



THE UNIVERSITY *of* NORTH CAROLINA  
**GREENSBORO**

**DIVISION OF**  
**INFORMATION TECHNOLOGY SERVICES**  
**ANNUAL REPORT**  
**2007-2008**

**June 2008**



## UNCG INFORMATION TECHNOLOGY SERVICES ANNUAL REPORT 2007-2008

### I. INTRODUCTION

Information Technology Services (ITS) is UNCG's central technology organization, providing computing, communications, data services, and technology planning. ITS is responsible for planning and management for the transmission and utilization of data, voice, and video in support of the University's academic and administrative goals. ITS seeks to provide cost-effective solutions for approximately 20,000 clients (students, faculty, staff). UNCG has been designated by the UNC Board of Governors as an Information Technology Management Flexibility campus.

The ITS organization has 148 employees, and is divided into the following functional units:

#### **Client Services**

- The Associate Vice Chancellor's Office provides administrative services including client software sales.
- Application Services provides web and desktop application solutions and training to meet instructional, research, and general technology needs; and manages the ITS Communications Office.
- Client Computing Architecture and Technical Services supports effective use of client computing devices through provision, maintenance and repair of end-user hardware and software, including network software delivery.
- Student Computing manages the Student Laptop Initiative, ITS labs and managed print services, and oversees ITS management of end-user software licensing.
- The Telelearning Center provides video and phone conferencing services to classes, University groups, and individual clients.

#### **Administrative Systems**

- Data Management supports client reporting and data integrity.
- Management Information Systems (MIS) manages enterprise applications for campus business and academic services.
- The Information Security Office provides active security analysis, development, education, and guidance for protecting UNCG's information assets and information technology environment.

**Systems and Networks** manages the campus-wide data and voice network, enterprise computing infrastructure, and the ITS Service Center.

- The Systems Design and Architecture group administers the enterprise server environment, operating systems, and databases.
- The Network Design and Architecture group administers the local and wide area campus wired and wireless data network.
- The Voice Services and Infrastructure Development group implements the production systems and networks environments and manages campus voice services.

- The Service Operations and Support group provides operations monitoring for the central campus computing facilities and general computing support to the clients.

**Service Assurance & Project Management** provides leadership direction and support for service management and project management process improvements across ITS.

- Service Assurance is focused on designing, implementing and maintaining service definitions and support agreement processes that are client-centered and based on established internationally accepted information technology best practices.
- Project Management provides best practice project management processes and techniques, improving the successful management and delivery of ITS and Client projects and providing strategic and tactical ITS project planning support.

**Management and Budget** manages ITS cost centers.

**Compliance and Business Continuity** is charged with ensuring university compliance with select federal and state regulations, coordination of the Information Systems General Controls Audit conducted by the NC Office of State Auditor, and with development and maintenance of the UNCG information systems business continuity and disaster recovery plan.

## **II. SUMMARY OF ITS DEVELOPMENTS**

In the 2007-2008 fiscal year, ITS implemented technology enhancements, and laid the groundwork for future accomplishments, that will significantly improve and substantially change the provision and use of technology services at the University. Many efforts focused on expanding mobility of and/or access to technology services, while simultaneously seeking improvements in efficiency, reliability and security.

Technology mobility and service access has been most notably enhanced through a major refresh of the campus wireless network. This effort has made available to students, faculty and staff an enhanced wireless network which provides substantially increased bandwidth and access to the same services available on the campus wired network, while reducing infrastructure costs per square foot of coverage area and implementing data encryption for better data security. The enhanced wireless network, combined with the first year of UNCG's laptop requirement for incoming freshmen, provides opportunities for unprecedented use of technology in UNCG classrooms. In support of mobile instructional technology, ITS implemented a web-based wireless printing service and worked, in partnership with NC State, to offer the first UNCG classroom pilots of the "Virtual Computing Lab" (VCL). VCL provides students and faculty with access to academic software outside of traditional lab and office settings, whether from their laptops via campus wireless access or from off campus.

The 2006-2007 focus on efficiency and effectiveness continued in 2007-2008 as ITS carried out recommendations identified by President Bowles' PACE initiative and ITS internal cost-control measures. ITS helped the University realize substantial efficiency gains and/or cost reductions through the following:

- The Banner HR "go-live", scheduled for July 1, 2008, which will complete the installation of all major Banner modules, consolidating the University's major ERP functions into a single, integrated system. This will enable a more holistic perspective on the University's data resources – promoting continued development of Banner operational data store (ODS) as the University's primary data source and consolidation of WebFocus as the centrally supported reporting tool for all Banner modules.
- A major server virtualization effort that has allowed separate physical servers to be consolidated into a more cost-effective, disaster resistant and manageable virtual server environment, providing approximately \$110,000 in hardware cost avoidance while improving reliability of services.

- An email outsourcing pilot with Google that led to the decision to outsource all student email to Google by Fall 2008, improving email services to students with higher storage capacity and better disaster resistance while also providing modest cost savings to the University.
- Establishment of a Centralized Hardware Procurement program in which UNCG-specific discounts and services were negotiated with vendors through an RFP process – this program is estimated to save the University over \$225,000 annually on client technology purchases while also offering new service benefits.

Collaboration through partnerships with other UNC system schools and the UNC system as a whole also continued to offer opportunities for greater efficiency and cost-effectiveness including the following:

- The Fall 2007 launch of a UNCG-hosted Blackboard Course Management System (CMS) environment for North Carolina A&T – a partnership that allowed both universities to reduce CMS costs through economies of scale.
- The launch of two major technology infrastructure initiatives supporting UNCG and NC A&T collaborative efforts and the broader technology needs of the two Universities – the planning for a Joint Primary Data Center to be sited at the Gateway Park South, and planning efforts to build the network infrastructure to the Gateway Park South.
- A partnership with Appalachian State University that established a remote disaster recovery hot site, hosted by ASU, for UNCG’s Banner environment.
- Work in a partnership with UNC General Administration to benefit campuses across the UNC system - including support of the UNC Inter-Institutional Registration project (IIR), and collaborative development of a solution to provide timely feeds of Banner data to the PIER Crisis Communication system.

Extensive research and planning has also been carried out to lay the groundwork for future improvements in efficiency and cost effectiveness. This includes work focused on technology platform consolidation, such as the planned migration from Novell to Windows, and a feasibility study of outsourcing faculty and staff email services.

ITS also focused substantial efforts on promoting security and safety of people, their data and technology resources in 2007-2008. ITS provided resources for the design, implementation and support of several University emergency notification and crisis communication tools designed to enhance human safety and the University’s ability to respond to crisis situations. ITS also launched its first campus-wide “Security Awareness” training program for faculty and staff, focusing on client technology and data security issues. Foundational work for future security and risk management improvement continued through efforts such as the UNCG wired network refresh that will enable provision of an “enhanced services network” offering better security for University employees who handle restricted data.

As ITS plans for 2008-2009, we anticipate continuation of several current major technology initiatives to further improve services while continuing to promote efficiency and cost-effectiveness. We also look forward to the new technology needs and challenges to be identified by the University in support of UNCG Tomorrow initiatives and the anticipated new UNCG Strategic Plan.

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## **STRATEGIC DIRECTION #1**

### **Teaching and Learning:**

***Promote excellence in teaching and learning as the highest university priority.***

**(1:4) Expand use of technology to improve teaching and learning for students on campus and at a distance.**

**Blackboard:** UNCG runs Blackboard Academic Suite, Community Suite and Content System as the campus course management system. ITS is sensitive to the need for 24/7 computing for students and has architected a hardware solution that is configured to be highly available and able to withstand the loss of one data center with less than 5 minute interruption of service and no loss of data.

Not only does Blackboard support the University primary academic courses, but in addition it supports the Division of Continual Learning's (DCL) Winter Session and iSchool programs. The DCL offerings have a separate class schedule which ITS supports. This year ITS performed an upgrade to the primary University academic Blackboard instance while maintaining the previous version in production to support Winter Session and iSchool. None of the active classes experienced downtime due to the upgrade process.

Additionally, ITS, in conjunction with University Registrar's Office, Division of Continual Learning and Teaching and Learning Center, implemented a means to "combine" distance course sections which were administratively separate for tuition purposes, but for which students needed to be aggregated within Blackboard.

Hardware enhancements for the production, validation and sandbox environments have been purchased and will be implemented throughout the summer. ITS is also working with clients to develop testing procedures for Blackboard upgrades and enhancements to minimize service interruption during maintenance periods.

**Wired Network Refresh:** In the summer of 2006, ITS began a five-year refresh cycle for the wired network. To date, refresh of the core infrastructure is complete, 6 of the 8 distribution routers have been refreshed (the remaining 2 will be completed once the Forney building bond construction is completed in late 2008), the McNutt data center network has been refreshed, the Bryan data center network will be refreshed concurrent with the completion of the Bryan 235 upgrade project in early 2009, enterprise intrusion prevention and network load balancing have been deployed, and 13 campus buildings have been refreshed. Network gear in all other campus buildings will be refreshed over the remaining three years.

As a result, the main campus core network now provides 10Gb speeds for primary paths (upgraded from 1Gb) and 1Gb for secondary backup paths. Once the network refresh is completed, all campus buildings will have 1Gb connections (upgraded from 10/100 Mb).

Today, UNCG faculty, staff and students enjoy an unprecedented level of network performance and availability.

**Wireless Network Refresh:** UNCG Information Technology Services (ITS) spent considerable energy in the spring and summer of 2007 talking to faculty, staff and students across campus about their wireless computing needs. Several fundamental needs emerged from these discussions. Faculty, staff and students clearly articulated the need for unrestricted wireless access to all network services (all services available on the wired network should also be available on the wireless network), seamless roaming from one location to another, and full wireless coverage campus wide. Vice Chancellor Clotfelter charged ITS "to make networked university computing services available to all faculty, staff, and students, independent of whether they are using our wired or wireless network."

