

Strengthening the Foundation: Operationalizing Excellence

Office of Information Technology
Emory University
Annual Report
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Office of Information Technology:

- *Vice-President for Information Technology and CIO*
- *Chief Enterprise IT Architect*
- *Chief Information Security Officer*
- *IT Finance and Administration*
- *Research and Health Sciences Information Technology*
- *University Technology Services*



EMORY UNIVERSITY

Executive Summary

The Office of Information Technology (OIT) made significant progress in achieving operational excellence in the core foundational areas that have been a focus for the past three years. Advances in academic, administrative and research initiatives; as well as in standardization, communications and infrastructure initiatives all helped to contribute towards operationalizing excellence across the Division. In addition, two key new members joined OIT; a Chief Information Security Officer (CISO) as well as a Chief Information Technology Architect (CITA). The impact of the two positions in helping Emory refine its approach to collaboration and integration in an increasingly complex world has just begun to be realized. Finally, OIT's central operational unit, University Technology Services (UTS), continues its record of solid performance, while working towards a new organizational structure that would more broadly prepare it for tackling technical challenges in the University's future. These steps in isolation represent significant efforts to focus OIT resources on Emory's strategic priorities; taken in aggregate, they provide an ever more unified and cost-effective approach to summoning the strengths of IT on behalf of our Institution.

The reward for focusing on a sound foundation is already being realized in the Research and Health Sciences IT Division, which was formally launched a little over a year ago. This group of IT professionals assists researchers with everything from the preparation of IT requirements for grant proposals to building collaborative environments that help investigators work together more effectively. This division also partners with the IT leadership in Woodruff Health Sciences Center schools and units on optimizing processes that support their academic and research activities. Two of its most significant contributions to the University this past year include an evaluation initiative for a research collaboration platform to be utilized securely both within and outside of Emory, as well as the implementation of the High Performance Compute Cluster, which just 10 months into its launch has over 56 users who have run over 1.9M CPU hours of computational work.

Part of OIT's growing strength is also being recognized in additions like Brad Sanford, who joins Emory University as its first CISO. Brad comes to Emory with over 18 years of IT experience in the healthcare field, working for companies such as Humana, Vanderbilt University Medical Center, and most recently, HCA. For the past 11 years, he has focused exclusively on architecting, implementing, and managing information security solutions and programs within these organizations. His experience at Vanderbilt is particularly valuable, given that the challenges of providing information security on a university campus are often quite unique compared to the typical corporate setting. Brad co-hosted Emory's annual security conference in partnership with UTS's security team this past year, raising awareness of many of the essential precautions that need to be taken around university and healthcare data—all the while raising the profile of security awareness across our community. Brad has overarching information security responsibilities for both Emory University and Emory Healthcare.

The past year was marked by the Office of Information Technology's (OIT's) mastering its approach to the foundational issues that have been its core focus for the past three years.

Steve Wheat also became part of the leadership of OIT this past August, joining the team as Emory's first Chief Information Technology Architect. Steve was formerly the Enterprise Architect for the University of Illinois system and the President of Open Integration Incorporated (OpenII), a software and consulting firm focused on enterprise application integration. Steve has over 15 years of experience in software development and enterprise architecture, and began his software development career working on German language parsers. Steve's new position was designed to coordinate and lead information technology architecture activities across Emory University and Emory Healthcare, with a focus on application integration, application development, and portal design. Some of Steve's initial activities will be to form and chair an enterprise architecture council and to use this forum to review and approve the standards, methodologies and products that will serve as the foundation for our future application integration and development activities. Steve's extensive knowledge and experience will help accelerate many of the critical foundation projects within the Office of Information Technology in the years to come.

Amidst all of OIT's units, UTS University Technology Services (UTS) is proud to have completed its inaugural year as a converged organization, bringing a more unified and cost-effective approach to the provisioning of IT across the campus. This new division not only combines the former AAIT and Netcom entities; it also brings together unique capabilities from a variety of technology areas in support of improved user experiences across the institution.

