Evolution of Emergency Notification

Trends in Technology Adoption for Performance and ROI

By Pamela LaPine

Introduction
It's not easy to build a business case for spending money in the current economy. It's harder still to justify annual subscriptions for services that are either under-used or perceived as single-purpose applications for one department. Incident notification software often falls under this category. The case can certainly be made for the benefits of notification software as an essential element in averting risk and mitigating the impact of an incident, but in today's environment, costs are coming under tremendous scrutiny and all services must prove their value.

Many Business Continuity and Disaster Recovery departments have received new mandates from management demanding their software applications and services provide operational value. Under this directive, applications and services need to either contribute to operational cost reductions or increased productivity for the organization as a whole. To add further complication, notification solutions must now be ready to communicate at unprecedented levels of reach through voice as well as text messaging to all cell phones, pagers, smartphones, and tablets along with appropriate connections to social media outlets. BC/DR professionals are looking for proven solutions that fit this new paradigm.

To address all the factors that drive up costs and then determine the best choices for your organization requires a complex and detailed study. While we can't address every variable in the space of this article, we will take a look at some of the major trends in deployment options and the expanding uses of notification software as evolving technology has produced significant game changers. We will explore advances in carrier offerings and expanded device platforms, hardware evolution, advantages of onsite systems and universal integration, along with how VoIP can play a role and the implications of social media.

Where are we today
Historically, fully hosted notification solutions have been used by many BC/DR departments as a turn-key solution because there are no internal infrastructure or maintenance requirements. Hosted systems have also been positioned for comprehensive coverage in the event of a catastrophic failure within an organization's own network or local geography and have been considered an acceptable cost of doing business.

The field of vendors for hosted solutions is diverse and capabilities vary widely. There are few, if any, standards for measuring true capacity and the availability of systems. Factors can vary based on the number of other clients they are servicing in a given geography overall as well as the overall number of active events at any time. In addition, one has to be sure the vendor has adequate BC/DR planning for their own systems and supply chain with multiple locations along with real-time backups, and seamless failover.

When an organization does a full usage review of a hosted system, many times they are startled at the true cost of their messaging. Fortunately, systems don't have to be used every day, but when the cost is divided by the number of notifications sent in a year, it can be a hard number to justify. In addition to cost, there are typically a number of high profile failures every year for any number of reasons, which further places pressure on cost justification. For these issues and more, many executives are demanding alternatives.

Carrier Advancements for Notification Delivery
Today's notification environment is more complicated than ever before. Competing device platforms of different capabilities and high expectations of 100% success for message delivery have become the

norm. There are a number of issues related to successful message delivery, be it voice or text, that contribute to the ultimate success rate.

Message delivery via voice can fail for many well known reasons including network congestion or equipment damage. The good news is its success or failure can be easily determined through standard IVR (Interactive Voice Response) technology. IVR is a standard feature of most notification solutions and is coupled with real-time results reporting. A good vendor will offer technology to successfully detect voice mail at 95% of the time or higher to insure appropriate messages are left.

Text message delivery is not as easy as voice to detect and isolate potential problems. While cellular carriers have all successfully launched Enterprise SMS delivery products that ensure higher reliability and full tracking with two-way responses, the use of these protocols is not universal.

The consumer-grade process of sending a message via email to the phone number, while being highly unreliable, is still commonly used by many organizations for everything from home-grown system alerts to notifications from major 3rd party applications and even by some notification vendors.

With the use of full Enterprise SMS delivery, dramatic improvements can be seen with increased success rates and clear visibility of call-out campaigns. With full audit trail of the message pathway, an organization knows just as easy if their message delivery failed as it succeeded. Many times it's more important to know about failures than successes. If your response teams aren't activated, you need to know to go to Plan B.

In the case of a major incident (i.e. fire, earth quake, or natural disaster) SMS gateways are immediately inundated with messages. Messages delivered via email to the carrier are subject to extreme delay and may never reach their destination through the network congestion. Through Enterprise messaging, a dedicated enterprise-class gateway is made available to receive traffic, bypassing this consumer congestion. In addition, this traffic is easier for the carrier to handle with higher priority routing inside the carrier's network than email traffic.

Is an onsite system technically feasible and defensible?
The question of feasibility for an onsite, premise-based system is a reasonable question and with recent changes in technology, it's one that can now be truly explored as a viable option. Onsite solutions have historically been regarded as highly secure and flexible. While it's true they carry infrastructure maintenance requirements, careful solution architecting along with proper choices in hardware and software options can result in a highly reliable, easy-to-maintain system.

