Our History

Budget Summary

A Shared Vision: University Information Technology (IT) Strategic Planning Process

Collaboration, Community and Learning

Administrative Services and Support

Infrastructure

IT Security

Mobile Apps & Security

Advanced Research

Technical Support

Accessibility Initiatives

Staff Recognition and Achievements

Improving Staff Working Conditions

Staff Diversity

Recommendations and Concerns for the Future

Our Pathway to the Future:

University Strategic Goal 1:
Enhance the success of our students through educational innovation

University Strategic Goal 2:
Enhance scholarship and research by investing in faculty and infrastructure

University Strategic Goal 3:
Enhance interdisciplinary scholarship to address the grand challenges of society

University Strategic Goal 4:
Enhance organizational excellence by creating a culture of constant improvement

University Strategic Goal 5:
Enhance local and global engagement through focused strategic partnerships
In November 2007, NC State’s Office of Information Technology (OIT) was created from the consolidation of the two former central IT units for academic and administrative computing. In September 2008, the university hired Marc I. Hoit, Ph.D., as its first Vice Chancellor for Information Technology (VCIT) and Chief Information Officer (CIO).

**OUR UNITS**

With a staff of 257 people and a budget exceeding $48.8 million, OIT is organized into eight units:

- Business Services
- Communication Technologies
- Enterprise Application Services
- Infrastructure, Systems and Operations
- Outreach, Communications and Consulting
- Shared Services
- Security and Compliance
- Technology Support Services

**OUR MISSION**

To provide nimble, effective, efficient, and collaborative IT services, solutions and strategies in a timely and helpful manner that assist the university, state and nation in achieving their strategic goals.

**OUR VISION**

Be the IT organization that people seek out as a partner for providing visionary strategies, creative solutions, objective information, and effective and efficient services in order to help them achieve their mission and goals.
A Good Budget Year

The Office of Information Technology had a good budget year. Despite several consecutive years of budget reductions, OIT did not face any budget reductions during the 2012-13 fiscal year.

This fiscal year's budget was approximately $48.8 million, with salary and benefits accounting for $25,527,701; operating expenses, $22,403,789; temporary support, $701,924; and contracted services, $200,100.

Budget Changes

In addition to this year's budget allocation, OIT received $551,000 in enrollment change funding, a $500,000 strategic allocation (appropriated recurring funds) to focus on identity management and data mart priorities and an additional $321,688 in Facilities and Administrative (F&A) funding.

New Biennial Budget: Fiscal Year 2013-15

There is significant uncertainty going into the next biennial budget, with many expecting some sort of budget reduction for the University of North Carolina System. As a result, campus officials requested deans and vice chancellors to review again their appropriated budgets to determine possible functions and services that could be reduced or eliminated. For additional information, see Budget Central.
The process to develop the university’s first-ever university-wide IT strategic plan began in January 2013; however, its vision and foundation were established several years ago.

In November 2007, the university consolidated the former central IT units for academic and administrative computing, forming the new Office of Information Technology (OIT). In September 2008, former Chancellor James Oblinger hired Marc I. Hoit, Ph.D., as the university’s first Vice Chancellor for Information Technology (VCIT) and Chief Information Officer (CIO) and charged him with developing and executing a progressive information strategy for campus.

Envisioning a spirit of collaboration among the various campus IT groups, Dr. Hoit mapped a three-phase strategic process to improve the use of information technology as a driver for change.

Phase I involved an analysis of the internal operations of the newly formed central IT organization. OIT leadership and staff developed a Strategic Operations Plan in order to make the organization more efficient, effective and responsive to its customers. The team developed new vision and mission statements and five operational goals along with broad strategies for achieving them.

Completed in the fall of 2011, Phase II was the creation of a new inclusive IT Governance Structure — comprised of various working subcommittees — that allows university IT to focus on five strategic areas: strategic alignment, value delivery, resource management, risk management, and performance measurement. The new Governance structure was the first step to strategically align campus’ IT objectives with the university’s mission, vision and goals.

In January 2013, Phase III began. The NC State IT Strategic Planning Process Steering Team was charged with leading the process to help the university develop a strategic plan. The process steering team has worked to engage campus stakeholders in gathering input about ways to improve the IT environment, and have met with hundreds of students, faculty and staff, as well as queried the campus via several online surveys.
The IT Strategic Advisory Committee (ITSAC), Campus IT Directors (CITD), and IT Governance subcommittees will be the driving force in creating the plan. Members of these committees have started analyzing the collected data to identify strengths, deficiencies, needs and expectations for campus IT services. Simultaneously, a review is underway of external influences such as technology trends and other factors that may impact how the university utilizes information technology to meet its future goals.

By mid-fall, the process steering team hopes to share an initial draft of the university IT strategic plan with campus stakeholders for review and refinement. The current goal is to have the plan approved as a working document and available to campus by the end of October 2013. When complete, the plan will provide a vision and framework for how the university’s comprehensive IT environment can best support and accelerate achievement of the mission, vision, and goals of NC State, as conveyed in The Pathway to the Future: NC State’s 2011-2020 Strategic Plan.

2012-13 OIT Annual Report

OIT is collaborating with campus IT units on projects that are the building blocks of the university IT strategic plan. Many of these initiatives and their alignment to the five University Strategic Goals are included in this fiscal year’s annual report.
Putting the communications in communicate

Getting the right message to the right audience using the right technology is a huge challenge with a diverse audience of 30,000-plus recipients, with varying degrees of interest and preferred ways to receive information.

Dr. Marc Hoit, vice chancellor for information technology, and Brad Bohlander, chief communications office, spearheaded an ongoing, four-step effort to develop and implement an effective internal communications strategy and infrastructure for the campus community.

This year’s efforts focused on:
• developing a priority email broadcaster message service that allows the specification of large campus constituency groups (e.g., students, faculty, staff) as recipients of approved messages
• upgrading the Bulletin, the university’s internal newsletter, with new topic areas, an updated layout and design, extended content life, and daily updates.

In the coming year, the emphasis will be on developing a unified calendar structure and creating a campus communicators’ toolbox.

Web Registry

Web Registry was recently enhanced to accept registration for WordPress, Drupal and Hosted Database Services.

This service allows OIT and the rest of campus to provision, monitor and manage a wide array of technology including Google entities, Web tools and social media resources. Web Registry ensures that these resources can be tracked to their owner and simplifies the yearly management of service-level agreements and collection on contracts for services. Already a huge time saver, it has the potential to be even more essential as it becomes a portal for the management of additional campus services.
The only thing that is constant is change

Keeping up with the latest technology is one of several reasons NC State chose Google as its university email and calendar provider.

