and emerges.”

In 2016, the Federal Communications Commission (FCC) changed its rules to allow IP-based wireless carriers and manufacturers the ability to support RTT. As a result, in December 2017, many nationwide carriers started providing RTT through applications on mobile phones or plug-ins that support RTT. Major wireless carriers such as AT&T, T-Mobile, and Verizon all support RTT.

“RTT has an inherent security on it as opposed to Short Message System (SMS) which does not,” Rohrer said. “RTT does not have to go through a message center like SMS does. SMS text messaging is a best effort technology by carriers while RTT is a direct connection to the PSAP in real time.”

PSAPs abilities to receive RTT will depend on each PSAPs technical capabilities. If PSAPs currently support IP-to-IP communications, they should easily be able to support RTT-to-RTT with 9-1-1 calls received in this format. As more PSAPs begin transitioning to Next Generation 9-1-1 (NG911), RTT will become more widely available for use. With over 48 million deaf and hard of hearing individuals located throughout the United States, it is important that PSAPs transition to NG911 so that they can support RTT. This will ensure that all people in need of emergency services, even the deaf and hard of hearing community, are able to access emergency services when they need it.

Ark-Tex COG Participates in Text-to-911 PSA Collaboration

This past January, Ark-Tex Council of Governments shared a text-to-911 public service announcement created by a group of students at Texas High School as part of a collaborative effort to help spread the word on text-to-911 services in their region.

"This video was created as part of our text-to-911 campaign we are currently running in our region," 9-1-1 Program Manager Rea Washington explained. "A group of students from Texas High School in Texarkana produced the video with the help of local first responders."



Texas High School Students at the unveiling of the text-to-911 PSA they helped create.

With the help of the Texarkana Police Department, Texas High School students were able to create a PSA on a real-life emergency that could occur. Not just any emergency, but one where calling 9-1-1 was not a possibility. The PSA showed text-to-911 options that are available and provided public education to help the community better understand emergency services. Other Regional Planning Councils (RPCs) can work with their local high schools to help create PSAs like this too! Whether it be by running a contest or working with a teacher who would like their students to work on a project and have real world experience.

"The school produced a 30 second and a one-minute video that we are running in our local movie theaters," Washington said. "The video has also been shared via social media on all our police department and sheriff office sites and we are also in the process of sharing it with all the school districts within our region as well." To view the PSA, click on this link and for more information on the project, send an email to rwashington@atcog.org.

Transitioning to NG9-1-1 cont.

"With interoperability within the ESInets, we could theoretically reroute calls to any PSAP with availability," Concho Valley Emergency Communications Director Hilda Arredondo-Garibay said.

Calls delivered to the PSAP today operate on 45-year-old infrastructure which will now be replaced with the new IP-network. This improvement will allow for the location of the calls coming through to be received with the accuracy of GIS data instead of through the old legacy system which does not provide near as much detailed information.

What it Means for Coordinators

The RPC coordinators will play a big role in transitioning the legacy E-9-1-1 to NG9-1-1. CSEC is currently working with the Department of Information Services (DIR) to provide a NextGen Service Offering (NSO) in their catalog for RPCs and any other 9-1-1 entity to utilize in their transition to NG9-1-1. Using the NSO, RPCs can contract with the chosen vendor to implement managed services of an Emergency Services IP network and NG9-1-1 core services. CSEC's goal is to take all the procurement heavy lifting off the RPCs while also making sure they meet all NENA standards for NG9-1-1 compliance.

"With interoperability within the ESInets, we could theoretically reroute calls to any PSAP with availability" – Hilda Arredondo-Garibay, CVCOG

The path to having an ESInet with Next Gen Core Services involves 4 major steps.

- 1) Getting off the selective router.
- 2) Ensuring all GIS data is in compliance with the NG9-1-1 GIS data standards for location-based routing. This includes completing the transition to the Geospatial Master Street Address Guide (GeoMSAG) from the current legacy MSAG 9-1-1.
- 3) Interconnectivity and Interoperability.
- 4) Integration with Originating Service Providers (OSPs). Implementing Location Information Service (LIS) and using Location Validation Function (LVF).

The first step, getting off the selective router, means RPCs must have all trunks disconnected from the tandem/selective router and ensure that the RPC is no longer using ALI for location services.

The next step in NG9-1-1 transitioning involves making sure all GIS data in the RPCs regions are accurate and complete. Since the GIS data that is collected by the 9-1-1 Entities will be used to route 9-1-1 calls based on the location of the 9-1-1 caller, we must ensure that the data follows the NG9-1-1 GIS Data Standard.

