



## IS YOUR CAMPUS PROPERLY EQUIPPED WITH A MASS NOTIFICATION SYSTEM?

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Every school or university with locations where people gather has a need for a mass notification system (MNS). Just as we gain lessons learned from large loss fires, so too do we learn from disasters and events on our campuses. We learned from the University of Texas massacre in 1966, we learned from the Columbine High School shootings in 1999, we learned from the Virginia Tech incidents in 2007, we learned from the Northern Illinois University events in 2008, we learned ... We learned that shooters and those intent to do harm on campus are difficult threats to deal with, and these can occur at any time. Each of these clearly illustrate why an MNS is needed, and each suggests ways of properly designing and using these systems. Mass notification during events such as these will obviously not stop the event from happening, but it can help to mitigate loss of life by providing clear concise information and direction to the students, staff, and visitors on campus. Obviously, a shooter on campus is only one of many events that could require the use of a mass notification system.

Before the design of the MNS can move forward, the risk analysis should already have been completed; the risk analysis is the vehicle used to establish and address the events. The style of campus—whether it is an urban setting or a more remote sprawling location—will also determine which mass notification systems should be installed. Regardless of the campus type, each college or university setting lends itself to the application of different mass notification systems. The broad goal of any MNS is to distribute messages as quickly and as clearly as possible to all locations where people are expected to be, both inside buildings and outdoor venues.

Once notification of an event is received by those in authority, they must respond based on their emergency

response plan, developed using a thorough risk analysis that considers all possible events and establishes appropriate responses. It is the designer's responsibility to ask questions regarding the risk analysis and emergency response plan to learn how the MNS will integrate with the needs of the particular institution. Only then can he or she design the right balance of mass notification systems for that college or university. Any one system will most likely not meet the college or university's needs. At this time, there are no building code or *Life Safety Code*<sup>®</sup> requirements to install an MNS, but there are laws and directives to do so in certain occupancies.

The *Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act* (the Clery Act), codified at 20 USC 1092(f) is a federal law that requires colleges and universities to disclose certain timely information and to provide annual reports about campus security policies and the incidence of crime on campus. All public and private institutions of postsecondary education participating in federal student aid programs must comply. Violators can be fined by the U.S. Department of Education, the agency charged with enforcement of the act, or face other disciplinary action.

The Clery Act, originally enacted by Congress and signed into law by President Bush in 1990 as the *Crime Awareness and Campus Security Act*, was championed by Howard and Connie Clery after their daughter, Jeanne, was murdered at Lehigh University in 1986. Amendments to the act in 1998 renamed it in memory of Jeanne Clery. Under the act, each institution must disclose crime statistics for the campus, unobstructed public areas immediately adjacent to or running through the campus, and certain non-campus facilities, including housing and remote classrooms. Institutions are also required to provide "timely warning" and a separate, extensive public

crime log. The “timely warning” requirement is somewhat subjective and is only triggered when the school considers a crime to pose an ongoing “threat to students and employees,” while the annual crime log records all incidents reported to the campus police or security department.

In 2008, the emergency notification requirements were added to the Clery Act. When the act became law in 1990, it included a longstanding requirement for “timely warning.”

A mass notification system is obviously a tool to assist in disseminating information in a timely manner. During the 2007 shooting on the Virginia Tech campus, message delivery took up to four hours. This delay was caused by many factors, all of which are learning experiences for the designers of mass notification systems. In a more recent incident on the Virginia Tech campus, three teenage girls reported seeing a man possibly carrying a gun near a campus dining hall; this message was transmitted in minutes. Within 30 minutes, alerts were sent via outdoor speakers, text messages, email, phone, social networking sites, electronic classroom signs, the Virginia Tech home page, and the university’s desktop alert system. Notice that eight different layers of mass notification systems were employed by Virginia Tech in this incident.

