

in the field

BY MERRILL DOUGLAS

New York to get massive network

M/A-COM system combines UHF, VHF and interoperability gateways on IP backbone

By linking several mobile radio technologies on an IP backbone, New York will gain a statewide wireless communications solution that's scalable and flexible, said John Vaughan, vice president and general manager of M/A-COM's wireless systems business.

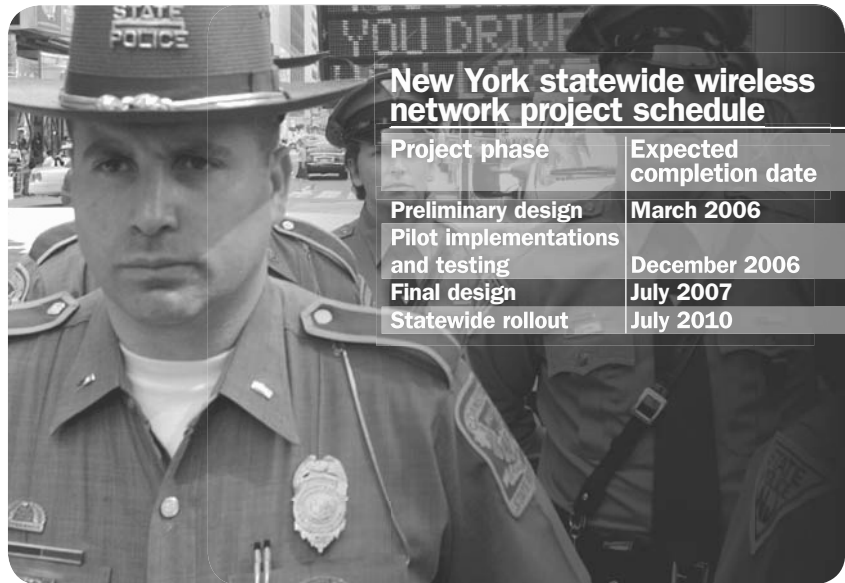
"Flexible is important ... because it's going to roll out in regions," Vaughan said. M/A-COM's approach will allow New York State to add users gradually, he added.

In September, M/A-COM started work on a project to design, deploy, operate and maintain the New York Statewide Wireless Network (SWN) (*MRT*, October, page 7). The 20-year contract carries a price tag of \$2.005 billion. Observers estimate that M/A-COM's bid was less than half that proposed by its sole rival for the contract, Motorola.

New York plans to roll out the network, region by region, over five years. Eventually, all New York state public-safety and public-service agencies will use the new system for voice and data communications. Local governments may also join the network or they may keep their legacy communications systems but still implement technology to interoperate with the state system.

M/A-COM is using its IP-based VIDA (voice, interoperability, data and access) technology to tie together three of its radio products: OpenSky, P25^{IP} and NetworkFirst. M/A-COM already is combining OpenSky and NetworkFirst on a VIDA backbone in a statewide network for Pennsylvania, but the New York project marks the first time it will add P25^{IP} to the mix.

According to New York officials, that addition does not make M/A-COM's design for the SWN a new, untested approach. The system in Pennsylvania is "exactly what they proposed to us," said Michael McCormack, director of the New York State Office for Technology.



New York statewide wireless network project schedule

Project phase	Expected completion date
Preliminary design	March 2006
Pilot implementations and testing	December 2006
Final design	July 2007
Statewide rollout	July 2010

Photo by Stephen Chernin/Getty Images

OpenSky, a voice-over-IP system that operates at 700/800 MHz, will provide broadband capacity in the state's more densely populated areas. P25^{IP}, which uses the Project 25 over-the-air protocol, will offer VHF narrowband communications. This is a more cost-effective solution in sparsely populated areas, Vaughan said.

In its request for proposals, New York "allowed the bidders to come in with using VHF overlays in both the Adirondacks and the Catskills," McCormack said. Each of those mountainous regions is home to a large state park preserve. VHF signals carry over a longer distance than 700/800 MHz signals, and "that would mean less need for tower infrastructure in those areas where, obviously, there is significant environmental concern," he said.

It also means the state can save money by operating fewer towers in those regions, Vaughan said.

All users who work for the state will get new radios based on either the OpenSky or P25^{IP} technology, and they will operate on new radio infrastructure.

