

Planning For The Unforeseen: Insuring Communications For All Contingencies

A White Paper From



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Introduction – Expect the Unexpected

In a decade marked globally by natural disasters as well as terrorist attacks, there have been some painful but valuable lessons learned with respect to preparedness for business disruption, disaster recovery, and business continuity. Prior to these events, many people and organizations viewed preparedness investments primarily as an expense, trying to minimize it wherever possible. These attitudes have been changing dramatically after seeing the devastation that has occurred, the loss of life and economic impact – both short and long term – of these emergency situations. In addition, those businesses and public organizations that did invest in preparedness have seen their investments pay off handsomely. As a result, ***we have learned to expect the unexpected***, raising the importance of disaster planning, preparation, and execution.

One of the most significant lessons learned is the critical nature of communications during the multiple stages of a disaster – from preparations for an approaching event, including plans for minimizing the impact of disruptions, surviving the actual episode, addressing the immediate after-effects as well as rebuilding on a longer term basis. The breakdown of communications capabilities in these situations has become not only a threat to business operations and earnings, but potentially a life and death issue. We have also begun to learn about the opportunities for disaster avoidance using communications planning to lessen the needs for disaster recovery.

This paper will explore a range of emergency situations and near misses, highlight lessons learned, and define communications strategies and requirements that can prepare us for meeting the needs of unforeseen events. It is intended not only for those organizations that constitute the front line defense against public disasters, but also for business planners who face the risks these disasters bring to their business operations and survival.

Ground Zero: First Responder Experiences from Large Scale Emergencies

Natural disasters and man made emergencies; from terrorist attacks, internet and power outages to the many devastating hurricanes, cyclones, tornadoes and earthquakes, have caused us to take a critical look at the state of disaster and business continuity planning globally. While there are many possible dimensions that can be explored for valuable lessons (i.e. estimating emergency requirements during rapidly changing situations, clarity of roles and responsibilities, cutting through bureaucratic red-tape to achieve required speed and results) that can be learned from these recent events, one of the most critical

areas that we have identified is that of **communications preparedness**. Making communications more effective during emergencies is always at the top of the list of initial post-mortem reviews, but is often then tucked away in reports without generating appropriate action for the next series of disasters.

In examining the lessons we can learn from the adequacy and effectiveness of the communications infrastructure preparedness during emergencies, a logical starting point is with First Responders. This is an area where, quite frankly, the general consensus assumed that if any group would be prepared this group would be – leveraging manpower, technology and the existing infrastructure to rapidly and effectively respond. Unfortunately, this has proved to be far from the truth.

To explore how events can play out in large scale natural disasters, we can learn a great deal from the impact of Hurricane Katrina on the Gulf region of the US. Sufficient time has passed to fully allow a sense of perspective on the disaster and to provide good lessons for the planning and handling of disasters, like those that have recently happened in Myanmar and China, and also preparing for what appears to be another "well above average" hurricane season in the Gulf.¹

While the occurrence of hurricanes making land in the southern US is certainly not a new or unexpected phenomenon, the rapid fire arrivals of Katrina, Rita and Wilma demonstrated that communications planning and available systems also were inadequate during the early days of the events. Traditional assumptions had been that disasters would be a local phenomenon, and that the communications system infrastructure would remain operational at least in part, and that there would be a way for first responders such as the National Guard, Police, Fire, volunteer groups, and other governmental agencies to communicate, coordinate and respond. This proved to be a faulty assumption. In the case of Hurricane Katrina the devastation was so widespread that the communications infrastructure in the entire region was disrupted. Traditional land-based communication was disrupted when telephone company Central Offices went under water, cell towers were blown down, and both infrastructure systems and telephones ran out of power.