People who print on campus are migrating to the new "Pharos" printing solution implemented over the summer. The new system brings multiple schools and departments into a common, industry-leading solution that offers greater reliability, significantly lower cost, and sustainability advantages. OPUS was also treated to a successful upgrade cycle bringing a new look, new features, and better performance across the PeopleSoft suite. Other key services grew over the summer, with explosive growth in the content available on iTunes U and a much welcomed increase in the LearnLink quota. Quieter growth happened behind the scenes as improvements in server provisioning created opportunities to expand development and testing environments for a number of important applications including R25.

Convergence seems to be happening everywhere these days and that includes both Emory's email and infrastructure. UTS successfully migrated 13,000 healthcare users onto the Microsoft Exchange email system which now has 19,000 active users. Working closely with Apple, Emory was one of only a handful of organizations to participate in a pilot project to make the iPhone fully functional with Microsoft Exchange. In the network, the work of consolidating telephone systems continues apace and brings with it some exciting ties between voice mail, email, and fax service as well as new capabilities for remote workers and cell phone users.

These exciting projects represent a small portion of the broad fundamental work that happens each year inside OIT, with additional details to follow. As many of the foundational projects come to a close, OIT is beginning to move into a new wave of effort related to improving the capacity and efficiency of the organization and eventually paving the way for more customer centered innovation. We look forward to those challenges in FY09 and to helping each of our partners be successful in helping Emory create the future.

University Technology Services (UTS) is proud to have completed its inaugural year as a converged organization

Issues and Risks

Critical Issue: Infrastructure Renewal Funds. The key to maintaining any infrastructure is an appropriate, effective, and continual renewal of that infrastructure. One of the key foundation initiatives within OIT and UTS particularly is to properly fund the active renewal of the various components of the infrastructure, including the voice, data, and wireless networks as well as the server, storage, database, and web layers. At present, the networking refresh is built into the rate structure of UTS but appropriate server and storage renewal will still take several additional years of dedicated reallocation before a healthy life cycle of equipment is achieved.

Critical Issue: Compass Readiness. It is no surprise that the largest IT project to hit UTS in many years is having a straining effect on every area of our technology resources and staff. Project Compass is imposing demands by pulling business analysts into the project team. The same will likely happen to programmers during the “build” phase. In addition, recent estimates indicate that simply writing the interfaces and data conversions for the PeopleSoft Student and HR systems will consume all of the remaining 6300 hours of available developer time between now and March 2009. This will effectively freeze development on HR and Student but also on key Emory Shared Data work. Additional drains will be felt by the data warehousing team as they prepare for the Financials Warehouse project that remains to be funded and by the systems team as they install the hardware and systems environments needed to host the production, QA, development, testing, conversion, and training instances of the product.

Academic Initiatives

Online Learning: Emory's Learning Management System, BlackBoard, saw record growth over the past year. UTS' Interactive Technologies Team supported nearly 5000 separate courses and 565 distinct organizations, significant growth over the 3233 courses and 163 organizations that resided on the system last year. Some of the more exciting activity related to deploying new role-based learning portals within BlackBoard for the Emory College Class of 2012 as well as for the School of Medicine's Anesthesiology program.

One distinct BlackBoard effort involved a collaborative effort between UTS, Campus Life, the Office of Undergraduate Education, and the Provost's Office to plan and develop an e-Portfolio pilot for the class of 2012. Launched alongside the Class of 2012 Portal, the project resulted in over 2000 users including faculty (FAME), staff, and students working on a set of custom developed templates and tutorials to provide an enhanced advising system.

