

## Understanding the University Emergency Notification System

*The following message is intended to increase your awareness of the University's current approach to emergency notification in the event an emergency should occur on campus.*

Rutgers uses many different and overlapping mechanisms to provide time critical information to the community including email, web sites, TV, radio, and text messages.

No single mechanism is sufficient on its own to provide effective notification. But a set of mechanisms, when used as part of a comprehensive public safety plan, provides timely notifications to the community. Rutgers has employed multiple mechanisms for several years and strongly supports the recommendations of the New Jersey Campus Security Task Force Report, which include the following:

The Campus Security Task Force recommends emergency notification plans contain redundant notification delivery methods, ranging from basic person-to-person notification to more sophisticated use of electronic devices, incorporating the latest advances in technology. While the Campus Security Task Force recognizes cell phones, text messaging, emails, and other electronic means as effective tools to notify the campus community of an emergency, it cautions colleges and universities to avoid reliance on any one form of notification, particularly any system in which the delivery of an emergency notification could be limited or thwarted because of technological glitches or system failures common with certain forms of electronic communication.

The key goal of a notification plan is to notify as many subscribers as possible in as short a time as possible. To achieve this goal, the performance limits of available and emerging technologies must be understood.

The newest technology in use for notification is text messaging delivered to cell phones. As a person-to-person messaging service, this technology performs well. But when scaled up to reach tens of thousands of subscribers located in a single small geographic area (e.g., a university campus) within a short period of time, the performance can degrade significantly.

Rutgers, being well aware of the scaling and load issues, has undertaken a coordinated staged approach to deployment and test of a text messaging system. This approach provides the information necessary to understand and verify performance characteristics of such systems and allows Rutgers to effectively use text messaging as one component of its notification plan.

There are two key challenges to deploying an effective text messaging system: sending and delivering messages. Rutgers controls the rate at which messages are sent while the cell phone providers control the rate at which messages are delivered.

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Delivery is dependent on the number of calls and messages being handled by the cell network at the time messages are sent as well as the number of messages sent in a given time window. A single message sent when cell traffic is light will be delivered in a few minutes. A message sent along with 30,000 other messages when cell traffic is heavy may take several hours or may not be delivered at all.

Over the last eight months, Rutgers has deployed, tested, and enhanced a notification system. This system has been tested three times, each time focusing on a specific technical capability.

In April we tested the rate at which we could send messages and determined we could send several thousand messages per minute – more than enough to effectively notify the community.

In July we tested end-2-end performance on a subset of 5,000 subscribers at a time when cell phone traffic was light. This test was designed to verify that we could send and deliver a small number of messages at an acceptable rate. This test delivered 3,500 messages within 30 minutes and delivered 4,000 of the 5,000 messages sent.

Based on the results from these two tests, we decided to perform a full-scale test when cell phone traffic was high. This test was performed in November using 30,000 subscribers at a time when cell traffic was at its peak for the day. This test delivered 10,000 messages within 30 minutes and delivered 15,000 of the 30,000 messages sent. The November test reached three times more subscribers than any previous test but also highlighted the diminished performance associated with sending a large number of messages at a time when the cell phone system is heavily loaded.

In parallel with this full scale test we began evaluations of third party services that have the potential of improving delivery performance when a large number of messages are sent. We expect to select and contract for such a service in the spring of 2008 and subsequently perform a full-scale test of the service to evaluate its performance.

The text message system tested in November is fully operational and remains part of Rutgers' emergency plans.

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