



## Preparedness & Security

### *Getting the Message Out in an Emergency: the Harvard University Emergency Notification System*

Updated January 2007

**Summary:** When an emergency such as a utility outage occurs on campus, one of the challenges at a large decentralized institution is that of contacting the right people quickly, conveying consistent facts, coordinating decision making, and initiating an appropriate response. Most schools have a security/police, facility operations, or call center to initiate responses to emergencies 24 hours a day. Call centers often use telephone trees, call lists, and similar systems which are prone to high maintenance, are very time consuming to implement, and can breakdown in an emergency. Further, personnel move in or out of positions, phone numbers change, and travel or vacation plans make it difficult to guarantee coverage.



To mitigate these concerns, Harvard University evaluated commercially available software packages for automated notification of emergency personnel. System requirements included the ability to quickly contact internal emergency teams while minimizing the time spent on the phone by call center personnel. In 2002, the office of the Harvard Provost approved the purchase of a computer server and commercially available software communications package similar to those used by some fire and police departments, major corporations, and nuclear power plants. Now when an emergency occurs on the Harvard campus, up to 250 people can be contacted nationwide within 3 minutes by the University Operations Center and be provided with an initial set of instructions for emergency response through the use of a pre-recorded messages.

#### **Campus Profile**

##### **Harvard University**

Cambridge, MA

**FT Undergrads:** 6,700

**FT Grad Students:** 12,000+

**FT Faculty/Staff:** 12,000+

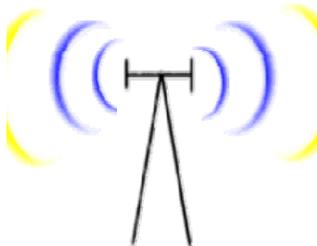
**GSF of buildings:** ~ 21 million

**Annual Operating**

**Budget:** ~2.3 Billion

#### Project Goals

- Ensure rapid, secure, and confirmed communications to key personnel.
  - Minimize communications and decision-making lag time.
  - Involve appropriate personnel and expertise early in an emergency.
  - Standardize information delivery to Harvard personnel emergency responders
  - Establish a system that will both alert and instruct emergency responders.
- Free up call center personnel to perform other critical functions.



#### Emergency Management Structure at Harvard

##### Crisis Management Team

Provost, General Counsel, VP Admin, VP Gov't/Community Affairs, Chief of Staff.

##### Incident Support Team

Associate VPs, Directors representing several depts. on campus.

First Responder Emergency Team – Police, Health Services, EH&S, Facilities, Engineering, News, Transportation etc.

##### Local Emergency Management Liaisons

Representatives from the above three teams form together and work with the local teams.

##### Local Emergency Management Teams.

Departmental area specific teams.

**U.S. EPA New England Best Management Practices Catalog for Colleges and Universities.**

**For more information about the catalog and other case studies visit**

<http://www.epa.gov/region1/assistance/univ/bmpcatalog.html>

*The provision of the case studies contained within the catalog does not constitute any form of endorsement or approval by the US EPA of particular institutions or technologies. The US EPA does not exercise editorial control over the information contained in non-EPA web sites, nor is the US EPA associated with or responsible for the content of these sites. The links to these web sites are provided for the convenience of the viewer.*

## Description of Issue/Problem

On 9/11, cell phones and other communication systems were greatly impaired in New York City. Telephone systems were overloaded and it was virtually impossible to effectively exchange information with or among employees and emergency responders. At Harvard University, senior management recognized the need for stronger emergency communications systems at the University. The old system relied on a mix of cell phones, pagers, and landline phones. Some guidelines existed and the burden on the call center to evaluate, make decisions, initiate calls, and take calls was challenging during an incident on campus. So in 2002, Harvard approved a project to enhance communications capabilities through the purchase of a commercially available emergency notification system augmented by leased conference call lines, an improved paging system, and consistent and standardized guidelines.

## Pre-Project Considerations

- Is the existing system robust enough to ensure that appropriate personnel can be reached quickly? Does it rely upon only one communications method or platform (e.g., call tree or land line telephones?)
- How to gather factual information, engage appropriate responders, and begin to make critical decisions in an emergency?
- What happens if key personnel are unavailable? Are alternate personnel available?
- How many people need to be alerted to an emerging situation and how will a response be directed?
- How do we reach people if the emergency takes place after normal business hours?
- Have the right personnel been assigned to specific roles and responsibilities in the event of an emergency?
- What are the purchase and maintenance costs for an improved notification system?



