



## Selecting a Mass Notification System

**Authored by:**  
Patrick Stuver  
James Keene  
John Carlisle

### **White Paper Abstract:**

Mass notification systems are becoming an integral part of both emergency and non-emergency communications for organizations of all sizes and in all industries. The benefits of mass notification are already being applied by organizations to increase revenues, cut or avoid costs, and minimize the loss of human life. Organizations have many options when selecting a system vendor. This paper examines in detail the considerations fundamental to selecting an appropriate mass notification system for any organization.



**When you need to deliver time-sensitive information to hundreds or thousands of people, a mass notification system can help you get the word out quickly and efficiently. But how do you know which system is right for your organization?**

### INTRODUCTION

An airline makes an eleventh-hour change to its flight schedule and has to notify all passengers ...a school must alert parents about an unplanned early closing...a pharmaceutical company needs to pull a recalled product batch off the shelves of thousands of retail stores.

Until recently, organizations had only one way to respond to these and similar scenarios: round up all available staff, seat them in front of telephones, and hand them lists of phone numbers. Organizations that were able to plan ahead might use “phone trees,” where each person receiving the message relays it to others on the list.

But emergency phone banks and phone trees don't work very well. At best, calling large numbers of people is expensive, and diverts staff from other tasks. At worst, the message will arrive too late for most people to act.

And many people will never get the message at all. Phone trees are easy to break; if some of the first tier aren't contacted, the people on their “branches” won't be, either, unless the original caller – usually an incident manager with more important things to do in a crisis – calls the second tier as well.

Even with centralized calling, quality control is a problem. Anyone who has ever worked on a military personnel callup or a voter registration drive knows that when dozens of operators are placing calls, it's easy to lose track of who has been called and who hasn't. Coordinating the effort becomes increasingly difficult, and inevitably some people on the list receive multiple calls while others are never notified.

In the last few years, business and government continuity planners have begun using mass notification systems to expedite crisis responses. Mass notification systems use computer technology to deliver recorded messages to large numbers of people in a very short time. Often, they can send messages through multiple communications channels – not just telephone, but also email, pager, fax, PDA, and other channels. They are faster, more accurate, more effective, and less expensive than manual systems.

### FINDING THE RIGHT SYSTEM

There are many mass notification services on the market today. These offerings vary widely in scale, functionality, and cost. Comparing each and every individual feature in order to choose among them would be time-consuming and possibly confusing.

But you don't need to review every offering in detail in order to make a selection. Many of these systems are appropriate only for limited applications. If you want to coordinate a municipal response to a terrorist attack, for example, you don't need to look at systems that are designed only for paging repair crews.

Asking a few basic questions can help you narrow the choice to products that are appropriate to your organization.

These questions are:

- Who operates the system, the purchaser or the vendor?
- Is the system designed to contact the people you need to reach?
- Is the system scaled to your current needs and scalable to your future needs?
- Is the system completely reliable?
- How flexible is the system?
- What is its pricing structure?

### WHO OPERATES THE SYSTEM

Some mass notification systems are operated by the organizations that use them, while others are operated by vendors.

With a vendor-operated system, you pay a fee for service, just as you might pay for telephone or Internet service. Fees may be based on usage, on the number of users, or on other criteria (see “Pricing Structure” below for a more detailed explanation).

On the other hand, if your organization will be responsible for operating the system, you purchase the computer hardware and license the software from the vendor. Hardware is usually purchased outright, while software is usually licensed on an annual basis.

But operating a system in-house also imposes other costs and responsibilities. Both hardware and software must be upgraded regularly, since vendors support only recent versions of their products. IT professionals must be hired and trained to maintain and upgrade the system.

With an in-house system, you must also maintain telephone lines and hire and train operators to initiate notifications. You must also supply space for the computers, systems professionals, telephone operators, and managers who oversee the system. Finally, if this is a system that will be needed during emergencies, you must maintain backup computers, electrical generators, and telephone lines.