The massive scale of the devastation, including to the communications infrastructure, highlights the need for an expansion of best practice thinking. It requires planning and deployment of communications systems and capabilities that are redundant, interoperable, and mobile for rapid drop in replacement of downed systems. Taking a lesson from military communications planning, which assumes you can count on nothing and, therefore, have to bring your own, emergency responders have been learning that they can not assume the existing infrastructure would be there for them to use. First responders must plan for and acquire in advance, truly mobile emergency communications backup systems -- systems that can be easily moved, self-powered and can accommodate multiple communication transport options that can take advantage of what channels are

available. These communication channels might include landlines, data lines, microwave, radio, cellular, and satellite. During the devastation of Katrina, satellite communications capacity was one of the few remaining channels still operating. Yet, getting satellite access and being able to utilize these channels to interoperate with other communication links had not been planned for or even contemplated.

Medical care providers also learned critical communications lessons from the impact of the hurricanes. When the standard operational model of hospitals providing the key hub of patient emergency care broke down, and as hospitals found themselves virtually shut down because of flooding and other damage, new models emerged for triage care. Impromptu field medical facilities became an important first line of care and required communications be established with each other as well as with surviving hospitals – seeking patient information, relaying patient conditions, numbers of injured, determining where patients are to be transported and coordinating the entire process. Clearly, emergency back-up communications systems for the medical teams were required. To more effectively operate in future emergencies, these communication systems would need to extend beyond terrestrial telecommunications and radio transmissions.

While utility companies have long been some of the best prepared for emergency responses, the hurricanes also severely tested their planning assumptions. The scale and severity of a Category 5 hurricane that covered multiple states when it hit land brought new lessons in planning for power recovery. Utility companies needed to establish multiple command centers in the field to coordinate the activities of their crews and have the ability to communicate with the HQ organization to relay manpower and equipment requirements and other critical information.

Examples of Preparedness

A good example of a utility that was prepared is that of Entergy. Entergy had been preparing for a large scale emergency and had put its plan into effect well before Katrina made landfall. They were able to execute their plan when they transferred their customer service contact center from New Orleans to the backup Little Rock facility – almost 450 miles inland, handling nearly 2 million calls with almost 47 thousand calls during the business peak hour.

Proper preparation and planning based upon the lessons learned by utilities have recently paid off for New Brunswick Power. Canada's New Brunswick Power recently avoided interruption of service to their customers by quickly relocating employees away from their headquarters as record snowmelt flooded the New Brunswick capital, Fredericton. By using a combination of effective Business Continuity planning and managed services support from they were able to keep their employees safe during the emergency while continuing to support their customers through their emergency communications capabilities.²

While the United States has not suffered any additional natural disasters on the scale of Katrina, catastrophes such as the massive flooding that struck Europe a few years ago and the more recent cyclone in Myanmar and earthquakes in Chengdu, China suggest that the lessons about planning for large scale disasters by both public agencies and private enterprise firms should continue at an accelerated pace.

Characteristics of a Flexible Emergency Communications Solution

Our analysis of recent emergencies and disasters and the lessons that have been extracted have contributed to defining a generalized set of requirements for emergency communications solutions. Emergency communication solution requirements must start with capabilities that can be added to existing, fixed systems as well as extending to mobile, ready-to-deploy solutions. Emergency communications solutions must be inherently mobile in their physical portability and operational capability to be dropped into emergency sites. These systems must be ready to go, easy to set-up, and quickly connected to whatever communications channels are available in a broad range of situations and environments. A key to mobility is a small form factor so that a system can be moved to the location where it is needed in a light vehicle or even dropped to a site by helicopter. Additionally, an emergency communication system must have an un-interruptible power supply with battery backup so that it can continue to operate while starting up, changing over to, or refueling local generators.

Emergency communications solutions must also be flexible and adaptable – with the ability to utilize and interconnect to traditional land lines, cellular, wireless/WiFi, radio, satellite uplink or any appropriate combination of services, depending on what is available and the specific needs of the situation. Flexibility also means being able to switch from one means of transport to another, taking into consideration cost, as well, as current availability of service.

Audio conferencing capabilities are another important requirement in an emergency as actions must be coordinated and quick decisions made based upon input from many sources. One aspect of this enables groups of people to call-in to conference bridges at previously scheduled times to obtain status reports, have questions answered and agree on next steps. Equally important is the ability to bring groups of people together via a conference call at a moments notice.