## Steps Taken

1. Each school established its own emergency team to manage emergencies.
2. Other internal teams (e.g., EH&S emergency team, steam system emergency team, etc.) augment Department/School teams if an emergency escalates or meets predefined criteria.
3. Emergency team notification criteria included a pre-defined critical incident list– major illness, death/serious injury, major fire, major HAZMAT incident, prolonged evacuation, etc.
4. Installed internal antennas and backup power for the pager system to strengthen emergency communications capability.
5. Alphanumeric pager messaging capability was expanded to 240 characters.
6. Created password-based Web paging system from anywhere, to anyone, at anytime.
7. Created standard text messages (e.g., “call conference bridge at 1-800 xxx-xxxx at 10:00 AM”) for automatic distribution to emergency teams.
8. Created call-in line for recorded emergency messages.
9. Purchased and installed software communications system for automatic notification.
10. Installed 24 outgoing message telephone lines for automatic emergency notification.
11. Populated all emergency team contact information into software system – work phone, cell phone, pager, home phone, and e-mail. Included contact information for alternate members of the emergency teams.

### Testing the System:

*Emergency response teams are periodically contacted by the system to determine availability. Responders may be provided with instructions to join a conference call where information is exchanged and roles assigned.*

---

*The provision of the case studies contained within the catalog does not constitute any form of endorsement or approval by the US EPA of particular institutions or technologies. The US EPA does not exercise editorial control over the information contained in non-EPA web sites, nor is the US EPA associated with or responsible for the content of these sites. The links to these web sites are provided for the convenience of the viewer.*

12. Tested automatic notification system with each team – executive level, senior operations, emergency teams in each school and department.
13. Included software feature to automatically FAX or e-mail personnel availability rosters to Emergency Operations Centers.
14. Created emergency webpage for university-wide communications.
15. Installed the capability to issue university-wide e-mail.
16. Provided training to system users in the Operations Center. Support training documentation is provided to users.

### *System Description and ...*

- 1st. An emergency call is received at the Operations Center (OC) or with Harvard University Police Department (HUPD). It is evaluated for type and level of emergency.
- 2nd. If pre-established criteria are met, HUPD requests the OC to contact the emergency teams in the affected schools or departments using the emergency notification system.
- 3rd. Emergency notification system software calls emergency team members, using contact information registered in the system. It will try team member's office phone, cell phone, pager, email, and home phone and will attempt contact until a response is received or the sequence is repeated three times.
- 4th. Responders must enter a unique password to hear the pre-recorded message from the system.
- 5th. Emergency team members will be given instructions. It may be to call a specified number for more information or to join a conference call at a specified time.
- 6th. Conference calls are used to establish facts, update emergency status, deploy personnel and other resources, establish immediate goals, set up assignments for immediate action, etc. If deemed necessary, an Incident Commander (a Harvard University trained staff member) may be appointed to manage the incident.



### Tools Used

- Commercial communication software package
- Server to host software and data
- Phone lines – 24 dedicated lines installed
- Office phone, pager, cell phone, email, home phone
- Alphanumeric pagers and other devices are used to communicate short messages and instructions during the emergency.
- Conference bridge service through local telephone system – has capacity of up to 30 persons per call
- Emergency generator keeps pagers and 2-way radio systems operating if there is a power failure.



### Participants

- System Operator – University Operations Center manager, supervisors and staff
- Harvard Central Administration Departments:
  - Harvard Police
  - Provost's Office, EH&S
  - Facilities Maintenance
  - Engineering and Utilities
  - University Health Services
  - Office of News and Public Affairs, and others
- Harvard Schools:
  - Ten (10) undergraduate, graduate, and professional schools of Harvard University



---

*The provision of the case studies contained within the catalog does not constitute any form of endorsement or approval by the US EPA of particular institutions or technologies. The US EPA does not exercise editorial control over the information contained in non-EPA web sites, nor is the US EPA associated with or responsible for the content of these sites. The links to these web sites are provided for the convenience of the viewer.*