"Keeping up" means change is inevitable and frequent. This year, the Google Service Team helped usher in many changes including:

• Gmail as the new spam filtering service, replacing the messaging security functionality of Google’s Postini product
• Transition from Google Docs to Google Drive
• New Gmail compose window
• Method to insert a Google Drive file into an email

The team also introduced new apps, with increased storage, while continuing to support and provide training for all Google Apps @ NC State users.

Got apps?

Google+? Got it. Google Analytics? Got it. Google Blogger? Got that, too! These are just a few of the 15 new apps the Google Service Team rolled out to campus users.

These additional apps provide greater flexibility and increased options for university students, faculty and staff. Each of the 15 apps were introduced with potential use cases, best practices and tips and tricks, as well as a way for all campus users to share their own experiences with the apps.

Additional 2012-2013 Highlights

Free Training & Education - Taught 120 classes on 47 unique topics with 716 unique users registered.

Onboarding - Conducted three Quick Start sessions and 54 New Employee Orientations, with 900 new employees attending.

Orientations - Conducted 20 student and 19 parent orientation presentations and participated in 20 Information Fairs during the 2012 New Student Orientation. Designed Computing @ NC State newsletter and distributed it electronically to students and in printed format for parents to educate them about IT resources and acceptable computer use.

Web Hosting Services - Managed more than 100 paid Web hosting accounts (and 22 for OIT use). Provided new and easy to deploy and maintain hosted WordPress and Drupal services that include NC State-focused templates. Currently have eight paid hosted WordPress accounts and 22 paid hosted Drupal sites. Added 157 WordPress blogs to the WordPress blog site, and worked on 19 contracts to support campus clients’ Web development needs.
Software - Provided 12,935 software downloads to campus (up from 10,074) and reduced software maintenance costs by approximately $215,420. Negotiated a VMWare Enterprise Licensing Agreement that consolidated and replaced current campus VMWare licensing, saving approximately $454,440 over a three-year period. Consolidated 35 Oracle/PeopleSoft contracts into one contract, greatly reducing the time to manage and process renewals. The new contract will reduce 140 quarterly invoices to just four.

Optical Mark Reading (OMR) - Processed 220,000 test/quiz sheets.

ClassTech - Supported 180 spaces, ranging from baseline “110-type” classrooms and conference rooms to high-end spaces utilizing cutting-edge technology for rich-media capture. Offered free to campus, design service grew this year, accounting for 50 projects that collectively saved the campus large sums of budget dollars.

Student Media Services - Increased video production by six clients over last year and increased content creation to include live local broadcasts, coaches shows and content provided to Athletics. Forged new partnerships with the Carolina Railhawks and the Hurricanes.

Web Applications Support - Implemented instant update Web application deployment system, reducing upgrade time from 30 to 60 minutes to one minute or less. Updated 24 OIT information kiosks for students with a turnkey package saving 200 hours per year of labor and providing access to campus information from secure and responsive Web stations.

Securing the Human - Formed an implementation team to select security training that will be required for all new employees. This initiative is slated to begin later this summer.

OIT Website - Upgraded the OIT website to incorporate NC State University branding. The redesign also resulted in improved performance and site management, significantly simplifying the process of creating, editing, and managing content.

Apple Device Management - Increased the availability and fault tolerance of the campus JAMF Casper service by moving it to virtual servers. Adoption of Casper increased from ~2,200 to ~2,900 licenses, making support for MacOS and iOS devices that much easier for many campus IT support staff.

Co-Working Fridays - Organized an opportunity for campus Web developers from various colleges and departments to share their expertise on individual projects and challenging issues.

OIT News - Published OIT News, the monthly IT e-newsletter for staff and faculty. Posted regularly on the OIT home page and from OIT’s Twitter account, with an average of 78 tweets per month, and a positive trend in the number of tweets retweeted and favorited.
Oracle Identity Management

Identity Management will enable the efficient sharing of resources within and beyond NC State by improving security and privacy, by having a single source of reliable data and by streamlining the deployment of new university processes because identities will already be in place to share only what is necessary about an individual only when it is necessary.

Toward the beginning of this fiscal year, the foundation was laid to begin implementing the Oracle Identity Management (OIM) product. After technical requirements and specifications were completed, an OIM development environment and a testing/quality assurance environment were built and configured along with creation of customized adapters and functionalities. A very detailed review of current and planned system processes has been developed and continues to be verified during testing.

In the latter part of the fiscal year, data were converted from Unity and eDirectory into the OIM development and testing environments and reconciled with associated Active Directory, LDAP, Kerberos and Google systems to improve performance. This conversion has also enabled the transition of MyPack Portal authentication to Active Directory.

Human Resources and Student Information System enhancements

In the fall of 2012, the Human Resources (HR) system was upgraded to Version 9.1 and the Student Information System (SIS) was upgraded to Version 9.0, both to maintain vendor support, while adding new functionality in the process.

HR system upgrade

OIT and Human Resources worked together to upgrade the system to the new version, as well as provide a new workflow-driven employee hiring process, with new self-service features that included multiple account options for direct deposit of paychecks and paycheck statement printing enhancements.

Other HR enhancements included support for the new Onboarding Center, which included automated emails to new hires and a new hire checklist delivered via the MyPack Portal.

SIS upgrade

OIT, Registration and Records and the Graduate School collaborated on the upgrade for the Student Information System. Staff also implemented an enrollment wizard to more easily and effectively register for courses, and an advisor dashboard to more easily monitor individual student progress toward a degree. OIT partnered with the College of Engineering Web Development Team and other campus IT units to add mobile support for some SIS functions, such as class schedule and grade tracking.
Other SIS enhancements this year included the ability to push class schedules from the MyPack Portal to Google calendars, to process fellowships from within SIS instead of in the HR system, and integrating the enterprise imaging system to provide authorized users with access to student-related document images from within SIS.

**Principal Investigator (PI) Portal**

With input and feedback from the Office of Contracts and Grants, the University Research Committee (URC) and the Research Support Council, OIT implemented a new PI Portal, which offers an intuitive way for NC State research faculty to view HR and financial information related to projects of theirs registered in the Research Administration Data & Reports (RADAR) system.

