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# SOUND & COMMUNICATIONS

AV FOR SYSTEMS INTEGRATORS, CONTRACTORS AND CONSULTANTS



**TECHNOLOGY,  
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**MILLENNIUM  
PARK'S PRITZKER  
PAVILION**

A CREATIVE JOB,  
PERSONAL CHALLENGE.



# EMPLOYEE SAFETY IN A NEW ERA

*Nextel's headquarters in Reston VA.*

EDICT paging system provides business continuity for Nextel.

## **BY DAWN ALLCOT**

You sit in your office, engrossed in your work. All of a sudden, your computer screen goes blank and then an administrative message appears. Your attention diverted, you listen to the announcement coming from the speaker mounted unobtrusively on the post near your desk: "Attention all personnel. Please report to the nearest exit...."

An unlikely scenario? Perhaps. But, in a post-9/11 world, it is a contingency for which every American should be prepared. It's also yet another way in which audiovisual systems are helping to keep people safe in their homes, public areas and their places of business. Electronic signage networks (ESNs), used to convey information and advertising in retail and other environments, are being used for public safety, to inform and instruct the public in the event of a terrorist attack or other emergency. Many businesses, in fact, have ESNs configured for dual purposes: homeland security as well as their own commercial signage needs.

## **Paging System**

With the installation of an 18-building Emergency Direct Information Communication Transmission (EDICT) paging system, telecommunications giant Nextel

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*Freelance journalist Dawn Allcot covers the AV and music industries.*

Communications has taken an audio-based approach to its employees' safety. The system uses two TOA NX-100 units and nearly 400 speakers in order to deliver messages across Nextel's vast computer network.

"The main thrust of the project is aimed at business continuity," said Brian Gross, president and CEO of Poolesville MD-based Phoenixx Systems, the systems integrator that designed and installed the system. "How can Nextel direct its most important resource, its employees, in the event of any kind of emergency? The system helps ensure their safety and security, in order to protect them, and then also, to make sure that Nextel can continue to be efficient in dealing with anything that could happen."

Nextel Communications, after all, understands the importance of the service it provides. Nextel wireless phones and pagers are used by SWAT teams, police officers and firefighters. In addition, 95% of all Fortune 500 companies are Nextel users, along with millions of private homes. The Reston VA-based Fortune 500 company knows that it is imperative to keep its business running in the event of an emergency.

The EDICT paging system is installed in 18 buildings across Virginia, Maryland and Washington DC. Gross revealed that there are tentative plans to expand into New York, Atlanta and Florida. "The technology proved itself extremely valuable during the hurricane season," Gross said.

The system can be used in the event of national disasters, security threats, terrorist attacks and any other emergency situation in which Nextel management has to convey imperative information to its employees. However, it is not a typical life-safety system with alarms and flashing lights. It is a global information system that runs across Nextel's Wide Area Network (WAN), transmitted across multiple T1 lines.

## Network Aspects

Reliability was one of the most important aspects of the system, which is why Gross chose to run the audio across the network. "Their network is their most prized, guarded and protected as-

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set," he said. "The backups of their network gave us the comfort level we needed and showed us that it was, indeed, the right highway to ride on."

However, the very aspects that made the network so secure also posed some challenges for the installer, which included diplomacy when dealing with the network administrators at Nextel. "As the AV industry, in general, matures into fully understanding the IT world, we sometimes take for granted that the IT world has any idea of what we're doing," Gross said. His words held no animosity, just a resignation that often the burden is on the audiovisual installer to bridge that gap.

"We had to be very careful to describe what was happening on their terms, in terms of packet data size. We had to go in with a complete plan and describe it very exactly in their lingo."

Once the network administrators were secure in the knowledge that the paging system software would not affect daily operations of the network, there were still a few more obstacles to overcome, including compatibility. Nextel has strict rules for the software used on its networks, including what Java Runtime Environments are permitted. The original software used to run the TOA NX-100 was incompatible with the network. TOA quickly created a patch to convert the JRE (Java Runtime Environment) from a two-version to a three-version JRE.

## Easy Interface

The software operates on a graphical user interface that, Gross said, "works a bit like an Excel spreadsheet."

Users can select IP addresses, or groups of IP addresses, from a matrix. Specific buildings, personnel and areas

are organized into different zones, with a macro for each one, allowing users to select a set of buildings or personnel or just one. User groups include such designations as sales, engineers and executive management, and regions such as Northern Virginia or Maryland. "You can do an all-call, which is a general message, or you can talk just to the data back-up facilities, or to Virginia or Maryland as a whole, for example," Gross explained.

There are a number of different ways for Nextel executives to access the digital system, which is completely network addressable. At the control center, the audio is encoded and distributed over Nextel's private data network. An audio codec at each site decodes packet audio from the network into a standard audio signal.

Users can go through the head-end, selecting the zones via a ViewSonic V1100 tablet PC and speaking through a Shure dynamic paging microphone to deliver any spoken message. Alternately, users can select zones through the PC and then play back any number of pre-recorded messages in MP3 format. "We couldn't always guarantee that the person on the other end would speak slowly and clearly," Gross said, explaining the purpose of the "canned message" option. "We couldn't let the system fail on either a network level or on an acoustic delivery level."

A third access feature makes use of Nextel cellular phones. Executives can call into the system through their telephone and speak in an all-call mode. "Nextel appreciated that feature from the aspect of showcasing what their phones can do," Gross said.