Other learning system enhancements include LearnLink, Emory's unique online community, which received a storage, server, and hardware upgrade in order to provide students with a larger quota. Insight, Emory's image database, added collections including the Scholars Resource Collection and three externally-hosted collections of rare books and papyri. Significant work was done alongside Emory's General Library to introduce DiscoverE, the new web-based front end to Emory's library collection. Finally, Emory College's unique project with UTS around the Holocaust Denial on Trail website, featuring the work of Holocaust scholar Deborah Lipstadt, resulted in website translations into Arabic, Farsi, Russian, and Turkish—all prominent languages of Holocaust denial.

Finally, much development attention was directed at Emory's instance of iTunes U, an online global repository of audio, video, and text. Launched in January with 13 classes hosting active content, the site has expanded this fall to nearly 50 courses. The iTunes U external site, which will be accessible globally, was architected over the summer and is expected to go live in October 2008 with more than 40 collections and 800 tracks. Training and general info sessions on podcasting and iTunes U have reach more than 500 members of the Emory Community.

Centers for Educational Technology: The Centers for Educational Technology supported over 160 regularly scheduled classes and teaching assistant sections and led over 450 workshops and technology training classes during the 2007-08 academic year. These included a newly redesigned Emory College online summer workshop hosted by ECIT devoted to teaching faculty how to use podcasting as a pedagogical tool; the TATTO program training over 275 graduate students how to effectively blend instructional technologies into their teaching; the Emory College Language Center's summer iPod workshop; and the new Faculty Digital Certification program.

The Computing Center at Cox Hall saw record-breaking student use of its facilities, with close to 150,000 entrances (29% increase over 2007; 43%

increase from 2006) and over 900 individual room requests scheduled for students and student groups during fall and spring semester. Now seven years old, the lab is more popular than ever, suggesting the opportunity to leverage the collaborative lab model more broadly across campus.

Classroom Support: UTS' Classroom Technologies group received 36,550 requests for service in this past year, an increase of over 30% in our support requests for Emory College classrooms.

OIT: Focusing on Sustainability...

Crestron Roomview AV management system grew to include over 100 spaces (up from 60 last year), enabling lamp-life and audio visual equipment monitoring, and real-time help for a greater number of users.



The group's service point added over two dozen video cameras, iPod recording packs and digital recorders to our equipment loaner pool -- expanding options for customers who wish to digitally capture lectures, events and special projects for use with Blackboard and/or iTunes U.

The team partnered with the College to design 20 technology enabled classrooms, labs, meeting rooms and common-spaces in the new Psychology Bldg (building completion targeted for Spring '09). The August '08 opening of Few freshman residence hall spaces included two College classrooms, multimedia room, a collaborative Media Den, a Demonstration Kitchen w/ meeting space and multiple LCD displays throughout the facility. AV upgrades were planned and implemented in the Journalism computing classroom, three registrar classrooms and multiple department classrooms. Data projector upgrade replacements were completed in over 30 College spaces.

In addition UTS, working through the auspices of the Office of Information Technology, partnered with the College and the Supplier Management group within the Finance Division to review AV procurement practices and execute a Preferred Supplier Agreement with AVYVE, the firm responsible for the majority of Emory's audio-visual installations. The agreement lowered acquisition costs between 5-10%, reduced the cost of project consulting and design, and provided reductions in the cost of hardware and system maintenance. In addition, the newly executed agreement provided immediate benefits to departments in the form of archived engineering and systems data, training opportunities, and preferred access to AVYVE designers when planning new facilities.

Video Services: An area of burgeoning growth is the video services unit within UTS, including streaming audio and video as well as video conferencing. Streaming for academic and special events grew to a total of 1,402,089 clips played (averaging 3,831 per day), with a total of 4,026GB of content passed over the network. A record number of 24,000 files on the server represents 662 GB of content available to users. The College, Library and School of Medicine represent the top three content areas, 289 GB, 221 GB and 204 GB respectively.

For the first time, UTS introduced 11 over-the-air digital HD channels on Emory's Cable TV System, significantly enhancing the University's system and more directly meeting the types of televisions that today's students are bringing to campus. Emory's programming now includes over 80 channels, including 18 foreign language channels.