### Choosing between in-house and vendor-operated systems:

	In-house	Vendor-operated
<b>Technical expertise required</b>	Higher	Lower
<b>Cost efficiency</b>	Lower	Higher
<b>Risk of unavailability</b>	Higher	Lower
<b>Ability to integrate with other systems</b>	Lower	Higher
<b>Control over system</b>	Higher	Lower

**When you're comparing systems, keep in mind these distinctions:**

**Local or in-house:** System runs on a computer at the customer's premises.

**Hosted:** System is designed to run locally, but runs on a remote computer that is operated by a vendor (not necessarily the software provider), and to which the customer has access.

**ASP (application service provider):** Software is designed to run on the Internet, and is provided over the Internet as a utility-based service.

Because hosted systems and ASPs are both vendor-operated, these terms are sometimes confused, both in the press and in product literature. However, the distinctions aren't just semantic. A true ASP system is less vulnerable to failure than a hosted system.

**Technical expertise:** An in-house system requires technical personnel to maintain the hardware, software, and communications network. For organizations that already run many complex systems and have strong IT management skills, adding a mass notification system may not pose a great challenge. Smaller organizations, or even larger organizations that outsource processes beyond their core competencies, usually prefer to leave technical issues to knowledgeable vendors. When companies without technical expertise attempt to run complex systems in-house, they either fail to use the systems, use them ineffectively, or become entirely dependent on the vendor to make decisions. All of these options are both costly and risky.

**Cost efficiency:** Because they are scaled to peak use, mass notification systems tend to be underutilized most of the time. Organizations can find cost efficiencies by sharing capacity in a vendor-operated system with other users who will be sending notifications at different times. However, not all vendor-operated systems are shared; those that offer dedicated capacity are no more cost-efficient than in-house systems. In addition, the potential savings from capacity sharing depend on the system's use. An organization that uses mass notification extensively for routine communications may achieve an acceptable utilization level with an in-house system.

**Risk of unavailability:** If the mass notification system will be used only for routine communications and is not part of a disaster preparedness plan, then the risk of unavailability is not especially important. But if the system is critical to business continuity, it must be available during a disaster. The same natural or man-made disaster that destroys an organization's facilities or makes them inaccessible must not also put the notification system out of commission.

To ensure that the system will be available when it's needed, it's important to locate the computer far away from the organization's other facilities, and to maintain backup systems in other locations. While this is possible with an in-house system, it adds considerably to the management challenge. Usually, if a system must be operated in multiple remote locations, it's simpler to have a vendor manage it.

**Ability to integrate with other systems:** If your organization uses a business continuity planning tool, integrating this system with the mass notification system might be advantageous. For example, you might want contact lists created in one application to be automatically available to the other one.

**Control over the system:** Finally, some organizations require a high degree of control over their notification systems. If it is critical to your business objectives that you be able to add customized features to the system, or ensure that no other user's messages will ever have priority over yours, or control the timing of scheduled maintenance, it may be easier to achieve these goals with an in-house system.

### CONTACTING THE RIGHT PEOPLE

In some situations, you need to contact specific people – employees, customers, suppliers – while in other situations you may want to contact everyone who lives in a targeted geographic area.

Geographic notification (sometimes called “reverse 911”) is necessary for evacuating communities threatened with natural disaster, posting warnings about escaped convicts or missing children, and advising residents of toxic spills or other local hazards.

Individual notification is more appropriate for emergency response and recovery. Calling up military units in a crisis, notifying hospitals about mass casualties, canceling a work shift because a plant is unavailable, and polling employees to make sure everyone is accounted for after a fire are examples of crisis-response applications.

The mass notification system you select should be designed to contact individuals, geographic areas, or both, depending on your requirements.

- **Geographic versus individual: It's not just how you build the list**

Contacting known individuals is very different from blanketing an area with phone calls. It isn't just a matter of how the call list is compiled; these two types of notification serve different purposes.