In this first phase, the new PI Portal provides users with action alerts (e.g., for delinquent technical project reports, approaching project end dates), a financial overview of all active projects, and researcher news and announcements, all in a useful and appealing format. These features are continuously being reviewed and updated based on input from campus groups and for future project phase enhancements. Other functionality already being considered for future phases includes PI travel information, effort reporting, cost-share confirmation alerts, accounts receivable, and new award notifications.

**Active Directory**

Ever heard of Microsoft Active Directory? Behind the scenes, Active Directory provides computer management services for Windows computers — from logins, printing and security to software installations for 17,000 campus computers. And this year, it does a little more: OIT has completed projects to allow it to support Cisco Unity voicemail accounts, and myPack portal logins.

A strategy for the university’s future use of Active Directory is being developed collaboratively with the College of Engineering and others in the campus community.

The Novell file and print infrastructure was decommissioned after a major multi-terabyte migration effort to Celerra/CIFS space and Active Directory. This reduced institutional risk, allowed the elimination of the associated physical servers, and paved the way to eliminate Novell software licensing costs.

**Additional 2012-2013 Highlights**

Financial System - Enhanced the usability of the Financial System worklist and system-generated purchasing emails to improve the efficiency of campus approvers; enhanced the Surplus System; rewrote the Web Inventory System to further leverage the newly implemented Asset Management System.

Marketplace - Integrated a significant number of new MarketPlace Vendors to increase cost-effective purchasing across campus.

LawLogix - Integrated LawLogix (for eVerify & I-9 service) with the Human Resources System.

Kaba time clock - Extended the Kaba time clock system to additional users as a cost-saving measure.
Data Marts - Implemented HR data marts for General Administration, and implemented phase I of the Advancement data mart and phase II of the Admissions data mart using the SAS Business Intelligence Platform.

Document/content management - Implemented Hyland's OnBase Document/Content Management solution for Financial Aid with integrations to SIS to provide more efficient access to documents and to increase the accuracy and speed of document and information retrieval. The service will process financial aid applications from approximately 16,000 students during the 2013-14 application period, as well as streamline the accuracy checking of submitted information for approximately 8,000 students.

Advance - Supported migration of Advance, the donor and alumni database for NC State, to a new Web-based environment.

Destiny - Supported the reboot of the Destiny Steering Team for non-credit activities.

Report2Web - Completed a significant upgrade of Report2Web, a Web-based report document repository at NC State.
Hello telephony

OIT completed phase II of the campus IP telephony project (Internet calling), converting 4,374 digital telephone lines. The project switched NC State’s telephony service from AT&T-supported Centrex to ComTech-supported Cisco Call Manager, resulting in significant ongoing savings for the university. During phase II, ComTech also provided, free of charge, Cisco Internet Protocol (IP) telephone sets to customers who had used Meridian telephones.

802.11n roll out new wireless technology

Last spring, ComTech began moving the campus wireless infrastructure to the latest Wi-Fi technology - 802.11n. Completed this fiscal year, the new system provides much greater capacity, a necessity with over 105,000 unique devices—up 69% from last year.

The new wireless access points are 802.11agn, which allows 802.11n-capable clients to connect at a faster data rate (up to 144Mb/s depending upon configuration and the radio frequency band). The legacy access points had a maximum data rate of only 54Mb/s.

Private IP address space for wireless network

With the explosion of devices connecting to the campus network, the university has been running low on public IPv4 addresses (Internet addresses) and could not obtain additional public IPv4 space.

Under IPv4, private IP address spaces were created as a stopgap to prolong IPv4 address exhaustion, but they are also a feature of IPv6, the next generation Internet protocol.

To permit continued IPv4 growth, in May OIT ComTech migrated the campus wireless network to private addresses. Normal Dynamic Host Configuration Protocol (DHCP) clients connecting to the “ncsu” wireless network receive a private IPv4 address, freeing up significant blocks of IPv4 addresses that had been dedicated to the wireless environment.

ComTech is currently testing IPv6 in a controlled lab environment and actively developing plans for its future campus-wide deployment.

BlueCat is new IPAM

Last fall, ComTech transitioned the campus Internet Protocol address management (IPAM) system from VitalQIP (QIP) software to BlueCat.

BlueCat is an industry-standard version of IPAM. It doesn’t use the proprietary versions of Domain Name Server (DNS) and Dynamic Host Control Protocol (DHCP) services or require a proprietary client like QIP did, and it provides a fresh, Web-accessible interface. This major transition took the coordination and cooperation of many IT staff throughout campus.
The upgrade to BlueCat brought a fundamental change to the architecture of DNS and DHCP on campus, and introduced several layers of resiliency and load balancing, offering better utilization of DNS and DHCP services across new equipment. BlueCat will give the university the ability to take advantage of advanced IPAM features, as well as full support of IPv6, the next generation Internet Protocol.

**Chilling and electrifying news**

OIT continues to make “chilling and electrifying” improvements to protect and extend the life of the university’s two data centers.

Data Center 2 (DC2) hosts hundreds of servers that produce a lot of heat! The data center relies on the university’s chilled water plant to provide cooling. But what happens if the chilled water plant is not available? DC2 would overheat and critical IT services might not be unavailable. The university recently completed a study that provides a plan for a resilient backup chiller system; the project is underway.

Data Center 1 (DC1) needs upgrades to its flooring and electrical systems. It’s not possible to shut down the entire data center to replace the floor, so OIT is taking an incremental approach by implementing “Islands of Improvement.” Sections of the data center are upgraded, and then racks of servers are moved to the improved “islands” with only a few minutes downtime. This work will proceed until the entire data center has been upgraded.

To protect DC1 from power losses due to vandalism or theft, a fence was added around the Hillsborough Building’s exterior electrical and generator systems. Cameras were also added to enhance security.

**Big data needs big computing**

A series of campus discussions have identified the need for new infrastructure to support “big data” research. OIT joined the Poole College of Management, the departments of Computer Science and Electrical and Computer Engineering, and the Office of Research to implement a new Power Linux cluster with 10 compute nodes and 770 TB of storage. This system supports investigations into new techniques to perform big data analysis, as well as the analysis of very large datasets.

---

**Interacting with James B. Hunt Jr. Library**

Over the past year, OIT consulted with staff at the James B. Hunt Jr. Library to develop the server infrastructure for the Institute for Emerging Issues’ Commons interactive exhibit.

This is a large, public exhibit that incorporates many exciting technologies such as Microsoft Surface touch screens, interactive Web and video screens, and Xbox Kinect for motion detection.
The exhibit helps people understand “challenges in education, economy, health and our environments.” An expansion to the infrastructure is planned later this year.