An operational highlight for UTS occurred in the Spring of 2008 when Emory hosted a 2-way, uncompressed, 60Mb video conference using a digital codec. This high bandwidth, high speed link allowed a local lead violist from the Atlanta Symphony Orchestra to tutor 3 students at the New World Symphony in Miami Beach, real time, with no delay in the musical performance between the two southern cities.

Administrative Initiatives

PeopleSoft Financial (Project Compass): In the fall of 2007, Emory University and Emory Healthcare agreed to fund a project to replace the aging FAS general ledger system with the PeopleSoft Financial applications. The project has been christened Project Compass, because it will chart a new direction for Emory as we fully integrate our enterprise business systems. The new system will not only replace the general ledger system, but it will also offer several new modules that will address business needs currently being handled manually or with shadow systems. New modules like Grants Management, Asset Management, Project Costing and others will give Emory the ability to improve business processes and decisions across the enterprise.

In the Fall of 2007, a project team was formed with staff members from the Emory Hospitals, Emory Clinic and Emory University and in December 2007, Christopher Uher was hired to manage the implementation project. In addition to the core project team, seasoned consultants from CedarCrestone, Huron and Highland Consulting have been selected to aid and advise the team. The project team is located in the old PeopleSoft Human Resources and Student Administration team offices in 1762 Clifton Rd., Suite 200. Currently the core team consists of nearly 60 people and more people from across the enterprise contribute to the project as subject matter experts and senior management advisors providing information and guidance to the team.

During Fiscal 2008, the Project Charter and Budget were created and Phase I of the project (Project Initiation) was completed. By the end of Fiscal 2008, the project team has nearly completed phase II of the project (Analysis & Design) and Phase III (Develop & Build) will begin at the start of Fiscal 2009. When the project is implemented in September 2009, Emory will possess a suite of integrated administrative systems (PeopleSoft Human Resources and Payroll, Student Registration and Admissions and Financials) that will allow Emory to leverage a wealth of information that will improve business functions and increase Emory's competitive edge.

PeopleSoft SA 9.0 Upgrade: Maintenance support for the PeopleSoft Student Administration (PS/SA) system was no longer available on version 8.0, after August 2007. A fit-gap assessment was approved by SA Governance in Spring 2007, followed by approval for the Upgrade to 9.0 Project to begin in September 2007.

The ultimate objective of the PS/SA 9.0 Upgrade Project was to provide a vendor-supported, integrated student information system to be used by all Emory schools, central administration, and Campus Life. The upgraded system provided enhanced functionality that improved many current business processes while taking advantage of new technology, such as functional-configured pagelets and XML Publisher.

OIT: Focusing on Sustainability...

PeopleSoft HR Process Improvement: After the PeopleSoft HR upgrade to 8.9 in July 2008, the PeopleSoft team, along with the payroll offices, began an initiative to streamline payroll processing. While the goal was for all pay cycles, the focus was primarily on “biweekly Tuesdays” which calculates and confirms over 16,837 checks for both Emory University and Emory Healthcare.

In April, it was determined that the measure of “success” in payroll processing was if it was confirmed by 6:00 pm for both University and Healthcare. A specific time was set as a benchmark because exceeding past this time has an impact on regular nightly processes. If successful, the date was marked “green” on a calendar used for tracking purposes. In a culture of sustainability and being “green”, it seemed an appropriate color for maximizing resources for efficiency and accuracy in “getting out the green”. The payroll offices and PeopleSoft HR team are on their six month of “green” processing which includes all biweekly, monthly, supplemental and off-cycle payrolls.



SEVIS: In June 2007, the ISSP Office submitted a business case to replace i1440 – the system used to manage and report international students, employees and scholars at Emory University. The i1440 software support would no longer be available after December 2007. To comply with federal regulations (SEVIS), a replacement solution was mandatory.

