News from the Texas Commission on
State Emergency Communications (CSEC)

Volume 2, Issue 4
November 2016

Connections

INSIDE THIS ISSUE

333 Guadalupe St.,
Suite 2-212,
Austin, Texas 78701
Telephone: 512.305.6911
Email: csecinfo@csec.texas.gov
Web: csec.texas.gov
facebook.com/TXCSEC
twitter.com/CSEC911

WE WANT TO HEAR FROM YOU

If you have story ideas for future issues of *Connections*, please send an email to:

CSECSupportTeam@mcp911.com

COGs Play Key Role in Flood Prediction

Harry Evans knew that his time with the Austin Fire Department was coming to an end. Most firefighters with the department retire after 25-30 years on the job, and Evans had spent 29 years with the department, the last six as chief of staff, during which time he oversaw day-to-day operations for the nation's 11th-largest fire department. What Evans didn't know was what he would be doing after hanging up his helmet for good.

Then the answer came down, quite literally, from the heavens.

Early in the morning on October 31, 2013, Onion Creek in Austin overflowed its banks after heavy rainfall. The hydrologic event, later dubbed the "Halloween Flood," was devastating. The creek rose 11 feet in less than 15 minutes and eventually crested at a record 41 feet. The water flow was estimated at 120,000 cubic feet per second—more than twice that of Niagara Falls. More than 1,200 homes were damaged severely, and at least five people were killed. Hundreds of those homes had water in them "within minutes," Evans said. The damage to homes, businesses and infrastructure was estimated at about $30 million.

"We didn't know that this was coming, but we soon realized that we could have known," Evans said. "The science and ability is out there—we just needed to put it together."

Serendipitously, Dr. David Maidment, a world-renowned hydrologist and professor of civil engineering at the University of Texas at Austin, had been working on the Nationwide Flood Interoperability Experiment for several years. The project is seeking to predict from coast to coast where floods will occur and their severity.

"The Onion Creek flood was the nexus that brought us together," Evans said.

As public safety liaison to the Texas Flood Response Study, Evans interacts with local first responders to identify the information they need that would improve emergency response during a flood event. He does this as well on a statewide level working

Continued on page 4

The 2013 Onion Creek flood resulted in $30 million in damage and at least five lives lost. (Austin Statesman)

A Deeper Dive into the MSI's ESInet Role

It is vital that the MSI takes a holistic view when performing its analysis, in order to avoid the "domino effect."

Last issue, *Connections* examined the differences between a systems integrator (SI) and a multi-sourcing systems integrator (MSI) as it relates to CSEC's State-Level Emergency Services Internet Protocol (IP) Network, or ESInet.

The chief difference is that while the SI focuses solely on implementation and ends its involvement when the network goes live, the MSI is focused on end-to-end service delivery, system operation, and managing all of the various components and subsystems implemented by the SI. The MSI's work is ongoing, as long as the system is operational.

In this issue, the role of the MSI is explored in greater depth, starting with the following key areas of focus:

- End-to-end performance monitoring
- Inter-provider management
- Relationship coordination

The CSEC State-Level ESInet will have a great many components, from network connectivity and infrastructure, to functional elements such as the Border Control Function (BCF) and the Emergency Communications Routing Function (ECRF), to various applications that will operate on the network. The MSI will be the single entity that will monitor the health and security of all ESInet components on a high level.

"This will be challenging because the MSI will be doing this across a multi-vendor environment," said Kevin Rohrer, CSEC's Chief Technical Officer. "All vendors do things a little differently, and they all use somewhat different tools—so, the MSI that ultimately is selected will need a knowledge base that is both deep and wide."

The MSI will monitor the health and security of the network largely by integrating and analyzing the data generated by each subsystem, functional element and application, in order to determine the root cause of an issue should one occur, and ideally to prevent the issue from occurring in the first place.

It is vital that the MSI takes a holistic view when performing its analysis, in order to avoid the "domino effect." Said another way, the MSI will need to determine whether an issue in one part of the network will affect other parts.

Regarding inter-provider management, the key task for the MSI involves keeping the plethora of vendors and service providers that are contributing to the CSEC State-level ESInet on the same page and working collaboratively, to ensure that nothing falls through the cracks and to avoid finger-pointing, Rohrer said.

"That too will be challenging, because there are so many piece parts to this network provisioned by a very diverse set of vendors," he said. "A lot of times, a certain entity won't be experiencing a problem, but the trouble is passing through its system.

"So you need their help in coordinating a troubleshooting activity. Sometimes it takes getting multiple vendors on a call to isolate a problem—without that type of coordination, troubleshooting takes a lot longer. The MSI will ensure that all troubleshooting activities occur in parallel."

The MSI also will perform a vital intermediary function.

"Let's say that one of the Councils of Government notices an ESInet router has failed and calls the service provider," Rohrer said. "The service provider likely will say that it cannot legally touch the circuit because the COG is not the customer of record.

"But an MSI armed with a letter of authorization from CSEC—which *is* the customer of record for the State-Level ESInet—would be able to get that circuit repaired."

Continued on page 4

"The MSI will ensure that all troubleshooting activities occur in parallel."

