

Next Generation 9-1-1

The Future State for Emergency Calling Systems

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Introduction

Location-based services have become so pervasive in consumer technologies that today's consumers take them for granted. Yet emergency services are often unable to detect the precise location of an individual calling from a mobile phone – a technology gap that risks lives. As a result, state and local governments, with assistance from standards setting bodies, are transitioning 9-1-1 calling systems to 'Next Generation' IP-based solutions.

As with any change to a new technology (or new mode of operations) moving to Next Generation 9-1-1 (NG9-1-1) systems is difficult. Funding, integration and stakeholder management are just a few of the many issues that must be considered. At Integris Applied and Buford Goff Associates, we think the best way to address them is to adopt collaborative service management frameworks with clearly defined roles for all parties and the flexibility to apply the right technologies at the right time. Implementing such frameworks allows governments to focus on *solutions* rather than *technologies* and create the conditions to keep systems 'continuously contemporary' as technology evolves.

Current Status of 9-1-1 Emergency Response

Across the United States, 9-1-1 callers and responders are dependent on Public Safety Answering Points (PSAPs), often referred to as the 'first first responder.' But with evolving threats and changing technologies the PSAP's role is changing. Requests for help (and situational information) from traditional sources such as the telephone, are now augmented with information from a wide variety of other sources including social media, mobile apps, and Global Information Systems (GIS). This information arrives in real time and must be rapidly processed, analyzed and acted upon. The result is PSAPs changing from call taking and dispatch to situation assessment, information analysis, and response management. They are becoming much more than *first first responders* and developing into emergency communications and response coordination centers.

This evolution is constrained by the fact that 9-1-1 services were historically local services. Systems emerged in homegrown environments designed to meet the needs and challenges of a local community (geographic location, environmental factors, available funding profiles, etc.). Most solutions were (and frequently still are) dominated by legacy technology and operating practices. Existing 9-1-1 capabilities were largely built on siloed and proprietary networks, equipment and services. Interoperability and security are rarely native or embedded and nor do government procurement processes support the acquisition of rapidly evolving and transformational technologies.

There seems little doubt that existing models must change and collaboration and coordination is needed to recognize the full benefits of NG9-1-1.

Of course, this change will not be without challenges such as:

1. Educating and raising the awareness of elected officials.
2. Creating clear policy directives and guidelines that contribute to solutions.
3. Applying appropriate and secure technological solutions that enable response providers.
4. Advancing emergency response operational capabilities.

These challenges are very real, but addressing them will support a vision of:

“Improving the ability to respond to tragic events – saving lives and positively impacting communities through better public safety services and emergency response.”

Implementing NG9-1-1

No matter where the information arrives from – social media, smart city devices, internet of public safety things, location data, mobile apps, or aerial drone video – the data flowing into PSAPs is redefining emergency response. Recognizing this, the industry has already developed many of the requirements for a NG9-1-1 architecture, for example NENA i3 (National Emergency Number Association specification i3) together with several local and regional solutions.

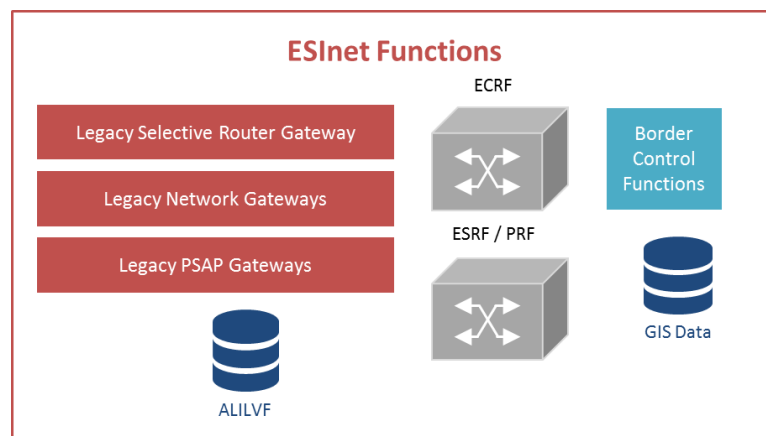


Figure 1: Emergency Services IP Network (ESInet) Architecture

The NG9-1-1 market is rapidly moving from a single provider solution based on archaic legacy technology and regulations, and instead becoming increasingly competitive and technically sophisticated. This is changing how emergency services are provided – encompassing an evolutionary process where requirements, technology, and funding are all dynamic.

As standards and architectures become more clearly defined the conditions for interoperability are emerging. We feel that State and local governments should take advantage of this. The technological framework to acquire NG9-1-1 systems is no longer proprietary, and procurements should include a network of

Principles for a NG9-1-1 Service Management Framework	
Functional	Through interoperable technology calls are answered and responders are called.
Compliant	Accepted standards (such as NENA) for NG9-1-1 services are used by PSAPs, suppliers, carriers and first responders.
Integrated	Business processes and 9-1-1 services must be delivered in an integrated manner, in some cases across multiple technology suppliers.
Sustainable	NG9-1-1 services should be “continuously contemporary” through market tests, flexible RFPs and the management processes to integrate new technologies regularly.