Technologies and methods used to provide mass notification to the occupants of a college or university campus have vastly improved. The earliest technologies consisted of email or text messaging to individual cell phones or some form of outside loudspeaker arrays. Early installations of MNS generally used only one form of communication for mass notification. However, only relying on one form of communication has proved to be unrealistic, so it has become apparent that each campus needs to be evaluated for additional MNS layers to provide a reliable and robust method of notification.

*NFPA 72®*, *National Fire Alarm and Signaling Code* provides for layers in Subsection 24.3.8 as follows:

**Mass Notification Layers.** Emergency communications used for mass notification shall be

categorized into layers and take in to consideration type of audience and reach as follows:

(1) Layer 1 relates to means of notification of occupants by systems/equipment installed inside a building and controlled only by authorized users (In-Building ECS)

(2) Layer 2 relates to means of notification of occupants on the exterior of a building and controlled only by authorized users (Wide-Area MNS)

(3) Layer 3 relates to means of notification of personnel through individual measures (Distributed Recipient MNS)

(4) Layer 4 relates to means of notification of personnel by public measures (Broadcast Radio, TV, etc.)

Determination of the type of MNS technology to be used, and the number of layers to incorporate into the various types of MNS, requires the integration of the detailed risk analysis and the emergency response plan. For any given campus (e.g., urban, suburban, single or multiple buildings), the proper mix of mass notification system technologies must be carefully selected to match the campus communications needs. Additionally, if there are additional needs regarding multiple languages to be used, that information should be incorporated into the MNS messaging plan.

Most campuses already have fire alarm systems installed throughout each building. In some cases these may even be in-building fire emergency voice/alarm communications systems (EVACS). The use of these systems is now permitted by NFPA 72 for MNS, but the designer must review each existing installation to ensure that the speakers are properly placed and tapped at the correct power setting to ensure intelligibility. These in-building systems are typically systems that are not controlled by the occupants, labeled “Layer 1” systems, and should be considered a primary notification system to meet the campus MNS goals.

Mistakenly, many colleges and universities decide to go with the low bid or determine that one MNS will suffice and then look for the least expensive one. However, no single MNS offers all of the reliability, robustness, or features needed to meet the goals and expectations of a

university.

Each communication system on campus has advantages and disadvantages. The text messaging system requires students and staff to “opt in” or “opt out,” and not all students want to give the school their cell phone numbers. Email will work for students and staff who have smart phones or are sitting at their computers. Home page alerts and desktop alerts only work if people are at their computers, and the computers are active. All of these systems require continuous management and review to ensure that database information is correct and up-to-date.

In-building MNS and wide-area MNS are Layer 1 systems that can be considered primary notification systems, and should be considered the first line of defense in meeting warning objectives. In both cases, designers need to evaluate the type of planned equipment to ensure reliability of communications throughout the campus. This includes evaluating wireless systems for possible interference with existing mobile communications, and evaluating building construction to see whether the wireless systems will reach the interior controls and system.

In an effort to find the most cost-effective approach to campus mass notification systems, designers should evaluate all communications systems currently installed in the various buildings on campus. This includes in-building fire EVACS and existing public address (PA) systems.

When evaluating EVACS or PA systems, the designer must ensure that the existing system controls will allow the system to perform as an MNS and that the speaker layout has been designed for intelligibility and reliability. Similarly, the amplifier network should be evaluated for reliability and robustness. Typically, the wiring for an in-building fire EVACS will be robust and comply with the *National Electrical Code*<sup>®</sup> (*NEC*<sup>®</sup>). However, this is less likely for the PA system, so the PA system and its wiring will probably require more scrutiny.

It is important that the MNS designer review the college or university’s risk analysis and emergency response plan to obtain a complete understanding of the operational requirements of the MNS and the conditions and risks under which it must operate. The goal of any MNS design is for the system to operate during the incident and during the recovery process. For example, if one of the risks evaluated as high is a flood on the campus, then the designer should be sure that the MNS control units, power supplies, and amplifiers are installed in locations above the expected flood water depth.

The designer should well understand that the MNS is a technology that should be integrated into the emergency response plan as the message delivery medium to ensure the proper response of the occupants are in accordance with the plan.