Geographic notification is personalized broadcasting. It's more effective than radio broadcasting, especially when people don't know they should be listening for an announcement. It's also more precise – for example, people closer to the hazard can receive more urgent messages than those further away. But, however sophisticated it is, this type of messaging is still one-way communication with people whose individual identities aren't particularly important.

Contacting known individuals is quite different. The individuals on your list have specific skills or responsibilities. Reaching all of them and recording their responses is critical to managing your crisis response. If you're calling parents to pick up children from school, you need to make sure every child is accounted for. If you're calling volunteer firefighters to the scene of a fire, you need to know how many of them are on their way.

Some services that originally provided only geographic notification have now added list-handling capabilities. But even if they can contact specific individuals, they may not be well suited to this task.

In order to be appropriate for contacting known individuals, a notification system should have these features:

- User-friendly procedures for updating contact lists
- Unlimited attempts to make contact with each person
- Contact path for each person that includes all their telephone numbers, pager numbers, email addresses, and other device addresses
- Confirmation and polling (“press 1 if you are in the office”)
- Real-time reporting on confirmations and polling responses
- Unlimited sublists
- Ability to make international calls

### ADEQUATE SCALE

A critical consideration is whether the system, including communications facilities, is scaled to your current *and future* needs. Scale is particularly important for organizations with lengthy contact lists and short notification timeframes. But some scale issues, such as whether the system supports multiple simultaneous users, can be relevant even to smaller organizations.

### ▪ **System issues**

System capacity depends on the underlying platform (operating system, database management system, and other system software), the application architecture, and the hardware.

A system to which you have dedicated access, whether it is operated in-house or by the vendor, should be capable of processing transactions at the maximum speed you require – for example, if you need to contact 10,000 individuals in 15 minutes, the system should be capable of this. A shared system should have a capacity several times higher than your maximum requirement, since your organization won't have exclusive access to it.

The system must also be scalable, or capable of expansion to higher capacities. Not all platforms and architectures are easily scalable. Since you can't be sure of your future needs, and since you are even less able to forecast the demands by other clients on a shared system, selecting a system that is not easily scalable would be a mistake.

Shared systems must also be capable of serving concurrent users. If your organization has an emergency message to send out, you should not have to wait for another organization's notification to complete. Notification systems that were originally designed to operate in-house (that is, serving a single user) and are now being offered as shared, vendor-operated systems may not serve concurrent users reliably.

### ▪ **Network issues**

No matter how fast the computer system is, it can't place calls without telephone lines. In an in-house system or a dedicated vendor-operated system, you will have to contract for enough telephone lines to place the maximum number of calls required in a worst-case scenario. This is such an expensive proposition that such systems typically don't have anywhere near enough phone lines.

In a vendor-operated system with multiple users, you will share communication lines with other customers. Therefore, the vendor must have communication capacity several times greater than the maximum requirement of its largest customer. The telephone lines should be dedicated lines, so there won't be outside contention for them. If you plan to use email as well as telephone communication, you (or the vendor) will also need adequate data lines and contracts with Internet service providers.

## RELIABILITY

Mass notification systems prove their worth during catastrophic events. Whether you are responding to a homeland security alert, evacuating those in danger, or simply trying to keep a business operating, these systems can save valuable time and allow crisis managers to focus on high-priority tasks.

Some notification systems are marketed only for use in routine corporate messaging. If this is the only purpose your organization has in mind, then ordinary standards of reliability apply – the same standards you might use when you procure an accounting system, for example. But if you plan to use a notification system to cope with potential crises, much higher standards of reliability apply.

To judge how reliable the system is, you should look at its availability, robustness, security, and track record.

### ▪ **Availability**

In order for a mass notification system to be available, the system itself must be functioning and it must be accessible from wherever you are. Both of these requirements may be problematic during an emergency.

