

Sharing Emergency Communications across Agency Lines

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As the annual IACP conference in Minneapolis drew closer, many of us involved with public safety communication in the Twin Cities metro area heard from people around the country who were interested in learning about the new regional 800-megahertz system that is now nearing completion here.

There were two reasons for the interest – operational and technical. In the wake of September 11, 2001, revelations of communication problems in New York and Washington, D.C., have greatly increased the concern for improving interoperability. The system being readied in Minneapolis is a multiagency large-scale voice-over IP system built by Motorola on the APCO Project 25 standard.

To provide information on the system for conference attendees, we created a virtual tour on video that explains numerous system features. Unlike most two-way radio systems of the past, the new metro system uses a common backbone – a network of antennas, receivers, and transmitters located throughout a nine-county area. The sites are connected by microwave links or by fiber-optic cable, allowing transmissions from any location to be repeated throughout the region. When necessary, any single user can talk to other users anywhere within the entire region.

Metro agencies have pooled their available 800-megahertz frequency channels to achieve much more efficient use of the radio spectrum. The use of digital trunking allows each agency to create "talk groups" for specific designated purposes, eliminating annoying waits and minimizing crowding.

Sharing the backbone has resulted in significant savings for local governments. When the new system was planned, most public safety two-radio systems in use in the Twin Cities area were built in the 1950s and 1960s. Advances in technology had rendered them virtually obsolete. Population increases and the growth of the urban area urgently required new solutions.

Although the cost to build the region-wide backbone was significant at some \$32 million, if each participating entity had built a new independent system, costs would have climbed much higher.

Advanced Technology. The new system is fully digital and built on the most advanced platform available. Use of the widely accepted APCO Project 25 standard, an open architecture, ensures that portable and mobile radios will be marketed by a variety of manufacturers, allowing users the flexibility of choosing from a wide range of features and prices. The largely software-based system design also means that, as future technological enhancements are developed, the system can be upgraded at minimal cost.

Expandable and Scalable. The backbone is built to accommodate the need for expanded capacity as populations grow and as more local governments opt to fully participate. Likewise, as improved communication needs extend beyond the metropolitan area, the potential for a statewide system can be realized.

Disaster-Resistant. To keep radios working in case a major event destroys elements of the infrastructure, multiple redundant measures have been designed into the system. Should one relay point go out due to an accident or a malfunction, a unique triple-loop design keeps all other sites operating. Dual nerve centers, located miles apart from one another and connected by underground fiber-optic cable, keep the radio traffic moving, even if one central site is disabled. There's even a spare dispatch center ready to go into operation in case of a breakdown. In addition, uninterrupted power supplies and backup radio equipment, designed to take over in case of trouble, are installed at every site.

Improved Interoperability. Even those local agencies that are not yet fully participating will enjoy improved interoperability. Radios that communicate with the backbone are accessible to all dispatchers in the metropolitan region and to many in surrounding counties. Conventional analog radios in use by non-participating users can be connected to first-phase participating users through their dispatch

consoles.

Broader and Deeper Coverage. Preliminary tests indicate that "dead" spots-geographic areas where radio waves cannot penetrate-are fewer and farther between than with the older conventional equipment. In every corner of the region, coverage readings show that signal penetration actually exceeds 95 percent, the baseline standard set for the new system.

Faster Response. When the difference between life and death is measured in moments, rapid response is vital. The Minnesota metro system has the capability to speed communications by facilitating nearly instantaneous voice transmission within and among jurisdictions, a benefit in situations such as a cross-jurisdictional chase or an Amber alert.

Internet Protocol. The Minnesota metro system uses the new Internet protocol switching, which means that every device on the system has an IP address. Digital data will be transmitted in packets, just as data flows over the Internet. Adoption of this software platform means that, in the future, a data layer can be added to the backbone, allowing for the exchange of pictures, fingerprints, video, and even criminal justice information. In the future, it will be possible for users to tap into the vast resources of the Internet, if applications dictate the need to do so.

Looking to the Future

Although the start of beneficial use of the system is a giant step forward for all Minnesotans concerned with public safety, there is still much to be done. Future goals include the following:

- * Full participation in the system by all public agencies and EMS providers in the metropolitan area

- * Extension and expansion to greater Minnesota

- * Inclusion of federal agencies and the National Guard in the interoperability network

For more information, please visit the Metropolitan Radio Board's Web site at www.metroradioboard.org.