During the fall of 2007, ITS began development of a new wireless architecture design to respond to faculty, staff and student needs. The new wireless design utilizes 802.1x authentication (the industry standard for authentication) and implements a network that is WPA and WPA-2 certified

/ compliant. WPA-2 enables ITS to provide wired-like equivalent access through the use of military grade encryption. Types of network traffic that may be passed over the UNCG encrypted wireless network are now equivalent to those permitted over the UNCG wired network.

Seamless roaming from one location to another across campus has been achieved in the new wireless design by using a single universal SSID (service set identifier) for faculty, staff and students. The UNCG-FacultyStaffStudent SSID provides secure encryption with no bandwidth restrictions and no firewall restrictions beyond those also in place for security purposes on the wired network. A second UNCG-Visitor SSID is available as a self-service wireless access profile for visitors to the UNCG campus. The visitor network is not encrypted and has no firewall restrictions beyond those in place for off-campus access to UNCG resources. It does, however, have upstream and downstream bandwidth restrictions of 768Kbps.

Initial project funding was received on February 6, 2008. By August 1, the entire campus wireless network, including all academic buildings, Elliott University Center, the common areas of the residence halls, and all outdoor common areas will be refreshed with Aruba gear (replacing Cisco fat AP legacy gear) using the new design. Further, campus outdoor coverage will be expanded from existing coverage at select locations to full outdoor coverage campus wide. ITS is currently investigating further expansion of wireless services onto the HEAT buses.

**Student Laptop Initiative:** The Student Laptop Initiative (SLI) promotes use of technology in the classroom. In 2006-2007, the University recommended that all incoming freshmen purchase a laptop; and in 2007-2008 full-time incoming UNCG freshmen were required to own a laptop meeting UNCG specifications.

In support of the Initiative, ITS has continued to work with the Academic Technology Coordinating Committee (ATCC) to select and offer deeply discounted Lenovo and Apple laptops for student purchase, with benefits including a UNCG software load and on-campus support. From July 1, 2007, through early June, 2008, 1,283 laptops were sold through the program – 842 Lenovo ThinkPads (66%) and 441 Apple MacBooks (34%). The total number of UNCG student program participants (since the April 2006 launch) now totals over 2,600.

The SLI has made it possible for UNCG to begin offering courses designated as “laptop intensive,” and has allowed the ISOM department to move their Introduction to Computers classes out of the ITS computer labs and into regular classroom space, providing more flexibility in the timing and size of those classes.

**Assisted Help Center:** In Fall 2007, ITS opened an Assisted Help Center to provide assistance with connecting laptops not purchased through the SLI to the campus wireless network. This service has helped facilitate use of laptop computers in classes and for independent student work.

**Wireless and Color Printing:** ITS completed implementation of web-based wireless printing in ITS labs and at two campus kiosk locations in Fall 2007. The web-based printing service, which was defined as a high priority by both the Academic Technology Coordinating Committee and Administrative Systems Committee, enables students, faculty and staff to print directly to ITS-maintained printers from their laptops. It also allows clients to print from off-campus to ITS printers and later retrieve their documents when on campus. The web-based printing service was upgraded in spring 2008 to add support for the Windows Vista operating system. A new color printing service was also launched in response to student interest, and has proven to be popular with over 14,000 color pages printed from July 1, 2007 through May 31, 2008.

**Virtual Computing Lab:** In 2007-2008, ITS continued development of UNCG’s Instructional Virtual Computing Lab (VCL) environment, an online offering that provides remote access to

academic software available in ITS labs and/or on UNCG office computers. In spring 2008, the first UNCG classes piloted VCL using UNCG ITS-provisioned accounts and software hosted on servers managed by North Carolina State University (NCSU). ITS supported VCL services for select classes within the Bryan School of Business and Economics, providing access to software such as Microsoft Project, Excel, Visio, SAS, PhotoShop and Dreamweaver. Documentation and video instruction files were also created to introduce users to the VCL environment and its usage.

UNCG's pilot VCL environment had a total of 838 reservations, with 1165 hours of use. Primary class uses were:

- Economics 351 – 625 reservations and 675 hours of use
- ISOM 206 – 58 reservations and 50 hours of use

ITS is now working with faculty in other Schools, such as Human Environmental Sciences and the College of Arts and Sciences, to expand Fall 2008 pilots to additional academic programs.

ITS has also begun a multi-year project which will augment the NCSU VCL offering with servers hosted locally at UNCG. This will allow ITS to open the use of VCL to all faculty and students. The collaboration with NCSU on this project will allow UNCG to share their computing resources and to access other schools' resources for more efficient and effective use of technology resources located throughout the state. A dedicated engineer to progress this work at UNCG has been hired.

**Academic Software Expansion and Upgrades:** ITS continues to enhance and upgrade academic software available on the UNCG network – updates to installed packages are performed on an ongoing basis as new releases become available. In 2007-2008, availability of the specialized classroom management software NetOp School was expanded to cover all ITS open access computer labs, allowing instructor control of lab machines and enhancing the interactive nature of classroom instruction. Investigation of software for wireless classroom management and wireless collaboration in support of the Student Laptop Initiative has also continued, with plans for a Fall 2008 classroom pilot if one or more promising products are identified.

**ITS Open Access and Instructional Labs:** ITS labs continue to be an important resource both for student open-access use and for classroom instruction, allowing instructors and students to use software and hardware they might not otherwise be able to afford. ITS operated 12 open access/instructional labs in 2007-2008, with a new 41-seat lab opening in Petty in January 2008. Two Bryan Building labs were closed to be replaced by laptop-friendly classrooms at the end of spring 2008 – a change made possible by the success of the Student Laptop Initiative and UNCG's enhanced wireless environment.

**Telelearning Facility:** The TeleLearning Center continues to provide a high level of client service and facilitation of a broad range of client needs in support of learning.

The Center has a large Telelearning classroom (41 seats) and a smaller Teleconference room (5 seats) that provide interactive videoconference services to the campus. In April 2008, ITS installed a web camera and supporting software in the Telelearning Center manager's office, creating a third location in which clients can participate in videoconferences.

- The Center supported 379 TeleLearning classroom events and 214 Teleconference room events from July 1, 2007 through May 31, 2008.
- Total network use for academic classes was 320.25 hours.
- Of the 379 classroom events held in the Center, 163 (43%) were conducted over the network and 216 (56%) were conducted locally.
- Of the 214 conference room events, 184 (86%) were conducted over the network and 30 (14%) were conducted locally.

The Center continued to provide innovative solutions to UNCG clients with special learning-related communications needs over long distances. For example:

- A UNCG lecturer successfully completed a thesis defense with Massey University in New Zealand via videoconference from the Center. One participant connected from a third location in Canada via Skype. The overall quality of the videoconference service provided a positive experience for the lecturer who successfully defended his thesis.
- A Political Science professor lectured and interacted with high school students at the US Embassy in Pretoria, South Africa via videoconferencing.

**(1:6) Expand opportunities for international research, study, and education for students, faculty, and staff.**

**Studio Abroad:** ITS made modifications to the interfaces between Banner and Studio Abroad, in support of International Programs use of the web tool for managing Study Abroad.

**(1:8) Improve support services for teaching and learning.**

**Jackson Library 24/5 Access:** ITS developed a solution for the Jackson Library staff to scan ID cards of persons entering the library during enhanced service hours (Midnight to 7am). This permits the Library to restrict access to only UNCG faculty, staff and students, enhancing the physical security of library users during that time.

**iSchool Support:** ITS built a support structure targeted at identifying, supporting, and reporting on support calls related to the University's iSchool program. Work done included the creation of process and procedures for the Service Desk and specific development within the Remedy application.

**Self-Service Content Management:** Service Operations and Support has taken a lead role in the development, publishing, and maintenance of technical solution content for the 6-TECH Online Self-Service Portal. This content is available to all clients via the 6-TECH Online Portal.

## **STRATEGIC DIRECTION #2**

### **Creation and Application of Knowledge:**

***Strengthen research, scholarship, and creative activity.***

**(2:8) Use technology to expand and enhance research.**

**SAS and SPSS Training:** ITS has continued to provide on-going training and support for SAS, SPSS and other data analysis and research packages. In 2007-2008, a customized SPSS training workshop was developed and offered to suit the needs of a campus research center. Client feedback indicated the researchers found the training valuable for their data analysis needs. ITS also continued to make SAS & SPSS available for students and faculty home use at a discount.

**Spartan Electronic Research Administration (SeRA) [RAMSES].** ITS developed interface extracts from Banner to support population of student, faculty and staff data into the SeRA. Additionally ITS provided data matching and technical assistance to Office of Research staff in cleaning up five years of prior proposal data for conversion into SeRA. ITS provides LDAP Authentication to SeRA, as hosted at UNC Chapel Hill.

**RAMSeS (Research Administration Management System and eSubmission):** ITS worked with Research and Public/Private Sector Partnership department to implement the use of RAMSeS at

UNCG. RAMSeS is hosted by UNC-CH and uses UNCG authentication and a data feed developed by ITS allowing faculty and staff to use local credentials for this web application.

**SeRA Roadmap:** ITS has consulted with Office of Research staff regarding technical requirements for implementing future modules of SeRA over the next two years.

### **STRATEGIC DIRECTION #3**

#### **Campus Community:**

***Become a more diverse and actively engaged community of students, faculty, staff, and alumni.***

#### **(3:5) Promote leadership training, community citizenship, and professional development programs for students, faculty, staff, and alumni.**

**ITS Staff Training and Certification:** ITS staff continue to earn and maintain currency of certification in relevant technical fields. Highlights for 2007-2008 include certification of technical staff to perform warranty repair work on Apple computers in addition to Lenovo and Dell computers, and ITS's first certification in software license management. Additional certifications achieved included Wireless and Net-Plus. Three project managers received their Project Management Professional certification. Four of the twelve ITS staff working towards the Oracle Application Developer Associate Credential have attained it.

