Wireless Solutions for Emergency Response
Rapid-deployment wireless for rapid-response situations

The flag goes up, the horn goes off, or the emergency notification system is activated. In all cases, a major event is expected or has occurred and first responders are being deployed. However, with today’s infrastructure-focused networking, the question is, will they have the communication tools required to meet the challenges they will face?

A major national emergency or Mother Nature’s fury or just a bird bridging transformer contacts can result in a significant, if not total, loss in telecommunications service. In such situations, emergency personnel will need to provide their own communication network.

Consequently, there is a dire need for a comprehensive emergency networking/communication solution that allows authorities to adequately prepare for, ride out, and ultimately overcome these unexpected events.

A rapid-deployment wireless network solution is the answer. Xirrus provides such a solution, and it has been a lifesaver (figuratively and quite possibly literally) for numerous emergency response organizations.

Rapid response challenges for IT

It’s easy to set up a tent and some tables and chairs, but what about the network? Are you going to pull cables and plug in switches? How many networking devices will be required? What types of network services are required? These are just some of the IT challenges that must be planned for, and they fall into three major areas:

1. Rapid and easy deployment
2. High reliability for short- and long-term events
3. Support for secure voice, video, and data services

Rapid deployment

In an emergency, first responders deploy in minutes and emergency communication systems cannot take hours to deploy. Immediate communication services are required to assist those impacted. Those on scene and those in support functions require real-time information so the right resources can be deployed to the right locations within tight time constraints. In situations when minutes can mean the difference between life and death, taking hours to deploy a communications lifeline is not an option.

Network reliability

Disasters can occur at any time and can last from hours to months. So emergency communications systems must be extremely reliable to provide services required as long as required. As result, network reliability is a primary concern and levels of resiliency are required to ensure the proper level of network availability and capacity.

Secure services

On-scene commanders may or may not have basic phone services. Even if they do, the available bandwidth will be significantly reduced due to the sharing of limited undamaged resources. Having the ability to provide reliable voice and data communications to their team will be vital. Additional capabilities such as video for face-to-face communication, video streaming, or even to assist with medical services could be life saving. Adding the ability to restrict and secure the communication channel is often required as well.
Wireless networking that is ready for any emergency

What is required is an encompassing communication solution that offers portability via most common transportation methods, fast and simple deployment, ability to support all required applications securely, and the ability to provide sufficient coverage to meet the vast majority of deployment scenarios.

The Xirrus RDK solution is a unique and cost-effective mobile solution for emergency response, allowing quick and easy setup at a deployed site. Designed to meet the requirements of corporations, the public safety agencies, and the military, the RDK is lightweight, portable, and robust, providing a complete suite of communication capabilities for hundreds of users per device.

With a fully integrated design delivering a coverage range well beyond typical wireless access points, the wireless networking array is the only solution of its kind for setting up a pervasive wireless network with such simplicity.

Easy transport and rapid deployment

The Xirrus Rapid Deployment Wireless Array Kit (RDK) enables fast and easy deployment of wireless service that can support hundreds of users with a single, pre-configured device. The RDK provides a complete, portable wireless solution with everything needed to create a wireless network in two rugged cases. It is easily deployed indoors or outdoors for temporary situations requiring wireless access. All that is required is an AC power source and an Internet uplink connection to deploy a wireless network that can be ready in less than 5 minutes.

Key features of the Xirrus RDK include:

- **Easily portable** — The RDK solution comes in two portable ruggedized cases allowing for easy transport and physical setup.
- **Integrated design** — The Xirrus Wireless Array integrates radio, controller, security, and AAA functions into a single device, significantly reducing the number of components that must be deployed for an operational Wi-Fi network.
- **Five-minute deployment** — A pre-configured RDK can be operational in under 5 minutes.
- **Flexible uplink** — The RDK connects directly via Ethernet to a router, cable or DSL modem, 3G/4G connection, or satellite uplink.
- **Mobility** — The RDK can be mounted on a tripod or pole mounted on a fixed or mobile location (truck/humvee) allowing great flexibility and rapid relocation of the system.

Enterprise-class services in the field

The Xirrus RDK includes all the capabilities and services required to deliver an enterprise-class, high-performance wireless network for hundreds of users anywhere it needs to be set up. With fully integrated network services it is really the only commercially available ‘network in a box,’ making it the only solution of its kind for rapidly deploying a wireless network.

When designing a field-deployable solution that offers all the services of an enterprise network the following capabilities are required:

- **High density of radios** — A single RDK with 4–8 radios can support hundreds of wireless users.
- **Multi-spectrum radios** — To support various client types, the RDK operates on the 2.4GHz, 5GHz and the 4.9GHz (public safety) bands with on-the-fly radio spectrum configuration.
- **Data/network services** — The RDK supports integrated RA-DIUS, DHCP, a stateful firewall as well as full QoS services to provide an enterprise class network in the field.
- **Secure communications:**
  - Authentication — 802.1x, MAC, and captive portal authentication services
  - Encryption — WPA2, WPA, WEP
  - Military-grade security — FIPS 140-2, JITC, PCI, HIPPA, and WFA 802.11i certifications

Network reliability

In emergency situations, network availability is always key and can make the difference between life and death. Recognizing this, Xirrus engineered a solution with multiple layers of redundancy to provide the highest level of availability.

Availability can be separated into reliability, redundancy, and resiliency. Key features include:

- **Reliability** — this is how robust the system is designed to be.
  - MTBF rating of 5 years
  - OS reliability via a Linux kernel, offering the highest reliability, security, and scalability
  - Integrated intelligence in each RDK, eliminating reliance on a central controller and the associated single point of failure
The Xirrus RDK was selected as part of the County of San Bernardino, Disaster Response Mobile Connectivity Solution. The County’s Information Services Department’s Core Solutions and Security Division (CSSD) chose the Xirrus Wireless Array to quickly deliver and distribute voice, video and data network access for county, federal, and non-profit groups during disaster and recovery operations. The county recently won an award from the National Association of Counties for this disaster response mobile connectivity solution.

**Requirements**
- Wireless access through the county’s network and the Internet
- Seamless and immediate service in the event of disaster
- Minimum devices required for a complete solution
- Highly reliable wireless solution to compliment disaster recovery solution

**Solution**
- Ratio of Wi-Fi Arrays to traditional APs — 1:5
- 80% reduction in number of access points required
- 80% reduction in cables to pull
- 80% reduction in required (scarce) power ports

**CASE STUDY — COUNTY OF SAN BERNARDINO**

“The Wildfires of 2007 were the first test of our disaster recovery solution. The Xirrus Array provided the County’s departments, Federal, and non-profit agencies stationed at the Orange Show Fair Grounds with immediate network connectivity and communications from a network drop.”

JAKE CORDOVA, Information Services Department, County of San Bernardino

**Be prepared with the Xirrus RDK.**

Manmade and natural disasters require an immediate response to save lives and property. The RDK is designed to quickly and simply provide a robust connectivity solution, supporting voice, video, and data access to many users over a large area without the complexity of deploying multiple APs, antennas, controllers, etc. The RDK delivers out-of-the-box capability for deploying a fully functional, highly scalable wireless network.

**For more information**

For more details on how Xirrus can help you solve your emergency response challenges, visit us at [www.xirrus.com](http://www.xirrus.com) or send us an email at [info@xirrus.com](mailto:info@xirrus.com).

**About Xirrus**

Xirrus provides unique, high-performance, array-based wireless solutions that perform under the most demanding conditions, while delivering wired-like reliability, superior security, and less infrastructure requirements. Xirrus is a privately held company headquartered in Thousand Oaks, CA.