**SIERRA
WIRELESS®**

When Disaster Strikes – First Responders and Public Safety Agencies Rely on Sierra Wireless Ruggedized Routers

Do You Have the Right Gear When You Need It the Most?

During routine operations, if your communications equipment doesn't work right, it's an annoyance. In an emergency, gear that doesn't perform can cost response time and lives.

Ruggedized design, always-on connectivity and the right support services help ensure that you have the best solution available to get the job done. See why first responders and public safety agencies rely on Sierra Wireless when disaster strikes.

TABLE OF CONTENTS

Introduction

On September 28th, 2022, Hurricane Ian slammed into South Florida with 150 mile-per hour winds and a deadly storm surge. It is estimated that Ian will be the costliest hurricane to make landfall in Florida. First responders from Florida and all over the US immediately went into action to rescue individuals and repair damaged infrastructure. It is estimated that there were 42,000 linemen helping to restore power in the state at the peak of the recovery efforts.

Communications played a major role in coordinating the efforts of the first responders, linemen and volunteers. With cell towers down or lacking power, connectivity became a very important commodity. This includes connectivity over public cellular networks as well as first responder networks such as AT&T FirstNet®, Verizon Frontline and T-Mobile® for Government.

Disasters such as hurricane Ian highlight how important it is for first responders and front-line utility workers to have ruggedized, reliable connectivity solutions installed, tested and ready to go. Marginal equipment can hinder emergency responses which can ultimately cost lives.

Ensure Your Equipment Meets the Challenge

In times of emergencies, it's critical that your communications equipment operates 24/7. The key to ensuring reliable operation is ruggedized design, always-on connectivity and first-rate support.

Ruggedized Design

Unlike desktop and data center routers that see minimal movement and use fans for cooling, routers for use in first responder and public safety applications need to be ruggedized and as bullet-proof as possible. With no external fans, heat is removed from the router through customized metal enclosures and superior design techniques. The best routers are built with die-cast housings which are purpose-built to draw heat from high-temperature wireless components and withstand abuse from field operations.

Routers for field use need to be sealed (rated to IP64) from the elements including rain, humidity and dust. They need to operate at wide temperature extremes from freezing cold to baking hot. And since many of these applications are vehicle-based, routers need to run on a wide range of DC voltages and tolerate extreme noise and voltage spikes.

Always-On Connectivity

A router's job is to connect to the best signal possible and maintain that connection as long as possible. If the cellular signal starts to fade, the router must switch to a secondary cellular carrier as quickly as possible to avoid outages. The best routers have dual cellular radios that are always on for redundancy.

Routers also need to connect with a variety of first responder equipment and networks. They must support integration with land mobile radios (LMRs) and tie into a vehicle's on-board diagnostic system allowing dispatch to see a vehicle's location and know if it's functioning correctly. Routers provide high-power Wi-Fi to create vehicle area networks (VANs) to interconnect all vehicle devices and user-worn and held devices such as body cameras and cell phones.

First responders must be able to connect to a variety of cellular networks including dedicated first responder networks such as FirstNet, Verizon Frontline and Emergency Services Network (ESN). They need to ensure that these communications are secure and not vulnerable to security attacks.

Support and Tools

First responders need to easily manage a whole fleet of devices. Modern router management software helps operations know which devices are operational and where they are. Over-the-air (OTA) device updates help ensure that all routers have current software updates and security patches. The same software can track individual vehicle status with advanced mapping applications.

First Responder and Public Safety Applications

In the following application scenarios, first responders and public safety workers leverage ruggedized cellular routers to form vehicle area networks (VANs) using the router's Wi-Fi. This enables field teams to connect vehicle mounted, body-worn and hand-held devices and effectively collaborate throughout the first responder and public safety ecosystem.

Cellular connectivity also supports computer aided dispatch and automated vehicle location (CAD/AVL) functionality enabling depots to always know the position and status of all vehicles. This minimizes emergency response times across all agencies involved.

