

# A Pioneering Move in Emergency Communications Call Delivery

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Local governments in the Mid-America Regional Council region purchased and installed a selective router as part of a complete overhaul of the 9-1-1 system.

THE MID-AMERICA REGIONAL COUNCIL (MARC)'S 9-1-1 MISSION IS probably similar to most communities across America, "to establish and maintain 9-1-1 as the primary emergency telephone number for the Kansas City metropolitan area and enhance the ability of local governments and emergency service providers to respond to calls for emergency assistance."

Unlike any other community in the country up to this point, however, MARC has taken an unprecedented and somewhat bold move to carry out this mission. Throughout the past year, the local governments in this region have purchased and installed a selective router as part of a complete overhaul of the 9-1-1 system.

This is truly a pioneering move in emergency communications call delivery because it eliminates the use of the local exchange carrier's (LEC's) selective router for wireless calls (wireline calls still run through the LEC's selective router).

Because this goes beyond the usual approach for providing 9-1-1 services, it undoubtedly raises a lot of questions:

- Why did the region do this?
- How does the system work?
- What are the local governments and citizens of our region gaining from it?

- What advice is there for others who might consider a similar approach?

## Deciding to Purchase a Selective Router for Wireless E9-1-1

The Kansas City 9-1-1 system managed by MARC encompasses forty-five PSAPs in eight counties along the Missouri-Kansas state line. The system serves a population of approximately two million people and processes about two million 9-1-1 calls annually, 53 percent of which are now being made from wireless phones.

The region has been planning for implementation of enhanced wireless 9-1-1 for several years. After inviting proposals from across the county via an extensive RFP process, new 9-1-1 equipment from CML Emergency Services (Westchester, IL) was chosen and installed in 2002. Initially, the new system included ECS-1000 ANI/ALI controllers, Sentinel 9-1-1 call answering positions and MIS software. GeoComm's GeoLynx 9-1-1 mapping

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software is used to display location information on 9-1-1 calls, and installation and service was provided by Commenco, a wireless communications provider based in the Kansas City area. Previously, all 9-1-1 equipment and maintenance was provided by the LEC through arrangements that had been in place since 9-1-1 originally was implemented in the area.

Although the system was completely wireless-compatible, a significant barrier was the tariff that the LEC was going to charge to route 9-1-1 calls through its selective router. The LEC had an existing tariff that would cost the 9-1-1 system \$36 per month per pANI (a nondialable routing number that identifies the cell sector from which the call originated) for each of the twenty-eight hundred cell tower sectors in the region. There was discussion about moving from this model to a per-call selective routing charge, which also was problematic for the region. Moreover, the LEC was not committing to a timeline to establish its readiness to receive wireless call data, resulting in a delay in the ability of the region to proceed with Phase I and Phase II implementation.

The local governments in the region decided to add a CML selective router to the system, giving MARC control over its 9-1-1 network and costs. In fact, the cost savings in the first year alone covered the cost of the equipment.

### How the System Works

In this model, the selective router essentially sets up two separate systems to route wireline and wireless calls, with no single point of failure. Moreover, this separate routing system reduces the possibility of overloading all 9-1-1 trunks due to highway accidents or other situations that have traditionally lead to spikes in cellular traffic on the system.

Wireless carriers use SS7 technology for network infrastructure. The selective router that was purchased came with an SS7 gateway, enabling MARC to interface directly to this network. Although this is not new technology in the overall scheme of telecommunications, historically, SS7 technology has only been used by wireless service providers and local exchange service providers. There was no precedent to provide access to this network for other entities.

This region was fortunate in being able to locate a progressive provider of SS7 connectivity—Telecommunications Services Incorporated (TSI)—that understands the lifesaving potential of this project and entered into a contract to provide SS7 connectivity to MARC.

Taking control of the wireless network required that MARC staff assume responsibility for some activities that are not normally associated with 9-1-1 operations. For example, Emergency Service Numbers (ESNs) are assigned to PSAPs to route wireless calls. Normally, the LEC issues ESNs, but in this case, MARC assumed the responsibility for wireless calls.

