

FIRE-RESCUE

CONNECTED RESPONSE FOR PUBLIC SAFETY

Innovative solutions for firefighters
and their vehicles

INTRODUCTION

FirstNet® Built with AT&T: Why We Exist

As first responders, you need access to fast and reliable communication. It's vital to your ability to serve and protect, to save lives. Yet no one knows better than you what can happen when you don't have access to the best technology.

The devastating losses from the terrorist attacks of Sept. 11, 2001, exposed glaring weaknesses in the nation's communications systems. Cell service was spotty. Emergency response teams could not communicate using their trusted radios. And many died. Of the 2,977 victims who perished that day, 421 were first responders. To prevent such tragic losses from happening again, we had to drastically change the way first responders communicate.

A 9/11 Commission was formed to identify the challenges and gaps in these communications systems. And the report that followed recommended a nationwide communications network just for public safety. In the years after the report's release, public safety organizations and associations came together to advocate for and encourage Congress to pass legislation to create such a network. And in 2012, Congress passed an act that created the First Responder Network Authority (FirstNet Authority) and charged it with building a nationwide communications network just for first responders.

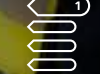

In March 2017, in a first-of-its kind public-private partnership, the FirstNet Authority awarded AT&T a 25-year contract to build, deliver and operate FirstNet – an innovative ecosystem that comprises the network, devices, applications and services. AT&T was the only major commercial carrier to bid and commit to build and maintain the only nationwide network for first responders.

After forming a partnership with AT&T, the FirstNet Authority issued customized State Plans outlining how FirstNet would be deployed.

Thanks to years spent consulting with public safety agencies across the country – combined with AT&T's deep knowledge of and service to public safety – the FirstNet Authority gained a better understanding of the needs of first responders nationwide. The goal: access to a reliable communications network that would be effective in all areas of the country, from rural and sparsely populated areas to mountainous or desert terrains to densely populated cities.

As first responders, you put your lives on the line every day to help others. A reliable and highly secure communications network is what you deserve, what you must have to do your jobs successfully. AT&T is privileged to be partnering with the FirstNet Authority to build and maintain this very important network for you.

The FirstNet®, Built with AT&T Difference

-  Covers more first responders than any other network in America
-  Prioritized access, never competing with commercial traffic
-  Band 14 Spectrum, now covering more than 99% of the American population
-  Highly secure network with available end-to-end comprehensive tower-to-core encryption
-  No throttling for FirstNet subscribers anywhere in the U.S.



In emergent situations, the last thing you need is spotty or even nonexistent cell coverage.

Fire-rescue professionals need reliable connectivity that cuts through the noise to deliver data that improves outcomes.

THE MODERN FIRE-RESCUE RESPONDER

By Amos Chalmers, Senior Solution Architect, FirstNet Program at AT&T and former Deputy Chief Technical Services/CTO, Phoenix Fire Department

When it comes to data, more isn't more. It's great to have access to information, but if it's not the **right** information, **with context, when** you need it, it's worse than useless. For those of us in the fire service, this means data has to inform the decisions we make about firefighter safety, operational effectiveness and often cost. It's that simple.

But connectivity and communication aren't always simple or easy. The reality is we're usually making those decisions in a quickly changing, emergent situation. And we might be communicating in a congested cellular environment with spotty or even nonexistent coverage.

More than anything, fire-rescue professionals need connectivity that can cut through the noise to deliver data that helps improve outcomes. Improving a firefighter's ability to communicate. Reducing turnout and response times. Tracking firefighter biometric information in near real-time, like the level

of air in a tank. Knowing exactly where a firefighter is on-scene so they can be extricated immediately if they're at risk.

And that's just for your personnel. You need the same information for your fire apparatus. Think of a fire engine with a pump on it. The pump is critically important to the firefighters on the other end of the hose. If something goes wrong, you want to know that immediately. When you connect the equipment on an engine, pumper or ladder truck, you can display that essential information on a dashboard, enabling you to make more informed decisions.

A Modern Response

What excites me most about a connected fire-rescue ecosystem is that the modern, connected firefighter and fire engine are giving us greater access to information, helping us deliver positive outcomes.