In an effort to maximize on current vendor investments, it was determined that functionality currently existed within the PeopleSoft HR and SA systems designed specifically for SEVIS reporting. The implementation of the SEVIS module was presented to HR and SA Governance committees in July 2007 and approved for work to begin in August.

The implementation was completed in December 2007. By implementing the PeopleSoft modules, we were able to maximize our investment, remain compliant with federal SEVIS regulations and benefit from the new technology (XML publishing) in the available vendor solution.

ACE/Advance: Ace was successfully upgraded to the latest release, version 9.1, in late May and early June of 2008. The next initiative will be the upgrade to version 9.2, released at the end of July. This may appear to be a minor “dot” upgrade but the newest version offers many useful features over the previous version including more robust Macintosh browser support and the ability to generate PDF files on the fly. Advance 9.1 requires Oracle 10, so an upgraded database must also be in place prior to this upgrade.

Optix 7.1 Upgrade: The Optix upgrade has been delayed due to competing priorities although several successful rounds of testing have been completed. The new version of Optix will offer improved application performance and more flexible security. Improved text indexing and optical character recognition are also promised in the new release.

Series25 Upgrade: Series25 (including R25 and the PeopleSoft interface) was successfully upgraded in 2008. This upgrade was necessary to maintain the interface and flow of data between PeopleSoft Student and R25. As part of the upgrade, Series25 was redeployed on state of the art HP Blade servers offering high availability and improved reliability and performance.

eCOI: The second phase of the eResearch project, Conflict of Interest (eCOI), is currently in the design phase. A cross functional team consisting of developer/analysts and end users has been assembled to document current business processes and to help ensure that the finished product is user friendly.

Research and Health Sciences Information Technology

The Research and Health Sciences IT Division was officially launched in 2007-2008. This new division helps investigators apply IT in support of their research activities. It also assists with the coordination and optimization of IT across the Woodruff Health Sciences Center.

IT-Enabled Research: There were three major thrusts to developing and enhancing researcher capability in the past year. First, an evaluation project was initiated to investigate ways for researchers to securely and reliably exchange data, information, and insights across research studies and project teams that span multiple units with Emory University and with colleagues external to Emory. A second major push centered on Emory's new High Performance Compute Cluster, where, 10 months into its launch, there are over 56 users running over 1.9M CPU hours of work and research. Finally, the organization began development of key research-based solutions. These include the Research Resource Discovery application that will assist researchers in finding resources, such as tools, cores, colleagues, and grant opportunities, as well as a Laboratory Information Management solution that will assist research laboratories in their management of laboratory data as well as create a network of laboratories to facilitate exchanging data among laboratories and with researchers.

IT-Enabled Collaboration: The Research and Health Sciences Division worked with a number of partners, both local and national, to establish new, key programs. Paramount among them is the Atlanta Clinical and Translational Research Institute's Biomedical Informatics Program, created and managed to help improve clinical and translational research across Emory University, Morehouse College of Medicine, and Georgia Institute of Technology. A second partnership found the division working with the Winship Cancer Institute, where the National Cancer Institute's caTissue application was installed for WCI's Human Tissue Procurement Core. The deployment of the application assists WCI in its application for NCI's Comprehensive Cancer Center designation and also ensures compliancy with NCI's data standards for specimen management. A third key collaboration is with the Veteran's Authority. Emory worked with the Atlanta and National VA to work out ways to continue to exchange data within the VA's new information security guidelines.

Supporting Emory's Strategic Plan: With a core goal of supporting the University's Strategic Plan, the Center for Health Discovery and Well Being – part of the University's Predictive Health initiative – was one of Research and Health Science IT's initial customers. Working in partnership, the unit designed and deployed the Center's participant portal and database. The portal consists of over 15 standard surveys and over 10 points of instrument integration. In total, the portal captures and manages 763 data points for each participant that goes through the Center's study, a central gathering point for research as the Center grows and expands its capabilities in the coming years.