Law Enforcement

Law enforcement agencies depend on real-time connected devices including automated license plate readers, dash cameras, body cameras, laptops and radios. The vehicle's router connects these devices using Wi-Fi within a vehicle area network. The Wi-Fi is also used to download stored videos at the depot at the end of each shift. Cellular connectivity (5G, 4G LTE, FirstNet, ESN) connects the vehicle with depots/dispatch and the rest of the public safety network.
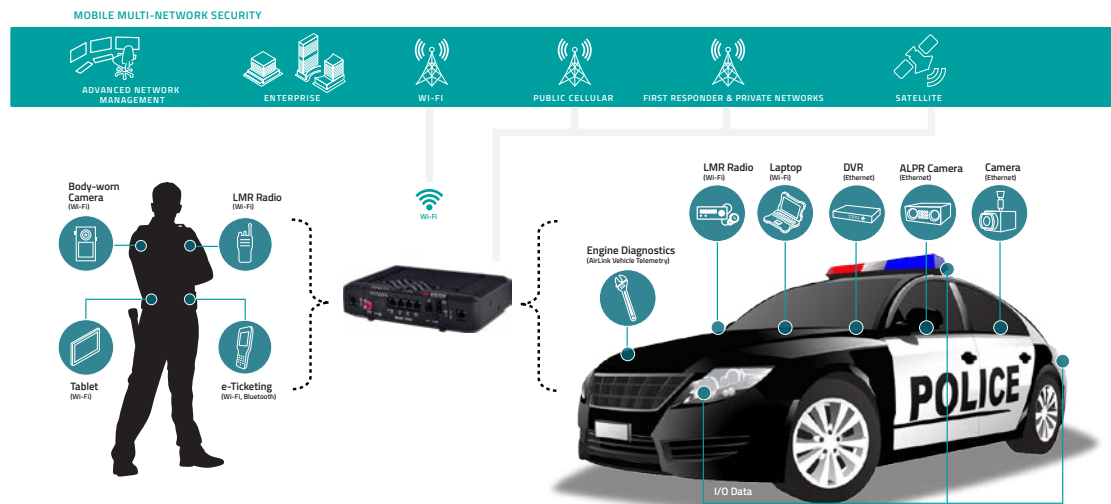
Firefighters

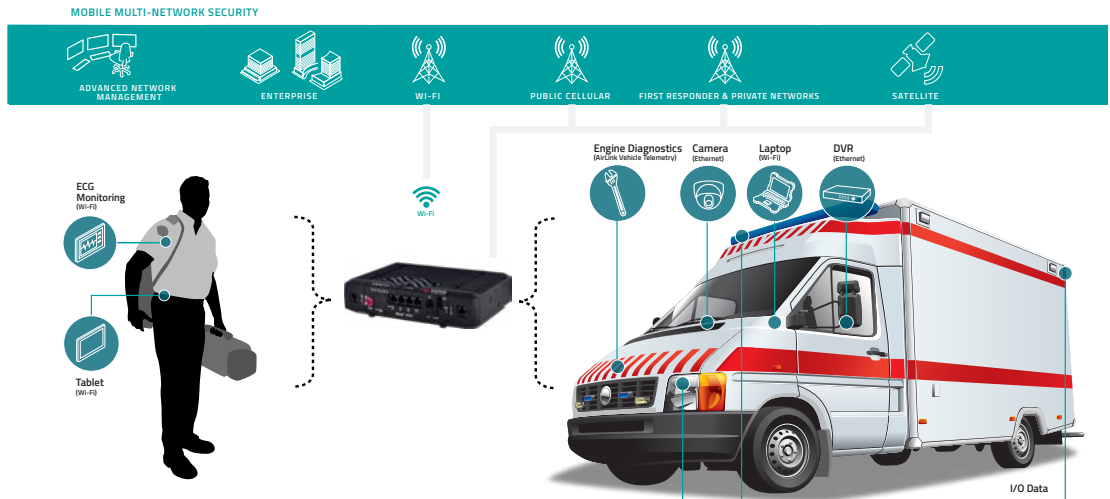Firefighters need real-time information to maximize communications between all situation responders. The router in the fire truck must connect both vehicle devices as well as fire personnel hand-held devices. The Wi-Fi VAN within the fire truck can help support advanced firefighting tools such as augmented reality (AR) to see through smokey interiors and firefighting robots to minimize personnel hazards.
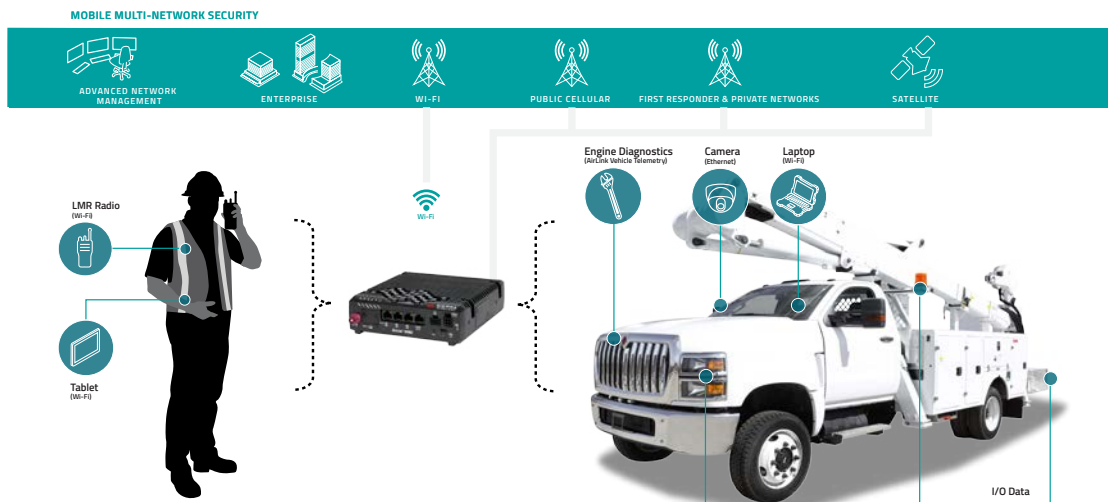
Emergency Medical Services

