

Connections

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NG9-1-1: At the Corner of Vision and Reality

Texas is vast and complex. We are the second largest state in terms of population and geography. We have 254 counties, some larger than small states. Our international border with Mexico and our proximity to the Gulf Coast pose inherent risks to our security, from both natural and manmade disasters.

Texas is uniquely diverse and the administration of 9-1-1 is too. It works well because it was established to support the needs of the many different regions of the state. There are 75 entities that oversee, fund and provide 9-1-1 service in 587 public safety answering points (PSAPs) statewide.

The Commission on State Emergency Communications (CSEC) has endeavored to

ensure that its approach to NG9-1-1 reflects and supports the continuation of this diversity.

Our goal is to design and implement a NG9-1-1 system that reflects the Texas landscape so that CSEC can support the 9-1-1 entities in our state program, and so that other 9-1-1 entities may either implement their own systems or use the state system if they choose to do so.

THE VISION

NG9-1-1 has been the vision for the future of 9-1-1 for more than 10 years. Current technology is based on wireline technologies established decades ago. Recent action by the FCC requires wireless carriers to send text messages to 9-1-1 centers—which legacy 9-1-1 systems cannot support.

Originally published in 2010, and updated in 2014, the Texas NG9-1-1 Master Plan communicates the vision for the Texas NG9-1-1 System to our stakeholders, to inform and engage them in its development and deployment. The current version represents and reflects input from all 9-1-1 entity stakeholders from across the state.

CSEC will continue the collaborative process with our stakeholders to ensure the plan meets the needs of the 9-1-1 community in Texas by updating it biennially, in alignment with the state's strategic planning process.

THE REALITY

The Texas NG9-1-1 System will be realized with the implementation

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Welcome to *Connections*

The implementation of Next Generation 9-1-1 (NG9-1-1) service is a transformational project with large implications for the 9-1-1 and public safety sector in Texas.

For that reason, CSEC created *Connections*, a

bi-monthly newsletter that will keep stakeholders informed about key developments regarding this vital initiative, which promises to dramatically change Texas emergency communications for decades to come.

Our goal is to inform and include our stakeholders in this transformational project. If you'd like to suggest a specific topic for us to cover or have feedback, email us at CSECSupportTeam@mcp911.com.

Implementing NG9-1-1 will require major changes to 9-1-1. The opportunity lies in the ability to enhance a vital public safety service. The challenge will be to marshal the resources required to effect the change.

NG9-1-1: At the Corner of Vision and Reality

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of a state-level Emergency Services Internet Protocol (IP) Network, or ESInet. The Texas NG9-1-1 System will be an interconnected and interoperable system of local and regional ESInets. The state-level ESInet will interconnect regional ESInets and individual PSAPs.

After years of planning, the 83rd Texas Legislature

appropriated funds to CSEC for the implementation of a state-level ESInet to serve the Regional Planning Commission (RPC) 9-1-1 Programs.

Implementation will be a multi-phase effort in collaboration with the RPC 9-1-1 Programs to ensure that the new system is built to meet their technical and functional requirements.

The key benefits of the project include the implementation of text to 9-1-1; enhancing redundancy and backup capabilities; improving interoperability and data sharing for call transfers; and realizing efficiencies through next-generation network solutions and the retirement of expensive, legacy technologies.

Clearly, 9-1-1 service in Texas is turning a corner.

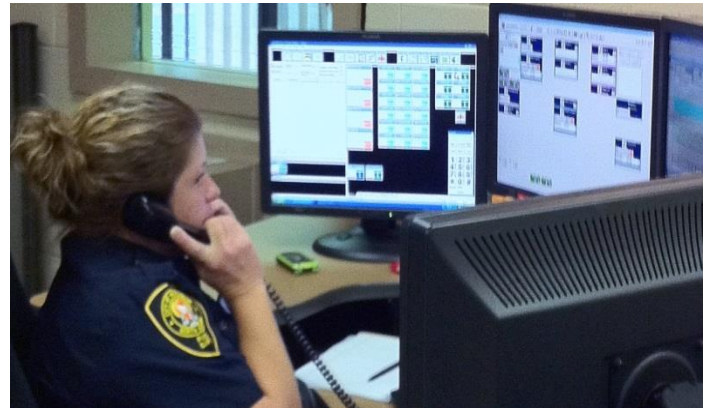
Leveraging MPLS to Create the State-level ESInet

It is a term that every 9-1-1 coordinator will hear many times for years to come: Emergency Services Internet Protocol (IP) Network, or ESInet.

But just what is an ESInet? Here's a technical definition:

An ESInet is a broadband, packet-switched technology, capable of carrying voice and large amounts of data using Internet protocols and standards. ESInets are engineered, managed networks, and are intended to be multi-purpose, supporting extended public safety communications and data-sharing services in addition to 9-1-1.

