MAKING THE CALL

Five Keys to Evaluating Rapid Notification Technology

In the ten years since the Columbine High School tragedy, numerous advances in school safety and security have occurred. One of the primary advances has been the use of rapid notification systems by many school districts. Such systems allow school districts or individual schools to contact parents quickly in the event of an emergency. They can also be used to deliver important non-emergency messages efficiently, survey parents, monitor student attendance, increase parental involvement, and provide critical data to support decisions made in school districts.

A number of vendors offer rapid notification systems. However, the technology powering each system can vary widely from one product to the next. Determining whether a particular system's technology meets a potential user's needs can be a daunting task. Rather than getting bogged down in a sea of acronyms and terminology, school districts considering the purchase of a rapid notification system should consider five key elements:

- Message Quality

- Capacity and Speed

- Redundancy and Reliability

- Usability and Benefits

- Staff Development, Service, and Support

Security is also a key element to consider when selecting a rapid notification system. However, the intricacies of system security are vast, and will be the subject of a detailed exploration in an upcoming white paper.

Market Drivers/History

Few institutions contend with as many communications complexities as school systems. School officials must meet state and federal standards, respond to media demands, recruit teachers from a shrinking pool, answer to local Boards of Education, and most importantly, maintain open communications between schools and families. If communication breaks down at any of these points, serious consequences for administrators, staff, parents, and children can result.

Schools can ensure breakdowns don't occur on their end by improving the reliability, efficiency and accuracy of their message delivery systems. Rapid notification systems replace outdated phone trees and auto-dialers for school districts. They provide a seamless, effective way to inform parents about important events, truancy or tardiness concerns, grades, and other issues. In many cases, rapid

notification systems eliminate or reduce the practice of giving students notes, memos and letters that can end up getting lost in a child's backpack.

As modern school systems improve their technology infrastructures, taking advantage of Software as a Service (SaaS) helps them keep overhead costs down and productivity up.   A SaaS-based rapid notification system provides a school district with the power to communicate quickly with stakeholders, without the expense of purchasing and supporting costly hardware and software components.

Call Quality

Some rapid notification systems claim to reduce the price of service by using internet-based telephone service, rather than relying upon traditional call delivery methods. However, careful consideration is needed when considering all the costs involved.

Telephone service delivered through the Internet, also known as Voice over Internet Protocol (VoIP) or broadband, is becoming increasingly popular among consumers because of its low cost, especially for international calls. Cost savings realized with VoIP are countered by lower reliability, security and voice quality. Total reliance on VoIP in the presence of such trade-offs may be appropriate for consumer or small-business use, but is not acceptable when an application promises reliability, safety, and security.

A mission-critical rapid notification service will employ only tier-one telecom carriers, for these reasons:

- **Power:** Blackouts or brownouts can affect Internet connectivity, and by extension, broadband phone service. Telephone lines are not affected by electrical outages.
- **ISP problems:** A slow or malfunctioning Internet connection could affect the ability of voice calls to be delivered over the Internet. Telephone lines are not affected by Internet outages.
- **Poor quality:** Since broadband was originally created to transfer data, its voice delivery capabilities are poor and involve dropped words, echoes and static. Telephone lines are built to deliver voice calls.
- **Security:** Any virus malware, phishing program or hacker scheme that compromises the security of data transferred via the Internet can also affect calls delivered via VoIP. Telephone lines are not susceptible to this kind of malicious activity.
- **Service Availability:** In many less-populated areas, the availability of high-speed internet service is insufficient for VoIP to provide the level of service required by a critical application. Telephone lines are virtually universal.

According to a recent report by the Georgia Tech Information Security Center, VoIP infrastructure has been vulnerable to the same types of attacks that plague other networked computing architectures. Voice fraud, data theft and other security breaches can occur, just as they have with e-mail systems. [i]

VoIP is still a relatively new technology, and it has improved considerably since its inception, as competition has driven the demand for low-cost, high-quality home-based phone service. However, rapid notification systems should continue to invest in tier-one voice carriers, rather than relying solely on VoIP. If future improvements in VoIP result in equal or greater coverage, quality, and reliability than existing traditional delivery methods, further evaluation will be in order.

Making the Connection

Many people feel confident that answering machines or voicemail means they'll never miss important calls like those from their child's school. But auto-dialers and many rapid notification systems frequently fail to distinguish between a person picking up the phone and an answering machine engaging. At such times, the program either plays over the recipient's greeting or doesn't leave a message at all.

Advanced Answering Machine Detection (AAMD) is an embedded technology which provides up to 97 percent accuracy in distinguishing between an answering device and a live voice. When the notification system determines that a call has been answered (whether by a person or a machine), it begins playing the message. A system with AAMD also listens for an outgoing message from an answering device. If it encounters one, it stops and waits for silence, which usually arrives after the beep, and replays the entire message from the beginning so it can be captured successfully by the answering device.