"The GeoMSAG will replace the current legacy tabular MSAG and it will be utilized by the OSPs for Location Validation," Data Quality Program Manager Monica Watt said. "Converting to GeoMSAG and adopting the NG9-1-1 GIS data standard will ensure the data is ready for geospatial routing of 9-1-1 calls. The RPCs have already made major improvements to their data and will continue to develop additional GIS data that is needed to prepare for NG9-1-1."

Transitioning to NG9-1-1 cont.

The GeoMSAG will be driving the routing of the 9-1-1 calls meaning when the 9-1-1 call comes through to the PSAP, it will now not only be able to find your location using X and Y coordinates, but also Z coordinates. For example, if you are on the 4th floor of a building, 9-1-1 will be able to tell where you are when you call from that floor location.

“All the hard work the RPCs have been doing to prepare their GIS data for transitioning to NG9-1-1 is paying off tremendously,” Rohrer said. “This allows for a faster and smoother transition to NG9-1-1 essentially coming down to an infrastructure change.”

During this process, RPCs will need to confirm their PSAPs can interconnect with other ESInets to transfer 9-1-1 calls between jurisdictions when needed. This does not necessarily mean that all jurisdictions have the same equipment, but it does mean that NextGen Core Services will need to be in place between the two jurisdictions so that they can communicate effectively. This ultimately provides 9-1-1 for interconnectivity and interoperability.

The final step in implementing NG9-1-1 is to have the call delivered to the NextGen core services ESInet with location embedded in the session-initiated protocol (SIP) header. This means that the originating access provider needs to embed location from a LIS/LVF and then deliver it to the serving ESInet. This will allow for the decommissioning of legacy transitional elements that utilize ALI for location. This portion of the transition will take several years to achieve.

Information security will also play a big role in transitioning to NG9-1-1. Information security entails making sure PSAP data is secure on the IP-based network. CSEC is in the process of working with DIR to find qualified information security vendors who are also familiar with NG9-1-1 framework.

“It is exciting that we - the CSEC/RPC 9-1-1 Program Partnership - have finally reached this point of actually transitioning to NG9-1-1,” Merriweather shared. “The RPCs have done such a great job in preparing for this point in time. The work has been difficult, and the journey has been long. There is more to be done, but we will finish the journey together.”

Real Time Text cont.

“9-1-1 needs to be proactive and prepare to integrate RTT capabilities as the next generation changes the way it communicates with others to include 9-1-1,” Pitt said.

Interim Solution for RTT

For those PSAPs that still rely on TTY devices and are unable to support RTT at this time, wireless carriers are required to provide a RTT component that is compatible with TTY devices. But keep in mind, this is only an interim solution until transitioning to NG911 occurs in the PSAPs. PSAPs can get ahead of the curve and start preparing for RTT by testing it before deploying it and training call-takers on the new technology.



“I suspect it will be as challenging as our current text solutions were to implement,” Panhandle Regional Planning Council (PRPC) 9-1-1 Network Director Mike Peters said. “I think any way to reach 9-1-1 is important, and I am hopeful that the hardware and software solutions are long-lasting and affordable.”

Once CSEC has program policies in place to prepare centers for RTT implementation, PSAPs would then ultimately submit a request to wireless carriers for the delivery of RTT. This would happen the same way PSAPs did when they deployed text-to-911. The carriers will have up to six months after this request to comply.

What Makes SMS and RTT Different

Currently, 76 percent of PSAPs are deployed or capable to receive text-to-911 services through SMS. PSAPs have different ways of receiving SMS messages including over TTY, through a web-based browser or interface, or through an IP-based network.

For SMS, the user types the message and then presses “send” for the text to be received by the PSAP. But as mentioned previously, with RTT, each character the user types are sent to the call-taker as it is being typed and both users can see the text simultaneously.

Another major difference is SMS only supports texting. RTT can concurrently support text and voice messages. The differences in these technologies means the PSAPs may receive RTT messages differently than they receive SMS messages. PSAPs will want to have protocols and procedures in place to know how to handle each type of text received. It is also important to note that an RTT call could appear to a legacy PSAP as a silent 9-1-1 voice call and the text portion of the call would not be seen by the call-taker. That’s why legacy PSAPs who have not transitioned to NG911 technologies yet should assume that silent 9-1-1 calls could be RTT and have TTY tones available as part of their standard operating procedures (SOP).

CSEC will be working closely with all the RPCs as our program moves forward with the implementation of RTT within the RPCs. For more information on the different options provided by the FCC regarding receiving RTT in your PSAPs, please visit the FCC website at www.fcc.gov/real-time-text.