ITS continued its focus on Information Technology Infrastructure Library (ITIL) by certifying all members of the Service Operations, Service Desk and Service Assurance/Project Management groups in ITIL Foundations. This training and certification provides in-depth understanding of the ITIL principles and their real-world application to ensure the provision of consistent high-quality service delivery and support.

**Professional Development and Conference Participation:** ITS staff participated in a wide variety of professional activities this past year to gain new skills, to enhance existing skills, and to network with other higher-education and technical professionals across the country. Several professional conferences were attended by ITS staff and management including the following: SunGard HE Summit conference, Information Builders Summit conference, AppWorx users conference, the Data Management Association International conference, Windows Tech Ed Conference, EMC World Conference, Windows WinConnections Technical Conference, TRI-IT Education Technology Conference and NC CAUSE.

ITS staff members also presented sessions at a number of conferences this past year – including sessions at the Data Governance conference, NC CAUSE and Southeastern Regional EDUCAUSE. ITS also had a member lead a seminar on Project Time Management for the State ITS Enterprise Project Management Office.

**Technology Training Opportunities:** ITS continues to offer technology training workshops to students, faculty and staff, both with live instructor classes and on-line courses available through the Element K training system. Certification opportunities for University employees with technology responsibilities include the ITS Technical Certification Program and UNCG's Web Certification program.

#### **(3:6) Ensure a positive and supportive environment for faculty, staff, and students.**

**Staff Advisory Committee:** The ITS Staff Advisory Committee, comprised of non-management area representatives, held elections in March 2008 which resulted in six returning members and

seven newly elected members this year. The group met 24 times during the year, sponsored two major social events, and identified three major areas of issues of interest and importance to ITS staff, including advising ITS staff on best practice communal workplace behavior, career development and teleworking.

An ITS Assistant Vice Chancellor attended the UNCG SafeZone Training in order to learn about issues facing gay, lesbian, bisexual, and transgender (GLBT) individuals.

## **STRATEGIC DIRECTION #4**

### **Economy and Quality of Life:**

*Be a leader in strengthening the economy of the Piedmont Triad and enhancing the quality of life for its citizens.*

#### **(4:1) Establish and maintain collaborations and alliances among academic institutions, Action Greensboro, economic development agencies and industry**

**UNC Tomorrow:** ITS has facilitated UNCG's efforts in support of UNC Tomorrow by developing and maintaining the UNCG Tomorrow website at <http://uncgtomorrow.uncg.edu/>, and by providing leadership and representation on the Planning Preparation Committee.

**UNC Shared Services Alliance and other UNC Initiatives:** The UNC Shared Services Alliance (Alliance) is a forum for UNC's 16 campuses to explore collaborative opportunities across a broad range of technology development. ITS continues to actively participate in and contribute expertise to Alliance initiatives and UNC system-wide technology efforts.

- The Banner Hosting working group, consisting of four Alliance Board members, is working to implement a shared hosting environment designed to enable more efficient and effective Banner operations. With UNCG's history of Banner deployment and depth of Banner expertise, UNCG ITS has a representative on the working group as a technical advisor. The group has defined a pilot project of running Banner on donated Dell hardware hosted at MCNC to test the x86 architecture for performance and scalability.
- The UNCG ITS technical representative to the Alliance worked on the Alliance Disaster Recovery taskforce which was comprised of a consultant and two representatives of other UNC institutions. This group created an RFP for Disaster Recovery for all of the UNC schools. The Alliance is working with MCNC on a pilot to test network backup strategies.
- UNCG also continues to provide leadership for the IT Measures Workgroup which is developing "IT Accountability Measures" for system-wide reporting to the UNC Board of Governors.
- ITS, in partnership with Enrollment Services, is supporting an initiative to enable the automatic import of North Carolina High School Transcript data into Banner.
- ITS management and staff, in conjunction with the University Registrar's Office, consulted extensively with UNC General Administration Staff who are building the Inter Institutional Registration system (IIR) (<http://www.northcarolina.edu/content.php/ir/iic/index.htm>). The purpose was to ensure that the design of the IIR system would enable smooth integration with Banner from a technical alignment and functional perspective. ITS staff are using this as a laboratory to build Web Services interfaces between Banner and UNC General Administration in support of IIR transactions.
- ITS has sponsored a Service Oriented Architecture project to demonstrate the technical feasibility of feeding Banner data to the PIER Crisis Communication Platform system and the IIR system using Web Services. This demonstration project paves the way for development of a data integration model that could be used by 14 of the 16 UNC System campuses who use Banner.

**Interim Disaster Recovery Project:** In 2006, ITS requested that University clients from the five divisions prioritize their top five applications and to state their tolerance for loss of the service and loss of data both given in units of time. The analysis to mitigate the gap with known vendor solutions was cost prohibitive so alternatives were researched.

ITS designed and tested a remote disaster recovery system for Banner at Appalachian State University. As of May, 2008, UNCG is saving data at the sister school and estimates that the recovery time for Banner will be less than 4 hours and the expected data loss will be less than one hour. The team will continue working on the project to fully define and test the disaster plan. As designed, the Banner hot site at Appalachian State far exceeds the client specified requirements for recovery time and recovery point objectives, while implementing a production Banner disaster recovery hot site at a greater than \$1M annual cost avoidance.

Presently only the Banner validation database, production database, and application servers are being maintained at Appalachian State. The team plans on doing an analysis of other priority applications that can benefit from being hosted at the hot site.

**NC A&T Blackboard Hosting:** UNCG ITS is hosting NC A&T's Blackboard Learning System. The hosting arrangement offers significant cost savings for NC A&T over their previous hosting arrangement with Blackboard, Inc. This collaborative partnership has also reduced the annualized cost to UNCG of paying for Blackboard hosting (through economies of scale), while continuing to provide the same high-quality services to UNCG students and faculty.

Like the UNCG Blackboard installation, the NC A&T environment is 3-tiered and is configured to be highly available so that it can withstand the loss of a data center with less than 5 minute interruption of service and no loss of data. As part of the implementation, UNCG ITS worked with NC A&T Information Technology & Telecommunications (ITT) to upgrade the NC A&T's Lightweight Directory Access Protocol (LDAP) authentication and network capabilities to improve Blackboard performance and resilience. UNCG ITS deployed virtualized Solaris installations in a production environment to facilitate the NC A&T hosting project with a minimum outlay for hardware, and installed a backup of the NC A&T Lotus LDAP authentication server locally at UNCG which replicates several times a day.

UNCG ITS has also assisted NC A&T Information Technology & Telecommunications (ITT) in developing the data feed of students, faculty, staff and course information from the NC A&T Banner system to the NC A&T Blackboard system. As part of the migration plan for NC A&T from Blackboard ASP hosting services, UNCG ITS created an online repository of previous courses for the NC A&T Blackboard Administrators to retrieve for faculty. UNCG ITS has worked in conjunction with NC A&T ITT to utilize the UNCG ITS Change Management system to monitor changes and upgrades as part of the ongoing support agreements.

Having UNCG host the Blackboard environment for NC A&T is a win-win situation for both Universities. This partnership meets both Universities' immediate needs for cost savings and provides a working example of President Bowles' concept that increased effectiveness and efficiency can be achieved through collaborative efforts among sister schools within the UNC system.

**MCNC Wide Area Network Consulting:** ITS provided significant technical assistance and leadership to MCNC in the design and engineering of the next generation statewide network in early 2008. This consulting work culminated in a week of off-site proof-of-concept work in the Cisco RTP lab with MCNC engineers.

**(4:2) Establish, with N.C. A&T State University, The Joint Millennium Campus.**

**Joint Primary Data Center:** The information technology divisions at both UNCG and NC A&T have played a key role in developing a critical UNC Tomorrow initiative for both campuses, a project to develop a Joint Primary Data Center (JPDC) at the Gateway Park South Campus. UNCG and NC A&T are both classified as “Doctoral/High Research Activity” universities, and both need new, larger data centers. As their research and administrative needs increase, the two research universities will need increased information technology processing capacity.

The Gateway Park is a joint UNCG/NC A&T venture, and its South Campus soon will have research-focused buildings for the U.S. Department of Agriculture and the UNCG/NC A&T Joint School of Nanoscience and Nanoengineering. Powerful data center and networking infrastructure are requisite in drawing research intensive activities to the South Campus. The JPDC will accelerate the growth of the Gateway Park South Campus and the two universities.

Building appropriate data centers on the already space-constrained campuses of UNCG and NC A&T, plus the cost of building an appropriate center at the Gateway Park South Campus – three separate data centers - would cost between \$76-\$102 million. Building a single, large, robust data center at the South Campus would cost \$46 million – saving the state between \$30-56 million, plus undetermined savings in annual operating costs.

Chancellors Battle and Sullivan each have listed \$23 million on his/her university’s capital list, and will seek full funding of the \$46 million JPDC in the 2008 General Assembly session. If the project is funded by the state legislature in the upcoming session, we anticipate that design will occur in 2009 – 2010, followed by construction from 2010 – 2012, with an anticipated move-in date of August 2012.

**Network Expansion to Gateway University Research Park South Campus:** In April of 2008, UNCG ITS began a \$1.2M joint project with NC A&T ITT to expand both campuses main network fiber infrastructure to the Gateway University Research Park South Campus for the purpose of providing faculty & researchers in the Joint School of Nanoscience and Nanoengineering (JSNN) with the appropriate level of computing resources to successfully compete for national awards and perform cutting-edge research activities at the school.

The project will result in a conduit-based underground fiber installation that runs 144 single-mode strands along street right of ways from each University’s main campus to the south campus location. NCREN expansion plans in Greensboro are consistent with the planned networking build out to the South Campus. MCNC architects have been involved in design and have stated path preferences for the networking. Additional discussions will be held with MCNC management, as the JSNN networking project proceeds. This collaborative project is currently in the construction phase and is expected to complete in early winter of 2008.