Emergency notification capability is another baseline requirement. This capability is required not just to alert and contact emergency responders, but to provide information to a wide range of audiences that may not have the ability to

originate communication, or if they can, not get access due to overloaded communications facilities. This capability should include multiple means of communications to increase the likelihood of recipients receiving the notification. Communication solutions should also support multiple communications channels including voice, email, IM, and paging options that try all or some of these until the message and its confirmation is received. These kinds of systems should also ideally provide a summary of who has received what message to further facilitate planning and resource deployment. This tracking mechanism must be tied into surviving fixed communications systems.

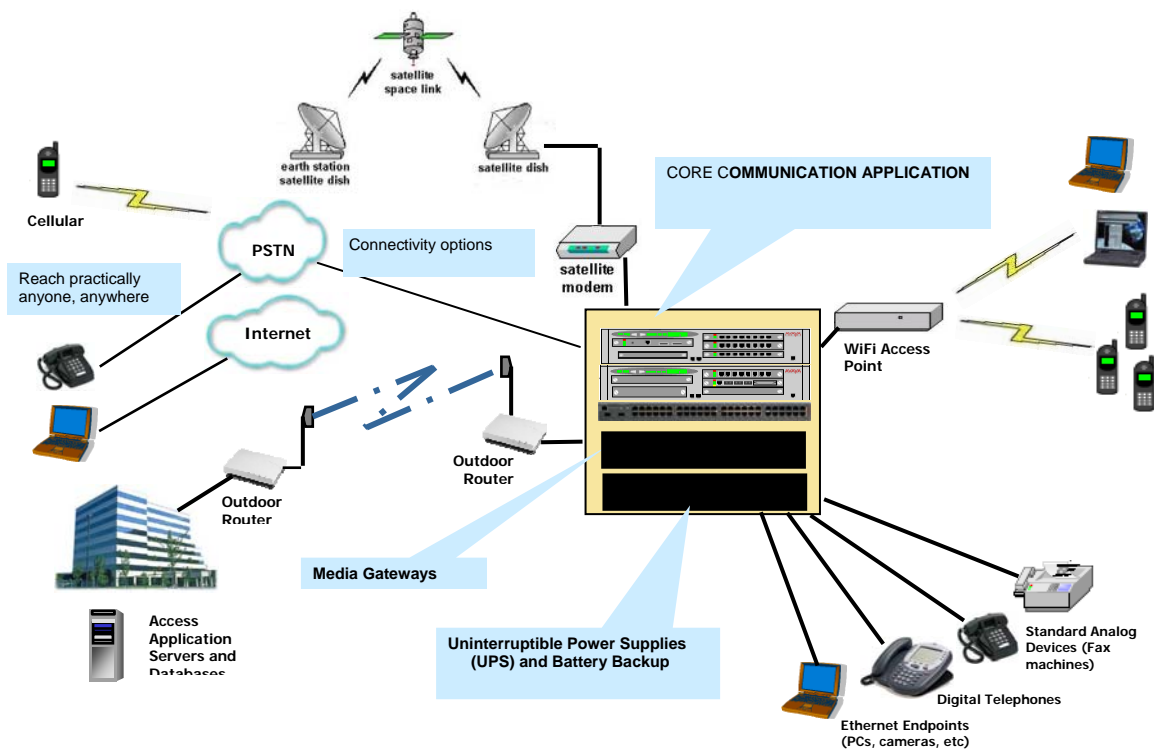
Some consideration ought to be given to installing some of the available mobile systems into fixed locations as replacements for lost capability as sites are returned to operation.

Emergency communication solutions must be fully tested and highly reliable. Further, these solutions must be based on industry standard protocols to ensure interoperability between disparate systems under emergency conditions.

They also must be designed to provide end-to-end capability. Security is also a vital requirement as temporary communications may traverse open networks while protecting access to proprietary systems and information that is passed across the network. Finally, it must address both voice and data communications needs.

