Calling plans

Today's emergency notification systems take advantage of e-mail, pagers, faxes, PDAs and instant messaging as well as telephones.

Randall Larson

A San Jose (Calif.) Fire Department information officer (above) speaks to the media about a chemical fire that threatened a mixed commercial/residential area. Using an automatic emergency notification system, in addition to having the media spread the word, would alert surrounding areas of potential danger and instruct residents to evacuate or shelter in place.

By Randall D. Larson

Communicating with the public in advance of a weather-related disaster, or in the aftermath of any major emergency, is being made easier nowadays by the prolific growth of emergency notification systems. Sometimes referred to as "reverse 911 systems," these systems originally abounded across telephone lines, directing emergency messages to a specific segment of a community, often using 911 database records.

As technology marches onward, however, the "telephone" in what were once routinely called emergency telephone notification systems has been supplemented by any number of notification methods: from pagers to PDAs to Blackberries. Whatever the delivery means, emergency notification systems are being used to provide emergency warnings and give instructions to the public and also to alert an agency's own specialty response teams, such as search and rescue, SWAT, and so on.

Though no hard-and-fast numbers exist, conservative estimates indicate that today more than 73 million U.S. citizens, about 25% of the total population, are within the reach of some type of ETNS, according to Bill Weaver, 911 Center Operations Committee liaison and ETNS Subcommittee chair for the National Emergency Number Association <www.nena.org>.

"The range of functionality, integration and capabilities between systems and vendors and the types of systems available to the market is considerable," says Weaver. This was one of the key reasons NENA undertook the responsibility to review ETN systems and, by way of collaboration with professionals in the industry, develop a body of standards targeted at more than just what to do when a notification event occurs.

Managed information sharing

The most common mission of an emergency alerting system in public safety is for an agency to alert its own special operations teams to respond to a specific emergency. Replacing phone trees or paging systems, emergency notification is used to quickly broadcast details to a wide range of responders through a wide variety of messaging methods.

"Callouts can be accomplished remotely by telephone by entering a numeric password and a scenario number, then speaking your message for delivery," says Pat Rivoli, communications manager for the Warren County (N.J.) Department of Public Safety, which uses Dialogic's The Communicator to notify various special response teams. "A list of contacted members is then faxed or e-mailed to one or more locations when the call-out scenario completes."

The system also facilitates a voice bulletin board, which updates county officials about ongoing situations. "When we activate our county EOC, we update a situation status message every hour, so municipal coordinators can stay informed by calling in to hear the latest status message," says Rivoli.

The second function of emergency notification has been to provide public warning and instruction, such as an alert about a hazmat release with instructions to shelter in place or evacuate to a specific area, using an exten-

sive database of community addresses and phone numbers. These kinds of systems use a number of outbound telephone lines to make literally thousands of calls an hour, playing a recorded message that identifies itself as a message from the local emergency agency. Residents are then told what has happened and the proper action to take.

The City of Milpitas, Calif., has taken an integrated approach to emergency public information, incorporating community warning sirens, a Teleminder <www.teleminder.com> automated telephone notification system, a low-power AM radio station, a cable TV channel and the city's Web site. Based on the severity of the incident, alerts are sent out by any of those means, with the public directed to the city's radio station, which will broadcast incident-specific information and instructions.

Peers to peers

A third type of emergency notification has to do with relaying emergency information between allied agencies. Because there are no standards by which emergency response agencies share information during a crisis, the NEARS (National Emergency Alerting and Response Systems) Initiative was created as a partnership of national organizations that represent all facets of emergency alerting systems and encourages methods of information-sharing between them. <www.nears.us>

Just as communications interoperability has become a huge issue in the years since 9-11, so has the sharing of data between response agencies. While early in its development, the NEARS Initiative intends to standardize and enhance the ability of emergency organizations to share vital information that will allow them to interoperate better during a terrorist event or other disaster.

"The biggest challenge in contemporary ETNS is moving responders from voice-centric information-sharing to data-centric information-sharing," says Judith Woodhall, managing director of COMCARE, a coalition of public safety entities seeking to enhance emergency communications across organizational and jurisdictional boundaries <www.comcare.org>.

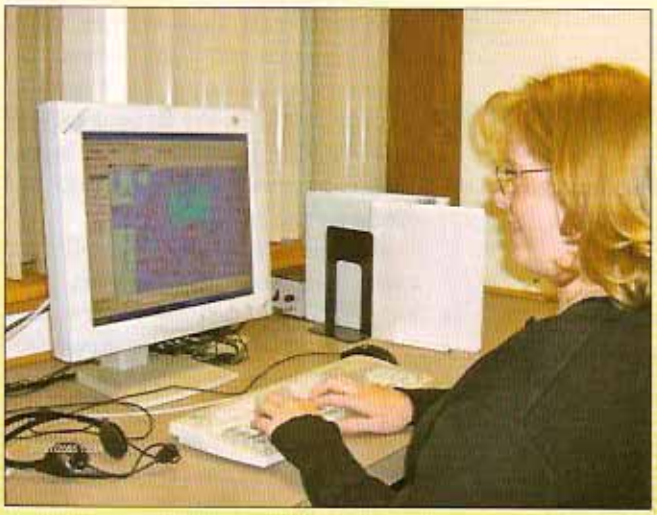
"For notification to the public," she says, "this shift would mean that agencies could geographically target the public that needs to be moved so that they have time to react. For emergency responders, this means that agencies can be contacted simultaneously with all of the information they would need to respond to an event."