**Virtualization reduces our paw print**

Virtualization provides a way to run multiple servers on a single physical computer and, in doing so, saves the university significant cash!

Because of OIT’s virtualization infrastructure (VMWare), more than 210 servers were moved from physical computers to virtual ones. This is a savings of around 82,800 kilowatt-hours per month, or the average monthly electricity use of 72 NC households*. This reduced the university’s energy bill by around $6,955 per month.

**Additional 2012-2013 Highlights**

Unified Communications - Offered more broadly advanced unified communications services including Single Number Reach, Extension Mobility, and Voicemail to Email.

Carter-Finley - Implemented a new mesh network for Carter-Finley to support dining, bookstores, and ticketing system.

NOC Calls - Handled 10,774 Network Operations Center (NOC) calls from July through April.

Hunt Library - Partnered in getting the Hunt Library online with more than 1,000 data connections and multiple technologies.

Wake on LAN - Continued testing of a pilot project with the College of Natural Resources. Anticipate campus deployment in fiscal year 2013-2014.

Wired Outlets and Ports - Wired outlets grew from approximately 37,000 to more than 39,500. Available network ports from approximately 71,000 to almost 76,000. Unique devices on the network grew to more than 160,000 devices.
OIT’s stronger line of defense against cyber security threats is an informed campus user! Despite technological advances in the information security industry, human error is considered the greatest IT security threat. To show campus users how significant a role they play in campus IT security and in protecting each other’s digital lives, OIT sponsored “U R Cyber Security,” a month-long event that included three unique security awareness presentations focusing on cyber threats and data protection and storage; five sessions on how to secure mobile devices; and a mobile security checkpoint in the Brickyard, which attracted more than 360 visitors.

These events were held last October during National Cyber Security Awareness Month, an annual event sponsored by the Department of Homeland Security in cooperation with the National Cyber Security Alliance “to increase the awareness and prevention of online security problems.”

**Control your digital footprint**

To protect everyone’s privacy, it is important for campus users to understand the ways personal information is collected, stored, used, and shared. Protecting privacy is everyone’s shared responsibility!

During January 2013, OIT sponsored three presentations during Data Privacy Month to empower campus users to protect their privacy and to control their digital footprint. Data Privacy Month is an annually sponsored by the National Cyber Security Alliance.

**Building a Data Sensitivity Framework**

Safeguarding university data is what we do! During this fiscal year, OIT made significant progress with the Data Sensitivity Framework, a set of guidelines to define the basis for establishing what university data is sensitive and how to safeguard and protect that data.
The Data Sensitivity Framework will be used to:

- Assist with development and implementation of more secure applications and systems
- Reduce risk associated with exposure of sensitive data
- Increase personal sensitive-data security-awareness for the Internet Cloud and personal mobile devices.

The Data Sensitivity Framework includes:

- **Data Classification Statement**, which defines five classifications for all university data sensitivity: Ultra (purple), High (red), Moderate (yellow), Normal (green) and Unclassified (white). Green and white are not sensitive data.
- **Element Table**, which provides an authoritative source to determine the sensitivity level of individual university data elements (about 90) based on compliance with various laws, regulations and other factors.
- **Controls for Securing University Data**, which provides IT Best Practices for handling sensitive data cross-referenced by sensitivity levels (Mandatory, Recommended, Optional, and Not Applicable).
- **Storage Locations for University Data**, which shows how the Data Sensitivity Framework can be applied to real-life situations.

### Simplifying a complicated (PCI) process

Like other state entities accepting credit and debit (payment) cards, NC State is contractually required to adhere to the Payment Card Industry-Data Security Standards (PCI-DSS) rules and standards as required by the N.C. Office of the State Controller’s State Electronic Commerce Program (SECP) and by SunTrust/FirstData, the SECP merchant bank and transaction gateway. There are 12 high-level PCI-DSS requirements that are subdivided into more than 280 separate detailed requirements affecting people, processes and technology. The university has 117 merchant organizations that accept payment cards and must show compliance with PCI-DSS.

- **Attestation** - In calendar year 2012, the university attested “non-compliant” under PCI-DSS v2.0 regulations to SunTrust/FirstData. Because the project was more complicated than originally scoped, the university will not be able to complete all tasks by its target completion date, June 30, and will have to attest as non-compliant in August 2013.

The university has made significant progress toward becoming compliant. For the attestation period ending in August 2013, the university is focusing on establishing full compliance for the simpler outsourced Web PCI transactions and the merchants using simple point of sale (POS) swipe terminals.

- **Major growth in merchant transaction** - For the first time, the university exceeded one million Visa transactions, a 33 percent increase during 2012. By separating University Dining (59 percent of university transactions) as a separate merchant chain, the university avoided considerably more time-consuming and more costly verification and attestation procedures.
Simplifying the PCI DSS compliance verification process

- The PCI Team is aggressively managing inactive merchant account numbers and the number of service providers and payment card implementations. This decreases the verification workload significantly during annual attestation.
- Convio is the primary service provider that supports the Advancement Services Giving website. Now, only one verification is needed of the Convio application implementation rather than 32 separate assessments of individual fund websites.
- The PCI Team is investigating Destiny as the standard payment processor for conference registration across the university. This could move approximately 125 of all merchant IDs to Destiny and greatly reduce compliance efforts for small campus merchants.

UNC system IT Security Council Security Framework

On the university’s behalf, OIT in conjunction with the Security and Compliance Governance Subcommittee completed a gap analysis against ISO 27002 information systems standards to create a comprehensive security framework.

The adoption of ISO 27002 was a recommendation made by the University of North Carolina system Information Technology Security Council. The gap analysis determined the additional tasks standards and other documentation necessary for compliance. Upon completion, the security framework will provide the means to secure university assets and information as well as provide consistent guidelines for campus users to follow.
NC State on the Move

This year brought about new and improved apps and security on mobile devices. OIT assisted campus developers in creation, delivery and maintenance of seven iOS and two Android mobile applications, providing multiple campus units presence in the mobile application space for outreach and potential enrollment growth.

Campus developers have also streamlined code sharing, maintenance and upgrades of apps using GitHub’s free public repositories and collaborations for open-source software tool.

There are mobile apps for that!

Live in the southeast? Have insect, weed disease or pest troubles? Then, the Lawn Care app can help you! Available for both iOS and Android devices, it’s just one of the three mobile apps the Mobile Initiatives Committee has helped campus teams develop and brand. The Student Media app conveniently connects you to campus news, library books, dining hall menus and more, and the MicroExplorer 3D app takes you on a virtual tour of a compound microscope, teaching you about its various parts and how to use it. Read about these and other NC State mobile apps now available in the Apple iTunes store.