Standardization, Centralization, and Process Improvement

F&A Transition: This effort created a centralized Information Technology (IT) support team within UTS providing services to the various F&A administrative units as well as the executive offices of the President, Provost, Research Administration, and Woodruff Health Sciences Administration. The goal of the initiative was to consolidate functional expertise across multiple administrative units in order to increase efficiencies, promote standards, and provide a consistent quality of support. The team was consolidated on September 1, 2008 under a new manager, hired through an open nationwide search process. An Advisory Committee was formed to oversee the transition and finalize a standard Service Level Agreement (SLA) for the new service.

Cascade (Web Content Management): Starting in December 2007, a cross-Emory group was assembled to review a University-offered web content management solution. This group included representatives from UTS, Emory College, Woodruff Library, School of Medicine, School of Public Health, and Emory's Creative Group. Following an extensive vendor selection process, the campus selected Cascade Server. Cascade is a product from Hannon Hill, an Atlanta-based firm specializing in providing web content solutions for higher education. Cascade is a powerful solution that's browser-based, easy to use, is standards compliant, and has sophisticated workflow. The new Emory Homepage, as the strategic business driver for this initiative, launched in August 2008 using the Cascade web content management service.

Web Hosting Migration: To address stability and performance issues with the existing Emory web hosting service, UTS designed and implemented a scalable and highly available solution to host over 200 websites for the Emory community. The new service provides three options for Emory web developers based upon their individual needs: Standard, Advanced, and Enterprise. The UTS web team consults with each customer to ensure the correct platform is selected, provides guidance on web development standards, and assists with transitioning. As a centralized resource, it is UTS' best effort to provide Emory web developers with the customizability they might need at a level that they can support.

Process Improvement: As demands for Information Technology services continue to grow on campus, UTS is constantly looking for ways to improve our services while becoming more efficient at delivering them. To accomplish those goals, UTS engaged in an extensive process improvement initiative based upon the Information Technology Infrastructure Library (ITIL) standard framework. As a first step to identify service improvement areas, UTS examined our methods for delivering services and defined three critical processes for improvement. The results were dramatic:

- The Change Management process stabilized the environment: 94% of changes implemented successfully and overall downtime decreased by 32%.
- The Incident Management process decreased the number of outstanding customer requests from 1,565 to 255.
- The Service Level Management process defined specific goals for addressing reported issues and met or exceeded the goals for 98.8% of all requests.

Service Management Tools: One of the keys to improving operational efficiency is to implement robust tools that facilitate, automate, and ensure proper execution of standard repeatable processes. A Project Tracking system was developed to centralize the prioritization and status reporting of all UTS projects. A new Service Level Management module was implemented on the Remedy development platform to provide escalation and focus to customer requests. A new web-based notification system was implemented to alert the Emory community when an IT service is unavailable or experiencing performance issues. With over 15,000 desktops at Emory, a standard solution to centrally manage, secure, provision, and update the systems is mandatory not only to promote standards but also to expedite service. LANDesk was chosen by the DeskNet committee and implemented by participating schools and business units.

Project Management: In December 2007, UTS formally established its “virtual” Project Management Office, with dedicated project managers assembled from various UTS teams. Highlights of that office’s work include assuming responsibility for liaison activities between IT Governance committees, revising the project management methodology for UTS, designing/monitoring a new Project Tracking console, and hosting several training classes with more than 350 participants from UTS, Research IT, University Libraries, and the Human Resources Division.

Communications and Infrastructure

OIT: Focusing on Sustainability...

Server Virtualization Project: UTS deployed a server virtualization infrastructure in order to consolidate physical servers, significantly reducing power and cooling consumption & costs, and maximizing the use of server resources. The initial deployment included over 40 servers, or roughly 10% of the current server infrastructure. UTS now averages over 10 servers on one physical platform, thereby cutting our power and cooling consumption by a factor of 10. Virtualization is our default platform for server infrastructure as we move forward.