**Gateway Park North:** ITS has continued to provide technical support for the Gateway Park North.

**Metro-E Expansion to North Campus:** The Gateway Park North Campus now utilizes a metro-Ethernet networking solution designed and deployed by UNCG ITS through MCNC. This business-class solution delivers a shared 10 Mbps network service to the campus and allows the remote campus to be seen, monitored, and controlled as if it were directly connected to the UNCG network equipment on the main campus.

**(4:8) Strengthen partnerships with universities, community colleges, and non-profit agencies in educating children/youth from birth through twelfth grade.**

**American Association of Physics Teachers (AAPT) Conference Support:** ITS worked with the UNCG Physics Department to provide reliable and convenient technology services including wireless access and lab software access for the Summer 2007 AAPT Conference held at UNCG.

**(4:11) Promote efforts to develop the urban environment, enhance the rural economy, protect physical and natural resources, and facilitate the integration of the Piedmont into the global economy.**

**Computing Lab Sustainable Practices:** ITS has installed energy efficient computers when purchasing new computers for the ITS open access labs. Lab computers are configured to use the most energy efficient settings possible to minimize energy use by the computers themselves and to decrease the heat in labs to reduce the load on university cooling systems. The “Pay-for-Print” system continues to lessen wasteful printing in ITS-managed computer labs as well as in department-run labs where it has been implemented.

## **STRATEGIC DIRECTION #5**

### **Access and Student Success:**

***Recruit and retain students with the potential to succeed in a rigorous academic environment.***

**(5:1) Increase efforts to recruit and retain students from diverse backgrounds.**

**INTERLINK Support:** ITS continues to create and deliver workshops for INTERLINK Language Center students. The Telelearning Center has also provided ongoing videotaping services for several sections of Interlink classes to assist students in seeing and hearing their own progress in language acquisition and usage. These taping services have been provided several times monthly.

**Adult Students Tracking:** ITS completed a project to better track adult students within Banner to support statistical analysis and consistent operational identification of adult students.

**(5:3) Become a university of first choice for an increasing number of students.**

**Destination UNCG and SOAR:** UNCG ITS continues to be involved in student recruitment and orientation activities such as Destination UNCG and SOAR. This gives ITS an opportunity to showcase key student technology offerings such as the Student Laptop Initiative, enhanced wireless network and computing labs that may encourage students to consider UNCG as an institution of first choice.

**(5:6) Encourage all divisions of the University to work together to manage enrollment growth effectively.**

**Administrative Systems Committee:** ITS continues to participate actively in the Administrative Systems Committee, which works to determine institutional level priorities and divisional priorities for ITS support. ITS also continues to participate in the work of the various Administrative Systems Governance groups that provide forums for cross-divisional discussions and decision-making related to administrative systems. The groups discuss issues such as timing of upgrades, improved data security options, assessment of new technologies, and development of multi-departmental business rules. ITS also works closely with the Administrative Systems Users

group to identify the least disruptive annual windows for implementing major Banner and ODS upgrades.

**(5:8) Support campus initiatives aimed at improving student satisfaction, retention, graduation, and career placement rates.**

**Student Satisfaction Surveys:** UNCG technology services generally receive high marks on the biennial Spartan Experience Questionnaire of undergraduate students. The Spring 2007 survey revealed, however, that student satisfaction with the e-Spartan email system continued to be relatively low compared to other technology services. This helped to inform ITS's decision to make investigation of student email outsourcing a top priority project for 2007-2008.

**Extended Computer Lab Hours:** With the Library's expansion of operating hours to 24x5, ITS shifted its late-night computing lab location to the Superlab, providing a secure location for UNCG students to compute until 3 am Sundays-Thursdays.

**AdAstra Course Demand Analytics:** ITS has supported Enrollment Services participation as a beta site/development partner with AdAstra corporation. This product, once in production, would permit UNCG to utilize degree evaluation data generated within the Banner Curriculum Advisement and Program Planning module to predict demand for courses. Accurate forecasting of demand to drive offerings can smooth students' path towards graduation.

**Career Services Reference System:** ITS has completed work on a custom module of Banner to support Career Services management of references.

**(5:10) Ensure that quality student services are available to meet the needs of all learners.**

**Lab and Technical Support Availability:** ITS continues to provide evening and weekend hours for the Laptop Support Center and select ITS labs to meet the needs of students not on campus during the 8am-5pm workday.

- Through the Laptop Support Center, ITS ensures the availability of quality student services through the provision of timely, on-campus support for student laptop computers purchased through the Student Laptop Initiative. Most students are provided with same-day service in the Laptop Support Center unless parts not in stock are required for repair. Loaner computers are provided to students when repairs are estimated to take two or more days, minimizing the time they are without a laptop computer for class work.
- From July 1, 2007 through mid-June 2008, the Laptop Support Center resolved 1,226 laptop service requests from students, including software support and hardware repairs. In spring 2008, ITS was awarded a special honor from Lenovo for excellence in the Lenovo Self-Maintainer Program in which ITS staff perform Lenovo warranty and accidental damage repairs. ITS was recognized for excellence in correctly diagnosing and repairing problems, placing UNCG in the top 15% of self-maintainer service providers.
- Assistive technology continues to be implemented in ITS labs to facilitate technology access for students with physical and/or learning disabilities.

## **CORNERSTONE #1**

### **Public and Private Support:**

*Pursue and effectively use all sources of public and private support.*

#### **(C 1:6) Strengthen relations and affinity with UNCG alumni.**

**Harris Alumni Online Community:** ITS has worked extensively with Alumni Affairs and Advancement Services to build a two way interface between Banner and a new externally hosted Alumni portal. When this launches in the summer of 2008, UNCG will have a modern tool for electronic engagement with alumni.

**Alumni House:** An ITS Assistant Vice Chancellor has served as the co-chair of the Alumni House Committee during the renovation of the Alumni House. This group has oversight for house use policies as well as interior furnishings and decoration.

## **CORNERSTONE #2**

### **Technology:**

*Strengthen technology resources for effective use in academic programs and administrative services.*

#### **(C 2:1) Strengthen technology services available to the campus, while implementing cost-effective technology solutions that take advantage of economies of scale.**

**Campus Network:** The UNCG main campus network communications infrastructure is a high performance, high availability design able to withstand the loss of one of the two data centers. The metropolitan area network (MAN) consists of more than 750 network switching devices, and over 25,000 network access ports. The MAN serves more than 8,400 devices throughout the campus, transmitting almost a terabyte of data on a daily basis.

**Deployment of MPLS:** Concurrent with the wired network refresh, ITS deployed a Multi-Protocol Label Switching (MPLS) architecture. MPLS has enabled ITS to provide separate layer 3 logical/virtual networks over the same physical infrastructure. ITS can now rapidly provision many different, need-specific custom networks to different user groups on campus using a single set of infrastructure. Over the last year, ITS has used the new MPLS capabilities to provision a number of custom networks to meet client-specific campus needs.

**Cable Plant:** All campus network communications depend on a multi-million dollar fiber optic ring infrastructure, consisting of 96 strands of multimode cable, and 48 strands of single mode cable which interconnect a ring of two core and eight primary distribution facilities. Each distribution router has dual redundant paths to the core network.

Each of the 73 buildings on campus is connected to the ring using 24 strands of multimode fiber and 12 strands of single mode fiber that terminate in ITS managed telecom closets and are dual-homed to two network distribution routers. In all cases, there are multiple diverse network paths with no single points of failure. If one path is down, another path will become primary without service interruption.

The North Carolina Research and Education Network (NCREN) is our Internet Service Provider. Connectivity is via gigabit Ethernet over single-mode fiber optic cable to a downtown regional

point of presence (RPOP) at 301 South Elm Street. An OC48 based self-healing fiber optic ring connects UNCG redundantly to NCREN in Research Triangle Park.

**Telecom Closets:** All of the 224 active telecom closets on campus are 100% data and voice converged. UNCG owns the pathway and the fiber. AT&T owns the copper cable plant. In spring of 2008, ITS developed new telecom closet standards which have been approved by Facilities Design and Construction and incorporated into the campus master building construction specifications.

In summer of 2008, ITS began a joint project with Facilities Design and Construction to remediate telecom closet security issues and bring these facilities up to an acceptable audit standard by isolating the function of the campus telecom closets to provision of ITS managed data and voice services only, and securing access to the closets by installing Millennium locks on every closet door to prevent unauthorized access.

**Next Generation Voice Services:** The current voice environment consists of a Centrex system with approximately 3,000 lines. A number of factors will affect UNCG's strategic plan for voice services. The University's current Centrex contract expires in 2010 and will either need to be re-negotiated or terminated. Housing and Residence Life has eliminated land lines in the dormitories in 2008, which cut the total number of voice lines on campus by nearly half. UNCG has a highly robust wired and wireless network infrastructure, as well as fully converged telecommunications closets, which will enable wired and wireless VoIP to be a viable alternative for voice services at UNCG.

ITS has nearly completed a project with Western Telecommunication Consulting of Los Angeles to develop a comprehensive, detailed strategic plan for voice services at the University of North Carolina Greensboro. The deliverable for this engagement is a comprehensive strategic plan for offering the highest quality of voice services at UNCG in the most cost effective, efficient manner possible. The strategic plan will include a detailed financial model and implementation strategy. This engagement is expected to complete in early summer 2008.

**High Availability Enterprise Systems:** ITS operates network attached server operating systems on Novell Netware, MS-Windows, SUN/Solaris, and OpenVMS. Today, all enterprise level application servers reside in the two campus data centers. The primary enterprise level (mission-critical) applications are SunGardHE Banner, Blackboard and Lotus Domino.