The Mobile Initiatives Committee manages the university’s mobile presence, guiding the campus community in developing applications and Web pages for delivery via mobile devices.

There are policies for that!

The NC State University Computer Use Regulation requires authorized users to take appropriate precautions to secure access to assigned university accounts and IT resources. Those security measures extend to mobile devices.

A working group established by the Campus IT directors recently published requirements and recommendations for university personnel who access university data, including email, via either their personal or university-owned mobile devices.

Visit the Mobile Device Security website to review information about what constitutes a secure device, secure data, and secure communications, along with do-it-yourself procedural instructions by device type, including Android, BlackBerry, iOS devices, among others.
**Additional 2012-13 Highlights**

Securing the Human - Purchased SANS Securing the Human for general security awareness training. Working on recommendation for inclusion during employee onboarding.

Computer Use Regulation - Revised the university’s Computer Use Regulation. The new version, which consolidates the Computer Use Regulation and the now-repealed Software License Requirements Regulation, further defines and clarifies acceptable use of campus information technology (IT) resources—such as computer equipment, software, networks, computer system accounts, and other digital assets and resources—for administrative, academic and personal use.

Phishing detection, prevention, mitigation and recovery responsibilities continues as a significant workload.

Cloud services and mobile computing - Continues to increase our work in many areas, including consulting, monitoring, forensics, policy/guidelines, and assessments.

Portfolio and Project Management - Continued managing the OIT portfolio and project management processes. A prioritization process is in place. Development of the project management lifecycle processes continues.

Public Record, Litigation Hold and eDiscovery Requests - 18 remain.

Compromised accounts - Detected 162 compromised accounts in the last six months. Due to lifetime email accounts, the number of accounts to be monitored for abuse is growing by at least 10,000 per year. The vast majority of compromised accounts in the last year were owned by graduated students.

Partnership Discovery Questionnaire - Coordinated the completion of a detailed Partnership Discovery Questionnaire for Information Systems portion of the 2012-13 Financial Audit conducted by the Office of State Auditors.

**2011 & 2012 OIT Risk Summary Report** - Identified risks with associated mitigation strategies for a more secure, robust, efficient, and effective central IT environment.

Resiliency plans - Defining restoration/recovery times for identified core services (e.g., email, ERP systems, Web services, hosted systems) in the event DC1 or DC2 is unavailable. Also, implementing a solution for payroll resiliency (running last month’s payroll) if both data centers are unavailable.
Technology virtually at your fingertips

Campus users now have twice the amount of time to utilize the NC State Virtual Computing Lab (VCL), a cloud computing system that provides remote access to high-end lab computers and software.

OIT increased the VCL default reservation time from four hours to eight hours. Special requests for longer durations can be made to accommodate class, research or departmental projects. As of May 14, the VCL had more than 177,000 reservations, using more than one million hours by nearly 15,500 unique users.

Developed in 2004 by OIT High Performance Computing (HPC) and the College of Engineering, the VCL provides 24x7 remote access for students, faculty or staff to use various VCL environments running on dedicated machines from anywhere with an Internet connection.

Additional 2012-13 Highlights

VCL Apache – Continued to be a lead contributor to the Apache VCL Project, which is a Top-Level Apache Software Foundation Project. As part of a National Science Foundation grant, the university has extended VCL service to three additional state community colleges and to three state public middle schools.

HPC CPU Hours – Delivered 10.5 million CPU hours to 124 projects and 413 unique users through April 30.

Internet2 - Collaborated with the Internet2 community to provide VCL services as a Net+ service offering.

Cloud Sidekick - Collaborated with Cato to interface their open source Cloud Sidekick with VCL to enable dynamic deployment of multiTier applications such as PeopleSoft and SAS.

Remote Desktop Protocol (RDP) acceleration - Added to VCL service to better support graphics intensive applications.

HPC cluster network connection to storage - Increased from 1Gb/s to 10Gb/s, improving performance and allowing solution of larger problems.

HPC parallel file system - Expanded and upgraded, providing additional storage capacity for research projects and improved performance.
Windows of opportunity in the new OIT Managed Desktop Environment

Staff successfully completed the transition of 2,700 desktops to the new OIT Managed Desktop Environment in February 2013. In addition to migrating to Windows 7 (32 & 64 bit), the desktops were migrated from a Novell-based environment to a Windows Active Directory environment.

The new managed desktop environment also provides substantially-increased file space—both for individual home directories as well as shared space for the department. The new tools associated with this environment will allow OIT Technology Support Services to do more remote support and more remote automation. Additionally, the new OIT managed desktop will be available to departments outside of the traditional business-related groups that comprised the former Novell administrative managed desktop.

This extensive migration required close coordination between OIT and client departments, as well as close collaboration among OIT units. Staff migrated data, transitioned printers, upgraded workstation operating systems, packaged and tested applications, and provided end-user training for each department involved in the migration.

More Windows of opportunities

The transition from the Novell-based file services environment to OIT’s Windows-based file service was completed in December 2012, allowing the decommissioning of this environment on schedule on April 1, 2013. More than 700 home and share directories were migrated during this process.

A painless Remedy

There was no unplanned downtime for the Remedy call tracking service during the period from July 1, 2012 to April 25, 2013. Remedy usage has remained strong with 108,103 calls logged since July 1, 2012 and 887 total active accounts.

Not that kind of papercut

Staff completed two significant improvements to the campus printing infrastructure this year.

Queue it here, print it there
“FollowMe Printing” allows students to print from their personal computer, or a lab computer, to a virtual print queue, which will hold the print job for up to 12 hours until the student releases it to a designated printer around campus.
FollowMe Printing is made possible by PaperCut, a service rolled out for the 2012 fall semester. It was a major transition from OIT’s legacy student accounted-printing service to a new service that utilizes NC State’s AllCampus account. OIT worked closely with WolfCopy to transition to this printing environment, which will also provide a platform for future service improvements in printing and imaging.

This year there were more than 18,300 users of the system, 205 printers available to print on, and more than 500,000 print jobs printed just under two million pages.

**Additional 2012-2013 Highlights**

NCSU Drive - Deployed a new campus file service, NCSU Drive (“B: drive”), which provides 5GB home directory space for all NC State users.