If the system is running on a computer in your offices and the offices are destroyed, the system will probably be unusable. Vendor-operated systems are less likely to be destroyed in the same event, but they are certainly not immune from disruption. Natural disasters, attacks, power failures, human error, and scheduled events such as upgrades can all cause systems to be unavailable.

Even if the system itself is functioning, you won't have access to it from your office if the office is inaccessible. Thus, a mass notification system that can be accessed only from your office computer does not meet the standard for availability.

Finally, communications lines are often damaged in emergencies. A system that can be accessed only by telephone will not be available if telephone lines are down.

Redundancy is the key to continuous availability. Data should be stored simultaneously at two or more separate sites, with switchover and failover features. Multiple application servers should be used, with any single server capable of running the entire system. Backup sources of electrical power should exist. Telephone lines should be leased from multiple phone carriers whose major hubs are in different cities.

And since you don't know where you will be in an emergency or which channels will be functioning, redundant means of access to the system are also necessary. You must be able to initiate emergency notifications through the Web, by phone via Integrated Voice Response (IVR), or by phone via live operators.

### ▪ **Robustness**

All parts of the system – hardware and software platform, application software, and communications links – must be designed for heavy and continuous use. They should be extremely stable and error-free.

It's important to confirm that the platform is one that has been used successfully in other mission-critical, high-reliability applications.

### ▪ **Security**

Contact information stored on the server must be fully secured. Security isn't just necessary to protect the privacy of the individuals on your list; it also protects your data from tampering. Your contact list, once developed, is an important business asset. Vendors should be prepared to demonstrate how they can secure that asset.

### ▪ **Track record**

Even a well-designed system can be poorly managed, and poor management can make a system unreliable. You need to confirm that it does, in fact, perform up to specifications during emergencies.

Client references and published accounts can tell you whether messages were sent speedily and correctly, whether confirmations were received and recorded, and – most important – whether the notification system achieved its purpose of getting the right people to the right places at the right time.

It's critical to look at examples that are at least as complex as the scenario you are planning for. A provider may have a good track record for relatively simple cases and not be equipped to handle notification in large, complex crises.

### FLEXIBILITY

#### ▪ **Adapting to multiple industries and scenarios**

If all the mass notification systems you are considering are either niche products designed specifically for your application or products that have been used successfully for scenarios similar to those you have planned, then the adaptability will not be an important issue.

However, adaptability is very important when vendors can't reference customers similar to your organization. To be confident that the system will support your application, make sure it has been used successfully in a broad range of industries and scenarios without special programming or training.

If you can't be confident that a system will be easily adaptable to your scenarios, then you may have to add the following costs to your estimated total cost of ownership:

- Custom programming and training.
- Developing “workarounds” to accommodate your organization's needs and training your staff to use them.
- Giving up some of your requirements and settling for not being able to work in the most efficient way possible.

#### ▪ **Serving both emergency and routine use**

If you have determined to use mass notification only for routine communications or only for emergency communications, then the system's flexibility will not be a concern.

However, many organizations decide to purchase mass notification systems as part of their continuity-of-operations plans, but intend to use the systems routinely as well. Since non-emergencies by definition greatly outnumber emergencies, these organizations realize return on investment faster by incorporating the systems into everyday communications with employees, customers, suppliers, and members. Some of the routine uses for mass notification are:

- Keeping remote sales teams updated about product changes and sales goals.
- Sending official news and announcements to the families of servicemen on active duty.
- Letting clients know you've moved to a new address.

- Communicating with parents about their children's school absences.
- Rescheduling meetings with many attendees.
- Reminding an organization's membership about upcoming events.
- Immediate conference call bridging.