Through Connected Response for Public Safety, firefighters and chiefs are getting near real-time information at their fingertips. In-vehicle mobile data terminals (MDTs) and tablets, among other technologies, enable seamless **interoperable communications**. That could mean one-to-one communication between firefighters, across agencies or jurisdictions, and among command-center staff and units responding to an incident.

More and better timely information allows **location and situational awareness** that delivers accountability tracking that simply wasn't possible before. That equates to helping to keep squads and communities safe.

Also important is the rise of the **mobile clinical environment** and the **mobile operational environment**. Smart devices like phones and tablets are enabled for voice, text, video and image communications. This makes it far simpler to communicate with your fellow firefighters, hospitals and other receiving facilities when you're transporting patients. I see a future, too, where we're going to be much smarter about monitoring firefighter health and wellness. This will help us mitigate the effects of chronic stress and lower cancer risk.

All of these capabilities are possible through **reliable, prioritized wireless connectivity** in the vehicle – what we at FirstNet®, Built with AT&T call the Connected Vehicle concept. Using the FirstNet 5G router with Wi-Fi connectivity, firefighters and fire-rescue leaders can have robust connectivity even in areas that sit at the edge of a cell connection. And FirstNet MegaRange™ high-powered user devices can help boost the signal at the edge of coverage.

With strained resources and staffing challenges, we're all tasked with doing much more with less. That's one of the areas where I see the greatest potential: The Connected Response for Public Safety on FirstNet ecosystem isn't just innovative, it's a force multiplier.

Just as important, it delivers options for agencies like yours. Limited funding and personnel means you probably can't fork over a lot of money for a complete suite of software solutions. It might make more sense to add one or two new products at a time, growing your capabilities as budget allows. And anything you buy to help modernize your agency should also work with what you already have. Interoperability — the ability to connect to systems and products you know and trust — is a critical part of cutting-edge and future technologies. Again, it gives you more options so you can choose what works for you.

These are just some of the needs FirstNet can fill with Connected Response for Public Safety.

“If you can identify the type of calls you’re going on, the amount of time and where your trucks are spending their time, where your people are and the impact it’s having on their health, then you have a chance at effecting change to get the right resources to the right place. Or identifying populations that could be served better through prevention efforts. That’s the resource imbalance that fire chiefs and EMS chiefs are dealing with right now. All that’s enabled through FirstNet connectivity and through our partners.”



Amos Chalmers
Senior Solution Architect
FirstNet Program at AT&T

Amos Chalmers is responsible for technical architecture and solutioning for public safety in the U.S. and Pacific Territories. His focus areas include dispatch and deployment technology, LMR-LTE interoperability, mobile data communications, deployable technology, and mobile security. Prior to joining the FirstNet Program at AT&T in 2017, Amos spent 20 years in public safety technology for the Phoenix Fire Department and retired as Deputy Chief over their regional dispatch and deployment organization. Amos holds a master's from the W.P. Carey School of Business at ASU and a master's in applied leadership and management.

Connected Response for Fire-Rescue isn't just innovative; it helps agencies do more with less.



If you like, FirstNet can ensure that every firefighter is set up with a working device, saving you time and hassle.

EXPLORE THE CONNECTED RESPONSE ECOSYSTEM

The Connected Response for Public Safety concept wasn't created simply as a way to put a variety of technologies "under one roof." A number of the products for the Connected Vehicle and Connected Responder for fire-rescue have been around. Radios and dashcams aren't anything new, after all.

But to truly modernize and maximize a variety of disparate tools and technologies, they need to work together. In a word, they need to be **connected**. And when they are, the whole is truly greater than the sum of its parts.

As you explore the Connected Response Ecosystem for FirstNet for both vehicles and responders we encourage you to see the potential you can realize through these connections: Smoother, faster communication and response times. More informed deployment of resources. More effective and relevant data. Safer, healthier communities and firefighters.



"Our area is made up of canyons, agriculture fields, grass that's four or five feet tall. You may not be able to see a truck that's 200 yards away from you. With a 40-mile-per-hour wind pushing a fire across, we have to be able to communicate and set our tactics together. We have the ability to use drones in our county that can live-feed back to my phone, my MDT, or wherever. Before FirstNet, we weren't able to stream it back to a specific device or incident commander. So far, I love access to what I have. Any tools we have that allow my people to get home and back to their families is very exciting to me."