Walk-in Center - Saw a decreased number of clients this fiscal year, with preliminary numbers showing a 13 percent decrease in average calls per month. Improved operating system stability, improved anti-virus software and compliance, and better safe-computing practices contributed to this decrease.

OIT Managed Desktop - Transitioned the new College of Sciences Dean’s Office in May to the OIT Managed Desktop service, which added ~40 workstations to the service.

Mediasite - Usage almost doubled, with 71 users of Mediasite in ClassTech spaces this fiscal year, up from 37 in the 2011-2012 fiscal year. Partnered with DELTA to support ad-hoc recordings in ClassTech rooms equipped with a Mediasite recorder.

Hardware upgrades - Upgraded the hardware in eight labs this year, including ITTC 2, Avent Ferry, Sullivan, North, Wolf Village, First Year College, E.S. King Village and Stinson Collaborative Commons, as well as the hardware in 23 kiosks across campus.

Alertus - Tested and implemented Alertus, a desktop emergency notification system with Environmental Health and Safety.
All Things IT Accessible

NC State strives to create an information technology (IT) environment where everyone can fully participate in campus life. All of us—students, faculty and staff—have a role to play in creating this environment so that IT does not stand in the way of work, study or play. A few of the many projects and services the IT University Accessibility Office worked with campus entities to provide this fiscal year include:

- **Accessibility Scanning** - Searches for accessibility errors on more than 380 campus websites, totalling more than 150,000 pages. The results of the reports are shared with website owners along with tools and resources for how to correct the problems. The IT Accessibility Office sponsored contests and training sessions to encourage website owners to correct accessibility problems with their sites. Since the program’s inception in March 2013, more than 190,000 errors have been corrected on university websites.

- **Transcript Synchronization Service** - Established, in conjunction with Distance Education and Learning Technology Applications (DELTA), provides a video transcript synchronization service to aid in the production of captions for videos. This service allows video creators to save approximately $50 per video hour. To date, the service has saved NC State approximately $12,000 in captioning costs.

- **Accessibility @ NC State Website** - Launched, in conjunction with the Office of Institutional Equity and Diversity (OIED) and the Disability Services Office (DSO), this Web page is a one-stop source of information for finding out about all the accessibility services, features and programs at NC State. It covers information ranging from students requesting accommodations, to finding accessible building entrances and pathways, to how to create accessible online content. Websites should point to this page regarding all accessibility information.
Major Appointments

- Josh Jury was named assistant director for Business Applications and Communications Services in Communication Technologies.
- Josh Snapp was named Support Center team lead in Technology Support Services.

Recognition

- Brian Judson and David Ladrie received the 2013 Office of Information Technology/University Awards for Excellence. Also nominated were Jason Austin, Andrew Barnes, Danny Davis, Dan Evans, Greg Kraus, and David Mai. Brian went on to receive a University Award for Excellence and will represent the university at the Governor’s level.
Professional Activities

• John Baines presented “Data Sensitivity Framework” at UNC CAUSE 2012.
• Mardecia Bell is serving as chair of the UNC IT Security Council for calendar year 2013. She also served as chair of the Security and Compliance Governance Subcommittee.
• Ron Bradley and Ron Jailall presented “Solving the Problem of Classroom Accessibility for the Visually Impaired” at UNC CAUSE 2012 and “Automated Classroom Capture: BYOD for Classroom Productions” at UNLEASH 2013.
• Rick Brown is serving as president for the Association of Higher Education Cable Television Administrators (AHECTA).
• Sherwood Bryan and Jack Foster presented at the PeopleSoft Campus Solutions Southeast Users Group 2012 Conference.
• Debbie Carraway completed the graduate certificate in Information Assurance, Security and Privacy from UNC-Greensboro. She is also serving on the Physical Environment Committee, a university standing committee; and the Disability Compliance Advisory Team, an administrative advisory committee.
• Charles Cline led a session on “The Evolving Role of Microsoft Technologies in Higher Education” at the Microsoft TechEd Conference.
• Wade Davis served on the Onboarding Business Operations Centers (BOC) Implementation Team and the Business Operations Human Resources Task Force.

OIT hosted 12 NC State STEM Early College High School students during the school's Job Shadow Day. Some of the students and OIT staff participated in a video conference in the Hillsborough Building with other students and staff working at the Avent Ferry Technology Center.
• Darren Fallis and Neal McCorkle continue to serve as advisers to the Institutional Review Board (IRB), which is a federally regulated committee that evaluates technical security and privacy issues in research involving human subjects.
• Tim Gurganus achieved his Internal Security Assessor certification for Payment Card Industry (PCI-DSS). He also served as an advisor to a group of NC State Department of Computer Science students who advanced to the Regional Finals of the 2013 National CyberWatch Center Mid-Atlantic Collegiate Cyber Defense Competition.
• Mark Harben renewed his Certified Software Manager (CSM) certification.
• Garrison Locke received a bachelor’s of arts in English with a concentration in creative writing from NC State’s College of Humanities and Social Sciences.
• Gwen Hazlehurst and Karen Horne served on the Business Operations Implementation Team.
• Gwen Hazlehurst served on the Onboarding BOC Implementation Team and as chair of the Onboarding Technical Team.
• Ron Jailall, Sina Bahram and Greg Kraus presented “Solving the Problem of Classroom Accessibility for the Visually Impaired” at the CSUN 28th Annual International Technology and Persons with Disabilities Conference.
• Ron Jailall and Greg Kraus presented a poster session, “Solving the Problem of Classroom Accessibility for the Visually Impaired,” at the 2012 EDUCAUSE Conference.
• Joe Johnson completed the Pathways Leadership Program.
• Chris King presented his published paper, "Logos: The Power of the Word in IT Support," at the 40th annual Association for Computing Machinery (ACM) SIGUCCS Conference.
• BJ Attarian and Chuck Givens received the Apple Final Cut Pro certification.
• Jason Austin presented "Lightning talk on Automated Deployment with Jenkins" at the TrianglePHP user group.
• Jason Austin and Garrison Locke presented “Service Oriented Architecture Panel Discussion” at php|Tek and the TrianglePHP user group.
• Greg Kraus gave numerous accessibility presentations for Accessing Higher Ground, UNC CAUSE, the CSUN Annual International Technology and Persons with Disabilities Conference, and the EDUCAUSE National Conference.
• Greg Kraus serves as leader of the EDUCAUSE IT Access Constituent Group and serves on the EDUCAUSE Southeast Regional Conference program committee.
• Ron Jailall, Greg Kraus and Sina Bahram, doctoral student and accessibility researcher in Computer Science, presented “Blind Instructors Controlling Classroom Tech” at the CSUN Annual International Technology and Persons with Disabilities Conference.
• Richard McLane and Patrick Williams co-led (with Wes Emerson of UNC-Greensboro) “VMware And Enterprise Storage Infrastructure” at UNC CAUSE 2012.
• Verna Little served on Onboarding Center Implementation Team.
• Yessy Mendoza-Tate served as chair of the Oracle General Ledger Product Advisory Group and presented various sessions at the 2013 Oracle Alliance Conference.
• Jack Neely organized the university’s fifth annual Free and Open Source Software (FOSS) Fair and the university’s first Puppet Campus Raleigh 2013.
• Sarah Noell serves as chair of UNC CAUSE 2013 with other OIT staff members leading and participating on planning subcommittees.
• Ron Reed served on the Administrative Process Review Committee (APRC), the Business Operations Finance Task Force and the Travel BOC Implementation Team.
• Jen Riehle presented “Hosting an ACM SIGDOC Unconference” at the 2012 Special Interest Group on the Design of Communication (SIGDOC), and “Game Genres: For the Design and Evaluation of Future Learning Environments” at the 2013 Communication, Rhetoric, and Digital Media (CRDM) Symposium.
• Greg Sparks is serving on the Association of College and University Telecommunications Administrators (ACUTA) Regulatory and Legislative Committee. He was also appointed to Cisco’s Public Sector Technology Exchange.
• Nick Young serves on the planning committee for the Google Southeast Users Group meetings.
New and interesting team, new and interesting places