There are several major technology changes in recent years that have contributed to the feasibility and attractiveness of an onsite system. First, the cost of hardware has plummeted. Enterprise-class servers that at one time commanded price tags in the tens of thousands of dollars can now be purchased for less than two thousand dollars. According to studies by IDC and Gartner, server sales in 2009 contracted nearly 31%, with revenue down 30.1% with the median price of servers averaging only $3323.[1]

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[1] IDC and Gartner Hardware sales:
http://www.crn.com/news/components-peripherals/219501114/idc-gartner-agree-server-sales-continue-to-plummet.htm;jsessionid=TutopU1KHE0TSxW1+4oyPQ**.ecappj03

These declines can be directly attributed to the second factor in our discussion; servers no longer serve a single purpose. Through the use of virtualization, a single server can now host dozens of server images. The high density per unit of rack space in the data center now allows for each rack to manage hundreds of systems instead of a dozen or so. With this steep decline in hardware requirements, other costs are reduced as power usage declines between eighty and ninety percent per image hosted.

VMWare's studies peg the savings at $3000 per year per server virtualized.[2] This has led to a trend of repurposing existing servers as VMWare VSphere platforms without additional costs. When a new Enterprise application is deployed additional hardware resources are no longer necessary.

A third advancement has been the radical decline in costs for Internet connectivity at high speeds. Circuits that were once hundreds of dollars per month for 1.54 megabits of speed have now been replaced with 20 megabyte connections and beyond for under a hundred dollars per month.

As a result of the hardware and connectivity advances, any Enterprise onsite solution can now be easily architected using a cost-effective backup system with automatic failover in the event there is a catastrophic failure in one site. A geographically separated server is standard for applications with mission-critical functionality and with periodic database synchronization, the risk for data loss is almost non-existent. Many organizations also opt to run their notifications systems in an active-active mode between two servers thus adding to capacity while protecting from possible outages.

The voice challenge solved with VoIP
One of the other factors in an organization's choice to go with a hosted environment has been the need to be prepared to quickly send a large number of voice calls using text-to-speech technology or recorded voice. Doing this onsite meant you had to buy additional servers, expensive voice boards and have a potentially large number of dedicated phone lines along with the in-house expertise and expense of the maintenance of this infrastructure.

The advancement of VoIP technology and the earlier discussed changes in virtualization and Internet connectivity options have made onsite systems easy from both a deployment as well as capacity perspective.   Burstable Internet connection technology can give organizations high capacity for voice call distribution without the complications, or the cost of phone lines. An organization can effectively pay for the standard bandwidth that covers the usual messaging traffic, while having in reserve "burstable" capacity for emergencies and incident management. You only pay for emergency capacity if you use it.

The beauty of VoIP as a voice solution is when usage begins to exceed existing capacity, additional VoIP nodes can be easily added to build a VOIP array with as much dialing power as required. This allows customers to scale their voice solution's capacity as its use builds.

The Power of an Integrated Solution
There is immense power in having event-driven alerts delivered to a group of any size with no human intervention when there's a problem. When integrating with third-party enterprise applications and systems, onsite solutions offer the highest level of security with tangible operational value difficult to achieve in a hosted deployment.

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[2] VMWare Consolidation figures: http://www.vmware.com/solutions/consolidation/consolidate.html

For many third-party systems, integration is only possible with an onsite solution. Business support systems are generally located behind a corporate firewall and are therefore meant to be unreachable to any system on the Internet. Security teams are increasingly tightening restrictions as a result of more directed and costly intrusions making outside integration challenging.

A wide variety of traditional integration methods such as CLI, COM Object and JAVA along with gateways for everything from SNPP and SNMP to TAP are currently used and supported by some vendors. In one installation these can be used to create a single, diversified notification platform for a multitude of applications throughout an entire organization.

Many systems such as fire safety or building management have limited external communication features. In these cases a local, hard connection may be the only solution for automated alerting on a large scale. Imagine having a fire alarm go off in a data center in Dallas and, without anyone having to do anything, personnel are alerted all over the country in a matter of minutes. This leaves the onsite staff more bandwidth to deal with the emergency while others launch contingency plans.

One of the family of integration technologies gaining in popularity for integration is Web Services, both SOAP and REST. There is a proliferation of software vendors now supporting these technologies to establish a universal touch point and they are gaining in popularity.

Web Services using SOAP allows integration with an increasing number of backend systems, along with REST interfaces to further increase the integration possibilities with any application, especially Internet systems. When available, REST services are preferred over SOAP due to their simplicity. With a straightforward, extensible framework they are ideal for exposing the business services as REST-like services.

Consider the advantage of having your notification system integrated into your network infrastructure, important applications, fire safety and building managements systems. You can be notified in real-time, of any incident important to your group with immediate knowledge of major network issues, alarms, or intrusions.

