MOBILE DATA TODAY:
WIDER CHOICE, GREATER SPEED

OPENSKY AIDS SECURITY
AT THE RYDER CUP MATCHES
IN MICHIGAN

800 MHz REBANDING:
WHAT YOU CAN DO
TO MAKE IT EASIER

AMBER ALERT DEMO
SHOWCASES DENVER
INTEROPERABILITY
THIRTEEN STATE AND
LOCAL AGENCIES
WITNESS SUCCESS
Goal Number One: Interoperability Achieved

The hotly debated question of interoperability among first responders, regardless of make, model or frequency band, has finally been answered with recent decisions by public safety agencies from coast to coast.

Denver’s first responders demonstrate NetworkFirst

The Denver Police Department stages a mock Amber Alert to demonstrate the effectiveness of their chosen solution to interoperability for a dozen state and local public safety agencies.

The data choice today

M/A-COM’s hybrid data systems provide affordable broadband access, wide-area coverage and increased flexibility for all critical communications users. And they do so without the need for the wasteful duplication of infrastructure.

“Interworking” and migration are global concerns

Jay Murray, M/A-COM’s Director, International Sales, explains why cost-effective migration and interoperability among disparate radio systems are common goals requiring common solutions worldwide.

OpenSky supports Ryder Cup communications

As host to the 35th Ryder Cup competition pitting international teams of golfers in a six-day event, the town of Bloomfield Township’s Police Department had extra support for their critical communications.

800 MHz Reconfiguration: Help is here

As the Nation’s public safety organizations prepare to embark on the FCC’s major rebanding effort, M/A-COM is “ready when you are.”

News Bites

The latest on who’s joining M/A-COM’s family of customers.

Training Center Schedule

A listing of all classroom and online training center classes scheduled for the second and third quarters of 2005.
Goal Number One: Interoperability

Few critical communications requirements have been as hotly debated and analyzed over the past few years as interoperability. As Denver Manager of Safety Al LaCabe said in a recent live demonstration of that city’s search for an interoperability solution (story next page), “We have a mission. A purpose.” That mission - seamless, cost-effective interoperability among first responders - is finally coming to fruition for the City of Denver and outlying areas in north-central Colorado.

Like the Denver Police Department, other state, local and federal agencies charged with ensuring the safety and security of the public have also embraced the NetworkFirst solution. These organizations include the Western States Contracting Alliance, Worcester County, Maryland and the Department of Defense (National Capital Region).

However, NetworkFirst is not the only interoperability solution offered by M/A-COM. Recent demonstrations have proven the ability of the company’s P25 radios to operate seamlessly over existing P25 systems and radios from other manufacturers. This is an important milestone for federal users and others who are committed to P25.

It’s important to note that P25 and IP-based solutions such as NetworkFirst are complementary, not mutually exclusive, technologies. The IP backbone provided by NetworkFirst and M/A-COM’s P25IP establish the all-important packet-switched infrastructure that will become the foundation of future critical communications networks. With this backbone in place, users are well-positioned to achieve the next big goal in critical communications: the unification of an organization’s fixed and mobile resources. Look for more on this exciting development in future issues.
Denver’s first responders demonstrate effectiveness of NetworkFirst in mock Amber Alert

Using federal homeland security funding, the Denver Police Department has selected NetworkFirst to link disparate radio systems of local, state and federal public safety agencies. Beginning with the Denver metropolitan region, the goal is to eventually link first responders across the entire state.
On December 9, 2004, the Denver Police Department (DPD) successfully conducted a mock Amber Alert to demonstrate interoperability among local, state and federal agencies linked together through NetworkFirst. In all, 13 agencies and departments across 12 jurisdictions participated in the exercise.

“What we’ve just seen are local, county and federal agencies talking with each other on their own radios, across their own systems,” said DPD Division Chief Steve Cooper after the demonstration.

“I know that I speak for all of the safety agencies when I tell you that the ability to communicate across different systems will be a tremendous communications leap forward for all of us. For the first time in our history we are about to have the ability to combine our resources in response to large emergencies without being limited by ineffective communications,” Cooper said.

Real-world scenario

The interoperability test, which was undertaken by the DPD with equipment and technical assistance from M/A-COM, consisted of a live exercise conducted along the Interstate 25 corridor between Ft. Lupton and Denver.

“An Amber Alert is an excellent test of inter-agency interoperability because it mirrors a real-world situation,” said Dana Hansen, superintendent of communications with the DPD.

To be most effective, response to an Amber Alert (see sidebar, above) requires instant, real-time communications between many separate organizations operating on different radio technologies and across a wide geographical area.

“The talk paths have to be immediately available to all participants simply by going to a pre-arranged channel. You don’t want to waste time setting up the connection for an Amber Alert – it must be instantaneous,” Hansen said.