OIT employees remembered the 70's well and they rocked the house... well at least the Talley Student Center Ballroom... to some oldies but goodies during last fall’s Holiday Party.

This was one of many events the newly formed Staff Relations Team (SRT) held to forge relationships and improve morale in the workplace.

A transformation of the previous Employee Relations Committee, the new team’s charter incorporated employee concerns garnered from OIT Town Hall meetings to clearly define and document its focus, scope, membership, structure, and administration. Current SRT members are Candace Warren, Eric Silberberg, Harry Nicholos, Kevin McDonald, Kim McAllister, Pat Gaddy, Jill Phipps, Febbie Gordon, and Vanessa Smith.

In addition to overseeing OIT recognition programs, such as the Totally Outstanding Attitude, Service and Talent (T.O.A.S.T.) awards, and OIT’s University Awards for Excellence awards, the SRT organized the division’s Holiday Giving Projects, which benefitted SAFE Haven, Love Wins Ministries and Hurricane Sandy Relief and recently initiated the OIT Lunch Bunch so employees can meet with new and interesting people in new and interesting dining locations.
OIT is diverse, not only in the type of work it does but also in the people who perform these mission-essential tasks. In its 257-member workforce, OIT employs 175 men and 82 women who are:

- American Indian: 3 (1%)
- Hispanic: 6 (2%)
- Asian: 17 (7%)
- African American: 28 (11%)
- White: 203 (79%)
Security and Regulatory Concerns

- Increasing security concerns are placing high demands on resources in terms of personnel time as well as hardware and software. A large percentage of the campus security compromises are due to patching of third-party software, which is frequently delayed or not done at all. Porous Internet perimeter security policy continues to result in constant exploitation of vulnerabilities from outside the university, and security of Internet cloud-based IT applications is immature and fraught with issues.

Recommendations

- A change in the university’s network perimeter policy is needed to address new threats to mobile devices and OS X as well as threats from more sophisticated data stealing Trojans and attacks on remote access systems.
- Identification and protection of highly sensitive data, including research data, are needed.
- Increased funding is necessary for staff training on IT security, new technologies and existing systems.
- A mandated security awareness training should be implemented for all students, faculty and staff.

Staffing Concerns

- Critical staff and projects are constrained by more aggressive schedules, increased workloads and numerous projects. Other concerns include:
  - Lack of depth in critical technical positions, resulting in no backups for critical functions such as imaging and system resources.
  - Availability of resources for various implementations, upgrades and migrations, particularly management resources to oversee and coordinate the large volume of planned technical activities.
  - Ability to provide competitive salaries to hire/retain staff needed for the complex scope of services.
  - Increasing workload and expectations of campus to deliver services with fewer resources.

Recommendations

- OIT should maintain engagement of central office leadership with evolution of enterprise systems, maintain senior management commitment for sufficient resources for priority projects, and explore and exploit opportunities to partner with campus units.
Accessibility Concerns

- The campus community produces a significant amount of video annually; however, the university lacks a comprehensive solution to provide captioning for videos. Because the cost to provide captioning services is not decreasing, a significant economy of scale will not be gained from creating more captioning work.

**Recommendation:** The IT Accessibility Office is working with campus groups to recommend viable solutions. The university’s senior leadership will have to make the final decision on how to approach this issue campuswide.

- There are an increasing number of employees who create online content, including websites, electronic newsletters and flyers. As the tools to create these resources become more mainstream, knowledge of the university’s accessibility requirements and skills to create accessible content are also broadening.

**Recommendation:** The IT Accessibility Office is working on strategies to reach out to online content creators, but more established processes, like leveraging the new Onboarding Centers, are necessary.
OIT supports the goals of “The Pathway to the Future: NC State’s 2011-2020 Strategic Plan” through much of its work, including providing the following services. More information about these services can be found in the OIT 2012-13 Annual Report.

UNIVERSITY STRATEGIC GOAL 1: ENHANCE THE SUCCESS OF OUR STUDENTS THROUGH EDUCATIONAL INNOVATION

• Improved advising, degree audit, course registration and scheduling capabilities in the Student Information System.
• Increased default Andrew File Space (AFS) storage quota to 2GB to meet student coursework needs.
• Supported deployment of new student printing environment.
• Expanded data marts to allow campus groups to use data for research to improve student success, research collaborations linkages, improved business operations.
• Incorporated 15 new Google Consumer Apps into Google Apps @ NC State to provide flexibility and increased options for students, faculty and staff.
• Added Remote Desktop Protocol (RDP) acceleration to VCL service to better support graphics intensive applications.
• Supported Destiny deployment for non-credit courses.
• Updated Virtual Computing Lab (VCL) hardware to reduce wait times and increase capacity.
• Upgraded entire campus wireless infrastructure to 802.11n.
• Completed first five true-N wireless projects across five buildings.
• Completed student residence common areas wireless project.
• Initiated Bowen Residence Hall full wireless pilot.
• Launched the Academic/Admin IPTV Service.
• Partnered in getting the James B. Hunt Jr. Library online with more than 1,000 network connections and multiple technologies.
• Provided new WordPress blog service for instructors, students and employees.
• Delivered Computing @ NC State newsletter to students and their parents to educate them about IT resources and acceptable use.