Figure 1 depicts the architecture of an emergency mobile communications solution that begins to address this broad range of requirements. The heart of the solution is the communication application which provides the intelligence that connects people automatically using the best, most economical channels available. Connectivity options must include satellite, internet and public and/or private networks, WAN: wired, optical or WiFi. Media Gateways are used to provide Telephony, Internet and Endpoint Connectivity. Power is supplied with generators, Uninterruptible Power Supplies (UPS) and Battery Backup to ensure available and continuous operation. Data communications capabilities are built in to enable access to a range application services. The solution also supports a broad choice of user endpoint devices including: WiFi endpoints, Cellular and radio units, wired devices including digital telephones, Ethernet endpoints, and standard analog devices such as POTS-based telephones and fax machines.

Emergency Communications Environment



Lessons Enterprises Can Learn from Large Scale Emergencies

Communications capabilities are also essential and play a critical role for businesses in preparing for, dealing with, and recovering from emergencies and disasters. In any emergency or disruptive event, the ability to rapidly gather, synthesize and analyze information and requests coming from a broad range of sources is most critical. The communication process facilitates the coordination of response efforts and makes it possible to deploy strained resources effectively.

The requirements for large scale emergency communication capabilities for enterprises can be illustrated by oil companies on the Gulf Coast as they prepared for and dealt with the aftermath of Hurricane Katrina. Their first priority was to lock-down their plants and equipment. This was a massive effort requiring constant dialogue between company personnel from headquarters to regional offices to oil rigs and other plants. To accomplish this rapidly, conferencing capabilities are essential. Personnel needed the ability to schedule and execute a multitude of conference calls right up until the hurricane hit. There was also a need to establish impromptu conference calls to deal with issues and situations as they arise. As the hurricane grew nearer, broadcast capabilities – both voice and data – were required to give personnel up-to-the minute

information on the status of the storm, what they should be doing, and most importantly when and where to evacuate to.

Part of the planning process needed to include making arrangements for employees to work remotely during the storm, to monitor the situation, as well as, afterwards to assess damage and begin the recovery phase of the operation as soon as possible. This proved difficult to accomplish when traditional communications were disrupted. Future requirements must expand the capability to use a wide range of communications channels including cellular, WiFi, Broadband, satellite service, etc. The ability to utilize IP telephones or soft phone software capability on a PC to connect to the company's network via the internet is also becoming a baseline requirement.

When the storm actually hit, it was very important for personnel to be able to rapidly alert others to specific situations. In order to do that, people must be able to dial a pre-determined and programmed string of digits that signify an emergency. Once dialed, the system should have the capability of not only completing the call, but simultaneously alerting emergency personnel and first responders that a situation is in progress, who is involved and the location. Critical to an effective alerting system is its ability to provide confirmation and active response. The system must not only support multiple channels of alerting communications, i.e. telephone, email, pager, IM etc., but support methods for remote personnel to confirm their notification and capability to respond as requested.

After the storm was over, the first priority was to locate employees and determine their status. This would only be feasible if plans had been made previously and people trained as to how the process would work. Key to this plan is to ensure that the company does not rely on one type of communication capability. In disaster situations, people will try to use whatever they have access to – most likely some type of mobile communications capability. Again, conferencing capability is crucial as employees can call into conference bridges at times that were previously defined. Broadcast capability is also crucial as instructions and orders can be easily and quickly disseminated. This capability is important in cases where people might be able to receive messages but not be able to originate them.

Once the immediate emergency has passed, the oil company needed to quickly coordinate with their suppliers – power, gas and telephone – to re-establish the core infrastructure that supported their operations. Concurrently, the company needed to coordinate their efforts to get their facilities back up and running. Communications capability that enables not only interfaces between the headquarters organizations, but between employees of the various organizations in the field was crucial to coordinating the restoration effort.

While the oil companies provide insight into what processes companies go through during actual emergencies and their aftermaths, they also provide a leadership example of preparedness. Shell Oil was recently featured on a segment on CNBC that detailed their extensive preparedness for any future weather threats to their Gulf of Mexico facilities. They have developed a “weather war room” facility that not only monitors impending weather threats but also coordinates their communications response to events.³

Applying These Lessons to Your Enterprise

While the oil companies’ experience and communication needs provide an excellent insight because of their concentration in the Gulf States that Katrina impacted, the broad implications of the need for emergency communications capability applies to many types of businesses and many types of possible disruptive events.

