



A Closer Look at E911

**Legal, Regulatory and Technology
issues surrounding Enterprise E911**

R E D S K Y W H I T E P A P E R

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Statement of Purpose

Now more than ever, corporate, education and government leaders across America are implementing measures to enhance emergency preparedness and security for their business operations, communications and people. At the same time, enterprises are implementing converged voice networks and virtual office operations in order to realize higher productivity and cost-savings. With the benefits of implementing advanced technologies, however, come risks that are not always recognized, but must be considered.

Whether you are a public or private enterprise, E911 is a critical security and corporate liability issue that must be properly addressed. This document presents the factors that enterprises should consider when evaluating E911 including the risk and liability factors, regulatory issues, what the experts are saying, the benefits accrued by enterprises that have implemented E911 and the solutions available.

A Glance at the E911 Issue

The familiar 9-1-1 dialing string speaks a universal language of protection and safety. If you need help in a fire, medical, security or workplace violence emergency, of course, you dial 9-1-1 anticipating a speedy response. Interestingly, in enterprises, the first task of emergency response personnel isn't necessarily to address the problem – it's to find it.

When a 9-1-1 call originates from home, locating the caller isn't a problem because a location record with the address of the home is provisioned when the phone is installed. When a 9-1-1 call is made from the home phone, the address of the home is retrieved and displayed on the call taker's screen.

A simple street address, however, isn't much help if the 9-1-1 call comes from a large office building or a multi-building campus. The caller may be unable to indicate a specific location within the building or campus because of a heart attack or may not know or be able to describe his or her location. One of the most publicized incidents of this occurred in Chicago where a marketing executive working late in a high-rise building dialed 9-1-1 and could not describe her exact location. Her death prompted an Illinois law requiring employers in large buildings to have E911 systems. (See "Real-life E911 Situations" on page 5 for other examples.) Fifteen other states have adopted similar laws.

E911 Provides Detailed Location Information

With basic 9-1-1 service, an emergency dispatcher knows only the billing address for the phone. But if an enterprise has a multi-line telephone system (MLTS), the billing address may be quite different from the location of the 9-1-1 caller. E911 allows enterprises to create location records (ALI) for every telephone or every Emergency Response Location (ERL). E911 enables the delivery of a detailed location record to 9-1-1 dispatchers so they have not only the address of the building but detailed location information that describes the location of the 9-1-1 caller, such as the conference room in the west hallway on the 12th floor.

Enterprises have multiple choices today for adopting E911. They can buy E911 software that automatically tracks phone locations and updates external emergency response databases, purchase E911 as a hosted service "in the cloud," or adopt E911 solutions that are offered by their Local Exchange Carriers (LECs).

Security and Liability: A Growing Concern

In today's security-conscious world, E911 is an especially relevant issue. More and more businesses and government agencies have adopted plans to protect their most important asset, their people. According to a recent survey of major corporations, workplace violence is the primary security concern. Nearly a third of respondents say they have observed workplace violence in the past year. In fact, about 1,000 people are killed each year because of personal attacks in the office.

The threat of a fire or medical emergency is even more prevalent than workplace violence. According to the American Heart Association, more than 90 percent of all people who have sudden cardiac arrest die because they could not get prompt assistance. An E911-compliant system can dramatically improve the likelihood of a timely response and a successful outcome. And where people are unable to receive the medical or security response they need because of the telephone system, juries are sympathizing with the victims and their families. Wrongful death suits with multi-million dollar judgments are commonplace when a 9-1-1 call inside an enterprise fails to deliver the necessary response.

Organizations Adopting E911-Ready Solutions

The truth is most enterprises have not implemented an E911 system that adequately protects their people and protects the enterprise from liability - despite state laws and regulations and despite the leadership of the FCC in encouraging E911 adoption. However, the tide is turning. Many of Ameri-

ca's largest businesses have taken their first steps toward implementing E911 systems to protect their employees. Many of America's top universities and colleges are uniquely aware of security risks on campus and have implemented robust E911 and emergency response systems on campus. And, many government agencies at the state and federal level are adopting E911 to protect their people and comply with state laws.