UNIVERSITY STRATEGIC GOAL 2: ENHANCE SCHOLARSHIP AND RESEARCH BY INVESTING IN FACULTY AND INFRASTRUCTURE

• Launched development of a new IT Strategic Plan for the university. Slated to be completed later this fall, the plan will provide a vision and framework for how the university’s comprehensive IT environment can best support and accelerate achievement of the mission, vision, and goals of NC State.
• Launched the new Oracle Identity Management System to replace many legacy and manual processes.
• Organized a successful Free and Open Source Software (FOSS) Fair and the university's first Puppet Campus Raleigh 2013.
• Created an IT Accessibility Quick Guide so faculty can make certain technologies accessible.
• Increased the High Performance Computing (HPC) cluster network connection storage from 1Gb/s to 10Gb/s, improving performance and allowing solution of larger problems.
• Expanded and upgraded the HPC parallel file system, providing additional storage capacity for research projects and improved performance.
• Developed high-level plans related to software defined networking (SDN) and OpenFlow in particular.
• Completed National Science Foundation (NSF) Campus Cyberinfrastructure - Network Infrastructure and Engineering (CC-NIE) grant proposal to enhance network infrastructure including further research into SDN use cases.
• Refined Jabber service and expanded across Windows, Mac and iOS devices.
• Improved networking resiliency for the Poe server facility utilized by many college partners.
• Completed Centennial Campus Alternate Ductbank as first step in mitigating largest physical layer risk.
• Implemented new data center network architecture based on new N7K platform. Brought first non-HPC 10Gb/s access layer switches into the data center with more deployments scheduled for the year ahead.
• Continued testing of Wake on Local Area Network (LAN) via a pilot project with the College of Natural Resources. Anticipate deploying the solution to the campus community in the 2013-2014 fiscal year.
• Enhanced campus-wide quality of service (QoS) strategy to better facilitate real-time collaboration tools. Partnering with Information Technology and Engineering Computer Services (ITECS) to pilot over the coming year before eventually deploying campus-wide.
• Implemented new firewall architecture and hardware. Transition from legacy firewall blades is underway and will continue over the next year.
• Developed the CALA 2.0 High Availability Architecture to allow departments with high availability needs to have resilient aggregation routers, XPALA switches and server room switches within applicable buildings. Initial deployment with Campus Police to be completed in the coming year.

UNIVERSITY STRATEGIC GOAL 3:
ENHANCE INTERDISCIPLINARY SCHOLARSHIP TO ADDRESS THE GRAND CHALLENGES OF SOCIETY

• Continued the shift of OIT to a more active role in support of research and education. Expanded efforts to partner on grants with faculty.
• Implemented a new Power Linux cluster with 10 compute nodes and 770 TB of storage to support investigations into new techniques to perform big data analysis as well as the analysis of very large datasets. This was a joint effort with the Poole College of Management, the Computer Science department, the Electrical and Computer Engineering department, and the Office of Research.
UNIVERSITY STRATEGIC GOAL 4:
ENHANCE ORGANIZATIONAL EXCELLENCE BY CREATING A CULTURE OF CONSTANT IMPROVEMENT

• Made significant progress on multi-year effort to move to a new, more resilient firewall environment.
• Upgraded the PeopleSoft environments, including the MyPack Portal, Financials, Human Resources and Student Information System.
• Completed significant upgrade of Report2Web, a Web-based report document repository at NC State.
• Migrated away from older technologies to provide more consistent and resilient environments. Decommissioned Sybase environments for business applications and legacy media server environment. Moved administrative Web application authentication off of legacy system and migrated databases off of older hardware.
• Supported migration of Advance to new Web-based environment.
• Converted 4,374 analog telephone lines in Phase II of the IP Telephony project.
• Implemented an Automatic Call Distribution (ACD) system as a more cost-effective alternative to our outsourced Angel.com solution.
• Developed and implemented the BAM tool to track Blue Lights.
• Developed a scanning service to detect accessibility errors on more than 380 campus websites, totalling more than 150,000 pages.
• Established, in conjunction with Distance Education Learning Technology Applications (DELTA), a video transcript synchronization service to aid in the production of captions for videos.

UNIVERSITY STRATEGIC GOAL 5:
ENHANCE LOCAL AND GLOBAL ENGAGEMENT THROUGH FOCUSED STRATEGIC PARTNERSHIPS

• Continued to serve as a lead contributor to the Apache VCL project and used the software to deliver the university’s VCL service.
• Extended VCL service to three additional NC Community Colleges and (as part of an NSF grant) to three NC public middle schools.
• Collaborated with the Internet2 community to provide VCL services as a Net+ service offering.
• Collaborated with Cato to interface its open source Cloud Sidekick with VCL to enable dynamic deployment of multi-tier applications (such as PeopleSoft and SAS).
• Partnered with MCNC and other Triangle campuses in developing a comprehensive strategy for SDN across campuses.
• Coordinated with the Access Technology Higher Education Network (ATHEN) to make the Google Apps for Education Suite more accessible to people with disabilities.
• Created Google Apps Accessibility Guidelines to help faculty and staff learn how to use Google Apps accessibly in the classroom and in the workplace.
• Worked with Distant Education and Learning Technology Applications (DELTA) and the Moodle open source community to improve the accessibility of the Moodle Learning Management System. The accessibility improvements are now available worldwide for all Moodle users.
• Contributed code to improve the accessibility of the open source Web-based video player, VideoJS. These improvements will be included in their next major release.
• Pursued partnerships with CISCO, IBM, DELL, EMC, and Lenovo.
• Continued efforts with the City of Raleigh and Wake County to increase broadband to the Triangle’s seven-county metro area via the Gig.U initiative.
• Worked with discipline engineering societies to support their efforts and to make positive and meaningful connections for NC State.
• Collaborated with the NC State Libraries and DELTA to consolidate the university’s VMWare Enterprise License Agreement, saving the university $300,000.
• Managed jointly the WolfTech Active Directory with the College of Engineering (ITECS) and Electrical and Computer Engineering.
• Collaborating with the College of Engineering (ITECS) to research the implementation of a virtual desktop infrastructure.
• Delivered more than 100 servers through Hosted Services, serving campus customers across the university with custom application and server hosting.