Most organizations already use email lists for routine messaging. But a mass notification system with multiple contact channels offers several important advantages over email-only systems:

1. Even non-emergency notifications may be time-sensitive. Email isn't useful when messages must be received quickly – for example, to cancel or relocate a meeting at the last minute. A mass notification system can proceed quickly to telephone or pager when an individual doesn't respond to email.
2. While email systems can request confirmations, they don't compile those confirmations into reports. When HR managers use a mass notification system to send a benefits update to 8,000 employees, they can find out at any time how many employees have confirmed receipt of the message, and print an up-to-the-minute list of those who haven't confirmed.
3. Not everyone has an email account. If you're trying to communicate with non-office workers, such as truck drivers or field service workers, multichannel communications will be much more effective.

To serve both emergency and non-emergency use, a system should offer separate contact paths for each type of notification. For example, an individual whose first choice for emergency contact is cell phone might prefer that routine communications be directed first to email.

### PRICING STRUCTURE

With an in-house system, as we've discussed, the customer not only pays licensing fees to the vendor but must also pay for telecom fees, system administration, backup electrical power, and so forth. With a vendor-operated system, all costs are included in the vendor's fee.

Vendor-operated notification systems use a variety of fee structures; which approach to pricing is best depends on how you plan to use the system.

- **Usage-based pricing**

Some plans charge users for each call or call minute. This is the least expensive option if you intend to use the system only for emergencies – and if no emergencies occur. It's also the only pricing structure that makes sense for geographic notification.

For list notification, however, usage-based pricing has several drawbacks:

1. Usage-based pricing discourages organizations from using their notification services for routine communications. Even organizations whose primary goal is enabling emergency communications often want to get additional use from their systems.
2. An organization whose policy is to avoid using its mass notification service risks being unable to use it in an emergency. It's only natural for people to spend time and energy maintaining the systems that are

in everyday use, and defer working on those with no apparent benefits. By the time an emergency occurs, users will have forgotten their passwords and the procedure, and will discover that the contact database is months or years out of date.

3. Some usage-based pricing schemes keep costs low by permitting advertising messages on the calls. While this might be appropriate for a small membership organization sending out event reminders, most organizations will not want advertisements attached to their communications, especially emergency communications.

- **Administrator-based pricing**

Some services allow unlimited usage for a single individual, but charge a hefty premium to allow additional administrators to initiate notifications. This may be an appropriate choice for an organization that is concerned about keeping tight control over system usage, and intends to use the system only in emergencies.

This fee structure, like usage-based pricing, inhibits non-emergency use of the system. Managers will hesitate – and justifiably so – before asking the emergency coordinator to help them reschedule their meetings or set up conference calls.

Administrator-based pricing is also potentially dangerous in an emergency. If only one or two people are authorized to initiate notifications, and those individuals are killed or incapacitated in a disaster, then emergency notifications will be unavailable.

- **Subscription-based pricing**

Other services charge an annual subscription fee based on the number of names in the customer's contact list and a selected level of usage. This type of scalable pricing is very affordable for small to medium-sized organizations and gives them an incentive to make the best use of their subscriptions.

This type of pricing has been likened to a cellular phone plan – because an organization selects a usage level and then pays for a subscription to the notification service at that level. Strict subscription-based pricing may become an expensive option for the largest organizations, and for this reason some vendors offer customized pricing - for example, if an organization has more than five thousand regular users.

## SELECTING A VENDOR

- **Writing a Request for Proposals**

There are two possible approaches to selecting a vendor for a complex product or service: functional and technical. Generally, it is more effective to tell vendors what you wish to accomplish and ask them to tell you how they can meet your needs. The second approach – compiling a list of technical requirements and then comparing these to product specifications – almost guarantees that you will forgo the opportunity of learning from the selection process.

To select the mass notification system that is right for your organization, begin by listing and prioritizing your potential uses for emergency and non-emergency notification. Develop several likely scenarios for each of

these uses. (For examples and case studies of how other organizations are using mass notification, see <http://www.3nonline.com/industries.htm>.)

Developing these scenarios will help you define:

- How many contact lists and sublists you will need.
- How many names will be on each list.
- How accurate the contact information needs to be.
- How many messages you will need to deliver, and how quickly you will need to deliver them.
- How your requirements for list size and delivery speed will grow over time.
- Your need for system reliability.