E911 is a standard requirement now in virtually every Request for Proposal (RFP) that is issued by businesses, universities and government agencies for multi-line telephone systems (MLTS) and IP PBXs. As enterprises move from Centrex to MLTS to IP telephony and now to Unified Communications, there is a high-level acknowledgement that E911 and tracking the location of phones connected to the enterprise are required for employee safety and liability protection.

As organizations move toward more complex telephony environments, where remote locations are served by a central data center and employees are increasingly mobile through the use of laptops or mobile devices, enterprises are seeking E911 solutions that fit seamlessly with their network voice strategy. Fortunately, the E911 industry has continued to innovate and deliver solutions that meet this rapidly changing voice environment.

Universities and colleges are at the forefront of adopting E911 solutions and integrating them into a unified security plan that includes 9-1-1 notification alerts to mobile campus security, broadcast alert messages to students and faculty and 9-1-1 protection for students on smartphones. Enterprises are implementing E911 solutions across increasingly consolidated voice and data networks, adopting E911 cloud computing solutions or E911 as a managed service. Enterprises are embracing E911 solutions now for voice Wi-Fi networks to track mobile phones inside the enterprise and adopting E911 solutions for softphones that can be used anywhere while connected to the corporate voice network.

Important Reasons To Adopt An E911 System

1. Protect employees and assets

Loss of life due to fire, an act of violence or an employee medical emergency can have a devastating impact financially and emotionally on an organization. By providing rapid emergency response to employees with E911, enterprises demonstrate a commitment to the safety of their employees while protecting the enterprise and minimizing disruptions that could result from an incident. According to a survey by the Liberty Mutual Group, about two-thirds of employers report a threefold savings for every dollar invested in safety.

"The safety of our employees is paramount. We were looking for a better (E911) solution long before compliance was a state law."

W.W. Grainger

2. Crisis liability

We live in a litigious society. Protecting the enterprise from a lawsuit is a legitimate and important aspect of corporate and organizational operations. More than two million people suffer from on-the-job violence annually, which costs employers \$36 billion. Court decisions have held institutions and managers personally liable for safety negligence. A jury recently awarded \$50 million to the family of a wrongful death victim because the city did not get an ambulance to the asthma-sufferer's home on time. A study by Liability Consultants found the average jury verdict for a rape on business property to be \$1.2 million and for a workplace death to be \$2.2 million.

"We have implemented the very best (E911) solution for our employees. We tell them: 'We're there for you. You do your job and we'll do ours by empowering and protecting you while at work.'"

Grant Thornton

3. Corporate imperative

Owners and managers are now being held to a greater standard of care concerning the safety of their employees, tenants and guests. According to an executive at a Fortune 500 company, "You enter the situation thinking about compliance and liability...but then you come out of the situation with a good feeling that you have helped save a life or head off a tragedy." Providing employees with E911 protection is also an issue of business ethics.

4. It's the law

Thus far, 16 states have adopted some form of E911 legislation for office environments. Typically, the laws require an enterprise to define the location of callers within their buildings so emergency responders can provide prompt response. Non-compliance can have penalties. In Illinois, for example, non-compliant businesses could face fines of up to \$5,000. Permits to operate have been held until enterprises have demonstrated E911 compliance. Every year one or two more states adopt E911 legislation at the encouragement of the FCC. While it is the current disposition of the FCC that E911 regulations should be handled by the states, the FCC has stated that if the states move too slowly in adopting regulations, the FCC may be forced to act with national regulations.

Also, Section 5(a)(1) of the Occupational Safety and Health Act requires employers to furnish a workplace free from recognized hazards. E911 protection is an important component of an employer's emergency action plan.

