

A police officer in a dark blue uniform is running towards the right. He is wearing a duty belt with a yellow flashlight and a radio. In the background, a white police SUV is parked. The SUV has "POLICE" and "FARRED" written on its side. The scene is set in front of a light-colored building with a white door.

Public Safety Response to Active Shooters

How FirstNet Can Ease the Burden

By Ryan Fields-Spack



Editor's Note: Ryan Fields-Spack, who authored this white paper, is a former first responder – paramedic and fire captain – who aided in the response and investigation of the Aurora Theater shooting and bombing scene on July 20, 2012. He brings a unique perspective to this situation.

Introduction

Today's public safety community faces a variety of challenges that test training and technological capabilities. One of the most tragic – and increasingly common – situations to which a first responder may be called is an active shooter. The sudden, public, and often large population of injured victims, will tax the training, capability and technology of any agency tasked to manage it.

During the initial response to the twin towers on Sept. 11, 2001, commanders at the World Trade Center attempted to radio evacuation orders to their responders in the second tower after the first tower collapsed. First responders did not receive the message and hundreds of public safety personnel died. Consequently, the public safety community unanimously called for a fix to the problem of interoperability and diminished communication capabilities during emergencies.

The answer came with the passage of the Middle-Class Tax Relief and Job Creation Act of 2012, which established the First Responder Network Authority and charged it with creating FirstNet, a nationwide wireless broadband network dedicated to America's public safety community. Built with first responders, for first responders, FirstNet brings about a solution to many of the operational challenges of simple, complicated and complex emergencies.

The Three Rules of Emergency Response:

Public safety agencies, whether law enforcement, fire or EMS, are bound by three general rules as they respond to emergencies. These rules apply to everyday calls for service, as well as those once-in-a-career active shooter events. The rules include:

1. Every first responder executes an emergency response from one of three points of view:

- **Task Saturation:** A paramedic treating a wound or an officer providing cover will, justifiably, be focused on the task at hand – not on activity happening beyond six feet away.
- **Tactical Approach:** Company officers or sergeants are guiding the tactical activities of their own teams. And they may not be aware of other tactical activities taking place.
- **Strategic Focus:** Incident commanders are charged to identify a strategic mode and goal for the incident and make tactical assignments to accomplish it.

2. Those points of view, whether task-oriented, tactical or strategic, take place on emergencies with varying levels of complexity. They can be simple, complicated or complex.

- **Simple Emergencies:** First responders face simple emergencies daily. And they typically employ a step-by-step process to bring them under control.
- **Complicated Emergencies:** A man-hunt for a dangerous person or a cardiac arrest with challenging arrhythmia are complicated emergencies. They require a good deal of thought to bring about a positive resolution.
- **Complex Emergencies:** An active shooter is a complex emergency – one with a malicious actor seeking to one-up the last big active shooter event and make a name for him or herself. These events morph with every iteration and challenge even the most robust responding agency. While public safety seeks to train for an active shooter, they can never quite prepare for the next scenario.

3. There are three basic types of incidents first responders face every day.

- **Law Enforcement Only** – where police are in charge and do not need assistance from other public safety agencies. Examples include traffic stops, robberies, etc.
- **Fire/EMS Only** – where Fire and/or EMS incidents are typically under the purview of these agencies. A structure fire or medical emergency likely will

only involve that agency to bring the event under control.

- **Combined law enforcement, fire, and EMS event** – where all agencies are called to the same location. These are *complex* emergencies with all agencies engaging in their respective *task-oriented, tactical, and strategic* activities at the same time. These combined complex events require a level of coordination, communication, and trust that is increasingly difficult to achieve. Chief amongst them is the lack of up-to-date technology – which can make radio interoperability difficult or impossible.

The Century Theater shooting in Aurora, Colo., proved a catalyst for driving change in active shooter response. Communication challenges during this active shooter response provided insight for required change.

Background

On July 20, 2012, a shooter entered the Century Movie Theater in Aurora, Colo., and opened fire. In just over two minutes, he shot 70 people – with 12 succumbing to their injuries. After the incident, the Aurora city council contracted with the company Tri-Data Division, System Planning Corp. to conduct a formal after-action report. Their assessment of events reveals many challenges faced by the public safety agencies who responded.

The Challenge / The Solution

This white paper looks at three specific challenges faced by responders during the Aurora theater shooting. It contrasts the technological hurdles faced then with the benefits FirstNet can offer now. Tri-Data identified three **core communication challenges**: general communication, technological capacity, and a limited use of currently available cellular technology.

General Communication

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As responders approached the scene at the theater on July 20, 2012, they faced multiple choke points – a fire alarm activated in the background, and over 1400

patrons streaming into the parking lot. Per Tri-Data, “There was a failure to establish direct communications links between the police and fire incident commanders and, to a lesser extent, with responding mutual aid units.”¹ This was due in large part to the geographical distance between the police and fire commander on the scene.