UNCG has adopted a preferred high-availability model to which most critical applications are architected. The standard for application survivability at UNCG holds that while the client may become aware that a failure has occurred, the only required recovery action for the client is to re-establish their session with the software application after the redundant system automatically "kicks in" -- typically within a few minutes. This semi-transparent fail-over provides a solution which can approach 100% uptime without the high costs associated with fully transparent fail-over.

**Banner:** ITS completed a number of critical upgrades to the enterprise Banner environment this year, including implementation of full high-availability failover for Banner ODS, modifications to the environment and management of multiple databases, backups and retentions in support of the campus transition to Banner HR, an upgrade of the Banner validation environment, implementation of increased storage area network capacity and development of a coordinated monthly account expiration process.

**Identity Management:** UNCG has a locally developed account provisioning solution which manages user accounts and access to enterprise systems. Currently there is a campus accessible

LDAP authentication service which allows several services to take advantage of a single username/password solution. UNCG has an external facing LDAP authentication service allowing students, faculty and staff to use services at UNC-CH and NCSU with their local UNCG credentials.

ITS Systems is working with GA as part of the Inter-Institutional Registration (IIR) project to be part of the Alliance federation to allow students from UNCG to authenticate with UNCG credentials and gain access to class registration at sister schools. ITS has begun implementing role based access by defining roles within our directory which allows users to be granted access to services based on their affiliation with UNCG. Access to the Google email pilot for students was limited to those persons who were only classified as students.

ITS has begun a multi-year Identity Management project which will work to define roles and business rules for access to services. In addition the project team will select identity management software that will improve account provisioning, auditing and position UNCG to be a viable member of resource sharing federation among other institutions. In conjunction with the GA Inter-Institutional Registration project, ITS has installed Shibboleth which will allow UNCG constituents to authenticate with UNCG credentials and use the IIR service. Shibboleth is the educational community single sign-on standard.

**Novell to Windows Transition:** The use of Windows server has increased at UNCG over the past several years and has put a strain on the group supporting the Novell and Windows infrastructure. Since these two solutions offer similar features a project has begun to examine the feasibility of removing the campus dependency on Novell, consolidate delivery of desktop computer applications, file storage and print services to one platform, position ITS to support the VISTA desktop operating system and demonstrate cost avoidance to the University with the PACE initiative goals of increased operational efficiency and effectiveness. The application delivery research is almost complete and will be followed by file services and print services.

**Disaster Recovery Plan:** In June 2008, ITS completed a project with Lurie, Besikof, Lapidus & Co., LLP of Minnesota to develop comprehensive technology availability plans for the Banner and Blackboard services under two different disaster scenarios: 1) a pandemic flu and 2) loss of both data centers. The end result of this effort was development of a detailed written assessment and gap analysis of the ITS current state of readiness to meet University recovery time and recovery point objectives for the HRS, Banner and Blackboard services in the event of a pandemic flu or loss of both data centers, as well as development of detailed written operating procedures that each disaster recovery team member will be responsible for executing for the essential services under these two disaster scenarios, and testing of each technology availability plan with disaster recovery team members.

**UNCG Student Email Outsourcing:** In fall 2007, UNCG ITS successfully conducted a student email outsourcing pilot which revealed high levels of satisfaction with the “Google Apps” for Education email service. This pilot led to the decision to outsource UNCG student email to Google for Fall 2008, which will place UNCG among the first UNC campuses to implement this PACE initiative. The Google service will provide an enhanced level of student email service (e.g., expanded storage capacity, enhanced redundancy and disaster resistance) while costing the University less than running its own student email system. In June, 2008, ITS hosted other UNC institutions for a Google information sharing day; and, throughout the pilot, has provided information to other UNC system schools interested in email outsourcing. ITS has also begun a study of the feasibility of outsourcing faculty/staff email.

**Email:** UNCG’s current email environment includes spam filtering, list serve capabilities and Lotus Notes email and calendaring. UNCG presently manages 10 servers for email spam filtering

and 14 servers for student/faculty/staff email and calendaring. Over the last year, nearly 2 billion connections were made to UNCG servers from the Internet requesting to deliver email. 97% of these connection attempts were blocked as SPAM by the PureMessage SPAM filtering environment. More than 89 million emails were routed by the UNCG Lotus email system.

Some of the milestones achieved this year were:

- Successfully implemented network “edge rejection” of incoming email to non-existent addresses allowing UNCG to avoid having to buy additional servers for managing the ever increasing number of internet emails.
- Implemented additional email gateway to support further segregation of mail traffic, helping to better avoid and/or respond to blacklisting which disables the ability for UNCG to send emails off campus.
- Implemented email gateway customizations to accommodate campus emergency notification system.
- Migrated email list processing server to upgraded hardware.
- Implemented redundant mail servers for faculty and staff across two data centers minimizing service outage.
- Developed scripts to help attorneys and clients manage and select messages as required.
- Implemented load balancing of incoming edge servers to improve mail performance and efficiencies of email security and transport system, to successfully process more mail without buying more servers.
- Continued to grow and increase the Blackberry presence of faculty/staff using the enterprise server allowing for better/faster communication with email and calendaring.

**Software for Home Use:** ITS continues to use volume licensing opportunities to offer a variety of packages for discounted purchase for clients including MS Office, anti-virus software and data analysis programs to install on their personal computers. In support of the Student Laptop Initiative, ITS has worked with academic departments such as the School of Music to negotiate discounts for curricular-specific software where feasible.

Discounted software offerings have grown considerably in the past year, resulting in a 25% increase in sales to clients as compared to 2006-2007. From July 1, 2007 to early June, 2008, nearly 1,000 UNCG clients had been served through direct ITS software sales, with additional clients purchasing discounted software on-line through ITS-negotiated discount programs.

**UNCG Centralized Hardware Procurement:** In fall 2007, UNCG proposed to the Executive Staff the implementation of a Centralized Hardware Procurement program designed to reduce University hardware costs while improving inventory/lifecycle management and support service. With Executive Staff approval, in early 2008, ITS issued an RFP for proposals from computer hardware vendors for volume discount pricing on six standard computer models including two laptop computers and four desktop computers. The Centralized Hardware Procurement program (CHP) provides for attractive pricing of standardized model types, central receiving and inventory of program equipment, expedited support for program equipment, and improved relationship with partner vendors.

ITS maintains UNCG’s CHP website at [http://its.uncg.edu/Technology\\_Purchases/CHP/](http://its.uncg.edu/Technology_Purchases/CHP/) . Dell was the first vendor accepted into the CHP program on April 15, 2008. Through Dell’s dedicated UNCG CHP online e-store, approximately 135 laptops and 383 desktops were procured from April 15, 2008, through early June, representing approximately \$600,000 of equipment. Lenovo was added to the CHP program in late May 2008, and ITS continues to work with Lenovo to make their online e-store ready for operation.

Discounts for desktop computers exceed 40% over standard education discount pricing. Discounts for laptop models average more than 10% over standard education discount pricing. Other CHP benefits consist of the inclusion of accidental damage protection in the price of all laptops, and, a service currently being implemented, in which the vendor pre-loads a standard UNCG software suite before shipping a computer to campus. A limited supply of loaner laptops will be available to clients while their own laptops are being repaired, beginning in 2008-2009. The program is expected to save the University over \$225,000 annually in hardware costs for desktop and laptop computers and monitors.

**Universal Data Backup Solution Study:** In response to a request from the Faculty Senate's Academic Computing Committee (ACC), ITS led a project to research, test and recommend an online computer backup solution for faculty. User requirements were determined through a series of meetings with the ACC. After evaluating twelve backup options, ITS recommended that service be provided through a leading online backup provider, Iron Mountain. That proposed solution was accepted by the ACC which made a recommendation that the Iron Mountain service be implemented for all UNCG faculty. If funded, this backup solution would provide user-friendly and secure off-site storage for a fraction of the cost per user of UNCG providing a similar service internally.

**Universal Imaging Utility Implementation:** To achieve greater efficiency in creating standard software loads ("images") for the University, ITS researched, acquired, and implemented the Universal Imaging Utility (UIU) software package. UIU allows ITS to create standard software loads that can be successfully deployed to a wide variety of computers in the UNCG environment, regardless of brand and model. UIU minimizes the number of images that must be developed, tested, and maintained, resulting in tremendous gains in technical staff efficiency. This allows ITS to improve customer service and computer security by updating images more frequently, and to focus on creating images that vary based on use need (e.g., student laptop versus staff office computer) rather than on variations in hardware.

**Flash Media Server:** ITS enhanced the ability of UNCG faculty and staff to deliver quality streaming media for instruction and other uses by launching the Flash Media Server as a second supported platform for streaming audio and video at UNCG. ITS also continues to support the Real Networks Helix server for clients who prefer Real or Quicktime formats over Flash.

**Telelearning Center:** The TeleLearning Center continues to provide a means for reducing costs of training opportunities, job searches, inter-institutional collaboration and other information exchange by providing a forum for live audio and/or video information communication without requiring travel. Notable events this year include:

- Videoconferences for a series of interviews with final candidates for the position of Founding Dean for the Joint School of Nanoscience and Nanoengineering. These candidates were located throughout the United States, and traditionally, would have been flown to Greensboro for these interviews.
- Telephone interviews for several campus search committees, including a search for an Associate Provost.
- Job interviews for nearly a dozen students were conducted via videoconferencing for interviews outside of North Carolina.

**Remote Support Tool Implementation:** ITS successfully implemented Bomgar, a web-based remote support solution. This solution provides ITS support staff the ability to remotely connect, at the request and initiation of the client, to client computers and provide assistance that would otherwise require a visit from technical support staff. This results in faster time to resolution and improved client satisfaction.

**“Thin Client” Computing Devices:** ITS has continued working with client groups to investigate opportunities for UNCG to decrease technology hardware and support costs through the use of “Thin Client” computing devices. ”Thin Client” devices are inexpensive and, typically, easily maintained computer stations that have relatively limited computing capacity, but may be used to deliver a wide variety of services in conjunction with a supporting server infrastructure.