The mock scenario began with a Ft. Lupton Officer transporting a “parent” to Children’s Hospital in Denver from an accident scene. As the officer traveled southbound on I-25, he spotted a vehicle matching the description of an Amber Alert suspect. Since the reporting officer had a “civilian” passenger who could not be placed in a dangerous position, he reported the sighting to Ft. Lupton dispatchers. This information was conveyed to other jurisdictions directly across the NetworkFirst interoperability

Amber Alerts: a nationwide plan to protect children

Since their inception in 2002, Amber Alerts have been credited with the successful recovery of more than 360 children less than 18 years of age nationwide. Now operational in all fifty states, the National Amber Alert System was signed into law in 2003.

The alerts make use of electronic aids to notify law enforcement and the general public of abductions that meet specific criteria established by the U.S. Dept. of Justice. In an alert, information is faxed to radio stations who relay information to area radio, television and cable systems. It is then immediately broadcast to millions of listeners over the Emergency Alert System. Radio stations interrupt programming to announce the Alert, and television stations and cable systems run a “crawl” on the screen, often along with a picture of the child. Many states, including Colorado, also use electronic highway billboards to alert the public.

Statewide, numerous separate conventional radios systems predominate in Colorado. Major exceptions are the greater Denver Metro Region and the State Digital Trunked Radio System. Nonetheless, with the NetworkFirst switch (Denver Police Dept. comm. center) and the appropriate interoperability gateways, seamless interoperability between disparate systems and technologies can be achieved. As shown in the table at right, 13 agencies across 12 jurisdictions took part in the mock Amber Alert. NetworkFirst converts audio into individually addressed digital IP packets, regardless of radio system technologies.

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Local, state and federal agencies involved in Denver interoperability test:

COMMUNICATIONS SYSTEM:
- State Digital Trunked Radio System
- M/A-COM Trunked
- Motorola Trunked
- Conventional (Various mfgs.)

“WE HAVE A COMMON MISSION. A PURPOSE.”

Al LaCabe

4
talk paths extending to systems as far as Grand Junction, 250 miles to the west. The Ft. Lupton officer was able to successfully handoff surveillance of the suspect vehicle and the eventual “capture” of the abductors through real-time coordination of communications over a single channel available to all participants.

Each step of the exercise was monitored in real-time by all 13 participating agencies, and captured on a CD which is now available for viewing on the M/A-COM web site.

**Interoperability a “common mission”**

Speaking before a group of local and state first responders and public safety officials assembled for the demonstration, Denver Manager of Safety Al LaCabe cited the lessons learned from emergencies such as Columbine and 9/11. “We have a common mission,” he said, “A purpose. What has become the watchword for all of us is the term interoperability.”

This purpose was underscored by Chief Cooper, who said, “It’s important for us to talk to each other instantly, fluently. We have to get the information from officer to officer instantly because in today’s world, that’s the way incidents happen.”

Like public safety agencies across the country, the DPD has expended a lot of effort in attempting to find an affordable and effective solution to the problem.

“Until the introduction of NetworkFirst, the main difficulty in achieving the desired level of interoperability was cost,” said Chuck Shaughnessy, M/A-COM vice president, operations. “The most commonly suggested way to achieve interoperability has for years been the use of a standard, or common, air interface between radios. But it is simply not cost effective to replace every first responder’s radio system. Independent estimates for changing out radio systems nationwide range to as high as $48 billion. We thought there had to be a better way,” he said.

Superintendent Hansen agreed, saying that the DPD could simply not afford to throw away its existing radio system.

**The IP backbone approach**

The “better way,” said Shaughnessy, “was sitting right in front of us, on nearly everyone’s desk. The solution was clear: connect disparate radio systems at the network level.” The result was NetworkFirst.

“NetworkFirst is a wide-area network – just like you probably have in your office – that sends IP packets to connected devices,” explained Shaughnessy. “The difference is that instead of having a personal computer that dumps information onto it, we have a digital voice unit, or DVU, that resides in a gateway and takes all of your analog voice, digitizes it and wraps it up in an IP packet.”

“Each packet has the IP address of the person you’re trying to talk to. The DVU puts it on your IP network and off it goes, just like the local area network in your office, and shows up at the other end at the right radio. It’s a simple
idea, but it is very complex technically. The bottom line is that it does not matter who made your radio equipment or what band split you are using or what the protocol is. Once you've digitized it and put it on an IP network, it is available to whoever needs it and has permission to receive it.

The cost savings result from allowing every agency to keep their existing investment in infrastructure and individual radios. In addition, minimal training is required and the lifespan of existing equipment is not affected.

**A public-safety-grade, redundant switch**

The key element of the DPD’s NetworkFirst solution is a public-safety-grade, redundant switch that will be permanently installed at the Department’s communications center. A combination of backhauls consisting of T1 landlines and microwave links connect to interoperability gateways at each participating agency. The gateways contain the DVUs required to translate the user’s audio into secure IP packets that are then available across the network.