Even with AAMD, school systems should not rely on answering machines during emergencies. A rapid notification system should provide the ability to designate a call as an emergency message, using Caller ID to distinguish it for the user. The emergency call should then simultaneously dial every contact phone number on file for each student, including parent work, home, and mobile numbers, increasing the odds that the message will be delivered live.

Capacity and Speed

Timeliness is a key factor of successful message delivery. In order for a rapid notification system to deliver messages in a timely manner, system capacity and call speed must be at optimal levels. For purposes of comparison, a legacy auto-dialer with one, two, or even four-line dialing capabilities could take hours to deliver a message to just a few hundred homes. If power is unavailable, such systems fail to function at all. Particularly in an emergency situation, today's parents expect prompt notification, which cannot be provided by legacy technology.

System capacity and calling speed must be addressed in tandem for a rapid notification system to be successful. A system which can store millions of phone records, but can only make a handful of calls per minute, is of little value. Ideally, a rapid notification system should have a sufficient combination of capacity and speed to deliver messages to *25% of its customer base within one hour*. In the event of a regional emergency, this level of capacity and speed allows districts affected by the emergency to communicate promptly with their families, while still providing resources for users in other areas to deliver their messages at the same time. In a typical call situation, a system with sufficient capacity and speed will be able to deliver all initial call attempts in less than 30 minutes.

As technology has improved and school districts across America have realized the value of rapid notification systems, some vendors have experienced significant increases in business. The most reliable vendors have made concurrent improvements in their capacity and speed to handle the increased call volume, in order to continue providing the level of service that enabled their growth. In addition, they have planning processes in place to accommodate future increases in call volume when they occur.

Redundancy and Reliability

To be most effective, a rapid notification system must be available at all times. The most reliable systems strive for 99.99% reliability, which translates to less than one hour of unplanned downtime per year. In order to approach the "four nines" standard, redundancy in all major components is required.

Redundancy begins with the electricity needed to power the systems. In order to continue operations during a disaster, a minimum of two weeks backup power capacity is needed.   In addition, the hardware and software needed to operate a system must be distributed across multiple data centers, enabling the system to continue operating, even if one data center is taken offline. These multiple data centers must also be located in each of the three major American power grid interconnects. Multiple telecommunication service providers and multiple internet service providers must be used, in order to ensure continuous message delivery.

Power Grid Interconnects

The continental United States is divided into three main power grids, the Eastern Interconnect, the Texas Interconnect, and the Western Interconnect. The Eastern and Western Interconnects have limited interconnections with each other, while the Texas Interconnect is only linked with the others via direct current lines.[ii] Having at least one data center located in each Interconnect, combined with a two week backup power supply, ensures that messages can be delivered, even in the unlikely event of an Interconnect failure.

Multiple Data Centers

In order to provide uninterrupted data access, a reliable rapid notification system should distribute its data across multiple data centers. Appropriately structured data centers house their application services in SAS (Statement on Auditing Standards) 70 Type II certified facilities. This certification was developed by the American Institute of Certified Public Accountants to measure the effectiveness of an organization's internal controls and is entirely voluntary. A Type II report includes detailed testing of such controls over a six month period.

Keeping all application services in Type II data centers ensures that each data center meets the same high standards for operations, security, and ethics. Within these data centers, applications and data should be housed across redundant load-balanced servers, with redundant backup systems, network firewalls, and internet uplinks.

Multiple Network Providers

To keep voice and data messages flowing, a redundant system of telecommunication and internet service providers is necessary. Using multiple providers for voice and data transmission ensures uninterrupted message delivery, even in the event of a significant service interruption to one or more providers.

Usability and Benefits

The most powerful rapid notification system on the market is worth very little unless its power can be used effectively. The most fully featured system is of no value unless the included features provide benefits for the end users. A system should be easy to use, easy to access, capable of delivering the type of messages the customer wants to send, and compatible with the customer's existing systems.

Ease of Use

If a rapid notification system is not easy to learn and use, it will not achieve maximum effectiveness. An ideal system will offer an intuitive user environment, using actions and commands that are familiar and easy to follow. Each step of the messaging process will follow logically into the next, with checks in place to ensure that all steps are completed, all without the need to jump back and forth through a series of confusing screens. A web-based user environment will provide a familiar setting, without the need to install and learn new software on each computer.

When a message needs to be delivered without a computer, or from a remote location, the system should provide a clear procedure for composing and delivering messages by telephone. Menu options should be clear and consistent throughout each step in the process, and should provide the same level of flexibility as a message delivered using a computer.

Ease of access

In an emergency situation, internet access, power, and/or telephone land lines may be unavailable. Users should be able to access their rapid notification system at all times, regardless of local utility availability, by using their telephone, internet connection, or mobile device.

Capabilities

School districts are the best judges of how to reach their constituencies. They should have the flexibility to determine which messaging methods, individually or in combination, will best reach those they wish to contact. A rapid notification system which offers the ability to deliver voice messages, e-mail messages, and SMS text messages will provide the most options. Districts can choose among multiple methods, and analyze delivery data to measure the effectiveness of each.

