

Security in the Face of Disaster



How a New Orleans-based systems integrator relied on Motorola's Canopy® wireless broadband platform to bring better communications and security to New Orleans just weeks after the devastation wrought by Hurricane Katrina.



In August 2005, Hurricane Katrina devastated much of the north central Gulf Coast of the United States and resulted in severe flooding in the city of New Orleans. Fortunately for the city, there were a few areas that were relatively spared, including the city's warehouse district and the French Quarter. These areas soon became the headquarters for relief and rebuilding operations.

But these relief efforts were being hampered by a lack of communications. Prior to the storm, city officials had primarily communicated via a citywide leased metro Ethernet network. But this network went down during the storm, and it was clear that the Ethernet network would be restored very slowly – or might not be restored at all in some areas.

Meanwhile, a portion of the city's 130-camera WiFi-based wireless surveillance network had been lost in the storm, but the network showed remarkable resistance to the high winds and high waters. "We lost poles in the storm, but the network stayed up for a long time due to the robustness of the wireless mesh network, which has no single point of failure," said Chris Drake, a principal at Logistix, the consultancy that built and ran the video surveillance network for the city.

After power was available again, Logistix knew that with a few enhancements – particularly the addition of equipment to compensate for the lack of wired connections now available to backhaul communications traffic – the wireless network could be used to support more than just video surveillance. The company soon found a Motorola representative that could get equipment delivered quickly. "In the middle of eight feet of water in the city, a Motorola rep was there," said Drake. "That is not to be taken lightly."

SYNOPSIS

When Hurricane Katrina knocked out the wired communications network in the city of New Orleans, local consultancy Logistix quickly took on the task of reestablishing communications in a core area of the city as quickly as possible.

Logistix, which built and managed a 130-camera WiFi-based wireless surveillance network for the City of New Orleans prior to the hurricane, was able to leverage this existing WiFi network to get a robust communications network up and running in just a few weeks. And this network, built using Motorola's wireless broadband network equipment, is today used for much more than just surveillance.

More than 3,000 city residents currently use the network for Internet access, and the network also supports 26 video surveillance cameras in about a 50-square-mile area, with a goal of having 250 wireless cameras set up within the next 18 months. A large Internet service provider has also negotiated with the city to eventually use the network to offer services on a commercial basis.



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CHRIS DRAKE, A PRINCIPAL AT LOGISTIX

POP Goes the Network

Logistix first secured a working point of presence (POP) from a local Internet service provider. In order to accomplish this, company officials had to break into the ISP's offices – with the company's permission, of course. Then Logistix ran an Ethernet cable from the router at the POP to the roof of a building and distributed the signal from that building via Motorola equipment.

“We were literally breaking and entering – with permission – and working with three or four feet of water in the city,” said Drake. Logistix quickly went to work getting a four-square mile area up and running with broadband wireless communications, which took only a few weeks. In fact, Logistix was actually able to get a broadband connection to the temporary quarters of New Orleans Mayor Ray Nagin almost immediately, and it supported some of the first phone calls the mayor made after the hurricane, using VoIP technology.

“We were the last network to go down and the first to go back up after Katrina,” Drake said.

“The network has been a real asset for downtown recovery.”

Today, more than 3,000 city residents currently use the system for Internet access and/or voice communications. “Hundreds of individuals on a daily basis are using the network as their primary means of communications,” Drake said.

The network also still supports several of the city's video surveillance needs. It currently supports 26 video surveillance cameras in about a 50 square-mile area, with a goal of having 250 wireless cameras set up within 18 months.

The Canopy Network: Security Delivered Flexibly

“The Canopy system is excellent for surveillance because of its flexibility,” Drake said, particularly because it allows you to connect security cameras in one of two ways.

The first way is to connect an Ethernet point directly to a Canopy subscriber module (SM), which then is directly attached to a camera. This cost-effective, easy connection method allows each security camera to have a dedicated 6 Mbps connection. Or one can connect the subscriber modules via a WiFi connection, which is more expensive but allows more cameras – which really only require a 1 Mbps connection – to be supported per SM. The WiFi connection method also allows cameras to be quickly mounted almost anywhere.

“This flexibility is critical for a place like New Orleans, where security needs are very dynamic,” said Drake. “Take Jazz Fest, for instance. It takes place in a very safe part of the city, so security cameras are not needed there usually. But when you have 100,000 people leaving and entering an area in a day, it naturally becomes a security concern.”

To alleviate this concern, Logistix set up 12 extra cameras in the area in which Jazz Fest was held the year after Katrina hit, and an officer was dedicated to watching the feeds from those cameras during the festivities. Setting up the extra cameras took Logistix just four days, and taking them down took just one. Logistix actually developed the surveillance module used for these



“Canopy equipment is clearly built for an outdoor environment – it just doesn’t die.” **CHRIS DRAKE**

temporary deployments itself. Logistix’s custom-built wireless IP surveillance cameras are designed for outdoor environments and have a pre-installed WiFi client as well as options for the inclusion of a WiFi access point.

“If you use a network like the Canopy network, these cameras are plug and play,” Drake said. “You just plug them in and start talking on the network. They are very portable – they can be installed within an hour or so and can come down in less than that.”

While the Jazz Fest cameras were monitored in real-time during the festival, local police usually do not monitor every permanent security camera in real-time. “It would be an inappropriate use of resources to have 24 by 7 monitoring when 99 percent of the time, nothing is happening in the areas where the cameras are mounted,” Drake said.

However, the city is using the cameras to help prosecute crimes after the fact, Drake said. And police will monitor the cameras in areas where they know crime is a problem. They have even used them during sting operations to help direct officers in the field as they make arrests.

Another key aspect of the Motorola network that makes it ideal for security applications is its ability to support multiple virtual LANs, which allows for several secure, private networks to exist within one public network. In the New Orleans network, Drake estimates that the network currently supports about six virtual LANs. Not only is the public blocked from accessing these virtual LANs, the LANs can also be easily monitored by those operating them to detect potential security breaches. “For instance, we know what type of traffic should be on the security camera network, and we can tag traffic as an intrusion if it is not this type of traffic,” Drake said.

Inspecting the Benefits

And public access and security are not the only two applications supported by the wireless network. Several city operations have been improved as well. Take building inspections, for instance. The city inspected only 7,000 buildings the year before Katrina hit, but it needed to complete 12,000 to 14,000 building inspections in the first few months after the disaster.

Using the wireless system, city inspectors could submit their evaluations in real-time. These evaluations were immediately posted online so that citizens could access them and begin making the necessary renovations to fix any areas that did not pass inspection. In fact, these inspectors are still using the network to make real-time evaluations today.

Public safety officials also use the network to run background checks, license plate numbers and even mug shots through Federal, state and local databases.

A well-known Internet service provider has also negotiated with the city to eventually use the network to offer services on a commercial basis. The provider plans to expand the network to 15 square miles and will continue to offer a low bit rate free service until the city’s state of emergency has been lifted.

Logistix has already set up similar networks in Baton Rouge and Lafayette, La. One of its favorite aspects of the Canopy equipment is its reliability. “Our maintenance costs have been basically zero – we’ve had no network outages in the last year,” Drake said. “Canopy equipment is clearly built for an outdoor environment – it just doesn’t die.”

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