Also, with MARC's selective router and database, wireless service providers had the option to receive pANIs issued by MARC or to create their own block of pANIs. By administering the pANIs, the region avoids the per sector charge proposed by the LEC.

Finally, MARC has installed its own ALI database for wireless pANIs. This database connects to third-party database providers to obtain location information, which is forwarded to the appropriate PSAP.

### Benefits

Providing enhanced service for wireless 9-1-1 is a requirement of the FCC, who defined two phases for implementing this service and stipulated that Phase II systems be fully deployed by 2005.

The new E9-1-1 system meets all of the requirements for Phase II. Phase II wireless 9-1-1 testing began in December, 2002 with Cingular Wireless being the first carrier to fully deploy in the region. All major carriers have since been successfully added with either Phase I or Phase II.

This approach allows MARC to connect directly to the various wireless carriers that serve the area. When a 9-1-1 call is made from a wireless phone, it is sent to the MARC router via the SS7 gateway. From that point forward, they have total control of the network.

MARC is able to switch that call to the appropriate answering point and have total control over the ALI display at each answering point. MARC interacts with the SS7 network provider so that it has tremendously fast call setup time—much more so than it was able to achieve through the LEC's network.

### Suggestions for Other Agencies

Owning the network is a viable and valid approach for delivering 9-1-1 services for the aforementioned reasons. Getting there does take careful planning and consideration.

The benefits of advanced project management cannot be overstressed. It is important to try to think out every scenario; the more you can plan in advance, the better prepared you will be when the system is implemented. Having said this, there are things nobody will think of and, for this reason, you must remain actively engaged in the process through final implementation.

When choosing your providers, make sure that you select partners who are willing to work with you every step of the way—the odds are good that you'll need them more often than you thought. MARC is fortunate that CML, Commenco, GeoComm and TSI have gone the extra distance and worked quickly and diligently to resolve unexpected issues as they arose.

It is important to talk to colleagues who have experienced what you plan to implement. MARC plans to prepare a white

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paper with much more detail on the technical challenges and solutions experienced. Hopefully, these experiences will help others moving in this direction.

One thing that worked well was to provide consistent, uniform guidelines to the wireless service providers operating in the region. Rather than contracting with each individual provider, wireless policies were drafted that govern the integration of wireless 9-1-1 service with MARC's infrastructure.

To further support the wireless service providers as they deployed in the MARC region, they prepared PSAP data books containing all of the information needed to work with the 9-1-1 agencies: PSAP locations, the communities each serves,

default numbers, and agency contacts for technical, administrative and operational issues. In light of current security concerns, you might want to declare this document exempt from public disclosure if your state law allows.

### Conclusion

The number-one criterion for any 9-1-1 system is that it works, and MARC never lost sight of the importance of system stability, redundancy and diversity. At the same time, MARC refused to accept that it could not move forward or try new approaches that would enable it to provide a higher level of service and support to the citizens in its communities. MARC decided not to stay on a network that has fallen behind the times and can no longer deliver the services needed and that its communities deserve and expect.

Throughout this whole project, MARC was very cognizant that every day it delayed, someone else might lose his or her life because enhanced wireless 9-1-1 was not implemented.

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## 9-1-1 Callout

### Software Technology Demonstrated During Maryland Emergency Drill

Last July, federal and state officials demonstrated the use of technology in a coordinated emergency drill in Laurel, MD, *Government Executive* magazine reports. Mark Forman—the e-government and information technology administrator at the White House Office of Management and Budget—along with several Maryland officials showed how a new software package can coordinate the work of police, fire and emergency medical personnel during a mock train derailment involving hazardous materials.

"Today, we showed the power of e-government and interoperable communications in saving lives," Forman said in a statement. The software facilitates information sharing among emergency management organizations by establishing a basic information set— such as weather data, private instant messaging, needs requests and incident maps.

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