Emergency medical service (EMS) personnel know how critical it is to have the right information to treat patients in the field as well as in the hospital. Cellular connectivity can help field teams gain access to electronic patient care records (EPCR) in real-time to better treat emergencies. EMS technicians can also quickly transmit patient data back to the hospital so doctors can be better prepared for patient arrival. Proper wireless router security ensures that patient records and condition are kept confidential.

MOBILE MULTI-NETWORK SECURITY

ADVANCED NETWORK MANAGEMENT	ENTERPRISE	WI-FI	PUBLIC CELLULAR	FIRST RESPONDER & PRIVATE NETWORKS	SATELLITE

ECG Monitoring (Wi-Fi)

Tablet (Wi-Fi)

Wi-Fi

Engine Diagnostics (AirLink Vehicle Telemetry)
Camera (Ethernet)
Laptop (Wi-Fi)
DVR (Ethernet)

I/O Data

Utility Mobile Workforce

Utility workers responding to line outages in emergency situations are very much part of the first responder work team. Reliable cellular communications help to improve efficiency and decrease response time for restoration of power in an emergency (ROPE). Advanced vehicle connectivity lets dispatch know the position and status of all vehicles and can even monitor position of the bucket truck arm.

MOBILE MULTI-NETWORK SECURITY

ADVANCED NETWORK MANAGEMENT	ENTERPRISE	WI-FI	PUBLIC CELLULAR	FIRST RESPONDER & PRIVATE NETWORKS	SATELLITE

LMR Radio (Wi-Fi)

Tablet (Wi-Fi)

Wi-Fi

Engine Diagnostics (AirLink Vehicle Telemetry)
Camera (Ethernet)
Laptop (Wi-Fi)

I/O Data

Sierra Wireless Solutions for First Responders and Public Safety

Sierra Wireless manufactures ruggedized AirLink routers for use in first responder and public safety applications. The AirLink XR90, AirLink XR80 and AirLink RX55 are built with cast aluminum housings and are designed to operate over wide temperature and environmental conditions. They have IP64 rated ingress protection ratings and meet MIL-STD-810G conformance to shock, vibration, thermal shock, and humidity. They are also specifically designed and tested for vehicle use.

END-TO END SECURITY

All AirLink routers incorporate an end-to-end security approach ensuring coverage from device to network to the cloud, providing the most secure IoT cybersecurity solution available in the market. AirLink routers use AirLink Management Service (ALMS) to deliver over-the-air (OTA) updates with the latest security patches as new threats emerge.

COGNITIVE WIRELESS TECHNOLOGY

AirLink routers use cognitive wireless technology to intelligently steer traffic across multiple wide area networks (WAN) delivering always-on connectivity and cost/bandwidth optimization. Users can set up detailed rules for their routers that direct them to use cellular, Wi-Fi or Ethernet networks, or split traffic between these networks depending on the type of data they are transmitting, changes in the network and where the vehicles are. As an example, a law enforcement vehicle might use cellular connectivity when driving through a city and automatically switch to Wi-Fi when arriving at the service depot.