Once established, the network remains available 24/7 simply by switching a mobile or portable radio from a participating agency to a pre-selected channel. None of the radio system’s capacity is tied up when the common interoperability channel is not in use, however. “The designated channel remains available for other uses until the network is activated,” said Sandy Lugger, M/A-COM regional sales manager. “NetworkFirst requires no system overhead when it’s not in use. But when it is required, it’s available immediately.”

**Statewide expansion a goal**

While the state has a long way to go before full statewide interoperability is achieved, approximately 30 agencies in the Denver region will soon begin the process of installation and training.

Hansen said she hopes to see a general system overlay in the Denver area by the end of 2005. When that NetworkFirst interoperability solution is complete, the network will be able to handle up to 55,000 talk groups. “A lot of work remains to be done,” she said. “But we have demonstrated the network’s effectiveness to our users in the region and across the state. If funds are available, I’m sure that there are many first responders who will want to participate and we will have made a huge step in being able to provide the level of safety and security Coloradans need.”

**AN AMBER ALERT IS AN EXCELLENT TEST OF INTERAGENCY INTEROPERABILITY BECAUSE IT MIRRORS A REAL-WORLD SITUATION.**

Dana Hansen

**WE HAVE DEMONSTRATED THE NETWORK’S EFFECTIVENESS TO OUR USERS IN THE REGION AND ACROSS THE STATE.**

Dana Hansen
More than a decade of experience has shown that, while increased safety of field personnel engaged in potentially hazardous work is often cited as the most compelling reason for deploying mobile data, it is but one of the many advantages of a well-planned data system.

“There is no doubt that within virtually all organizations with a significant need for critical wireless communications, there are increasing demands for mobile data,” says Tim Dailey, data solutions manager for M/A-COM’s Data Solutions Group. “In addition to enhanced safety, the goal now is for increased efficiency throughout the organization. This can be accomplished through greater access to information and faster response time in the deployment of personnel and other resources.”

Examples of how the well-planned integration of mobile data into an organization’s daily functions significantly enhances efficiency abound. Over the past five years,
Channels has shown how organizations as diverse as the London (Ontario) Police Service, Consumers Energy of Michigan and VIA Metropolitan Transit in Bexar County, Texas, have used mobile data to improve their effectiveness. Specifically, they have reduced paperwork, improved reaction time and increased efficiency while simultaneously enhancing safety for personnel and the public at large.

Today, the data rate of integrated voice and data over M/A-COM’s data-friendly, packet-switched IP-based OpenSky platform is double that of our offering of just a few years ago. Just as important is the enhanced data handling characteristics and sophisticated algorithms used by OpenSky, which greatly increase the number of users supported across a wide area.

Most recently, the addition of a hybrid solution utilizing broadband 802.11 “hot spots” delivers even greater speed and capacity for cost-effective localized coverage.

Public or private network

With all the gains of new technology, however, difficult decisions remain. One of the first such decisions is whether a public or private network will best meet an organization’s needs.

“Public networks are very tempting since they don’t require an investment in infrastructure and because, with a large number of cell sites in densely populated areas, they can offer tantalizing data speeds,” Dailey said. But the downside is that they rarely offer prioritization for first responders and other critical users. Therefore, once you move away from metropolitan areas, coverage can be poor to non-existent.

"ALL CRITICAL COMMUNICATIONS APPLICATIONS ARE UNIQUE, BUT MOBILE DATA REQUIRES A THOROUGH KNOWLEDGE OF USER NEEDS AND THE MOBILE ENVIRONMENT."

Tim Dailey

Automatic Vehicle Location on buses in Bexar County, TX, help supervisors know where their resources are at all times.

Photo: VIA Metropolitan Transit
“As we saw in Florida during the last hurricane season, usage during emergencies escalates quickly. Cellular networks were off the air or overloaded in the wake of the hurricanes. Everyone understandably wants to be in touch with their families, and traffic quickly increases to the point where the system is overloaded. So, just when critical communications are needed most, they're either blocked or not available where they may be needed. It's unfair to expect that a commercial public network should meet the standards necessary for public safety. For that reason, most critical communications require public-safety-grade networks with the coverage, redundancy and security only a private network can provide,” Dailey said.

**Evaluation and planning are essential**

Well-designed, cost-effective private data networks are a carefully balanced trade-off between coverage, capacity and cost. With that in mind, evaluating an organization’s needs becomes a key factor.

“It is essential to determine which features are most important to the organization,” said Dailey. “Streaming video, for example, is an exciting feature, but it may not be worth the cost, at least in the immediate future. Silent dispatch, crime database access and field reporting provide tremendous productivity gains and substantially improve officer safety for a lot less money.”

With the many technology choices now available, it’s a good bet that an organization can come up with a balance that cost-effectively meets its immediate needs, while simultaneously laying the groundwork for future enhancements that won’t require wholesale replacement of the infrastructure. But Dailey cautions that in this, as so often is the case, experience counts.