The first lesson for businesses is that proper planning for communications preparedness needs to be a serious and continuing priority. Postponing action until an event is eminent is clearly an act of management folly. Planning starts with selecting communications vendors that have significant experience and knowledge in planning and executing emergency communications plans as part of their overall value proposition. These types of vendors bring with them the ability not only to configure systems with emergency capabilities and redundancy, but the support capabilities to help you build your emergency plan to fully utilize the extensive features of their systems to support the plan.

The second lesson centers on creating and communicating an emergency plan to the entire business employee population. When the plan is translated into policy and understood practice, it is ready to be executed when an emergency event threatens. Triggering events can then kick start the plan into action. This will help get employees where they need to be both from a safety and communications readiness perspective.

Once an emergency or disaster has actually occurred the focus shifts to restoring commercial business operations. First and foremost is the requirement to keep in touch with employees, customers and suppliers. Notification capabilities are critical in this effort as instructions on how to make contact can be disseminated to voice mail boxes, e-mail addresses, cell phones etc. Conference bridges can be established, allowing employees to call-in to obtain instructions on how to proceed and coordinate damage assessments and deployment of resources. This becomes critical for delivering a consistent message to all employees regarding process and policy changes for how to interface with customers.

In situations that follow a disaster or emergency, the assumption must be made that all employees can become teleworkers. They may not have the ability to get to their work location and may have to work from home or another temporary location. IP telephony capability can be very beneficial in this situation as IP phones can be connected via the Internet into the core communication system using secure encryption technology such as VPN. However, since some employees may not have broadband connections into their home, consideration should be given to a communication system that allows these employees to control their communications while communicating through their home or cellular telephone. Again, conference capabilities are essential in terms of gathering and exchanging information, discussing options, making decisions and implementing action plans.

Multi-modal communication capability should also be considered a new baseline requirement. Employees will not be in a position to communicate in the same manner. Some will have PDAs, some will have cell phones, some will have e-mail access, some may have WiFi capability, etc. The ability to develop and execute a plan that incorporates these diverse technologies will speed the restoration process.

Businesses will also need to be able to field inquiries and requests from their clients or customers. Establishing a virtual call center, where customer service contacts are routed to employees working remotely would help to maintain customer business and relationships.

Readiness for Smaller Scale Emergencies and Disruptions

While we have focused initially on the impact of large scale emergencies, enterprises also need to be prepared for more frequently occurring smaller scale emergency situations in their disaster and business continuity planning. Smaller scale emergency situations can range from weather related disruptions like snow storms or localized flooding due to heavy rain; to health or accident emergencies; or facility specific disruptions such as power failures or communication outages. Physical destruction may not play a significant role in these emergencies, but disruptions of normal business operations can have important negative business impacts such as loss of revenue and customer loyalty. Additionally, many government entities worldwide require businesses to be prepared for situations that can affect the health and safety of their employees.

The good news for enterprises with current generation Voice over IP (VOIP) systems is that many useful capabilities that can be used for emergency response are already built into the systems. For example, multi-location systems that have been configured properly as a single system model can achieve fail-over functionality for individual locations that may experience emergencies or

disruptions. In addition, systems can be engineered with greater redundancy and reliability depending on the size of the location and susceptibility to power and network outages.

Leading VOIP systems have a number of features that can be used for emergency situations. Some examples of these features include:

- Telecommuting functionality that can enable people to work at home during weather related events such as snow storms. Softphone applications and VPN network connections insure equal functionality and security to normal Deskphone functionality.
- Mobility related functionality, including
 - Providing PBX station features to the cell phones of employees including call recording and call accounting, one number portability, and continuous connection to the office.
 - Allowing Smart phones to have full access to Enterprise VOIP capabilities
 - Enabling any phone calling in to the application to access telephony, calendaring and conferencing services via a speech interface
- E911 capabilities can help to isolate and identify the location of employees who have encountered a health or safety emergency

To effectively tap these kinds of emergency response capabilities and build them into a business continuity and disaster recovery program, enterprises can find help in the professional services organizations both within communication companies and also traditional consulting firms. Knowledgeable communications experts can provide significant value in helping to exploit existing communications capabilities including call center redundancy and virtualization, identifying supplemental requirements such as mobile emergency systems, fail over architectural engineering, and the creation of communication centered business continuity plans.