Figure 2: A Principles Based Service Management Framework

manufacturers and service providers that collaboratively build solutions that are integrated across multiple suppliers.

We propose that the focus should be on the management and evolution of services rather than a point in time transition to a single technological system. A service management framework in which suppliers are integrated, stakeholders are engaged, and PSAPs can pick from multiple technologies can be built. This will help state and local governments focus on collaboration with the marketplace, PSAPs and first responders. In other words, solutions can be flexible and sustainable rather than rigid point systems that could be obsolete in just a few short years.

Building a NG9-1-1 Service Management Framework

The conditions are ripe for states to approach NG9-1-1 solutions with a service management framework in mind. As shown in figure 3, technology architectures and standards are defined, a substantial and maturing market for required technologies is developing, and the business services and processes needed are known.

With such an environment in place, governments can now buy best of breed solutions for services and technologies and integrate them within a rules-based multi-supplier ecosystem. This frees them up to focus on management, delivery and service evolution rather than specific technologies.

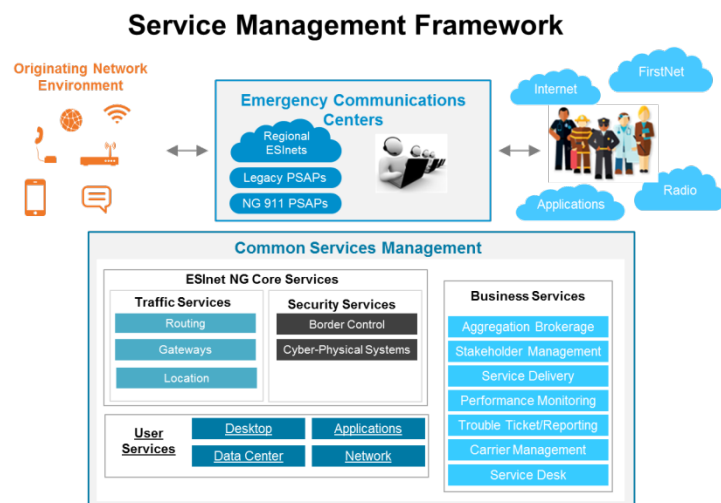


Figure 3: Notional Service Management Framework

In building a service management framework, we suggest that our clients should focus on defining the manner in which all parties operate, and creating the forums for the transparency needed to operate a multi-supplier environment. Tactics to do this include:

- Operational and relational governance forums to measure and monitor outcomes, establish transparent operating practices for all parties, and define paths of escalation and resolution.
- Operating level agreements between all parties (including the client) that define responsibilities, integration points and areas of shared responsibilities.
- Service levels and governance processes that are clearly stated in contract documents with all stakeholders trained on their importance and implementation.

Implementing these steps requires a focus on integration and communication across multiple parties. This takes work, and is a shift in focus from traditional implementation of point solutions. However, the pace of change in the technology market place, and the demand from today’s consumers offer governments an opportunity to implement new approaches that resonate with their customers.

Conclusion:

If governments start building a multi-supplier operating platform framework early in the procurement process (through practices such as integration sessions) they can set the right expectations for supplier collaboration and transparency well before a contract is signed. It's an approach that contributes to the overall improvement of the operational response – not technology for technology's sake, but intuitive and useful tools for public safety communications professionals. Done correctly, a framework approach results in an integrated operating environment that contributes to effective and efficient delivery of services with no gaps or missing links.

The benefits of applying this approach to the NG9-1-1 environment are many including: a continuing evolving equipment platform, reduced component integration risks, best of class equipment and services and lower overall costs of service provisioning.



Integrus Applied guides clients through the changes required to implement sustainable technology-led strategies. It shapes IT organizations and environments with an approach that unifies vision, action and the people who influence both. Integrus Applied professionals have walked in your shoes as buyers, sellers and advisors ... and will walk with you now, on your journey.



For more than 47 years, Buford Goff & Associates has provided innovative solutions to clients in the healthcare, education, public safety, emergency management, energy, and criminal justice markets. It is structured around four practice areas: mechanical, electrical, security electronics, and communications technology that specialize in systems engineering, project management and strategic planning services.

Buford Goff & Associates and Integrus Applied have teamed together to develop a service management framework that focuses on managed services and the acquisition of technology solutions for the public safety and critical services markets that are continuously evolving. For more information on the solution model or to discuss your situation contact Mike Corbett (mike.corbett@bgainc.com), Principal at BGA or Patrick Moore (Patrick.moore@integrusapplied.com), Partner at Integrus Applied.