– Rob Boyd, Chief, Fire/EMS, Ford County, Kansas

CONNECTED RESPONSE FOUNDATIONAL TECHNOLOGY

★ THE CORE FOUR

While fire-rescue agencies can and should choose only the solutions that will most benefit their personnel, these four technologies are the foundation of Connected Response for Public Safety and often a good place to start:



1 Router – FirstNet 5G Wi-Fi Connectivity

The foundation of all reliable, robust and prioritized connectivity and communications for Connected Response for Public Safety. FirstNet enables public safety to connect in areas where there’s typically little or no coverage and also delivers greater uplink speed.



2 FirstNet MegaRange™

This high-power user equipment (HPUE) solution helps boost your signal at the edge of coverage for a range of communications and needs.



3 FirstNet-enabled Land Mobile Radio (LMR)

Turn a local radio system into a nationwide platform using the FirstNet network. Provides additional capability, allowing for failover and system redundancy in the event of an outage. Reprogramming your radio to align with a neighboring agency’s is simple and quick.

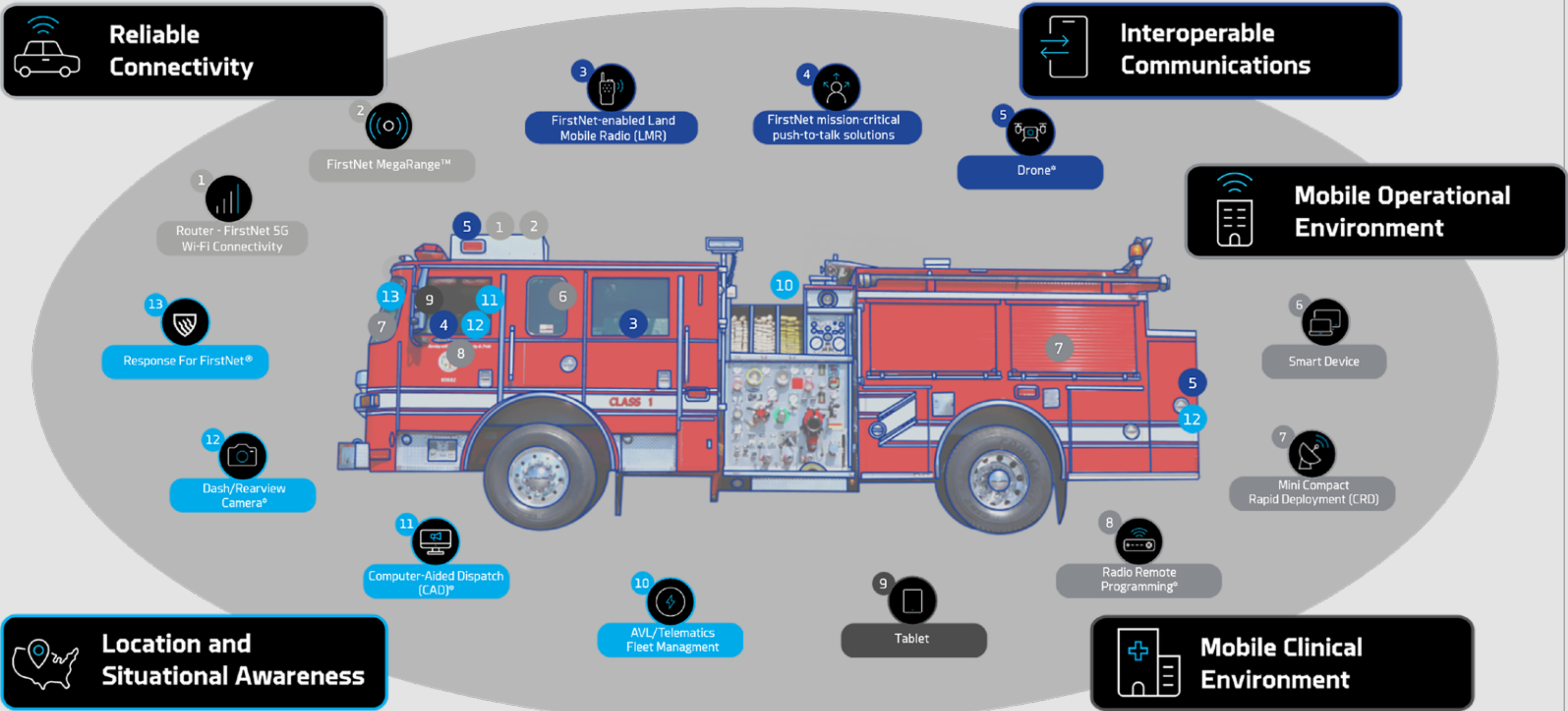


4 FirstNet connected smart device with mission critical push-to-talk

A public safety-grade group communications service defined by 3GPP Mission Critical standards. Delivers group and 1-to-1 push-to-talk calling; location services to map or call team members; text messaging to groups or individuals; file-sharing of images, video clips, documents and more.

CONNECTED VEHICLE FOR FIRE-RESCUE

Meet the in-vehicle solutions designed to improve firefighters' location and situational awareness, provide reliable, prioritized connectivity in a mobile environment and facilitate interoperable communications. Then reach out to learn more about the specific technologies that can help meet your needs.



CONNECTED VEHICLE FOR FIRE-RESCUE



Reliable Connectivity

- ★ **1. Router – FirstNet 5G Wi-Fi Connectivity:** Providing connectivity for nearly every aspect of the Connected Vehicle, the router enables the communication of status changes, runs your computer-aided dispatch (CAD) and records management system (RMS), and connects to the Knox Box. Personnel can also use the router to access electronic patient records (ePCRs).
- ★ **2. FirstNet MegaRange™:** Exclusive to FirstNet, this high-power user equipment (HPUE) solution helps boost the signal at the edge of coverage and in areas with poor cell reception. For EMS functions such as cardiac monitoring, FirstNet MegaRange can help keep you connected so you can send patient updates and receive prehospital instructions.



Interoperable Communications

- ★ **3. FirstNet-enabled Land Mobile Radio (LMR):** In augmenting your existing LMR, this technology delivers nationwide coverage and push-to-talk capabilities that allow for far greater interoperability. The FirstNet LMR also extends the capability of medical radio systems used for prehospital alerts and medical direction.