5G, WI-FI 6 AND PRIVATE NETWORK COVERAGE

The AirLink XR90 and AirLink XR80 use both 5G and 4G LTE cellular bands. 5G communications delivers higher-bandwidth and lower-latency communications which better enable real-time communications, real-time data and video sharing and augmented reality enhancements. The AirLink XR90 and AirLink XR80 also use Wi-Fi 6 to deliver the highest end-to-end communications speed possible. All three AirLink routers for use in public safety operate over private networks and emergency networks such as FirstNet, Verizon Frontline and Emergency Services Network (ESN).

AirLink XR90

5G

AirLink XR90
Shown with two expansion cartridges

The AirLink XR90 cellular router is the highest performing, most flexible router in the Sierra Wireless portfolio. The router is available with dual-5G cellular radios and dual independent 4×4 MIMO Wi-Fi 6 radios. The AirLink XR90 is GNSS equipped and certified to operate on First Responder Networks as well as many private cellular bands.

The AirLink XR90 is best suited for large law enforcement fleets.

AirLink XR80

5G

AirLink XR80
Shown with single expansion cartridge

The AirLink XR80 cellular router is available with dual 5G radios and a single 5X4 MIMO Wi-Fi-6 radio. The router is GNSS equipped and certified to operate on First Responder Networks as well as many private cellular bands.

The AirLink XR80 is best suited to medium sized law enforcement fleets, fire trucks and EMS vehicles.

AirLink RX55

AirLink RX55

The AirLink RX55 cellular router operates on 4G LTE and Wi-Fi 5. The router is GNSS equipped and certified to operate on First Responder Networks as well as many private cellular bands.

The AirLink RX55 is best suited to utility vehicle fleets.

AirLink Router Comparison Table

TOP FEATURES	AIRLINK XR90	AIRLINK XR80/XR80 5G	AIRLINK RX55
Best Application Fit	• Large law enforcement fleets	• Medium law enforcement fleets • Fire trucks • EMS vehicles	• Utility vehicles • Service and command vehicles
Cellular Coverage	• 5G • 4G LTE • FirstNet • Emergency Services Network (ESN) • Private networks	• 5G • 4G LTE • FirstNet • Emergency Services Network (ESN) • Private networks	• 4G LTE • FirstNet • Private networks
Cellular Radios	Expandable to two cellular radios	Expandable to two cellular radios	One cellular radio
Wi-Fi	Wi-Fi 6	Wi-Fi 6	Wi-Fi 5
Wi-Fi Radios	Dual 4x4	Single 5x4	Dual 1x1
Operating Temperatures	-30°C to +70°C / -22°F to +158°F	-30°C to +70°C / -22°F to +158°F	-30°C to +70°C / -22°F to +158°F (Wi-Fi variant)
Size – Base Unit	220mm x 170mm x 53mm (6.69in x 8.66in x 2.08in)	220mm x 170mm x 53mm (6.69in x 8.66in x 2.08in)	119 mm x 33 mm x 85 mm (4.69 in x 1.34 in x 3.35 in)
Size – With Single Expansion Cartridge	220mm x 220mm x 53mm (8.66in x 8.66in x 2.08in)	220mm x 220mm x 53mm (8.66in x 8.66in x 2.08in)	–
Size – With Dual Expansion Cartridges	268mm x 220mm x 53mm (10.55in x 8.66in x 2.08in)	–	–
Services	• AirLink Premium which includes Sierra Wireless Advanced Mobility Reporting and Advanced Replacement Program	• AirLink Complete • Advanced Mobility Reporting (Optional)	• AirLink Complete • Advanced Mobility Reporting (Optional)

AirLink Services and Support

REMOTE DEVICE & SECURITY MANAGEMENT
with AirLink Management Service (ALMS)

OUT-OF-BAND MANAGEMENT
(AirLink XR80 router only)

AIRLINK COMPLETE

HARDWARE WARRANTY

TECHNICAL SUPPORT

Trip Report

Advanced Mobility Reporting (AMR)
Cloud-based for Fixed & Mobile Assets

Driver Behaviour Report

AirLink Mobility Manager (AMM)
Cloud-based or On-premise for Mobile Assets

AirLink Complete

AirLink Complete includes **AirLink Management Service (ALMS)** and delivers 24/7 technical support to detect, diagnose and troubleshoot issues quickly and remotely. It also includes options for extended hardware warranty for up to 5 years, unlimited firmware updates and security patches to ensure the longevity of the solution.

One of the primary benefits of AirLink Complete is that ALMS allows for managing router deployments and software and security updates. ALMS supports over-the-air device registration, configuration and software updates. Configurable dashboards display up-to-date views of the entire device fleet, and custom reports can be set up to monitor critical events and prevent downtime.