“All critical communications applications are unique to one degree or another, but mobile data requires a thorough knowledge of user needs and the mobile environment. You need an experienced team to help you evaluate your needs, select a system and end-user applications, and to complete the implementation. A skilled, qualified data team can help by knowing what questions to ask, where you can safely compromise, and how to best plan for future additions or enhancements. The streaming video you want today may be more easily and cost-effectively added tomorrow – if you have planned for that possibility," Dailey said.

**Look for choice and flexibility**

Since no two mobile data applications are alike, it makes sense to select a system that offers the most flexibility in design and implementation, as well as one which preserves the customers’ right to choose the end-user applications they want, rather than having to accept only what the vendor offers.

The ability to choose between integrated voice and data and a dedicated data network is a case in point. “We don’t think it makes sense to offer just one way to do mobile data, and the flexibility of our systems means we don’t have to. We’ve provided a choice between completely integrated voice and data, dedicated systems, or a hybrid network,” said Blake Nyland, manager, Dispatch and Data Solutions.

One reason that choice is important is because there is an inherent trade-off between coverage and capacity. Broadband data (Wi-Fi) offers impressive speed, but the downside is that the data capacity can’t be maintained as the distance of a moving vehicle from the access point increases.

“We’re talking in terms of just a few hundred yards in distance,” Dailey said. Capacity is further reduced by backhaul traffic and interference from other devices in the unlicensed bands (2 GHz and above) that are used.

“Multiple access points can be combined to increase coverage, but this requires a large number of access points – perhaps as many as 20 per square mile. That makes wide-area coverage for broadband extremely expensive,” Dailey explained.

The hybrid network offers the most bang for
the buck since it provides both wide area data and localized Wi-Fi hot spots. This plays to the strength of both technologies.

“The traditional integrated voice and data approach over an OpenSky network provides the wide-area coverage many organizations need for time-critical information such as computer aided dispatch (CAD), NCIC inquiries, Automatic Vehicle Location and status information. At the same time, less time-critical information such as field reports, operating procedures and even software updates can be uploaded or downloaded at strategic locations. Users can seamlessly roam between the traditional network and hot spots using middleware or advanced mobile applications that handle roaming directly,” said Dailey.

It’s more about capacity than speed

While the raw data rates of wideband and broadband data applications grab headlines and undoubtedly have an important role to play in a balanced data network, Dailey is quick to point out that capacity and coverage are equally important.

“It goes back to the needs analysis that every organization should do when first considering mobile data. The goal is to improve individual safety and the internal processes of the organization. That means being sure that the system has sufficient capacity across the entire coverage area, so that no one is beyond reach,” he said.

Capacity, or the number of users a channel can support, is determined by more than just speed (see graph, right and box, left). “M/A-COM’s packet-switched, IP-based networks have been optimized for multiple users – it is extremely robust under load and is not subject to ‘data crashes’ and channel collapse if overloaded,” said Dailey.

Another factor to consider is the coverage guarantee. “The highest bit rate in the world is useless if you don’t have coverage where you need it. M/A-COM stands behind its coverage predictions, which are generated by our own software-based propagation tool,” Dailey said.

Total ownership cost (TOC) is yet another factor. OpenSky has been designed to minimize recurring costs through the use of inexpensive backhaul options and minimum antenna requirements. Compact pole-top “cell sites” minimize environmental impact and are a low-cost option when traditional antenna sites are unavailable or too expensive.

“And don’t forget,” said Dailey, “IP is the de facto networking standard and contributes to a lower TOC because it allows the use of off-the-shelf routers and servers and a wide choice of IP-based end-user applications. It also means that training and maintenance costs are reduced, and that migration to future IP-based technologies is assured.”

For more information, contact Tim Dailey at daileyt@tycoelectronics.com or (434) 455-9291.

Data Lab ensures choice, maximum performance

“There are literally hundreds of data applications on the market,” says M/A-COM’s Rick Hundstad, manager, Data Products. “As total solutions providers, our goal is to allow customers to choose the end-user applications they want, not the ones we tell them to use.”

In order to ensure that each application will work as well as possible, the Data Lab tests customer applications and works with the vendors to optimize their performance on our network. Services include:

• Message modeling
• System/Application tuning
• Test-before-purchase evaluations
• Traffic loading studies
• Total integration support

Hundstad says these services evolved because “over the years, we’ve learned that an application that is ‘wireless savvy’ and properly integrated can have a greater impact than increased data speed. It’s all part of the ‘data your way’ philosophy that we’ve had for nearly two decades.” For more information on the Data Lab, contact Rick Hundstad, hundstari@tycoelectronics.com, (434) 455-9322.

OpenSky’s advanced data handling techniques and protocols strictly control data traffic and eliminate the “data crashes” typical of other protocols. The result is higher data capacity under real-world loading. This extra capacity translates to more users per channel than many protocols with higher data rates.

“Most critical communications require public-safety-grade networks with coverage, redundancy and security.”