- ★ **4. FirstNet mission-critical push-to-talk solutions:** Allow easier collaboration with your team and other agencies, share video, images, data, text, voice (1-to-1 or 1-to-many/talk groups), location and more. This all helps improve operational effectiveness and firefighter safety. FirstNet push-to-talk solutions on your smart device allows you to set up fast, seamless communications with any group responding to a scene (including mutual- and automatic-aid situations). And when it's time to file the incident report or hotwash, the necessary documentation is at your fingertips.
- 5. Drone*:** Connect to a drone sent up to provide situational awareness of a fire or other incident and stream video footage to incident command, using that information to provide operational insight.



Mobile Operational Environment

- 6. Smart Device:** Enables video, voice and text communication. Even in areas with minimal connectivity, you can use the FirstNet-enabled smart device to communicate, and FirstNet MegaRange can help boost your signal strength at the edge of coverage.
- 7. mini Compact Rapid Deployable (CRD):** This satellite-based deployable creates a mobile operational environment through which firefighters can set up Wi-Fi to connect through the FirstNet router.
- 8. Radio Remote Programming*:** Delivers the ability to remotely program a radio, eliminating the need to manually program individual radios. This saves valuable time and effort in a mutual-aid situation, for example, with an immediate need to align with another jurisdiction's radio system.



Mobile Clinical Environment

- 9. Tablet:** As in the Mobile Operational Environment, the FirstNet-supported tablet enables many functions for fire departments that provide EMS. You can use the device to track patient vital signs, transmit 12-lead EKG and cardiac monitor defibrillator data, communicate with EDs, and contact medical control for advanced airway management, trauma and pediatric care and more. If your firefighters wear a smartwatch to track their vital signs, the tablet can also show whether a firefighter is incapacitated and needs to be extricated.
- The tablet can also be used for a wide range of applications that provide critical information to firefighters when they arrive on-scene, including checking personnel into and out of an incident (accountability tracking), sharing information with the incident commander, tracking fire inspections, conducting building surveys and interior mapping of buildings, providing building maps to see shut-off locations and alarm panels, and much more. Video captured by a firefighter's helmet camera and displayed on the tablet improves situational awareness and the footage can help inform the incident commander's operational strategy to deploy his/her crew in the most effective and safe manner.