Secondary Data Center: Emory University and Healthcare completed an initial provisioning of a secondary data center at an off campus location away from Emory's primary data center, completing Phase I of Emory's Disaster Recovery/Business Continuity plan. The new center allowed for the relocation of storage and servers that expanded power, cooling, and floor space available in Emory's primary facility, and will be a suitable location for expanded, redundant services as the University moves forward.

Single Voice Platform (SVP): The acronym SVP converges three telephone systems onto one Single Voice Platform (SVP), called Avaya VoIP. The project has committed to migrate 6,447 traditional telephone sets to single voice platform by Dec 1, 2008. To-date, UTS has migrated 5,220 sets, an 81% completion rate., UTS has completed installation for the vast majority of Emory University Hospital, Rehab Center, Wesley Woods, Pediatrics, EUH Annex, all the blue lights and elevator phones, Mason Guest House, and some departments in NDB.

Accompanying the introduction of SVP is Modular Messaging (MM), our new state-of-the-art Voice Mail System which was introduced last year. Modular Messaging will showcase some new features, including: Find Me/Follow Me, web access to your voice messages, and the capability to play messages on your PDA or PC, just to name a few. Modular Messaging is provided to single voice platform users only and will be offered to everyone on the single voice platform within the University and Emory Healthcare.

Exchange Migration, Healthcare and University: The Emory Healthcare Exchange project included the migration of Emory employees from the GroupWise email and calendaring platform to the new Emory Exchange platform for email and calendaring. Approximately 13,000 accounts were migrated in late February 2008. Since that time, an additional 6,000 University accounts have been migrated, enabling a common email and calendaring solution across Emory. This service will also provide the foundation for UTS' newly introduced Modular Messaging (MM). Consistent with the migration *to* Exchange for email and calendaring, is the migration of all schedule keeping *from* Meeting Maker to

Exchange. By December 2008, all individual and group meetings will be scheduled using Exchange.

Emergency Communications: As Emory University continues to expand in reputation, stature, size and population, the need to reach out with multiple communication pathways in an emergency is paramount—3 new notification systems were implemented in 2007-2008:

- **Alert Notification System:** A system that allows a text message to community member's cell phones and PDA's. Over 90% of the campus chose to 'Opt In' to participate such that a single text message can be broadcast to a large contact base in a very short time frame. Further development will allow for targeting specific groups to include a particular floor in a building or a particular class or group across the enterprise. A successful text alert was sent in March '08 to registered Emory students, faculty and staff; subsequent monthly testing has been equally successful to date.
- **Sirens & PA System:** 8 sirens were installed across Emory in the last fiscal year – parking decks (Michael St, Peavine, Starvine), Pediatrics Bldg, Gatewood Rd, Oxford Campus, Briarcliff Campus & 1762 Clifton Road. Site selections were based on siren range and audience density to maximize communication. The system has been tested successfully on a monthly basis since September '07.
- **CATV Banner System:** A new generator was installed to support the capability to broadcast alert notifications as a streaming banner across all channels in the line-up on the Emory Cable TV system using network access.

New Firewall Infrastructure: In March, UTS completed the refresh of Emory University's firewall infrastructure. The new firewalls are capable of passing traffic at rates ten times faster than the old infrastructure. This increased speed has opened the possibilities for higher bandwidth connectivity (>1G) to external partners.

OIT: Focusing on Sustainability...

In addition to the increased speed the new firewall infrastructure utilizes virtualization technology, which has made it possible to combine multiple virtual firewalls on to a single piece of hardware. This has the advantage of reducing the amount of space, power, and cooling required for the firewall infrastructure.



This technology is also more scalable because a virtual firewall can be added, as was the case for the HIPAA core and Healthcare DMZ, without the need to purchase additional hardware.