Dispatchers, in addition to tracking and assigning resources, were also receiving sequential 911 calls that needed to be answered. As a result, “multiple requests for rescue and EMS from police in the field were acknowledged by the police dispatcher but not received or not acknowledged by the fire department Incident Commander, and needed resources were not assigned.”² Further, “...requests [were] being made directly to the police dispatcher by multiple field units, which made it difficult to identify duplicate requests and keep track of EMS assignments. Any time information must pass through multiple hands it is possible there will be miscommunication, duplicate requests, and lost requests.”³

How FirstNet Can Help

FirstNet brings a dedicated communications ecosystem that provides first responders on FirstNet with priority access to the network with the ability to preempt other users when necessary. First responders’ texts data and voice communications get priority once on the network. During complex emergencies, emergency call handlers can conduct an initial size-up and compile requests from 911 callers and, using FirstNet, the synthesized information can be pushed out to incoming responders in real time.

FirstNet provides solutions that allow commanders to track responding units on a map, providing immediate situational awareness for incoming first responders. Those responders can identify the location of an assigned incident command post and proceed directly to the location. Those chief and command officers can then easily organize their strategic approach to the incident via a unified command: thus, reducing the potential for duplicate and unheeded resource requests.

¹ TriData Division, System Planning Corporation, *Aurora Century 16 Theater Shooting [After Action Report for the City of Aurora](#)*, Colorado (April 2014), 91

² TriData Division, System Planning Corporation, *Aurora Century 16 Theater Shooting After Action Report for the City of Aurora*, Colorado (April 2014), 91

³ TriData Division, System Planning Corporation, *Aurora Century 16 Theater Shooting After Action Report for the City of Aurora*, Colorado (April 2014), 91

Technological Capacity

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While the sheer volume of injured on the scene exacerbated the communication difficulties, Tri-Data noted several technology concerns. Those concerns included the following radio interoperability challenges:

- “Police channels were not available on the Fire Department ‘Suppression’ Fleet channels. Accessing interoperable talk groups required switching away from primary police or fire channels, making it highly possible that critical transmissions would be missed.”⁴
- “Police Department portable radios were programmed differently depending on assignment, potentially causing confusion. Police ‘administrative’ fleets contained different talk groups from ‘patrol’ fleets. That difference probably was not immediately noticeable to the radio operator.”⁵
- “As a corollary issue, the police Incident Commander (Lincoln 25) specifically asked that Blue Southeast, the mutual aid channel, be patched to the primary Aurora dispatch frequency, but the Communications Department either could not or did not know how to do it. Lincoln 25 then asked to have the City of Lakewood Communication Center make the patch, but they did not have that capability either. Lincoln 25 told us he asked for Lakewood because prior training led him to believe they had the necessary equipment and capability. As a result, responding mutual

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⁴ TriData Division, System Planning Corporation, *Aurora Century 16 Theater Shooting After Action Report for the City of Aurora, Colorado* (April 2014), 91

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aid units were unable to monitor radio traffic as events unfolded, decreasing situational awareness and delaying their deployment.”⁶

How FirstNet Can Help

Today, there are over 10,000 different radio networks across the country. Within the Denver metropolitan area alone, most public safety agencies are on some variant of a proprietary radio system. This means that neighboring agencies typically can't talk to one another. While statewide interoperable channels have been built to address this, Aurora exposed several hurdles that still exist.

A core benefit of FirstNet is the nationwide licensing of 20MHz of dedicated Band 14 spectrum. Band 14 funnels all needed voice, data, video and text capacity into one place. The benefit: every FirstNet user has access to the same frequency. No more interoperability issues. Additionally, contrary to the limited reach and security of traditional land mobile radio (LMR) systems, all activity on FirstNet will go through the core network. The FirstNet core has redundancy and high levels of encryption and security capabilities.

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Today, FirstNet provides the capability for all LMR traffic to be linked to the AT&T LTE cellular network. This means that agencies can continue to use the LMR systems they have invested in, while adding to the situational awareness of incoming units that traditionally do not have access. Incoming mutual aid responders can use the Enhanced Push-to-Talk (EPTT) application on their FirstNet device to hear all channels in use on the incident. They can communicate with the incident commander and receive an assignment once they arrive.

The traditional LMR network has been honed to support public safety's mission critical needs over the last 60 years. Integrating with — and complementing — that mission critical status is a responsibility that FirstNet does not take lightly.