★ These four technologies are the foundation of Connected Response for Fire-Rescue



Location and Situational Awareness

- 10. AVL/Telematics Fleet Management:** By providing vehicle location information, this technology enables dispatch to send the unit closest to an incident, reducing response times. Telematics information also helps leadership monitor the need for maintenance on vehicles and provide information for accident reconstruction purposes. Other benefits of fleet management include reducing idle times, monitoring vehicle performance and various safety features, such as seatbelt sensors for improved firefighter safety.
- 11. Computer-Aided Dispatch (CAD)*:** With the push of a button, the company officer can indicate that a vehicle has arrived on-scene or ended service, making it easy to track and report vehicle status, and prompt accountability/wellness check for personnel.
- 12. Dash/Rearview Camera*:** Provides critical guidance for maneuvering the fire engine as well as recording any traffic incidents that occur while driving.
- 13. Response for FirstNet®:** This app functions as a mobile situational awareness platform for day-to-day and emergency operations. It delivers near real-time mapping of the location of all team members (both X and Y coordinates as well as Z/vertical location). Plus, you can share information between and among groups, and coordinated team mobilization.

*FirstNet does not sell all of the technologies outlined here. However, FirstNet Ready® and FirstNet Trusted™ devices sold by third parties have been through a rigorous device evaluation and testing process to provide first responders and those who support them with highly secure, high-performance devices ready for use on FirstNet.



“What I find so exciting about FirstNet is just the opportunity here. This is something we have never had available to us. We have had communications challenges across the United States among all public safety—people being in different frequency bands, using different systems. FirstNet is the first opportunity that we’ve had to have some consistent platform that police, fire, EMS, everybody can come to be able to still get the information they need to help others.”

– Chris Lombard,
Battalion Chief,
Seattle Fire
Department

A Connected Vehicle can tell you immediately if there’s something wrong with an engine’s pump or if a firefighter needs to be extricated.

CONNECTED RESPONDER FOR FIRE-RESCUE

While there's a lot a connected vehicle can do, true connectivity means extending capability *beyond* the fire apparatus — enabling firefighters to serve safely and effectively no matter where the job takes them. That's where Connected Responder comes in.

- These seven solutions help you:
- Get prioritized connectivity to communicate critical information in near real-time.
 - Use technology to keep firefighters safe, acting as a force multiplier in times of inadequate staffing and resources.
 - Make the firefighters' job easier, simpler and faster — from administrative duties to fighting fires to aiding a neighboring jurisdiction.





CONNECTED RESPONDER FOR FIRE-RESCUE



Interoperable Communications

- ★ **1. FirstNet-enabled Land Mobile Radio (LMR):** Allows the firefighter to use FirstNet network connectivity whenever and wherever they need to, including in times of mutual aid outside their service area.
- ★ **2. FirstNet mission-critical push-to-talk (PTT) solutions:** Building on the extended range provided by FirstNet, this technology allows for the sharing of video, images, data, text, and voice to make collaboration both within and beyond your team easier, faster and more reliable. Firefighters and fire-rescue leaders can immediately see the scale and extent of a fire or emergency scene, allowing for faster decision-making and resource allocation. An action plan can then be sent immediately and simultaneously to all team members. If a firefighter doesn't have a body-worn camera, these solutions can transmit video through their smart device. Using PTT during emergencies frees up space on your LMR channel for critical communication, while still allowing personnel to communicate.



Mobile Operational Environment

- ★ **3. Tablet:** Useful for a wide range of operational and clinical needs, the tablet can be used to enter ePCR data, access CAD and RMS information, view drone footage and patient vital signs and monitoring, track firefighters during an incident, log fire inspections, manage staffing, and access information about hazardous materials, among other uses. In the future, leaders will be able to monitor the air level in a firefighter's SCBA equipment and pass device to ensure their safety.

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Health and Wellness

- ★ **4. Smart Detection^{*}:** While not widely available yet, these tools will enable tracking of indicators such as the Connected Responder's oxygen levels, location and building temperature. Incident command can then determine in near real-time whether a firefighter is at risk and should be extricated.
- ★ **5. Smart Watch^{*}:** Allows for the monitoring of firefighter vital signs such as heart rate and blood pressure in situations of extreme exertion.



