

Motorola PTP Solutions Provide Communications Bridges During the 2009 Fargo Flood



When the Red River flood engulfed the Fargo area in spring of 2009, Motorola wireless Point-to-Point (PTP) systems provided reliable public safety communications and network redundancy.

Situation: The need for a reliable backup public safety communications network before and during a record-breaking flood.

Because of the weather patterns during the winter of 2008-2009, the cities of Fargo, North Dakota and Moorhead, Minnesota knew that conditions were right for major flooding during the spring. One major concern was the possibility of problems with public safety communications. First responder communications in the area are dependent on an underground fiber optic network that could be susceptible to water-caused outages. Officials of the city of Fargo and the Red River Regional Dispatch Center knew they needed a reliable yet powerful backup network that could be deployed quickly and easily. To prepare for the imminent emergency, the city and agency turned to wireless communications.

Solution: Motorola PTP wireless broadband solutions that provide high performance and reliability as either primary or backup networks.

With the help of Motorola partner MidStates Wireless, city and dispatch officials chose to deploy a wireless system to back up its crucial public safety communications. They ultimately acquired and deployed two Motorola PTP systems. The first was a PTP 100 solution that served as the primary communications link with ambulances and EMTs during the flood. The second was a Motorola PTP 600 solution that was quickly deployed as an additional backup network in the event of flood damage to the underground wired system.

Result: Excellent performance and reliability in both primary and backup roles during the history making 2009 spring flood.

When it finally arrived in March and April, the Red River flood turned out to be even worse than the expected worst-case scenario. With the river cresting at 40.82 feet, flooding was the worst the area had experienced in over 100 years. The Motorola PTP 100 system functioned flawlessly as the primary ambulance and EMT communications network during the flood. The PTP 600 network was quickly deployed and functioned as a redundant system for police, fire and other first responder communications.

CUSTOMER PROFILE

Enterprise

- City of Fargo, North Dakota
- Cass County, North Dakota
- Clay County, Minnesota
- The Red River Regional Dispatch Center

Industry

City and County Government

Motorola solution

- PTP 58100 and PTP 58600 wireless Ethernet bridge solutions

Solution features

- PTP 58100 provides up to 14 Mbps throughput
- PTP 58600 provides up to 300 Mbps throughput
- Building-to-building connectivity
- Backhaul to enable building-to-vehicle and handheld device connectivity

Benefits

- Fast, easy deployment
- Highly reliable ambulance and pager communications
- Excellent performance in unlicensed 5.8 GHz spectrums

Motorola Wireless PTP Solutions Help Fargo Prepare for and Deal with a Worst-Case Flood Scenario

“We knew we couldn’t afford the time and effort needed to install a wired backup system. The Motorola networks were deployed quickly, in a matter of days, not the weeks or months a wired system would take.”

- Ron Gronneberg,
Chief Information Officer,
City of Fargo

They knew it was coming. The people of Fargo and Cass County in North Dakota, and Moorhead and Clay County in Minnesota knew a major spring flood wasn’t merely possible. They knew it was probable. And public safety officials knew they had to be prepared for not just a major flood, but for the proverbial 100-year flood.

Home to a population of over 175,000 over an area of 38 square miles of flat plains, the Fargo-Moorhead area has a long record of flooding. Historically flood-prone, the Red River flows through the middle of the sister cities’ metropolitan area while forming the state line between North Dakota and Minnesota. Based on long experience, residents of the area recognized the flood danger inherent in the fall and winter weather patterns.

Before the Deluge

Weather conditions foreshadowing flooding had been building for months. During the summer and autumn of 2008, the area had seen heavy rains. The winter followed with significant snowfall and then a rapid melt. Based on history, the area prepared for a worst-case scenario. In anticipation of catastrophic flooding, the city of Fargo and the Red River Regional Dispatch Center, which provides dispatch service for all public safety personnel in the region, began preparations early.

Communications Concerns

“Red River Regional Dispatch,” explains Brian Zastoupil, radio systems coordinator, “is responsible for dispatch operations for all public safety personnel in Cass and Clay counties. We work with 56 government

agencies in the area, the largest being the Sheriff’s Department, the metro Police and Fire Departments and regional ambulance service. We had ample warning about the flood and we began emergency planning right away.”

The Dispatch Center worked closely with the city of Fargo to assess and respond to flood-driven public safety communications vulnerabilities. Says Ron Gronneberg, Fargo’s CIO, “We were well aware of the risk factors in terms of public safety communications and of the implications if communications were shut down during a major emergency.” Together, the city and the dispatch center agreed that wireless communications was the best solution for the reliable, quickly deployable redundant systems that were needed.