—Kevin Rohrer, CSEC

Geospatial MSAG Conversion Project Hits Milestone

In a Next Generation 9-1-1 (NG9-1-1) environment, Geographic Information System (GIS) data will be used to locate emergency callers and to dispatch the appropriate response. A Geospatial Master Street Address Guide (MSAG), which represents an interim step toward a NG9-1-1-compliant GIS capability, provides the ability to manage a controlled database with geographical information.

One advantage of the Geospatial MSAG is the ability to accurately define specific road segments, making it easier to resolve boundary issues between adjoining counties with different affiliated agencies, different coordinators, and different administrations. For example, Brazos Valley Council of Governments (BVCOG) has a road segment going in and out of the Capital Area Emergency Communications District (CAECD). Although CAECD still is using the tabular MSAG, improved refinement of the road segment has been realized due to BVCOG's geospatial data.

Earlier this year, BVCOG took a large step toward implementing NG9-1-1 service when it completed its conversion from the legacy tabular MSAG to the Geospatial MSAG .

This effort, which took nearly nine months to complete, represents a proven implementation path for Texas Councils of Government (COG) that are moving to a transitional model of data management in preparation for NG9-1-1.

BVCOG was the ideal first candidate for this project because it already possessed high-quality GIS data. BVCOG and CSEC worked closely with West Corporation (formerly Intrado) and GeoComm to define field mapping for consistency and to perform quality-control checks on the data. GeoComm is the GIS software and related services provider selected by CSEC to manage the Enterprise Geospatial Database Management System (EGDMS), which is a repository of geographic Information that will be a key component of CSEC's State-Level ESInet.

One success indicator for BVCOG is a 98-percent match rate between its GIS data and the tabular MSAG—this is the minimum threshold established by the National Emergency Number Association (NENA) before GIS data can be used to locate emergency callers. Another is a reduction in telephone number (TN) errors from 90 to 11 after the transition to the Geospatial MSAG was complete.

BVCOG worked closely with the county GIS teams within its jurisdiction to ensure that all data fields were populated correctly. Significantly aiding the effort was an effective collaboration between BVCOG, CSEC, West and GeoComm, which joined forces to provide the most accurate data possible.

"Getting to this level of success takes a lot of patience and communication," said Anita Pitt, BVCOG 9-1-1 Program Manager. "You must always be testing the data."

Throughout the process, BVCOG, CSEC, West and GeoComm developed a much better understanding of the scope of work, which will help them to advise other COGs as they convert their tabular MSAG to a Geospatial MSAG. To that end, a checklist and lessons-learned document was developed and presented by Frances Crate, BVCOG's GIS coordinator, to all RPCs in attendance.■

An effective collaboration between BVCOG, CSEC, West and GeoComm resulted in the most accurate data possible.

"Getting to this level of success takes a lot of patience and communication. You must always be testing the data."

– Anita Pitt, BVCOG

Cogs Play Key Role in Flood Prediction

Continued from page 1

closely with CSEC and the Texas Division of Emergency management. Consistently, Evans gets the following questions from first responders:

- When is the disaster going to occur?
- How big will it be?
- How many people will be impacted?

"They want to know, 'how bad is bad,'" Evans said. "The goal of the project is to predict when and where floods will occur so that first responders can get ahead of it."

In order to provide the answers, Maidment's team of researchers is working to predict flood impacts at the street level. Researchers currently are plotting all of the "stream reaches" in the United States—all 2.7 million of them.

A stream reach is defined as the segment of a stream from one confluence to the next. In the state of Texas, 102,000 stream reaches exist, according to Evans.

(Government Technology)

"The idea is to put timely, actionable intelligence into the hands of the people who can make these decisions. And when it comes to floods, particularly flash floods, the time window is very narrow."

– Harry Evans, Texas Flood Response Study

This is where CSEC and the regional Councils of Government enter the picture. The COGs are identifying all of the 8.6 million address points in CSEC's 9-1-1 Program, which represent where people live and work. The researchers are plotting the address points on a map. From there they will calculate the distance and elevation of each address point in relation to the nearest stream reach(es). Once that is done, that map is overlaid onto the inundation maps created by the National Water Model, which is a project of the National Oceanic and Atmospheric Administration (NOAA) Office of Water Prediction.

"Using all of this, the researchers can figure out what address points are at greatest risk when a weather event occurs, based on where it rains and how much rain falls," Evans said.

Based on that knowledge, emergency response officials can make better-informed decisions. For instance, they could place additional resources where a flood event will have the greatest impact, warn the public in advance and evacuate them if necessary—all in advance of the event occurring.

"The idea is to put timely, actionable intelligence into the hands of the people who can make these decisions," Evans said. "And when it comes to floods, particularly flash floods, the time window is very narrow."

While this might seem similar to the Federal Emergency Management Agency's floodplain maps, it is completely different, according to Evans.

"The floodplain maps are regulatory in nature and demonstrate flood risk for properties concerning development," he said. "In contrast, the Texas Flood Response Study is concerned with telling emergency responders which streams will flood, and which houses will be affected."■

Deeper Dive

Continued from page 2

In addition to the aforementioned performance monitoring and inter-provider management roles, the MSI also will engage in relationship coordination, which largely will consist of proactive communication and outreach with all parties, including the end users of the network, to ensure that everyone's needs are being met.

This largely is a "care-and-feeding" function, Rohrer said.

"The MSI will need to communicate with all affected parties what is happening with the ESInet and, more importantly, how it will impact them."■