However, the better question might be: How does CSEC plan to deploy a state-level ESInet? The



correct answer is: as efficiently and cost-effectively as possible.

The network design hinges on the fact that a Multiprotocol Label Switching (MPLS) network already exists in the state of Texas. It is used to transport 9-1-1 automatic location identification (ALI) data to PSAPs. Because this network already interconnects PSAPs, the plan is to enhance it so that it can become the basis for

the state-level ESInet.

As part of the project, the system integrator will work with MPLS network providers to increase bandwidth, implement new redundant routers, and upgrade other system components as needed.

This approach, which avoids a wholesale replacement, will be executed in such a way so as not to affect current PSAP operations.

The existing MPLS network that transports ALI information will be enhanced to become the basis for the state-level ESInet.

PSAP Readiness Assessment Coming Soon

An important step toward bringing the state-level Emergency Services Internet Protocol (IP) Network, or ESInet, to fruition is an assessment of the readiness of public safety answering points (PSAPs) and the Regional Planning Commission (RPC) host locations for participation in the network.

The implementation of the state-level ESInet will occur in phases. The first phase, funded by the 83rd Legislature, calls for establishing connectivity between selected participants using the state-level ESInet. With this connectivity, text to 9-1-1 can be implemented, as a first office application.

As participants vary from one to another, an important step in the process is to ensure that all participating entities are prepared for Phase I.

Work sessions will be held—in coordination with the RPCs, CSEC staff, the systems integrator (SI) and subject matter experts (SMEs)—to gather and/or validate information such as customer premises equipment (CPE), uninterruptible power supply (UPS), and network routers. Starting in January, this effort will take approximately 4-6 weeks.

Once the data gathering is complete, an assessment of findings and a gap analysis will be performed to identify any upgrades or system enhancements that will need to be procured in order for each participant to connect to the state-level ESInet. The assessment and gap analysis also is expected to take 4-6 weeks to conduct.

This assessment provides a foundation for PSAP

participation in subsequent phases.

Phase I—currently underway—focuses on provisioning network connectivity between PSAPs and data centers, and adopting standards and best practices to ensure future PSAP interoperability, while also enabling access to text to 9-1-1 services.

Phase 2—scheduled for Fiscal Year 2016-2017—calls for PSAPs that are connected to the state-level ESInet to be able to leverage Next Generation 9-1-1 (NG9-1-1)-enabled intelligent call-handling technology.

Phase 3—scheduled for Fiscal Year 2018-2019—involves expanding the build out of the state-level ESInet, migrating additional PSAPs to NG9-1-1, and connecting regional ESInets to the state-level ESInet.

An important step ... is to ensure that all participating entities are prepared for Phase I of the state-level ESInet implementation.



A gap analysis will be performed to identify any upgrades or system enhancements that will need to be procured in order for each participant to connect to the state-level ESInet.





The EGDMS essentially translates data generated by RPCs and ECDs into a format that can be processed by an LVF or an ECRF.

So, what exactly is an EGDMS?

The transition to Next Generation 9-1-1 (NG9-1-1) technology will open a portal to an entirely new world as it relates to the communications technology and infrastructure that will support the delivery of 9-1-1 emergency calls to public safety answering points (PSAP) in the future.

It also will introduce terminology that may seem quite foreign, at least in the beginning. One such term is EGDMS, or **Enterprise Geospatial Database Management System**.

Before we explain what the EGDMS does, let's first explore two other important NG9-1-1 functions that work in concert with the EGDMS.

Location Validation Function (LVF)—The

LVF is used to validate location information associated with the device that has generated an emergency call. Pre-validation of the location information ensures that the calls can be routed to the appropriate PSAP and that emergency services can be dispatched to the correct location.

Emergency Call-Routing Function—The ECRF receives location information and uses it to route an emergency call toward the PSAP that is appropriate for the caller's location based on predefined policies. This same information can be used to dispatch the appropriate emergency response entity.

In a NG9-1-1 environment, Geographic Information System (GIS) data will be leveraged to locate 9-1-1 callers, regardless of whether

the call originates as a wireline, wireless or voice over Internet Protocol (VoIP) call. This data takes into account determining factors such as road centerlines, jurisdictional boundaries, emergency service boundaries and PSAP boundaries.

In the state of Texas, such GIS data is generated by Regional Planning Councils (RPCs) or Emergency Communications Districts (ECDs). This data is transported to the EGDMS, which essentially translates the data into a format that can be processed by an LVF or an ECRF.

The EGDMS also executes a very strict quality assurance/quality control (QA/QC) process to ensure that all of the GIS data that it receives is accurate.

If the EGDMS uncovers inaccurate data, it will generate a discrepancy report so that the entity providing the data can make the necessary corrections.

The combination of the EGDMS, LVF and ECRF effectively replaces the automatic location identification (ALI) and Master Street Address Guide (MSAG) data that legacy systems use to locate 9-1-1 callers.