Real-Life E911 Situations

E911 can and does save lives. The Association of Public-Safety Communications Officials (APCO) is among the groups leading the fight for mandatory nationwide adoption of E911 systems. Following are real-life situations collected by APCO underscoring the need for businesses to have a system that provides location-specific information from a 911 caller:

Phoenix: A woman had a heart attack and collapsed at an American Express office. Co-workers tried to call 9-1-1 for help, but the company's phone system blocked such calls because the company wanted employees to call an in-house emergency number instead. Emergency help was delayed. A lawsuit followed.

San Francisco: A gunman entered a high-rise, killed eight people and wounded six on three floors before encountering police and killing himself. The disgruntled employee started shooting people he encountered on the 34th floor and continued to two other floors. Due to a shared telephone system, dispatchers thought the incident was in the building next door. Many of the initial 9-1-1 calls were hang-ups because the caller had been shot or was hiding. Some callers were too hysterical to identify their location. Police finally searched floor-by-floor of the correct building to locate the shooter.

St. Paul: An incident at a private college prompted campus authorities to install an E911 software solution because a student was threatening suicide and they were unable to locate the individual based on his phone number. To find the student, police had to search the dorms room-by-room until they found the student. Fortunately, the student did not commit suicide.

Clay County: While visiting a county building, a woman was suddenly gripped by a seizure, rendering her speechless. A by-stander called 9-1-1, and when questioned by the dispatcher to validate the address of the distressed person, realized that the dispatch center was receiving a different building address. Had the caller been speechless like the victim, tragedy would likely have ensued. Immediately following the incident, the county began to evaluate E911 solutions.

What Key Leaders Say About E911

It's critical in this day and age that employers explore all means of technology available to protect their employees. This is particularly true with the new Administration in Washington that has indicated it is going to be much more aggressive in holding employers to their legal obligation to protect employees in the workplace.

Mark Lies, Partner



We live in a fine community where people don't think bad things will happen. They may be right, but I don't want to find out the hard way that they were wrong. The safety net is there.

Director of Technology



(We) recommend local, state and federal agencies implement appropriate processes, procedures and services to forward the precise location of a telephone serviced by a multi-line system to the PSAP whenever 911 or another appropriate emergency number is dialed.

APCO resolution



In an emergency situation, response time is only as good as the information you have.

City of Chicago



Your E911 Solution Options

In 1999, when RedSky launched the first automated E911 software solution, there were few choices. Integration with the PBX was cumbersome and custom hardware was typically involved. Many enterprises tried to meet state regulations by managing E911 manually which requires a full-time administrator or developing their own in-house custom solutions, most of which failed when the institutional knowledge of how the system worked departed the enterprise. Today, enterprises have a wide variety of options for meeting E911 needs, options that are highly integrated with the voice network and support a wide range of systems and capabilities. With the advent of E911 services “in the cloud,” enterprises have choices not only in what they buy but also in how they buy. E911 can be either a capital purchase or a monthly expense like your phone or network costs. Enterprises can manage E911 locally using traditional PS-ALI or can opt for E911 network services that can send a 9-1-1 call to any PSAP in the USA and Canada. Solutions are available now for voice over Wi-Fi phones, softphones, UC clients and smartphones.

The key to selecting the right solution for your enterprise requires you to walk through a decision tree about your enterprise infrastructure that addresses what you want to accomplish, the regulatory requirements you need to meet and the best way for your enterprise to budget for E911.

How to Select the Right E911 Solution

Selecting the right solution for your enterprise begins with an honest assessment of your requirements, your network and your enterprise’s purchasing and approval processes. Above all, you need to think about E911 as an integrated capability of your network, not as a stand-alone manual process that someone facilitates. Beware of purchasing only “pieces” of an E911 solution and take note that Local Exchange Carriers (LECs) traditionally do a poor job of understanding their own PS-ALI E911 offerings and on advising customers how to implement E911.