Social Media Plugged In
Communication is one of the most important aspects of incident management. As social media steps up from being a corporate marketing tool, it's emerging as a complementary tool to existing notification systems. It can be used as an information outlet from a central messaging platform as easily as sending a text message to a phone but does require a full integration with available APIs to be stable.

Because there is no way for two-way confirmation or one-to-one communication, social media is not appropriate for staff activation or as a high-level decision support conduit. Instead, it should be an integral part of an organization's planned media response. Social media can provide an easy way to provide *informational* updates to a base of stakeholders, employees, or even the general public for awareness. It has been shown to be viable in government for public safety as demonstrated by the earthquake in Japan and numerous instances in smaller situations. But, in a corporate environment for disaster recovery, its use is still being defined.

One of the main reasons for the problem is, while social media has proven useful, it has considerable drawbacks with overall control and content approval being the most problematic during emergencies.

Examples include sites that have been spoofed and postings that have either inaccurate information or content not ready for release thus tight controls need to be in place.

It should also be noted that while popular social media platforms improve performance on a continual basis, they are not immune to over-capacity failures or outages. In these cases over reliance on the technology can defeat the purpose for a BC/DR department.

Advanced Mobile Applications
First, it was Blackberry, and now iPhone, Android, and a variety of tablets that are being deployed in the workplace in huge numbers. With the power of faster networks, reduced data costs and strong application control, organizations are embracing mobility with all its advantages. As smartphones have become less about telephony and more about feature-rich computing, a push towards untethered computing has taken place. The challenge many companies face is how to manage this new untethered profile.

A good notification system not only sends messages out but it provides mobile applications to extend beyond cellular features unifying the untethered profile in an organization. With Advanced Applications, real-time messaging can go to even more devices whether it is a workstation, a feature phone, a smartphone or a tablet with instant notification capability and device presence support.

Thick-client device applications work for all today's mobile devices on the cellular network or Wi-Fi with features for a dedicated inbox with alternative notification tones, settings override for emergency messages with persistence, the ability to control the dispatched notification lifecycle, and encrypted SMS. There are many times that message confidentiality is critical with the need to automatically delete alerts after an expiration time.

These advanced two-way applications can also provide a feature-rich set of controls to organizations. Controls include the ability to remotely activate campaigns, manage mobile devices and the messages on them by remote configuration of settings such as:
- setting permissions and access control
- cleaning data that includes received, sent and saved messages in the private inbox
- revoking a security key

All of these controls will allow an organization to ensure smooth operations even if a device is lost or stolen.

Emergency Notification Moving Forward
We've discussed the trends in technology that have changed the way many companies look at their notification deployment options. More control can be exerted than was possible even a few years ago with real benefits.   An organization can have complete power over their capacity with authority over its use at any time.

Every business professional is challenged to find more ways to increase productivity in the organization. Leveraging your notification system that is used for emergencies to help any department respond faster and manage increasing resource limitations daily addresses the mandate for multi-functional systems. One server *can* serve many masters.

The final but very important factor in selecting an onsite solution over hosted is of course more favorable long-term system costs as the software becomes a tangible asset. Most notification vendors provide updates and enhancements at no charge for clients under support thus ensuring organizations take advantage of industry evolution. When every procurement request is scrutinized for benefit vs. cost, contribution of asset value via a one-time investment can often be regarded as a smarter decision than sinking funds into recurring annual fees. It's a well-established fact that every firm needs notification and changing it from a recurring fee to an asset can save money over time.

Considering a solution to serve the organization both in emergencies as well as everyday operations that works across multiple departments will ultimately add value to your purchase. Ensuring that your solution provider can integrate with critical systems, provide long term mobile evolution, and help manage costs will help build your case for procurement of a robust notification solution.

There are of course instances where a fully hosted system is still the best model but it is now time to take a critical look at past assumptions and perhaps embrace new paradigms.

About the author:
Pamela LaPine is President & CEO of HipLink Software. She has over 25 years of experience in Silicon Valley high-tech companies and has been with HipLink Software for over fifteen years. Working closely with clients and partners, Pam has led the team from early vision to the current successful state of the popular HipLink wireless communication software product. She is considered an expert in architecting global wireless solutions that reliably connect an organization or a backend system to existing wireless carrier networks. Pam has forged business continuity and disaster recovery solutions for all major industry verticals and the public sector. She has worked closely with all major providers in this field including carriers like Verizon, AT&T and Nextel, handset manufacturers like RIM and Nokia, as well as numerous leading technology organizations. HipLink Software is a privately held, woman-owned business with headquarters in Los Gatos, California.