Compatibility

A school district should not have to change their information storage methods or spend their time and money on data conversion in order to use a rapid notification system. A system should be able to import data from widely used student information management systems. Once imported, links should be established between the two systems to ensure that contact data is regularly and automatically updated. In the event that the district is using older systems, vendor implementation specialists should be able to work with the district and convert the data into a format that the system can utilize.

Staff Development, Service, and Support

The efficiency with which any technology-based product is integrated into existing operations will play a significant role in its successful implementation and adoption by end users.   The following factors should be considered by school districts when selecting a rapid notification system:

- *Minimal to no disruption in workloads of district technology staff.*

  A SaaS solution which requires no on-site installation of hardware or software, and no hiring or training of IT staff to provide support, is an ideal way to address this concern.

- *Staff development which delivers appropriate content and builds confidence among end users.*

  In addition to having an intuitive end-user interface, staff development should be offered by the vendor with sufficient depth to allay any fears or concerns among users. "Train the Trainer" sessions, which enable future users to be trained by co-workers, should also be a part of the training process. Implementation specialists should assist in setting goals for the district to accomplish with the system, and provide support for achieving them.

- *Access to live support during the data import, implementation, and activation periods.*

  An essential element of a successful launch, the vendor should provide ready access to a team of support staff, who can assist district staff with importing and loading student data, system testing and implementation, and the "Go-Live" phase, in which the system is activated for district use.

- *Ongoing end-user access to live support at all times.*

  Once testing, implementation, and activation have been completed, the vendor should provide access to user support at any time of day or night, 365 days per year. Emergencies, weather-related closings, and other important concerns do not occur only during the school day, therefore access to support should not be restricted to school hours. Likewise, the ability to speak live with a support team member at any time is far more valuable than a voice mailbox or other automated support options.

Numerous factors are involved when comparing rapid notification systems. When evaluating the technology involved in delivering services, detailed attention should be paid to the key factors of Message Quality, Capacity and Speed, Redundancy and Reliability, Usability and Benefits, and Staff Development, Service, and Support. Careful consideration of these factors will result in a purchase decision which will ultimately benefit everyone affected by the purchase . . . most notably, students and their families.

About AlertNow

AlertNow was introduced in 2003 as a service of Saf-T-Net, a 45-employee firm based in Raleigh, NC, with regional offices in Massachusetts, Missouri, Texas, Ohio, Delaware, South Carolina and Mississippi. Working with organizations that were invested in preserving their important digital assets—often in the wake of power failures or other disasters—Saf-T-Net's founders saw the need for a reliable, inter-organization emergency-notification system.

AlertNow quickly caught on among officials at public school districts eager to replace antiquated, inefficient ways of communicating with parents. Today, Saf-T-Net's AlertNow remains the rapid notification industry market leader. It has grown by nearly 100 percent a year since 2003. More than 22,000 school administrators in all 50 US states and Canada currently use AlertNow for rapid communication.

AlertNow provides the five key technology elements required for a complete rapid notification solution. Voice message quality is ensured by delivering messages using proven traditional telephone services. Call priority, sound quality, and call latency are superior to solutions relying solely on VoIP. AlertNow also uses AAMD to improve call detection by answering machines. As the company has grown, AlertNow has increased its capacity to handle the increased demand. Typically, all initial call attempts are completed in less than 30 minutes, while AlertNow has the messaging capacity to contact as many as two million phone numbers within one hour.

The reliability of AlertNow is supported by redundancy in all critical areas. The system has two weeks of backup electrical capacity, with multiple data centers located on all three major US power grid interconnects. The use of multiple telecommunication providers and multiple internet service providers ensure continuous service. AlertNow guarantees 99.99% system availability.

AlertNow offers an intuitive web-based client, combining powerful features with unmatched ease of use. The system can also be activated from any telephone, providing access at times when power, computers, or landline phone services are unavailable locally. Messages can be delivered by telephone, e-mail, or SMS text. AlertNow can seamlessly import and update data from all popular student information management systems.

Prior to going live, AlertNow provides thorough staff development for administrators and staff who will use the system. Support is provided throughout the implementation process, and once implementation is complete, AlertNow offers live user support 24 hours per day, 7 days per week, 365 days per year.

Next Steps

To learn more about how AlertNow can help school districts improve communication, make the call to your regional AlertNow account executive at 800-213-7168. For more information right now, visit http://www.alertnow.com/WhitePaperNextSteps and put the power of AlertNow to work for your school district.

NOTES

[i] "Emerging Cyber Threats Report for 2009"; Georgia Tech Information Security Center
http://www.gtiscsecuritysummit.com/pdf/CyberThreatsReport2009.pdf; page 4.

[ii] "U.S. Power Grids"; U.S. Department of Energy, Distributed Energy Program
http://www.eere.energy.gov/de/us_power_grids.html