

Digital Radio Improvement Is Loud And Clear

A Kentucky county solves communication challenges and enables always-on communication for emergency services with digital radios.



The NEXEDGE digital radio solution from Kenwood provides secure, encrypted communication so users can communicate without fear of intercepted radio transmissions.

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Reliable radio service is critical for emergency services to operate effectively. When disaster strikes, police, fire, medical, and other departments must be able to communicate with each other in order to coordinate services. However, many county and city agencies have difficulty managing their communications systems because these departments use disparate radio systems that are not interoperable. Christian County, KY, recently deployed a multisite, multidepartment digital radio system that solved its radio interoperability issues and provided reliable communications for its emergency services providers.

Previously, the county’s various departments had been using a variety of radio equipment, none of which was interoperable. That made it difficult for different divisions to communicate with each other over the existing radios. “Before, if we wanted to talk to someone in the fire department or police department, we’d go through the dispatcher,” says Randy Graham, emergency management director for Christian County and radio project coordinator. “They would call the other dispatcher and relay our messages, which created a lot of wasted time and lost information.”

Officials from Christian County and the city of Hopkinsville formed a committee consisting of the city fire chief, the sheriff, emergency management, dispatchers, and other officials to investigate purchasing a new radio system. The county engaged a consultant from Georgia Tech to assist them with their RFP process. “Most of

us on the radio committee were end users, so we didn’t have a lot of radio expertise,” Graham says. “The consultant helped us develop the RFP and then evaluate the proposals that came in.”

The county had three chief criteria for choosing the new system: interoperability across departments, network capacity, and radio coverage. After a three-month selection process, the committee deployed the NEXEDGE digital radio solution from

Kenwood. The city and county have since deployed three towers and nearly 700 radio units across 35 departments, including the entire emergency management infrastructure.

Teamwork Aids In Large Radio Deployment

The scope of the radio project took both the county and Kenwood into new territory. The NEXEDGE solution debuted in 2008, and Christian County marked one of the earliest and largest deployments of the technology. “Because this was a multisite public safety system, I don’t think we knew quite what we were getting into,” Graham says. “There were a lot of unexpected issues that stalled the process, but Kenwood helped us to put a system in place that has really surpassed our expectations.”

Christian County deployed approximately 350 NX-300 portable (handheld) radios and an equal number of NX-800 vehicle-mounted mobile units. According to Graham, the project team initially rolled out a small test group of portable units in each department to get some of the end users trained on the devices and to work out the kinks in the computer-controlled communications system. According to Graham, end user training was key to the success of the implementation. “Kenwood warned us before we put the system in that if we were going to have problems, it was going to come down to training, and they were one hundred percent right,” he says. “The biggest thing was getting people used to the difference between frequency-based radios and trunking.”

Trunking Solves Capacity Problems

The system is a trunked radio solution, which is a computer-controlled system that establishes talk groups on a few channels to provide greater efficiency. “We have 17 frequency pairs, but we’ve got 50 talk groups,” Graham says. “You can only talk to one person in the group at once, but you can have 10 different talk groups talking at

the same time.” If someone in the volunteer fire department, for instance, needs to communicate with someone in the sheriff’s department, they can switch their radio over to the correct talk group or ask the dispatcher to contact the other party and have them switch over to the other talk group.

The county has been able to better manage radio traffic this way. With the older radio systems, communication could become bogged down, particularly during emergencies. The digital solution has eliminated those problems. “With the volunteer fire departments, we had 15 departments on one frequency,” Graham says. “It was quite confusing, and in times of disaster it was completely tied up. Going to a trunking system that allows us to have different talk groups has really cleared up that capacity issue.”

The trunked sites are connected using wireless microwave communication (as opposed to using a wired network), which came in handy during a recent ice storm. “We were still deploying the system when we had the ice storm,” Graham says. “A lot of communities lost their communication because of downed lines, but even with the amount of ice we had, it didn’t affect our system.”

In addition, the radios can be customized so that each department can take advantage of features that others may not need. “Our city fire chief has a feature activated on the radios where he gets an alert as each radio goes into service so he can see the response time and know which units are en route,” Graham says. “He can see that without tying up radio traffic.” The system also provides secure, encrypted communication so that the county’s drug task force, for instance, can communicate without fear of anyone intercepting their radio transmissions.

Moving forward, the county plans to apply for a grant to add a fourth tower site. “We want to get better coverage in the northern part of the county, which is extremely hilly,” Graham says. “We’ve got decent coverage up there, but we’d like it to be better.” Graham says he hopes eventually to take advantage of the GPS capabilities in the radios to provide automatic vehicle location. “The system has so much possibility that we haven’t been able to use all of the capabilities yet,” Graham says.