Tim Dailey
Need for interoperability and cost-effective migration paths a global concern for critical communications

INTEROPERABILITY – OFTEN CALLED “INTERWORKING” ABROAD – IS MUCH IN DEMAND THE WORLD OVER. SO TOO IS THE NEED FOR COST EFFECTIVE MIGRATION PATHS TO EVOLVING TECHNOLOGIES. IN THIS ISSUE WE TALK TO JAY MURRAY, M/A-COM’S DIRECTOR, INTERNATIONAL SALES, TO LEARN HOW COMMON GOALS ARE DRIVING COMMON SOLUTIONS WORLDWIDE.

Editor: What are the trends in critical communications worldwide – are they similar to those in the US, or significantly different?

Murray: Very similar, though each region has its own uniquely defined set of characteristics. Overall, one of the single biggest needs worldwide is for interoperability with the many diverse public safety and service organizations in a given geographical and political area. Like in the U.S., police, fire, emergency medical teams and other public safety first responders need to communicate during times of crisis. They need to find a solution to that problem, and they need to do so cost effectively.

Editor: Is interworking made any easier because of standards such as Europe’s TETRA?

Murray: Yes and no. Europe has been involved with the TETRA standard for nearly a decade, and those entities that have implemented TETRA systems have interoperability with other TETRA users. There is also a market for P25 radios and systems. But as we have discovered here in the U.S., getting everyone you need to talk to on a single standardized system is a long and expensive process. It will be years, at best, before extensive interoperability is achieved via a common-air-interface approach.

Other regions in the world are also interested in standardized air interfaces such as those employed by TETRA and P25, but they are not as far along in the deployment of these systems as Western Europe. So, despite the standards, there is still an overwhelming need for an interoperability solution which does not rely on common radio specifications such as frequency, bandwidth, air interface and the like. That need has sparked a growing interest in our NetworkFirst solution, which is immediately available and doesn’t require modifications to existing RF infrastructure.

Editor: Is the fact that NetworkFirst is an IP-based interoperability solution an important consideration?

Murray: Absolutely. IP is an international standard for networking, whether we are talking about enterprise networks or communications networks. In fact, IP is arguably the most important and ubiquitous set of standards in the world. NetworkFirst is not a radio-based solution to interworking, but a network-based solution that leverages the worldwide investment in information technology. As such it is far more cost effective and, because it is an off-the-shelf solution, can be implemented immediately. NetworkFirst has the additional advantage of establishing an IP-based, packet-switched link between radio communications and an organization’s existing IP network. That by itself will have immense implications for the future as nations seek to improve their communications not just internally, but externally, around the globe.

Editor: How so?

Murray: The worldwide trend is toward secure, integrated IP networks that encompass all of an organization’s functions, regardless of whether those functions are fixed or mobile. The goal is to incorporate mobile voice, and eventually data, into the enterprise network for greater efficiency and connectivity to a multitude of resources. But doing so requires a cost-effective migration path from current technologies, one which allows much of the existing infrastructure to be maintained, not thrown away. NetworkFirst is the first step — the gateway — to that global connectivity. Our interoperability gateways work with any air link protocol and any frequency and bandwidth, trunked or conventional, whether its TETRA, EDACS or P25.

Editor: What would be the practical value in such a network?

Murray: Near limitless connectivity across an IP-based network. Once the immediate goal of voice interworking with all local agencies is accomplished, the basic foundation is in place. Interworking could be expanded well beyond
the local area to include regional, national or even international connectivity. For such a network to be practical, however, there must be a cost-effective means of achieving such connectivity in planned, graduated steps. As one of only a few companies worldwide who can provide all of the elements in such a wireless network, M/A-COM’s Unified Network Architecture assures users of this gradual path to implementation. And NetworkFirst is an easy first step to this virtually limitless connectivity.

**Editor:** What would subsequent steps entail?

**Murray:** It’s up to the individual customer. Once you have the secure IP packet-switched backbone you have connectivity to any IP-based technology – either wired or wireless. An organization with an analog conventional system may wish to establish interworking with NetworkFirst and then gradually migrate to a new PMR network by adding a TETRA-based system or M/A-COM’s digital P25IP on a channel-by-channel basis. P25 has a cost advantage over TETRA in that, usually, no new sites are required for the same coverage area as a conventional system. In addition, users gain the advantage of end-to-end IP, which provides every radio with a unique IP address. This makes individual, radio-by-radio upgrades and reprogramming easy. It also saves on the cost of updating the radios because they don’t have to be returned from the field for reprogramming.

**Editor:** Where do you see the most interest as well as the biggest need for IP-based solutions such as NetworkFirst and P25IP?

**Murray:** Virtually everywhere: Australia, Canada and Europe – particularly in Germany and Poland; and there is a lot of interest in Latin America, with Brazil and Mexico being especially active in the search for cost-effective solutions to interoperability. We have a top-notch staff in Brazil now and have just completed our first full year of operations there – we’re excited about the opportunities we see before us in Brazil in the near term and beyond. China is facing the same interoperability problems as everyone else – that’s why we’ve hired sales staff in Beijing – and we hope to leverage Tyco’s very impressive presence in China to jumpstart our sales efforts. We are also looking forward to adding direct sales representation in the Middle East, historically a solid region for us, in the next few months.