Finally, authorized executives can log on to the system through an internet

***The client felt the look of the speaker boxes blended in well in the high-tech environment of the Nextel offices. 'A horn bolted to a wall just wouldn't have flown.'***

gateway and send messages via zone, halting operation for a short time and displaying an administrative message on the desktop. "There is a sight and sound aspect to it," Gross said. "Nobody can ignore what is happening."

When a message is transmitted via any of the methods, data is sent simultaneously to the computers in that

## **Phoenixx Systems**

After 24 years working for various well-known AV installation firms, Brian Gross rose up, in a manner of speaking, to create Phoenixx Systems. "I like the idea of the mythical bird emerging from the ashes," said Gross, whose easygoing nature belies his serious commitment to audiovisual systems installation. "The overriding company philosophy is that a client's needs come first," he said. "We're not out to impress anyone with the intricacies of our systems. A job well done is a job in which our clients' needs have been satisfied."

The philosophy has served the Poolesville MD-based audiovisual communications systems integration company well. Its employees leverage more than 30 years experience in the industry, and have completed projects in Universal Studios Hollywood Citywalk, the US Naval Command and Control Navsea, SeaWorld, Busch Gardens and the Department of Homeland Defense. Although based primarily in the Washington DC area, Phoenixx Systems supports projects all over the US.

Nextel Communications is one of the company's regular clients; Phoenixx Systems has installed everything from corporate boardrooms to security systems to the new EDICT paging system for the Fortune 200 company. "They needed a company that could meet all their AV needs," said Gross, "so Phoenixx Systems was a logical fit."

### **A Unique Solution**

Gross didn't create such an intricate audio solution to fill his client's needs single-handedly. He credits Brian Flowers, who supervised the installation, and Chris Kendrick, who managed the network aspects of the project, along with an unnamed colleague who first introduced him to the NX-100 system.



**A general view of the Nextel open office plan.**

"The original design was more PC-based," Gross said. "We were going to negotiate the traffic through a host PC, using Linux and Redhat to trigger .wav files." When Gross mentioned the new project over breakfast, a colleague turned his attention to the NX-100 system.

"When I looked at the product, I was amazed that virtually every attribute I had laid out was there," he said. "It uniquely accomplished every objective that was required, in one package."

He needed a system in which he could select the sampling rate, so that, once again, the IT personnel would be comfortable that the files wouldn't bog down the system. Message buffering permitted users to stop a message in the middle, if necessary. The system would hold an interrupted message until the package was complete, and then send it out in its entirety. According to Gross, this was important because reliability under any circumstances was paramount. The system was placed on battery back-up for the same reason.

Signal processing in the form of dbx 286A mic preamps was added for intelligibility. "Each floor is set to a volume level, essentially 16dB over ambient, and the speakers and microphone are EQ'd so the level is the same and the curve of the spoken word has been maximized for intelligibility," Gross said. "We boosted the hard consonants and sibilance bands for intelligibility."

Likewise, care was taken to select speakers that would provide the dispersion pattern and required intelligibility. Close to 400 wall-mounted TOA H-3 speakers were installed in the 18 buildings. "They were picked, originally, be-

## Equipment

### Head-End Only

- 1 Alcorn McBride MP3 pre-announce tone playback
- 2 APS Smart 3600W UPS
- 2 dbx 286A mic preamps for mic processing, signal processor
- 1 Gentner cell phone to audio telephone hybrid
- 1 Laytron DTMF relay signal lock out interface
- 1 Lowell extra deep custom AV rack for UPS  
Network Cat5e cable interface to switch
- 2 Peavey ICS 4200 4-channel 70V amps
- 1 Shure dynamic page mic
- 1 TOA NX-100 network audio adapter
- 2 ViewSonic V1100 tablet PC for routing activation  
West Penn plenum speaker cable
- 1 Whirlwind Mix 5 source line summing mixer

### 19 Additional Buildings (each)

- 1 APS Smart 3600W UPS
- 1 dbx 286A mic pre-amp
- 1 Lowell custom rack
- 1 Peavey ICS 4200 4-channel 70V amp
- 20 TOA H3 wide-dispersion facility speakers
- 1 TOA NX-100 network audio adapter

*List edited from information supplied by Phoenix Systems.*



**One of the EDICT speakers is located just above the wall-mounted emergency evacuation plan.**

cause of their coverage patterns," Gross said, specifying that he was looking for speakers with a wide pattern in order to cover, plus or minus 3db, the very large work areas. "The speaker was picked for its power handling, its dispersion and its smoothness throughout its coverage pattern."

Additionally, the client felt the look of the speaker boxes blended in well in the high-tech environment of the Nextel offices. "A horn bolted to a wall just wouldn't have flown," Gross said.

The ease with which the speakers could be wall-mounted helped move the project, which was completed in just two months, along at a rapid pace. "Removing ceiling tiles and mounting speakers right down the center of cubicles would not have happened during normal business hours," Gross stated. The speakers were instead placed along the perimeter of the rooms, allowing the installer to work unobtrusively during the business day.

With homeland security on everyone's mind, business continuity in the event of emergencies becomes a prime concern across the spectrum, in retail venues, corporate offices and especially in a telecommunications firm such as Nextel. "With a system such as this," Gross said, "you hope the client never has to use it. But if they do, we know it will work." ■