**Service Oriented Architecture/Web Services:** ITS has sponsored a Service Oriented Architecture project to demonstrate the technical feasibility of feeding Banner data to the PIER Crisis Communication Platform system and the GA Sponsored Inter-Institutional Registration system using Web Services. The model of data exchange, permitting real time or near real time exchange of data between systems, has the potential to replace existing batch interfaces, while increasing reusability of code. ITS anticipates production implementation of SOA/Web Services interfaces in 2008-2009.

**SubVersion:** ITS has investigated and educated staff on a leading source code version management system for implementation in the 2008-2009 year. Such an implementation would permit enhanced management of Banner code as well as other custom code developed by ITS units.

**PL/SQL Shell Job Methodology:** ITS has developed a methodology for standardizing the deployment and simplifying the coding process for UNCG custom Banner batch jobs.

**Contract Banner Development:** ITS has successfully partnered with Enrollment Services units to support the engagement of a contract Banner development firm on five projects that were active during the 2007-2008 year. Code developed under this agreement will become maintained by ITS.

**Geography Lab:** ITS worked with the Geography Department to create a unique high speed network configuration in their graduate student lab.

**Enterprise Backup:** ITS completed a number of enhancements to the enterprise backup system, including implementing a special weekly backup process for Banner HR (UGval7/ODS7), expansion of the backup environment to allow more incremental backups to execute more quickly, development of Windows and Linux Virtual environment backups, creation of a NetBackup test environment, and development of a strategic growth plan for the enterprise backup environment through 2010.

**Virtual Server Environment:** ITS manages a robust Windows and Novell environment. Novell is used for file, print, identity management, and desktop application delivery. Currently there are over 500 applications available for use on the desktop via the Novell Application Launcher. Each faculty, staff and student are given a disk allocation in the Novell file space which is mirrored and can withstand the loss of a data center. The Windows environment is used for web, SQL database support, streaming media, and departmental application hosting.

In fall 2007 these services ran on 116 servers. In an effort to decrease the cost of providing these services (hardware, software, support staff resources, electricity, HVAC and data center floor space), ITS implemented a virtual computing environment using VMware/ESX to host Windows, Novell and Red Hat Linux servers. To date, 49 production servers have been replaced and have been consolidated to run on 4 servers. The hardware cost avoidance alone is approximately \$110,000.

The new virtualized environment is redundant across data centers. Should one data center fail, redundant servers in the other data center can load and run within minutes of the outage.

Virtual servers will be offered to UNCG departments for hosting departmental applications. Virtual servers can be provisioned for University departments at significantly less cost and considerably faster than traditional server hosting options. Reduced service costs will enable departments to purchase 2 or 3 tier environments for pre-production development and testing, and result in increased quality and performance for departmental applications.

**Increased Network File Storage:** The file storage utilized by the Windows and Novell servers was refreshed in March 2008. With the increase in disk density the newly purchased arrays have lowered the cost for providing additional disk storage to faculty and staff. As a result, the default Novell space that is allocated to faculty, staff and department units will be increased tenfold (to 1Gb) over the summer. Students will be allocated five times (512Mb) their current default amount of Novell network storage space and they will have the ability to increase their network storage up to 1Gb.

**Application Hosting Support:** ITS hosts a myriad of applications for University departments. The hosting service varies from basic server administration, to acting as liaison working with vendor support to deliver the application the ability to increase their network storage up to 1Gb.

**System Administration:** ITS had a number of accomplishments this year with regard to improved systems administration operational efficiency and security, including implementation of an enterprise-level SYSLOG server to allow for better trending and analysis for securing servers, implementation of Advanced Intrusion Detection Environment (AIDE) and other security improvements for increased protection of production servers, deployment of improved repositories for documentation and system software, finalization of updated Solaris and Linux build documentation based on NSA guidelines, completion of the design for a new SAN storage architecture, improved console access for legacy UNIX and OpenVMS servers and increased capacity of the UNIX fiber channel switch environment.

**(C 2:2) Protect and enhance the reliability, security, and capacity of UNCG networks, and the servers that support UNCG administrative enterprise systems.**

**Pharos “Pay-for-Print” Enhancements:** In spring 2008, ITS completed a project to enhance the reliability of the Pharos Pay-for-Print System by creating a separate development environment and implementing failover capabilities in the event of primary system failure.

**Desktop/Laptop Computer Protection:** In spring 2008, ITS upgraded from Symantec Antivirus to the new Symantec EndPoint Protection software that includes anti-spyware and firewall capabilities in addition to anti-virus protection. To enhance protection of client workstations, this software is now deployed in ITS standard software loads, available for client installation from the UNCG network, and is available for client purchase for home use.

**Security Awareness Training:** ITS worked with Fishnet Security to develop and deliver a four hour security awareness course. This course was offered 24 times over a three-week period, delivering information to many faculty and staff in an effort to improve the University’s security posture. ITS is currently implementing an online version of the awareness training.

**Intrusion Prevention System:** ITS continues to perform vulnerability identification and remediation. The goal is to eliminate the vulnerabilities before they are exploited by intruders. This year, ITS implemented Sourcefire’s intrusion prevention system and network device profiling tools that improve the analysis process. This has identified compromised workstations as well as identified vulnerabilities before they became intrusions. For the upcoming year, ITS plans to spend more time in preemptive identification and less time discovering exploited vulnerabilities.

**Departmental Business Continuity Plans:** ITS worked with the Administrative Systems Committee and University departments to complete updated departmental business continuity plans.

**Pandemic Flu Plan:** ITS acquired the assistance of a contractor to develop detailed plans to provide continuing services in the event the University closes during a pandemic. ITS worked with the Administrative Systems Committee to identify the number of staff who will need secure access to central information technology services during a pandemic.

**ODS and Banner Environment Expansion:** This year, ITS built a more robust Banner and ODS validation/special projects environment that is better scaled to accommodate the variety of client activities that occur concurrently in this environment – for example, integrated testing for special projects such as Banner HR implementation, client testing of enhancements for existing Banner modules, and ITS and client report writing activities.

**UNCGenie Registration Monitoring:** ITS implemented enhanced monitoring of UNCGenie registration functions using the BMC Patrol toolset. This can better alert Service Operations Center Staff of slow registration performance.

**BMC Environment Upgrade:** ITS successfully upgraded the BMC Business Service Management Suite to the latest version. This tool suite provides all monitoring, data collection, and reporting functionality related to our production network infrastructure. We also began the upgrade of the BMC IT Service Management Suite to the latest version. This upgrade will include the addition of Change Management and Problem Management modules into the suite. This work included the virtualization of 80% of the BMC Environment equipment.

**Data Center Access:** ITS implemented an e-Sign In solution for the McNutt data center. This solution, along with the supporting process, requires individuals entering and exiting the McNutt Data Center to sign in and out electronically as well as provide the reason for the visit and any related Remedy Ticket or Change Request numbers.

**Campus-wide UPS Inventory/Refresh:** ITS completed a complete inventory of Uninterrupted Power Supply units in telecommunications closets across campus. These units provide temporary backup power to equipment that provides data services to all of the campus buildings. The work included getting an accurate count of the units, identifying end-of-life equipment, and facilitating the replacement of that equipment.

**(C 2:3) Make UNCG a Web-enabled campus, using the Web as a regular means of doing business and providing service to students, faculty, staff, alumni, and the community.**

**ITS On-Line Service Catalog:** ITS developed and posted the first ITS Service Catalog on-line at <http://its-d.uncg.edu/Service%5FCatalog/>. This catalog is designed to facilitate client technology service access by clearly defining ITS services that are offered and how to obtain those services. Guided by internationally adopted Information Technology Infrastructure Library (ITIL) guidelines, the service catalog will continue to improve in an iterative manner as our services grow and change.

**Records Management:** In February 2008, ITS designed and published a client-oriented version of the recently adopted the *University of North Carolina General Records Retention & Disposition Schedule* on the UNCG website in a searchable and user-friendly format at the following web location: [http://its.uncg.edu/Records\\_Management/General\\_Schedule/](http://its.uncg.edu/Records_Management/General_Schedule/). The new format features easier navigation and a new search mechanism.

**Google Apps for Education Service Expansion:** UNCG was invited to join five other schools as founding members of the Google Apps for Education Customer Advisory Board. This forum provides an opportunity for UNCG to help shape Google Apps Services to meet the needs of UNCG, and, potentially, other UNC system schools. As part of this opportunity, UNCG is exploring Google web-based services beyond email that may benefit UNCG clients while also reducing technology costs. In particular, Google Sites are being investigated as an alternative to UNCG's current student website space offering.

**Online Metadata for Institutional Data:** ITS deployed SunGardHE's web-based dictionary of reporting metadata and enhanced the dictionary's content to include information about UNCG-developed Banner and ODS reporting customizations. For each reporting view in Banner and the ODS, metadata includes business descriptions, key search columns, and level of detail information. Business descriptions for each data element are also available.

**Dorm Washers and Dryers:** ITS performed network configuration changes to support the installation of devices that will provide resident students the ability to view, via the web, the status of washers and dryers in the laundry rooms.

**(C 2:4) Maintain UNCG's status as an Information Technology Management Flexibility campus, and comply with appropriate federal and state technology standards.**

**Information Systems General Control Audit:** ITS staff continue to monitor the Information Systems (IS) audit reports published by the Office of State Auditor and continues to review the report from the 2004 IS audit to ensure compliance with the auditors' recommendations.

### **CORNERSTONE #3**

#### **Administration:**

*Use effective policies and processes to deliver services to the University community.*

**(C 3:1) Maintain accountability and fiscal integrity over all financial operations to include clean audits / unqualified opinions and no major audit findings.**

**First Year End Close/13<sup>th</sup> Month under Banner:** UNCG closed the first fiscal year operating under Banner Finance during the summer of 2007. ITS worked closely with Financial Services staff in supporting the first production use of the UNCG developed 13<sup>th</sup> month process. Additionally ITS authored and fine tuned multiple year end reports. UNCG had a clean audit.