⁶ TriData Division, System Planning Corporation, *Aurora Century 16 Theater Shooting After Action Report for the City of Aurora, Colorado* (April 2014), 92

Use of Cellular Technology

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Researchers with Tri-Data also identified a lackluster use of the existing cellular network. (The First Responder Network Authority had just been authorized at the time.) They noted the following:

- “The Communications Department could have helped by requesting a police vehicle to lead the ambulance to patients or... could even have transmitted the path to take if the right apps had been downloaded for personal smart phones.”
- “A backup inter-department communications system such as cell phone direct connect should be considered. The Communications Dispatch should maintain listings of police and fire department cellular telephone numbers. However, the radio system still should be the primary system, because cell phone infrastructure may become overloaded and fail during emergency situations.”⁷
- “Satellite Phones: If not already available, consider purchasing a small number of satellite phones that do not rely on cell phone sites and will work at almost any location. During destruction of the explosives removed from the Paris Street apartment, the ATF reported that the destruction location was so remote that cell phones did not work. Also, the cell phone system can get overloaded in a major emergency.”⁸

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- “Alternative forms of critical incident communications were not considered, especially use of cell phones. The Communications Department does not maintain lists of police and fire personnel’s cell phone numbers. Members of the theater audience had better cell phone communications with each other than did police and fire personnel.”⁹

How FirstNet Can Help

FirstNet is a public-private partnership between the First Responder Network Authority and AT&T. The First Responder Network Authority has dedicated \$6.5 billion raised from spectrum auctions for the network. AT&T is committed to spending \$40 billion to build and maintain the communications ecosystem known as FirstNet.

The challenges identified by Tri-Data regarding cellular connectivity are where FirstNet truly shines today. Capabilities that fundamentally assist first responders include:

- **FirstNet Applications and solutions:** FirstNet is hosting an applications and solutions catalog that is limited to highly secure, thoroughly vetted and public safety focused apps. This catalog will feature applications for smart phones and other devices designed to improve response and scene management. Purpose-built mapping applications, for example, could be tied directly with a computer aided dispatch (CAD) system, improving scene access issues. What is more, many of the applications will be open sourced and built by public safety: dramatically reducing the cost to use.
- **Priority and preemption:** No longer will network overload be a concern for public safety. FirstNet provides priority and preemption for all first responder users. Priority means that first responders will always be first in line to access available network resources. Preemption means that first responders can push

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other non-emergency users to a different network band or off the network entirely if the situation requires it. Once on the network, first responders' communications are prioritized over other non-emergency communications, fostering faster, more reliable coordination.

- **Improved Coverage and Deployable Assets:** FirstNet is committed to expanding coverage and capacity on Band 14 in rural areas throughout the U.S. and territories. Band 14 is a nationwide, high-quality wireless spectrum set aside by the federal government specifically for FirstNet. FirstNet will cover 95% or more of the U.S. population with Band 14 once that spectrum is fully deployed. This will bring first responders access to even more coverage and capacity, helping to address rural coverage gaps, and give them greater access to the connectivity they need. Should an incident occur in a largely unpopulated area — like the bombing range in Aurora — FirstNet provides access to dedicated, deployable assets. First responders can call upon these assets in emergencies, so they can stay connected and operate safer, faster and more effectively. By the end of 2018, FirstNet is expected to have 72 of these dedicated deployables.
- **FirstNet online tools:** FirstNet features Local Control, a single portal that gives public safety agencies the ability to manage FirstNet services, wireless plans and devices. Administrators with public safety agencies can “uplift” the relative priority and preemption capabilities of their users in a real-time, dynamic basis using the incident management tool. The FirstNet online tools give agencies the ability to provide their users the enhanced communications capabilities they need to effectively respond to any incident in a timely manner.

Conclusion

Society faces grand challenges daily. Natural hazards test the resolve of our infrastructure, homes and neighbors. Man-made events, such as an active shooter, test the resolve of our psyche and fortitude. Thankfully, selfless first responders throughout the United States and U.S. territories are on shift and on call, ready to face any threat head on.

Public safety personnel are trained to handle any event. They can mitigate the threats and quell the violence. They have not traditionally had the technological resources, however, that can aid them in accomplishing the tasks, tactics and strategy in a streamlined and unified manner. Until FirstNet.

FirstNet offers access to technology that public safety has needed — and requested — for decades, including:

- Unmatched situational awareness and operational coordination capabilities: Linking a wide array of Internet of Things devices to a complex emergency will allow commanders to make informed decisions that can directly affect lives and property.
- First Priority™ network access and preemption capabilities for first responders – always on, not just as needed.
- Deployables dedicated exclusively for public safety – for both planned activities and disaster recovery.
- A dedicated public safety application store with vetted public-safety relevant, highly secure and interoperable apps, coupled with a public safety applications development program that will foster interoperability and facilitate access to new public safety applications through a dedicated developer program.
- Control of users and applications and the ability to give others priority access to the network.

The victims of the Aurora theater shooting will never be forgotten. The senseless violence of this and other complex emergencies underscore the fragility of life. With each tragedy, all in the public safety community learn and improve.

While complex, the response to these emergencies will become more cohesive and unified with the tools deployed by FirstNet. And first responders are in the driver's seat.