Location and Situational Awareness

- ★ **6. Helmet Camera^{*}:** Camera footage from the helmet improves situational awareness that reduces risk for firefighters, delivers critical information to an incident commander (via a tablet or other smart device) and can provide evidence in the event of litigation. Eventually, more firefighters will be able to transmit other data such as thermal imaging measurements through cameras like these.
- ★ **7. Response for FirstNet[®]:** This mobile situational awareness app gives firefighters access to near real-time mapping of the location of all team members, enables information-sharing and facilitates the coordinated mobilization of teams.

★ These technologies are the foundation of Connected Response for Fire-Rescue.



Interoperability means your personnel can talk, text and share video and photos with one another regardless of location, jurisdiction, device or wireless carrier.



GETTING STARTED WITH CONNECTED RESPONSE FOR FIRE-RESCUE

Now that you've seen the Connected Response ecosystem for FirstNet and have an idea of how it helps firefighters and fire-rescue leadership, chances are you have a few questions. Here are some answers to help you assess whether these solutions are right for you:

Q: Why do I need FirstNet?

A: The ability to communicate and connect reliably with fellow firefighters, leadership, neighboring agencies and beyond is foundational to your ability to do your job. So is a platform that expands those capabilities and continues to reinvest in the network with public safety's input. That's what [FirstNet is and does](#). Simply put, FirstNet was born out of necessity: to allow responders to communicate in any situation.

FirstNet, Built with AT&T uses Band 14, which is spectrum coverage set aside specifically for public safety.

Q: What does Band 14 spectrum coverage mean for me?

A: Think of [Band 14](#) as public safety's VIP lane. It is spectrum set aside for public safety, only available on FirstNet and dedicated when first responders need it most. Band 14 provides FirstNet users with the confidence that they will get prioritized connectivity when and where you need it most.

Q: Our agency isn't on FirstNet or AT&T. How can I make sure the transition to a new network will be smooth?

A: Having worked with tens of thousands of public safety agencies of all sizes, we can say with confidence that we know how to make the move to FirstNet seamless for you and your personnel. We can help you remotely or come to you on-site, if you prefer. Services can include setting up devices so every firefighter walks out with a working FirstNet device, saving you time and hassle.

Q: How can I be sure that FirstNet will work with the software we already use?

A: With more than 660 [devices](#) and growing, chances are very good that FirstNet is compatible with your current infrastructure. As part of AT&T's contract with the [FirstNet Authority](#), our devices are certified by the federal government's [National Institute of Standards and Technology \(NIST\)](#).

Q: What about coverage where I am? How can I be sure I'll have the connectivity I need when I really need it?

A: FirstNet coverage has always been, and remains, a top priority. That's why AT&T spent the first five years building out Band 14 wireless coverage nationwide as well as providing connectivity through a [fleet of deployable assets](#) like SatColts (Satellite Cell on Light Trucks), CRDs™ (Compact Rapid Deployables) and FirstNet MegaRange High Power User Equipment (HPUE) that can boost your signal at the edge of the coverage.

We know that without reliable communication, your mission can't be successful. So to ensure you always know the status of your coverage, FirstNet also provides the Advanced Network Viewer/[FirstNet Central](#) portal, which gives you visibility into everyone on your FirstNet system as well as network status and the ability to layer in external information like weather and traffic conditions, cell towers, outages, and more.

Q: You mentioned enhanced mutual aid. How does this work if another agency or jurisdiction doesn't have FirstNet?

A: FirstNet is inherently interoperable because it adheres to open international wireless standards (called 3GPP) as required by federal law. Interoperability means first responders can communicate – talk, text, share video and photos – with one another regardless of location, jurisdiction, discipline, device, or even wireless carrier. It doesn't matter if a first responder on FirstNet gets a call from someone on a commercial network or from another FirstNet device, their traffic **always** has priority on FirstNet.

More questions? We'd love to answer them. Please [contact](#) a FirstNet Solutions Consultant to learn more.

Coverage has always been a FirstNet priority; we know that without reliable communication, your mission can't succeed.



**CONNECT WITH FIRSTNET,
BUILT WITH AT&T**

**FIRST TO RESPOND.
FIRST TO CONNECT.**



To learn more visit:

<https://www.firstnet.com/campaigns/connected-vehicle.html>

