Abstract
Information Technology Services (ITS) supports 117 applications, the network and servers for the health center. ITS wasn’t always aware of the impact when a system was taken down. There was no comprehensive, coordinated effort to communicate events, putting mission critical systems at risk and at times burdening the server team with too many events on the same day. DEMN was built using Cold Fusion® and the Remedy® Action Response system. DEMN is used for planning and approval of downtime events as well as a vehicle to communicate unplanned event to the Help Desk, and subsequently, the end-user.

Introduction
Due to the consequential nature of information systems in a healthcare environment, a goal was established for ITS to provide 99.9% network uptime for our Academic Health Center. The most common and most arduous problem was the issue of managing network and server downtime (planned or unplanned) within our institution. With over 10,000 live ports and fourteen servers to manage, the task is quite complex. Disruption of computer systems within clinics and medical departments equals disruption of healthcare delivery, ultimately affecting productivity and reducing the overall quality of healthcare.

Methods
After initial analysis the group agreed on protocols for managing planned or unplanned downtime events. First, ITS administration mandated that DEMN would be used universally across the department and sanctions were imposed if this process was not followed. Second, an authorization process was established with management and system administrators. Third, communication of the event had to be automated utilizing alphanumeric paging, e-mail and by posting a notice of the event on the computer support web site.

The DEMN system would ultimately relay all the following information to any member on the notification list:
- What system is down
- Down time as well as expected up time
- Responsible technical group
- Details of the event

The DEMN system was developed by using the Remedy® Action Request system, currently being used by the Help Desk. Cold Fusion® was used to develop the web front end. Data from DEMN are stored in the data warehouse, which is in Oracle. When a planned downtime period is being planned, upon opening DEMN, the user first sees the calendar view. Then based on the best day for the event, the user submits the downtime and designates the appropriate managers and administrators to approve the event. The approval team receives notifications with hyperlinks to the event in question. After approval the event is posted and e-mail goes out to the mailing list. On the day of the event, a notice is posted to the support web site, in hopes of educating the user experiencing problems, before they log a trouble ticket. The whole process only takes a couple of minutes to adequately communicate the event. In the event of an unplanned downtime the DEMN system also pushes out messages to the mailing list about what is occurring and when the estimated uptime will be. Details about the problem are logged.

Results
DEMN went live, after an initial pilot phase, on August 1, 2000. Between August 1, 2000 and February 28, 2001, 576 planned events and 500 unplanned events were logged into the system. Overall, DEMN has been a success as communication within the department and to our customer environment improved. Directly, the DEMN system serves the technicians, system administrators and clinical managers the most. When managers are informed, they can implement a back-up plan for business continuity. System administrators are able to communicate with other administrators and upper management about the downtime event, lessening the possibility of communication breakdown. Technicians are able to know in real-time what disruptions are occurring and how that might effect their own systems and productivity. Indirectly, providers, patients and the rest of the staff benefit when technical interruptions are kept to a minimum and when they must take place; alternate plans can be smoothly implemented. Keeping everyone informed is critical for quality delivery of healthcare and for the overall morale of employees.