## Performance and Benefits

- Software can make 250 notification calls in 3 minutes using 24 telephone lines
- Utilizes multiple forms of electronic communications to contact responders to maximize probability of contact
- Communications can be made with any of one or more pre-established emergency teams within the University
- System features secure delivery of message (unique password is required for access)
- System provides confirmation of message receipt by intended recipient
- System creates status and availability report for emergency personnel and FAXes report to Emergency Operations Center
- Does not tie up Operations Center staff with call-ins during emergency
- Does not tie up Operations Center making calls to notify numerous individuals during the critical moments when an emergency is unfolding
- Harvard Police are assured that notification of appropriate personnel has taken place
- Pagers operate at lower frequency than cell phones for better penetration of building shell and greater probability of message receipt
- Allows on-campus personnel to respond to the emergency rather than spending time making calls, relaying directions, or instructions
- The approach is consistent so all involved personnel know how they will be notified and that instructions will be provided

### Financial Info

- Cost for software and server package: \$60K
- Maintenance Costs (Service Contract):
- Initial Personnel Time to set up: 2 people for 2 months full time.
- Estimate total price to set up: \$100K
- On-going Personnel Time to maintain: 0.2 FTE
- Conference Bridge Calls per group: \$40/month and an additional cost per user when bridge in use
- Alpha Numeric Pagers & Associated Monthly Fees: Appx. \$22
- Phones & Associated Monthly Fees: Utilizes existing handsets and cell phones.

## Lessons Learned

- Keep it simple. Pre-recorded automatic messages at Harvard are limited to “This is an emergency ...; “This is a drill...,” or “This is a test ...”
- An on-going commitment is needed to keep information and contact data up-to-date
- Requires resource commitment, technical expertise, and ongoing maintenance
- Functionality of the automatic communications system is realized when mated with internal paging system and conference call line leased from phone company
- Sophisticated systems may limit utility for smaller schools
- Conference call capability is a very worthwhile investment and timesaver in an emergency
- Develop an understanding so it is known when the various call groups on campus should be notified

### Engaging with the Local Emergency Planning Committee (LEPC)

Harvard University, the Massachusetts Institute of Technology, Cambridge LEPC, and Boston LEPC conduct emergency response training on a periodic basis. Among other things, this helps to further emergency response programs at both Universities and at the response agencies.

*The provision of the case studies contained within the catalog does not constitute any form of endorsement or approval by the US EPA of particular institutions or technologies. The US EPA does not exercise editorial control over the information contained in non-EPA web sites, nor is the US EPA associated with or responsible for the content of these sites. The links to these web sites are provided for the convenience of the viewer.*

## Next Steps

- Continued training and drills
- Increased integration with local response agencies
- Continued development of response plans
- Further develop team integration

## For Further Information

Joe Griffin

Director, Environmental Health and Safety

Harvard University

[joseph\\_griffin@harvard.edu](mailto:joseph_griffin@harvard.edu)

Gary Kassabian

Manager, University Operations Center  
Harvard University

[gary\\_kassabian@harvard.edu](mailto:gary_kassabian@harvard.edu)



The Harvard University EH&S Web site provides further information on emergency management to include emergency evacuation plans.

<http://www.uos.harvard.edu/ehs/>

Harvard University Emergency Communication Web Site

<http://www.emergency.harvard.edu>

## Commentary

This is one of many possible approaches to addressing a critical need for an initial emergency notification system. Harvard's approach enables members of an emergency team to have a "virtual meeting" for information updates, creating action plans, mobilizing or deploying resources, and establishing a schedule for ongoing communications.

Harvard's system is fairly sophisticated. The software installation and maintenance requires a resource commitment that may be beyond the reach of smaller institutions. A less expensive approach might be to implement an alphanumeric text paging system, assign responsibility to the emergency team, and obtain access to a conference bridge line. Institutions can also explore the possibility of resource and expense sharing among multiple stakeholders in a community.

---

*The provision of the case studies contained within the catalog does not constitute any form of endorsement or approval by the US EPA of particular institutions or technologies. The US EPA does not exercise editorial control over the information contained in non-EPA web sites, nor is the US EPA associated with or responsible for the content of these sites. The links to these web sites are provided for the convenience of the viewer.*