COMCARE advocates an open information-sharing architecture that can be used for all hazards by all professions. This architecture, along with a group of shared facilitation services, will allow agencies to communicate across professions and jurisdictions while using and selecting commercial tools that best meet their needs.

"One facilitation service is the Emergency Provider Access Directory that can be used to route data messages," says Woodhall. "Using EPAD, a receiving emergency response agency will identify how it wants to be notified of this terrorist alert, whether it should be via e-mail, pager, fax, cell phone call, or put directly onto their computer screen using their messaging application."

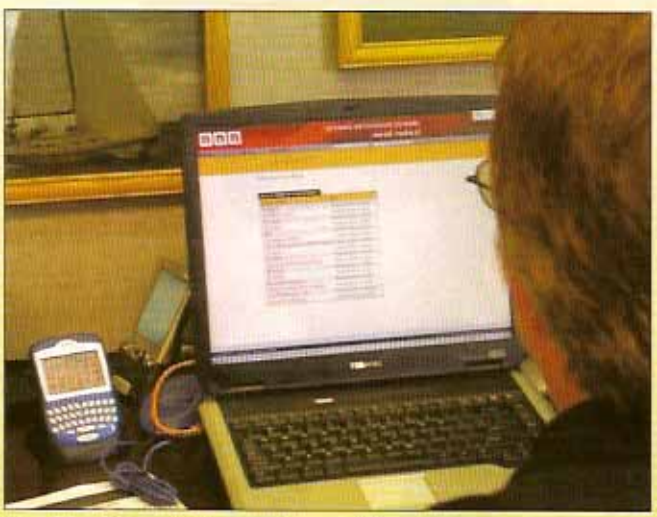
Targeting alerts to correct segments of the population is essential, as is establishing a mechanism within an organization that allows the alerts to be sent quickly and updated as needed.

"In today's society, citizens often get cynical and develop insensitivity as a result of 'alert overload,'" says Bob Piccioni, CEO of CrimeWeb, an Internet subscription-based alerting system <www.crimeweb.net>. "If the alert is



Washington County, Ore., 911

Washington County, Ore., dispatcher Jenny Silva selects a geographic area to create a notification alert in "The Communicator." In addition to notifying the public of threatening situations, Washington County has found the system's greatest benefit to be its pre-defined list notification capability. "Many of our user agencies have entered their entire staff into the system and put them in different groups," says communications manager Larry Hatch. "In less than two minutes you can send the same message to a group or groups."



3n

The City of Camarillo in Southern California's Ventura County uses a notification system from 3n (National Notification Network) to alert its Disaster Assistance Response Team, a volunteer organization responsive to the Ventura County Fire Department and Sheriff's Department. "We chose 3n because it utilizes multiple contact paths and does not give up until it finds the message recipient," says Dale DeHart of Camarillo's DART Team.

sent to a broad region, but actually only pertains to a small area, citizens will quickly lose interest and will treat future alerts with less of a sense of urgency."

Internet-based alerting

Internet-based systems like CrimeWeb allow citizens to register online and maintain their own accounts, while alerts can be received by a variety of means, from phones to Palm Pilots. "Since the entire set-up is centrally located online, the department simply needs a password to access the system to begin sending alerts," says Piccioni.

Traditional phone-based systems provide only a brief audio summary of the alert, whereas an Internet-based alerting system can send images along with the message, which can be configured for translation into various languages as requested by a community.

"As with many public safety applications, as the market becomes saturated and applications begin to gain wider use, it becomes increasingly more efficient to maintain fewer stand-alone systems and centralize the process for all users" says Piccioni. "This approach gains even more economy of scale when the Internet is used to provide access nationwide to users."

The Georgia Bureau of Investigation communications center uses the DAPage Notification Server by CompuDesigns Inc. of Atlanta <www.compudesigns.net> for internal notification of personnel. "This is an excellent method of notifying literally hundreds or thousands of persons in a short period of time," says communications commander Ronald Carter. "We pay a flat monthly rate of $350, and the vendor provides everything to use the system: his server, training and consultation."

Before you buy

More expensive, self-contained systems can provide directed emergency notifications to virtually all businesses and residences in a given area and aren't dependent on a subscriber list to enable reception of alerts.

The term "reverse 911" used to be used to describe these kinds of public notification systems, since many use 911 telephone databases to derive their call lists. However, Sigma One owns a trademarked product named Reverse 911 and claims ownership of the term.