Local governments that join the SWN will buy new radios as well. Those that don't adopt the state's technology—or that want to phase it in gradually—can use M/A-COM's NetworkFirst gateway technology to communicate with users on the SWN.

Westchester County, just north of New York City, probably will do a little of both. The county currently is installing a conventional, trunked UHF system from Motorola, but usable frequencies are in short supply, and the new system won't meet all of the government's needs, said Norman Jacknis, Westchester's chief information officer. When the SWN reaches Westchester, "hopefully we'll be able to piggyback on that and use it to coordinate with state agencies when we have to," he said.

Westchester will continue to operate on its own frequencies on the Motorola network, but it plans also to use state frequencies on the SWN infrastructure. "The systems are a little bit incompatible, so we're going to have to figure out how to bridge them," Jacknis said.

In the Finger Lakes region, Tompkins

County officials expect to sign a contract for a new 800 MHz Motorola system by the end of this year. But, "we fully expect to have interoperability with [the state's] system," said Stephen Whicher, county administrator. "The technology is in place to allow that communication to happen. I think it's about a \$25,000 investment."

M/A-COM's approach looks interesting, and Tompkins County might have considered joining the SWN instead of building its own network if the state hadn't taken so long to choose a system, Whicher said. "I've visited Pennsylvania to look at what they're doing there, and the people there seem very encouraged."

Officials in both counties hope the state will take advantage of radio towers the counties already operate and that, in turn, they will be able to use new towers the state erects. "They're putting up towers in areas where there's no coverage. And that's true for us, too," Jacknis said. "We have had, for some time, a mutual agreement that allows us to use each other's towers."

Whicher hopes the state also will employ Tompkins



Michael McCormack

Along with M/A-COM's design approach, "certainly the dollars loomed large as well" in New York's decision, McCormack said. He can only speculate on the reasons behind the large price difference between the two bids, he said, but one may have been that Motorola proposed using more high-profile towers. "Those can be costly to build and maintain."

At the state's request, both companies proposed using existing towers wherever possible, both to save money and minimize environmental impact. "I think M/A-COM took more advantage of that, but they both did that," McCormack said.

Along with their certainty that M/A-COM's approach has already proved itself in Pennsylvania, New York officials draw confidence from the way they've structured their contract with M/A-COM, McCormack said. After completing an initial design phase in March, the vendor will start implementing the system in two adjacent western New York counties, Erie and Chautauqua. It will also do an implementation with the

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County's microwave backbone. "I'm hoping they'll help defray our costs, and it will be much less expensive for them to deploy their system if they don't have to put up a microwave system," he said.

New York chose M/A-COM's proposal over Motorola's in part because M/A-COM proposed using a combination of high-profile towers—typical radio towers—and low-profile towers, which look more like utility poles, McCormack said. "That was attractive to us both financially and environmentally."

Also, M/A-COM's proposal looked "more spectrally efficient in terms of the technology they proposed," McCormack said. The state wanted the successful bidder to deliver a system with 6.25 kHz channels, quadrupling the capacity the state has today on 25 kHz channels. M/A-COM's proposal would move the state to 6.25 kHz channels immediately, while Motorola proposed starting at 12.5 kHz and transitioning to 6.25 kHz over time, he said.

Officials at Motorola declined to comment on the SWN. In a written statement, they pointed out that Motorola will continue to support New York state in its communications needs and that Westchester and Nassau counties recently chose the company to supply radio systems.

Metropolitan Transportation Authority—a state authority—in the New York City metropolitan area. The state has established a set of tests for these pilot systems, and M/A-COM "will have to satisfy that fully before they get paid" for these initial deployments and can move on to the next phase, McCormack said.

"That is, I think, fairly significant leverage with them to make sure that when they proposed, they can deliver on," he said.

In the tests, M/A-COM must show that the system meets the requirements of 95% coverage over the geographic area concerned and 97% coverage on roadways, McCormack said. The tests will evaluate throughput, digital audio quality and numerous other parameters. Once they are complete, "we want to put the system through its paces in a more real-life scenario," he said. "How is it going to work at a fire scene, when you have fire and police converging? And will we get the interoperability benefits that we specified in the [request for proposal]?"

M/A-COM is scheduled to complete the testbed systems in nine months, taking the project to December 2006. Next comes a seven-month final design phase, followed by a three-year statewide rollout. New York and M/A-COM have not yet defined the schedule for bringing the system to different regions of the state. ■

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