Motorola PTP Solutions

To help with the wireless technology planning and deployment, the team turned to Fargo wireless service provider, MidStates Wireless, a Motorola partner. The solutions chosen were the Motorola PTP 100 system for ambulance service communications and the Motorola PTP 600 system for other first responder networks. The systems would operate in the unlicensed 5.8 GHz frequency band, yet there were no concerns about reliability. Already experienced in working with Motorola’s globally-proven wireless networks, Zastoupil says simply that when “there are other systems competing, the Motorola system wins. It performs really great in noisy RF environments.”

With both Motorola PTP networks, deployment was fast and easy. “We knew we couldn’t afford the time





MidStates Wireless Partners with Fargo in Flood Response

MidStates Wireless has been a leader in communications services in the Red River Valley for over 60 years. The company is the area leader in wireless communications, including two-way radio, paging and wireless broadband Internet connectivity featuring the Motorola portfolio of wireless solutions. "Having great partners is essential," says Ron Gronneberg, City of Fargo CIO. "MidStates did a great job of responding to all our needs during the flood crisis. When they said they would do something, we were confident that they would do it."

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PTP 100 Network

"We chose PTP 100 technology for our redundant ambulance service communications network, but decided early on to use it as our primary system during the flood," says Zastoupil. "We didn't want to take any chances of having outages." The network had one link on the local Ambulance Service building and other on a Fargo high-rise apartment building. This building functions as the master RF site for the public safety system, as well as the first responder paging control center. As the primary network for ambulance service during the flood, the PTP 100 system served as an integral part of paging connectivity for EMTs, reliably delivering about 14 Mbps throughput.

PTP 600 System

The city of Fargo had actually purchased the Motorola PTP 600 system before the flood situation arose, and had planned and deployed a nine-hop system. Two of the links were reconfigured during the disaster to accommodate emergency efforts. One PTP 600 was located at the high-rise RF master site and linked to the Public Safety Building, which was the location of Emergency Operations. A second link was from the Public Safety Building to the Fargo Dome, which functioned as "Sandbag Central" during the emergency.

The PTP networks were planned and deployed using the Motorola path planning tool. Says Zastoupil, "I did the path planning for the system using the Motorola LINKPlanner, which I found to be quite accurate and did a very good job of representing what I was expecting for throughput. It's a good tool."

The Flood

About a week before the expected flood began, most area business came to a halt. Stores and businesses were shuttered as residents worked to build up dikes and levees to try and limit damage. Starting around the middle of March, the Red River rose continually until it finally crested on March 28 at an area-record 40.82 feet, which was about 22 feet above flood stage. But the high water levels weren't the only problem; the flood was also exceptionally long lasting. About two weeks after the first crest, the river came to a secondary crest of over 38 feet. The inundation was indeed the "perfect flood," fast rising and slow receding.

The Aftermath

All in all, through the heroic efforts of residents, public safety professionals and city officials, flood damage was significantly contained. While still severe, devastation was actually considerably less than it could have been. The wired fiber network held up, and the system never had to switch over to the redundant network. Both wired and wireless communications networks performed exceptionally well during the crisis, and communications connectivity never became an issue. Although the Fargo-Moorhead region spent many months in clean-up operations, it also breathed a collective sigh of relief. Thanks to the anticipation and planning of information technology and public safety professionals, damage and devastation were significantly less than expected.

The Future

As things returned to normal, the Red River Regional Dispatch Center and the city of Fargo also returned to their normal communications networks. As the city of Fargo continues to grow, with a new fire station and water tower in the works, the

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PTP 100 and PTP 600 wireless networks are now providing backup that inspires confidence even as data needs grow. “We have all kinds of data going over our Motorola radio networks,” says Gronneberg, “ranging from e-mail and word processing to communications with handheld computers and devices to connectivity with onboard computer systems in fire and police vehicles.” Thanks to Motorola’s PTP backup networks, Gronneberg continues, “I am confident we’ll maintain our connectivity for data transfer with all our primary agencies whenever we have to switch over to our backup system.”

Red River Regional Dispatch also relies on the PTP systems for redundancy. The reality is that fiber connectivity is continually subject to outages due to roadwork or infrastructure improvement projects. “We’re using some PTP links for leased

line replacement out in the county for public safety radio connectivity,” says Zastoupil. “Deploying a system like this enhances network reliability by allowing us to work around a single point-of-failure scenario. It also fills in gaps where we don’t have redundant connectivity to outlying facilities such as fire and police facilities.”

Backup or Primary Network

The city of Fargo and the Red River Regional Dispatch Center realize that their Motorola PTP wireless networks are excellent solutions for both primary and redundant systems. “Based on their excellent performance during the flood,” concludes Gronneberg, “we’re confident if we are forced to switch over to the backup network, people won’t even be aware that they’re using a backup system. That’s exactly what you want.”



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