Cost Effective Approaches to Emergency Communications Preparedness

The cost of creating emergency communications preparedness especially acquiring emergency communications systems and capabilities can seem unreasonably high. Yet there is much that can be accomplished with relatively low investment costs. Utilizing existing and communications capabilities costs only the effort to better understand their availability and use. Building business continuity and disaster recovery plans may require some labor costs and some expert consultancy expense without requirements for capital investments.

In order to mitigate the cost impact of new emergency communications systems, organizations should strongly consider a dual-use strategy – utilizing the system in a broader range of applications and situations. Using these systems on a more regular basis would not only make them more cost-effective, but would allow the people responsible for deploying them and getting them up and working in a timely fashion to gain valuable experience with them. In this way, when an emergency does occur, they would be well-versed in the system and its operation, so it could be deployed quickly with minimal difficulties – something that is so critical in an emergency or disaster situation. There also may be additional sources, particularly from the local, provincial, and national governments.⁴

There are also a number of alternative uses for an emergency communications system that can help to underwrite their costs. In a case where construction is being done and employees have to be relocated to temporary office space, the system could be used to provide the needed communications capability. In a situation where an organization needs to quickly open a new location to serve their clients or take advantage of a market opportunity, they can deploy the emergency communications system and be up and running in very short order. Other potential applications include tradeshow, hotels and convention facilities.

As we have detailed throughout the paper, conferencing capabilities are critical to emergency communications. This capability can be utilized on a normal, everyday basis to reduce conference service expenses. The same holds true for an Emergency Notification Application. The application can be used in non-emergency situations such as notifying employees, customers and suppliers of snow closings, power outages, and IT system problems.

Conclusions

Communication is critical when an emergency or disaster occurs for government and private enterprises. Every business or operation should have a continuity and disaster recovery plan that addresses communications backup considerations. An emergency backup communications system should be available for deployment on a moment's notice. Multi-modal communications flexibility including stand-by satellite service, WiFi, cellular and radio should be included to ensure not only connectivity, but conversion and integration as well. Conferencing capabilities, broadcast notification applications, teleworker, and mobility applications are all critical components of the solution. Emergency communications solutions must be designed for end-to-end capability and to cover a wide range of situations.

To reduce the costs associated with emergency communications systems acquisition, many of these systems and applications can be utilized on a normal, everyday basis for extended operations or events. And finally, a detailed, comprehensive emergency communications plan also should be developed and tested. Duplicating spare equipment is not enough if the processes to effectively deploy and use them are not in place.

While every disaster has its own unique characteristics and surprises, the lessons learned from the recent past can be of enormous help in preparing for future emergencies. We do not want to pay twice in pain and suffering for information that is readily available for those who plan ahead.

Footnotes

1. "2008 Hurricane Season Will Be "Well Above Average"", National Geographic News, April 9, 2008
2. Avaya Case Study, "A Contact Center Solution from Avaya Keeps Power Customers in Touch, in Spite of Hurricane Katrina", 2006
Need Reference for NB Power case.
3. CNBC May 30, 2008, Scott Cohen, "preparing for the Worst", <http://www.cnbc.com/id/15840232?video=757348826&play=1>
4. For US sources for example see, Ready America: <http://www.ready.gov/>; Business Roundtable Partnership for Disaster Response: <http://www.respondtodisaster.com/mambo/> ; National Congress on Secure Communities: <http://www.nationalcongress.org/> ; National Blueprint for Secure Communities: <http://www.nationalblueprint.org/>.

About GreenSpringPartners and the Authors

GreenSpring Partners is an industry analyst and consulting firm focused on driving profitable growth for its clients. The principals at GreenSpring Partners, are engaged in an ongoing effort to help shape the landscape of infrastructure possibilities – hardware, software, applications and services -- for both enterprises and service providers as they migrate to next generation networks. For more information about GreenSpring Partners go to www.greenspringpartners.com.

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