**Editor:** What else has the International group done to serve their global markets?

**Murray:** We’re making more use of the worldwide resources of our parent company, Tyco International, by sharing resources and ideas in different parts of the world. Our local channel partners throughout the world remain an important part of our operations and we’re getting tremendous effort from our international support team, which includes program management and system engineering. Our goal is to provide the right solutions to the right places at the right time. With the products and services we can now provide, we’re confident of achieving that goal. ■

“End-to-end IP provides every radio with a unique IP address, which makes individual, radio-by-radio upgrades and reprogramming easy and saves a great deal on cost…”

NetworkFirst provides an immediate, phased solution to interworking while simultaneously providing a cost-effective migration path to newer technologies for the future.
From September 14th – 19th, 2004, the Ryder Cup matches entertained thousands of golf fans at the Oakland Hills Country Club in Bloomfield Township, Michigan. Pitting teams selected from some of the best golfers in America and Europe, it was the 35th match-up in this prestigious bi-annual series that began in 1927. As host, Bloomfield Township’s Police Department, with the assistance of the Oakland County Sheriff’s Office, was designated as the lead law enforcement agency and responsible for security during the weeklong sporting event.

With all the interest and media attention generated by such a gathering, safety and security were top priorities. “In our security preparations for Ryder Cup 2004, our central concern was the safety of all residents, participants and visitors,” said Bloomfield

OpenSky provides critical communications for premier international golf event

“The international aspect of the event brought with it some crucial public safety concerns.”

Police Chief Jeffrey D. Werner
Township Chief of Police Jeffrey D. Werner.

Assisting the two local agencies were numerous federal and state entities, including the U.S. Secret Service, the Bureau of Alcohol, Tobacco and Firearms, Michigan State Police, the Federal Bureau of Investigation, Oakland County Sheriff and the Bloomfield Township Fire Department and Emergency Medical Technicians. In all, about a dozen agencies were involved in security and safety for the event.

“The international aspect of the event brought with it some crucial public safety concerns,” said Werner. “Central to our preparations for the event was ensuring that we had the ability to communicate with the various local, state and federal public safety organizations dispatched throughout the area. With M/A-COM’s technology and services, we were able to meet this goal.”

**Familiarity with NetworkFirst, OpenSky**

Oakland County is no stranger to M/A-COM critical communications networks, having selected OpenSky to replace a number of aging, disparate conventional radio systems in July, 2002 (see sidebar, above). The city of Farmington went live on an OpenSky pilot network in the fall of 2003, and in November of that year the county was host to a successful NetworkFirst pilot program linking seven agencies across six technologies from different manufacturers (*Channels, Volume 4, Issue 3*).

To ensure the coverage and interoperability demanded by the Ryder Cup Matches, M/A-COM installed a temporary OpenSky site in the area. “We worked closely with officials from Bloomfield Township to adapt the Oakland County OpenSky network,” said Ken Palazzi, M/A-COM project manager on the system.

In addition to the deployment of the two OpenSky sites and IP links established through NetworkFirst, M/A-COM supplied and programmed 200 radios for use among the participating agencies. “We are pleased that users from the various local, state and federal agencies were able to intercommunicate. We look forward to further success with the township and the county as we continue the implementation of the countywide system,” Palazzi said, noting that this was not the only time an OpenSky network had been employed in the region to bolster security for a special event. “In October 2004 we also provided communication support in Farmington Hills for a visit from President Bush.” Approximately 60 radios were distributed to various public safety agencies for use during the President’s visit.

While communications during the event went well, the American teams fell a bit short, with the Europeans extending their win streak to seven out of the last 10 events. The next round of the Ryder Cup will be held in Dublin, Ireland in 2006.
800 MHz Reconfiguration: “We’re ready when you are”

ON MARCH 11, 2005, THE FEDERAL COMMUNICATIONS COMMISSION (FCC) APPROVED THE REGIONAL PRIORITIZATION PLAN PREPARED BY THE 800 MHZ TRANSITION ADMINISTRATOR (TA). CHANNELS RECENTLY TALKED TO MIKE ENGELHAUPT, SENIOR MANAGER, NATIONAL PUBLIC SAFETY MARKETS, ABOUT WHAT THE COMPANY IS DOING TO HELP THE ESTIMATED 200 M/A-COM CUSTOMERS WHO WILL BE AFFECTED BY THIS PLAN.

“None of our customers are going to be left out in the cold.”

Mike Engelhaupt

Editor: How long has the Public Safety team been preparing for the Reconfiguration Plan?

Engelhaupt: Although many of the specifics of the agreement with Nextel didn’t fall into place until very recently, we’ve been working with the TA, Nextel, consultants, our network channel partners and customers for a quite a while. In fact we’ve been providing no-cost seminars, monthly bulletins and RAPTR training – that’s our software-based coverage-planning tool – to consultants for the past 18 months. We also participated in the rebanding forums and seminars at this year’s IWCE in Las Vegas, and will continue with customer visits and participation in rebanding forums over the next few months. The result of all this is that we are offering a number of services to our customers that range from consultation to engineering and implementation (see listing, right).