The interactive monitoring dashboard and map shows the status, signal information, and location of all AirLink routers deployed. Users can drill down to quickly troubleshoot devices or update older versions of firmware with one-click. Advanced heartbeat reporting and custom alerts can be set up to notify when devices go offline, resulting in faster issue identification, less downtime and fewer field trips.

Advanced Mobility Reporting (AMR) is an optional add on component to ALMS that provides advanced historical reporting and insight into generated telemetry data. Reports include driver behavior, coverage map, vehicle reporting, vehicle utilization and trip reports.

AirLink Premium is available for the AirLink XR90 and includes all the features of AirLink Complete plus Advanced Mobility Reporting (AMR) and an Advanced Replacement Program allowing you to receive a loaner device while a malfunctioning device is under RMA to avoid downtime for your solution.

Why Sierra Wireless?

Sierra Wireless has more than 25 years of cellular-first experience helping public safety, industrial and infrastructure organizations deploy reliable and cost-effective wireless solutions. As a part of the global cellular technology ecosystem, our partnership with all major cellular carriers ensures you have the performance and connectivity required for your mission-critical and business-critical applications.

Timeline:

- 1997 — 1st cellular embedded module
- 1999 — 1st wide area network interface card
- 2001 — Embedded software platform for M2M / OpenAT
- 2007 — 3G M2M gateways (AirLink®)
- 2008 — 1st embedded SIM for M2M market
- 2009 — AirVantage® M2M cloud platform
- 2010 — 1st HSPA+ modems & embedded modules
- 2011 — 1st-to-market LTE embedded modules (AirPrime®)
- 2012 — 1st thin form factor embedded module for 4G LTE / Smallest cellular module (AirPrime®)
- 2013 — 1st Tri-Network Hotspot / 1st multicore M2M embedded modules
- 2014 — Smallest embedded wireless modules: 2G, 3G & 4G / 1st open source, Linux-based embedded platform for M2M / Legato® / 1st LTE embedded modules
- 2015 — 100M devices – Over 100M connected devices shipped globally / mangOH™ Open hardware reference design
- 2016 — Ready-to-Connect plug and play technology / Smart SIM and connectivity service / 1st NB-IoT/LTE-M, dual-mode module
- 2017 — Lowest power LTE industrial gateway
- 2018 — 1st CBRS module / 1st LPWA cellular router / 1st FirstNet Ready vehicle router / Most compact LTE router
- 2019 — 1st 5G module prototype / 5G / Most rugged, compact LTE-A Pro router
- 2020 — GNSS modules / 1st 5G module
- 2021 — Octave™ 1st data-driven transformation / 5G 1st 5G router with Edge Computing

Sierra Wireless has delivered innovation and leadership throughout every cellular evolution.

- **150 million** devices shipped worldwide
- **80+ networks** supported globally
- **400+ patents** in wireless technology
- **130+ countries**
- **$75M+** invested annually in cellular technology R&D

In addition, Sierra Wireless provides mission-critical and business-critical solutions where they are needed most.

- **More than 75% of high-performance EMS Systems** trust Sierra Wireless routers to support paramedics in the field.

- **70% of the Top 10 State Police Agencies** use Sierra Wireless purpose-built routers in their vehicles.

- **More than 50% of the Top 100 Police Departments** rely on Sierra Wireless routers in cruisers and incident response vehicles.

- **More than 80% of the Top 20 US Utilities** use AirLink routers for smart grid deployments and vehicle fleets.

- **All of the Top 10 Oil & Gas producers** rely on Sierra Wireless to keep their infrastructure running smoothly.

- **More than 25% of the Top 50 US Transit Agencies** depend on Sierra Wireless to improve passenger services and operations.

To Learn More

To learn more about 5G solutions from Sierra Wireless call us at **1-877-687-7795** or email **sales@sierrawireless.com.**

About Sierra Wireless

Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is a world leading IoT solutions provider that combines devices, network services, and software to unlock value in the connected economy. Companies globally are adopting 4G, 5G, and LPWA solutions to improve operational efficiency, create better customer experiences, improve their business models, and create new revenue streams. Sierra Wireless works with its customers to develop the right industry-specific solution for their IoT deployments, whether this is an integrated solution to help connect edge devices to the cloud, a software/API service to manage processes with billions of connected assets, or a platform to extract real-time data to improve business decisions. With more than 25 years of cellular IoT experience, Sierra Wireless is the global partner customers trust to deliver them their next IoT solution.

For more information, visit www.sierrawireless.com.

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