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Insights

When Disaster Strikes, Wi-Fi Responds

By Jeff Goldman

In almost any disaster recovery scenario--from wild fires to bridge collapses to earthquakes or storms--Wi-Fi offers the perfect mix of flexibility and interoperability.

Following the devastation of Hurricane Katrina in the fall of 2005, a group of Burning Man participants calling themselves Burners Without Borders headed to Pearlington, Mississippi and began helping out in any way they could.

And a simple Wi-Fi router was key to their efforts.

Participant Tom Price says the group used a Kyocera KR1 Mobile Router and an EVDO card to get online in Mississippi.

"We're sitting in a swamp running gas generators perched in the debris of what used to be the post office, with this router inside a plastic bin nail-gunned to a pole we'd stuck in the ground—and that was our lifeline to the world," he recalls.

Burners Without Borders continues to operate aid projects in remote areas—they're currently helping Pisco, Peru recover from last fall's 8.0 earthquake—and Price says Internet connectivity is always key, for both communications and fundraising.

"We're a diverse community of people located internationally, and so whenever we work on a project, being able to connect wirelessly puts us in touch with that entire global network of money, resources, and expertise," he says.

Quick and cheap

ABI Research analyst Stan Schatt says Wi-Fi is uniquely capable of providing the kind of flexibility that a disaster recovery operation like Burners Without Borders needs.

"Wi-Fi is particularly valuable for setting up very quick, temporary communications networks," he says. What's more, Schatt says, just about everybody has a piece of equipment that can connect to a Wi-Fi network.

"It's portable, it's inexpensive to set up, and probably even more important, most companies now have Wi-Fi equipment already onsite, so they don't have to buy anything," he says. Still, it does have its limitations.

"One of the issues that Wi-Fi faces in a situation like that is the threat of interference, because there's so much 2.4 GHz stuff out there," Schatt says. "What happens if there's a disaster in a high-rise and everybody tries to use their Wi-Fi to get out? It's going to be worse than a situation on a tarmac where everybody tries to use their cell phone at the same time."

Avoiding interference

Joel Vincent, senior manager for outdoor wireless at Cisco Systems, notes that one way to avoid interference is to use the 4.9 GHz public safety band whenever possible.

"We have products that can support the private band for public safety, as well as public-band Wi-Fi, in the same box," he says. Still, when demonstrating those products to customers, Vincent says, Cisco sees the Wi-Fi functionality as a key asset for disaster recovery scenarios.

"We show them, in an emergency situation, if for whatever reason, the private band is not available, here's how you can use the public Wi-Fi network to keep the emergency teams operational and effective," he says.

The company's Network Emergency Response Vehicle (NERV), a mobile command center for disaster management, serves as a central processing center for a wide variety of different communication methods in an emergency—and it uses Wi-Fi as a key technology.

"It's a really easy way to do a quick, ad-hoc network and pop open some communications," Vincent says.

Speed of deployment

When the I-35W Mississippi River bridge collapsed in Minneapolis last August, the city's Wi-Fi network proved to be critical in helping with emergency response. The network, built by USI Wireless using equipment from BelAir Networks, allowed first responders to download structural information about the bridge, monitor live video feeds, and communicate over VoIP.

BelAir CTO Stephen Rayment says Wi-Fi offers three key strengths in a situation like that: broadband performance, straightforward interoperability, and ease of deployment. In July of 2005, Rayment says, BelAir deployed a Wi-Fi network in less than 24 hours to help first responders handle wildfires in Cave Creek, Arizona—and close to 100 users were able to exchange data and communicate with each other on a network that hadn't existed the day before.

New Energy Technologies has taken that concept to the next level, building BelAir's equipment into rugged quick-deployment kits and pre-configured vehicles for emergency response.

"Out of an H3 Hummer with nothing more than a standard rooftop carrier on the top of it, we can establish between one-and-a-half and two square miles of coverage with data, voice, and video, with one person, in about an hour and a half," says company CTO Dave Kimberling.

And the universal availability and interoperability of Wi-Fi equipment, Kimberling says, are key assets for New Energy's offering.

"I can walk into any consumer electronics store and purchase a standard laptop that already has built-in 802.11, and I can get onto a Wi-Fi network… there's nothing in any of the products that we've put together that is proprietary," he says.

An ideal solution

Tropos Networks' Wi-Fi equipment has proved essential in providing communications for a wide range of scenarios, from New Orleans after Hurricane Katrina to Laguna Beach, California amid wildfires. According to company director of marketing Denise Barton, a county in Los Angeles (unnamed for obvious reasons) is using Tropos equipment to deploy a Wi-Fi network in a different location almost every night to monitor for drug dealing and gang activity.

"The beauty of the wireless network is that they can put it up and take it down very quickly, so it can be used for tactical applications," she says.

Similarly, Trapeze Networks is using Wi-Fi for disaster response in schools—company director of product marketing David Cohen says an educational environment is perfect for that kind of deployment, since the same network that's being used for student and faculty Internet access can support everything from video monitoring to emergency communications.

"To enable all the administrators, firemen, police captains, all those people, to communicate with each other on a wireless network, that is a tremendous resource," he says.

To that end, Cohen says, it's the interoperability that really makes Wi-Fi ideal in an emergency situation: any first responder with a Wi-Fi device can instantly access the network as needed.

"Wi-Fi uniquely offers one system with guaranteed interoperability," Cohen says. "Everything just works together."

Jeff Goldman is a frequent contributor to Wi-FiPlanet.