Editor: Are there any charges for services provided by M/A-COM?

Engelhaupt: Not for our customers, no. We’re providing a number of services directly and through a network of qualified partners.
The Report and Order states that our customers (the licensees) will not have any financial burden from the rebanding process. When and if charges are necessary, the cost will be included in each agency’s proposal and negotiated with Nextel. Ultimately, all negotiations must be approved by the TA. 

Editor: How complicated is the process – is it likely to be something agencies can accomplish on their own? 

Engelhaupt: It all depends on the size and structure of the agency. In general, the larger the system, the greater the task. The TA has set an official start date of June 27 of this year, and divided the country into four sections, or “waves.” Start dates for each section are staggered, with each wave in turn being divided into four steps. There will undoubtedly be organizations with the depth of knowledge and resources necessary to accomplish everything in house. Many others will require various degrees of help. Our role is to provide all of our customers with the level of help they need, no matter how much or how little that may be. None of our customers are going to be left out in the cold on this.

Editor: What should customers do first? 

Engelhaupt: Talk to us, because we can help avoid duplication and wasted effort. According to the TA schedule, rebanding in all four waves in the US is supposed to be completed by mid-2008. This is a relatively short period of time and there is a lot to be done, beginning with a complete system audit. This will be similar to the audits performed five years ago for Y2K. We have already provided free audit forms to licensees, consultants, dealers, integrators, Nextel and the TA, and stand ready to help customers and their consultants on the audit process when requested.

A baseline performance test should also be conducted for pre- and post-reprogramming performance. The baseline performance testing should be done as close to the rebanding procedure as possible to capture the same environmental conditions, like tree foliage.

It is critical that this audit be accurate and complete – if an item is left off the list and turns up later, it may be too late to have it included in the plan. A concern is that a backup radio will turn up in some out-of-the-way closet somewhere. If that’s the case, it may fail to operate when you need it and the cost of retuning or replacement may not be covered. Similarly, if there is a decrease in performance anywhere in your system that was not recorded in the baseline, the licensee could be burdened with the cost of correcting it. Once the audit is complete, a cost proposal should be drawn up for negotiations between the agencies and either Nextel or the TA. A point to remember is that if the negotiations are held directly with Nextel rather than the TA, the TA must still approve it, so time must be allowed for that to occur as well. 

Editor: How about implementation – isn’t that likely to require outside help, especially if the proposal approval process takes longer than anticipated and the

continued ➤
Engelhaupt: It’s quite likely. Again, we are here to help. We also have a network of trained and experienced partners to call on if additional manpower is needed. The key is to try and anticipate your requirements at the very beginning so that there are no costly surprises at the end. If the initial audit and proposal are well prepared and thorough, an accurate forecast of the total cost and time required to complete the process should not be too difficult to achieve. But if the initial audit and proposal are weak, there could well be unanticipated costs.

Editor: How about performance testing after the reprogramming is complete – what happens if unanticipated problems occur at that stage?

Engelhaupt: It will depend on the nature of the problem. If it is determined to be a fault of one of the replacement radios that Nextel is committed to provide, for example, there are mechanisms in place to resolve that issue. If it is a problem related to one of our products, we will do everything in our power to resolve the problem. Again, it all goes back to the initial audit and baseline performance test. We are here to help our customers make this transition as easy and painless as possible.

For more information:
Mike Engelhaupt: 614-599-9955; engelham@tycoelectronics.com

Additional links:
800 MHz Transition Administrator: http://www.800ta.org/index.html
FCC: http://wireless.fcc.gov/publicsafety/800MHz/bandinterference.html
APCO: http://www.apcointl.org/frequency/800pb.htm

As announced at the 2005 IWCE, M/A-COM has expanded its P25 product line to include 800 MHz trunked radios in addition to the existing VHF and UHF conventional models. “The 800 MHz P7100IP and M7100IP radios allow existing EDACS customers the ability to interoperate with neighboring 800 MHz P25 trunking systems, regardless of the manufacturer,” said Steve Frackleton, director of product development for M/A-COM.

The P7100IP and M7100IP are powerful, DSP controlled, multi-mode radios that are capable of concurrently hosting P25, EDACS and conventional analog modes operating in clear or encrypted voice.

Tests prove interoperability

“Our P25 trunking radios have been successfully tested on our competitor’s P25 trunking systems and offer users a powerful and cost-effective alternative to their existing radio suppliers,” Frackleton said.

One such test was recently conducted in Phoenix, Arizona, where several cities share a P25 800 MHz network. Once programmed onto the network, M/A-COM’s P25 radios shared messages and other alerting functions with P25 radios from Motorola and E.F. Johnson. “It worked fine,” said Joe Noce, Mesa project manager for the Phoenix-Mesa network in an article published in the Oakland (Calif.) Tribune. “It’s not vaporware, they do have a functioning radio.”