You need to think through and identify:

- What do I really want to accomplish with E911?
- What regulatory requirements do I need to meet?
- Do I have a specific “use case” that is a pain point?
- How does E911 need to fit in with a larger security initiative or organization?
- Does my enterprise prefer to buy products and services as a capital purchase, a capital lease or an operating lease? Are we a purely hosted environment?

A wide variety of E911 solutions are available today. For example, E911 can be implemented most simply by purchasing a PS-ALI account from the local LEC. This will allow an enterprise to put ALI records into the LEC’s ALI database. If you are a small enterprise with a limited number of phones and the phones never move, this might be the right solution for you.

If you are an enterprise with a large number of users, with multiple locations, and phones that move all the time, a premise-based software solution that automates the E911 process is likely the right solution for you. This solution will track the location of all phones, update appropriate databases and provide emergency 9-1-1 call notifications. Emergency notification of a 9-1-1 call is important to an enterprise because it can save 2-3 minutes in on-site emergency response. If your enterprise has a security department or local medical emergency personnel, emergency notification is a great optional feature that you’ll want on your E911 system.

E911 is also available as a hosted service – also known as cloud computing or software as a service (SaaS). You can purchase E911 as a monthly service and send all 9-1-1 calls to the service which routes the emergency call and the location of the caller to the correct Public Safety Answering Point (PSAP). The service works with IP-PBX platforms as well as legacy TDM platforms and allows enterprises to pay for E911 as an expense similar to their telephony network costs.

Large, distributed enterprises find E911 as a service especially attractive if they are consolidating their telephony infrastructure in centralized data centers and using Wide Area Networks (WANs) to route voice traffic for all locations including branch offices and teleworkers. This network convergence approach eliminates the need and the associated cost of local trunks and local PBXs. All 9-1-1 calls are captured at the data center and sent to the E911 service for routing, greatly simplifying the completion of 9-1-1 calls.

Finally, you can look at E911 as a managed service. If you are outsourcing your telephony operation to a service provider, the service provider can provide advanced E911 capabilities from their data center, managing all aspects of the E911 process. Or, more simply, if you are a large government agency or business enterprise with dozens or more legacy TDM PBXs, you can send all phone location changes to a managed services provider who will make any necessary changes in one or more ALI databases.

RedSky has assembled a simple decision tree to help you get started with the process. It begins with you defining the size of your enterprise (small, medium, large, and extra large) as your size can be a good indicator of the range of solutions most appropriate based on features and cost.

Type of Enterprise	E911 PRODUCT OR SERVICE OPTIONS			
	PS-ALI Account	Hosted E911 Service	On-premise E911 Software application	On-premise E911 Software application with national 9-1-1 call routing service
Small Enterprise (<500 phones) with little to no phone movement	✓	✓		
Small Enterprise (<500 phones) with several locations and some phone movement		✓		
Medium Enterprise (500 - 5000 phones) with multiple buildings or locations and regular phone movement		✓	✓	
Large Enterprise (5,000 - 50,000 phones) with multiple locations, large complex buildings, and a mix of legacy and IP-PBX platforms			✓	✓
Very Large Enterprise (50,000+ phones) with multiple locations, large complex buildings, multiple remote sites reporting to a central IP telephony data center				✓

About RedSky

RedSky is the leading provider of E911 software solutions to the enterprise market with more customers, more technology, and more experience than any other provider. Hundreds of customers, including 50 Fortune 500® companies, use RedSky’s software to automate their E911 processes. RedSky provides a full suite of software solutions, network services and professional services to help large and small organizations of all types capture, manage and deliver the detailed location information necessary to provide effective 9-1-1 emergency response and other location-based services. Headquartered in Chicago, IL, RedSky has partnerships with other leaders in the telecommunications and 9-1-1 industries to help shape 9-1-1 policy, leverage emerging technology, and comply with evolving regulatory requirements.

RedSky Technologies, Inc.
 925 West Chicago Avenue, Suite 300
 Chicago, Illinois 60642
 877-REDSKY1
www.redskyE911.com