If you are considering purchasing an in-house system, you also need to consider who in your organization will be responsible for maintaining the system, your organization's current IT environment and IT skills, and where the computer hardware and system operators would be located.

In your Request for Proposals (RFP), you can let vendors know how you plan to use mass notification and what your functional requirements are. You can then ask them to address each of those requirements. For example, you might ask, "How will you help us maintain a contact list that is 99.9 percent accurate?" or "How will you help us train staff to use the system correctly?"

You can find a prepared, downloadable model RFP at the National Notification Network's Information and Download Center. (visit <http://www.3nonline.com>)

### ▪ **Selection criteria**

The most important criterion for selecting a mass notification vendor is, of course, how well the vendor understands and meets your requirements. But you will probably also want to use additional criteria, such as:

- The vendor's track record in providing services on the scale that you require.
- How quickly you can begin using the service (time needed for setup, list preparation, and training).
- The vendor's financial stability.
- Your expected return on investment (ROI).

## CALCULATING RETURN ON INVESTMENT

Calculation of ROI has been called both an art and a science: while the concept is simple, the calculation can be very difficult. In its simplest form, ROI is equal to cost savings or avoidance, plus increased revenue, divided by the cost of the system.

An organization's cost savings, cost avoidance, and increased revenues, however, will depend on how it utilizes the mass notification system. System cost may also vary with how, and how often, it is used – particularly if the selected vendor is usage-based.

## Selecting a Mass Notification System

---

Non-emergency users of mass notification can try to quantify the benefits of improving overall communication within their organizations, with key suppliers and vendors, and with customers. Time savings is one key element. For example, a mass notification system might reduce product time-to-market and the time required to correct business errors. Increased communication speed and efficiency will also improve employee productivity and overall customer satisfaction.

When selected for emergency use, a mass notification system is capable of saving precious time in crisis, and may even be responsible for saving lives. There is hardly a way to quantify such a powerful benefit in dollars. When calculating ROI, the risk of *not* undertaking a purchase or project is sometimes overlooked by organizations. In the case of mass notification, this mistake could be devastating. Gartner Dataquest estimates that two out of five enterprises that experience a disaster go out of business within just five years.

### THE 3n SOLUTION

**National Notification Network (3n)** is a proven vendor of mass notification services that are effective in both emergency and non-emergency situations. The 3n System can be utilized to deliver voice and text messages to one, ten, or thousands of people, within minutes, by accessing the web via computer, or by calling from any phone.

**3n is an Application Service Provider (ASP):** No installation of hardware or software is required to begin using 3n services. Instead, National Notification Network - in partnership with Oracle - maintains and continually upgrades the computer hardware, software, and communication lines that form the backbone of the system. The 3n System not only can be scaled as small or as large as needs require, but it can grow *with* an organization.

**Reliable in Emergencies:** Using the most robust hardware and software available, 3n assures communication availability through redundant computer systems, electrical power, and communications carriers.

**Perfect for Routine Messaging:** Unlimited contact paths, monthly pricing, and ease-of-use all make 3n a great choice for routine corporate messaging. And since non-emergencies outnumber emergencies, users will get more return on investment by using mass notification to its fullest extent.

**Individual and Geographic Notification:** Organizations using the 3n system can allow users to update their own contact information and choose their preferred channels of communication. Organizations can thus rapidly reach individuals or groups of any size. The 3n System is also designed to send messages to targeted geographic areas.

**Pricing to Fit All Budgets:** No investment in hardware or software, no dedicated telephone lines, and no specialized staff or training is required to use the 3n System. A low annual subscription fee provides maximum fiscal flexibility for organizations of all types and sizes.

***For more information about National Notification Network and the 3n System, please visit our website at [3nonline.com](http://3nonline.com), or contact us at (888) 366-4911.***