Available through authorized dealers

It was also announced that M/A-COM’s P25IP offerings are now available through the company’s authorized indirect channel partners.

“As the adoption and deployment of Project 25 radio systems accelerates, the demand for knowledgeable, qualified P25 technical and sales professionals will continue to grow,” said Ron Bender, director of system products, M/A-COM. “With this announcement, M/A-COM is taking the appropriate step to leverage the talent of our indirect channel to meet the increasing demand for P25IP solutions of first responders and other critical communication users.”

800 MHz P25 Trunked radios now available
OpenSky hybrid data network to serve in Virginia
As recently announced, M/A-COM has been awarded a wireless data system contract from the County of Albemarle, City of Charlottesville, and the University of Virginia (UVA). The network will provide shared, interoperable mobile data communications to the region’s Emergency Communication Center (ECC), which coordinates all police, fire and EMS actions for the county, city and university.

The new turnkey data network will consist of a four-site OpenSky system piggybacked onto the ECC’s current voice system. The hybrid OpenSky (see The Data Choice Today, page 7) network will provide wide-area, public-safety-grade data communications with localized 802.11 hot spots via Cisco Systems Aironet Access Points. A suite of end-user applications from FATPOT Technologies will enable seamless roaming and integrate the ECC’s multiple CAD applications into a single user interface. The FATPOT mobile client software will run on Panasonic mobile data computers. The system will use the ECC’s existing voice network antennas, battery backup and backhaul equipment, eliminating the need for a duplicate backbone infrastructure.

EDACS IP with Project 25 CAI
The City of Harrisonburg, Virginia and Rockingham County, Virginia have selected M/A-COM’s EDACS IP to facilitate seamless interoperable communications for the Rockingham-Harrisonburg Emergency Communications Center. The new 800 MHz system will include the EDACS IP digital communications network with Project 25 Common Air Interface, which will provide users with comprehensive digital coverage. In addition to seamless interoperability between the city and county’s many public safety and service entities, the new network establishes a clear migration path to future integrated voice and data communications. A complementary paging system, UHF and 800 MHz mutual aid network will also be implemented as a part of the overall communications network.

2005 Second & Third Quarter Schedule
Make training a number-one priority for supervisory personnel, users and maintenance staff. Call 1-434-455-9469 for complete information on our schedule and to find out more about class availability.

- **Introduction to EDACS System Maintenance**
  Jun. 6 – Jun. 17 • Aug. 15 – Aug. 26

- **EDACS System Administration**
  Jul. 25 – Jul. 29

- **Communications System Director**
  Jun. 20 – Jun. 22 • Aug. 29 – Aug. 31

- **EDACS Master Technician**
  May 16 – May 20

- **MASTR® III Station Maintenance**
  Aug. 1 – Aug. 5

- **RF Test & Troubleshooting**

- **EDACS System Management Workshop**
  Jul. 11 – Jul. 15

- **Orion™ & EDACS 500M Radio Maintenance**
  Aug. 8 – Aug. 12

- **LPE™ & M-RK™ Radio Maintenance**
  Jul. 18 – Jul. 22

- **Advanced RF Fundamentals**
  Jun. 20 – Jun. 24

- **EDACS Mobile Data**
  Sept. 19 – Sept. 28

- **Analog & Digital Voting**
  Jun. 27 – Jun. 29

- **P7100IP & M7100 IP Radio Maintenance**
  May 9 – May 13

Online Training Class Schedule
Online sessions can cover one of the topics listed below, or a session can be customized to meet your specific needs. Contact the Training Manager at 1-434-455-9469 or visit www.macom-wireless.com/training to schedule an online session or to discuss another topic for delivery. The following is a list of some training sessions that can be conducted online, including the session length:

- **Implementing the EDACS Security Key** (2 hours)
- **Operating the C3 Maestro Dispatch Console** (4 hours)
- **Configuring the SitePro Controller** (4 hours)
- **Implementing ProFile using an EDG** (3 hours)
- **Implementing ProFile using RF Data** (4 hours)
- **Configuring Reports on the CSD** (3 hours)
- **Backing Up & Retrieving CSD Activity and Database Records** (3 hours)
- **Configuring the C3 Maestro Dispatch Console with UDS** (3 hours)
P25 and IP Addressable.

It's Here.

And It's from M/A-COM.

M/A-COM's P25™ radios are fully interoperable with other commercially available P25 compliant equipment. M/A-COM also provides network interoperability through VIDA IP network solutions.


Voice
Data
UHF
VHF
800 MHz
Conventional
Trunking

DES Encryption
AES Encryption
OTAR
P25 compliant
VIDA Network compatible
Available Today

tyco / Electronics

For more information on IP-addressable radios from M/A-COM, call 1-800-528-7711
email P25products@tycoelectronics.com, or visit www.macom-wireless.com/p25.