**Archive of FRS Data:** ITS has developed code to extract 4 years financial data required for retention from the legacy FRS (Financial Resource System) (VMS Environment) and store a copy of that data in Oracle tables (Unix Environment). This will permit the retirement of the VMS environment once it is no longer needed for HRS Plus (Human Resource System).

**(C 3:2) Upgrade and improve the functionality and efficiency of administrative systems and processes.**

**Oracle 10g:** In March of 2008 ITS upgraded the Banner/ODS environment as well as numerous other Oracle databases to Oracle 10g. This permitted UNCG to maintain technical currency required to receive vendor support, and enables future implementation of database related security enhancements. As part of the Oracle 10g upgrade, the following were accomplished:

- Academic Oracle teaching database upgraded to Oracle 10g and developed scripts to create accounts upon request.

- Migrated Webfocus repositories to Oracle 10g databases on production Webfocus servers.
- Upgraded FirstCard/IDMS system and migrated database to Oracle 10g.
- Continued Oracle Security audit – implemented stronger security with Oracle 10g upgrades.
- Banner/ODS upgraded to Oracle10g Release 2.
- Oracle warehouse build upgraded to Oracle 10g Release 2.
- Retired Oracle 9i ODBC and implemented 10g Instant Client with ODBC for third party Oracle database access.
- Configured a server to be the new Oracle Grid validation server.
- Installed July and January Critical Patch Updates (Security patches) in all Oracle database and Application server instances.

#### **Banner Alumni:**

- **Grad Rollover:** ITS has enhanced the UNCG custom process to create Alumni constituent records for graduating students.
- **Alumni to Finance Feed:** ITS supported an effort by Advancement Services and Foundations Accounting to implement the Banner Alumni to Finance feed. This increased the speed and accuracy of data updates between two modules of Banner, while reducing manual data entry.

#### **Banner Student:**

- **Enhance Advisor De-assignment:** ITS automated de-assignment of advisors to students who graduated in a given term as well as students who were dismissed or deceased.
- **Transfer Course Degree Re-association:** ITS enhanced custom processes to more accurately apply transfer coursework to academic transcripts of students who change majors.
- **Graduate School Action Sheet:** ITS enhanced this report to include five iterations of a new English Language equivalency test now accepted by the Graduate School.
- **Repeat Course Checking:** ITS has developed custom reporting functionality for assessing students who have repeated coursework against UNCG's academic regulations. This reduces the need for manual checking.
- **Batch Assign Student Advisors:** ITS has started a project with Enrollment Services to batch assign advisors to students based on standard criteria. This will reduce manual assignment and data entry.

#### **Banner Financial Aid:**

- **Regulatory Upgrades:** ITS performed four Financial Aid regulatory upgrades required during the fiscal year. In addition there were three North Carolina specific releases related to College Foundation of North Carolina (CFNC) processing.
- **Prior Balance Holds:** ITS enhanced Financial Aid's capability to enforce federal regulations regarding disbursement of aid to students with prior balances.
- **Title IV Return of Funds:** ITS enhanced Financial Aid's capability to review data for Title IV mandated return of Financial Aid for non withdrawn students.
- **Summer Processing:** ITS supported Financial Aid's engagement of a contract Banner development firm to develop additional functionality for Summer School Aid Processing.
- **Emergency Loan:** ITS supported Financial Aid's engagement of a contract Banner development firm to develop additional functionality for administering Emergency Loans.
- **Modify GA Data Extract:** ITS modified a UNCG custom data extract to explicitly provide SSN distinct from University ID for data matching by UNC General Administration.

**Banner Finance:**

- **Forms Fusion Upgrade:** ITS upgraded Forms Fusion from 1.6 to 1.9.
- **Contracts & Grants Administration:** ITS built a custom process to automate calculation of certain overhead charges associated with grant funded personnel.
- **Accounts Payable Bad PIDM Move Process:** ITS built a custom process to move Accounts Payable data between a “bad” PIDM & a “good” PIDM during consolidation of data for individuals who have multiple person records in Banner.
- **Budget Balance Availability Cleanup:** ITS built a custom process to correct available budget calculation anomalies. This process is executed weekly and can be run on demand by Accounting staff.
- **Alliance Reports and Processes:** ITS has implemented and modified several reports and processes provided by the UNC Shared Services Alliance.
- **Streamline Nightly Processing:** ITS more tightly orchestrated the processes for Banner Finance End of Day, ODS rebuild and Finance WebFocus report execution, for efficiency and essential dependencies.
- **Budget Reports:** ITS developed additional WebFocus reports for the Budget office.
- **Foundations Reports:** ITS re-wrote eight reports, originally authored against the ODS to run against live Banner Data.

**Banner General:**

- **Data Cleanup:** ITS built address cleanup scripts to correct erroneous zip codes and eliminate “#” signs from addresses. Zip corrections result in more accurate addresses, and “#” removal prevents Banner Letter Generation jobs from aborting.
- **Address Correction Software:** ITS evaluated Address Correction Software. The selected product, if purchased, would likely be implemented in 2008-2009.
- **Ethnicity/Race Data Capture:** ITS has started a project with the University Registrar’s Office to change Banner from the single element Race to Ethnicity/Multiple Race values as required by Federal Government and UNC General Administration. This should be implemented in mid to late summer 2008.

**Banner Student Accounts Receivable:**

- **Regulatory Release:** ITS implemented the required regulatory release for 1098-T Processing.

**Special Populations Custom Data Tracking:** ITS has developed custom Banner forms, tables and reporting views to permit University offices to design their own mechanism within Banner for storing data particular to the population of students they serve. Initial use will include Lloyd International Honors Program, Special Support Services and the Teachers Academy.

**First Card System Upgrade:** ITS upgraded the IDMS system from a proprietary data architecture to Oracle. This will permit more integration options in the future.

**Student Organization Rosters Enhancement:** ITS built custom functionality to upload data from spreadsheets about students who are participating in various student organizations. This reduces manual data entry.

**Dining ScanPlus:** ITS developed an interface methodology to integrate Banner Location Management Module with Dining Services’ ScanPlus system, to better track meal plan changes.

**Dining Services Point of Sale Network:** Prior to deployment of the new point of sale network (POS) in the spring of 2008, UNCG Dining Services had historically utilized dialup connections at the cash registers in the student government association and Elliot Center Food Court to process purchases. Lengthy dialup transaction times resulted in long lines and less than optimal service to

students. ITS installed network ports at cash register locations where they did not already exist and configured network access for new network-based card swipe readers. Not only was the new service much more secure (PCI compliant), it also yielded much faster authorization than the old dial up devices, and allowed Dining Services to provide improved service to students by significantly reducing waiting time in line at the registers.

**Disaster Recovery Portable Files for Business Affairs:** ITS has worked with Business Affairs to outline business processes needed to extract direct deposit, vendor and student accounts receivable data from Banner and encrypt this data for transport and storage off campus at the homes of BAF employees. In the event of a disaster such as the loss of both UNCG data centers, should ITS not be able to restore services on campus or remotely within the client specified recovery periods, this data would be decrypted and utilized on laptop PC's by BAF staff to support critical University business functions.

**Mandatory Health Insurance Hard Waiver:** ITS built interfaces between Banner and data systems operated by Pearce & Pearce to support UNCG's transition to requiring students to prove insurance coverage or purchase a UNCG managed health insurance. This included Banner screens for administrative offices as well as student facing notifications within UNCGenie.

#### **P-Card**

- **Travel Module:** ITS installed and supported additional vendor developed functionality within the P-Card system to support enhanced tracking and reconciliation of travel expenditures. This permitted the elimination of travel advances.
- **Remove Twice Loaded Data:** ITS developed a mechanism for P-Card Administrators to remove a duplicate set of transactions if the same input file is loaded into the P-Card System twice.

**Postal Service Enhancement:** ITS enhanced custom built functionality within Banner to support a new mail box station in the Spring Garden Apartments.

**New Housing Application:** ITS has started a project with Housing and Residence life to implement a new housing management system RMS. This system, when implemented in 2008-2009 will permit integrated web based housing applications, more efficient administration of housing/mealplan assignments and integrate with Banner.

**ITS Targeted Communications by Building:** ITS developed for internal use a mechanism to determine active employees who reside within a given building. This is utilized for communications related to networking changes or outages.

**SOAR Signup Enhancements:** ITS developed enhancements to the UNCG custom Orientation signup module within UNCGenie.

**Enhanced Services Network:** A new prototype high security network, the Enhanced Services Network, has been created and implemented in the McNutt building. Once deployed, faculty and staff with higher security needs can choose to operate in this privately addressed administrative network. This service will be initially targeted for release to campus users with higher security needs, such as those who routinely handle restricted data, and is expected to be available in early 2009.

### **(C 3:3) Provide essential support services to the campus.**

**ITS Client Support:** In 2007-2008, ITS responded to over 34,251 requests for service and support.

**ITS Newsletter:** ITS produces a campus newsletter, *Technology at UNCG*, to keep faculty, staff and students informed on technology issues and news that affect campus computing. Five issues, covering a wide range of topics, were published during the year. Designed as a single page attachment to the *Campus Weekly*, regular features may include the Vice Chancellor's column, news articles, and updates on campus technology services.

**Telephone Directory:** ITS provided data extracts for student and faculty/staff sections of the printed campus directory.

**Student-employee Training Program:** ITS developed, documented, and implemented a comprehensive training program for student-employees hired to provide technical client support. The program includes a standardized training curriculum provided to all student-employees, an internal certification program that must be completed by all new students prior to working with clients, and detailed procedures for handling the most commonly reported technical issues.