"It really is a 'buyer beware' market right now," says Steve Warren, VP of sales and marketing for Reverse 911 <www.reverse911.com>, "and agencies must be careful in the technology they embrace. They must ensure that homework is done with regard to service and future technologies."

As agencies consider installing a community notification system, there are a number of considerations to take into account before signing a contract. "When deciding on which methodology to use in telephone-based notification, consider the dynamics of these methods," notes Barry Furey, former manager of the Knox County (Tenn.) Emergency Communications Center.

"For local-based dialing from the PSAP," he says, "you are going to need enough outbound lines to make notifying any large list effective. One or two lines are not going to cut it if you have to call 100 people, even if you have a machine doing it. Conversely, while notifications performed by a

remote host on a contract basis cut down the need for extra PSAP lines, you run the risk that your local exchanges may not be able to accept inbound long-distance calls during a major crisis."

Monica Marics, vice president of wireline products and notification for Intrado, a leading provider of alerting systems <www.intrado.com>, suggests that officials ask the following questions before committing to any emergency notification solution:

- Is the system accurate, using 911 data extracts as the basis for citizen notification databases?
- Is the system precise, targeting only those responders and citizens directly affected by a specific crisis?
- Is the system reliable, including the most current security protocols, ongoing testing and monitoring and redundancy?
- Is the system flexible, providing a variety of system deployment and launch options, and round the clock support from public safety trained personnel?

"The philosophy about 911 centers communicating to the public rather than from the public to emergency responders is not universally acknowledged," notes Jerry Boyd, communications manager for Baker County, Ore. "However, in my view it's a 'value-added' service and one which creates more public recognition of 911 and builds increased public support, which, in turn, could mean more support for funding."

For jurisdictions that can't afford high-end notification systems (which can cost $30,000 – $50,000 or more), creativity may be the key: See what exists and how it can be adapted into a community notification system.

"Our chamber of commerce had an AM radio station on which the license had lapsed," says Boyd. "They never used it, but the equipment still worked. So we partnered up with them, renewed the license and put it back on the air."

"We also had a community notification system (BEACON, Baker Emergency Alert County-wide Network) that was created only to warn the public of escapes from our state prison, which are very rare. We expanded it to have used it on missing kids, potential hazmat releases, etc."

Emergency alerting post 9-11

"The terrorist attacks of 9-11 shined a light on our vulnerabilities and the need for mass-notification solutions to evolve into the business of saving lives as well as infrastructure," says Cinta Putra, CEO and co-founder of National Notification Network, a provider of mass-notification systems <www.3n online.com>.

With the advent of homeland security, emergency notification systems have flourished as a means for public safety and emergency management agencies to notify their public of potentially harmful events.

"We use The Communicator several times a year to activate SWAT for police departments," says Carl E. Loerzel Jr., public safety shift supervisor for the Onondaga County (N.Y.) Department of Emergency Communications, which purchased the system in 2001.

"We are creating a new scenario that will be used to notify the county's

department of health and other groups in the case of a mass-casualty incident due to a biological or chemical attack. We have the system set up to notify any government officials who may need to be alerted of terrorist threat level changes, especially during off hours."

Onondaga County is also using the system to make notifications to the public surrounding their main post office in the case of an alarm on their biodetection system.

"The challenges faced in notifying responders and citizens are the same whether the crisis is a suspect-at-large situation, a massive wildfire or a terrorist attack," says Intrado's Monica Marics. "But there are differences with respect to scale, making it critical that a notification system be flexible enough to notify 100 responders or citizens as precisely, accurately and quickly as it can notify 10,000."

The future

Mass-notification technology continues to be accepted as an important tool for public safety. "With this increased adoption, clients are needing larger calling capacities, stronger back-up/replication models, and more flexibility for making sure the application reflects existing procedures and plans," said Rick Wimberly, director of public safety for Dialogic Communications Corp. <www.dccusa.com>.

Conservative estimates indicate that more than 73 million U.S. citizens, about 25% of the total population, are within the reach of some type of emergency telephone notification system.

"We see the technology as the communications backbone for entire communities, not just for one organization," he says. "Because of this, we're placing more 'shared' systems, where different organizations or jurisdictions team up to use a single solution."

Emergency notification systems have a long way to go to, however. There still is no proven method to communicate with a geographical area's wireless devices, including cell phones and PDAs, says NENA's Bill Weaver. "There is still much work to be done on normalizing the emergency dispatcher's desktop such that call receipt, call dispatch, call/resource plotting and ETN systems act seamlessly together."

"This process has already begun, as evidenced by NENA's published operational standards, continued media coverage and public safety's increasing usage of emergency notification technologies," concludes Marics. "The end result will be the establishment and consistent adherence to 'public safety class' requirements for emergency notification technologies." HPP

Randall D. Larson is a dispatch supervisor and field communications manager for the San Jose (Calif.) Fire Department, with more than 20 years' experience in emergency communications. In addition, he is a communications specialist on California Task Force 3. He is also the editor of 9-1-1 Magazine, a national trade magazine focusing on public safety communications management.