



Patching Your Way To A Fix

Interoperability. The word is defined as the ability for law enforcement and other public safety agencies to communicate among themselves.

Unfortunately, over the past several decades this word would have been better cast as “noninteroperability”. . . the inability of law enforcement and public safety agencies to communicate with each other.

Incompatible radio systems, differing radio frequencies, and jurisdictional concerns about privacy of information—all aggravated by a very limited number of available radio frequencies—have turned interoperability into one of public safety’s biggest headaches. It is more than obvious that something is wrong when the only way for police officers from neighboring departments to communicate with each other is to pull their cruisers side by side and roll down their windows.

In initial attempts to resolve the interoperability issue, police and other agencies purchased additional radios or radio systems that could handle the frequency used by other jurisdictions in their area. But this “fix” usually involved a significant outlay of money and training. In other instances, a dispatcher in one jurisdiction would relay information to another jurisdiction’s dispatcher via telephone. But this fix was slow and allowed room for error or misinterpretation. When it came to task force operations or emergencies, some departments had their officers carry more than one radio. Some also tried using a common radio frequency or buying a sophisticated master controller to supervise all of the participating radio systems. But these fixes, too, could be expensive and had the additional disadvantage that departments no longer had complete control of their radio systems.

Over the past several years, however, there has been a change in thinking about the interoperability problem. Recognizing that the “ideal” solution may be several years away, some agencies have begun working with one another to use existing technology to “patch” radio systems together until that ideal solution is available. These agencies recognized that, while interim in nature, this approach would improve their interoperability situation and would provide them with an opportunity to work

together now and to develop new procedures that would be valuable whenever the ideal answer arrived.

In 1996, the U.S. Attorney for the Southern District of California asked the U.S. Navy Public Safety Center in San Diego and the National Institute of Justice (NIJ) through its Border Research and Technology Center (BRTC) to find a cost-effective solution to the interoperability problem. The result was BORTAC, the Border Tactical Communications System, a collaborative effort with the Counterdrug Technology Assessment Center (CTAC) of the Office of National Drug Control Policy. BRTC provided concept identification and assisted with project management; CTAC funded hardware and dedicated phone circuits; the Navy provided technical management and a facility to be the central connect point for the circuits. Together they created the modern equivalent of a telephone switchboard, the kind that was once used to connect callers before the development of automated circuit switching.

Resembling a hub and its spokes, the system is activated when one agency requests a patch to another agency. The dispatcher at the system’s central location, or hub, simply uses a mouse to connect the icons representing the agencies on a computer screen. The voice transmissions come into the hub and then are transmitted through the spokes, or phone circuits, to the appropriate agency, which remodulates the voice in a format compatible to its radio system. All the officers hear at the other end is the voice from the other agency. Low band, VHF, UHF conventional, trunked, and 800 MHz systems can all communicate directly with one another, without the delay or the potential for error that can occur when humans must act as the relay for messages. According to one officer, “[It]. . . sounded like officers from other agencies were in the backseats of our vehicles.”

BORTAC now connects 16 Federal, State, and local public safety agencies in California’s San Diego County. Its success prompted the formation of RIO-Com, which connects 11 agencies, including city, county, and State police, along with the FBI, Immigration and Naturalization

Service, Drug Enforcement Agency, and U.S. Customs Service, in the Rio Grande Valley of South Texas. The RIO-Com system patches through the Brownsville, Texas, Police Department headquarters.

Though BORTAC's designers anticipated the system would support emergency operations, such as pursuits involving multiple jurisdictions, it has also been used to facilitate planned multiagency operations. Since the system became operational in 1996, BORTAC has been utilized repeatedly by law enforcement in the San Diego area for an array of activities, including regional auto-theft task force operations, truancy sweeps, counterdrug sweeps, police pursuits, special cross-border events, and gang suppression. RIO-Com gets the same kind of workout. Since its recent inception, this system has enabled officers to work cooperatively on multiagency drug raids, surveillance operations, pursuits, and traffic stops. BORTAC was the result of a proactive movement on the part of Federal and State officials. Similarly, RIO-Com grew out of a need for agencies in Texas' Rio Grande Valley to communicate during multiagency operations.

According to Charles Hoskins, emergency communications manager for the Brownsville Police Department, there is no limit to the number of agencies you can have on a patch. "You can have all the agencies on a single patch, or a number of smaller patches working at the same time," he says. "That's the advantage." Additionally, agencies do not need new radios and they can retain control of their systems. "The disadvantage," he says, "is that we had to abandon 10-codes because every agency's was different. The officers have to speak in plain language. We also cannot do encryption, although I think that as technology progresses we'll be able to add that." Also, a patch system does not add towers or repeater locations, nor does it extend an agency's coverage. Officers must stay within the existing coverage of their radio system. Unfortunately, dead spots will still be dead spots.

When agencies have completed their operations, they just notify the central dispatcher, who disconnects the participants. To preserve autonomy, no agency is ever added to a patch unless the agency agrees. To facilitate privacy, Hoskins says, dispatchers at the Brownsville Police Department are prohibited from listening to a patch that does not involve a police officer from that department.

"Building your own BORTAC or RIO-Com is really not that difficult," says Robert Waldron, project manager at NLECTC-West. "The technology is relatively simple and available. The major hurdles that agencies have to overcome are not technology related but rather are issues related to operations. The first thing is that law enforcement needs to sit down and begin cooperating among themselves."

Along with interagency cooperation, other recommendations include:

- Some overlap in radio coverage between jurisdictions.
- Someone assigned to collect information about the participating agencies' radio systems so the right equipment can be purchased.
- An agency that agrees to be responsible for local organization of the system.
- An agency that agrees to act as the "hub" and that can provide round-the-clock staffing. A 911 Public Safety Answering Point (PSAP) is an excellent candidate since it manages emergency calls around the clock.

As for the price of a patch system, Waldron says two types of costs enter in. The first are the one-time installation and equipment costs. "Spoke" agencies need a base interface module (BIM) card, which will need a base interface module (BIM) card, which will connect to the phone system. This is a relatively simple device that costs from \$1,000 to \$1,200. The hub agency needs a fairly current radio system that can accept phone lines from the spoke agencies. This generally entails "slots" in the electronics banks, which hold circuit boards that have phone connections on them. The number of these slots in more current radio systems can be increased, but it may cost thousands of dollars. Phone lines must be able to carry voice signals and the inaudible signaling tones that accompany the voice. They cannot have a dial tone. If a group of agencies has a hub system that does not need to expand, cost per agency could run from \$3,000 to \$4,000 to install the appropriate phone line and buy a base interface module. The second type of cost is the recurring or "monthly" service charge, such as the fee for the telephone line.

Funding for both BORTAC and RIO-Com came from CTAC. Funding from this agency required a counterdrug mission be a part of the project. For example, BORTAC and RIO-Com are important tools in keeping drugs from crossing the U.S.-Mexico border. Waldron says, however, that it is conceivable that a group of agencies can connect to one another without outside funding.

For more information about BORTAC or RIO-Com, contact Chris Aldridge at the Border Research and Technology Center, 888-656-2782, or Robert Waldron at the National Law Enforcement and Corrections Technology Center-West, 888-548-1618. Lt. Charles Hoskins of the Brownsville, Texas, Police Department can be contacted at 956-548-7119. In addition, BORTAC was the genesis for several interoperability-related projects sponsored by the National Institute of Justice, culminating in the Advanced Generation of Interoperability for Law Enforcement (AGILE) Program. For more information about the AGILE Program, log on to www.nlectc.org/agile.

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