**(C 3:4) Develop, implement, and maintain relationships, policies, procedures and programs that make for a safe and accessible campus.**

**Pandemic Flu Table Top Exercise:** ITS participated in the September 24, 2007 exercise with representatives at the Emergency Operations Center and on the Crisis Management Team. ITS installed wireless network access in the Chancellor's Board Room to provide network access during an emergency.

**Active Shooter Training Exercise:** ITS participated in the January 2008 exercise with representatives in the Emergency Operations Center and on the Crisis Management Team.

**Emergency Notification and Communication:** Several ITS staff were members of the Emergency Notification and Communications work group, consisting of Emergency Planning and Response Team (EPART) and key University personnel, which developed a comprehensive, cohesive plan for notifying and communicating with the campus community during an emergency. ITS staff worked with other University areas as appropriate to implement the following notification and communication solutions at the request of EPART:

**SMS Text Messaging - Notification**

For emergency notification a system will be used to send SMS text messages everyone who has not declined the service. During an emergency this will be used to notify the campus community of an emergency situation and instruct them where to turn for further information. Beginning in the fall of 2008, students will be prompted to validate their contact number every 90 days, and faculty/staff every 180 days, each time they log on to UNCGenie.

**Computer Pop-Up Screen - Notification**

This emergency notification system will deliver a brief message to the campus community through a "pop up" dialog box delivered to Windows-based computers connected to the Internet. Each new campus computer will have this small software package included on the UNCG configuration or users with existing computers can download it from the UNCG Emergency Communication home page. The program only works with a Windows operating system and does not work in the Apple Macintosh and Linux environments, except through Windows emulation software. Operational in July 2008.

### **“Blue Light” Telephone PA/Sirens – Notification and Communication**

Sixteen of the university’s “Blue Light” emergency communication stations have been converted to add public address (PA) and siren capabilities. In an emergency, these strategically placed devices will provide notification and communication to the university community that is out of doors. Testing to begin on June 15, 2008.

### **UNCG Information Radio Station (with Webcasting) - Communication**

This AM radio based emergency communication system provides the UNCG community with emergency information. The system utilizes an AM radio transmitter (WQGY AM 1640). One hundred and twenty administrative offices on campus have been provided with hand powered AM radios to ensure communication in power outages. An automated telephone dialer has contacts each office to notify them of the emergency. Webcasting of the Information Radio Station provides the access to the information from any computer connected to the Internet in emergencies that do not disrupt Internet connectivity. Operational in July 2008.

### **PIER Crisis Communication System**

ITS constructed a one way batch interface to populate the PIER Crisis Communication System.

### **Emergency Cell Phone Number Gathering**

ITS has started development of programs to gather emergency cell phone numbers from students, faculty and staff through UNCGenie. This information, including a text messaging opt in, would be fed to PIER or utilized for other emergency purposes. Implementation is scheduled for August 2008.

### **Email – Communication**

In order to enable Campus Police to quickly email all UNCG Students and/or Faculty/Staff ITS created two new listserves: staff-police-l and student-police-l. These listserves are automatically re-generated each night to include currently employed faculty/staff and currently enrolled students and can be used by Campus Police personnel as needed.

**Millennium Lock Interface:** ITS began work on interfacing the Millennium Lock System, managed by Physical Plant Operations, with Banner. This work, scheduled for completion in 2008-2009, would permit daily feeds of Banner Information to the Millennium System, enabling broader, automated and more timely management of access to campus spaces.

**Police Video Surveillance Network:** Over the last year, ITS worked closely with the University Police to develop a specialized video surveillance network used to monitor public areas of the campus to increase safety. A highly secure, isolated network was deployed that allows the Police department to monitor video from 60 cameras across the campus either on desktop monitoring workstations in the Police Station, or on mobile video streams from patrol cars via IPSEC-VPN over cellular broadband. Video is stored by digital video recorder on an application server located in one of the central campus data centers.

**Facilities Operations Human Safety Related Network:** This year ITS worked with Facilities Operations to develop a highly secure, isolated single utility network to support all of the campus building access security systems (card swipe) and building physical plant automated systems (HVAC).

**(C 3:5) Maintain a personnel system that meets the needs of the University and the staff.**

**HRS Plus Platform:** ITS has performed all required regulatory updates for the HRS Plus System which is in its last year of use. Additionally ITS has developed a custom interface from HRS Plus to the new state retirement system ORBIT.

**Banner HR:** This year involved a significant effort from both ITS and clients to implement the Banner HR system. The project involves conversion of data on 10,000+ people from HRS, development of 100+ reports, testing/development of approximately 40 interfaces or data feeds. This system, once live in July 2008 will be the final module of the Banner Suite. Banner HR, in addition to fulfilling traditional payroll, position management and hiring/termination functions, will permit employees to access their own HR/Payroll data directly via electronic means. Also, distributed departmental staff with HR responsibilities will be able to view and input data directly into the system. This implementation lays the foundation for further efficiencies in managing personnel information in future years.

**(C 3:8) Enhance and maintain the security of legally protected information.**

**Data Use Compliance:** ITS continues to ensure that data is securely erased from surplus computers at the UNCG surplus warehouse. In 2007-2008, approximately 470 computers were securely reformatted prior to sale or redistribution.

**Digital Millennium Copyright Act (DMCA):** ITS processed 20 (11 students and 9 faculty or staff) complaints from copyright owners or their agents from July 1, 2007 through June 30, 2008. The significant reduction in the number of complaints from the previous year may be attributed to the fact that student rooms in residence halls are no longer part of the University wired network managed by ITS (as of Fall semester 2007). ITS included an article “Copyright Owners Pursue Violators of Law” in the January 2008 ITS Newsletter. In May 2008, ITS updated the procedures for handling complaints against individuals sharing copyright protected works via the wireless network.

**HIPAA Compliance:** ITS continued to monitor HIPAA Security requirements and to advise University units (covered entities) via the hipaa-l listserv.

**Records Management:** During the year, ITS sent 186 *Records Management at UNCG* brochures to new employees. A joint initiative by ITS and Waste Reduction and Recycling designed to encourage offices to properly dispose of paper records by transferring historical records to University Archives, recycling, or shredding as indicated by the UNC Records Retention and Disposition Schedule is planned for summer 2008. ITS arranged for a certified Identity Theft Risk Management Specialist to offer two *Preventing Identify Theft at UNCG* workshops for employees.

**Federal Rules of Civil Procedures:** ITS worked with University Counsel to develop procedures to comply with the new rules for discovery of electronically stored information in a Federal civil case.

**Social Security Masking:** ITS supported the Banner Security Committee’s first production use of the Banner provided Data Masking tools to restrict access to SSN’s from persons who did not have an approved business need to see SSN’s. This produced an 81 percent reduction in the number of employees who have access to the SSN.

**Value Based Security:** ITS has implemented Banner Value Based Security for one specific use case associated with Banner HR project. This work will lay the foundation for more widespread use of Value Based Security within Banner during 2008-2009.

**Touchnet Payment Gateway:** ITS has worked with the Cashiers & Student Accounts office to shift Banner centric credit card processing from a campus based server to a vendor hosted service. This is in support of Payment Card Industry standards compliance.

#### **CORNERSTONE #4**

##### **Facilities:**

***Build and maintain high-quality facilities that permit good academic and support programs to operate.***

##### **(C 4:1) Design and construct new and renovated facilities on schedule and within budget.**

**Technical Support for Department Moves:** ITS has continued to provide on-site technology assistance to clients during bond-related moves. In 2007-2008, support was provided for moves into the following buildings post renovation work: McNutt, Brown, Aycock, Petty, and the Alumni House. ITS also provided support for moves not funded by the Bond project, including department moves to and from McIver, 1100 West Market, Mossman, Bryan and Becher-Weaver.

**ITS Lab in Petty 222:** The new 42-seat computing lab in the renovated Petty lab opened in January, 2008.

##### **(C 4:5) Manage University space, including use of accurate and detailed space management data.**

**Space Planning Short Term:** ITS worked with the Office of Space Management to identify and plan for ITS Client Services office and Laptop Support Center space in the McIver Building while Forney is being renovated.

**Space Planning Long Term:** ITS developed staffing and support space scenarios for the Joint Primary Data Center. ITS participated on the committee that selected a contractor to conduct a department location study and provided information for the study.

**AdAstra Platform Implementation:** ITS supported the Registrar's office transition to a new Room Scheduling Software package which integrates with Banner. Replaces Resource 25.

**Famis 8:** The Office of Space Management uses the FAMIS software to provision space for the university. ITS worked with the department and the vendor to complete an upgrade of the software to version 8i which has more reporting capabilities than previous versions. Additionally ITS enhanced views to ease the work of Office of Space Management staff in developing reports required by UNC General Administration.

**McNutt Data Center:** From 2005 – 2007, ITS worked closely in partnership with Facilities Design and Construction to complete the McNutt building renovation, which included the design and construction of the new McNutt data center on campus. A year-long highly labor intensive ITS internal project was conducted to relocate equipment, establish network and systems redundancy and test failover prior to the data center relocation date. The goal was to ensure minimal disruption of services to campus during the move. Business continuity was critically important since the Bond project schedule necessitated that the data center relocation occur during the last phase of the campus wide Banner Finance project.

At midnight on September 1, 2007, ITS began the process of relocating the University's then primary data center from the legacy machine room in the Forney building to the newly constructed data center in the renovated McNutt building. 100% of the enterprise services supported by the data center were fully operational in less than 40 hours. During the move transition, ITS took the opportunity to perform comprehensive disaster recovery failover testing for all services between the two campus data centers and all worked perfectly. The McNutt renovation project produced a modified Tier II, 220 kW capacity data center that is currently in use as the primary campus data center.

**Bryan Data Center:** ITS is currently working on a joint project with Facilities Design and Construction to expand the capacity of the Tier I Bryan machine room to a total capacity of 150 kW. This project is expected to complete in early 2009.